

ISTANBUL KEMERBURGAZ UNIVERSITY
GRADUATE SCHOOL OF SCIENCE AND ENGINEERING

SMART LOCATION-BASED MOBILE SHOPPING ANDROID
APPLICATION

M. Sc. THESIS

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SMART LOCATION-BASED MOBILE SHOPPING ANDROID APPLICATION

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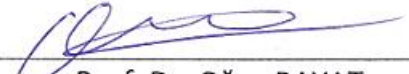
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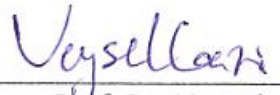
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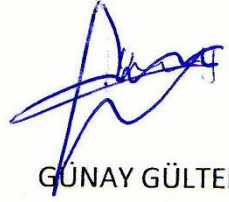
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ABSTRACT

SMART LOCATION-BASED MOBILE SHOPPING ANDROID APPLICATION

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In this thesis, a standard feature of today's smart phones "the location information" is used for determining the user location. SAGO finds nearest electronic super-stores by using the location information. Currently, SAGO shows only the electronic malls however, it will be added other types of shopping stores such as clothing stores, perfumery and so on. Therefore, this mobile shopping Android application's coverage is not limited. The application is easily extendable according to the users' requirements. The Android application is developed in Android 2.2 version, Application Programming Interface (API) level 8. Although the mobile application is developed for Android devices, it will be easily adopted and developed for iOS devices.

The system architecture is designed by using Service-Oriented Modeling Framework (SOMF) which is based on the Unified Modeling Language (UML) and also, object-oriented

programming language is used in the development process. Designing with UML is simplifying the complexity of the system and helps us to understand the architecture of this thesis project.

In the development process, the users' input data which has been brought before searching products in nearest electronic super-stores and also the names of local shopping stores are used in a "Smart Filtering algorithm". Moreover, simple filtering and cleaning technics such as Agglomerative Clustering Algorithm, Greedy Search Algorithm, and a Levenshtein distance are used in Search And Go (SAGO) mobile shopping application. By using this Android mobile application, the users are able to search the products in closer areas. The mobile users do not need to know where the locations of the shopping malls are. Also, the users are able to compare the prices that they are getting from each local electronic super-store and subsequently decide where to buy. The product is not purchased thorough the SAGO mobile shopping application. If the mobile users want to buy products, they will go to the related store directly. According to these, the users save both their money and time by using this Android mobile application.

Keywords: Mobile Shopping, Android Application, Unified Modeling Language (UML), Service-Oriented Modeling Framework (SOMF), Location, Price Comparison, Listing Algorithms, Filtering, Personalization.

TABLE OF CONTENTS

LIST OF TABLES	XI
LIST OF FIGURES	XII
LIST OF EQUATIONS.....	XIV
LIST OF ABBREVIATIONS	XVI
1. INTRODUCTION.....	19
1.1 ORGANIZATION OF THE THESIS.....	19
1.2 PURPOSE OF THE THESIS	20
1.3 STATE OF ART.....	20
1.4 BACKGROUND OF THE STUDY.....	21
1.5 STATEMENT OF THE PROBLEM	22
1.6 SIGNIFICANCE OF THE STUDY.....	23
1.7 SCOPE AND LIMITATIONS	23
2. RELATED WORKS.....	25
2.1 LOCATION-BASED SERVICES.....	28
2.2 GLOBAL POSITIONING SYSTEM	30
2.3 ANDROID OS PLATFORM	31
3. A POC APPLICATION IMPLEMENTATION	37
3.1 SYSTEM DESIGN	39
3.1.1 Architecture	39

3.1.2 The Work Flow of SAGO	42
3.2 IMPLEMENTATION	47
3.2.1 Trial Prototype	47
3.2.2 Technical Issues.....	52
4. SEARCHING, FILTERING AND STRING SIMILARITY ALGORITHMS	54
4.1 KARP-ROBIN ALGORITHM.....	54
4.2 SHIFT-OR ALGORITHM.....	55
4.3 QUICK SEARCH ALGORITHM	57
4.4 MANHATTAN DISTANCE METHOD	58
4.5 CHEBYCHEV METHOD.....	59
4.6 SPEARMAN RANK CORRELATION.....	59
4.7 BHATTACHARYYA DISTANCE.....	59
4.8 HAMMING DISTANCE	60
4.9 JARO-WINKLER DISTANCE	60
4.10 EUCLIDEAN DISTANCE	62
4.11 LEVENSHTein DISTANCE	63
5. DEVELOPED ALGORITHM WITH CONTENT FILTERING	65
5.1 MODIFIED GREEDY SEARCH ALGORITHM	65
5.2 SMART FILTERING ALGORITHM	66
5.3 COMPARISON VERSUS EXISTING SEARCHING AND FILTERING ALGORITHMS.....	73

6. RESULTS & CONCLUSION	78
7. FUTURE WORKS	87
REFERENCES	89
SAMPLE LOGS.....	95

LIST OF TABLES

Table 1 Bad-character shift table.....	57
Table 2 Algorithm Comparison results for searching "camera"	74
Table 3 Algorithm Comparison results for searching "laptop"	75
Table 4 Algorithm Comparison results for searching "iphone"	75
Table 5 Number of Result for All String Search Algorithms.....	76
Table 6 Total time of pattern search on Text (ns)	77
Table 7 Search result table (Threshold 3s)	80
Table 8 Error Rate of Search Result (Threshold 3s)	81
Table 9 Search Result table (Threshold 0s).....	81
Table 10 Error Rate of Search Result (Threshold 0s)	82

LIST OF FIGURES

Figure 1 Computing growth drivers over time	21
Figure 2 Determination of the User location	30
Figure 3 GPS Architecture	31
Figure 4 Android OS Architecture	33
Figure 5 Android OS Activity life-cycle	36
Figure 6 System Architecture of SAGO	40
Figure 7 Flow Diagram of SAGO	44
Figure 8 Contents of Smart Filtering Algorithm	46
Figure 9 Start Screen of SAGO	48
Figure 10 Showing the Nearest Shopping Stores	49
Figure 11 One Of the local stores in Map View	49
Figure 12 Showing Nearest Electronic Local Store	50
Figure 13 Settings Menu on SAGO	51
Figure 14 “Camera” Search Result	51
Figure 15 Karp-Rabin Algorithm	55
Figure 16 Meaning of vector R_j	56

Figure 17 Quick Search Algorithm sample example	58
Figure 18 General template of Greedy Search Algorithm	65
Figure 19 Modified Greedy Search Algorithm for SAGO	66
Figure 20 Basic Agglomerative Hierarchical Clustering Algorithm	68
Figure 21 Smart Filtering Algorithm.....	71
Figure 22 Sample distribution of the products in coordinate system	72
Figure 23 Dendrogram view of “camera” search results.....	73
Figure 24 Sample logs in SAGO	79
Figure 25 Sample Error logs in SAGO	80
Figure 26 Sample search result.....	83
Figure 27 Search Log before Algorithm renders.....	84
Figure 28 Laptop Search Results after algorithm renders	84
Figure 29 Bottom Search Result of Laptop Search	85

LIST OF EQUATIONS

Equation 1 Hash function.....	54
Equation 2 Rehash function.....	55
Equation 3 Horner Rule.....	55
Equation 4 Case condition of R_j	56
Equation 5 Case Condition of R_{j+1} for $i+1$ index	56
Equation 6 Case Condition of R_{j+1} for zero index	56
Equation 7 Manhattan Distance	59
Equation 8 Chebychev	59
Equation 9 Spearman Rank Correlation.....	59
Equation 10 Bhattacharyya Distance.....	60
Equation 11 Jaro Distance.....	61
Equation 12 Matching criteria of Jaro-Winkler distance	61
Equation 13 Jaro-Winkler Distance.....	61
Equation 14 Euclidean Distance.....	62
Equation 15 Euclidean plane	62

Equation 16 Alternative form of Euclidean distance	62
Equation 17 Mathematical Definition of Levenshtein Distance	63
Equation 18 Formula of calculation representative price	69
Equation 19 Normalization Formula.....	70

LIST OF ABBREVIATIONS

3G	Third Generation International Mobile Telecommunication-2000 (IMT-200) standards
4G	Third Generation
GPS	Global Positioning System
TDOA	Time Difference of Arrival
AOA	Angle of Arrival
LPM	Location Pattern Matching
NFC	Near Field Communication
LBS	Location-Based Services
LOS	Line of Sight
API	Application Programming Interface
IDE	Integrated Development Environment. In this thesis – Eclipse
OS	Operation System
SDK	Software Development Kit

ADT	Integrated Development Environment
GSM	Global System for Mobile Communications
VAS	Value Added Service
SCM	Supply Chain Management
CRM	Customer Relationship Management
USDL	Universal Service Description Language
PoC	Proof of Concept
PDA	Personal Digital Assistant
RFID	Radio Frequency Identification Description
HTTP	Hypertext Transfer Protocol
REST	Representational State Transfer
HTML	HyperText Markup Language
MIT	Massachusetts Institute of Technology
UI	User Interface
SOMF	Service-Oriented Modeling Framework
GNU	GNU's Not Unix

MANET	Mobile Ad-hoc Networks
SAGO	Search And Go
SGL	Scalable Graphics Library
SIP	Session Initiation Protocol
CPU	Central Processing Unit
MET	Mobile Entity Tracker
UML	Unified Modeling Language
VM	Virtual Machine

1. INTRODUCTION

1.1 ORGANIZATION OF THE THESIS

This study aims to support and to assist the decision-making process of purchasing products by designing system architecture. The structure of the thesis is as follows;

- Introduction
- Related Works
 - Location-based services
 - Global Positioning System (GPS)
 - Information about Android Operation System (OS) platform
- Developing a Proof of Concept (PoC) application
 - System Design
 - Architecture
 - The work flow of SAGO application
 - Implementation
 - Trial Prototype
 - Technical Issues
- Algorithm
- Conclusions
- Recommendations for further improvements and comments.

1.2 PURPOSE OF THE THESIS

In the thesis, I proposed a smart location-based mobile shopping application for Android devices. This shopping application especially depends on the location information. The Geo-position of the user's mobile device is received to produce location information. In addition to that, the user searches a product by using the Android mobile device. The SAGO identifies the location, searches the product on the closest electronic local stores, gets the prices from each local store and finally, shows the results as a product list. By showing the results, the "smart list algorithm" is used. In this algorithm, several steps have been done in the mobile shopping application to reach the goal which is mentioned in 5.2 Smart Filtering Algorithm.

1.3 STATE OF ART

Nowadays, the technology keeps improving in every area, especially on smart phones and mobile devices. Since the last decade, their hardware and software capabilities have been improved rapidly. We are able to think that the current mobile phones are as strong as a computer and also they are able to compete with computers. For one example is that, they have multi-core processor means they are as fast as a computer, in other words, their capabilities are very broad. Therefore, the customer requirements will increase year by year. In addition, the sales have increased tremendously in recent decades.

Mark Lipacis, who is a managing director at Morgan Stanly Research and also global technology and telecom analysts, has expressed by saying "From a broader computing cycle perspective, we think we are in the middle of the mobile consumer/internet computing cycle characterized by a fragmentation of computing devices, where computing occurs anytime, anywhere, on a range of internet-connected devices." in his early research study. [1] The Mobile is growing faster than any technology before. PC installed base reached 100MM in 1993, cell phone/Internet users reached 1B in 2002/2005 respectively. The mobile internet usage is not just phones; it includes iPad's, Smartphone's, kindle's, tablet's, mp3's, cell phone's/personal digital assistant's (PDA), car electronics, mobile video's, home entertainment systems, games and wireless home appliances. Computing growth drivers over time expressed by Lipacis, Mark is in Figure 1.

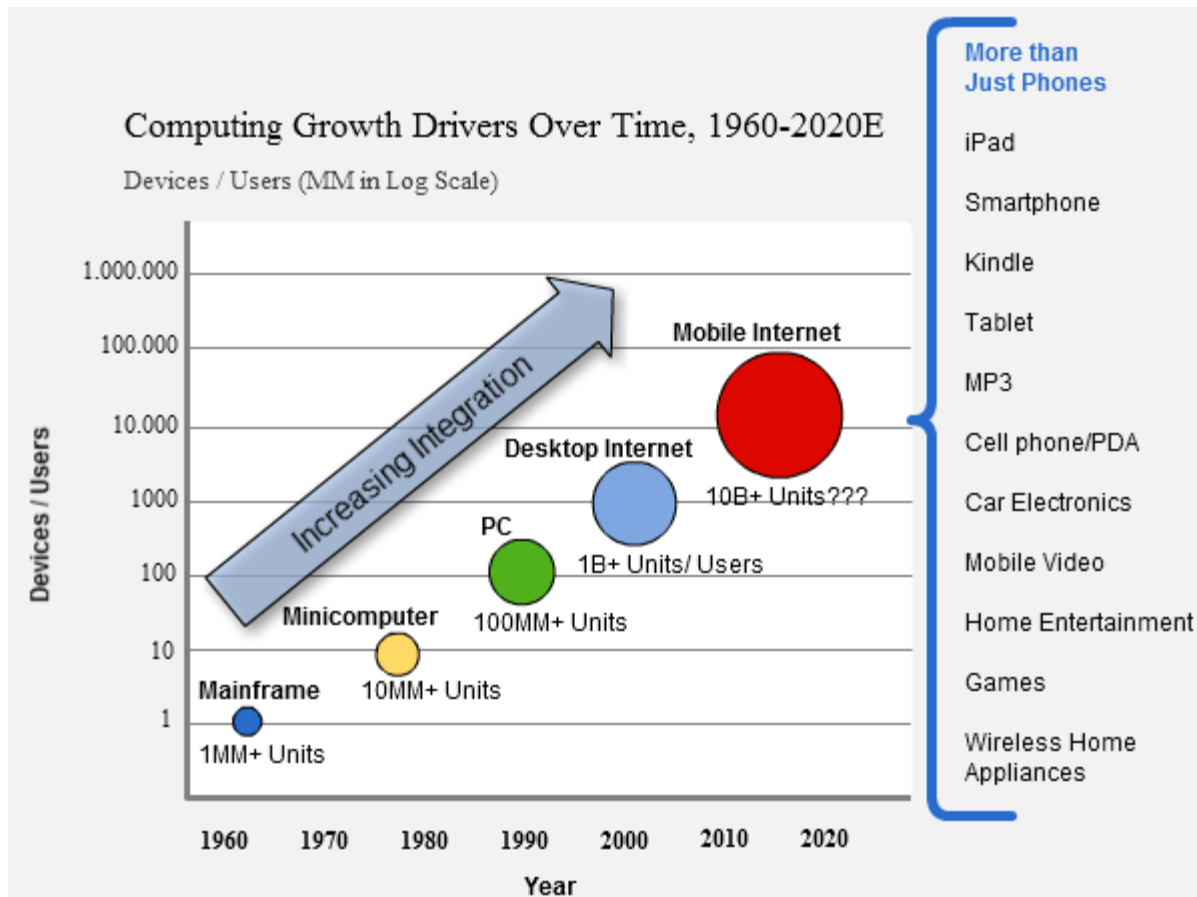


Figure 1 Computing growth drivers over time

1.4 BACKGROUND OF THE STUDY

As more people have more smart phones, they are more willing to use them for purchasing, searching and other purposes, instead of using a computer. The survey proves that smartphones are used as a reference to get information. [2] In addition, the big companies get benefits from mobile devices and smart phones. PayPal is experiencing exponential growth in mobile payments and growing from \$750M in 2008 to over \$4B in 2011, with \$20B expected in 2013. [3] More than 3 million people have paid using the Starbucks Card Mobile application, making Starbucks the nation's largest mobile payment network. Present 6,800 Starbucks and 1,000 Target locations. [4] According to all this information, the mobile market becomes an important part of the world trade. Therefore, mobile applications are needed and produced by mobile developers.

“Online shopping” is the one type of mobile application on smart phones. Furthermore, we are able to see that the web market is losing the people’s focus, on the other side the focus is shifting towards the mobile market. Moreover, the people have a limited time nowadays because the technology has been improving and tons of work must be finished in a specific time; therefore the time becomes important for our daily work. In addition to that, the people want to decrease time consuming tasks on daily routine works by using the mobile devices. According to this, market analyst’s says that the people use their phones more than the last two decades.

To sum up, the mobile application has a key role these days for doing daily works and these applications enrich our life quality. In my opinion, in the future, it will be more and more important than today, especially with the online shopping market.

1.5 STATEMENT OF THE PROBLEM

The limited time problem in daily life was mentioned in the “background of the study” because of the people who have lots of work to do they are willing to accomplish all jobs and their personal works in a short time; such as buying electronic products and also other different kinds of products, making reservations, paying the bill, etc. Moreover, money is as big issue as time, especially while purchasing something. Generally, the people are willing to buy the cheapest products. Also, the locations of shopping malls are an important factor, too. People prefer to choose closer shopping malls for buying a product even though the product’s price is high. Therefore, the people have to search the location of shopping malls and products which are available at each shopping mall. Afterwards, they should go to each shopping mall to get the detailed information of the product. Next, they should spend time to compare them and also consider which shopping mall gives the best appropriate price. Finally, they decide on the place to buy the product. According to all this information, conventional shopping requires more money, time and effort to be spent in each shopping. The location-based mobile shopping Android application solves this problem in a quick and efficient way.

1.6 SIGNIFICANCE OF THE STUDY

This study aims to help mobile users in the decision-making process before purchasing a product. In the meantime, the time and money will have been saved through this study. Therefore, the mobile users will not have to spend too much time and effort to find or purchase the products. Furthermore, the output of this study is that the mobile users have got an Android mobile shopping application that is working on a real environment.

1.7 SCOPE AND LIMITATIONS

This study focuses on only one type of information technology category which is an electronic device including computers, computer parts, printers, scanners, suppliers, network and modem, software, environmental unit and also digital life devices such as TVs, projectors, cameras, video cameras, digital music players, recorders, etc. All other types of categories such as personal care, games and entertainment, home technologies, accessory, etc. will be imported to the application easily if these are needed.

The developed application is not a production ready fully featured application; it is a PoC application or described as a prototype of a shopping application on Android mobile device based on location information. The application is working only on Android devices which use Android OS and it can be easily adopted in other OSs such as iPhone OS.

The developed application limitations are internet bandwidth and hardware capabilities. These factors are very important for the mobile applications. These key factors make big impact on the product's efficiency.

The first limitation, which is internet bandwidth, is an important key factor for the mobile device application because, the smart mobile phones gather the data that is requested from the user through the internet. Furthermore, the internet speed effects to increase the usage of the bandwidth. Recent smart phones use the third generation (3G) mobile phone standards and technology. 3G provides high speed internet but increases the internet usage quickly. Therefore,

the bandwidth for each user is decreased by mobile operators, moreover, sometimes the internet is cut off and the mobile user can not establish a connection.

The second limitation depends on mobile devices hardware. The recent technologies make the smart mobile phones more capable than before. In addition to that, some smart phones have quad-core Central Processing Unit (CPU), more than 2 GB RAM, high resolution cameras, high quality big screens, supporting to use 3G or fourth generation (4G) network, GPS, Near Field Communication (NFC) and so on. Moreover, according to these improvements, the programmers want to use these hardware capabilities in their mobile applications to produce unique applications. Therefore, newer and more capable mobile applications are produced. According to this information, the recent mobile application requires the high capable smart phones.

2. RELATED WORKS

In the world, every living and non-living element has a geo-location. Longitude and latitude coordinates are the parameters of the Geo-location information. The global system uses this information for Mobile Communication (GSM). The GSM based mobile telecommunication companies provide a wide range of value added services (VAS) to the subscribers. Also, there are various kinds of applications that are being used such as, location-based data and user's Geo-location information, available on the market. Some of the location-based services (LBS) applications given below:

- Personal navigation,
- GPS-based car-navigation,
- Personal roadside service,
- Supply chain management (SCM),
- Customer relationship management (CRM),
- Asset tracking,
- Fleet tracking system,
- Homeland defense,
- Shopping assistance,
- People monitoring,
- Recommending social events in a city,
- Requesting the nearest business or service,
- Mobile advertising, receiving alerts (a notification of a sale on gas, warning of a traffic jam),

- Games where your location is part of the game play (for example, your movements during your day makes your avatar move in the game or your position unlocks content),
- Location-based reverse auctions [5],
- Mobile online auctions [6],
- GPS-based LBS [7],
- E-parking [8],
- Wireless advertising [9], etc.

In my literature survey, these applications generally use GPS to determine the best location. It is effective and accurate to find the mobile device's location rather than using a base station. Besides that, when GPS is used, the power consumption is higher than a base station. In addition, this valuable location-based information helps the developer to serve better mobile applications and services to the customers. Furthermore, mobile applications do not only depend on using Geo-location information but also they use it for improving the application's productiveness.

Today's mobile market in Turkey is not as diverse as it was 10 years ago. When I started to write this thesis, there was no such kind of application that uses local electronic stores. On the other hand, there are many web sites that provide information with many functions such as comparing, sorting, purchasing, utilities. Besides that, the valuableness of this Android mobile shopping application uses real-time data. This data is available on the web site of the local stores.

One research project is about a context aware personalized recommendation system for web and mobile. This project recommends relevant location-based data for user collection and consisting of GPS routes and photos. [10] This mentioned system has several LBS applications such as search engines, data gathering, user tracking and route recording.

City Voyager that was described in [11] offers recommendation of shops dependent on user location history. Previously visited locations are used as an input to an item-based collaborative filtering algorithm.

Magitti that was described in [12] forecasts user activity by collecting data of both user context and the patterns of user behavior. Collaborative filtering, distance, stated or learned preferences are used on the recommendation of context which is produced automatically.

Another project is ShopBot which aims at the development of a smart and interactive mobile shopping assistant for everyday use in shopping centers or home improvement stores. [13] This research project is using both sonar-based grid and vision based graph maps which includes the map of the local stores. Moreover, during the guidance tour, the robot detects and tracks customers.

Speak4itTM is a customer-oriented mobile search application that leverages the multimodal input and output to allow users to search for and act on local business information. This application is the first commercially deployed mobile local search application to support true multimodal interaction where users can issue commands that integrate simultaneous inputs from speech and gesture. [14]

WherifyWireless is a personal locator that depends on GPS-based information. This application helps the user to generate an accurate breadcrumb of their children on a web demanded map. [15]

The Mobile Entity Tracker (MET) is a mobile application for tracking mobile user's phone with a graphical interface. The location of the mobile user is shown on the map with any major landmarks. In addition, the current velocity and the road in which a given mobile is travelling on are shown in MET. [15]

Ubiroid is an Android application which uses information via USDL (Universal Service Description Language) channel that comes from an information distribution system. This system gathers the data provided by multiple sensors and reporters and then show the results on the phone. The aim is to encourage the customers to purchase the products in the mall. [16]

Shopper's Eye is a PDA which works as a personal information manager based location enabled agent prototype. This is used for helping the shopper by providing the users previous interest information while they are shopping in a shopping mall. [17]

The impulse research project provides an application that enables a customer's agent to give relevant information, real-time alerts and suggestions. These suggestions depend on the mobile user's interests, Geo-location information, and environments. [18]

Another research project is a prototype that is able to work both push and pull mode. In push mode, suppliers are able to send offers to the clients. In pull mode, the information which is taken from the online information system can be pulled by the agent. Moreover, this research project depends on users' interests. [19]

Researchers are interested in improving the customers shopping experience. This means people who use the application still have the experience of shopping in malls or stores. "MyGROCER" is a radio frequency identification description (RFID) based shopping system. RFID receivers in the proposed system aim to identify each product uniquely. [20]

Proposed information registration and gathering method on Mobile Ad-hoc Networks (MANET) achieved low communication traffic and short response time. [21]

ShopSavvy is a mobile shopping application that searches products on local super-stores. The differentiating feature from the other mobile shopping application is using barcode. It is used for searching the related product.

2.1 LOCATION-BASED SERVICES

Abowd defined the location term as "Location is a common piece of context used in application development." The most widespread applications have been GPS-based car-navigation system and handheld tour-guide systems that vary the content displayed (audio or video)." [22]

Moreover, LBS architecture is to use devices to communicate with the location services suggested by the super-stores, shopping malls, retails, and so on. All these marketing companies want to serve better services to the customers by using the location information provided from

the mobile devices. These are services such as product searching, viewing, comparison, purchasing, emergency assistance, travel services, navigation or real-time traffic and bill payment etc. Nowadays, people prefer to use a handheld device to do online shopping rather than going to a physical store. A mobile customer can use a handheld device to perform search operations in the marketplace and then, see the search results on the mobile device screen and compare them. Finally, the mobile customer can purchase the products. According to this information, product searching, comparison and purchasing operation can be done easily by using mobile devices.

Location-Based Service architecture consists of three parts.

- The Mobile Operator
- The Location-Based Service Provider
- The Mobile User

The Mobile Operator works as an agent between the LBS provider and mobile user. The Mobile Operator is responsible for identifying, authorizing customer and transferring the user location to the LBS provider via mobile communication networks.

The LBS provider uses the mobile user's location information that includes Geo-location information to create and provide the requested services to the mobile customers. This information helps to produce the user-based information easily.

The location information of the mobile user is a must for the LBS system. There are different positioning methods to determine the location information of the mobile user. In general, the location is determined by GPS. The other technologies are Time Difference of Arrival (TDOA), Angle of Arrival (AOA), and Location Pattern Matching (LPM). GPS is the most important technology that differentiates from others.

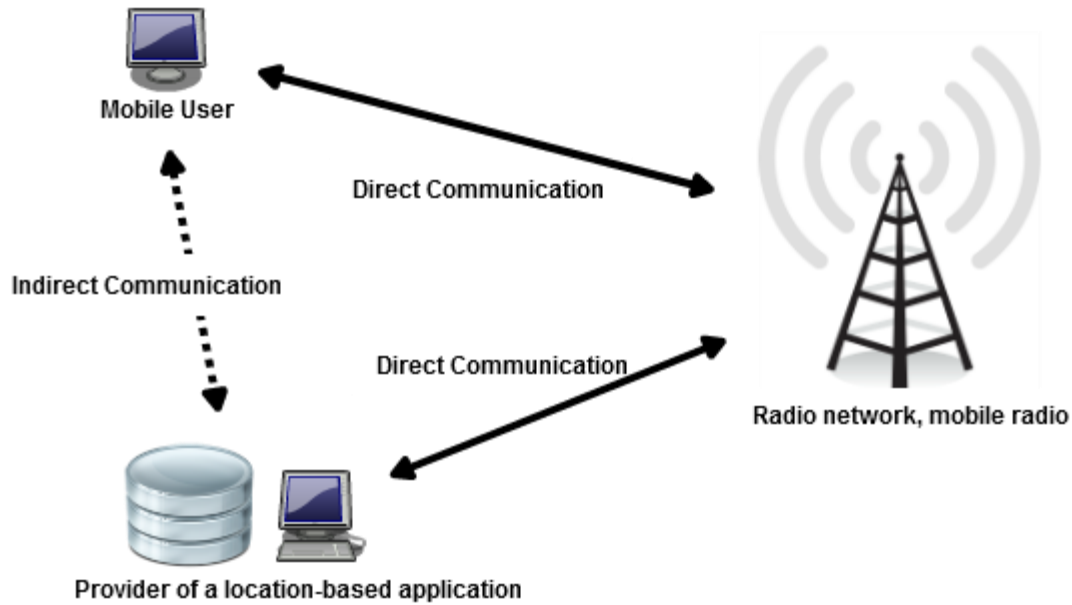


Figure 2 Determination of the User location

2.2 GLOBAL POSITIONING SYSTEM

GPS is a satellite based positioning system using satellite technologies; on the other hand, TDOA, AOA and LPM are network based technologies. GPS uses more than three geo-orbiting satellites that turn around the earth. The satellites communicate with a base station receiver on Earth by Line of Sight (LOS). Clear LOS is required for the GPS.

GPS satellites convey information data, which can be used to calculate the position of the receiver. GPS includes 28 active satellites that are uniformly settled on six different circular orbits. The inclination angle of orbits from the equator is 55° and orbits are separated by 60° right ascension from each other. This constellation provides global coverage and chance to operate 24 hours a day and in all weather conditions. In theory, three or more satellites in view are enough to calculate the location of the receiver. Although a receiver can calculate the position, the accuracy of positioning is dependent on the number of satellites in view, signal qualities, weather conditions, etc. [23]

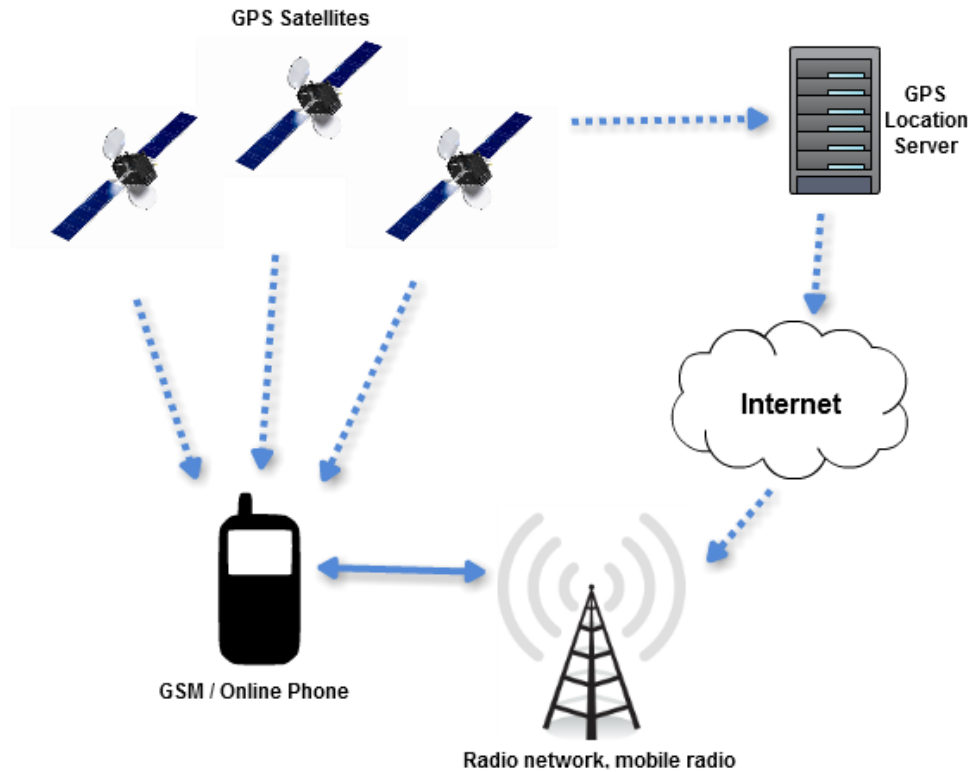


Figure 3 GPS Architecture

2.3 ANDROID OS PLATFORM

Android is a Linux-based OS and designed primarily for touchscreen mobile devices such as Smartphones and tablet computers. Initially developed by Android Inc., which Google backed financially and later bought in 2005 [24]. Android Inc. was found in Palo Alto, California October 2003 by Andy Rubin, Rich Miner, Nick Sears, and Chris White.

This OS is an open source system provided by Google that everybody is able to contribute to the OS and feel free to use. Google releases the code under the Apache License therefore, this permissive licensing allows this software to be freely modified and distributed by device manufacturers, wireless carriers and enthusiast developers [24].

Figure 4 Figure 4on page 33 is showing the Android System Architecture with its core components. As you can see, there are five main parts Linux 2.6 Kernel, Libraries which include Java class libraries, Android Runtime, Application Framework and Applications. Each component

has its own specific feature. For example, in the library part, OpenGL/ES, which is a 3D library, and Scalable Graphics Library (SGL), which is a 2D library, are the core of graphics libraries. In addition, Android uses only “Kernel” portion in Linux. This platform has various Linux kernel libraries in order to support higher functionality. Many of these libraries come from open source projects, on the other hand, the Android developer created their own C library in order to resolve licensing conflicts. They also developed their own Java runtime engine, optimized for the limited resource available on a mobile platform called the “Dalvik Virtual Machine”. [4] Moreover, A Linux kernel is GNU's Not Unix (GNU) software. Software stack of the Android runs Java applications using Java core libraries. Each instance of the Java application runs on its own Virtual Machine (VM) called Dalvik [2].

