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WEB INTERFACE FOR OIL FIELD REPORT SYSTEM (OFRS) USING PHP AND MYSQL

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WEB INTERFACE FOR OIL FIELD REPORT SYSTEM (OFRS) USING PHP AND MYSQL

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

HAMZA MAHFOUD HAMER

DEDICATION

To whom I miss with all my feelings my dear homeland Libya.

To the example of dedication my father

To the one who gave my happiness and comfort my honorable mother.

To my brothers and family and friends

To everyone who called me well

To all of those who have received advice and support

My completion of my work would not have taken place without your support, and I hope that it will satisfy you.

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ABSTRACT

WEB INTERFACE FOR OIL FIELD REPORT SYSTEM (OFRS) USING PHP AND MYSQL

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Electronic management is administrative strategy in age of the information for achieving best services to the people and institutions by using information resources and reducing time, cost and effort. In this research we converted a paperwork system into electronic management for a report system in an oil company. The proposed system uses the web application using PHP and MySQL the system proposed achieved the purpose of this study. by applying an electronic system for reports management, this system contains database for storing the report resources information for the company, it provides access easily to data through GUI which contains many of keys to conduct different processes on data, such as modification and query. This system allows just for authorized users to access the system through protection windows Also, the proposed system leads to convert the paper information to electronic information and saved it in the database. Protecting the information electronically, which were in previous as a paper documents prone to damage.

Keywords: PHP; MySQL; E-management; Information Systems.

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1. INTRODUCTION

Resulted the modern technology use to bring a change in administrative structures and working methods of the government and private institutions. Since the mid-eighties institutions also are using information and communications technology along with business re-engineering as a means to reform the administrative work, including getting rid of bureaucracy [1]. Further it leads to increase coordination between institutions and providing services in ways easier in terms of space and time.

Convergence of the methods of work in many government institutions leads to achieve readiness management and integration required for linking institutions across regimes in the applications such as, E-Management and E-Government. The models mentioned are as indicators for the establishment of computer systems in management practices and the abolition of traditional practices in the field of labor intensive and accumulation of paperwork. The development that has been occurred concerning information technology through using electronic methods in institutions management, aims at simplifying procedures and routine reduce, replacement the paper documents to be an electronic system.

The reason why traditional management is unable to respond for changes and requirements of the age is because the disadvantages in this administrative system for example, it needs many employees, spending a large amount of paper, needs for stores as an archive save, a lot of money and more time. There are technical problems while using the limited programs in the management of institution for example using Microsoft Excel spreadsheet in designing of DB, which can be used only for building personal DB. Furthermore, there are other problems in using such of these systems such as stockpiling the information in one table that causes the data redundancy electronic management (EM) is administrative strategy in age of the information for achieving best services to the people and institutions by using information resources and reducing time, cost and effort [2]. It means also the conversion the paperwork to the electronic work through automating the institutions work and building system based on single window principle.

The main purpose of this study is designing and applying electronic management using the web application techniques as some literatures emphasize the importance of web applications [70]-[71]-[72]-[73]. The web application for the daily, weekly and monthly reports on the institutions within the oil field company and other institutions such as general maintenance,

oil and gas production communications department laboratory department drilling department and medical clinic.

there are other purposes such as:

- Based on the proposed system, we can change paper information for daily, weekly and monthly reports to electronic information that can be updated easily.
- Maintaining the information from damage or loss through building database for compilation the information and data.
- company support in decision making.
- Avoiding administrative mistakes by an electronic system to hold accurate data.

The web application is programmed using the PHP programming language that runs on Apache Webserver. Also use MySQL database to store and organize data, Choosing the best suitable database is really important for the web application system for storing and organizing data, while supporting simultaneous connection and input from different users.

importance of this study can be summarized as follows:

- Transparency of administrative work because the proposed system depends on clear steps (data input, processing and output), and does not allow changing workflow.
- Simplifying the administrative work and procedures in the company is based on providing information at computer and reducing manual work by using database and interfaces.
- Help the top management of organization in making decisions in a timely manner that because of the availability of accurate data and necessary in the system database which can access to them when needed, as well as the supply.

Challenges of this study:

- Information security as some sources emphasize Web applications (web app) are hardened to mitigate security issues [3],[9],[74].
- The cost of conversion from previous system to E-management.
- The challenges of resistance to change, and the continuation of senior management in the intellectual shortcomings are unable to absorb the information systems to manage as ZAHRAA has found in her search.[4]

1.1 BACKGROUND

Information systems (IS) can be defined as "A set of interrelated components that collect process, store and distribute information to support decision making, coordination and control in an organization. In addition to supporting decision making, coordination, and control, information systems may also help managers and workers analyses problems, visualize complex subjects, and create new products" [10]. Components of information systems are shown in figure (1.1).

Figure 1.1: Components of information system

Electronic management (EM) is administrative strategy in age of the information for achieving best services to the people and institutions by using information resources and reducing time, cost and effort [11]. It means also the conversion the paperwork to the electronic work through automating the institutions work and building system based on single window principle.

Human resources management system (HRMS) is application based on information systems and it has been designed for supporting the human resources. Figure (1.2) shows simple steps

in the system work. At the beginning, it is conversion paper information to electronic information in the database then viewing. Information when it is needed through interfaces.

Figure 1.2: Steps of system work

The data are series of facts that can be got through search, registration or other ways. In general, the data is a group of letters, words, numbers, symbols and pictures that has relation with a particular subject such as data of employees which are names, ID number, job and picture [12].

The database (DB) is a collection of related data with each other by mathematical relationship. It contains to one table or more, each table has more than one record, the record contains group of fields [13]

Database management system (DBMS) is a collection of software for control of storing, management and retrieval the data of database [12]. There are other functions of (DBMS) such as establishment, maintenance, protection and update the database.

1.2 USABILITY

As is mentioned in widely used standard ISO 9241-11 (Guidance on usability), usability is: "the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use [14]". This definition tells us that usability determines how easy is to achieve an intended outcome by performing specific activities. Generally, achieving great usability is one of the primary goals of user experience [58].

Good usability allows users to spend very little time on learning how to operate a product. It also speeds up the work itself by simplifying the processes. Jakob Nielsen of Nielsen Norman Group defines usability by five quality components: Learnability, Efficiency, Memorability, Errors, and Satisfaction [15].

Every one of these components describes different important part of usability:

Learnability defines the simplicity of accomplishing essential tasks for the first time.

Efficiency determines how fast users are once they have learned the basics.

Memorability is telling us how quickly can users come back to the product and regain their previous proficiency.

Errors keep track of the number of faults users make, how severe they are and how fast can they get back to the track.

Satisfaction describes the feeling of accomplishment and pleasantness.

1. 3 CENTERED DESIGN

Standard ISO 9241-11 defines human-centered design as: "approach to systems design and development that aims at making interactive systems more usable by focusing on the use of the system and applying human fac- tors/ergonomics and usability knowledge and techniques" [14],[59].

Human-centered design can be understood as a way of adjusting products and services to be as usable for the users as possible [60]. Usability is, therefore, one of the primary goals of the human-centered design. Term user-centered design is often used as a synonym for HCD.

HCD builds on research and aims to provide solutions for problems of interaction between product and the human user. The process usually starts with observations and immersion into the issue and community of users. Prototyping is often used to ensure the correct solution.

1.4 INTERACTION DESIGN

As stated in the book Interaction Design by Rogers, Sharp, and Price, interaction design is: "designing interactive products to support the way people communicate and interact in their every day and working lives [16]". Interaction design is another approach to creating usable applications and simplifying the work [61]. The main difference between HCD and Interaction design (IxD) is probably in scope. IxD can be easily adopted into different

fields while HCD is most commonly used in the creation of interactive computing systems. IxD is often being used as an umbrella term covering different areas of development [62],[63]. From user interface design to software design, all various fields are the parts of Interaction design. However, the primary focus of IxD is in practice. It is asking questions like: What is the best way to design user experiences?
The process of IxD involves these essential activities:

1. Establishing of requirements
2. Designing
3. Prototyping
4. Evaluating Activities mentioned above are intertwined and are usually con- ducted repeatedly to ensure the best possible outcome.

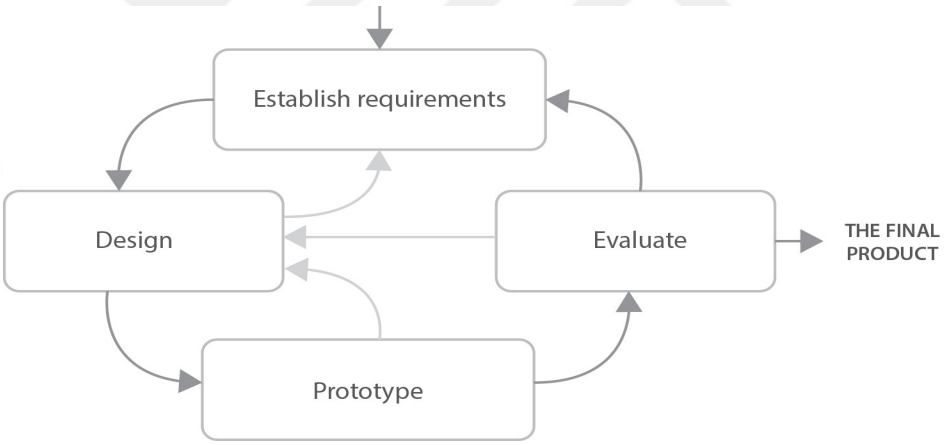

Figure 1.3: Representation of IxD process

1.5 PROGRESSIVE DISCLOSURE

A simple yet beneficial principle of Interaction design. It teaches UX designers to disclose advanced or rarely used features only if a user requests them. This technique provides users with less cluttered interfaces but also with the full complement of functions at their disposal [64]. In figure (1.4) When designing with progressive disclosure, designers should carefully select which information will be shown on the main screen for these will be perceived as most important by users. A secondary display consisting of advanced functions should only be visited rarely.