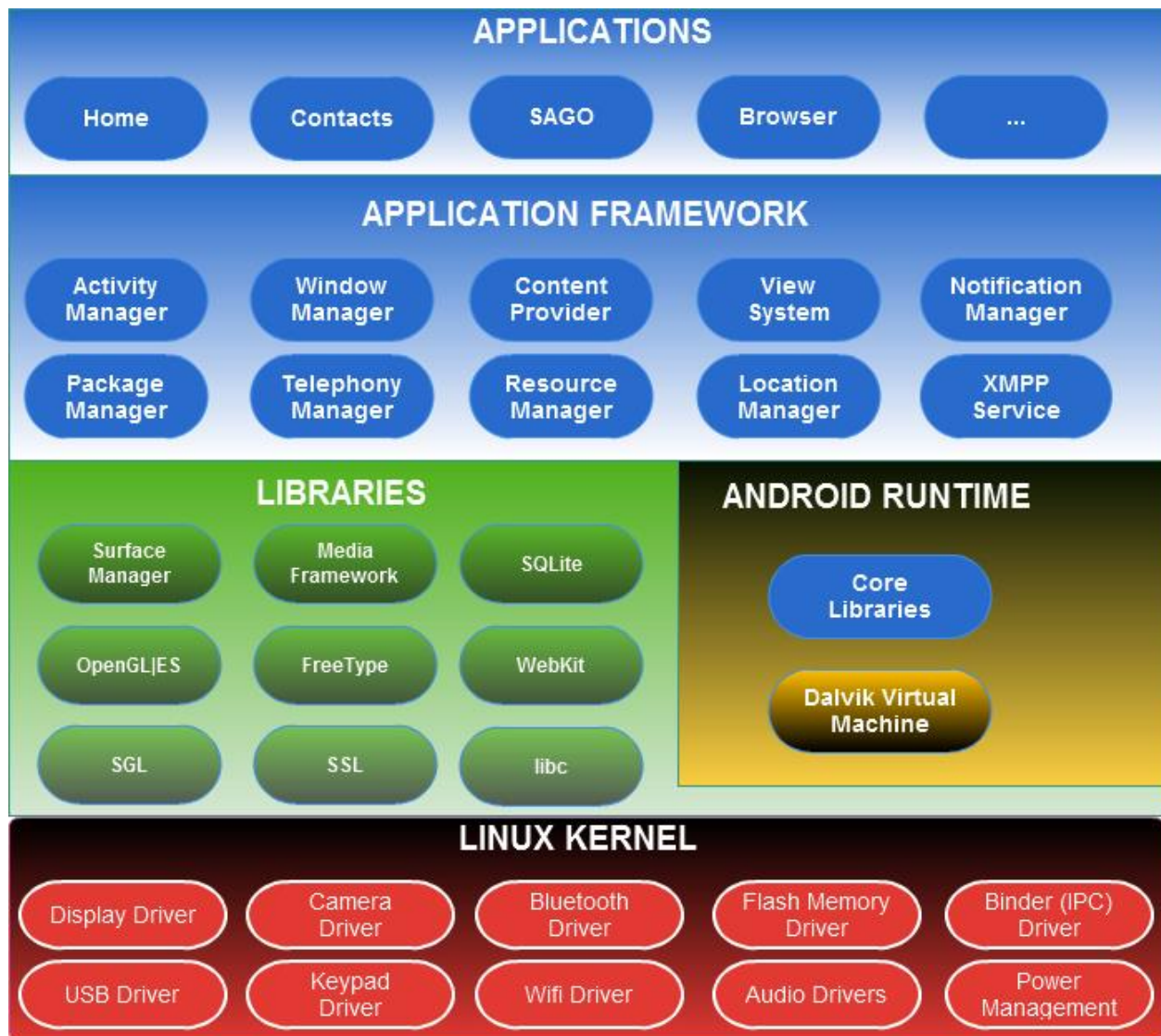


Figure 4 Android OS Architecture

Well as for Dalvik VM, it has its own Java Byte code and is designed to be optimal on memory and processor usage. The VM executes Dalvik Executables with (.dex) extension. Among the several tools built-in the Android, 'dx' tool is used to generate the executable that converts the Java classes into.dex format [2].

Android developers can build an application by using the Software Development Kit (SDK) that is developed and provided by Google. It includes an API to be used for developing extremely rich and innovative Java applications. These APIs make it easy to access the components on the mobile phones and some of them are;

- Media and Camera,
 - Add video, audio, and photo capabilities to your app with Android's robust APIs for playing and recording media. [3]
- Contacts Provider,
 - The Contacts Provider is a powerful and flexible Android component that manages the device's central repository of data about people. The Contacts Provider is the source of data you see in the device's contacts application, and you can also access its data in your own application and transfer data between the device and online services. [3]
- Calendar Provider,
 - The Calendar Provider API allows you to perform queries, insert, update, and delete operations on calendars, events, attendees, reminders, and so on. [3]
- OpenGL,
 - OpenGL is a cross-platform graphics API that specifies a standard software interface for 3D graphics processing hardware. [3]
- Location and Sensors APIs,
 - Use sensors on the device to add rich location and motion capabilities to your app, from GPS or network location to the accelerometer, gyroscope, temperature, barometer, and more. [3]
- Connectivity,
 - Android provides rich APIs to let your app connect and interact with other devices over Bluetooth, NFC, Wi-Fi Direct, USB, and Session Initiation Protocol (SIP), in addition to standard network connections [3] and so on.

Android OS, an activity is an application component that provides a screen which user interaction is needed in order to do something, such as taking a photo, dialing a phone, sending an email or a message, viewing a map, drawing a picture, editing contact information, looking for a word in the dictionary. Each activity provides a window in which to draw its user interface (UI). In general, the application consists of more than one activity and each activity bounds the other activity. One activity in application is mentioned as the “main” activity, which is presented to the user when launching the mobile application for the first time. The other screens are bound to the first activity. When the other activity starts, the main activity stops and puts it to the OS stack mechanism. The main activity pops up until the user pushes the back button. Therefore managing the activity life-cycle is the most important part of the Android OS. You can see the activity life-cycle in Figure 5 on page 36. In here, “onCreate()” called when the activity is first created. After the activity has been stopped, “onRestart()” is called. This called just before the activity becomes visible to the user. “OnCreate()” and “onRestart()” are always followed by “onStart()”. If the activity comes to foreground, “onResume()” will be called and if the activity becomes hidden that means no longer visible to the user, “onStop()” will be called. “onPause()” is called when the system is about to start resuming another activity. “OnDestroy()” is called before the activity is destroyed. This is the final call that the activity will receive. At this stage, the OS destroyed the activity to save the space. [3]

Moreover, there are three lifetimes on the Android OS. These are entire lifetime, visible lifetime and foreground lifetime. The entire lifetime starts with by calling “onCreate()” and ended by calling “onDestroy()”. The visible lifetime of an activity happens between the call to “onStart” and the call to “onStop”. During this time, the user can see the activity on screen and interact with it. [3] And lastly, the foreground lifetime of an activity happens between the call to “onResume()” and the call to “onPause()”. During this time, the activity is in front of all other activities on screen and also the user has focused on that activity. In addition, Figure 5 on page 36, the rectangles represent the callback methods that the programmer should implement to perform operations when the activity transition between states.

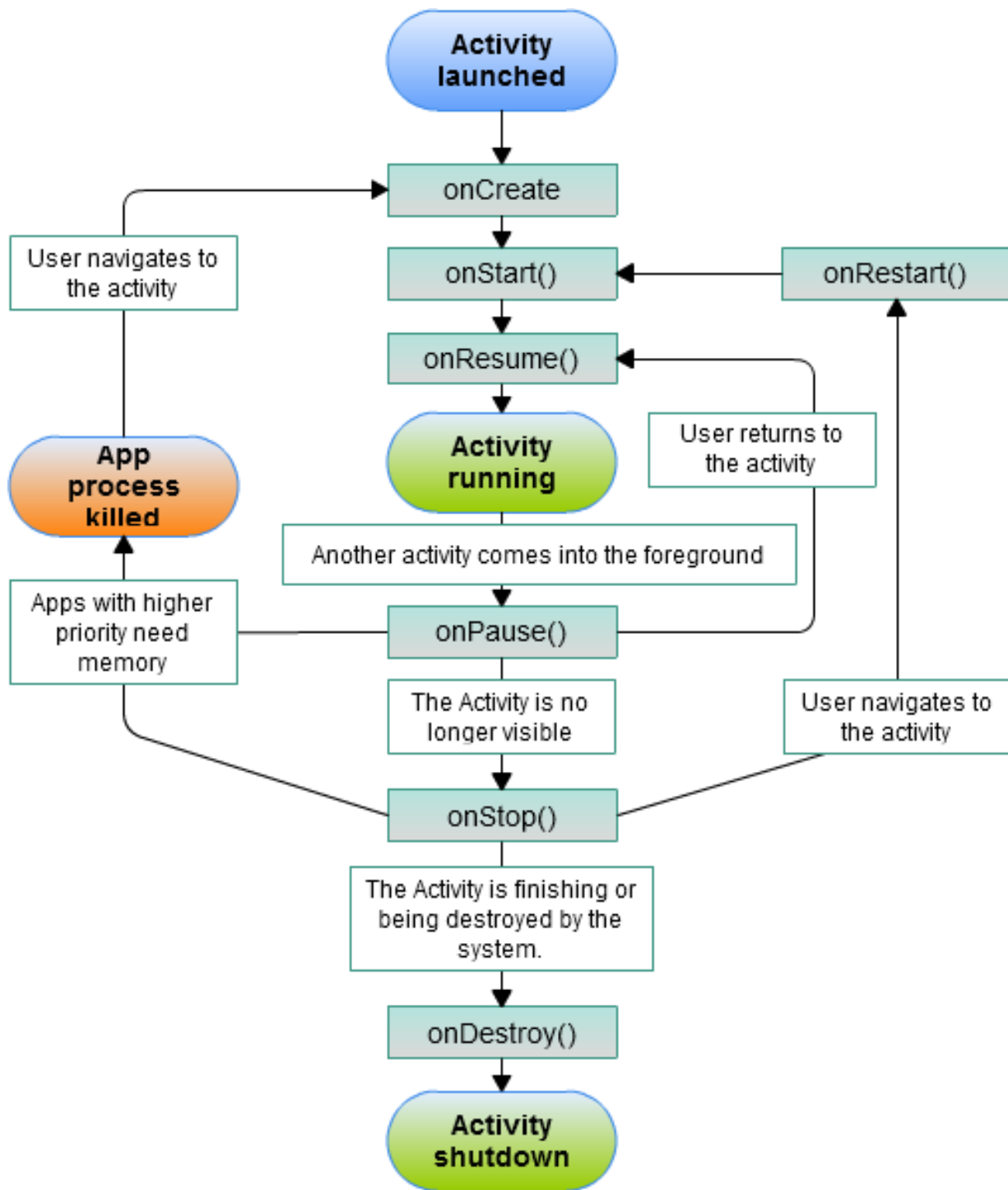


Figure 5 Android OS Activity life-cycle

3. A POC APPLICATION IMPLEMENTATION

In this thesis, the mobile shopping Android application was developed. This application named as SAGO which stands for “Search And Go”. The first capital letter of each word is combined as “SAGO”. [This mobile shopping Android application is a PoC application which means the SAGO does not have fully functional.]

The Android application uses the geographic coordinates of the mobile device. This location information is the key point of the SAGO application. SAGO uses the location information as an input of the system architecture which is mentioned in this thesis. The geographic coordinate is used to determine nearest shopping mall around the user. This information is converted to a valuable form by using Google API. This API is used in the SAGO mobile shopping Android application. The API is defined in [25] as “Specification intended to be used as an interface by software components to communicate with each other.” In order word, this API is used as gathering the data from the web. The Google Web API services help developers to find data and manipulate information on the web easily. In addition, these web APIs are for developers and researchers interested in using Google as a resource in their programs. Moreover, the software developers can easily query more than 3 billion web documents directly by using the Google Web APIs service from their own personal computer programs. [25] Google has many APIs such as

- Analytics API,
- Books API,
- Blogger API v3,
- Freebase API,
- Maps Android API v2,
- Maps Android API v2,
- Maps API v3,

- Google+ API,
- Places API,
- Search API for Shopping,
- Street View Image API,
- Static Maps API,
- Translate API,
- YouTube Analytics API and so on.

These APIs are also called Restful APIs because of their structure based on Representational State Transfer (REST) architecture. The REST is a software architecture based on Hypertext Transfer Protocol (HTTP) protocol to collect the data from internet resources. HTTP is a standard protocol for web servers and browsers. It tells how to communicate to each other and defines message formats.

In this thesis, SAGO uses two Google APIs.

- The first one is Google Places API. This API is used to search detailed information about places across a huge range of categories such as establishments, prominent points of interest, Geo-locations, etc.
- The second is Google Map API. This API is used to build spectacular location-based applications. This API provides the mobile developers to create 3D images. The generated map that was provided by the Google Map API is able to highlight the data such as images, brands, and so on.

3.1 SYSTEM DESIGN

3.1.1 Architecture

The system architecture diagram was created by using SOMF which depends on UML. SOMF has been proposed by author Michael Bell as “a holistic and anthropomorphic modeling language for software development that employs disciplines and a universal language to provide tactical and strategic solutions to enterprise problems” [26]. In short, SOMF is a service-oriented development life-cycle methodology. SOMF supports;

- Business architects,
- Technical architects,
- Developers,
- Modelers,
- Managers,
- Business analysts,
- Technical analysts to succeed service-oriented life-cycle management and modeling.

Figure 6 on page 40 represents the system architecture design of SAGO mobile shopping Android application.

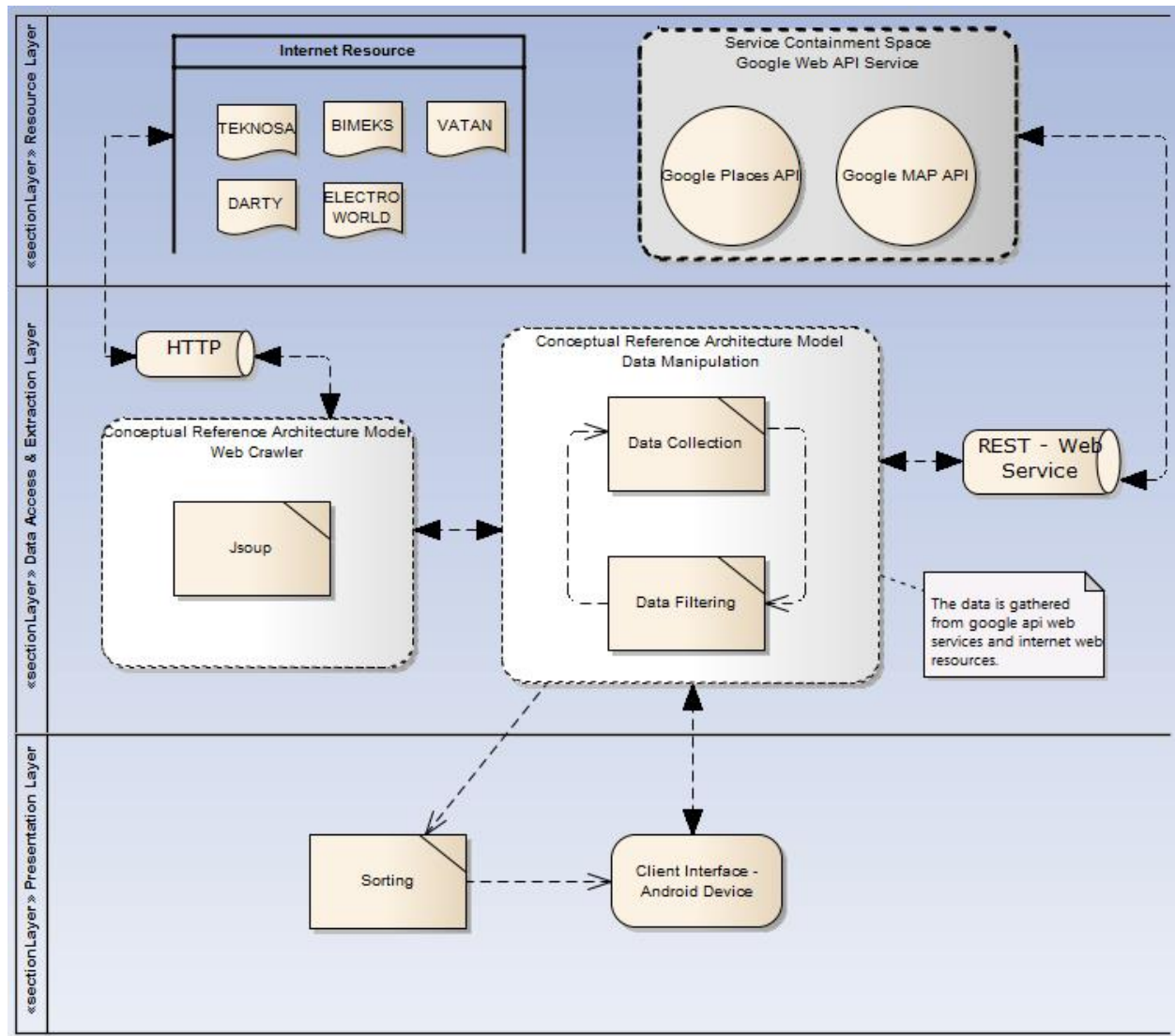


Figure 6 System Architecture of SAGO

The system architecture depends on three layers;

- Resource Layer
- Data Access and Extraction Layer
- Presentation Layer

The top layer of the system architecture is "Resource Layer". This layer includes the related data which is used in the SAGO mobile shopping Android application. The most part of the data is

collected from internet resources which are the electronic local stores in Turkey. The local electronic stores which are used in the SAGO mobile shopping Android application are;

- Teknosa,
- Darty,
- Bimeks,
- Vatan Computer,
- Electro World.

There are also many other local electronic stores. These are the most popular electronic stores in Turkey. In future development, the other electronic local stores will be able to be added to the SAGO mobile shopping Android application. Another part of the data is gathered from Google. Google provides a variety of data to the developers and researchers. In this thesis, the two Google Web APIs are used to collect the data. The first one is Google Places API and the second one is Google Map API.

The second layer of the system architecture is “Data Access and Extraction Layer”. This layer includes tools and data-extraction. The tool, which named as Jsoup, defined as “Jsoup is a Java library for working with real-world HTML. It provides a very convenient API for extracting and manipulating data, using the best of DOM, CSS, and JQuery-like methods.” [27] Jsoup is a Java HyperText Markup Language (HTML) Parser and an open source project. This project distributed under the Massachusetts Institute of Technology (MIT) license. This license allows developers to use it freely in their applications. In this thesis, Jsoup uses HTTP protocol to collect the data from the web resources. Moreover, the data is also gathered from Google APIs through REST Web service. In addition, after collecting from Google APIs, the filtering is needed to eliminate the unwanted and unrelated Information.

The third layer of the system architecture is “Presentation Layer”. This layer includes sorting the related results that are gathered from the Data Access and Extraction Layer. Presentation layer aims to present the result in a meaningful and a logical way that covers the user requirements.

The basic sorting technique is used in SAGO because the more complex sorting technique is not needed.

3.1.2 The Work Flow of SAGO

The mobile shopping Android application has a flow chart that depends on the system architecture. This flow chart also covers all use cases of the SAGO application. Figure 7 on page 44 represents the flow diagram of SAGO.

The starting point of the flow diagram is that the user opens the SAGO application on his/her Android device. When the application starts, it uses the GPS feature of the mobile device. According to the surrounded environment, the GPS signal may be captured or may not be captured. For instance, if the user is inside or outside the home but the weather is cloudy, the device could not capture the GPS signal that comes from the satellites that orbit around the earth. If the device could not find the GPS signal, SAGO application insists the mobile user either to type longitude and longitude information that is used as an input in this workflow or to move to a suitable place that enables mobile device to gather GPS signals. After continuing, the process flow is the same as when GPS signal is captured. If the device captures the GPS signal, the application will send the longitude and latitude information to Google Places API. In addition, the mobile application also sends other information as parameters that are needed to get related data from Google Places API. After collecting the data, this data must be filtered. This filtering technique includes cleaning the data and Greedy Search Algorithm. The information, which is mentioned, is a branch of the local store. The first step is to find branches. At that time, the Google API returns lots of data, some of them are junk data, therefore, the related information should be searched and taken from this data. In addition to that, Google warns user about returning result data is not accurate at all. The next step is cleaning up the data. This step cleans the data by looking at distance from branch to the user location. The distance was calculated by using Haversine formula. The Haversine formula is one type of Great Circle calculations. It is used for computing distances between two given points that have longitude and latitude values more accurately. [28] The coverage distance is pre-defined as 5 km in SAGO.

In addition, the mobile user is able to change the coverage distance up to 20 km. This limitation depends on the Google Places API. It provides the information up to 20 km.

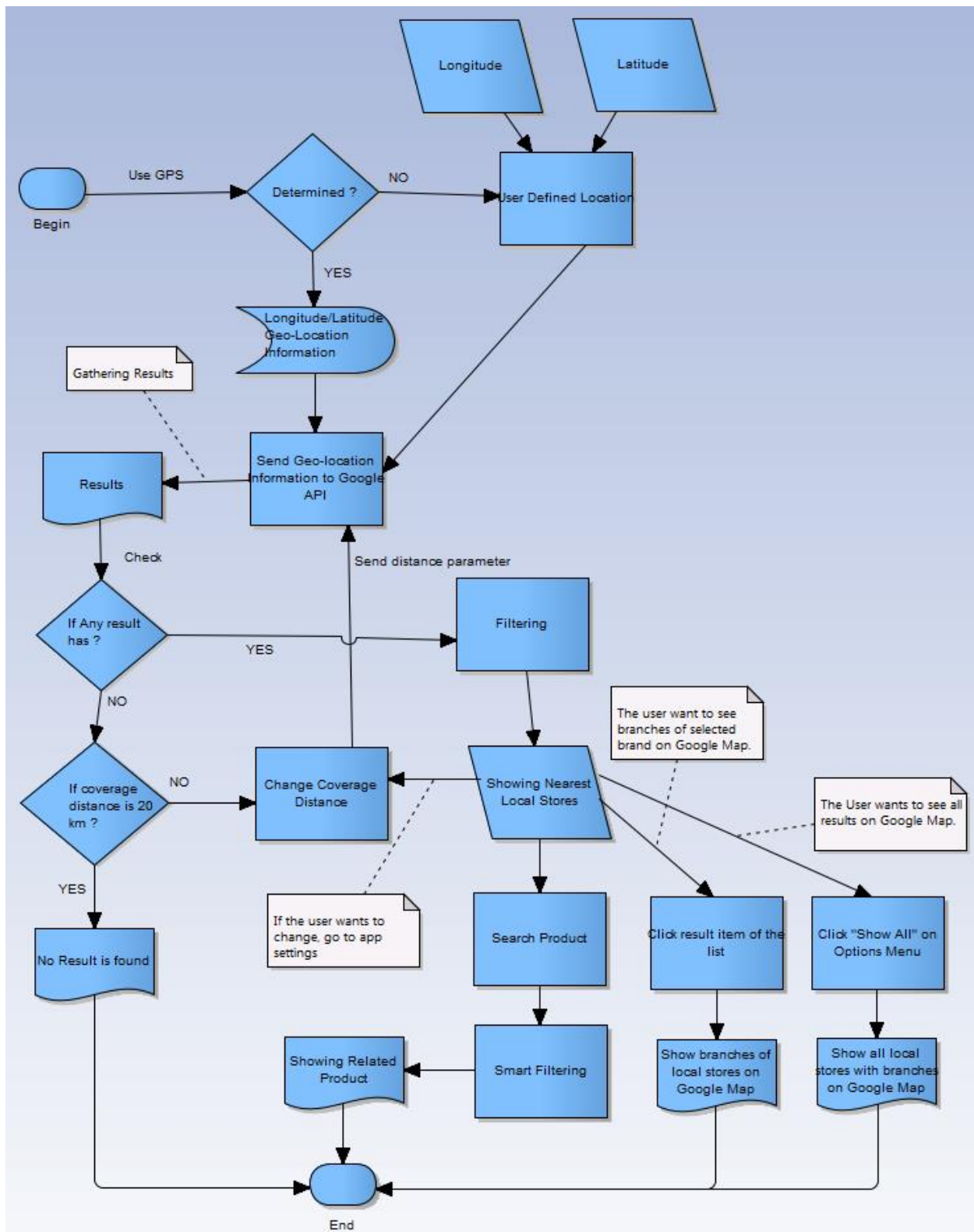


Figure 7 Flow Diagram of SAGO

Google provides data including branches which are at a further distance; at most 20km. This means that Google provides the data within given specific distance limits, however, some branches in the result exceeds the limits. These branches should be eliminated in the Android mobile shopping application. After filtering, the meaningful result data are presented on the SAGO UI. In here, the flow is changed according to the mobile UI. In this step, the user is able to,

- see the selected branches of the brand on Google Map,
- see the all branches with brand information on a Google Map,
- change the coverage distance to see more branches that are near,
- search a product.

The first user case is that the mobile user wants to see the branches of local electronic stores by clicking an item in the result list. After clicking the list, the Google Map opens and shows the branches on the map.

The next user case is that the mobile user wants to see all results in Google Map. In this step, the mobile user should go to the options menu on activity of the application, and then select “Show All in Map”. The branches information is sent to the Google Map API and then SAGO mobile application opens Google Maps. The SAGO shows all items on the list in different colors.

The third user case is that the mobile user wants to see more results. In this step, the user should go to the application settings menu and then changes the distance from 1 km to 20 km. After changing the coverage distance, the new distance is sent to the Google Map API as a parameter and then the new result will be shown to the user on the UI.

The last user case is that the mobile user can be able to search for a product in the brands that are shown on the list. In this step, the user only enters the product name in the mobile shopping Android application. All the data are gathered from internet resources which are shown in Figure 6 on page 40.

After collecting the data, the Smart Filtering Algorithm is rendered on this data. The Smart Filtering Algorithm includes cleaning data processing, normalization by using string similarity function and Greedy Search Algorithm. This is shown in Figure 8.

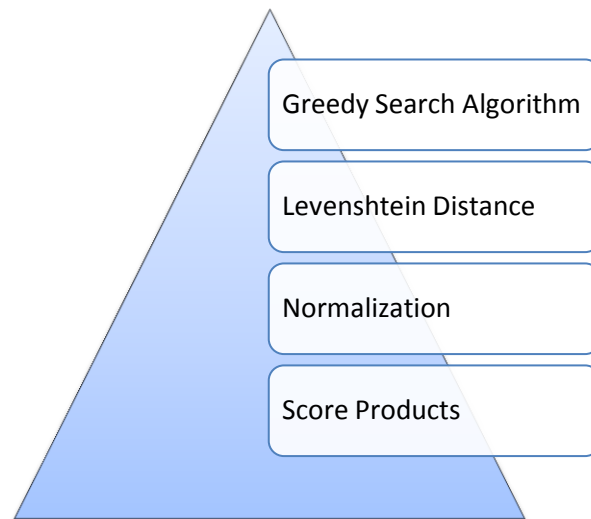


Figure 8 Contents of Smart Filtering Algorithm

Greedy Search Algorithm is used for cleaning data process. Levenshtein distance is a string similarity function used for looking similarity between the product title and the search keyword. In normalization process, the price and title are scaled between 0 and 1. The products are scored for sorting them in a meaningful way. After all those processes are finished, the valuable information is produced and viewed on the UI in SAGO.

The last thing is about the results that are gathered from the Google Places API. In this step, if SAGO could not find any related data, according to the flow, the coverage distance will be checked. The distance is 20 km and SAGO could not find any data, SAGO will warn the user and close the application. Moreover, if the distance is below 20 km and SAGO could not find any related data, the Android mobile shopping application will insist the mobile user to change the coverage distance. After changing the coverage distance, the related process keeps continuing according to flow diagram that was mentioned in Figure 7 on page 44.

3.2 IMPLEMENTATION

3.2.1 Trial Prototype

This section includes the SAGO mobile shopping Android application's use cases. The overall use cases are;

- viewing nearest local stores,
- changing the coverage distance on settings menu,
- activating default location settings and viewing nearest local stores,
- searching a product,
- viewing local store on Google Map,
- viewing all nearest local stores on Google Map.

In addition, these use cases use either GPS information or default location information. The test flow is the same when using either GPS or default location.

When the first application is opened, SAGO validates some information that is about GPS and network status. After one of them is not validated, SAGO insists the user to redirect to the setting menu and activates the related missing information.

Here is the first screen in SAGO mobile application. In this step, both GPS and network states has been checked, to confirm the validation. After that, SAGO searches GPS signal from the satellites in orbit to determine the user's go-location.

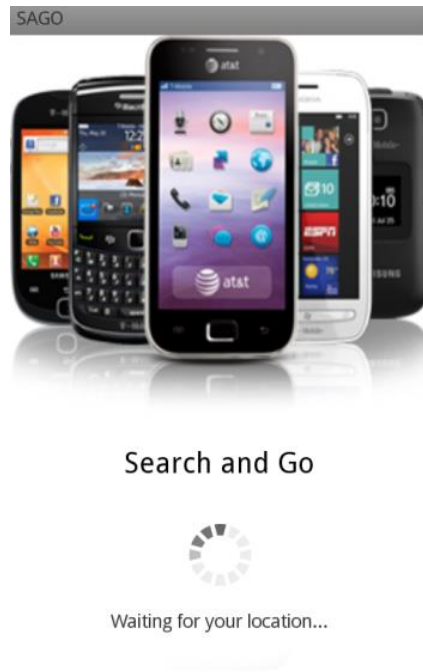


Figure 9 Start Screen of SAGO

In here, if the user location could not be determined by the SAGO application in one minute, the application warns the user either to change the location or to use the default location that includes longitude and latitude information. After all required information is gathered, the SAGO application uses the Google Places API to locate the nearest local stores. Figure 10 on page 49 shows the result that was returned from Google Places API. The longitude, latitude information and the name of local store are gathered from this API. The next process is filtering the data, calculating the distance and sorting the results. In addition, this distance is calculated by using Haversine formula.

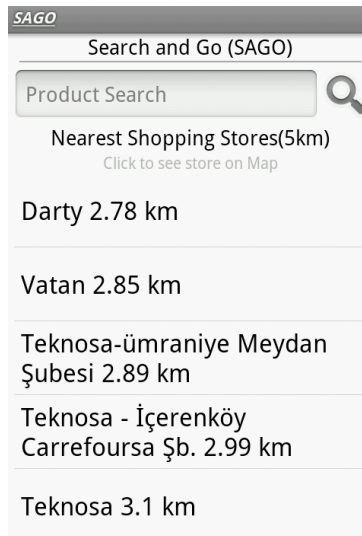


Figure 10 Showing the Nearest Shopping Stores

Moreover, the mobile user wants to see one of the local stores on a map by clicking that store on the list. The selected local store and the other local stores of this selected brand are shown on a Google Map. In addition, the selected local store is shown on the map in a different color. It is shown in Figure 11.



Figure 11 One Of the local stores in Map View

Furthermore, the mobile user wants to see all local stores on a Google Map. The SAGO mobile shopping application provides this to the mobile user in an options menu. After pressing “show

all” button in the options menu, the mobile user could see different colors in each brand shown in Figure 12 in Google Map.



Figure 12 Showing Nearest Electronic Local Store

Moreover, the user can change the coverage distance in the settings menu. In this menu, the user is also able to type the longitude and latitude value or use the default values. The default location which is shown in Figure 13 is Ataşehir in İstanbul. Then SAGO returns to the previous stage and starts to search with the new parameters given.

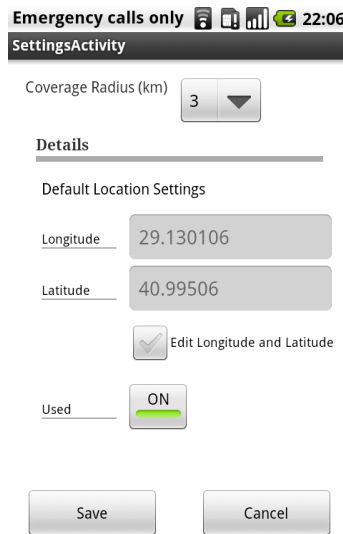


Figure 13 Settings Menu on SAGO

Figure 14 shows the last stage of the SAGO mobile shopping application. At this stage, the user is able to search a new product by typing it in the “product search” field. The result size, search keyword and the item detail of each result are shown. The products are sorted by the score. The score is calculated in Smart Filtering algorithm. More details are explained in section 4 page 54.

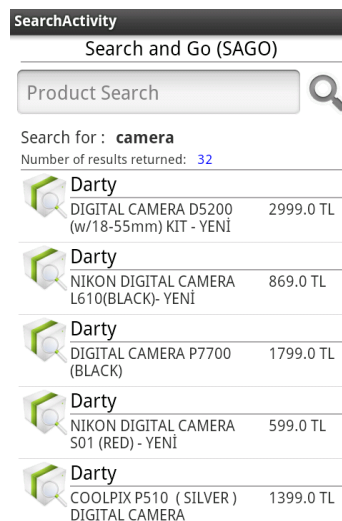


Figure 14 “Camera” Search Result

3.2.2 Technical Issues

I used the following existing software tools and APIs for this PoC application.

- Eclipse Integrated Development Environment (IDE) with the built-in Integrated Development Environment (ADT)
- Android SDK,
- Android PC Emulator,
- Huawei X5 Android mobile device Android v2.2 API Level 8,
- Google APIs,
- Enterprise Architecture Software with the built-in design tool for creating user cases, flow charts, diagrams,
- Assemble collaborative task and code management tool,
- Cacoo online diagram software for flowchart and UML.

In this thesis, the huge data on the web is gathered. This data is not structured therefore data mining should be done on this unstructured data. After modification and filtering have been created on data, the data is converted to structured data. This data becomes knowledge for the SAGO mobile application.

The SAGO mobile shopping application uses only five electronic local stores

- Vatan,
- Teknosa,
- Darty,
- Electro World and Bimeks.