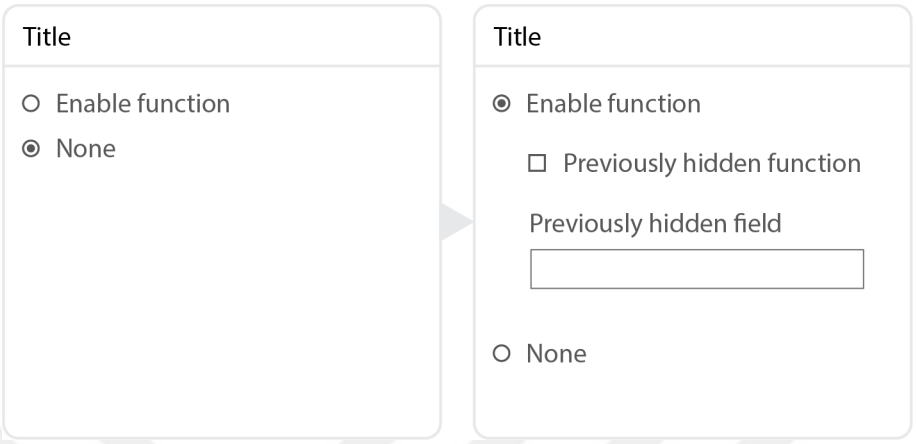

Figure 1.4: Representation of Progressive disclosure principle

Otherwise, it loses sense. This outcome can be achieved by performing detailed task analysis. Designers should also set clear expectations for what users will find after progression and let them come back from the secondary screen if its content is not satisfactory [17].

1.6 USER INTERFACE

User Interface (UI) is one of the products of User Experience, IxD, and HCI. It is the physical demonstration of the application that is pre-sented to the user [65]. The user can interact with UI in different manners. These interactions can include pointing a device such as a computer mouse, keyboard, touch, voice, motion or in some different fashion. Most of the modern user interfaces should be called GUIs which stands for Graphical User Interface [78]. GUI historically evolved from Command Line Interface.

1.7 VISUAL DESIGN

Visual design is a process of creating a visual image of an application with the emphasis on strengthening user experience via considering the effect of typography, space, layouts, illustrations, photography, shapes and colors on usability. It also considers the resultant aesthetic appeal of a product. Visual design is comprised of a variety of principles that

help designers achieve a pleasant and working result [18],[66]. The visual design consists of different elements such as line, shape, negative space, volume, value, color, and texture. It also involves following principles:

Unity – the creation of elements that support each other and all work together toward a common goal. The common goal is better usability and readability.

Hierarchy – it is an order in which the users view the elements of a composition. It might also be called an order of importance.

Dominance – principle connected with hierarchy creates focus on a single element which is the most important for a user.

Scale – another principle which is often used to emphasize more important element.

These principles are used to create usable user interfaces and there- fore better user experience. Giving users clear instructions on which elements are important and used to continue toward the goal is the primary task of visual design regarding UX design. Improve the system " [19],[67]. This provides UX designers with the exciting way of finding flaws in the design.

1.8 COGNITIVE LOAD

The term cognitive load describes the mental effort to learn a new skill or information. Learning how to use a new application or even using a known one requires a certain amount of cognitive load. It is one of the tasks of the user experience designers to prepare the user interface in such a way that it would require the least amount of cognitive load. The application is usually considered more enjoyable when it requires the user to remember less information [68]. It is not possible to eliminate the cognitive load entirely. It even would not be a desirable outcome because users typically use the applications to reach goals or get information. This type of cognitive load is called Intrinsic cognitive load, and it is needed. On the other hand, the useless content and unnecessary actions are part of a so-called Extraneous cognitive load which should designers strive to eliminate.

1.9 USER EXPERIENCE

User Experience is a highly open term which is described by many different definitions. According to Nielsen Norman Group it "encompasses all aspects of the end-user's interaction with the company, its services, and its products "[20].

But as for the formal definition in an ISO 9241-10, the user experience is "a person's perceptions and responses that result from the use or anticipated use of a product, system or service "[21],[68].

It is clear that even according to the definitions, the user experience is quite a broad term for a quite dynamic concept. It encompasses user's perceptions of a product such as utility, ease of use, efficiency and also their emotions and attitudes. User experience is tightly tied to terms mentioned above. A good UX design achieves the good user experience.

A broad definition of UX design is the creation and combination of such elements that have a direct impact on user's experience with

1.10 COGNITIVE PSYCHOLOGY

Cognitive psychology is a vital part of the Human-centered design. It is mostly used for evaluation of human performance in the fields such as attention, perception, sense, decision making, and cognition. All of these are elements tightly connected to the user experience. Cognitive psychology helps UX designers in the process of understanding an individual which subsequently leads to more intuitive and customized interfaces [22].

Psychology has different views on user behavior. For example, so-called developmental psychology studies what is often called the wrong behavior and adapts UX design to prevent it. It states that "Difference between system operation and user expectations are opportunities to a product. These elements include different things. Some are tangible and can be touched, some can be heard and in special cases even smelled. Of course, it also includes various digital interfaces and things that are beyond tangible. For a user experience to be satisfactory, we need to keep in mind tangible elements. The environment and physical products used to interact with a digital product [23],[69].

1.11 AGILE METHODOLOGY

Software now rules the world and its development is integral to all the IT companies. Software development is very complex process and requires multidimensional growth. Having a single model like waterfall or prototype for development is not enough for the product agile development is most useful for customized product development. With adaptive nature and early delivery and flexible life cycle. Agile is best suited for quick and effective development of software. There are various frameworks for agile, but scrum provides an easy method to implement agile. Scrum is currently the topmost technique used in development not only for software but even in the fields of finance, research etc., Scrum can undoubtedly become the most sought-after method to be chosen for development with no hassles [86]

1.11.1 Scrum Model

Scrum is a fast programming framework that belongs to the category of Agile Methodologies in which the product is divided into the characteristics to be developed and called (Backlogs) and each feature is divided into a group of sprints. In which a periodic meeting is made on a daily basis (every 24 hours) to know the status of the tasks performed and the mechanism of their running in the running, and therefore the main goal of the group of sprints is to achieve the feature (Backlog), but the goal of the set of properties (Backlogs) is to achieve the final work the common form of the scrum action mechanism in Figure(1.5) [87].

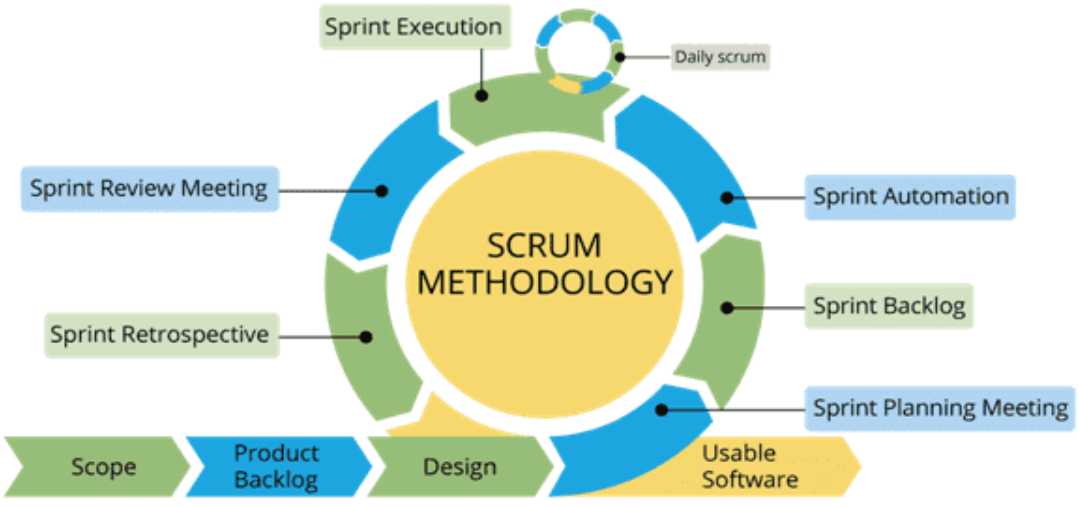

Figure 1.5: Scrum model

Important quality factors in Scrum

- Use the TDD development method, and make a test case before starting the development
- Development is the team's review of what the peer review has done
- The work of different types of examination at the levels of system, integration test, unit test
- Constant communication with the team and the customer

This development methodology is divided into three main roles:

1. Scrum Master: individual who is responsible for the Scrum process and its correct usage
2. Product Owner: individual who is accountable for the alignment of the development and the main responsibility of the Product Owner is to steer the Team to develop successful IT projects
3. Team: in charge of delivering the product. A team comprises five to nine members with cross-functional skills, who are self-organized and self-led. [88].

1.11.2 The Waterfall Model

Is a successive advancement process, in which improvement is viewed as streaming consistently downwards (like a cascade) through the periods of necessities examination, structure, execution testing (approval) incorporation, and upkeep Figure (1.6) [24].

Figure 1.6: waterfall model

1.12 PHP

Php is anything but difficult to learn and runs productively on the server side. What recognizes PHP from something like customer side JavaScript is that the code is executed on the server, producing HTML, which is then sent to the customer. The customer gets the consequences of running that content yet doesn't have the foggiest idea what the hidden code was [24].

1.13MySQL

is a database server perfect for both little and enormous applications? It underpins standard SQL and incorporates on various stages. It is allowed to download and utilize [25].

1.14CSS

Stands for Cascading Style Sheets. It is utilized to control the style and design of different site pages at the same time. Styles characterize how to show HTML components. CSS abrogates the program's default settings for deciphering how labels ought to be shown, letting you utilize any HTML component demonstrated by an opening and shutting tag to apply style traits characterized either locally or in a template. Outside Style Sheets can spare a great deal of work. They are put away in CSS records. Templates contain rules, made out of selectors and announcements that characterize how styles will be applied. The selector (a reclassified HTML component, class name, or ID name) is the connection 15 between the HTML record and the style. There are two various types of selectors: types (HTML component labels) and properties, (for example, class and ID names) [26].