Besides these electronic local stores, there is another one which name is Media Markt. In this thesis, this electronic store could not be used although it is a local electronic store because Media Markt does not provide a search function to customers in their web sites therefore it was dismissed in SAGO mobile application. In addition, another electronic local store Gold Computer was added to the thesis. When I search a product in this local store's website, all the results are shown on the web site without paginating therefore SAGO crashed when it searches a product. For instance, when I searched the "iPhone" on that electronic local store, more than nine hundred results of data is shown on the browser. In addition, sometimes the web browser of a PC does not respond. According to this information, the local store Gold Computer was removed in SAGO mobile application.

Moreover, the Google mentioned about their provided data. This data they mentioned is not accurate at all therefore, Greedy Search Filtering is needed to improve the eliminating of unrelated search result.

The big problem of the SAGO mobile shopping application is the collecting data from internet resources depends on their web site's html code. An individual algorithm was created for each of internet resources' website to gather the result data. This parsing calculation takes a long time therefore, the user waits for more than 5 minutes. This time depends on the number of electronic stores. If all electronic local stores which are defined in the SAGO mobile application are in the near area of the mobile user, it takes five minutes to collect the data. After some refactoring on code and using multi-thread feature in Java, this time is decreased and now it takes 2 minutes.

4. SEARCHING, FILTERING AND STRING SIMILARITY ALGORITHMS

This section is mentioned about details of the Basic Filtering and Smart Filtering Algorithm, some of the most commonly used algorithms for exact string matching, and also distances methods.

Karp-Robin Algorithm, Shift-Or Algorithm, Quick Search Algorithm, and Greedy Search Algorithm are string searching algorithms. Euclidean distance, Euclidean Squared, Manhattan are the methods that calculate the distance between two clusters. These methods and algorithms are explained in the following sections. Moreover, these were tested and compared with each other.

In this thesis, the Greedy Search Algorithm and Euclidean distance method were used in Basic Filtering technic.

This section tells us about the most commonly used algorithms for searching a string in a text and methods for calculating the distance between two clusters in Agglomerative Clustering Algorithm, respectively.

4.1 KARP-ROBIN ALGORITHM

Michael O. Robin and Richard M. Karp created this algorithm in 1987. This algorithm is a string searching algorithm and uses hashing to find string patterns in a text. The important point of strings this algorithm uses is string's hash values rather than the strings themselves. The efficiency of using the hashing value is easily computing the next position in the text. The hashing is a function which converts string into a numeric value. This value called as the hash value. [29] It represents as follows:

$$\text{hash}(w[0 \dots m-1]) = (w[0] * 2^{m-1} + w[1] * 2^{m-2} + \dots + w[m-1] * 2^0) \bmod q$$

Equation 1 Hash function

Where “q” is a large number, “w” is a text and “m” is a length of w. “q” is generally chosen as a big prime number. Moreover, rehashing is calculated to find the next hash value. The rehash function is defined as follows:

$$rehash(a, b, h) = ((h - a * 2^{m-1}) * 2 + b) \bmod q$$

Equation 2 Rehash function

Where “a” is $w[0]$, “b” is $w[m]$, and “h” is previous calculated hash function result. Equation 1 is the preprocessing phase of the Karp-Rabin algorithm.

```

Choose a big prime number (p)
Compute hash (W) and hash (P)
Do
    If (hashW == hashP)
        Brute force comparison of pattern and selected section of the text
    else
        hashP = hash value of next section of the text
While ((hash value of both pattern and string is match) or end of text))
Return comparison status

```

Figure 15 Karp-Rabin Algorithm

In the first step, a big prime number is chosen from Horner’s rule;

$$p = P[m] + 10(P[m - 1] + 10(P[m - 2] + \dots + 10(P[2] + 10(P[1]) \dots))$$

Equation 3 Horner Rule

The next step is to calculate the hashing function by using both pattern string which is P and the first W letters in body of text. Then the iteration continues, at the end the matching result returns as true or false.

4.2 SHIFT-OR ALGORITHM

The Shift-Or algorithm is known as Bitap algorithm which is created by Ricardo Baeza-Yates and Gaston Gonnet in 1989. This algorithm uses bitwise techniques which mean preprocessing and search are very simple. This algorithm uses only bitwise logical operations and also does not store the text in the memory.

The Shift-Or algorithm is mentioned in [29] as;

R is a bit array of size m. After text character $y[j]$ has been processed, vector R_j is the values of the array R. This is shown in Figure 16. This contains information about all matches of prefixes of x that end at position j in the text for $0 < i \leq m - 1$:

$$R_j[i] = \begin{cases} 0 & \text{if } x[0, i] = y[j - i, j], \\ 1 & \text{otherwise.} \end{cases}$$

Equation 4 Case condition of R_j

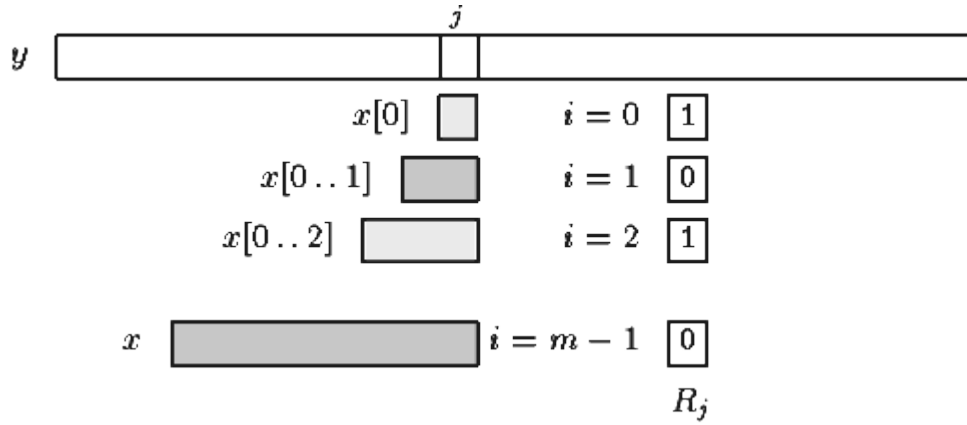


Figure 16 Meaning of vector R_j

After R_j is calculated, the vector R_{j+1} can be computed as;

$$R_{j+1}[i + 1] = \begin{cases} 0 & \text{if } x[i + 1] = y[j + 1], \\ 1 & \text{otherwise.} \end{cases}$$

Equation 5 Case Condition of R_{j+1} for $i+1$ index

$$R_{j+1}[0] = \begin{cases} 0 & \text{if } x[0] = y[j + 1], \\ 1 & \text{otherwise.} \end{cases}$$

Equation 6 Case Condition of R_{j+1} for zero index

If $R_{j+1}[m - 1] = 0$ which means the algorithm comes to the end of the text, a complete match will be reported.

4.3 QUICK SEARCH ALGORITHM

This algorithm simplifies the Boyer-Moore Algorithm. Quick Search Algorithm uses the bad-character shift table that was mentioned in the Boyer-Moore Algorithm. This bad-character shift table is a preprocessing which means that this table must be created before searching a pattern in the text because the shifting is progressed by this table. The creation of this table is explained step by step as follows;

1. The position of the last character of the pattern (P) is recorded.
2. If this character (x) exists in text (T), count the position of this character from the right end to the left.
3. If it does not exist in T, the number which the length of the pattern (m) plus 1 is recorded.
4. Keep going to iterate for all characters in T.
5. The table (qsBc which extends for Quick Search bad-character) is created.

For example, Let's P is "her" and T is "herkesyenibirgunebasladi".

a	b	d	e	g	h	i	k	l	n	r	s	u	y
4	4	4	2	4	3	4	4	4	4	1	4	4	4

Table 1 Bad-character shift table

For example, starting end character of P, "r" is the last character of P. This character is in T therefore "r" is 1 in Table 1. This is one because, as I mentioned, the count starts from the last character. Then second step, "e" is the second last character of P and it is available in T so "e" is 2 in Table 1. The last character in P is "h" and it is available in Table 1 therefore "h" is 3 in Table 1. The other characters are not in P therefore the length of P plus 1 which equals four is assigned in Table 1.

After Table 1 is created, it is ready to render to search P in T. Each character in P is compared with a character in T. If the text is found, this algorithm will not stop; it will continue to the last character of P. Searching in progress is shown in Figure 17.

1. Herkesyenibirgunebasladi HER Shift by 4 (qsBc[k])	HERkesyenibirgunebasladi String length: 24 Pattern length: 3
2. HERkesyenibirgunebasladi h.. Shift by 2 (qsBc[e])	Attempts: 6 Character comparisons: 8
3. HERkesyenibirgunebasladi h.. Shift by 4 (qsBc[i])	
4. HERkesyenibirgunebasladi h.. Shift by 4 (qsBc[g])	
5. HERkesyenibirgunebasladi h.. Shift by 4 (qsBc[b])	
6. HERkesyenibirgunebasladi h.. Shift by 4 (qsBc[a])	

Figure 17 Quick Search Algorithm sample example

4.4 MANHATTAN DISTANCE METHOD

This method computes the distance between two points in a grid based area that is Cartesian coordinates. Manhattan distance is also called city block distance. The distance is calculated according to travelling to get from one-point to another point if a grid-base path is followed.

$$d = \sum_{i=1}^n |x_i - y_i|$$

Equation 7 Manhattan Distance

In Equation 7, x and y are the two points respectively, n is the number of variables, and x_i and y_i are the values of the ith variable. [30]

4.5 CHEBYCHEV METHOD

The Chebychev distance method is calculating between two points by measuring the maximum distance between the points in any single dimension. [30]

$$d = \text{Max}_i |x_i - y_i|$$

Equation 8 Chebychev

In Equation 8, x and y are the two points respectively, x_i and y_i are the values of the ith variable. [30]

4.6 SPEARMAN RANK CORRELATION

The correlation between two sequences of values is measured by this method. The ranks of these two values are calculated separately and the differences in rank are calculated at each position i. [30]

$$1 - \frac{6 * \sum_{i=1}^n (\text{rank}(x_i) - \text{rank}(y_i))^2}{n (n^2 - 1)}$$

Equation 9 Spearman Rank Correlation

4.7 BHATTACHARYYA DISTANCE

The Bhattacharyya distance calculates the similarity of two discrete or continues probability distributions. Bhattacharyya coefficient is a measure of the amount of similarity between two

statistical samples or populations. Bhattacharyya distance was created in the 1930s at the Indian Statistical Institute by A. Bhattacharyya. [31]

$$D_B(p, q) = \frac{1}{4} \ln \left(\frac{1}{4} \left(\frac{\sigma_p^2}{\sigma_q^2} + \frac{\sigma_q^2}{\sigma_p^2} + 2 \right) \right) + \frac{1}{4} \left(\frac{(\mu_p - \mu_q)^2}{\sigma_p^2 + \sigma_q^2} \right)$$

Equation 10 Bhattacharyya Distance

Where [32] :

$D_B(p, q)$ is the Bhattacharyya distance between p and q distributions or classes,

σ_p is the variance of the p-th distribution,

μ_p is the mean of the p-th distribution, and

p,q are two different distributions.

4.8 HAMMING DISTANCE

This method measures the minimum number of substitutions required to change one string into the other string, or the minimum number of errors required to transform one string into another. [33] For example, the Hamming distance between “gunay” and “gulen” is 3. This is because of the characters (“n”, “a”, “y”) in the word of “gunay”. These characters should be changed as “l”, “e”, “n” respectively.

4.9 JARO-WINKLER DISTANCE

The Jaro-Winkler distance is used to measure the similarity between two strings. This distance method was created in 1990 by Winkler. It is a kind of Jaro distance metric which is used for duplicate detection. The Jaro-Winkler distance is best suitable for short strings such as person names. [34] The distance is scored and this score is 1 or 0. One means one string matches the other string and the zero means these two strings are not equal.

The Jaro distance d_j is defined as;

$$d_j = \begin{cases} 0 & \text{if } m = 0, \\ \frac{1}{3} \left(\frac{m}{|s_1|} + \frac{m}{|s_2|} + \frac{m - t}{m} \right) & \text{otherwise.} \end{cases}$$

Equation 11 Jaro Distance

Where:

- s_1 and s_2 are given two strings,
- m is the number of matching characters,
- t is half the number of transpositions.

[34] expressed that two characters of s_1 and s_2 are matched if and only if they are the same and not further than;

$$\left\lfloor \frac{\max(|s_1|, |s_2|)}{2} \right\rfloor - 1$$

Equation 12 Matching criteria of Jaro-Winkler distance

Each character of s_1 is checking with the character which is the same index of s_2 . The number of matching (but a different sequence order) characters divided by two defines the number of transpositions. The Jaro-Winkler distance is shown in Equation 13. [34]

$$d_w = d_j + (l * p(1 - d_j))$$

Equation 13 Jaro-Winkler Distance

Where:

- d_j is the Jaro distance for strings s_1 and s_2 ,
- l is the length of the common prefix at the start of the string up to a maximum of four characters,

- p is a constant scaling factor for how much the score is adjusted upwards for having common prefixes. [34] The limit of p is less than 0.25. If it is more than that, the distance can become larger than one therefore Winkler chose p is 0.1 which is the standard value in Equation 13.

4.10 EUCLIDEAN DISTANCE

In Cartesian coordinates, if $p = (p_1, p_2, \dots, p_n)$ and $q = (q_1, q_2, \dots, q_n)$ are two points in Euclidean n -space, then the distance from “ p ” to “ q ”, or from “ q ” to “ p ” is given by;

$$\begin{aligned} d(p, q) &= d(q, p) = \sqrt{(q_1 - p_1)^2 + (q_2 - p_2)^2 + \dots + (q_n - p_n)^2} \\ &= \sqrt{\sum_{i=1}^n (q_i - p_i)^2} \end{aligned}$$

Equation 14 Euclidean Distance

In the Euclidean plane that is expressed in [35], if $p = (p_1, p_2)$ and $q = (q_1, q_2)$ then the term of distance is defined by

$$d(p, q) = \sqrt{(p_1 - q_1)^2 + (p_2 - q_2)^2}$$

Equation 15 Euclidean plane

This is equivalent to the Pythagorean Theorem. Alternatively, it can be written if the polar coordinates of the point are (r_1, θ_1) and those of q are (r_2, θ_2) , then the distance between the two points is

$$\sqrt{r_1^2 + r_2^2 - 2 * r_1 * r_2 * \cos(\theta_1 - \theta_2)}.$$

Equation 16 Alternative form of Euclidean distance

4.11 LEVENSHTEIN DISTANCE

The aim of this algorithm is to measure the difference between two sequences or strings. It depends on the number of changes required to change one word into the other. [36]

The Levenshtein distance between two strings a , b is given by $lev_{a,b}(|a|, |b|)$ where [36],

$$lev_{a,b}(i, j) = \begin{cases} \max(i, j) & \text{if } \min(i, j) = 0, \\ \min \begin{cases} lev_{a,b}(i-1, j) + 1 \\ lev_{a,b}(i, j-1) + 1 \\ lev_{a,b}(i-1, j-1) + [a_i \neq b_j] \end{cases} & \text{otherwise.} \end{cases}$$

Equation 17 Mathematical Definition of Levenshtein Distance

For instance, the Levenshtein distance between “gunay” and “gulen” is 3. The first two characters are the same. The third, fourth, fifth characters need to change as;

1. gunay $\rightarrow$ gulay (substitution of “l” for “n”)
2. gulay $\rightarrow$ guley (substitution of “e” for “a”)
3. guley $\rightarrow$ gulen (substitution of “n” for “y” at the end.) Therefore the result is 3 again.

This distance algorithm has several constraints.

- It is always, at least the difference in the sizes of the two strings or words. [36]
- It is at most the length of the longest string. [36]
- It is zero if and only if the strings are equal. [36]
- If the strings are the same size, the Hamming distance is an upper bound on the Levenshtein distance. [36] Hamming distance measures the minimum number of substitutions required to change one string to another. [33]

- The measured distance between two strings is no greater than the sum of their Levenshtein distances from a third string. [36]

5. DEVELOPED ALGORITHM WITH CONTENT FILTERING

5.1 MODIFIED GREEDY SEARCH ALGORITHM

Greedy Search Algorithm is one of the heuristic (informed) algorithms that is used in this thesis. The terms of heuristic that was expressed by Newell, Shaw, and Simon in 1963 as “A process that may solve a given problem, but offers no guarantees of doing so, is called a heuristic for that problem”. [37] Heuristic algorithms do not provide an accurate solution, in other words, the quality of the solution is not satisfied and also the calculation of the total search process time could not be determined.

A greedy algorithm is an algorithm that follows the problem solving heuristic of making the locally optimal choice at each stage with the hope of finding a global optimum. [38] When a global optimum solution is found, the greedy algorithm does not consider other iterations and gives the result immediately. Moreover, in a literature survey, some authors expressed a Greedy Search Algorithm as greedy best-first search algorithm. The Greedy Search Algorithm is easy to develop, generally run very fast because of its simplicity and works well in some heuristic problems, on the other hand; this algorithm does not work for most of the cases.

This search algorithm is chosen because it is simple, easy to use and also my search requirement is not complex. The general template of Greedy Search Algorithm is shown in Figure 18. [38]

```
R is the set of all requests
X is empty (* X will store all the jobs that will be scheduled *)
While R is not empty do
    Choose i ∈ R
    Add i to X
    Remove from R all requests that overlap with i
Return the set X
```

Figure 18 General template of Greedy Search Algorithm

According to Figure 19, a solution is built-in a Greedy Search Algorithm step by step at a time through the feasible solutions, applying a heuristic algorithm to determine the best choice. [39]

In the SAGO mobile shopping Android application, the similar Greedy Search Algorithm is used. Greedy Search Algorithm is changed according to the mobile shopping Android application requirements. This algorithm is shown in Figure 19;

```
R is the data provided from internet resources
X is empty (* X will store all the brunches of local stores that will be used afterwards *)
While R is not empty do
    Choose i  $\in$  R
    If related_data (i)
        Add i to X
    Else remove i from R all requests that overlap with i
Return the set X
```

Figure 19 Modified Greedy Search Algorithm for SAGO

In the Modified Greedy Search Algorithm, **R** is the input data. This data is provided from internet resources by the Google Places API. The data provided includes title, address and location information of the brands, and also other information. Each search result item includes this information. The algorithm chooses an item that is expressed as an “**i**”. Then the data is checked if “**i**” is related to the pre-defined brands (Vatan, Teknosa, Darty, Bimeks, and Electro World). After that, this related data will be added to **X**. At the end, the algorithm filters unrelated items and then accurate information is made.

5.2 SMART FILTERING ALGORITHM

In this thesis, the Smart Filtering algorithm is a combination of different types of algorithms. Smart filtering algorithm includes;

- Greedy Search Algorithm
- Agglomerative Clustering Algorithm
 - Normalization
 - Levenshtein distance

- Scoring products

Greedy Search Algorithm is used for removing unrelated information from the data. This algorithm is modified according to the SAGO mobile shopping Android application's requirements and it is explained in details in section 5.1 page 65. The same algorithm and parameters in Greedy Search Algorithm are used, however, this time; "R" is the summation of products. The products come from internet resources. Moreover, the products are also filtered in that algorithm.

The Agglomerative Clustering Algorithm is more complex than Greedy Search Algorithm including some calculation and filtering. It is also used for clustering the results. These are made of product search results. These results enable the mobile user to see prices at the nearest electronic local stores in SAGO mobile shopping Android application.

In data mining, the Agglomerative Clustering Algorithm is one type of strategy for hierarchical clustering. Hierarchical clustering is a method of cluster analysis which seeks to build a hierarchy of clusters in data mining [40]. In addition, the clustering is an unsupervised (does not have data for demonstrating in the learning process) learning method.

The SAGO Android mobile shopping application uses clustering approach to help the Smart Filtering algorithm to be able to show product search results to the mobile users efficiently. According to the investigation of my product search results from internet resources; for instance, the mobile user searches iPhone, different types of products are gathered and some of them are unrelated. The unrelated result should not be shown to the customer therefore the product search results are in a group by using the each result item's price because we know that the price of the iPhone mobile device is in a certain range.

The Agglomerative Clustering Algorithm or Agglomerative Hierarchical Clustering starts with objects (one-point, singleton) which are set as a cluster, in other words, each object is a cluster at the beginning. Then, the object is added to the closest pair of clusters for each of the iteration if a similar criterion is validated. This algorithm continues until all of the data is merged down as one cluster and this is an agglomerative strategy which is a "bottom up" approach. This approach

is expressed more formally in Figure 2068. Moreover, traditional hierarchical algorithms use similarity or distance/proximity matrix. The algorithm is shown in Figure 20 and the key operation is the calculation of the distance/proximity matrix between two clusters.

Compute the distance/proximity matrix between the input data points, if necessary.
Let each data point be a cluster
Repeat
 Merge the closest two clusters
 Update the distance/proximity matrix
Until Only one cluster remains.

Figure 20 Basic Agglomerative Hierarchical Clustering Algorithm

There are lots of methods that calculate the distance between two clusters. [41] Here are some of them;

- Euclidean
- Manhattan
- Chebychev
- Spearman Rank Correlation

In my thesis, Euclidean distance is used for distance measurements. It is chosen because of measurements of the calculation process time.

In the SAGO mobile shopping Android application, the similar Agglomerative Clustering Algorithm is used. The Agglomerative Clustering Algorithm is changed according to the mobile shopping Android application requirements. This algorithm is shown below.

In an Agglomerative Clustering Algorithm expressed in Figure 20, x and y are the input parameters of the algorithm.

$x_1, x_2, x_3, \dots \in x$, x_1 is the second input parameter of the first product and $y_1, y_2, y_3, \dots \in y$, y_1 is the first input parameter of the first product. Moreover, the first iteration, the algorithm

does not compute any distance, and all points behave like a cluster. The next iteration, the distance matrix is calculated and then the closest two clusters merge down to create a new single cluster. This algorithm keeps repeating until only one cluster remains.

The first parameter (x) is generated after two operations are rendered.

- The first operation is clustering the similar product using their prices that were mentioned in [42]. In this paper, it is mentioned about the similar products in the same category usually have the similar prices therefore differing of between products is the price information. In this paper, to provide meaningful comparison, each actual price is converted to a representative price and the formula gives both upper bound limit and lower bound limit of the price. Their formula is shown below.

$$P^I = \begin{cases} 10, & \text{if } P \leq 10 \\ \left\lceil \frac{P}{m} - 0.5 \right\rceil * m, & m = 10^{\lfloor \log P \rfloor} \text{ if } P > 10 \end{cases}$$

Equation 18 Formula of calculation representative price

In this formula, P is the price and P' is the representative price. Moreover m is a variable which value is 10 TL in this formula. This assumption depends on explanation in [42]. According to this research paper, approximately ten dollar difference is much more noteworthy for low-price products than for high-price products [42] so the value of m is 10 Turkish Liras. For instance, a pair of headphones is 28 TL and another similar pair of headphones is approximately 3 or 5 TL the difference therefore, 10 TL is a much more significant price on cheap products. In addition, if P is 28 TL, the representative price will be 30 TL. The representative of the price that is between 26 and 35 TL is 30 Turkish Liras.

In general, the SAGO mobile shopping android mobile application searches electronic products. In addition, it is a PoC mobile application therefore, the three products are determined which are laptop, iPhone, and camera. The aim of this formula is to sort the high price products. These products are very expensive so this formula works very well in that domain.

- The second operation is the normalization process. The output of the first operation in here is the input of the normalization process. After the normalization process is rendered, the first parameter (x) is generated and the price of products is scaled between 0 and 1. This is needed for presenting the products in a two dimension coordinate system and also the total calculation time is low. The normalization formula is shown below.

$$Normalization(X_{price}) = \frac{X_{price}}{MaxPrice}$$

Equation 19 Normalization Formula

In this formula, Xprice is the input parameter and it is the representative price of the product. “MaxPrice” is the maximum price which is selected from the product result list. Therefore, this formula scaled down the price between 0 and 1.

The second parameter is produced by a string similarity function. There are lots of string similarity algorithms which are mentioned in section 4. Some of them are;

- Levenshtein Distance
- Bhattacharyya Distance
- Hamming Distance
- Jaro-Winkler.

The Levenshtein distance algorithm is used in this thesis. This algorithm calculates two differences between two strings. Levenshtein distance is mentioned in details in page 63 section 4.11.

1. **Remove** unrelated products
2. **Calculate** the representative price of the product
3. **Normalize** the output of the step 2 (x)
4. **Measure** similarity score between search keyword and the product title (y)
5. **Use** modified agglomerative clustering algorithm
6. **Compute**

$$a * x + b * ((90 - y)/90) + \text{clustering score}$$

Where;

$$a > b$$

Figure 21 Smart Filtering Algorithm

To sum up, the previously mentioned algorithms are now combined and then, the Smart Filtering algorithm is made. The first step is filtering the unrelated products by using Greedy Search Algorithm.

The second step is calculating the representative price of the product by using the formula given in Equation 18. This step causes that the high price products will be seen at the top of the search result list. Therefore; in the similar products, Smart Filtering Algorithm always sorts the high price products.

The third step is the normalization process. This step must be done because of decreasing the calculation time, put it in another word, if the step is skipped, the calculation time of step 5 and step 6 will be long. This normalization process increases the product efficiency.

In the fourth step, each product search result is assigned a value according to similarity of the keyword searched which was explained in previous paragraphs. In this process, the Levenshtein distance is used to measure the similarity. Moreover, the assigned value is between “1” and “0”. “1” means the product search result item is a suitable product which is expected; on the other hand, “0” means the result item is not an expected product.

The fifth and sixth step is to calculate the given function in Figure 21 and the result is the score of the product that is a search result item. [In the formula, the first calculation until addition scales the product title in a range that is between “0” and “1”.] “a” and “b” are the coefficients of the

formula. The important key is the value of a . “ a ” should be greater than the value of “ b ” because the price information is an important factor to choose a product according to the customer view.

In the last step, the products are sorted according to their price in descending order. Figure 22 shows a demonstration of the title/price range on the x-y coordinate. The figure shows clustering. In this demonstration, the search keyword is the “iPhone”. After Smart Filtering is done on the search result data, the clustered products are made. In this algorithm “ a ” is 10 and “ b ” is 2.

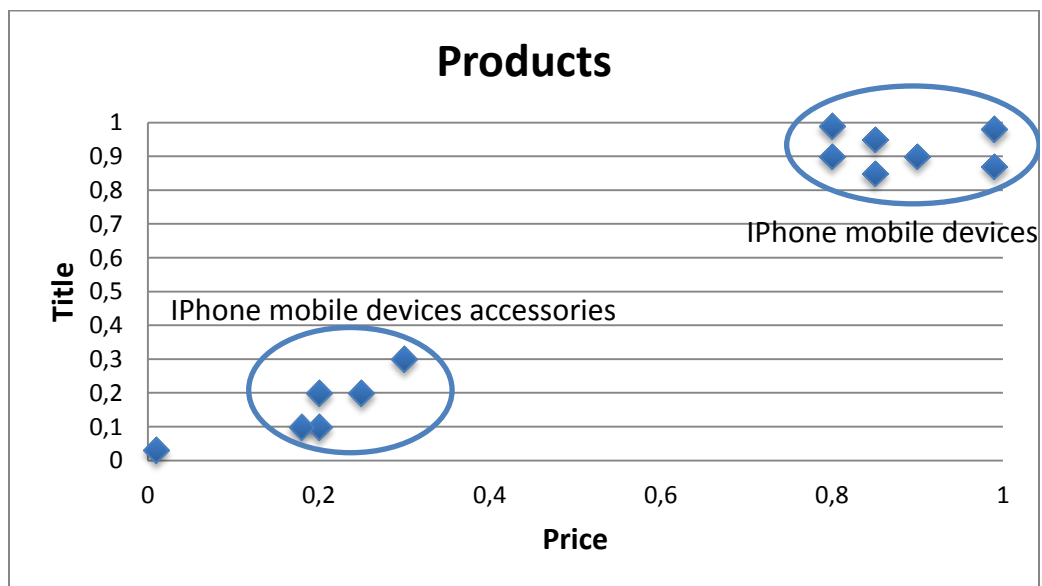


Figure 22 Sample distribution of the products in coordinate system

Moreover, here is the dendrogram view of “camera” search results after the clustering algorithm renders on this data. The dendrogram simplifies the understanding of the complexity of the “hierarchical clustering” algorithm. The view shows the clusters in each level. The top level which the score of the algorithm is 24 expresses the least related search result in a given data. This score is used as negative in the Smart Filtering algorithm. Here, the nearest clusters to zero contain relevant search results. Moreover, the algorithm is not working very well, on the other side; it shows better results after rendering the data.

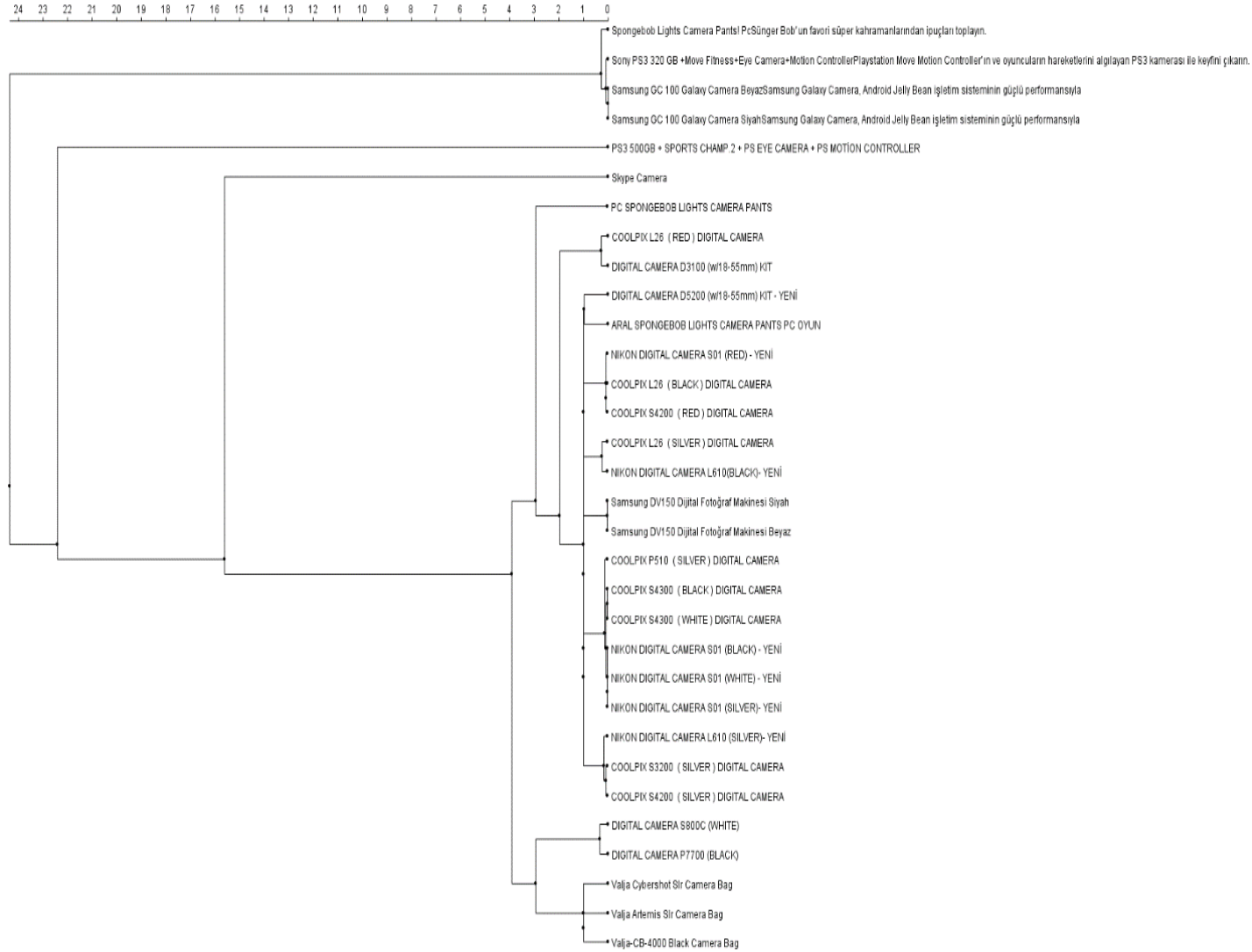


Figure 23 Dendrogram view of “camera” search results

5.3 COMPARISON VERSUS EXISTING SEARCHING AND FILTERING ALGORITHMS

These String Search Algorithms (Karp-Robin, Shift-Or and Quick Search), were explained in section 4 page 54, are compared to the Modified Greedy Search Algorithm.

The first experiment is to search for “camera” in SAGO. The total number of results which are gathered from internet resources is 40 and these are raw data. The unrelated search result in data must be removed. The four String Search Algorithms are rendered on that data. The total time and the number of returning results are shown in Table 2.

Results for camera	Algorithms				
	Modified Greedy Search		Karp-Robin	Shift-Or	Quick Search
# of return data	31		29	29	29
Calculation time	(ms)	4.914946	2.80077	25.633355	19.003977

Table 2 Algorithm Comparison results for searching "camera"

According to the results shown in Table 2, the fastest string searching algorithm is Karp-Robin and the slowest one is Quick Search. The important thing is the total number of return data from these algorithms. The Modified Greedy Search Algorithm is slower than Karp-Robin but, faster than the other two algorithms however it does not miss the related data that the others miss. This happens because of the Turkish characters in the search results. In my opinion, of course, the speed is important but the returning related results are more important than this, therefore the Modified Greedy Search Algorithm is used.