Other Non-functional Requirements

- Scalability: System ought to have the option to deal with various clients.
- Usability: Simple UIs that a client can comprehend.
- Speed: Speed of the framework ought to be responsive for example reaction to a specific activity ought to be accessible in brief timeframe on enrolling as another outcast.

1.15 WHAT IS BLOCKCHAIN ?

“A blockchain is an append-only distributed database that stores a time-ordered set of facts, also known as transactions. Transactions are grouped into batches called blocks and form a cryptographic hash-chain.” [84] It was widely popularized after being used as the underlying

technology of the Bitcoin [82] cryptocurrency. "It is internally implemented as a linked list in which pointers to previous blocks have been replaced with cryptographic hash pointers. A pointer is simply the hash of the previous block and serves to identify and verify its integrity. Each block contains the hash of the previous block and information specific to the current block." [83]. The specific block information might hold payment history (as in cryptocurrencies) or any other data. The chain of blocks is shared across all participating nodes, new blocks are verified and confirmed by other participating nodes, eliminating the need for a central authority. Appending a new block to the chain (also called mining) entails solving a computation- ally demanding, hard-to-solve, and easy-to-verify crypto puzzle. The nodes must agree on the state of the blockchain, meaning they need to reach consensus on which transactions occurred in what order. The computation resources required to participate in the consensus algorithm can be very significant, which restricts the number of blocks that can be mined, thus protecting against uncontrollable block mining. [18] Reaching consensus might be difficult since nodes can have different views of the blockchain (this is called a fork) due to faulty or malicious nodes, or due to network errors.

1.15.1Blockchain Types

The question of who can access the blockchain network distinguishes the two main high-level approaches of creating blockchains. This question splits blockchains into two main categories: public (or per) and private (or permissioned). Public blockchains are open blockchains that anyone can join, contribute to, and see its con- tents. They represent true decentralization and they are generally slower and more expensive to maintain and operate as more difficult consensus mechanisms to prevent Sybil attacks need to be employed.

Private blockchains, on the other hand, allow joining of only authenticated or verified participants. There is usually an owner, or administrator of the network who controls the rules for accessing the blockchain. Private blockchains are basically closed distributed ledgers operating as secure databases. The permissioned blockchain can sometimes be presented as a third type of blockchains different from the private and public ones. Per missioning can in certain context refer to granting permissions to participants only for specific operations, such as reading or writing to a chain. Unless stated otherwise, we will refer to permissioned blockchains in the same meaning as to the private ones. In between the two models stands the hybrid model that combines both the public and private blockchain. For example, selected

transactions can be submitted from the private to the public blockchain for open access and secure data provenance.

1.15.2 Smart Contracts

Smart contracts are self-executing scripts that are stored on the block- chain. The idea behind smart contracts is to translate terms of physical contracts into code in such way that they can enforce themselves and don't have to be managed by a single trusted entity. Every contract has a unique address on the chain. Sending a trans- action to its address, a contract can be triggered and executed on every node. For independent execution on every node, each node needs to run a virtual machine (VM). This puts the whole network into a role of a distributed VM. Each contract has its own state and is its execution is always deterministic. This predictability and transparency of smart contracts allows deployment of distributed automated workflows on blockchains. Various dedicated languages are used for writing smart contract scripts, such as the Solidity language of the Ethereum platform [85].

1.15.3 Benefits of Blockchain

In recent years, blockchain (as part of cryptocurrency mechanisms) has been discussed significantly due to its innovative approach in replacing a trusted intermediary in an exchange of goods or services. The trust is transferred from a single entity to, for example, block miners, and the collectively created ledger of transactions can be therefore trusted. It is immutable, meaning that the validated transactions cannot be altered or removed from the chain transparent, meaning that all the transactions are visible by any node in the network
auditable, meaning that any block in the chain can be checked for correctness at any time
The distributed character together with the fact that no central leading authority is needed for correct functioning of a blockchain system gives blockchains an ability of strong operational resilience, all the aforementioned properties of blockchains have the potential to positively impact the current state of IoT design – blockchain could bring to the IoT environment trusted sharing service, immutability of data, traceability of transactions, always available data source identification and verification, and stronger security. This would create more reliable and robust IoT ecosystem.

2 SECOND CHAPTER LITERATURE REVIEW

In this part, the focus will be on the scientific references that specialized in design and implement of electronic management system and database systems design.

2.1 LITERATURE REVIEW WHICH HAVE RELATION WITH WEB APPLICATIONS

Application for agarwood oil quality discriminator, they said that the Agarwood quality is very important to the customers and it's hard to determine the quality by human eyes, so they need a perfect classification system for this issue furthermore, to provide the accurate information for end users. they used PHP and MySQL to build their system as PHP is suitable for medium and small projects and it's free and open source. The system successfully run but they need to design a better interface for end users and to apply machine learning techniques for more efficient [5] Mohammed Thakir Etal they proposed web application for an online shop using PHP Laravel framework and MySQL database, their system buys the products from the global online shops and ship them to their address. they said that some global online shops don't ship their products to some countries in medial east regions especially the Arabic countries for some political issues for some of these countries do not have a mailing system. End users in this system submit their orders for products and the admin users will replay on the orders with details of the cost and payment details. Their system have a good usability and accessibility and they only need an online payment method.[6]