The second experiment is to search "laptop" and the total number of results is 155 which is raw data. Then the same processes, which were mentioned in the previous experiment, are rendered on data by using four String Search Algorithms. The total time and the number of returning results are shown in Table 3. According to the result, the Modified Greedy Search Algorithm is searching the string pattern in a text successfully. The other algorithms are failed. Moreover, the Modified Greedy Search Algorithm finds 33.54% of the whole result.

Results for laptop	Algorithms				
	Modified Greedy Search		Karp-Robin	Shift-Or	Quick Search
# of return data	52		5	5	5
Calculation time	(ms)	8.129314	4.602438	62.850032	21.420398

Table 3 Algorithm Comparison results for searching "laptop"

Analyzing the result, lots of data are the product code of the brand. For instance, “LNB-G580-59366722” is both a search result item and a product name. This product title does not have a meaning for the String Search Algorithms therefore the algorithms do not understand that these results are for the related laptop or not.

The third experiment is to search for “iphone” and the total number of results is 633 which is raw data. Four all String Search Algorithms are rendered on the data and results are shown in Table 4.

Results for iphone	Algorithms				
	Modified Greedy Search		Karp-Robin	Shift-Or	Quick Search
# of return data	476		476	476	476
Calculation time	(ms)	35.28467	22.930596	171.307762	62.331238

Table 4 Algorithm Comparison results for searching "iphone"

At this time, all String Search Algorithms gathered the same amount of data. Moreover, the data was analyzed and the same results were returned. According to the three experiments, Karp-Robin Algorithm is the fastest algorithm; however, the capability on Turkish characters is very low. My Modified Greedy Search Algorithm is the second fastest algorithm among them and has

an ability to search pattern for Turkish text therefore this algorithm would be useful for the SAGO mobile shopping Android application.

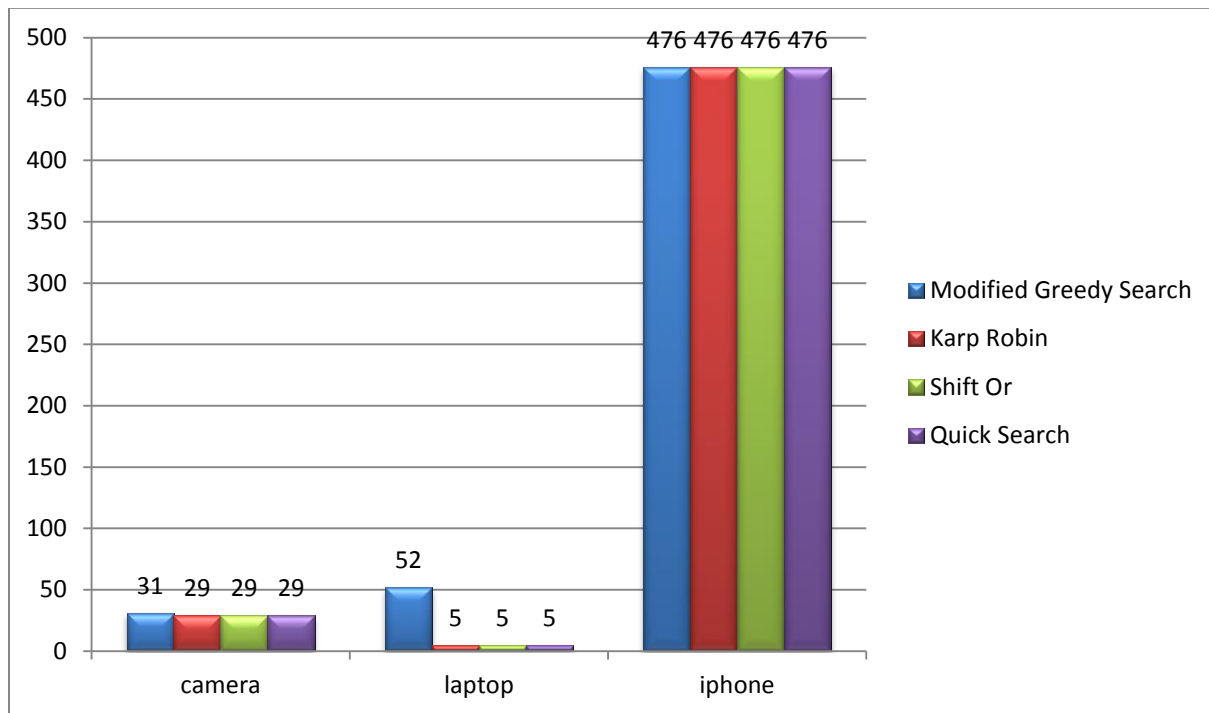


Table 5 Number of Result for All String Search Algorithms

Table 5 shows the all search results in four experiments. It combines all results from Table 2, Table 3, and Table 4 and expressed the differences among String Search Algorithms clearly.

Table 6 shows the total time of each search as nano seconds for all the String Search Algorithms. The records are gathered from four experiments which are explained in previous paragraphs.

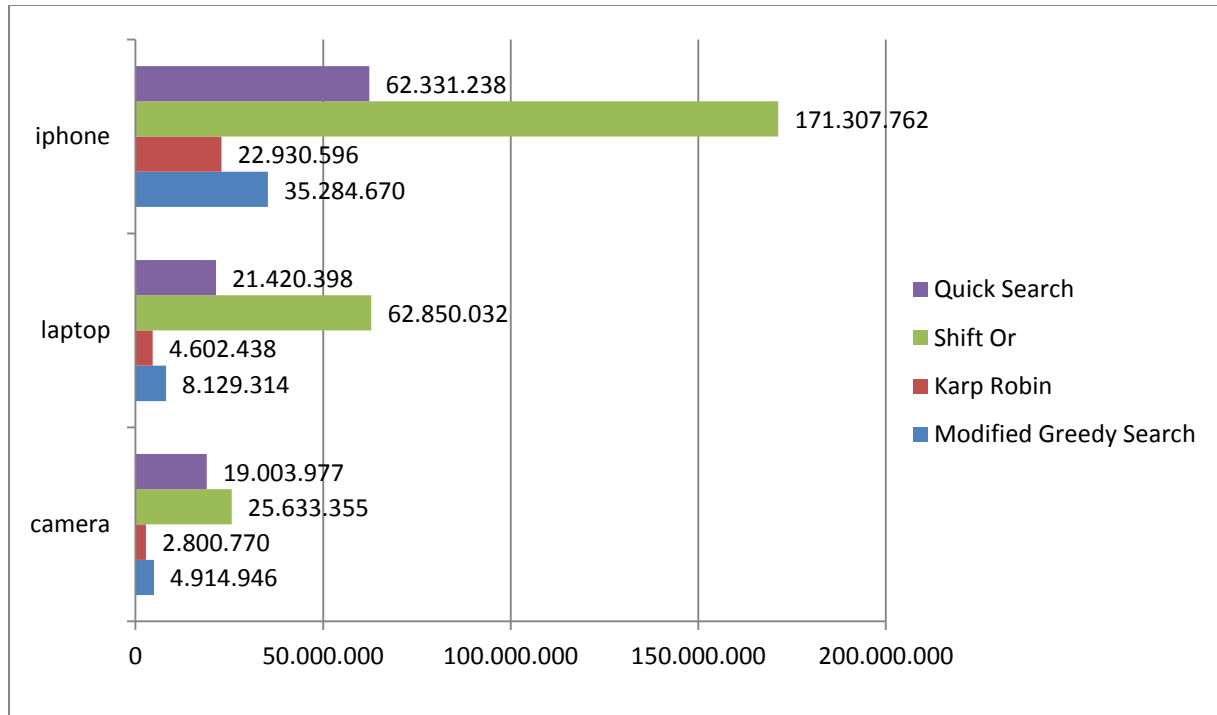


Table 6 Total time of pattern search on Text (ns)

Consequently, the Greedy Search Algorithm was modified, optimized. It named as a “Modified Greedy Search Algorithm”. The Modified Greedy Search Algorithm gained ability to handle Turkish characters. This is the differentiation from other search algorithms. In addition to that, the experiments which explained previous paragraphs show us the Modified Greedy Search Algorithm is better than others. On the other hand, the Modified Greedy Search algorithm does not work perfect because it is a keyword based searching algorithm. Therefore, the number of keywords should be increased to cover all situations. This dependency decreases the efficiency of the SAGO android mobile shopping application. Moreover, to increase the efficiency, the algorithm should be re-analyzed and re-factored.

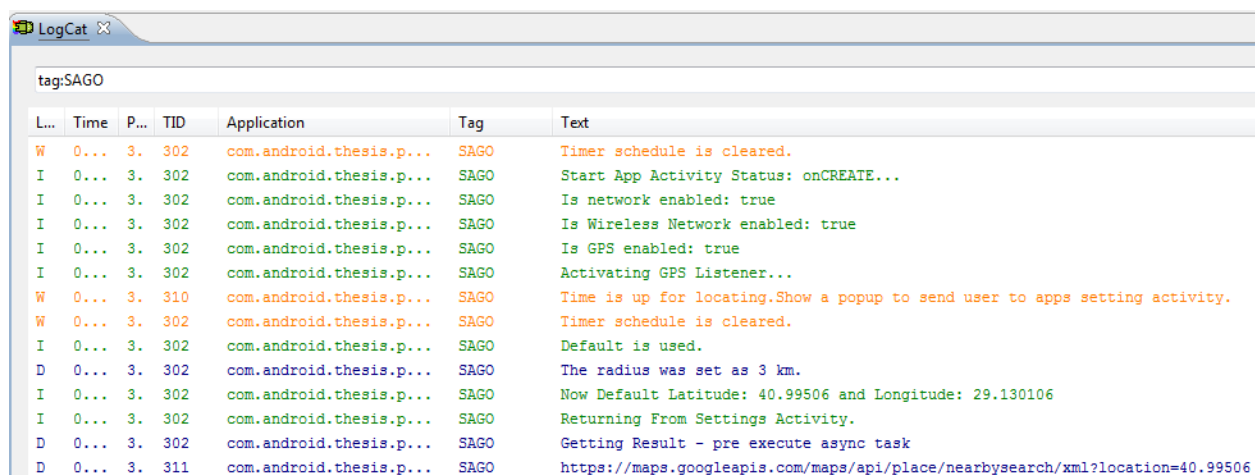
6. RESULTS & CONCLUSION

This thesis describes recent progress in developing a mobile shopping android application for mobile users who want to search a product. The main goal is to get the prices from each local store with in stock information and smartly list the product list. To do these, Smart Filtering algorithm is proposed. This algorithm is a combination of other algorithms such as content filtering, searching and string similarity algorithms. These algorithms, searching, filtering and string similarity algorithms are presented in section 4. The Smart Filtering algorithm is presented in details in section 5.2. In order to evaluate the proposed algorithm that is the Smart Filtering algorithm, the demonstration has been made. The application demonstration results are presented in this section. In addition to that, one of the most difficult problems is the data collection time from internet resources. The data gathering time is optimized to improve the efficiency of the SAGO android mobile shopping application. The data collection and extraction from internet resources takes a long time. Before improvement, it took 5 minutes to gather the data. After the improvement had been done, the gathering time decreased as 2 minutes. This improves performance of the system and SAGO android mobile shopping application's efficiency. Moreover, the time that is 2 minutes is only the collection time from internet resources and extra time is needed for extracting the data. Additionally, some of the data is lost due to the high response time from internet resources. Many of these resources do not have a web service therefore the data is not provided at a limited time. The other one of the most difficult problems is the power consumption issue by using a GPS which is a hardware feature of a mobile device. It drains battery very quickly therefore, it is a common issue for mobile devices nowadays, on the other hand; it enables us to create high standard innovative mobile applications. To reduce the power consumption issue, the GPS is used in SAGO when it is needed; otherwise, the GPS always works in the background until it is closed.

A Jsoup which is a Java HTML Parser for collecting data from internet resources is used in the SAGO mobile shopping Android application. This parser connects to the internet resources via HTTP protocol and collects the data. Each connection to the internet resources has a timeout period and the timeout is 3 seconds by default. When the SAGO application collects the data by

Jsoup, sometimes, the response time from internet resources is changeable and exceeds the timeout therefore the connection is cut down and a data could not be taken. This problem is handled by increasing the timeout to 5 seconds. By changing the timeout value showed us that if the timeout was increased, for example 10 seconds, Jsoup would not lose any data. On the other hand, it has opposing effect on the total collection time. It takes approximately 2 minutes to gather data from five internet resources by using the default timeout. If the timeout is increased, the total collection time exceeds 2 minutes. After some observation has been made, 5 seconds has been set as a timeout; the total collection time will be 5 minutes.

In the SAGO mobile shopping application, there is a logging mechanism. The aim is to collect the data in process flow of the application. At the beginning of the Android mobile shopping application, the SAGO writes the logs in its external or internal storage that depends on the mobile device. The log includes necessary information; such as GPS configuration, network status, error information, etc. Additionally, if the user faces any the problems during the SAGO works, this log will be helpful for the developer to maintenance the SAGO. You can see the more detailed logs in the appendix.



L...	Time	P...	TID	Application	Tag	Text
W	0...	3.	302	com.android.thesis.p...	SAGO	Timer schedule is cleared.
I	0...	3.	302	com.android.thesis.p...	SAGO	Start App Activity Status: onCreate...
I	0...	3.	302	com.android.thesis.p...	SAGO	Is network enabled: true
I	0...	3.	302	com.android.thesis.p...	SAGO	Is Wireless Network enabled: true
I	0...	3.	302	com.android.thesis.p...	SAGO	Is GPS enabled: true
I	0...	3.	302	com.android.thesis.p...	SAGO	Activating GPS Listener...
W	0...	3.	310	com.android.thesis.p...	SAGO	Time is up for locating. Show a popup to send user to apps setting activity.
W	0...	3.	302	com.android.thesis.p...	SAGO	Timer schedule is cleared.
I	0...	3.	302	com.android.thesis.p...	SAGO	Default is used.
D	0...	3.	302	com.android.thesis.p...	SAGO	The radius was set as 3 km.
I	0...	3.	302	com.android.thesis.p...	SAGO	Now Default Latitude: 40.99506 and Longitude: 29.130106
I	0...	3.	302	com.android.thesis.p...	SAGO	Returning From Settings Activity.
D	0...	3.	302	com.android.thesis.p...	SAGO	Getting Result - pre execute async task
D	0...	3.	311	com.android.thesis.p...	SAGO	https://maps.googleapis.com/maps/api/place/nearbysearch/xml?location=40.99506

Figure 24 Sample logs in SAGO

In Figure 24, the screenshot was captured from eclipse which is an IDE. This IDE has got an Android development tool. This tool has some good features such as showing logs via LogCat is seen in Figure 24, threads, heaps, files explorer, system information, emulator control panel. In

Figure 25, a sample error logs occurred in SAGO when “iphone” keyword was searched in Teknosa. In this demonstration, SAGO found Teknosa as a nearby electronic local store.

```

D 0... 1. 2191 com.android.thesis.p... SAGO 12. page request URL: http://www.teknosa.com/arama/?s=iphonespage=12
E 0... 1. 2191 com.android.thesis.p... SAGO Connection problem or couldnt get data. Error is : java.net.SocketTimeoutExce
ption
D 0... 1. 2191 com.android.thesis.p... SAGO 13. page request URL: http://www.teknosa.com/arama/?s=iphonespage=13
E 0... 1. 2191 com.android.thesis.p... SAGO Connection problem or couldnt get data. Error is : java.net.SocketTimeoutExce
ption
I 0... 1. 2191 com.android.thesis.p... SAGO The Data was collected.
I 0... 1. 2191 com.android.thesis.p... SAGO Stop MyWebCrawler
D 0... 1. 1758 com.android.thesis.p... SAGO Getting Result - post execute async
D 0... 1. 1758 com.android.thesis.p... SAGO result size: 30

```

Figure 25 Sample Error logs in SAGO

According to Figure 25, the results have paging and the web site did not respond the 12th and 13rd request therefore the data was lost. The total number of results is lower than expected.

For testing purpose, Ataşehir in İstanbul is the location of mobile device. Totally, 1210 results will be collected just for searching “iphone”. Additionally, the Smart Filtering algorithm is not rendered on this data. Moreover, the size of data is changing according to the network connectivity. For demonstration purpose, there are only three keywords are used; these are “iphone”, “laptop”, and “camera”. Table 7 shows the number of results with keywords from five local electronic stores. In this table, the threshold is 3 seconds. After 3 seconds is passed, SAGO will cut the connection down to the internet resources.

Brand Name	# of data for iphone		# of data for laptop		# of data for camera	
	Gathered	Available Data	Gathered	Available Data	Gathered	Available Data
Darty	236	276	80	100	28	28
Vatan	74	76	8	8	4	4
Bimeks	120	298	100	214	4	4
Teknosa	30	362	48	48	1	1
Electro World	200	200	1	1	7	7

Table 7 Search result table (Threshold 3s)

The total number of data that was collected at the same time from these internet resources is;

- 44 for searching “camera” keyword in 14 seconds,
- 800 for searching “iphone” keyword in 2 minutes and 47 seconds,
- 362 for searching “laptop” keyword in 1 minute and 38 seconds.

Brand Name	Error Rate (%)		
	iphone	laptop	camera
Darty	14,49	20	0
Vatan	2,63	0	0
Bimeks	59,73	53,27	0
Teknosa	91,71	0	0
Electro World	0	0	0

Table 8 Error Rate of Search Result (Threshold 3s)

Table 8 shows the error ratio of the search result. These search results are provided from Table 7. As we can see, the data was collected successfully in the “camera” search keyword. The worst error is in the “iphone” searches in all local brands because the size of data is very big therefore, some data is dismissed. Moreover, the response time is changed according to both server and search keyword.

For the next demonstration, when the threshold is removed, the more data is gathered; however, the total time is increased. Furthermore, according to experiments, Electro World responses are quicker than other electronic local stores.

Brand Name	# of data for iphone		# of data for laptop		# of data for camera	
	Gathered	Available Data	Gathered	Available Data	Gathered	Available Data
Darty	276	276	100	100	28	28
Vatan	74	76	8	8	4	4
Bimeks	298	298	214	214	4	4
Teknosa	362	362	48	48	1	1
Electro World	200	200	1	1	7	7

Table 9 Search Result table (Threshold 0s)

The total number of data is;

- 44 for searching “camera” keyword in 12 seconds,
- 1211 for searching “iphone” keyword in 3 minutes and 34 seconds,
- 370 for searching “laptop” keyword in 1 minute and 32 seconds.

After rendering Greedy Search Filtering on the result data, the total number of results is;

- 34 for searching “camera” keyword,
- 996 for searching “iphone” keyword,
- 146 for searching “laptop” keyword,

If the threshold is 3 sec, the total number of results will be;

- 34 for searching “camera” keyword,
- 715 for searching “iphone “ keyword,
- 124 for searching “laptop” search keyword. In addition, SAGO gave out of memory error in one experiment.

Brand Name	Error Rate (%)		
	iphone	laptop	camera
Darty	0	0	0
Vatan	2,63	0	0
Bimeks	0	0	0
Teknosa	0	0	0
Electro World	0	0	0

Table 10 Error Rate of Search Result (Threshold 0s)

As you can see in Table 10, the error rate is close to zero by removing the threshold. This is because of the response time of each server of local electronic stores. This table provides us that these servers do not send the result in expected time.

Here is the sample result of laptop search within zero thresholds.

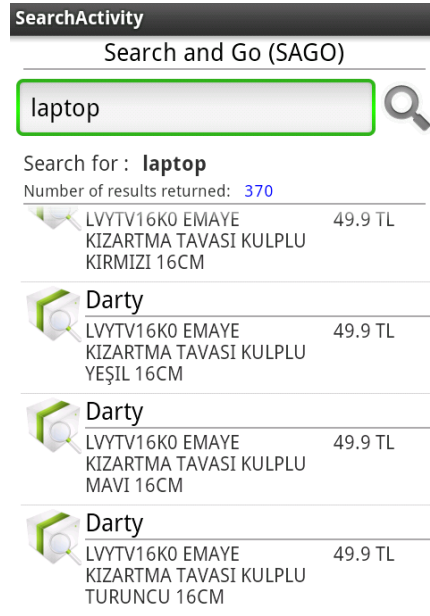


Figure 26 Sample search result

The user wants to search “laptop” near 3 km area. Before the algorithm renders, there are 149 search results and the log is shown the result size in Figure 27. Some of them are unrelated information therefore the Smart Filter algorithm is rendered on this data and 47 search results are passed. Each step of the algorithm is written in the logs. These steps are detailed explained in section 5.2. Moreover, the results are shown in Figure 28. After rendering the Smart Filtering algorithm on the search result, less related results which are expected are shown at the bottom of the list. This is shown in Figure 29.

Tag	Text
SAGO	10. page request URL: http://www.darty.com.tr/e_commerce/u
global	Default buffer size used in BufferedInputStream constructo
SAGO	11. page request URL: http://www.darty.com.tr/e_commerce/u
global	Default buffer size used in BufferedInputStream constructo
SAGO	The Data was collected.
SAGO	Stop MyWebCrawler
SAGO	*****Start Greedy...*****
SAGO	BEFORE GREEDY, SIZE=149
SAGO	*****Start Normalization...*****
SAGO	*****Start Similarity Function...*****
SAGO	Products and size is 47
SAGO	Brand Name: Product Title
SAGO	Darty : SVE1113M1EP Pembe Notebook
SAGO	Darty : MACBOOK PRO MD101TU/A
SAGO	Darty : MACBOOK PRO MD103TU/A
SAGO	Darty : MACBOOK AIR MD223TU/A
SAGO	Darty : MACBOOK AIR MD224TU/A
SAGO	Darty : MACBOOK AIR MD231TU/A
SAGO	Darty : MACBOOK AIR MD232TU/A
SAGO	Darty : MACBOOK PRO RETINA MD212TU/A
SAGO	Darty : MACBOOK PRO RETINA MD213TU/A
SAGO	Darty : MACBOOK PRO MD102TU/A
SAGO	Darty : MACBOOK PRO RETINA MC975TU/A
SAGO	Darty : MACBOOK PRO MD104TU/A

Figure 27 Search Log before Algorithm renders

SearchActivity

Search and Go (SAGO)

Product Search 

Search for : **laptop**

Number of results returned: 47



Darty

MACBOOK PRO MD103TU/A 5570.0 TL



Darty

MACBOOK PRO MD102TU/A 3699.0 TL



Darty

MACBOOK PRO MD104TU/A 4499.0 TL



Teknosa

APPLE Z0J4Q NOTEBOOK 2109.0 TL



Darty

MACBOOK PRO RETINA MD213TU/A 3689.0 TL



Darty

MACBOOK PRO RETINA MC975TU/A 4399.0 TL

Figure 28 Laptop Search Results after algorithm renders

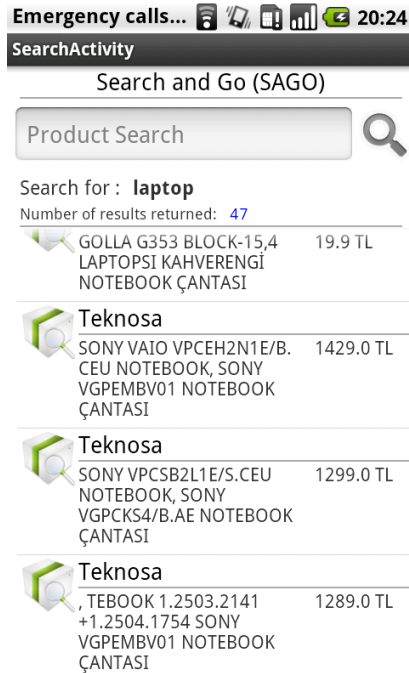


Figure 29 Bottom Search Result of Laptop Search

In general, the total time of rendering Smart Filtering algorithm on data is more than the total time of gathering the data because, the clustering step of Smart Filtering algorithm takes a long time according to the size of the data. The algorithm works quite well for less result. On the other hand, such as, searching for “iphone”, the total time is more than 30 minutes that is unacceptable and further improvement is needed for the clustering process therefore a better clustering algorithm should be made. Moreover, the important issue is to gather the data from internet resources. Some of them do not provide all of the data. There are two reasons. One of the reasons is their servers. These server response times are very high therefore some data is lost. The second reason is the network connectivity of the user’s device. If the internet is down, the data is not gathered from internet resources and the SAGO could not work. In addition, if the websites of internet resource are changed, the code should be updated. This is the bottleneck of the Android mobile shopping application. On the other hand, the code is easily changeable and it does not require more effort. Moreover, if these sources provide web services, SAGO will gather the data quickly therefore, the total processing time of the data will be acceptable.

This thesis proposed a smart location-based mobile shopping application for Android devices. The Geo-position of the user's mobile device is utilized to produce location information in shopping application (SAGO). The flow of the application is that user searches a product, and then SAGO identifies the location and searches the product on the closest electronic local stores. The idea is to get the prices from each local store with in stock information and smartly list the product list. With the proposed smart filtering algorithm, mobile shopping application achieves precise and minimum error location based searching and listing results.

Consequently, the mobile shopping android application performance results have shown for five local electronic stores. The performance is better than expectation. Additionally, the SAGO is a PoC application that can be expanded easily by adding other sectors such as local pet shops, book shops, etc. In addition, the SAGO could help to the mobile users for decision-making on purchasing.

7. FUTURE WORKS

This section includes recommendations for further improvements. The further improvements were determined after the first initial was released and the SAGO was tested with real environment.

Before the SAGO was made, the local market was investigated for the same mobile applications and could not find any the same applications. On the other hand, a mobile shopping application which is “ShopSavvy” is available in US market. ShopSavvy is an alternative of SAGO. This mobile shopping application is very popular in USA. The company defines their mobile shopping application as barcode scanning and price comparison application. [43] “ShopSavvy” reads product barcodes, mobile barcodes. This mobile application stores does:

- The search history,
- Shows the product deals of companies,
- Guarantees the lowest price,
- Allow users to set price alerts,
- Shows popular products. These features will be able to add to SAGO mobile shopping Android application easily in the next version.

Two months before the SAGO was finished, the same mobile shopping application was released in local market at 28th May of 2013. “Akakce” is a mobile shopping iOS application which searches products in online markets in Turkey. “Akakce” team describes their application as a product search engine. [44] This mobile application enables the user to search products however; the user is not able to purchase the products and must open the company’s product web site. Furthermore, the SAGO mobile shopping application has search a feature but, the differentiation is only covering the real local stores not online markets.

The next version of SAGO mobile shopping application will be more user-friendly, more compact and more functional. The goal is to provide a completely full-functional android application. In

the next version, the application will be able to use both speech to text and text to speech conversation by speech recognition system using APIs such as Google Speech API or another freely distributed APIs. The SAGO will be able to use zip code instead of using the device's latitude and longitude information. Moreover, the Android mobile shopping application will be able to guide the user how to reach the local store by drawing lines from the mobile user's Geo-location to the place of electronic local store. In addition to that, to increase the performance of SAGO, the data that is gathered from internet resources will be stored in a database and the Android mobile shopping application will request the query to the database and collect the data. In the background, the database will be updated periodically to provide fresh data. Furthermore, the system architecture should be improved or redesigned for decreasing response time from internet resources. The user interface of SAGO mobile shopping application might be improved, for instance, especially in the result activity, the images of the products might be shown. Moreover, the details of the product item on a search result list will be seen by clicking the result item to open related local store's web site. Additionally, the Shopping Google API could be used for product recommendation. When the user types the name of the product in the search field, SAGO recommends related products by showing on UI so SAGO will have better user friendly design. In addition to that, the mobile shopping android application will be able to use, user pre-defined data which is personalized, based on information provided from the user's purchasing habit history. It also includes user's own input data about the satisfaction of the shopping mall. Finally, the SAGO will be able to allow the user to store their favorite searches and share them on social sites like Facebook, Twitter, etc. Furthermore, the user will be able to share one of the search results both on social sites and by emails.

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APPENDIX A

SAMPLE LOGS

This is a sample search result log of SAGO mobile shopping Android application.

08-15 20:17:40.697: W/SAGO(2817): Time is up for locating.Show a popup to send user to apps setting activity.
08-15 20:17:44.982: W/SAGO(2817): Timer schedule is cleared.
08-15 20:17:45.072: I/SAGO(2817): Default is used.
08-15 20:17:45.182: D/SAGO(2817): The radius was set as 5 km.
08-15 20:17:46.902: I/SAGO(2817): Now Default Latitude: 40.99506 and Longitude: 29.130106
08-15 20:17:46.982: I/SAGO(2817): Returning From Settings Activity.
08-15 20:17:47.012: D/SAGO(2817): Getting Result - pre execute async task
08-15 20:17:47.022: D/SAGO(2817):
<https://maps.googleapis.com/maps/api/place/nearbysearch/xml?location=40.99506,29.130106&radius=5000&name=vatan|darty|bimeks|teknosa|electro&sensor=true&key=AlzaSyDfliBQWGzS19DC8pFtBsUoPMOUTlug22Q>
08-15 20:17:48.022: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.
08-15 20:17:48.022: I/global(2817): Default buffer size used in BufferedReader constructor. It would be better to be explicit if an 8k-char buffer is required.
08-15 20:17:49.052: D/SAGO(2817): [BRAND INFO] XML Parser is initializing...
08-15 20:17:51.042: D/SAGO(2817): [BRAND INFO] XML Parsing is done.
08-15 20:17:51.092: D/SAGO(2817): Checking if more result available : true
08-15 20:17:51.092: D/SAGO(2817):
https://maps.googleapis.com/maps/api/place/nearbysearch/xml?location=40.99506,29.130106&radius=5000&name=vatan|darty|bimeks|teknosa|electro&sensor=true&key=AlzaSyDfliBQWGzS19DC8pFtBsUoPMOUTlug22Q&pagetoken=CnRrAAAAGlVEM6ZotD2YNmhaEFmFNW3CxowYn3l28zapxQg9M8uf1u_azkb7glXb2hHvKPPWfEVLk1YAGAMmdEd1KuZcWTZkQJ70m9Wbw0ONVR6PGct154xBuyLB0PqqZs0gE3AUExZOnNatEdVuX5tFp7atcBIQtNzL23fdtGjLeqOuol6mzhoUkQTFnckET73hzyUFJG80_miaANU
08-15 20:17:51.312: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.
08-15 20:17:51.312: I/global(2817): Default buffer size used in BufferedReader constructor. It would be better to be explicit if an 8k-char buffer is required.
08-15 20:17:52.162: D/SAGO(2817): [BRAND INFO] XML Parser is initializing...
08-15 20:17:53.582: D/SAGO(2817): Return String Null. This string was dismissed.
08-15 20:17:53.882: D/SAGO(2817): [BRAND INFO] XML Parsing is done.
08-15 20:17:53.952: D/SAGO(2817): Checking if more result available : true
08-15 20:17:53.952: D/SAGO(2817):
<https://maps.googleapis.com/maps/api/place/nearbysearch/xml?location=40.99506,29.130106>

08-15 20:18:18.522: D/SAGO(2817): Request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=camera
08-15 20:18:18.542: I/SAGO(2817): Brand is Vatan
08-15 20:18:18.542: I/SAGO(2817): Start MyWebCrawler
08-15 20:18:18.542: D/SAGO(2817): PropertiesUtil is used.The string is Vatan
08-15 20:18:18.542: D/SAGO(2817): Return String Vatan
08-15 20:18:18.542: D/SAGO(2817): PropertiesUtil is used.The string is Vatan
08-15 20:18:18.542: D/SAGO(2817): Return String Vatan
08-15 20:18:18.542: D/SAGO(2817): Request URL:
<http://www.vatanbilgisayar.com/search.aspx?text=camera>
08-15 20:18:18.542: I/SAGO(2817): 3. Thread was created for Teknosa
08-15 20:18:18.542: I/SAGO(2817): Brand is Teknosa
08-15 20:18:18.542: I/SAGO(2817): Start MyWebCrawler
08-15 20:18:18.542: D/SAGO(2817): PropertiesUtil is used.The string is Teknosa
08-15 20:18:18.542: D/SAGO(2817): Return String Teknosa
08-15 20:18:18.542: D/SAGO(2817): PropertiesUtil is used.The string is Teknosa
08-15 20:18:18.542: D/SAGO(2817): Return String Teknosa
08-15 20:18:18.542: D/SAGO(2817): Request URL: <http://www.teknosa.com/arama/?s=camera>
08-15 20:18:18.552: I/SAGO(2817): 4. Thread was created for Bimeks
08-15 20:18:18.562: I/SAGO(2817): Brand is Bimeks
08-15 20:18:18.562: I/SAGO(2817): Start MyWebCrawler
08-15 20:18:18.562: D/SAGO(2817): PropertiesUtil is used.The string is Bimeks
08-15 20:18:18.562: D/SAGO(2817): Return String Bimeks
08-15 20:18:18.562: D/SAGO(2817): PropertiesUtil is used.The string is Bimeks
08-15 20:18:18.562: D/SAGO(2817): Return String Bimeks
08-15 20:18:18.562: D/SAGO(2817): Request URL:
<http://www.bimeks.com.tr/search.aspx?s=1&arama=camera>
08-15 20:18:18.572: I/SAGO(2817): 5. Thread was created for electro
08-15 20:18:18.582: I/SAGO(2817): Brand is electro
08-15 20:18:18.582: I/SAGO(2817): Start MyWebCrawler
08-15 20:18:18.582: D/SAGO(2817): PropertiesUtil is used.The string is electro
08-15 20:18:18.582: D/SAGO(2817): Return String Electro World
08-15 20:18:18.582: D/SAGO(2817): PropertiesUtil is used.The string is electro
08-15 20:18:18.582: D/SAGO(2817): Return String Electro World
08-15 20:18:18.582: D/SAGO(2817): Request URL:
<http://www.electroworld.com.tr/arama/?q=camera>
08-15 20:18:19.012: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:18:19.272: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:18:19.312: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:18:19.832: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:18:20.822: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:18:22.582: D/SAGO(2817): All Fields are collecting...

08-15 20:18:22.922: D/SAGO(2817): All Fields are collecting...

08-15 20:18:23.282: D/SAGO(2817): All Fields are collecting...

08-15 20:18:23.542: I/SAGO(2817): The Data was collected.

08-15 20:18:23.572: I/SAGO(2817): Stop MyWebCrawler

08-15 20:18:23.782: I/SAGO(2817): The Data was collected.

08-15 20:18:23.812: I/SAGO(2817): Stop MyWebCrawler

08-15 20:18:24.102: D/SAGO(2817): All Fields are collecting...

08-15 20:18:24.212: D/SAGO(2817): The first page's last page is 1

08-15 20:18:24.432: I/SAGO(2817): The Data was collected.

08-15 20:18:24.432: I/SAGO(2817): Stop MyWebCrawler

08-15 20:18:24.562: D/SAGO(2817): All Fields are collecting...

08-15 20:18:24.912: I/SAGO(2817): The Data was collected.

08-15 20:18:24.912: I/SAGO(2817): Stop MyWebCrawler

08-15 20:18:25.632: D/SAGO(2817): 2. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=camera&page=2

08-15 20:18:26.552: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:18:28.342: D/SAGO(2817): 3. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=camera&page=3

08-15 20:18:29.132: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:18:30.752: I/SAGO(2817): The Data was collected.

08-15 20:18:30.752: I/SAGO(2817): Stop MyWebCrawler

08-15 20:18:30.762: D/SAGO(2817): *****Start
Greedy...*****

08-15 20:18:30.762: D/SAGO(2817): BEFORE GREEDY, SIZE=42

08-15 20:18:30.762: D/SAGO(2817): *****Start
Normalization...*****

08-15 20:18:30.782: D/SAGO(2817): *****Start Similarity
Function...*****

08-15 20:18:30.802: D/SAGO(2817): Products and size is 32

08-15 20:18:30.802: D/SAGO(2817): Brand Name: Product Title

08-15 20:18:30.802: D/SAGO(2817): Darty : COOLPIX L26 (SILVER) DIGITAL CAMERA

08-15 20:18:30.802: D/SAGO(2817): Darty : COOLPIX L26 (BLACK) DIGITAL CAMERA

08-15 20:18:30.802: D/SAGO(2817): Darty : COOLPIX L26 (RED) DIGITAL CAMERA

08-15 20:18:30.802: D/SAGO(2817): Darty : COOLPIX S3200 (SILVER) DIGITAL CAMERA

08-15 20:18:30.802: D/SAGO(2817): Darty : COOLPIX S4300 (BLACK) DIGITAL CAMERA

08-15 20:18:30.802: D/SAGO(2817): Darty : COOLPIX S4300 (WHITE) DIGITAL CAMERA

08-15 20:18:30.802: D/SAGO(2817): Darty : COOLPIX S4200 (SILVER) DIGITAL CAMERA

08-15 20:18:30.802: D/SAGO(2817): Darty : COOLPIX S4200 (RED) DIGITAL CAMERA

08-15 20:18:30.802: D/SAGO(2817): Darty : NIKON DIGITAL CAMERA S01 (WHITE) - YENİ

08-15 20:18:30.802: D/SAGO(2817): Darty : NIKON DIGITAL CAMERA S01 (SILVER)- YENİ
08-15 20:18:30.802: D/SAGO(2817): Darty : NIKON DIGITAL CAMERA S01 (BLACK) - YENİ
08-15 20:18:30.802: D/SAGO(2817): Darty : NIKON DIGITAL CAMERA S01 (RED) - YENİ
08-15 20:18:30.802: D/SAGO(2817): Darty : NIKON DIGITAL CAMERA L610(BLACK)- YENİ
08-15 20:18:30.802: D/SAGO(2817): Darty : NIKON DIGITAL CAMERA L610 (SILVER)- YENİ
08-15 20:18:30.802: D/SAGO(2817): Darty : COOLPIX P510 (SILVER) DIGITAL CAMERA
08-15 20:18:30.802: D/SAGO(2817): Darty : DIGITAL CAMERA S800C (WHITE)
08-15 20:18:30.802: D/SAGO(2817): Darty : DIGITAL CAMERA P7700 (BLACK)
08-15 20:18:30.802: D/SAGO(2817): Darty : DIGITAL CAMERA D3100 (w/18-55mm) KIT
08-15 20:18:30.802: D/SAGO(2817): Darty : DIGITAL CAMERA D5200 (w/18-55mm) KIT - YENİ
08-15 20:18:30.802: D/SAGO(2817): Vatan : PC SPONGEBOB LIGHTS CAMERA PANTS
08-15 20:18:30.802: D/SAGO(2817): Vatan : Skype Camera
08-15 20:18:30.802: D/SAGO(2817): Vatan : PS3 500GB + SPORTS CHAMP.2 + PS EYE CAMERA +
PS MOTİON CONTROLLER
08-15 20:18:30.802: D/SAGO(2817): Teknosa : ARAL SPONGEBOB LIGHTS CAMERA PANTS PC
OYUN
08-15 20:18:30.802: D/SAGO(2817): Bimeks : Spongebob Lights Camera Pants! PcSünger Bob'un
favori süper kahramanlarından ipuçları toplayın.
08-15 20:18:30.802: D/SAGO(2817): Bimeks : Samsung GC 100 Galaxy Camera BeyazSamsung
Galaxy Camera, Android Jelly Bean işletim sisteminin güçlü performansı
08-15 20:18:30.802: D/SAGO(2817): Bimeks : Samsung GC 100 Galaxy Camera SiyahSamsung
Galaxy Camera, Android Jelly Bean işletim sisteminin güçlü performansı
08-15 20:18:30.802: D/SAGO(2817): Bimeks : Sony PS3 320 GB +Move Fitness+Eye
Camera+Motion ControllerPlaystation Move Motion Controller'in ve oyuncuların hareketlerini
algılayan PS3 kamerası ile keyfini çıkarın.
08-15 20:18:30.802: D/SAGO(2817): Electro World : Valja Artemis Slr Camera Bag
08-15 20:18:30.802: D/SAGO(2817): Electro World : Valja Cybershot Slr Camera Bag
08-15 20:18:30.802: D/SAGO(2817): Electro World : Valja-CB-4000 Black Camera Bag
08-15 20:18:30.802: D/SAGO(2817): Electro World : Samsung DV150 Dijital Fotoğraf Makinesi
Siyah
08-15 20:18:30.802: D/SAGO(2817): Electro World : Samsung DV150 Dijital Fotoğraf Makinesi
Beyaz
08-15 20:18:30.802: D/SAGO(2817): *****Start
Clustering... *****
08-15 20:18:30.802: D/SAGO(2817): BEFORE CLUSTERING, RESULT SIZE=32
08-15 20:18:30.802: D/SAGO(2817): BEFORE CLUSTERING, NORM LIST SIZE=32
08-15 20:18:30.802: D/SAGO(2817): Cluster is cleaning...
08-15 20:18:30.802: D/SAGO(2817): Cluster was cleaned
08-15 20:18:42.822: D/SAGO(2817): Spongebob Lights Camera Pants! PcSünger Bob'un favori
süper kahramanlarından ipuçları toplayın.
08-15 20:18:42.822: D/SAGO(2817): Sony PS3 320 GB +Move Fitness+Eye Camera+Motion
ControllerPlaystation Move Motion Controller'in ve oyuncuların hareketlerini algılayan PS3
kamerası ile keyfini çıkarın.

08-15 20:18:42.822: D/SAGO(2817): Samsung GC 100 Galaxy Camera BeyazSamsung Galaxy Camera, Android Jelly Bean işletim sisteminin güçlü performansıyl

08-15 20:18:42.822: D/SAGO(2817): Samsung GC 100 Galaxy Camera SiyahSamsung Galaxy Camera, Android Jelly Bean işletim sisteminin güçlü performansıyl

08-15 20:18:42.822: D/SAGO(2817): PS3 500GB + SPORTS CHAMP.2 + PS EYE CAMERA + PS MOTİON CONTROLLER

08-15 20:18:42.822: D/SAGO(2817): Skype Camera

08-15 20:18:42.822: D/SAGO(2817): PC SPONGEBOB LIGHTS CAMERA PANTS

08-15 20:18:42.822: D/SAGO(2817): COOLPIX L26 (RED) DIGITAL CAMERA

08-15 20:18:42.822: D/SAGO(2817): DIGITAL CAMERA D3100 (w/18-55mm) KIT

08-15 20:18:42.822: D/SAGO(2817): DIGITAL CAMERA D5200 (w/18-55mm) KIT - YENİ

08-15 20:18:42.822: D/SAGO(2817): ARAL SPONGEBOB LIGHTS CAMERA PANTS PC OYUN

08-15 20:18:42.832: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (RED) - YENİ

08-15 20:18:42.832: D/SAGO(2817): COOLPIX L26 (BLACK) DIGITAL CAMERA

08-15 20:18:42.832: D/SAGO(2817): COOLPIX S4200 (RED) DIGITAL CAMERA

08-15 20:18:42.832: D/SAGO(2817): COOLPIX L26 (SILVER) DIGITAL CAMERA

08-15 20:18:42.832: D/SAGO(2817): NIKON DIGITAL CAMERA L610(BLACK)- YENİ

08-15 20:18:42.832: D/SAGO(2817): Samsung DV150 Dijital Fotoğraf Makinesi Siyah

08-15 20:18:42.832: D/SAGO(2817): Samsung DV150 Dijital Fotoğraf Makinesi Beyaz

08-15 20:18:42.832: D/SAGO(2817): COOLPIX P510 (SILVER) DIGITAL CAMERA

08-15 20:18:42.832: D/SAGO(2817): COOLPIX S4300 (BLACK) DIGITAL CAMERA

08-15 20:18:42.832: D/SAGO(2817): COOLPIX S4300 (WHITE) DIGITAL CAMERA

08-15 20:18:42.832: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (BLACK) - YENİ

08-15 20:18:42.832: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (WHITE) - YENİ

08-15 20:18:42.832: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (SILVER)- YENİ

08-15 20:18:42.832: D/SAGO(2817): NIKON DIGITAL CAMERA L610 (SILVER)- YENİ

08-15 20:18:42.832: D/SAGO(2817): COOLPIX S3200 (SILVER) DIGITAL CAMERA

08-15 20:18:42.832: D/SAGO(2817): COOLPIX S4200 (SILVER) DIGITAL CAMERA

08-15 20:18:42.832: D/SAGO(2817): DIGITAL CAMERA S800C (WHITE)

08-15 20:18:42.832: D/SAGO(2817): DIGITAL CAMERA P7700 (BLACK)

08-15 20:18:42.832: D/SAGO(2817): Valja Cybershot Slr Camera Bag

08-15 20:18:42.832: D/SAGO(2817): Valja Artemis Slr Camera Bag

08-15 20:18:42.832: D/SAGO(2817): Valja-CB-4000 Black Camera Bag

08-15 20:18:42.832: D/SAGO(2817): AFTER CLUSTERING, NORM LIST SIZE=32

08-15 20:18:42.832: D/SAGO(2817): *****Start

Scoring...*****

08-15 20:18:42.832: D/SAGO(2817): ProductName+Score+Distance+xPrice+yTitle+ProductPrice

08-15 20:18:42.832: D/SAGO(2817): Spongebob Lights Camera Pants! PcSünger Bob'un favori süper kahramanlarından ipuçları toplayın.+0+0.0+0.00333+90+12.63

08-15 20:18:42.832: D/SAGO(2817): Sony PS3 320 GB +Move Fitness+Eye Camera+Motion ControllerPlaystation Move Motion Controller'ın ve oyuncuların hareketlerini algılayan PS3 kamerası ile keyfini çıkarın.+1+0.0+0.26667+90+799.0

08-15 20:18:42.842: D/SAGO(2817): Samsung GC 100 Galaxy Camera BeyazSamsung Galaxy Camera, Android Jelly Bean işletim sisteminin güçlü performansıyl+2+0.0+0.33333+90+1399.0

08-15 20:18:42.842: D/SAGO(2817): Samsung GC 100 Galaxy Camera Siyah Samsung Galaxy Camera, Android Jelly Bean işletim sisteminin güçlü performansı+2+0.0+0.33333+90+1399.0
08-15 20:18:42.842: D/SAGO(2817): PS3 500GB + SPORTS CHAMP.2 + PS EYE CAMERA + PS MOTİON CONTROLLER+1+0.0+0.3+65+949.0
08-15 20:18:42.842: D/SAGO(2817): Skype Camera+1+0.0+0.03333+7+137.0
08-15 20:18:42.842: D/SAGO(2817): PC SPONGEBOB LIGHTS CAMERA PANTS+1+0.0+0.00333+32+14.0
08-15 20:18:42.842: D/SAGO(2817): COOLPIX L26 (RED) DIGITAL CAMERA+-1+0.0+0.06667+35+219.0
08-15 20:18:42.842: D/SAGO(2817): DIGITAL CAMERA D3100 (w/18-55mm) KIT+1+0.0+0.33333+35+1299.0
08-15 20:18:42.842: D/SAGO(2817): DIGITAL CAMERA D5200 (w/18-55mm) KIT - YENİ+9+0.0+1.0+42+2999.0
08-15 20:18:42.842: D/SAGO(2817): ARAL SPONGEBOB LIGHTS CAMERA PANTS PC OYUN+0+0.0+0.00333+42+14.99
08-15 20:18:42.842: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (RED) - YENİ+3+0.0+0.2+37+599.0
08-15 20:18:42.842: D/SAGO(2817): COOLPIX L26 (BLACK) DIGITAL CAMERA+2+0.0+0.06667+37+219.0
08-15 20:18:42.842: D/SAGO(2817): COOLPIX S4200 (RED) DIGITAL CAMERA+2+0.0+0.13333+37+399.0
08-15 20:18:42.842: D/SAGO(2817): COOLPIX L26 (SILVER) DIGITAL CAMERA+2+0.0+0.06667+38+219.0
08-15 20:18:42.842: D/SAGO(2817): NIKON DIGITAL CAMERA L610(BLACK)- YENİ+4+0.0+0.3+38+869.0
08-15 20:18:42.852: D/SAGO(2817): Samsung DV150 Dijital Fotoğraf Makinesi Siyah+0+0.0+0.1+41+349.0
08-15 20:18:42.852: D/SAGO(2817): Samsung DV150 Dijital Fotoğraf Makinesi Beyaz+0+0.0+0.1+41+349.0
08-15 20:18:42.852: D/SAGO(2817): COOLPIX P510 (SILVER) DIGITAL CAMERA+3+0.0+0.33333+39+1399.0
08-15 20:18:42.852: D/SAGO(2817): COOLPIX S4300 (BLACK) DIGITAL CAMERA+1+0.0+0.13333+39+399.0
08-15 20:18:42.852: D/SAGO(2817): COOLPIX S4300 (WHITE) DIGITAL CAMERA+1+0.0+0.13333+39+399.0
08-15 20:18:42.852: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (BLACK) - YENİ+2+0.0+0.2+39+599.0
08-15 20:18:42.852: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (WHITE) - YENİ+2+0.0+0.2+39+599.0
08-15 20:18:42.852: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (SILVER)- YENİ+2+0.0+0.2+39+599.0
08-15 20:18:42.852: D/SAGO(2817): NIKON DIGITAL CAMERA L610 (SILVER)- YENİ+1+0.0+0.3+40+869.0

08-15 20:18:42.852: D/SAGO(2817): COOLPIX S3200 (SILVER) DIGITAL CAMERA+0+0.0+0.06667+40+249.0
08-15 20:18:42.852: D/SAGO(2817): COOLPIX S4200 (SILVER) DIGITAL CAMERA+0+0.0+0.13333+40+399.0
08-15 20:18:42.862: D/SAGO(2817): DIGITAL CAMERA S800C (WHITE)+1+0.0+0.33333+28+1399.0
08-15 20:18:42.862: D/SAGO(2817): DIGITAL CAMERA P7700 (BLACK)+4+0.0+0.66667+28+1799.0
08-15 20:18:42.862: D/SAGO(2817): Valja Cybershot Slr Camera Bag+2+0.0+0.02333+25+69.9
08-15 20:18:42.862: D/SAGO(2817): Valja Artemis Slr Camera Bag+0+0.0+0.02+23+59.99
08-15 20:18:42.862: D/SAGO(2817): Valja-CB-4000 Black Camera Bag+0+0.0+0.00333+24+12.99
08-15 20:18:42.862: D/SAGO(2817): *****Start Ordering...*****
08-15 20:18:42.862: D/SAGO(2817): Getting Result - post execute async
08-15 20:18:42.862: D/SAGO(2817): Result size After Smart Algorithm was rendered : 32
08-15 20:19:42.612: D/SAGO(2817): Getting Result - pre execute async task
08-15 20:19:42.622: I/SAGO(2817): 1. Thread was created for Darty
08-15 20:19:42.632: I/SAGO(2817): 2. Thread was created for Vatan
08-15 20:19:42.632: I/SAGO(2817): Brand is Darty
08-15 20:19:42.632: I/SAGO(2817): Start MyWebCrawler
08-15 20:19:42.632: D/SAGO(2817): PropertiesUtil is used.The string is Darty
08-15 20:19:42.632: D/SAGO(2817): Return String Darty
08-15 20:19:42.632: D/SAGO(2817): PropertiesUtil is used.The string is Darty
08-15 20:19:42.632: D/SAGO(2817): Return String Darty
08-15 20:19:42.632: D/SAGO(2817): Request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=camera
08-15 20:19:42.632: I/SAGO(2817): 3. Thread was created for Teknosa
08-15 20:19:42.652: I/SAGO(2817): Brand is Vatan
08-15 20:19:42.652: I/SAGO(2817): Start MyWebCrawler
08-15 20:19:42.652: D/SAGO(2817): PropertiesUtil is used.The string is Vatan
08-15 20:19:42.652: D/SAGO(2817): Return String Vatan
08-15 20:19:42.652: D/SAGO(2817): PropertiesUtil is used.The string is Vatan
08-15 20:19:42.652: D/SAGO(2817): Return String Vatan
08-15 20:19:42.652: D/SAGO(2817): Request URL:
<http://www.vatanbilgisayar.com/search.aspx?text=camera>
08-15 20:19:42.672: I/SAGO(2817): 4. Thread was created for Bimeks
08-15 20:19:42.672: I/SAGO(2817): Brand is Teknosa
08-15 20:19:42.672: I/SAGO(2817): Start MyWebCrawler
08-15 20:19:42.672: D/SAGO(2817): PropertiesUtil is used.The string is Teknosa
08-15 20:19:42.672: D/SAGO(2817): Return String Teknosa
08-15 20:19:42.672: D/SAGO(2817): PropertiesUtil is used.The string is Teknosa
08-15 20:19:42.672: D/SAGO(2817): Return String Teknosa
08-15 20:19:42.672: D/SAGO(2817): Request URL: <http://www.teknosa.com/arama/?s=camera>
08-15 20:19:42.672: I/SAGO(2817): Brand is Bimeks
08-15 20:19:42.672: I/SAGO(2817): Start MyWebCrawler

08-15 20:19:42.672: D/SAGO(2817): PropertiesUtil is used.The string is Bimeks
08-15 20:19:42.682: D/SAGO(2817): Return String Bimeks
08-15 20:19:42.682: D/SAGO(2817): PropertiesUtil is used.The string is Bimeks
08-15 20:19:42.682: D/SAGO(2817): Return String Bimeks
08-15 20:19:42.682: D/SAGO(2817): Request URL:
<http://www.bimeks.com.tr/search.aspx?s=1&arama=camera>
08-15 20:19:42.682: I/SAGO(2817): 5. Thread was created for electro
08-15 20:19:42.682: I/SAGO(2817): Brand is electro
08-15 20:19:42.682: I/SAGO(2817): Start MyWebCrawler
08-15 20:19:42.682: D/SAGO(2817): PropertiesUtil is used.The string is electro
08-15 20:19:42.682: D/SAGO(2817): Return String Electro World
08-15 20:19:42.682: D/SAGO(2817): PropertiesUtil is used.The string is electro
08-15 20:19:42.682: D/SAGO(2817): Return String Electro World
08-15 20:19:42.682: D/SAGO(2817): Request URL:
<http://www.electroworld.com.tr/arama/?q=camera>
08-15 20:19:43.012: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:19:43.162: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:19:43.312: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:19:43.972: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:19:44.512: D/SAGO(2817): All Fields are collecting...
08-15 20:19:44.772: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:19:45.052: D/SAGO(2817): All Fields are collecting...
08-15 20:19:45.082: D/SAGO(2817): All Fields are collecting...
08-15 20:19:45.512: I/SAGO(2817): The Data was collected.
08-15 20:19:45.512: I/SAGO(2817): Stop MyWebCrawler
08-15 20:19:45.832: I/SAGO(2817): The Data was collected.
08-15 20:19:45.832: I/SAGO(2817): Stop MyWebCrawler
08-15 20:19:46.322: I/SAGO(2817): The Data was collected.
08-15 20:19:46.322: I/SAGO(2817): Stop MyWebCrawler
08-15 20:19:46.792: D/SAGO(2817): All Fields are collecting...
08-15 20:19:46.812: D/SAGO(2817): All Fields are collecting...
08-15 20:19:46.852: D/SAGO(2817): The first page's last page is 1
08-15 20:19:47.462: I/SAGO(2817): The Data was collected.
08-15 20:19:47.462: I/SAGO(2817): Stop MyWebCrawler
08-15 20:19:48.012: D/SAGO(2817): 2. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=camera&page=2
08-15 20:19:49.482: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:19:51.092: D/SAGO(2817): 3. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=camera&page=3
08-15 20:19:52.212: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:19:53.792: I/SAGO(2817): The Data was collected.
08-15 20:19:53.792: I/SAGO(2817): Stop MyWebCrawler
08-15 20:19:53.792: D/SAGO(2817): *****Start
Greedy...*****
08-15 20:19:53.792: D/SAGO(2817): BEFORE GREEDY, SIZE=42
08-15 20:19:53.802: D/SAGO(2817): *****Start
Normalization...*****
08-15 20:19:53.852: D/SAGO(2817): *****Start Similarity
Function...*****
08-15 20:19:53.862: D/SAGO(2817): Products and size is 32
08-15 20:19:53.862: D/SAGO(2817): Brand Name: Product Title
08-15 20:19:53.872: D/SAGO(2817): Darty : COOLPIX L26 (SILVER) DIGITAL CAMERA
08-15 20:19:53.872: D/SAGO(2817): Darty : COOLPIX L26 (BLACK) DIGITAL CAMERA
08-15 20:19:53.872: D/SAGO(2817): Darty : COOLPIX L26 (RED) DIGITAL CAMERA
08-15 20:19:53.872: D/SAGO(2817): Darty : COOLPIX S3200 (SILVER) DIGITAL CAMERA
08-15 20:19:53.872: D/SAGO(2817): Darty : COOLPIX S4300 (BLACK) DIGITAL CAMERA
08-15 20:19:53.872: D/SAGO(2817): Darty : COOLPIX S4300 (WHITE) DIGITAL CAMERA
08-15 20:19:53.872: D/SAGO(2817): Darty : COOLPIX S4200 (SILVER) DIGITAL CAMERA
08-15 20:19:53.872: D/SAGO(2817): Darty : COOLPIX S4200 (RED) DIGITAL CAMERA
08-15 20:19:53.872: D/SAGO(2817): Darty : NIKON DIGITAL CAMERA S01 (WHITE) - YENİ
08-15 20:19:53.872: D/SAGO(2817): Darty : NIKON DIGITAL CAMERA S01 (SILVER)- YENİ
08-15 20:19:53.872: D/SAGO(2817): Darty : NIKON DIGITAL CAMERA S01 (BLACK) - YENİ
08-15 20:19:53.872: D/SAGO(2817): Darty : NIKON DIGITAL CAMERA S01 (RED) - YENİ
08-15 20:19:53.872: D/SAGO(2817): Darty : NIKON DIGITAL CAMERA L610(BLACK)- YENİ
08-15 20:19:53.872: D/SAGO(2817): Darty : NIKON DIGITAL CAMERA L610 (SILVER)- YENİ
08-15 20:19:53.872: D/SAGO(2817): Darty : COOLPIX P510 (SILVER) DIGITAL CAMERA
08-15 20:19:53.872: D/SAGO(2817): Darty : DIGITAL CAMERA S800C (WHITE)
08-15 20:19:53.872: D/SAGO(2817): Darty : DIGITAL CAMERA P7700 (BLACK)
08-15 20:19:53.872: D/SAGO(2817): Darty : DIGITAL CAMERA D3100 (w/18-55mm) KIT
08-15 20:19:53.872: D/SAGO(2817): Darty : DIGITAL CAMERA D5200 (w/18-55mm) KIT - YENİ
08-15 20:19:53.872: D/SAGO(2817): Vatan : PC SPONGEBOB LIGHTS CAMERA PANTS
08-15 20:19:53.872: D/SAGO(2817): Vatan : Skype Camera
08-15 20:19:53.872: D/SAGO(2817): Vatan : PS3 500GB + SPORTS CHAMP.2 + PS EYE CAMERA +
PS MOTİON CONTROLLER
08-15 20:19:53.872: D/SAGO(2817): Teknosa : ARAL SPONGEBOB LIGHTS CAMERA PANTS PC
OYUN
08-15 20:19:53.872: D/SAGO(2817): Bimeks : Spongebob Lights Camera Pants! PcSünger Bob'un
favori süper kahramanlarından ipuçları toplayın.
08-15 20:19:53.872: D/SAGO(2817): Bimeks : Samsung GC 100 Galaxy Camera BeyazSamsung
Galaxy Camera, Android Jelly Bean işletim sisteminin güçlü performansıyl

08-15 20:19:53.872: D/SAGO(2817): Bimeks : Samsung GC 100 Galaxy Camera SiyahSamsung Galaxy Camera, Android Jelly Bean işletim sisteminin güçlü performansıyl
08-15 20:19:53.872: D/SAGO(2817): Bimeks : Sony PS3 320 GB +Move Fitness+Eye Camera+Motion ControllerPlaystation Move Motion Controller'ın ve oyuncuların hareketlerini algılayan PS3 kamerası ile keyfini çıkarın.
08-15 20:19:53.872: D/SAGO(2817): Electro World : Valja Artemis Slr Camera Bag
08-15 20:19:53.872: D/SAGO(2817): Electro World : Valja Cybershot Slr Camera Bag
08-15 20:19:53.872: D/SAGO(2817): Electro World : Valja-CB-4000 Black Camera Bag
08-15 20:19:53.872: D/SAGO(2817): Electro World : Samsung DV150 Dijital Fotoğraf Makinesi Siyah
08-15 20:19:53.872: D/SAGO(2817): Electro World : Samsung DV150 Dijital Fotoğraf Makinesi Beyaz
08-15 20:19:53.872: D/SAGO(2817): *****Start Clustering... *****
08-15 20:19:53.872: D/SAGO(2817): BEFORE CLUSTERING, RESULT SIZE=32
08-15 20:19:53.872: D/SAGO(2817): BEFORE CLUSTERING, NORM LIST SIZE=32
08-15 20:19:53.872: D/SAGO(2817): Cluster is cleaning...
08-15 20:19:53.872: D/SAGO(2817): Cluster was cleaned
08-15 20:20:05.862: D/SAGO(2817): Spongebob Lights Camera Pants! PcSünger Bob'un favori süper kahramanlarından ipuçları toplayın.
08-15 20:20:05.862: D/SAGO(2817): Sony PS3 320 GB +Move Fitness+Eye Camera+Motion ControllerPlaystation Move Motion Controller'ın ve oyuncuların hareketlerini algılayan PS3 kamerası ile keyfini çıkarın.
08-15 20:20:05.862: D/SAGO(2817): Samsung GC 100 Galaxy Camera BeyazSamsung Galaxy Camera, Android Jelly Bean işletim sisteminin güçlü performansıyl
08-15 20:20:05.862: D/SAGO(2817): Samsung GC 100 Galaxy Camera SiyahSamsung Galaxy Camera, Android Jelly Bean işletim sisteminin güçlü performansıyl
08-15 20:20:05.862: D/SAGO(2817): PS3 500GB + SPORTS CHAMP.2 + PS EYE CAMERA + PS MOTİON CONTROLLER
08-15 20:20:05.862: D/SAGO(2817): Skype Camera
08-15 20:20:05.862: D/SAGO(2817): PC SPONGEBOB LIGHTS CAMERA PANTS
08-15 20:20:05.862: D/SAGO(2817): COOLPIX L26 (RED) DIGITAL CAMERA
08-15 20:20:05.862: D/SAGO(2817): DIGITAL CAMERA D3100 (w/18-55mm) KIT
08-15 20:20:05.862: D/SAGO(2817): DIGITAL CAMERA D5200 (w/18-55mm) KIT - YENİ
08-15 20:20:05.862: D/SAGO(2817): ARAL SPONGEBOB LIGHTS CAMERA PANTS PC OYUN
08-15 20:20:05.862: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (RED) - YENİ
08-15 20:20:05.862: D/SAGO(2817): COOLPIX L26 (BLACK) DIGITAL CAMERA
08-15 20:20:05.862: D/SAGO(2817): COOLPIX S4200 (RED) DIGITAL CAMERA
08-15 20:20:05.862: D/SAGO(2817): COOLPIX L26 (SILVER) DIGITAL CAMERA
08-15 20:20:05.862: D/SAGO(2817): NIKON DIGITAL CAMERA L610(BLACK)- YENİ
08-15 20:20:05.862: D/SAGO(2817): Samsung DV150 Dijital Fotoğraf Makinesi Siyah
08-15 20:20:05.862: D/SAGO(2817): Samsung DV150 Dijital Fotoğraf Makinesi Beyaz
08-15 20:20:05.862: D/SAGO(2817): COOLPIX P510 (SILVER) DIGITAL CAMERA
08-15 20:20:05.862: D/SAGO(2817): COOLPIX S4300 (BLACK) DIGITAL CAMERA

08-15 20:20:05.862: D/SAGO(2817): COOLPIX S4300 (WHITE) DIGITAL CAMERA
08-15 20:20:05.862: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (BLACK) - YENİ
08-15 20:20:05.862: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (WHITE) - YENİ
08-15 20:20:05.862: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (SILVER)- YENİ
08-15 20:20:05.862: D/SAGO(2817): NIKON DIGITAL CAMERA L610 (SILVER)- YENİ
08-15 20:20:05.862: D/SAGO(2817): COOLPIX S3200 (SILVER) DIGITAL CAMERA
08-15 20:20:05.862: D/SAGO(2817): COOLPIX S4200 (SILVER) DIGITAL CAMERA
08-15 20:20:05.862: D/SAGO(2817): DIGITAL CAMERA S800C (WHITE)
08-15 20:20:05.872: D/SAGO(2817): DIGITAL CAMERA P7700 (BLACK)
08-15 20:20:05.872: D/SAGO(2817): Valja Cybershot Slr Camera Bag
08-15 20:20:05.872: D/SAGO(2817): Valja Artemis Slr Camera Bag
08-15 20:20:05.872: D/SAGO(2817): Valja-CB-4000 Black Camera Bag
08-15 20:20:05.872: D/SAGO(2817): AFTER CLUSTERING, NORM LIST SIZE=32
08-15 20:20:05.872: D/SAGO(2817): *****Start
Scoring...*****
08-15 20:20:05.872: D/SAGO(2817): ProductName+Score+Distance+Price+Title+ProductPrice
08-15 20:20:05.872: D/SAGO(2817): Spongebob Lights Camera Pants! PcSünger Bob'un favori
süper kahramanlarından ipuçları toplayın.+0+0.0+0.00333+90+12.63
08-15 20:20:05.872: D/SAGO(2817): Sony PS3 320 GB +Move Fitness+Eye Camera+Motion
ControllerPlaystation Move Motion Controller'ın ve oyuncuların hareketlerini algılayan PS3
kamerası ile keyfini çıkarın.+1+0.0+0.26667+90+799.0
08-15 20:20:05.872: D/SAGO(2817): Samsung GC 100 Galaxy Camera BeyazSamsung Galaxy
Camera, Android Jelly Bean işletim sisteminin güçlü performansıyl+2+0.0+0.33333+90+1399.0
08-15 20:20:05.872: D/SAGO(2817): Samsung GC 100 Galaxy Camera SiyahSamsung Galaxy
Camera, Android Jelly Bean işletim sisteminin güçlü performansıyl+2+0.0+0.33333+90+1399.0
08-15 20:20:05.872: D/SAGO(2817): PS3 500GB + SPORTS CHAMP.2 + PS EYE CAMERA + PS
MOTION CONTROLLER+1+0.0+0.3+65+949.0
08-15 20:20:05.872: D/SAGO(2817): Skype Camera+1+0.0+0.03333+7+137.0
08-15 20:20:05.872: D/SAGO(2817): PC SPONGEBOB LIGHTS CAMERA
PANTS+1+0.0+0.00333+32+14.0
08-15 20:20:05.872: D/SAGO(2817): COOLPIX L26 (RED) DIGITAL CAMERA+-
1+0.0+0.06667+35+219.0
08-15 20:20:05.872: D/SAGO(2817): DIGITAL CAMERA D3100 (w/18-55mm)
KIT+1+0.0+0.33333+35+1299.0
08-15 20:20:05.872: D/SAGO(2817): DIGITAL CAMERA D5200 (w/18-55mm) KIT -
YENİ+9+0.0+1.0+42+2999.0
08-15 20:20:05.872: D/SAGO(2817): ARAL SPONGEBOB LIGHTS CAMERA PANTS PC
OYUN+0+0.0+0.00333+42+14.99
08-15 20:20:05.872: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (RED) -
YENİ+3+0.0+0.2+37+599.0
08-15 20:20:05.872: D/SAGO(2817): COOLPIX L26 (BLACK) DIGITAL
CAMERA+2+0.0+0.06667+37+219.0
08-15 20:20:05.872: D/SAGO(2817): COOLPIX S4200 (RED) DIGITAL
CAMERA+2+0.0+0.13333+37+399.0

08-15 20:20:05.872: D/SAGO(2817): COOLPIX L26 (SILVER) DIGITAL CAMERA+2+0.0+0.06667+38+219.0

08-15 20:20:05.872: D/SAGO(2817): NIKON DIGITAL CAMERA L610(BLACK)-YENİ+4+0.0+0.3+38+869.0

08-15 20:20:05.872: D/SAGO(2817): Samsung DV150 Dijital Fotoğraf Makinesi Siyah+0+0.0+0.1+41+349.0

08-15 20:20:05.872: D/SAGO(2817): Samsung DV150 Dijital Fotoğraf Makinesi Beyaz+0+0.0+0.1+41+349.0

08-15 20:20:05.872: D/SAGO(2817): COOLPIX P510 (SILVER) DIGITAL CAMERA+3+0.0+0.33333+39+1399.0

08-15 20:20:05.882: D/SAGO(2817): COOLPIX S4300 (BLACK) DIGITAL CAMERA+1+0.0+0.13333+39+399.0

08-15 20:20:05.882: D/SAGO(2817): COOLPIX S4300 (WHITE) DIGITAL CAMERA+1+0.0+0.13333+39+399.0

08-15 20:20:05.882: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (BLACK) - YENİ+2+0.0+0.2+39+599.0

08-15 20:20:05.882: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (WHITE) - YENİ+2+0.0+0.2+39+599.0

08-15 20:20:05.882: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (SILVER)-YENİ+2+0.0+0.2+39+599.0

08-15 20:20:05.882: D/SAGO(2817): NIKON DIGITAL CAMERA L610 (SILVER)-YENİ+1+0.0+0.3+40+869.0

08-15 20:20:05.882: D/SAGO(2817): COOLPIX S3200 (SILVER) DIGITAL CAMERA+0+0.0+0.06667+40+249.0

08-15 20:20:05.882: D/SAGO(2817): COOLPIX S4200 (SILVER) DIGITAL CAMERA+0+0.0+0.13333+40+399.0

08-15 20:20:05.882: D/SAGO(2817): DIGITAL CAMERA S800C (WHITE)+1+0.0+0.33333+28+1399.0

08-15 20:20:05.882: D/SAGO(2817): DIGITAL CAMERA P7700 (BLACK)+4+0.0+0.66667+28+1799.0

08-15 20:20:05.882: D/SAGO(2817): Valja Cybershot Slr Camera Bag+2+0.0+0.02333+25+69.9

08-15 20:20:05.882: D/SAGO(2817): Valja Artemis Slr Camera Bag+0+0.0+0.02+23+59.99

08-15 20:20:05.882: D/SAGO(2817): Valja-CB-4000 Black Camera Bag+0+0.0+0.00333+24+12.99

08-15 20:20:05.882: D/SAGO(2817): *****Start Ordering... *****

08-15 20:20:05.882: D/SAGO(2817): Getting Result - post execute async

08-15 20:20:05.882: D/SAGO(2817): Result size After Smart Algorithm was rendered : 32

08-15 20:20:21.982: I/SAGO(2817): Default is used.