Ching-Yu Huang presents an integration mechanism using PHP and MySQL functions to reset user passwords. in his paper, he shows us how to rest and store the forgotten password using web application with PHP, furthermore he shows us the data flow during the operation and the encryption process using SHA2 which is important to be used such a pattern for safety and security issues.[7] Olalere Modupeola Eetal they build a web-based for physical Fitness teleconsultation system using PHP and MySQL they stated that they provided a cordial link between the physical fitness instructors and users, by making information readily available to the end-users, however their paper does not contain a lot of information about the implementation part and technical issues and their system appears to be simple.[8]

The aim of the study [28] is access to information for the customers easily after system application based on network. The system maintains the information and data from loss or damage through storing them in database. There is no process of repeat while collecting and

processing the data because database design according to logical steps for example, ER diagram and relational model.

Conclusions of this study are the system provides database contains information to each employee in the institute for retrieving this information and updating it easily. The customer can access to the information easily from different administrative units through LAN network. The system provides speed; accuracy and reliability in inserting and updating the data. The system contains interfaces that characterized in the easiness of use and uncomplicated ones. Searching in the system through the name of the employee, gives speed in getting the information by using employee name as a primary "key in database.

The aim of the study [29] is demonstrating the significance of utilizing social database the board framework in working with web applications. The creator picked MySQL innovation such delegate social database the board framework in light of the fact that has movability, versatility, speed, is anything but difficult to utilize, is open source, is generally utilized by web engineers and gives great security. Finishes of the investigation are elite on the grounds that MySQL can run on an assortment of working frameworks, for example, Linux, Windows, Mac OS X and Solaris. In the interim, it can work with a huge number of exchanges. Simple to utilize in light of the fact that MySQL is anything but difficult to design and regulated. Versatility, MySQL is open source and it very well may be effortlessly adjusted by the client for his own necessities. It likewise oversees enormous databases. Great security on the grounds that MySQL gives expanded security through the execution of scrambled passwords and guarantee information insurance through explicit systems.

2.2 LITERATURE REVIEW WHICH HAVE RELATION WITH DATABASE BUILD

A database build process not comes easily to meet needs of university and end-user. It is also need to the technologies which uses in database design to get a relational database which can be compatibles with the proposed system. However, we can know methodology to build database through what come in the literature review [30]- [31], [34], [27] and [37].

The main aim of the study [30] is designing DB for employees in Baghdad University to store their information and to manage the information and data in high efficiency. Also, designing interface to this system with four buttons which are input, report, search and exit. Importance of the study is ending problems of the paper documents that have been used in storing employee's data.

Conclusions of this study are users can select the required information easily by using the main interface and the executive buttons. The system can warn the user by message when there is a wrong in implementation. The user can get the reports by using different keys. The system can be used by people who have simple information about computer.

The aim of the other study [31], raise the level of services provided to students through preparing of documents and results by electronic system. Making all information and data relating to students in one place is database. Speed in completing the tasks of the department through retrieving data and processing by using the system interfaces. Give each student identification number which facilitates the process of administration of information. Support the administration of college the ability to speed decision-making. This system provides a kind of protection to the data by preventing unauthorized users from accessing to the data stored in the system. Since the department suffers from a lack of staff, the adoption of this system does not require a large number of "employees.

Conclusions of this study are collection of data in one place and making various transactions and modifications on it and retrieve this data according to the need of generating the report. This system will transfer the work in this department from the manual to the computer-based system and is able to store huge data of the students, also enables the user to get access to data through a user-friendly interface. In addition, this system promotes the management of college to carry out its tasks high efficiently. Student information system reduces the time and effort required in the process of management students' information, also reduce the need for a large number of staff to carry out the functions of the department of student affairs, where the management of this system needs to only one employee, furthermore it will help the administration of the" college to speed decision-making which flows into the benefit of the college. The aim of the study [34] is design and build of a database management system for students in the department of computer science. Through DB, it is possible to store the information and data typical manner. This data will be connected to each other by a reciprocal relationship. Results of the study are using the "ER-Model" then "Relational Model" strengthens DB and detects errors from the beginning. Applying steps "Normalization" to find the best standard formulas at least "3NF" for "Relational Model" to overcome the problems which is facing DB for example data redundancy. According to "Relational Model", it can establish an integrated DB for students in the department of computer science in line with the descriptive tables. The system does not need "Denormalization" because there is no problem

in final tables. Access time and data processing through entering, retrieval, update and delete is almost negligible. Using “Embedded SQL” within an application “Microsoft Visual FoxPro” can be a good way to data retrieval and also to view reports. Student ID number is useful in search, reports and queries because it is a primary key in the database. Conclusions of the study are good analysis for the system from the early stages makes DB strong. “Relational Model”, which is based on mathematics basis can configure an integrated DB. Storing the attributes in a sequence way within table does not affect content of the table and the user can store the attributes in random sequence.