08-15 20:20:22.032: D/SAGO(2817): The radius was set as 5 km.

08-15 20:20:24.942: D/SAGO(2817): The radius was set as 3 km.

08-15 20:20:25.602: I/SAGO(2817): Now Default Latitude: 40.99506 and Longitude: 29.130106

08-15 20:20:25.672: D/SAGO(2817): Getting Result - pre execute async task

08-15 20:20:25.682: D/SAGO(2817):

<https://maps.googleapis.com/maps/api/place/nearbysearch/xml?location=40.99506,29.130106>

08-15 20:21:02.702: I/SAGO(2817): Brand is Teknosa
08-15 20:21:02.702: I/SAGO(2817): Start MyWebCrawler
08-15 20:21:02.702: D/SAGO(2817): PropertiesUtil is used.The string is Teknosa
08-15 20:21:02.702: D/SAGO(2817): Return String Teknosa
08-15 20:21:02.702: D/SAGO(2817): PropertiesUtil is used.The string is Teknosa
08-15 20:21:02.702: D/SAGO(2817): Return String Teknosa
08-15 20:21:02.702: D/SAGO(2817): Request URL: <http://www.teknosa.com/arama/?s=laptop>
08-15 20:21:03.812: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:21:04.852: D/SAGO(2817): All Fields are collecting...
08-15 20:21:05.312: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:21:05.522: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:21:06.762: D/SAGO(2817): 2. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=laptop&page=2
08-15 20:21:07.002: D/SAGO(2817): All Fields are collecting...
08-15 20:21:07.212: D/SAGO(2817): All Fields are collecting...
08-15 20:21:07.712: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:21:08.032: I/SAGO(2817): The Data was collected.
08-15 20:21:08.032: I/SAGO(2817): Stop MyWebCrawler
08-15 20:21:11.012: D/SAGO(2817): 3. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=laptop&page=3
08-15 20:21:11.452: D/SAGO(2817): 2. page request URL:
<http://www.teknosa.com/arama/?s=laptop&page=2>
08-15 20:21:12.702: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:21:13.292: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:21:15.042: I/SAGO(2817): The Data was collected.
08-15 20:21:15.042: I/SAGO(2817): Stop MyWebCrawler
08-15 20:21:15.802: D/SAGO(2817): 4. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=laptop&page=4
08-15 20:21:16.812: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:21:18.752: D/SAGO(2817): 5. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=laptop&page=5
08-15 20:21:19.952: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:21:21.762: D/SAGO(2817): 6. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=laptop&page=6
08-15 20:21:22.732: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:21:24.612: D/SAGO(2817): 7. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=laptop&page=7
08-15 20:21:25.572: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:21:27.392: D/SAGO(2817): 8. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=laptop&page=8
08-15 20:21:29.732: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:21:31.552: D/SAGO(2817): 9. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=laptop&page=9
08-15 20:21:32.452: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:21:34.432: D/SAGO(2817): 10. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=laptop&page=10
08-15 20:21:36.972: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:21:38.822: D/SAGO(2817): 11. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=laptop&page=11
08-15 20:21:40.152: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:21:41.382: I/SAGO(2817): The Data was collected.
08-15 20:21:41.382: I/SAGO(2817): Stop MyWebCrawler
08-15 20:21:41.382: D/SAGO(2817): *****Start
Greedy...*****
08-15 20:21:41.382: D/SAGO(2817): BEFORE GREEDY, SIZE=149
08-15 20:21:41.392: D/SAGO(2817): *****Start
Normalization...*****
08-15 20:21:41.402: D/SAGO(2817): *****Start Similarity
Function...*****
08-15 20:21:41.412: D/SAGO(2817): Products and size is 47
08-15 20:21:41.412: D/SAGO(2817): Brand Name: Product Title
08-15 20:21:41.412: D/SAGO(2817): Darty : SVE1113M1EP Pembe Notebook
08-15 20:21:41.412: D/SAGO(2817): Darty : MACBOOK PRO MD101TU/A
08-15 20:21:41.412: D/SAGO(2817): Darty : MACBOOK PRO MD103TU/A
08-15 20:21:41.412: D/SAGO(2817): Darty : MACBOOK AIR MD223TU/A
08-15 20:21:41.412: D/SAGO(2817): Darty : MACBOOK AIR MD224TU/A
08-15 20:21:41.412: D/SAGO(2817): Darty : MACBOOK AIR MD231TU/A
08-15 20:21:41.412: D/SAGO(2817): Darty : MACBOOK AIR MD232TU/A
08-15 20:21:41.412: D/SAGO(2817): Darty : MACBOOK PRO RETINA MD212TU/A
08-15 20:21:41.412: D/SAGO(2817): Darty : MACBOOK PRO RETINA MD213TU/A
08-15 20:21:41.412: D/SAGO(2817): Darty : MACBOOK PRO MD102TU/A
08-15 20:21:41.412: D/SAGO(2817): Darty : MACBOOK PRO RETINA MC975TU/A
08-15 20:21:41.412: D/SAGO(2817): Darty : MACBOOK PRO MD104TU/A
08-15 20:21:41.412: D/SAGO(2817): Vatan : X5-20MD-1 KABLOLU NOTEBOOK MOUSE -MAVi

08-15 20:21:41.412: D/SAGO(2817): Vatan : X5-20MD-2 KABLOLU NOTEBOOK MOUSE - GRİ
08-15 20:21:41.412: D/SAGO(2817): Vatan : ADDISON LCD/LAPTOP EKRAN TEMİZLEME SETİ
300891
08-15 20:21:41.412: D/SAGO(2817): Vatan : AIRJAC MACBOOK LAPTOP DERİ KILIF- (KARIŞIK
RENKLİ)
08-15 20:21:41.412: D/SAGO(2817): Teknosa : SONY VPCSB2L1E/S.CEU NOTEBOOK, SONY
VGPKS4/B.AE NOTEBOOK ÇANTASI
08-15 20:21:41.412: D/SAGO(2817): Teknosa : SONY VPCEH1S8E/B.CEU NOTEBOOK, SONY
VGPEMBV01 NOTEBOOK ÇANTASI
08-15 20:21:41.412: D/SAGO(2817): Teknosa : SONY VAIO VPCEH2N1E/B.CEU NOTEBOOK, SONY
VGPEMBV01 NOTEBOOK ÇANTASI
08-15 20:21:41.412: D/SAGO(2817): Teknosa : TEBOOK 1.2503.2141 +1.2504.1754 SONY
VGPEMBV01 NOTEBOOK ÇANTASI
08-15 20:21:41.412: D/SAGO(2817): Teknosa : SONY VAIO VPCCA4S1E/P.CEU NOTEBOOK, SONY
VGPCPC1/P.AE NOTEBOOK ÇANTASI
08-15 20:21:41.412: D/SAGO(2817): Teknosa : SONY VAIO VPCCA4S1E/W.CEU NOTEBOOK, SONY
VGPCPC1/P.AE NOTEBOOK ÇANTASI
08-15 20:21:41.412: D/SAGO(2817): Teknosa : APPLE Z0J7Q NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : APPLE Z0J4Q NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : APPLE Z0JQQ NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : ACER AS5742Z P622G25MNKK NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : ACER AS5745G-383G32MNKK/MNKS NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : ACER AS5745G-7744G50MNKS NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : ACER AS5745G-484G32MNKS NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : CASPER CN.TKI-2430A NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : SONY VAIO VPCEL2S1E/W.CEU NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : SONY VAIO VPCYB3V1E/G.CEU YEŞİL NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : SONY VAIO VPCYB3V1E/S.CEU GÜMÜŞ
NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : PACKARD BELL TS44HR-503TK NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : PACKARD BELL TS44HR-605TK NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : PACKARD BELL TSX66HR-704TK NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : ASUS X54H-SX113R NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : PACKARD BELL NS45HR-400TK NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : TOSHIBA SATELLITE L750-1MM KRM NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : CASPER CN.TKI-2450B NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : SONY VAIO VPCEH3C0E/W.CEU NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : ACER AS5560G-6204G32MNKK NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : SAMSUNG ATIV BOOK 3 NP300E5A-SOLTR
NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : CASPER CN.TKI-2450C NOTEBOOK
08-15 20:21:41.412: D/SAGO(2817): Teknosa : TUCANO BZCK-GT ZETA BEJ SIRT LAPTOP ÇANTASI
08-15 20:21:41.412: D/SAGO(2817): Teknosa : GOLLA G298 SYNFONY-13 LAPTOPSI AÇIK PEMBE
NOTEBOOK ÇANTASI

08-15 20:21:41.412: D/SAGO(2817): Teknosa : GOLLA G353 BLOCK-15,4 LAPTOPSI KAHVERENGİ
NOTEBOOK ÇANTASI
08-15 20:21:41.412: D/SAGO(2817): *****Start
Clustering...*****
08-15 20:21:41.412: D/SAGO(2817): BEFORE CLUSTERING, RESULT SIZE=47
08-15 20:21:41.412: D/SAGO(2817): BEFORE CLUSTERING, NORM LIST SIZE=47
08-15 20:21:41.412: D/SAGO(2817): Cluster is cleaning...
08-15 20:21:41.412: D/SAGO(2817): Cluster was cleaned
08-15 20:22:37.572: D/SAGO(2817): AİRJAC MACBOOK LAPTOP DERİ KILIF- (KARIŞIK RENKLİ)
08-15 20:22:37.572: D/SAGO(2817): SONY VAIO VPCEH3C0E/W.CEU NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): PACKARD BELL NS45HR-400TK NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): SONY VAIO VPCEL2S1E/W.CEU NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): PACKARD BELL TS44HR-503TK NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): PACKARD BELL TS44HR-605TK NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): PACKARD BELL TSX66HR-704TK NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): ACER AS5745G-484G32MNKS NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): ACER AS5745G-7744G50MNKS NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): ACER AS5742Z P622G25MNKK NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): ACER AS5560G-6204G32MNKK NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): ACER AS5745G-383G32MNKK/MNKS NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): X5-20MD-1 KABLOLU NOTEBOOK MOUSE -MAVİ
08-15 20:22:37.572: D/SAGO(2817): X5-20MD-2 KABLOLU NOTEBOOK MOUSE - GRİ
08-15 20:22:37.572: D/SAGO(2817): TOSHIBA SATELLITE L750-1MM KRM NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): SONY VAIO VPCYB3V1E/G.CEU YEŞİL NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): SONY VAIO VPCYB3V1E/S.CEU GÜMÜŞ NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): ADDISON LCD/LAPTOP EKRAN TEMİZLEME SETİ 300891
08-15 20:22:37.572: D/SAGO(2817): SAMSUNG ATIV BOOK 3 NP300E5A-SOLTR NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): TUCANO BZCK-GT ZETA BEJ SIRT LAPTOP ÇANTASI
08-15 20:22:37.572: D/SAGO(2817): APPLE Z0J4Q NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): APPLE Z0J7Q NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): APPLE Z0JQQ NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): MACBOOK PRO MD103TU/A
08-15 20:22:37.572: D/SAGO(2817): MACBOOK PRO MD102TU/A
08-15 20:22:37.572: D/SAGO(2817): MACBOOK PRO MD104TU/A
08-15 20:22:37.572: D/SAGO(2817): MACBOOK AIR MD223TU/A
08-15 20:22:37.572: D/SAGO(2817): MACBOOK PRO MD101TU/A
08-15 20:22:37.572: D/SAGO(2817): MACBOOK AIR MD224TU/A
08-15 20:22:37.572: D/SAGO(2817): MACBOOK AIR MD231TU/A
08-15 20:22:37.572: D/SAGO(2817): MACBOOK AIR MD232TU/A
08-15 20:22:37.572: D/SAGO(2817): CASPER CN.TKI-2430A NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): CASPER CN.TKI-2450B NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): CASPER CN.TKI-2450C NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): MACBOOK PRO RETINA MD212TU/A
08-15 20:22:37.572: D/SAGO(2817): MACBOOK PRO RETINA MD213TU/A

08-15 20:22:37.572: D/SAGO(2817): MACBOOK PRO RETINA MC975TU/A
08-15 20:22:37.572: D/SAGO(2817): SVE1113M1EP Pembe Notebook
08-15 20:22:37.572: D/SAGO(2817): ASUS X54H-SX113R NOTEBOOK
08-15 20:22:37.572: D/SAGO(2817): GOLLA G298 SYNFFONY-13 LAPTOPSI AÇIK PEMBE
NOTEBOOK ÇANTASI
08-15 20:22:37.572: D/SAGO(2817): GOLLA G353 BLOCK-15,4 LAPTOPSI KAHVERENGİ
NOTEBOOK ÇANTASI
08-15 20:22:37.572: D/SAGO(2817): SONY VAIO VPCCA4S1E/P.CEU NOTEBOOK, SONY
VGPCPC1/P.AE NOTEBOOK ÇANTASI
08-15 20:22:37.572: D/SAGO(2817): SONY VAIO VPCCA4S1E/W.CEU NOTEBOOK, SONY
VGPCPC1/P.AE NOTEBOOK ÇANTASI
08-15 20:22:37.572: D/SAGO(2817): SONY VPCEH1S8E/B.CEU NOTEBOOK, SONY VGPEMBV01
NOTEBOOK ÇANTASI
08-15 20:22:37.572: D/SAGO(2817): SONY VAIO VPCEH2N1E/B.CEU NOTEBOOK, SONY
VGPEMBV01 NOTEBOOK ÇANTASI
08-15 20:22:37.572: D/SAGO(2817): SONY VPCSB2L1E/S.CEU NOTEBOOK, SONY VGPKCS4/B.AE
NOTEBOOK ÇANTASI
08-15 20:22:37.572: D/SAGO(2817):, TEBOOK 1.2503.2141 +1.2504.1754 SONY VGPEMBV01
NOTEBOOK ÇANTASI
08-15 20:22:37.572: D/SAGO(2817): AFTER CLUSTERING, NORM LIST SIZE=47
08-15 20:22:37.572: D/SAGO(2817): *****Start
Scoring...*****
08-15 20:22:37.572: D/SAGO(2817): ProductName+Score+Distance+xPrice+yTitle+ProductPrice
08-15 20:22:37.572: D/SAGO(2817): AIRJAC MACBOOK LAPTOP DERİ KILIF- (KARIŞIK
RENKLİ)+2+0.0+0.01667+50+148.0
08-15 20:22:37.572: D/SAGO(2817): SONY VAIO VPCEH3C0E/W.CEU
NOTEBOOK+0+0.0+0.15+34+899.0
08-15 20:22:37.572: D/SAGO(2817): PACKARD BELL NS45HR-400TK
NOTEBOOK+0+0.0+0.16667+34+1019.0
08-15 20:22:37.572: D/SAGO(2817): SONY VAIO VPCEL2S1E/W.CEU
NOTEBOOK+0+0.0+0.16667+34+999.0
08-15 20:22:37.572: D/SAGO(2817): PACKARD BELL TS44HR-503TK
NOTEBOOK+0+0.0+0.16667+34+1049.0
08-15 20:22:37.572: D/SAGO(2817): PACKARD BELL TS44HR-605TK
NOTEBOOK+0+0.0+0.16667+35+1299.0
08-15 20:22:37.572: D/SAGO(2817): PACKARD BELL TSX66HR-704TK
NOTEBOOK+1+0.0+0.33333+35+1639.0
08-15 20:22:37.572: D/SAGO(2817): ACER AS5745G-484G32MNKS
NOTEBOOK+3+0.0+0.16667+32+1439.0
08-15 20:22:37.572: D/SAGO(2817): ACER AS5745G-7744G50MNKS
NOTEBOOK+3+0.0+0.33333+33+1569.0
08-15 20:22:37.572: D/SAGO(2817): ACER AS5742Z P622G25MNKK
NOTEBOOK+1+0.0+0.11667+33+669.0

08-15 20:22:37.572: D/SAGO(2817): ACER AS5560G-6204G32MNKK
NOTEBOOK+1+0.0+0.16667+33+1269.0
08-15 20:22:37.572: D/SAGO(2817): ACER AS5745G-383G32MNKK/MNKS
NOTEBOOK+3+0.0+0.16667+37+1199.0
08-15 20:22:37.572: D/SAGO(2817): X5-20MD-1 KABLOLU NOTEBOOK MOUSE -
MAVİ+1+0.0+0.00333+38+17.0
08-15 20:22:37.582: D/SAGO(2817): X5-20MD-2 KABLOLU NOTEBOOK MOUSE -
GRİ+1+0.0+0.00333+38+17.0
08-15 20:22:37.582: D/SAGO(2817): TOSHIBA SATELLITE L750-1MM KRM
NOTEBOOK+3+0.0+0.33333+39+1559.0
08-15 20:22:37.582: D/SAGO(2817): SONY VAIO VPCYB3V1E/G.CEU YEŞİL
NOTEBOOK+0+0.0+0.15+40+899.0
08-15 20:22:37.582: D/SAGO(2817): SONY VAIO VPCYB3V1E/S.CEU GÜMÜŞ
NOTEBOOK+0+0.0+0.15+40+899.0
08-15 20:22:37.582: D/SAGO(2817): ADDISON LCD/LAPTOP EKRAN TEMİZLEME SETİ
300891+0+0.0+0.00333+46+21.0
08-15 20:22:37.582: D/SAGO(2817): SAMSUNG ATIV BOOK 3 NP300E5A-SOLTR
NOTEBOOK+2+0.0+0.16667+43+1319.0
08-15 20:22:37.582: D/SAGO(2817): TUCANO BZCK-GT ZETA BEJ SIRT LAPTOP
ÇANTASI+1+0.0+0.005+43+29.9
08-15 20:22:37.582: D/SAGO(2817): APPLE Z0J4Q NOTEBOOK+4+0.0+0.33333+20+2109.0
08-15 20:22:37.582: D/SAGO(2817): APPLE Z0J7Q NOTEBOOK+2+0.0+0.16667+20+1439.0
08-15 20:22:37.582: D/SAGO(2817): APPLE Z0JQQ NOTEBOOK+2+0.0+0.16667+20+1219.0
08-15 20:22:37.582: D/SAGO(2817): MACBOOK PRO MD103TU/A+8+0.0+1.0+21+5570.0
08-15 20:22:37.582: D/SAGO(2817): MACBOOK PRO MD102TU/A+5+0.0+0.66667+21+3699.0
08-15 20:22:37.582: D/SAGO(2817): MACBOOK PRO MD104TU/A+5+0.0+0.66667+21+4499.0
08-15 20:22:37.582: D/SAGO(2817): MACBOOK AIR MD223TU/A+2+0.0+0.33333+21+2099.0
08-15 20:22:37.582: D/SAGO(2817): MACBOOK PRO MD101TU/A+3+0.0+0.5+21+3399.0
08-15 20:22:37.582: D/SAGO(2817): MACBOOK AIR MD224TU/A+3+0.0+0.5+21+2599.0
08-15 20:22:37.592: D/SAGO(2817): MACBOOK AIR MD231TU/A+3+0.0+0.5+21+2689.0
08-15 20:22:37.592: D/SAGO(2817): MACBOOK AIR MD232TU/A+3+0.0+0.5+21+3099.0
08-15 20:22:37.592: D/SAGO(2817): CASPER CN.TKI-2430A
NOTEBOOK+1+0.0+0.33333+28+1759.0
08-15 20:22:37.592: D/SAGO(2817): CASPER CN.TKI-2450B
NOTEBOOK+0+0.0+0.16667+28+1449.0
08-15 20:22:37.592: D/SAGO(2817): CASPER CN.TKI-2450C
NOTEBOOK+0+0.0+0.16667+28+1359.0
08-15 20:22:37.592: D/SAGO(2817): MACBOOK PRO RETINA MD212TU/A+3+0.0+0.5+28+3439.0
08-15 20:22:37.592: D/SAGO(2817): MACBOOK PRO RETINA
MD213TU/A+4+0.0+0.66667+28+3689.0
08-15 20:22:37.592: D/SAGO(2817): MACBOOK PRO RETINA
MC975TU/A+4+0.0+0.66667+28+4399.0
08-15 20:22:37.592: D/SAGO(2817): SVE1113M1EP Pembe Notebook+2+0.0+0.16667+24+1289.0
08-15 20:22:37.592: D/SAGO(2817): ASUS X54H-SX113R NOTEBOOK+3+0.0+0.16667+25+1138.7

08-15 20:22:37.592: D/SAGO(2817): GOLLA G298 SYNFONY-13 LAPTOPSI AÇIK PEMBE
NOTEBOOK ÇANTASI+0+0.0+0.00167+58+9.9

08-15 20:22:37.592: D/SAGO(2817): GOLLA G353 BLOCK-15,4 LAPTOPSI KAHVERENGİ
NOTEBOOK ÇANTASI+0+0.0+0.00333+58+19.9

08-15 20:22:37.592: D/SAGO(2817): SONY VAIO VPCCA4S1E/P.CEU NOTEBOOK, SONY
VGPCPC1/P.AE NOTEBOOK ÇANTASI+2+0.0+0.16667+70+1399.0

08-15 20:22:37.592: D/SAGO(2817): SONY VAIO VPCCA4S1E/W.CEU NOTEBOOK, SONY
VGPCPC1/P.AE NOTEBOOK ÇANTASI+2+0.0+0.16667+70+1399.0

08-15 20:22:37.592: D/SAGO(2817): SONY VPCEH1S8E/B.CEU NOTEBOOK, SONY VGPEMBV01
NOTEBOOK ÇANTASI+3+0.0+0.16667+62+1349.0

08-15 20:22:37.592: D/SAGO(2817): SONY VAIO VPCEH2N1E/B.CEU NOTEBOOK, SONY
VGPEMBV01 NOTEBOOK ÇANTASI+0+0.0+0.16667+67+1429.0

08-15 20:22:37.592: D/SAGO(2817): SONY VPCSB2L1E/S.CEU NOTEBOOK, SONY VGPCS4/B.AE
NOTEBOOK ÇANTASI+0+0.0+0.16667+65+1299.0

08-15 20:22:37.592: D/SAGO(2817):, TEBOOK 1.2503.2141 +1.2504.1754 SONY VGPEMBV01
NOTEBOOK ÇANTASI+0+0.0+0.16667+65+1289.0

08-15 20:22:37.592: D/SAGO(2817): *****Start
Ordering...*****

08-15 20:22:37.592: D/SAGO(2817): Getting Result - post execute async

08-15 20:22:37.592: D/SAGO(2817): Result size After Smart Algorithm was rendered : 47

08-15 20:26:26.942: D/SAGO(2817): Getting Result - pre execute async task

08-15 20:26:26.942: I/SAGO(2817): 1. Thread was created for Darty

08-15 20:26:26.952: I/SAGO(2817): 2. Thread was created for Vatan

08-15 20:26:26.952: I/SAGO(2817): Brand is Darty

08-15 20:26:26.952: I/SAGO(2817): Start MyWebCrawler

08-15 20:26:26.952: D/SAGO(2817): PropertiesUtil is used.The string is Darty

08-15 20:26:26.952: D/SAGO(2817): Return String Darty

08-15 20:26:26.952: D/SAGO(2817): PropertiesUtil is used.The string is Darty

08-15 20:26:26.952: D/SAGO(2817): Return String Darty

08-15 20:26:26.952: D/SAGO(2817): Request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=camera

08-15 20:26:26.962: I/SAGO(2817): 3. Thread was created for Teknosa

08-15 20:26:26.962: I/SAGO(2817): Brand is Vatan

08-15 20:26:26.962: I/SAGO(2817): Start MyWebCrawler

08-15 20:26:26.962: D/SAGO(2817): PropertiesUtil is used.The string is Vatan

08-15 20:26:26.962: D/SAGO(2817): Return String Vatan

08-15 20:26:26.962: D/SAGO(2817): PropertiesUtil is used.The string is Vatan

08-15 20:26:26.962: D/SAGO(2817): Return String Vatan

08-15 20:26:26.962: D/SAGO(2817): Request URL:
<http://www.vatanbilgisayar.com/search.aspx?text=camera>

08-15 20:26:26.972: I/SAGO(2817): Brand is Teknosa

08-15 20:26:26.972: I/SAGO(2817): Start MyWebCrawler

08-15 20:26:26.972: D/SAGO(2817): PropertiesUtil is used.The string is Teknosa

08-15 20:26:26.972: D/SAGO(2817): Return String Teknosa

08-15 20:26:26.972: D/SAGO(2817): PropertiesUtil is used.The string is Teknosa

08-15 20:26:26.972: D/SAGO(2817): Return String Teknosa

08-15 20:26:26.972: D/SAGO(2817): Request URL: <http://www.teknosa.com/arama/?s=camera>

08-15 20:26:27.752: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.

08-15 20:26:27.762: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.

08-15 20:26:28.022: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.

08-15 20:26:29.392: D/SAGO(2817): All Fields are collecting...

08-15 20:26:29.542: D/SAGO(2817): All Fields are collecting...

08-15 20:26:29.792: I/SAGO(2817): The Data was collected.

08-15 20:26:29.792: I/SAGO(2817): Stop MyWebCrawler

08-15 20:26:29.852: I/SAGO(2817): The Data was collected.

08-15 20:26:29.872: I/SAGO(2817): Stop MyWebCrawler

08-15 20:26:30.202: D/SAGO(2817): All Fields are collecting...

08-15 20:26:31.012: D/SAGO(2817): 2. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=camera&page=2

08-15 20:26:31.872: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.

08-15 20:26:33.592: D/SAGO(2817): 3. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=camera&page=3

08-15 20:26:34.612: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.

08-15 20:26:36.242: I/SAGO(2817): The Data was collected.

08-15 20:26:36.242: I/SAGO(2817): Stop MyWebCrawler

08-15 20:26:36.242: D/SAGO(2817): *****Start Greedy...*****

08-15 20:26:36.242: D/SAGO(2817): BEFORE GREEDY, SIZE=33

08-15 20:26:36.252: D/SAGO(2817): *****Start Normalization...*****

08-15 20:26:36.252: D/SAGO(2817): *****Start Similarity Function...*****

08-15 20:26:36.262: D/SAGO(2817): Products and size is 23

08-15 20:26:36.262: D/SAGO(2817): Brand Name: Product Title

08-15 20:26:36.262: D/SAGO(2817): Darty : COOLPIX L26 (SILVER) DIGITAL CAMERA

08-15 20:26:36.262: D/SAGO(2817): Darty : COOLPIX L26 (BLACK) DIGITAL CAMERA

08-15 20:26:36.262: D/SAGO(2817): Darty : COOLPIX L26 (RED) DIGITAL CAMERA

08-15 20:26:36.262: D/SAGO(2817): Darty : COOLPIX S3200 (SILVER) DIGITAL CAMERA

08-15 20:26:36.262: D/SAGO(2817): Darty : COOLPIX S4300 (BLACK) DIGITAL CAMERA

08-15 20:26:36.262: D/SAGO(2817): Darty : COOLPIX S4300 (WHITE) DIGITAL CAMERA

08-15 20:26:36.262: D/SAGO(2817): Darty : COOLPIX S4200 (SILVER) DIGITAL CAMERA

08-15 20:26:36.262: D/SAGO(2817): Darty : COOLPIX S4200 (RED) DIGITAL CAMERA

08-15 20:26:36.262: D/SAGO(2817): Darty : NIKON DIGITAL CAMERA S01 (WHITE) - YENİ

08-15 20:26:36.262: D/SAGO(2817): Darty : NIKON DIGITAL CAMERA S01 (SILVER)- YENİ
 08-15 20:26:36.262: D/SAGO(2817): Darty : NIKON DIGITAL CAMERA S01 (BLACK) - YENİ
 08-15 20:26:36.262: D/SAGO(2817): Darty : NIKON DIGITAL CAMERA S01 (RED) - YENİ
 08-15 20:26:36.262: D/SAGO(2817): Darty : NIKON DIGITAL CAMERA L610(BLACK)- YENİ
 08-15 20:26:36.262: D/SAGO(2817): Darty : NIKON DIGITAL CAMERA L610 (SILVER)- YENİ
 08-15 20:26:36.262: D/SAGO(2817): Darty : COOLPIX P510 (SILVER) DIGITAL CAMERA
 08-15 20:26:36.262: D/SAGO(2817): Darty : DIGITAL CAMERA S800C (WHITE)
 08-15 20:26:36.262: D/SAGO(2817): Darty : DIGITAL CAMERA P7700 (BLACK)
 08-15 20:26:36.262: D/SAGO(2817): Darty : DIGITAL CAMERA D3100 (w/18-55mm) KIT
 08-15 20:26:36.262: D/SAGO(2817): Darty : DIGITAL CAMERA D5200 (w/18-55mm) KIT - YENİ
 08-15 20:26:36.262: D/SAGO(2817): Vatan : PC SPONGEBOB LIGHTS CAMERA PANTS
 08-15 20:26:36.262: D/SAGO(2817): Vatan : Skype Camera
 08-15 20:26:36.262: D/SAGO(2817): Vatan : PS3 500GB + SPORTS CHAMP.2 + PS EYE CAMERA +
 PS MOTİON CONTROLLER
 08-15 20:26:36.262: D/SAGO(2817): Teknosa : ARAL SPONGEBOB LIGHTS CAMERA PANTS PC
 OYUN
 08-15 20:26:36.262: D/SAGO(2817): *****Start
 Clustering... *****
 08-15 20:26:36.262: D/SAGO(2817): BEFORE CLUSTERING, RESULT SIZE=23
 08-15 20:26:36.262: D/SAGO(2817): BEFORE CLUSTERING, NORM LIST SIZE=23
 08-15 20:26:36.262: D/SAGO(2817): Cluster is cleaning...
 08-15 20:26:36.262: D/SAGO(2817): Cluster was cleaned
 08-15 20:26:38.432: D/SAGO(2817): PS3 500GB + SPORTS CHAMP.2 + PS EYE CAMERA + PS
 MOTİON CONTROLLER
 08-15 20:26:38.432: D/SAGO(2817): Skype Camera
 08-15 20:26:38.432: D/SAGO(2817): DIGITAL CAMERA S800C (WHITE)
 08-15 20:26:38.432: D/SAGO(2817): DIGITAL CAMERA P7700 (BLACK)
 08-15 20:26:38.432: D/SAGO(2817): PC SPONGEBOB LIGHTS CAMERA PANTS
 08-15 20:26:38.432: D/SAGO(2817): DIGITAL CAMERA D5200 (w/18-55mm) KIT - YENİ
 08-15 20:26:38.432: D/SAGO(2817): ARAL SPONGEBOB LIGHTS CAMERA PANTS PC OYUN
 08-15 20:26:38.442: D/SAGO(2817): COOLPIX L26 (RED) DIGITAL CAMERA
 08-15 20:26:38.442: D/SAGO(2817): DIGITAL CAMERA D3100 (w/18-55mm) KIT
 08-15 20:26:38.442: D/SAGO(2817): COOLPIX P510 (SILVER) DIGITAL CAMERA
 08-15 20:26:38.442: D/SAGO(2817): COOLPIX S4300 (BLACK) DIGITAL CAMERA
 08-15 20:26:38.442: D/SAGO(2817): COOLPIX S4300 (WHITE) DIGITAL CAMERA
 08-15 20:26:38.442: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (BLACK) - YENİ
 08-15 20:26:38.442: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (WHITE) - YENİ
 08-15 20:26:38.442: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (SILVER)- YENİ
 08-15 20:26:38.442: D/SAGO(2817): NIKON DIGITAL CAMERA L610 (SILVER)- YENİ
 08-15 20:26:38.442: D/SAGO(2817): COOLPIX S3200 (SILVER) DIGITAL CAMERA
 08-15 20:26:38.442: D/SAGO(2817): COOLPIX S4200 (SILVER) DIGITAL CAMERA
 08-15 20:26:38.442: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (RED) - YENİ
 08-15 20:26:38.442: D/SAGO(2817): COOLPIX L26 (BLACK) DIGITAL CAMERA
 08-15 20:26:38.442: D/SAGO(2817): COOLPIX S4200 (RED) DIGITAL CAMERA

08-15 20:26:38.442: D/SAGO(2817): COOLPIX L26 (SILVER) DIGITAL CAMERA
08-15 20:26:38.442: D/SAGO(2817): NIKON DIGITAL CAMERA L610(BLACK)- YENİ
08-15 20:26:38.442: D/SAGO(2817): AFTER CLUSTERING, NORM LIST SIZE=23
08-15 20:26:38.442: D/SAGO(2817): *****Start
Scoring... *****
08-15 20:26:38.442: D/SAGO(2817): ProductName+Score+Distance+Price+Title+ProductPrice
08-15 20:26:38.442: D/SAGO(2817): PS3 500GB + SPORTS CHAMP.2 + PS EYE CAMERA + PS
MOTION CONTROLLER+1+0.0+0.3+65+949.0
08-15 20:26:38.442: D/SAGO(2817): Skype Camera+1+0.0+0.03333+7+137.0
08-15 20:26:38.442: D/SAGO(2817): DIGITAL CAMERA S800C
(WHITE)+1+0.0+0.33333+28+1399.0
08-15 20:26:38.442: D/SAGO(2817): DIGITAL CAMERA P7700 (BLACK)+4+0.0+0.66667+28+1799.0
08-15 20:26:38.442: D/SAGO(2817): PC SPONGEBOB LIGHTS CAMERA
PANTS+1+0.0+0.00333+32+14.0
08-15 20:26:38.442: D/SAGO(2817): DIGITAL CAMERA D5200 (w/18-55mm) KIT -
YENİ+9+0.0+1.0+42+2999.0
08-15 20:26:38.442: D/SAGO(2817): ARAL SPONGEBOB LIGHTS CAMERA PANTS PC
OYUN+0+0.0+0.00333+42+14.99
08-15 20:26:38.442: D/SAGO(2817): COOLPIX L26 (RED) DIGITAL CAMERA+-
1+0.0+0.06667+35+219.0
08-15 20:26:38.442: D/SAGO(2817): DIGITAL CAMERA D3100 (w/18-55mm)
KIT+1+0.0+0.33333+35+1299.0
08-15 20:26:38.442: D/SAGO(2817): COOLPIX P510 (SILVER) DIGITAL
CAMERA+3+0.0+0.33333+39+1399.0
08-15 20:26:38.442: D/SAGO(2817): COOLPIX S4300 (BLACK) DIGITAL
CAMERA+1+0.0+0.13333+39+399.0
08-15 20:26:38.442: D/SAGO(2817): COOLPIX S4300 (WHITE) DIGITAL
CAMERA+1+0.0+0.13333+39+399.0
08-15 20:26:38.442: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (BLACK) -
YENİ+2+0.0+0.2+39+599.0
08-15 20:26:38.442: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (WHITE) -
YENİ+2+0.0+0.2+39+599.0
08-15 20:26:38.442: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (SILVER)-
YENİ+2+0.0+0.2+39+599.0
08-15 20:26:38.442: D/SAGO(2817): NIKON DIGITAL CAMERA L610 (SILVER)-
YENİ+1+0.0+0.3+40+869.0
08-15 20:26:38.442: D/SAGO(2817): COOLPIX S3200 (SILVER) DIGITAL
CAMERA+0+0.0+0.06667+40+249.0
08-15 20:26:38.452: D/SAGO(2817): COOLPIX S4200 (SILVER) DIGITAL
CAMERA+0+0.0+0.13333+40+399.0
08-15 20:26:38.452: D/SAGO(2817): NIKON DIGITAL CAMERA S01 (RED) -
YENİ+3+0.0+0.2+37+599.0
08-15 20:26:38.452: D/SAGO(2817): COOLPIX L26 (BLACK) DIGITAL
CAMERA+2+0.0+0.06667+37+219.0

08-15 20:26:38.452: D/SAGO(2817): COOLPIX S4200 (RED) DIGITAL CAMERA+2+0.0+0.13333+37+399.0

08-15 20:26:38.452: D/SAGO(2817): COOLPIX L26 (SILVER) DIGITAL CAMERA+2+0.0+0.06667+38+219.0

08-15 20:26:38.452: D/SAGO(2817): NIKON DIGITAL CAMERA L610(BLACK)-YENİ+4+0.0+0.3+38+869.0

08-15 20:26:38.452: D/SAGO(2817): *****Start Ordering...*****

08-15 20:26:38.452: D/SAGO(2817): Getting Result - post execute async

08-15 20:26:38.452: D/SAGO(2817): Result size After Smart Algorithm was rendered : 23

08-15 20:27:17.912: D/SAGO(2817): Getting Result - pre execute async task

08-15 20:27:17.912: I/SAGO(2817): 1. Thread was created for Darty

08-15 20:27:17.922: I/SAGO(2817): 2. Thread was created for Vatan

08-15 20:27:17.922: I/SAGO(2817): Brand is Darty

08-15 20:27:17.922: I/SAGO(2817): Start MyWebCrawler

08-15 20:27:17.922: D/SAGO(2817): PropertiesUtil is used.The string is Darty

08-15 20:27:17.922: D/SAGO(2817): Return String Darty

08-15 20:27:17.922: D/SAGO(2817): PropertiesUtil is used.The string is Darty

08-15 20:27:17.922: D/SAGO(2817): Return String Darty

08-15 20:27:17.922: D/SAGO(2817): Request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone

08-15 20:27:17.932: I/SAGO(2817): 3. Thread was created for Teknosa

08-15 20:27:17.932: I/SAGO(2817): Brand is Vatan

08-15 20:27:17.932: I/SAGO(2817): Start MyWebCrawler

08-15 20:27:17.932: D/SAGO(2817): PropertiesUtil is used.The string is Vatan

08-15 20:27:17.932: D/SAGO(2817): Return String Vatan

08-15 20:27:17.932: D/SAGO(2817): PropertiesUtil is used.The string is Vatan

08-15 20:27:17.932: D/SAGO(2817): Return String Vatan

08-15 20:27:17.932: D/SAGO(2817): Request URL:
<http://www.vatanbilgisayar.com/search.aspx?text=iphone>

08-15 20:27:17.932: I/SAGO(2817): Brand is Teknosa

08-15 20:27:17.932: I/SAGO(2817): Start MyWebCrawler

08-15 20:27:17.932: D/SAGO(2817): PropertiesUtil is used.The string is Teknosa

08-15 20:27:17.932: D/SAGO(2817): Return String Teknosa

08-15 20:27:17.932: D/SAGO(2817): PropertiesUtil is used.The string is Teknosa

08-15 20:27:17.932: D/SAGO(2817): Return String Teknosa

08-15 20:27:17.932: D/SAGO(2817): Request URL: <http://www.teknosa.com/arama/?s=iphone>

08-15 20:27:19.712: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.

08-15 20:27:19.872: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.

08-15 20:27:20.842: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.

08-15 20:27:22.222: D/SAGO(2817): All Fields are collecting...

08-15 20:27:22.602: D/SAGO(2817): All Fields are collecting...

08-15 20:27:23.982: D/SAGO(2817): All Fields are collecting...

08-15 20:27:25.102: D/SAGO(2817): 2. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=2

08-15 20:27:25.932: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:27:28.292: D/SAGO(2817): 2. page request URL:
<http://www.teknosa.com/arama/?s=iphone&page=2>

08-15 20:27:29.862: D/SAGO(2817): 3. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=3

08-15 20:27:30.262: D/SAGO(2817): 3. page request URL:
<http://www.vatanbilgisayar.com/search.aspx?text=iphone&rcd=25>

08-15 20:27:30.742: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:27:30.742: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:27:31.012: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:27:37.512: D/SAGO(2817): 4. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=4

08-15 20:27:38.532: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:27:41.092: D/SAGO(2817): 3. page request URL:
<http://www.teknosa.com/arama/?s=iphone&page=3>

08-15 20:27:42.642: D/SAGO(2817): 5. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=5

08-15 20:27:42.882: D/SAGO(2817): 4. page request URL:
<http://www.vatanbilgisayar.com/search.aspx?text=iphone&rcd=50>

08-15 20:27:43.482: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:27:43.492: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:27:44.262: E/SAGO(2817): Connection problem or couldnt get data. Error is :
java.net.SocketTimeoutException

08-15 20:27:44.262: D/SAGO(2817): 4. page request URL:
<http://www.teknosa.com/arama/?s=iphone&page=4>

08-15 20:27:47.592: E/SAGO(2817): Connection problem or couldnt get data. Error is :
java.net.SocketTimeoutException

08-15 20:27:47.592: D/SAGO(2817): 5. page request URL:
<http://www.teknosa.com/arama/?s=iphone&page=5>

08-15 20:27:47.982: D/SAGO(2817): 6. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=6

08-15 20:27:48.792: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:27:50.612: E/SAGO(2817): Connection problem or couldnt get data. Error is :
java.net.SocketTimeoutException
08-15 20:27:50.612: D/SAGO(2817): 6. page request URL:
<http://www.teknosa.com/arama/?s=iphone&page=6>
08-15 20:27:51.572: D/SAGO(2817): 5. page request URL:
<http://www.vatanbilgisayar.com/search.aspx?text=iphone&rkd=75>
08-15 20:27:51.782: D/SAGO(2817): 7. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=7
08-15 20:27:52.042: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:27:52.542: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:27:53.292: I/SAGO(2817): The Data was collected.
08-15 20:27:53.302: I/SAGO(2817): Stop MyWebCrawler
08-15 20:27:53.632: E/SAGO(2817): Connection problem or couldnt get data. Error is :
java.net.SocketTimeoutException
08-15 20:27:53.632: D/SAGO(2817): 7. page request URL:
<http://www.teknosa.com/arama/?s=iphone&page=7>
08-15 20:27:54.582: D/SAGO(2817): 8. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=8
08-15 20:27:55.532: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:27:56.642: E/SAGO(2817): Connection problem or couldnt get data. Error is :
java.net.SocketTimeoutException
08-15 20:27:56.642: D/SAGO(2817): 8. page request URL:
<http://www.teknosa.com/arama/?s=iphone&page=8>
08-15 20:27:57.482: D/SAGO(2817): 9. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=9
08-15 20:27:58.522: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:27:59.672: E/SAGO(2817): Connection problem or couldnt get data. Error is :
java.net.SocketTimeoutException
08-15 20:27:59.672: D/SAGO(2817): 9. page request URL:
<http://www.teknosa.com/arama/?s=iphone&page=9>
08-15 20:28:00.432: D/SAGO(2817): 10. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=10
08-15 20:28:01.252: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.
08-15 20:28:02.712: E/SAGO(2817): Connection problem or couldnt get data. Error is :
java.net.SocketTimeoutException
08-15 20:28:02.712: D/SAGO(2817): 10. page request URL:
<http://www.teknosa.com/arama/?s=iphone&page=10>
08-15 20:28:03.152: D/SAGO(2817): 11. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=11

08-15 20:28:04.092: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:28:05.742: E/SAGO(2817): Connection problem or couldnt get data. Error is :
java.net.SocketTimeoutException

08-15 20:28:05.742: D/SAGO(2817): 11. page request URL:
<http://www.teknosa.com/arama/?s=iphone&page=11>

08-15 20:28:05.942: D/SAGO(2817): 12. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=12

08-15 20:28:06.782: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:28:08.692: D/SAGO(2817): 13. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=13

08-15 20:28:08.762: E/SAGO(2817): Connection problem or couldnt get data. Error is :
java.net.SocketTimeoutException

08-15 20:28:08.762: D/SAGO(2817): 12. page request URL:
<http://www.teknosa.com/arama/?s=iphone&page=12>

08-15 20:28:09.582: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:28:11.532: D/SAGO(2817): 14. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=14

08-15 20:28:11.772: E/SAGO(2817): Connection problem or couldnt get data. Error is :
java.net.SocketTimeoutException

08-15 20:28:11.772: I/SAGO(2817): The Data was collected.

08-15 20:28:11.772: I/SAGO(2817): Stop MyWebCrawler

08-15 20:28:12.283: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:28:14.202: D/SAGO(2817): 15. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=15

08-15 20:28:15.122: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:28:16.952: D/SAGO(2817): 16. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=16

08-15 20:28:17.912: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:28:19.702: D/SAGO(2817): 17. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=17

08-15 20:28:20.492: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:28:22.352: D/SAGO(2817): 18. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=18

08-15 20:28:23.222: I/global(2817): Default buffer size used in BufferedInputStream constructor.
It would be better to be explicit if an 8k buffer is required.

08-15 20:28:25.192: D/SAGO(2817): 19. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=19

08-15 20:28:26.472: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.

08-15 20:28:28.372: D/SAGO(2817): 20. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=20

08-15 20:28:29.242: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.

08-15 20:28:31.092: D/SAGO(2817): 21. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=21

08-15 20:28:32.212: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.

08-15 20:28:34.072: D/SAGO(2817): 22. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=22

08-15 20:28:34.942: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.

08-15 20:28:36.842: D/SAGO(2817): 23. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=23

08-15 20:28:38.152: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.

08-15 20:28:40.052: D/SAGO(2817): 24. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=24

08-15 20:28:41.042: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.

08-15 20:28:42.882: D/SAGO(2817): 25. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=25

08-15 20:28:43.752: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.

08-15 20:28:45.642: D/SAGO(2817): 26. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=26

08-15 20:28:46.532: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.

08-15 20:28:48.452: D/SAGO(2817): 27. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=27

08-15 20:28:49.292: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.

08-15 20:28:51.162: D/SAGO(2817): 28. page request URL:
http://www.darty.com.tr/e_commerce/univers.cfm?search=iphone&page=28

08-15 20:28:51.942: I/global(2817): Default buffer size used in BufferedInputStream constructor. It would be better to be explicit if an 8k buffer is required.

08-15 20:28:53.782: I/SAGO(2817): The Data was collected.

08-15 20:28:53.782: I/SAGO(2817): Stop MyWebCrawler

08-15 20:28:53.782: D/SAGO(2817): *****Start Greedy...*****

08-15 20:28:53.782: D/SAGO(2817): BEFORE GREEDY, SIZE=417

08-15 20:28:53.792: D/SAGO(2817): *****Start
Normalization...*****

08-15 20:28:53.872: D/SAGO(2817): *****Start Similarity
Function...*****

08-15 20:28:53.902: D/SAGO(2817): Products and size is 363

08-15 20:28:53.902: D/SAGO(2817): Brand Name: Product Title

08-15 20:28:53.902: D/SAGO(2817): Darty : 13057 SE TRU SERT IPHONE 4/4S KILIFI MAVİ

08-15 20:28:53.902: D/SAGO(2817): Darty : FB YARIM ARKA KAPAK-IPHONE 5-FB SINCE 1907

08-15 20:28:53.902: D/SAGO(2817): Darty : FB YARIM ARKA KAPAK-IPHONE 4/4S-FB ELYAZISI

08-15 20:28:53.902: D/SAGO(2817): Darty : FB YARIM ARKA KAPAK-IPHONE 4/4S-LACİVERT
LOGO

08-15 20:28:53.902: D/SAGO(2817): Darty : FB YARIM ARKA KAPAK-IPHONE 4/4S-REPUBLIC OF
FB ELY

08-15 20:28:53.902: D/SAGO(2817): Darty : FB YARIM ARKA KAPAK-IPHONE 4/4S-NOSTALJI

08-15 20:28:53.902: D/SAGO(2817): Darty : FB YARIM ARKA KAPAK-IPHONE 5-NOSTALJI

08-15 20:28:53.902: D/SAGO(2817): Darty : 618 STYLUS IPAD&IPHONE&IPOD TOUCH 2Lİ KALEM
SETİ

08-15 20:28:53.902: D/SAGO(2817): Darty : IPHONE4 YARIM ARKA KAPAK K2 SİYAH

08-15 20:28:53.902: D/SAGO(2817): Darty : IPHONE4 YARIM ARKA KAPAK K2 PEMBE

08-15 20:28:53.902: D/SAGO(2817): Darty : IPHONE4 YARIM ARKA KAPAK K2 MAVİ

08-15 20:28:53.902: D/SAGO(2817): Darty : IPHONE4 YARIM ARKA KAPAK K2 KIRMIZI

08-15 20:28:53.902: D/SAGO(2817): Darty : IPHONE 4 SRC SLD

08-15 20:28:53.902: D/SAGO(2817): Darty : PARANTEZ KAPAK-IPHONE 4/4S- CROME SİYAH

08-15 20:28:53.902: D/SAGO(2817): Darty : IPHONE 4/4S FLIP KAPAK K2 SİYAH

08-15 20:28:53.902: D/SAGO(2817): Darty : IPHONE 4/4S FLIP KAPAK KIRMIZI&KAHVE

08-15 20:28:53.902: D/SAGO(2817): Darty : IPHONE 4/4S FLIP KAPAK DESENİ PEMBE

08-15 20:28:53.902: D/SAGO(2817): Darty : IPHONE 5 AIR JACKET KAPAK SİYAH

08-15 20:28:53.902: D/SAGO(2817): Darty : IPHONE 5 AIR JACKET KAPAK MAVİ

08-15 20:28:53.902: D/SAGO(2817): Darty : LFCS40W IPHONE 4G SILIKON KILIF - BEYAZ

08-15 20:28:53.902: D/SAGO(2817): Darty : FB YARIM ARKA KAPAK-IPHONE 5 SİYAH KARBON

08-15 20:28:53.912: D/SAGO(2817): Darty : FB YARIM ARKA KAPAK-IPHONE 4S GOLD KARBON

08-15 20:28:53.912: D/SAGO(2817): Darty : FB YARIM ARKA KAPAK-IPHONE 4S SİYAH KARBON

08-15 20:28:53.912: D/SAGO(2817): Darty : FB YARIM ARKA KAPAK-IPHONE 4S GRİ KARBON

08-15 20:28:53.912: D/SAGO(2817): Darty : FB FLIP KAPAK-IPHONE 4/4S-PU LEATHER LACİVERT

08-15 20:28:53.912: D/SAGO(2817): Darty : FB FLIP KAPAK-IPHONE 5-PU LEATHER LACİVERT

08-15 20:28:53.912: D/SAGO(2817): Darty : IPHONE 4S SYH -3C KAPAK

08-15 20:28:53.912: D/SAGO(2817): Darty : IPHONE 4S SYH -1C KAPAK PATTERN

08-15 20:28:53.912: D/SAGO(2817): Darty : IPHONE 4S BYZ -3C KAPAK

08-15 20:28:53.912: D/SAGO(2817): Darty : IPHONE 4S BYZ -1C KAPAK PATTERN

08-15 20:28:53.912: D/SAGO(2817): Darty : LFCB40K HARD CASE IPHONE KAPAK SİYAH

08-15 20:28:53.912: D/SAGO(2817): Darty : SBS TE0PTS50K ULTRATHIN CASE IPHONE 5 SİYAH

08-15 20:28:53.912: D/SAGO(2817): Darty : SBS TE0PTS50W ULTRATHIN CASE IPHONE 5 BEYAZ

08-15 20:28:53.912: D/SAGO(2817): Darty : SBS TE0PTS50P ULTRATHIN CASE IPHONE 5 PEMBE

08-15 20:28:53.912: D/SAGO(2817): Darty : 15091 iGUM SERT IPHONE 5 KILIFI SİYAH

08-15 20:28:53.912: D/SAGO(2817): Darty : 15093 iGUM SERT İPHONE 5 KILIFI PEMBE
08-15 20:28:53.912: D/SAGO(2817): Darty : 16664 iGUM SERT İPHONE 5 KILIFI MOR
08-15 20:28:53.912: D/SAGO(2817): Darty : 15092 iGUM SERT İPHONE 5 KILIFI BEYAZ
08-15 20:28:53.912: D/SAGO(2817): Darty : 15096 iGUM SERT İPHONE 5 KILIFI AÇIK MAVİ
08-15 20:28:53.912: D/SAGO(2817): Darty : 2KLYK66CARDCase PRO KORUMA KILIFI İPHONE
4SKETENE AÇIK KAHVE
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC CARDCase PRO KORUMA KILIFI İPHONE 4S-
KETENE SİYAH
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC CARDCase PRO KORUMA KILIFI İPHONE 4S-
SPORT GRİ
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC CARDCase PRO KORUMA KILIFI İPHONE 5-
KETENE BEYAZ
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC CARDCase PRO KORUMA KILIFI İPHONE 5-
KETENE SİYAH
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC CARDCase PRO KORUMA KILIFI İPHONE 5-
SPORT GRİ
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC DİK KAPAKLI KILIF İPHONE 4-SİYAH
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC DİK KAPAKLI KILIF İPHONE 5-SİYAH
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC KORUMA PANELİ İPHONE 5 0.35MM-FÜME
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC KORUMA PANELİ İPHONE 5 0.35MM-ŞEFFAF
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC ARTCase KORUMA PANELİ İPHONE 4/4S
İSTANBUL-İSTANBUL 02
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC ARTCase KORUMA PANELİ İPHONE 5
İSTANBUL-İSTANBUL 02
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC ARTCase KORUMA PANELİ İPHONE 4/4S
İSTANBUL-İSTANBUL-09
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC ARTCase KORUMA PANELİ İPHONE 5
İSTANBUL-İSTANBUL 09 (BE
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC ARTCase KORUMA PANELİ İPHONE 4/4S
İSTANBUL-İSTANBUL 10
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC ARTCase KORUMA PANELİ İPHONE 5
İSTANBUL-İSTANBUL 10 (Sİ
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC ARTCase İPHONE 5 SKULL-SKULL 01
08-15 20:28:53.912: D/SAGO(2817): Darty : 2PNA260 TTEC ARTCase İPHONE 4/4S SKULL-SKULL
01
08-15 20:28:53.912: D/SAGO(2817): Darty : CÜZDAN KILIF İPHONE 5 FER. KREDİ KARTLI SİYAH
08-15 20:28:53.912: D/SAGO(2817): Darty : CÜZDAN KILIF İPHONE 5 FER. KR. KARTLI BEYAZ
08-15 20:28:53.912: D/SAGO(2817): Darty : FB YARIM ARKA KAPAK-İPHONE 4/4S-SARI FLOTER
08-15 20:28:53.912: D/SAGO(2817): Darty : FB YARIM ARKA KAPAK-İPHONE 4/4S-LACİVERT
NUBUK
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC ARTCase KORUMA PANELİ İPHONE 5 LOVE-
LOVE 01
08-15 20:28:53.912: D/SAGO(2817): Darty : FB FLIP KAPAK-İPHONE 4/4S-FLOTER SARI
08-15 20:28:53.912: D/SAGO(2817): Darty : FB FLIP KAPAK-İPHONE 4/4S-FLOTER LACİVERT

08-15 20:28:53.912: D/SAGO(2817): Darty : FB FLIP KAPAK-IPHONE 4/4S-NUBUK SARI
08-15 20:28:53.912: D/SAGO(2817): Darty : FB FLIP KAPAK-IPHONE 4/4S-NUBUK LACİVERT
08-15 20:28:53.912: D/SAGO(2817): Darty : FB FLIP KAPAK-IPHONE 5-FLÖTER SARI
08-15 20:28:53.912: D/SAGO(2817): Darty : FB FLIP KAPAK-IPHONE 5-FİESTA LACİVERT
08-15 20:28:53.912: D/SAGO(2817): Darty : 14875 O!COAT 0.3 JELLY İPHONE 5 KILIFI SİYAH
08-15 20:28:53.912: D/SAGO(2817): Darty : 14876 O!COAT 0.3 JELLY İPHONE 5 KILIFI ŞEFFAF
08-15 20:28:53.912: D/SAGO(2817): Darty : 14872 O!COAT 0.3 JELLY İPHONE 5 KILIFI PEMBE
08-15 20:28:53.912: D/SAGO(2817): Darty : 14873 O!COAT 0.3 JELLY İPHONE 5 KILIFI MAVİ
08-15 20:28:53.912: D/SAGO(2817): Darty : 14871 O!COAT 0.3 JELLY İPHONE 5 KILIFI KIRMIZI
08-15 20:28:53.912: D/SAGO(2817): Darty : 14890 FRUIT SERT İPHONE 5 KILIFI+EKRAN KOR. FILM LACİVERT
08-15 20:28:53.912: D/SAGO(2817): Darty : 14891 FRUIT SERT İPHONE 5 KILIFI+EKRAN KOR. FILM ÇİLEK
08-15 20:28:53.912: D/SAGO(2817): Darty : FB CÜZDAN KILIF-IPHONE 5-NUBUK LACİVERT
08-15 20:28:53.912: D/SAGO(2817): Darty : FB CÜZDAN KILIF-IPHONE 5-FİESTA LACİVERT
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC CARDCASE FLEX KORUMA KILIFI İPHONE 5-BEYAZ
08-15 20:28:53.912: D/SAGO(2817): Darty : TTEC CARDCASE FLEX KORUMA KILIFI İPHONE 5-SİYAH
08-15 20:28:53.912: D/SAGO(2817): Darty : 2SK002 CAFFEINE İPHONE ŞARJ KILIFI 1400 SİYAH
08-15 20:28:53.912: D/SAGO(2817): Darty : ŞARJLI KAPAK İPHONE 4/4S RUBBER Q7-SİYAH
08-15 20:28:53.922: D/SAGO(2817): Darty : TECLEARIP5P CLEAR CASE İPHONE 5 PİNK
08-15 20:28:53.922: D/SAGO(2817): Darty : TEBUMPTrip5W BUMPER CASE TRANSPARENT İPHONE 5 WHITE
08-15 20:28:53.922: D/SAGO(2817): Darty : İPHONE 5 KILIF + EKRAN KORUYUCU STICKER SİYAH
08-15 20:28:53.922: D/SAGO(2817): Darty : İPHONE 5 KILIF + EKRAN KORUYUCU STICKER BEYAZ
08-15 20:28:53.922: D/SAGO(2817): Darty : F8Z889CWC00 İPHONE4G/4GS ESSENTIAL KORUYUCU KILIF SİYAH
08-15 20:28:53.922: D/SAGO(2817): Darty : 9ANTI-FİNGERPRINT İPHONE 5 EKRAN KORUYUCU FİLM (ÖN ŞEFFA)
08-15 20:28:53.922: D/SAGO(2817): Darty : 9FLEXİBLE SERT İPHONE 5 KILIFI (SİYAH)
08-15 20:28:53.922: D/SAGO(2817): Darty : 9FLEXİBLE SERT İPHONE 5 KILIFI (BEYAZ)
08-15 20:28:53.922: D/SAGO(2817): Darty : 9TEXTURE SERT İPHONE 5 KILIFI (SİYAH)
08-15 20:28:53.922: D/SAGO(2817): Darty : GCC02ND EMBOSsing İPHONE 5 CASE
08-15 20:28:53.922: D/SAGO(2817): Darty : GCC03SC EMBOSsing İPHONE 5 CASE
08-15 20:28:53.922: D/SAGO(2817): Darty : GCC04LB EMBOSsing İPHONE 5 CASE
08-15 20:28:53.922: D/SAGO(2817): Darty : GCC05MP EMBOSsing İPHONE 5 CASE
08-15 20:28:53.922: D/SAGO(2817): Darty : GCC06PV EMBOSsing İPHONE 5 CASE
08-15 20:28:53.922: D/SAGO(2817): Darty : DC15X121 İPHONE 5 SLIM FIT HARD CASE /GRID BLACK
08-15 20:28:53.922: D/SAGO(2817): Darty : DC15X121 İPHONE 5 SLIM FIT HARD CASE /GRID WHITE
08-15 20:28:53.922: D/SAGO(2817): Darty : DC15X121 İPHONE 5 SLIM FIT HARD CASE /GRID PINK

08-15 20:28:53.922: D/SAGO(2817): Darty : DC15X121 IPHONE 5 SLIM FIT HARD CASE /GRID RED
08-15 20:28:53.922: D/SAGO(2817): Darty : DC15X121 IPHONE 5 SLIM FIT HARD CASE /GRID
VIOLET
08-15 20:28:53.922: D/SAGO(2817): Darty : IPHONE 5 SILICONE CASE WITH HAND-STRAP
&TOUCH PEN BLACK
08-15 20:28:53.922: D/SAGO(2817): Darty : IPHONE 5 SILICONE CASE WITH HAND-STRAP
&TOUCH PEN VIOLET
08-15 20:28:53.922: D/SAGO(2817): Darty : IPHONE 5 SILICONE CASE WITH HAND-STRAP
&TOUCH PEN PINK
08-15 20:28:53.922: D/SAGO(2817): Darty : TEFLIPIPHO5W FLİP CASE İPHONE 5 WHITE
08-15 20:28:53.922: D/SAGO(2817): Darty : 11880 MCA CAR CHARGER IPOD - IPHONE ARAÇTAN
CİHAZI
08-15 20:28:53.922: D/SAGO(2817): Darty : MUVİT IPHONE USB ŞARJ MAKARALI
SENKRONİZASYON KAB
08-15 20:28:53.922: D/SAGO(2817): Darty : DLM1386 IPHONE 4/4S ÖN KORUMA ŞEFFAF
08-15 20:28:53.922: D/SAGO(2817): Darty : EKRAN KORUYUCU IPHONE 5 MAT
08-15 20:28:53.922: D/SAGO(2817): Darty : EKRAN KORUYUCU-IPHONE5 ÖN-ARKA
08-15 20:28:53.922: D/SAGO(2817): Darty : CS103CL iPhone 5 Ekran Koruyucu (2'Li)
08-15 20:28:53.922: D/SAGO(2817): Darty : MCA IPOD IPHONE UZAYABİLEN ŞARJ VE SENKRON
KABLO
08-15 20:28:53.922: D/SAGO(2817): Darty : TE0PSP40A IPHONE4 İZ BIRAKMAYAN EKRAN
KORUYUCU 2 ADET
08-15 20:28:53.922: D/SAGO(2817): Darty : TE0PSP50A IPHONE 5 EKRAN KORUYUCU FILM ANTI-
MIRROR
08-15 20:28:53.922: D/SAGO(2817): Darty : 2EK7542 IPHONE 5 TTEC EKRAN KORUYUCU İZ
BIRAKMAYAN
08-15 20:28:53.922: D/SAGO(2817): Darty : TE0PSP50E IPHONE 5 EKRAN KORUYUCU FILM ANTI-
BUBBLE
08-15 20:28:53.922: D/SAGO(2817): Darty : FB STICKER-IPHONE 4/4S-BİZ FENERBAHÇELİYİZ
08-15 20:28:53.922: D/SAGO(2817): Darty : FB STICKER-IPHONE 4/4S-FB SINCE 1907
08-15 20:28:53.922: D/SAGO(2817): Darty : FB STICKER-IPHONE 4/4S-FB LOGO
08-15 20:28:53.922: D/SAGO(2817): Darty : FB STICKER-IPHONE 5-BİZ FENERBAHÇELİYİZ
08-15 20:28:53.922: D/SAGO(2817): Darty : FB STICKER-IPHONE 5-FB SINCE 1907
08-15 20:28:53.922: D/SAGO(2817): Darty : FB STICKER-IPHONE 5-FB LOGO
08-15 20:28:53.922: D/SAGO(2817): Darty : FB STICKER-IPHONE 5-SARI LACİVERT
08-15 20:28:53.922: D/SAGO(2817): Darty : FB STICKER-IPHONE 4/4S-SARI LACİVERT
08-15 20:28:53.922: D/SAGO(2817): Darty : 2235 3'LÜ IPHONE TRAVEL SET
08-15 20:28:53.922: D/SAGO(2817): Darty : DREX12IPB.AE İPHONE TELEFON KULAKLIĞI
08-15 20:28:53.922: D/SAGO(2817): Darty : 5667 BIMAT IPHONE4 KILIF FUŞYA
08-15 20:28:53.922: D/SAGO(2817): Darty : GEAR4 ANGRY BIRDS IPHONE 4/4S KILIFI
08-15 20:28:53.922: D/SAGO(2817): Darty : 5611 SLIM İPHONE4/4S KILIFI SIYAH
08-15 20:28:53.922: D/SAGO(2817): Darty : TE8SCB40P HARD CASE IPHONE 4/4S PEMBE
08-15 20:28:53.922: D/SAGO(2817): Darty : ICOAT 0.4 SLIM IPHONE 4/4S KILIFI PEMBE
08-15 20:28:53.922: D/SAGO(2817): Darty : IPHONE4G/4GS EMERGE KORUYUCU KILIF KIRMIZI