The study [37] is aiming to build electronic documentation system by using (Oracle) and designing distributed database for management unit of the postgraduate studies and connects it with administrative units and academic departments in the university. Importance of this study are facilitating the work in the units and departments within college and organizing it by using distributed database. Time saving, by using the electronic mail system in dealing among administrative units in the college. Prevent unauthorized persons from access to the system by protection gate. Insert electronic pictures documents and directory of graduate studies within database tables. Figure (2.1**)** Distributed database [37].

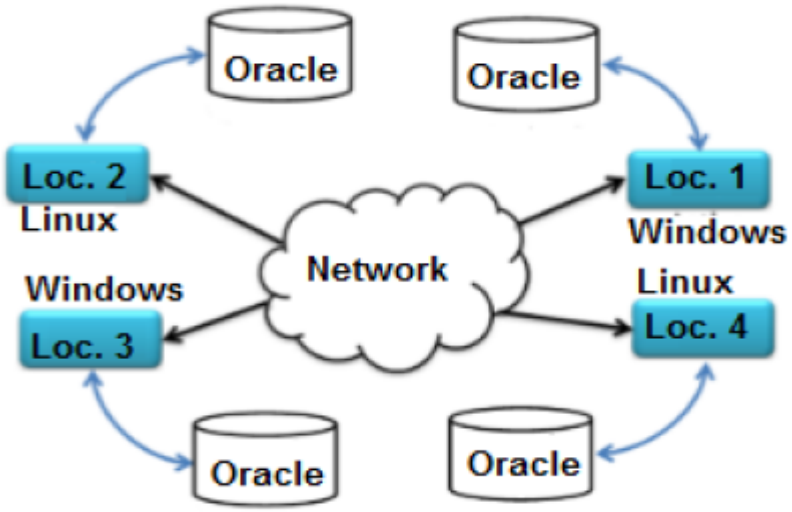

Figure 2.1: Distributed database

Conclusions of the study are the user can access to the system from any computer at network because linking database in LAN network with all users. The system can process the technical problems facing data by using tools within DBMS “Oracle”. Easiness in dealing with images and PDF by using multimedia databases in designing database. Using horizontal retail depending on (issued code, incoming) will lead to retrieve the data easily because the

mentioned codes will be the keys to deal with data. The system provides transmission easily among the windows and provides reports print, search and view the electronic documents. The aim of the study [27] is automating of administrative work by using information and communication technology to reduce time and effort in preparation of the reports. Building a system to provide students database and store the documents, information and reduce number of employees in the administrative units.

Advantages of this study are reducing the administrative effort in obtaining the information and the number of the employees because the one employee can handle with the proposed system. Accuracy in the work because the proposed system can provide accurate data and information to user through storing them in the database. Easiness in system development, where can add a new relationship to ER diagram and DBMS change from Microsoft Access which used in the proposed system to another one for example Microsoft SQL Server, Oracle. The system depends on an automatic coding to facilitate process data input through DBMS which is used in designing the proposed system where provides this technique.

Conclusions of the study are the system provides database to save information the students, hence making the modification and query on this information easily. Reducing administrative effort through dealing with digital information and the computerized processes without searching in the paper documents. Reducing the number of the staff because the proposed system can handle with one employee. Getting reports in less time by using the executive buttons to retrieve and printing information.

2.3 OTHER STUDIES

There are also" different studies [32]-[33] and [36] about applying EG and EM. The aim of the study [32] is recognizing the electronic management as a description of modern administrative, and what are the elements and requirements to apply electronic management. Conclusions of the study, electronic management is comprehensive transformation in concepts, theories, methods, procedures and legislations that is depended by the traditional management. It is complex process, integrated system of technical components, Informatics, finance and human, in the study [33] which is aiming to design and implement an e-government workflow that acts as a software platform to connect the government agencies together. The application enables the employees of different ministries to exchange electronic mails between each other in very secure and flexible way, it enables a user to create a text

message using a very sophisticated text editor (WYSIWYG), and also the user can attach a file to the message with a maximum size of 10Mb, then send that message to the specified receivers according to the government hierarchy (Ministry, Office, Department, Employee). The EG Workflow contains an administrative console which contains web pages that enable the administrator to create new users, add or edit ministry, office, department and official positions. For test purposes the designed application is deployed to a web server http://www.mobiiraq.com/egov, where many users have been registered to the application and tried it. conclusions of the study are using the developed e-government workflow system in this thesis; it will provide an advantage to the government in minimizing the waiting time of sending and receiving official messages between the employees of different ministries in the government. Also, e-government workflow provides an easy and effective way to store the messages sent and received as an archive. Security in the e-government workflow is an important issue, hence the proposed design in this thesis takes that into consideration:

1. The managers of the system add their employees, hence there is no auto registration, all the employees are trusted people and known by the managers which makes the application more secure.
2. When a user type the URL of the application on the browser that user is automatically to a login page that contains a login box only without any controls to hide the details of the application for unauthorized users, and when that user is logged in successfully is redirected to the required page.
3. The use of ASP.NET 2.0 gives the system more security, because the data membership of the system built using stored procedures which prevents the “SQL injection attack.