08-15 20:28:53.922: D/SAGO(2817): Darty : IPHONE4G/4GS SILIKON KORUYUCU KILIF BEYAZ
08-15 20:28:53.922: D/SAGO(2817): Darty : 13054 SE TRU SERT IPHONE 4/4S KILIFI MOR
08-15 20:28:53.922: D/SAGO(2817): Darty : 13054 SE TRU SERT IPHONE 4/4S KILIFI PEMBE
08-15 20:28:53.932: D/SAGO(2817): Darty : 13056 SE TRU SERT IPHONE 4/4S KILIFI ŞEFFAF
08-15 20:28:53.932: D/SAGO(2817): Darty : LFCT40TS/TC IPHONE 4G TPU KILIF
08-15 20:28:53.932: D/SAGO(2817): Darty : SBS TE0PGB40W BUMPER CASE İPHONE 4 BEYAZ
08-15 20:28:53.932: D/SAGO(2817): Darty : FB YARIM ARKA KAPAK-IPHONE 5-BURASI KADIKÖY
08-15 20:28:53.932: D/SAGO(2817): Darty : CLEAR BACK IPHONE 4/4S KILIFI (ŞEFFAF)
08-15 20:28:53.932: D/SAGO(2817): Darty : IPHONE 4S KILIFI
08-15 20:28:53.932: D/SAGO(2817): Darty : IP-800 2000MA IPAD/IPHONE 12V ARAC SARJI
08-15 20:28:53.932: D/SAGO(2817): Darty : PARANTEZ KAPAK-IPHONE 5- CROME SİYAH
08-15 20:28:53.932: D/SAGO(2817): Darty : PARANTEZ KAPAK-IPHONE 5- CROME BEYAZ
08-15 20:28:53.932: D/SAGO(2817): Darty : PARANTEZ KAPAK-IPHONE 4/4S- CROME BEYAZ
08-15 20:28:53.932: D/SAGO(2817): Darty : LFCS40K IPHONE 4G SILIKON KILIF SİYAH
08-15 20:28:53.932: D/SAGO(2817): Darty : TE0PCSQ40P IPHONE 4 FUN CASE PEMBE
08-15 20:28:53.932: D/SAGO(2817): Darty : 5609 DUO MINIGEL GLAZY 2Lİ IPHONE4 KILIF
08-15 20:28:53.932: D/SAGO(2817): Darty : IPHONE 4S UV SKIN
08-15 20:28:53.932: D/SAGO(2817): Darty : IPHONE 4S UV SKIN
08-15 20:28:53.932: D/SAGO(2817): Darty : DESING HM BLUE IPHONE 4/4S KILIFI SİYAH
08-15 20:28:53.932: D/SAGO(2817): Darty : DESING FINELADY IPHONE 4/4S KILIFI SİYAH
08-15 20:28:53.932: D/SAGO(2817): Darty : DESING GENTLEMAN IPHONE 4/4S KILIFI SİYAH
08-15 20:28:53.932: D/SAGO(2817): Darty : SBS TE0PGB40K BUMPER CASE İPHONE 4 SİYAH
08-15 20:28:53.932: D/SAGO(2817): Darty : IPHONE 4 KILIF PLATİN
08-15 20:28:53.932: D/SAGO(2817): Darty : LFCB40W HARD CASE APPLE IPHONE 4G
08-15 20:28:53.932: D/SAGO(2817): Darty : ICOAT 0.4 SLIM IPHONE 4/4S KILIFI SİYAH
08-15 20:28:53.932: D/SAGO(2817): Darty : ICOAT 0.4 SLIM IPHONE 4/4S KILIFI MOR
08-15 20:28:53.932: D/SAGO(2817): Darty : ICOAT 0.4 SLIM IPHONE 4/4S KILIFI MAVİ
08-15 20:28:53.932: D/SAGO(2817): Darty : FACEOFF IPHONE 4/4S ÇERÇEVELİ KILIF SİYAH ŞEFFAF
KIRMIZI
08-15 20:28:53.932: D/SAGO(2817): Darty : FACEOFF IPHONE 4/4S ÇERÇEVELİ KILIF BEYAZ
ŞEFFAF PEMBE
08-15 20:28:53.932: D/SAGO(2817): Darty : TTEC CARDCASE PRO KORUMA KILIFI İPHONE 4S-
KETENE BEYAZ
08-15 20:28:53.932: D/SAGO(2817): Darty : IPHONE 4S KILIFI
08-15 20:28:53.932: D/SAGO(2817): Darty : IPHONE 4S KILIFI
08-15 20:28:53.932: D/SAGO(2817): Darty : IPHONE 4S KILIFI
08-15 20:28:53.932: D/SAGO(2817): Darty : IPAD IPHONE IPOD TOUCH STYLUS VE TÜKENMEZ
KALEM SARI
08-15 20:28:53.932: D/SAGO(2817): Darty : ŞARJLI KAPAK IPHONE 5 RUBBER F7
08-15 20:28:53.932: D/SAGO(2817): Darty : CELLULAR LINE IPHONE 4 CIRCLE KAUÇUK KILIF MAVİ
08-15 20:28:53.932: D/SAGO(2817): Darty : CELLULAR LINE IPHONE 4 CIRCLE KAUÇUK KILIF
PEMBE
08-15 20:28:53.932: D/SAGO(2817): Darty : CELLULAR LINE IPHONE 4 CIRCLE KAUÇUK KILIF
ŞEFFAF

08-15 20:28:53.932: D/SAGO(2817): Darty : CELLULAR LINE IPHONE 4 GLAM KAUÇUK KILIF PEMBE
08-15 20:28:53.932: D/SAGO(2817): Darty : CELLULAR LINE IPHONE 4 GLAM KAUÇUK KILIF ŞEFFAF
08-15 20:28:53.932: D/SAGO(2817): Darty : CELLULAR LINE IPHONE 4 GLAM KAUÇUK KILIF MOR
08-15 20:28:53.932: D/SAGO(2817): Darty : CELLULAR LINE IPHONE 4 SHOCKING KAUÇUK KILIF PEMBE
08-15 20:28:53.932: D/SAGO(2817): Darty : CELLULAR LINE IPHONE 4 SHOCKING KAUÇUK KILIF BEYAZ
08-15 20:28:53.932: D/SAGO(2817): Darty : CELLULAR LINE IPHONE 4 NUBUK KILIF SIYAH DESENLI
08-15 20:28:53.932: D/SAGO(2817): Darty : CELLULAR LINE IPHONE 4 NUBUK KILIF TURKUVAZ
08-15 20:28:53.932: D/SAGO(2817): Darty : CELLULAR LINE IPHONE 4 NUBUK KILIF MOR
08-15 20:28:53.932: D/SAGO(2817): Darty : IPHONE HEXAGON KAUCUK KILIF KOYU MAVİ
08-15 20:28:53.932: D/SAGO(2817): Darty : IPHONE HEXAGON KAUCUK KILIF PEMBE
08-15 20:28:53.932: D/SAGO(2817): Darty : F8Z871CW2 IPHONE 4G EKRAN KORUYUCU FİLM AYNALI
08-15 20:28:53.932: D/SAGO(2817): Darty : ESSENTIALS PACK IPHONE 4/4S AKSESUAR PAKETİ
08-15 20:28:53.932: D/SAGO(2817): Darty : 5673 IPHONE4 2Lİ EKRAN KORUYUCU FILM SETİ MAT PARLAK
08-15 20:28:53.932: D/SAGO(2817): Darty : IP-551 IPHONE 5G MAT EKRAN KORUYUCU
08-15 20:28:53.932: D/SAGO(2817): Darty : IP-551 IPHONE 5G PARLAK EKRAN KORUYUCU
08-15 20:28:53.932: D/SAGO(2817): Darty : TE0PCSQ40K IPHONE 4 FUN CASE SİYAH
08-15 20:28:53.932: D/SAGO(2817): Darty : 7053 IPHONE4 ARKA KAPAK VE EKRAN KORUYUCU FİLM SETİ PARLAK
08-15 20:28:53.932: D/SAGO(2817): Darty : TECLEARIP5K CLEAR CASE İPHONE 5 BLACK
08-15 20:28:53.932: D/SAGO(2817): Darty : TEBUMPTrip5K BUMPER CASE TRANSPARENT İPHONE 5 BLACK
08-15 20:28:53.932: D/SAGO(2817): Darty : 9PROTECTİVE FRAME ÇERÇEVE İPHONE 5 KILIFI (MAVİ)
08-15 20:28:53.932: D/SAGO(2817): Darty : 9SEE-THROUGH HARDSHELL SERT İPHONE 5 KILIFI (GRİ,ŞEFFAF)
08-15 20:28:53.932: D/SAGO(2817): Darty : GCC01LM EMBOSsing IPHONE 5 CASE
08-15 20:28:53.932: D/SAGO(2817): Darty : 9FLİP COVER DERİ İPHONE 5 KILIF VE STANDI (MAVİ)
08-15 20:28:53.942: D/SAGO(2817): Darty : 9SLİM FOLİO DERİ İPHONE 5 KILIF VE STANDI (KIRMIZI)
08-15 20:28:53.942: D/SAGO(2817): Darty : 9SLİM FOLİO DERİ İPHONE 5 KILIF VE STANDI (BEYAZ)
08-15 20:28:53.942: D/SAGO(2817): Darty : 10336 MINİ IPHONE IPOD ARAÇ ŞARJ CİHAZI SİYAH
08-15 20:28:53.942: D/SAGO(2817): Darty : MUVİT IPHONE USB ŞARJ SENKRONİZASYON SETİ
08-15 20:28:53.942: D/SAGO(2817): Darty : 9725 IPHONE PRİZDEN ŞARJ CİHAZI AC BEYAZ
08-15 20:28:53.942: D/SAGO(2817): Darty : İPHONE/iPOD RTRCTBL CABLE * 3.5mm/3.5mm; 2.6'
08-15 20:28:53.942: D/SAGO(2817): Darty : İPHONE MINİ STR DUB CORD * 3.5MM STEREO M/M;6'
08-15 20:28:53.942: D/SAGO(2817): Darty : SOSCHARGERIPHONE3G IPHONE HARİCİ PİL

08-15 20:28:53.942: D/SAGO(2817): Darty : SPIPHONE3G IPHONE EKRAN KORUYUCU
08-15 20:28:53.942: D/SAGO(2817): Darty : SPPRIVAIPHONE3G IPHONE KARARTMALI EKRAN KORUYUCU
08-15 20:28:53.942: D/SAGO(2817): Darty : GRIFFIN IPHONE4 IPAD IPOD ARAC SARJI
08-15 20:28:53.942: D/SAGO(2817): Darty : IPHONE 4 AIR ARKA KAPAK BEYAZ
08-15 20:28:53.942: D/SAGO(2817): Darty : IPHONE 4 FUSİON ARKA KAPAK MAVI
08-15 20:28:53.942: D/SAGO(2817): Darty : IPHONE 4 FUSİON ARKA KAPAK MOR
08-15 20:28:53.942: D/SAGO(2817): Darty : TE8PSP4SW IPHONE 4/4S PRİVACY EFFECT BEYAZ
08-15 20:28:53.942: D/SAGO(2817): Darty : RUBBER BACK IPHONE 4/4S KILIF SİYAH
08-15 20:28:53.942: D/SAGO(2817): Darty : F3S004CW2.6-MOB İPHONE/İPOD RTRCTBL CABLE
08-15 20:28:53.942: D/SAGO(2817): Darty : BELKIN IPHONE/İPOD ARAÇ KİTİ (ÇAKMAK ŞARJI VE KABLO)
08-15 20:28:53.942: D/SAGO(2817): Darty : DLC 2417 2MT IPHONE DATA/ŞARJ KABLOSU
08-15 20:28:53.942: D/SAGO(2817): Darty : TE0PSP44A IPHONE4 ÖN ARKA EKRAN KORUYUCU
08-15 20:28:53.942: D/SAGO(2817): Darty : SU2080 IPHONE ARAÇ TAŞIYICISI
08-15 20:28:53.942: D/SAGO(2817): Darty : 2M EKSTRA UZUN DATA KABLOSU İPHONE 5/İPAD MİNİ/İPAD 4
08-15 20:28:53.942: D/SAGO(2817): Darty : SWAROVSKI TAŞLI IPHONE 4S/4 KILIFI
08-15 20:28:53.942: D/SAGO(2817): Darty : SWAROVSKI TAŞLI IPHONE 4S/4 KILIFI
08-15 20:28:53.942: D/SAGO(2817): Darty : SWAROVSKI TAŞLI IPHONE 4S/4 KILIFI
08-15 20:28:53.942: D/SAGO(2817): Darty : SWAROVSKI TAŞLI IPHONE 4S/4 KILIFI
08-15 20:28:53.942: D/SAGO(2817): Darty : SWAROVSKI TAŞLI IPHONE 4S/4 KILIFI
08-15 20:28:53.942: D/SAGO(2817): Darty : SWAROVSKI TAŞLI IPHONE 4S/4 KILIFI
08-15 20:28:53.942: D/SAGO(2817): Darty : SWAROVSKI TAŞLI IPHONE 4S/4 KILIFI
08-15 20:28:53.942: D/SAGO(2817): Darty : SWAROVSKI TAŞLI IPHONE 4S/4 KILIFI
08-15 20:28:53.942: D/SAGO(2817): Darty : İPHONE 4 8 GB SİYAH
08-15 20:28:53.942: D/SAGO(2817): Darty : İPHONE 4 32 GB
08-15 20:28:53.942: D/SAGO(2817): Darty : İPHONE 4 8 GB BEYAZ
08-15 20:28:53.942: D/SAGO(2817): Darty : İPHONE 4S 16GB SİYAH
08-15 20:28:53.942: D/SAGO(2817): Darty : İPHONE 4S 16GB BEYAZ
08-15 20:28:53.942: D/SAGO(2817): Darty : Iphone 5 16GB Siyah
08-15 20:28:53.942: D/SAGO(2817): Darty : Iphone 5 16 GB Beyaz
08-15 20:28:53.942: D/SAGO(2817): Darty : İPHONE 5 16GB SİYAH
08-15 20:28:53.942: D/SAGO(2817): Darty : İPHONE 5 32GB SİYAH
08-15 20:28:53.942: D/SAGO(2817): Darty : İPHONE 5 32GB BEYAZ
08-15 20:28:53.942: D/SAGO(2817): Darty : İPHONE 5 16GB BEYAZ
08-15 20:28:53.942: D/SAGO(2817): Darty : İPHONE 5 64GB SİYAH
08-15 20:28:53.942: D/SAGO(2817): Darty : İPHONE 5 64GB BEYAZ
08-15 20:28:53.942: D/SAGO(2817): Darty : OUTLETC/İPHONE 4 32 GB
08-15 20:28:53.942: D/SAGO(2817): Vatan : 11885 İPOD/İPHONE 4/4S PRİZ ŞARJ CİHAZI- (SİYAH)
08-15 20:28:53.942: D/SAGO(2817): Vatan : 11880 İPOD/İPHONE 4/4S ARAÇ ŞARJ CİHAZI
08-15 20:28:53.942: D/SAGO(2817): Vatan : 11875 STYLUS İPAD/İPHONE/İPOD TOUCH 2'Lİ KALEM SETİ

08-15 20:28:53.942: D/SAGO(2817): Vatan : 11886 İPOD/İPAD/İPHONE 4/4S UZAYABİLEN SENKRONİZASYON ŞARJ KABLOSU- (SİYAH)

08-15 20:28:53.942: D/SAGO(2817): Vatan : 16870 İPHONE 5 EKRAN KORUYUCU- (2 ADET MAT ÖN)

08-15 20:28:53.942: D/SAGO(2817): Vatan : iOS 4.0 ile iPhone ve iPad Programlama

08-15 20:28:53.942: D/SAGO(2817): Vatan : 14889 İPHONE 5 EKRAN KORUYUCU ANTİ-PARMAKİZİ YANSIMA ÖNLEYİCİ

08-15 20:28:53.942: D/SAGO(2817): Vatan : 10411 İPHONE 4/4S KILIF 0.4 MM SLİM SERT- (SİYAH)

08-15 20:28:53.942: D/SAGO(2817): Vatan : 10411 İPHONE 4/4S KILIF 0.4 MM SLİM SERT- (KIRMIZI)

08-15 20:28:53.942: D/SAGO(2817): Vatan : 10336 İPHONE/İPOD MİNİ ARAÇ ŞARJ CİHAZI- (SİYAH)

08-15 20:28:53.942: D/SAGO(2817): Vatan : SK-513 İPHONE KULAKLIĞI

08-15 20:28:53.942: D/SAGO(2817): Vatan : 16854 BİMAT İPHONE 5 SERT KILIF VE EKRAN KORUYUCU- (SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 15045 BİMAT İPHONE 5 SERT KILIF VE EKRAN KORUYUCU- (PEMBE)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 17611 CRYSTAL THİN İPHONE 5 SERT KILIF VE EKRAN KORUYUCU- (ŞEFFAF)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 16853 SLİM CASE İPHONE 5 DERİ KAPAKLI KILIF VE EKRAN KORUYUCU- (SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 17612 ULTRA THİN İPHONE 5 2'Lİ KILIF VE EKRAN KORUYUCU- (BEYAZ/SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 15099 BUMPER İPHONE 5 ÇERÇEVELİ SERT KILIF- (YEŞİL)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 150101. BUMPER İPHONE 5 ÇERÇEVELİ SERT KILIF- (PEMBE)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 15102 GLOSSY İPHONE 5 SERT KILIF- (BEYAZ)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 15104 İPHONE 5 EKRAN KORUYUCU ANTİ-PARMAKİZİ- (1 PARLAK 1 MAT 1 ŞEFFAF ÖN)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 16855 BİMAT İPHONE 5 SERT KILIF- (BEYAZ)

08-15 20:28:53.952: D/SAGO(2817): Vatan : BELKIN İPHONE/İPOD USB SYNC/CHARGA CABLE-10-PIN

08-15 20:28:53.952: D/SAGO(2817): Vatan : 20955 SLİM WAVE İPHONE 5 SERT KILIF- (SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 21185 SLİM WAVE İPHONE 5 SERT KILIF- (KIRMIZI)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 21186 SLİM WAVE İPHONE 5 SERT KILIF- (PEMBE)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 15072 PİXELSKİN İPHONE 5 KILIF SERT- (MOR ÜZÜM)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 15092 İGUM İPHONE 5 SERT KILIF- (BEYAZ)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 16866 İPHONE 5 SİLİKONLU KILIF- (BEYAZ-PEMBE-SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 15091 İGUM İPHONE 5 SERT KILIF- (SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 15093 İGUM İPHONE 5 SERT KILIF- (PEMBE)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 15095 İGUM İPHONE 5 SERT KILIF- (YEŞİL)

08-15 20:28:53.952: D/SAGO(2817): Vatan : ESSENTİAL023 SİLİKON İPHONE 4S KORUYUCU KILIF İKİLİ PAKET (SİYAH-BEYAZ)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 14873 JELLY İPHONE 5 KILIF 0.3 MM- (MAVİ)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 14874 JELLY İPHONE 5 KILIF 0.3 MM- (MOR)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 14894 FRUIT PEACH İPHONE 5 KILIF- (PEMBE)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 15052 CANDYSHELL İPHONE 5 KILIF SERT- (FRAMBUAZ/SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 15053 CANDYSHELL İPHONE 5 KILIF SERT- (MALAHİT YEŞİL/MOR ÜZÜM)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 11891 İPOD/İPHONE 4/4S SENKRONİZASYON ŞARJ KABLO SETİ- (SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 10053 İPAD/İPOD/İPHONE 4/4S PRİZDEN ŞARJ CİHAZI- (BEYAZ)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 10052 İPAD/İPOD/İPHONE 4/4S PRİZDEN ŞARJ CİHAZI- (SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 21184 SLİM LASER İPHONE 5 SERT KILIF- (KIRMIZI)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 20954 SLİM LASER İPHONE 5 SERT KILIF- (METALİK SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 15069 PIXELSKİN İPHONE 5 KILIF SERT- (SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 14876 JELLY İPHONE 5 KILIF 0.3 MM- (ŞEFFAF)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 14892 FRUIT BLACKBERRY İPHONE 5 KILIF- (SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 14869 SPRİNG İPHONE 5 KILIF- (EFLATUN)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 19799 LIGHTNING İPHONE/IPOD KABLOLU ARAÇ ŞARJ CİHAZI- (SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 19796 LIGHTNING İPHONE/IPOD PRİZ ARAÇ ŞARJ CİHAZI 1000 MA- (SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 21187 SLİDER İPHONE 5 SİLİKON KILIF- (KIRMIZI)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 20958 SLİDER İPHONE 5 SİLİKON KILIF- (SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 17600 LIGHTNING İPHONE 5/İPAD MİNİ SEKRONİZASYON ŞARJ KABLOSU 1 MT.- (SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 21001 SAFEPORT İPHONE 5 SERT KILIF- (SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : APPLE DUVAR ŞARJ ALAETİ & KABLO (2.1 Amp) for iPad/iPhone/iPod

08-15 20:28:53.952: D/SAGO(2817): Vatan : 17601 LIGHTNING İPHONE 5/İPAD MİNİ/İPHONE TOUCH PRİZ ŞARJ CİHAZI- (SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 21013 SAFEPORT RUGGED İPHONE 5 SERT KILIF- (KIRMIZI/SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : 21014 SAFEPORT RUGGED İPHONE 5 SERT KILIF- (SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : MM 30İ MİKROFONLU İPHONE KULAKLIĞI- (SİYAH)

08-15 20:28:53.952: D/SAGO(2817): Vatan : S135i PORTABLE SPEAKER (iPhone & iPod)

08-15 20:28:53.952: D/SAGO(2817): Vatan : S315i RECHARGEABLE SPEAKER BLACK (iPhone & iPod)

08-15 20:28:53.952: D/SAGO(2817): Vatan : MVH-150UB USB, Aux-in, 2xRCA ve iPod/iPhone Kontrol, FM, MP3/WMA/WAV,Kırmızı Tuş

08-15 20:28:53.952: D/SAGO(2817): Vatan : MVH-1400 USB, Aux-in, 2xRCA ve iPod/iPhone Kontrol, FM, MP3/WMA/WAV,Kırmızı Tuş

08-15 20:28:53.952: D/SAGO(2817): Vatan : PURE-FI EXPRESS PLUS SPEAKER BLACK (iPhone & iPod)

08-15 20:28:53.952: D/SAGO(2817): Vatan : TOMTOM İPHONE ARAÇ KİTİ

08-15 20:28:53.952: D/SAGO(2817): Vatan : S715i RECHARGEABLE SPEAKER (iPhone & iPod)

08-15 20:28:53.952: D/SAGO(2817): Vatan : DEH-3400UB CD/MP3/WMA/WAV Çalar, RDS, 50Wx4, iPod, iPhone, RGB Ekran ve Tuşlar

08-15 20:28:53.952: D/SAGO(2817): Vatan : DEH-4400BT CD/MP3/WMA/WAV/AAC Çalar, 50Wx4, USB, iPod, iPhone, Bluetooth

08-15 20:28:53.952: D/SAGO(2817): Vatan : 6" Dokunmatik Ekranlı Navigasyon Sistemi, 4x50W, AM/FM, RDS, Bluetooth, iPhone

08-15 20:28:53.962: D/SAGO(2817): Vatan : İPHONE 4S 16 GB CEP TELEFONU (SİYAH)

08-15 20:28:53.962: D/SAGO(2817): Vatan : İPHONE 4S 16 GB CEP TELEFONU (BEYAZ)

08-15 20:28:53.962: D/SAGO(2817): Vatan : İPHONE 5 16 GB CEP TELEFONU(SİYAH)

08-15 20:28:53.962: D/SAGO(2817): Teknosa : SKYPAL SA-210A IPAD/IPHONE HDMI ADAPTÖR

08-15 20:28:53.962: D/SAGO(2817): Teknosa : ONION - IPHONE5 EKRAN KORUYUCU

08-15 20:28:53.962: D/SAGO(2817): Teknosa : ONION - IPHONE 5 SİYAH KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : GEAR4 İPHONE 5 ARAÇ ŞARJI

08-15 20:28:53.962: D/SAGO(2817): Teknosa : CELLULAR LINE İPHONE 4 NORMAL EKRAN KORUYUCU

08-15 20:28:53.962: D/SAGO(2817): Teknosa : DEXIM DCA210-W İPOD/İPHONE ARAÇ ÇAKMAK ŞARJI

08-15 20:28:53.962: D/SAGO(2817): Teknosa : ONION - IPHONE 5 BEYAZ KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : ONION - IPHONE 5 PEMBE KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : ONION IPAD+İPHONE 5 BEYAZ SET

08-15 20:28:53.962: D/SAGO(2817): Teknosa : CELLULAR LINE İPHONE 5 SOFT SLIM KILIF- SİYAH

08-15 20:28:53.962: D/SAGO(2817): Teknosa : APPLE İPHONE 5 - 16 GB WHITE AKILLI TELEFON, ONION - IPHONE 5 SİYAH KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : APPLE İPHONE 5 - 16 GB WHITE AKILLI TELEFON, ONION - IPHONE 5 BEYAZ KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : APPLE İPHONE 5 - 16 GB WHITE AKILLI TELEFON, ONION - IPHONE 5 PEMBE KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : APPLE İPHONE 5 - 16 GB WHITE AKILLI TELEFON

08-15 20:28:53.962: D/SAGO(2817): Teknosa : CELLULAR LINE İPHONE 4 PARMAK IZI BIRAKMAYAN EKRAN K.

08-15 20:28:53.962: D/SAGO(2817): Teknosa : APPLE İPHONE 5 - 16 GB BLACK AKILLI TELEFON, ONION - IPHONE 5 SİYAH KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : APPLE İPHONE 5 - 16 GB BLACK AKILLI TELEFON, ONION - IPHONE 5 BEYAZ KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : APPLE İPHONE 5 - 16 GB BLACK AKILLI TELEFON, ONION - IPHONE 5 PEMBE KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : APPLE IPHONE 5 - 16 GB BLACK AKILLI TELEFON, ONION - IPHONE 5 TURUNCU KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : APPLE IPHONE 5 - 16 GB WHITE AKILLI TELEFON, ONION - IPHONE 5 TURUNCU KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : APPLE IPHONE 5 - 16 GB BLACK AKILLI TELEFON

08-15 20:28:53.962: D/SAGO(2817): Teknosa : ONION - IPHONE 5 TURUNCU KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : SKYPAL SA-202A IPOD/IPHONE/IPAD 30PIN - MICRO USB ADAPTÖRÜ

08-15 20:28:53.962: D/SAGO(2817): Teknosa : CELLULAR LINE IPHONE 4 BOOK KILIF SIYAH

08-15 20:28:53.962: D/SAGO(2817): Teknosa : BLUETREK LOST DOG 2301 IPHONE 4&4S KILIFI

08-15 20:28:53.962: D/SAGO(2817): Teknosa : BLUETREK LOST DOG 2701 IPHONE 4&4S KILIFI

08-15 20:28:53.962: D/SAGO(2817): Teknosa : BLUETREK LOST DOG 2201 IPHONE 4&4S KILIFI

08-15 20:28:53.962: D/SAGO(2817): Teknosa : CELLULAR LINE IPHONE 4 (035MM) SERT KAPAK

08-15 20:28:53.962: D/SAGO(2817): Teknosa : CELLULAR LINE IPHONE 4 ON ARKA EKRAN KORUYUCU

08-15 20:28:53.962: D/SAGO(2817): Teknosa : ONION - IPHONE 4/4S BEYAZ KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : ONION - IPHONE 4/4S PEMBE KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : ONION - IPHONE 4/4S TURUNCU KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : CELLULAR LINE IPHONE 5 SEYAHAT SARJI-BEYAZ

08-15 20:28:53.962: D/SAGO(2817): Teknosa : CELLULAR LINE IPHONE 5 ARAÇ ŞARJI- BEYAZ

08-15 20:28:53.962: D/SAGO(2817): Teknosa : HAMA 93577 USB BAĞLANTI KABLOSU İPHONE 3G/3GS/4 0.5M

08-15 20:28:53.962: D/SAGO(2817): Teknosa : APPLE IPHONE 5 - 16 GB BLACK AKILLI TELEFON, ONION - IPHONE 5 MOR KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : APPLE IPHONE 5 - 16 GB WHITE AKILLI TELEFON, ONION - IPHONE 5 MOR KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : CELLULAR LINE IPHONE ARAÇ SARJI

08-15 20:28:53.962: D/SAGO(2817): Teknosa : BLUETREK LOST DOG 2601 IPHONE 4&4S KILIFI

08-15 20:28:53.962: D/SAGO(2817): Teknosa : DEXIM DWA064 IPOD/IPHONE/IPAD/Micro USB SYNC&ŞARJ KABLOSU

08-15 20:28:53.962: D/SAGO(2817): Teknosa : CELLULAR LINE IPHONE SEYAHAT SARJI

08-15 20:28:53.962: D/SAGO(2817): Teknosa : ONION - IPHONE 5 MOR KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : EYEQ EQ-HPEGG100 IPHONE 4/4S SİLİKON DOCK

08-15 20:28:53.962: D/SAGO(2817): Teknosa : CELLULAR LINE IPHONE 5 STANTLI CARBON ARKA KAPAK

08-15 20:28:53.962: D/SAGO(2817): Teknosa : APPLE IPHONE 5 - 16 GB BLACK AKILLI TELEFON, ONION - IPHONE 5 MAVİ KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : APPLE IPHONE 5 - 16 GB WHITE AKILLI TELEFON, ONION - IPHONE 5 MAVİ KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : CELLULAR LINE IPHONE 4 FLAP DERİ KILIF BEYAZ

08-15 20:28:53.962: D/SAGO(2817): Teknosa : BLUETREK LOST DOG 1002 IPHONE 4&4S KILIFI

08-15 20:28:53.962: D/SAGO(2817): Teknosa : CELLULAR LINE IPHONE 4 (035MM) SERT KAPAK KOYU GRİ

08-15 20:28:53.962: D/SAGO(2817): Teknosa : ONION - IPHONE 5 MAVİ KILIF

08-15 20:28:53.962: D/SAGO(2817): Teknosa : CELLULAR LINE IPHONE 5 SOFT SLIM KILIF- BEYAZ
08-15 20:28:53.962: D/SAGO(2817): Teknosa : LOGITECH S315i BEYAZ IPHONE/IPOD DOCK
SYSTEM
08-15 20:28:53.962: D/SAGO(2817): Teknosa : PHILIPS DS3500/12 IPHONE/IPOD DOCKING
SYSTEM
08-15 20:28:53.962: D/SAGO(2817): Teknosa : HAMA 80811 USB A FİŞ - İPOD/İPHONE/IPAD FİŞ
SARILABİLİR 0 75M
08-15 20:28:53.962: D/SAGO(2817): Teknosa : CELLULAR LINE IPHONE 4 SILIKON KILIF SIYAH
08-15 20:28:53.962: D/SAGO(2817): Teknosa : CELLULAR LINE IPHONE BAGLANTI KABLOSU
08-15 20:28:53.962: D/SAGO(2817): Teknosa : ONION - IPHONE 4/4S MOR KILIF
08-15 20:28:53.962: D/SAGO(2817): *****Start
Clustering... *****
08-15 20:28:53.962: D/SAGO(2817): BEFORE CLUSTERING, RESULT SIZE=363
08-15 20:28:53.962: D/SAGO(2817): BEFORE CLUSTERING, NORM LIST SIZE=363
08-15 20:28:53.962: D/SAGO(2817): Cluster is cleaning...
08-15 20:28:53.962: D/SAGO(2817): Cluster was cleaned