Figure **(**2.2**)** E-government workflow description [33]

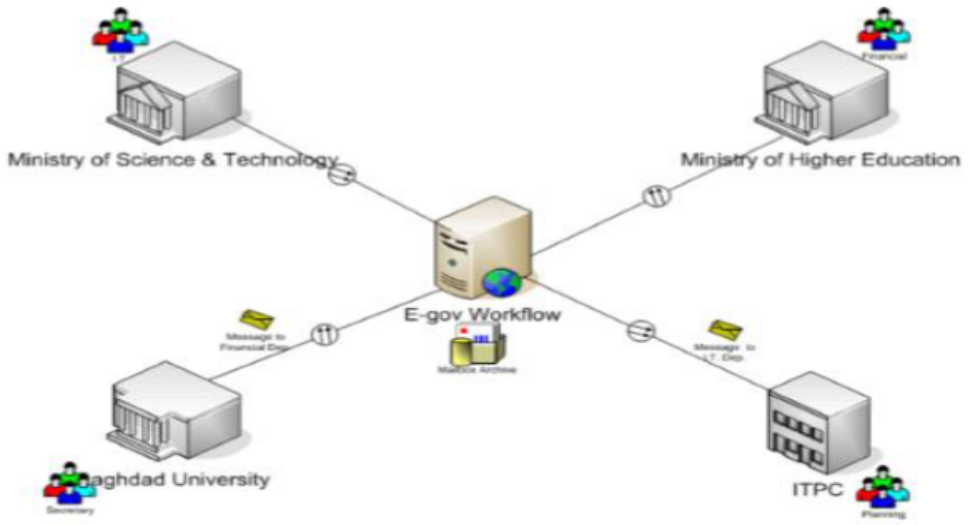

Figure 2.2: E-government workflow description

The study [36] which is aiming to apply and implementing of EG, through the scientific literature in this field and analyze main issues for transformation from public administration to modern of the investigation are ICT and especially web innovations are progressively moving into the multidimensional resident society segment, requiring new types of examines, organization and instruction. Arrangement of options in contrast to e-administration is a costly, (it doesn't give the normal investment funds in costs) and was not completely acknowledged by residents and by and large didn't improve the considerations, developments or cooperation of residents in key dynamic. In light of world experience, we can attest that many creating nations don't have the framework for arrangement of e-taxpayer supported organizations on their whole domain.

Creating nations must incorporate the advancement of ICT-foundation in the e-government improvement technique, growing new ways to deal with arrangement of the entrance issue. Examining the present state of the e-government on the planet, it tends to be noticed that," the developing specialized hole between nations progressively created in the educational field and the creating nations, is as yet a genuine issue.

Emmanuel Okewu etal: They announced the use of the Component-based programming building worldview for the improvement of a college an Enterprise Resource Planning (ERP) explicitly an e-Administration System to computerize its complex operational and authoritative methodology for productivity and adequacy. The examination gives a premise to exactly look at the benefits of Component-based programming building and customary advancement draws near. They said that we have to restraint the inadequacies of manual preparing of archives through sorting out and organizing gatherings in the college, and for that need, an innovation-based answer for college e-organization was created, ERP framework was created by utilizing CBSE approach. Anyway, their extent of conversation in their exploration is constrained to the structure and improvement of the e-Meeting module of the e-Administration System. In their paper they said that the e-Administration framework improves business work process and builds effectiveness, lessens reliance on paper, engage controls and computerizes email cautions, gives easy to use and usable electronic interfaces, mastermind forms, facilitates selection of best strategic policies, and coordinates existing systems[38].Therefore, the rising requirement for a versatile innovation in running the undertakings of a college can't be overemphasized .The procedure in their examination was sorted out on three sections , first to diminish the managerial and operational wasteful aspects related with manual handling they utilized structure and execute a customized ERP utilizing the CBSE life cycle, second to gauge and think about programming advancement endeavors of conventional programming advancement approach and Component-based programming designing (CBSE) approach , they utilized cost estimation strategies. Right now, Point Analysis and Constructive Cost Model. At long last , to check guarantee of significant compensation off of Component-based programming designing (CBSE) versus conventional advancement they Compare study result with industry take care of parameter .In their outcome they discovered that ERP, e-Administration framework, mitigates generously the operational and regulatory expenses of running a college converting into proficient administration of techniques and procedures, likewise he guarantee that the e-Administration framework has decreased expense and measure of individual hours used on operational and managerial procedures.[39]

Abood H, Alani msh etal: They directed an exploration to discover the Obstacles to the Spread of E-Learning in the Arab nations. They guarantee that the on the web, separation and e-learning in Arab nations are still underneath the universal standard. Their examination

expected to explore the hindrances counteraction the spread of e-learning in the Arab nations. He said that the Education at the college is as yet adhering to conventional examples of instructive frameworks in the Arab nations, and There are various components that lead to this outcome which may identify with the way of life, foundation or the absence of human and material assets, or just on the grounds that this new innovation is still new right now the world[40].In their procedure they utilized a poll to get reactions of Arab colleges showing staff individuals. The survey comprised of 48 inquiries separated into four gatherings; questions identified with understudies, educators, college divisions and leaders. The example of the investigation comprised of 400 school personnel individuals from different Arab colleges in their investigation expressed that the fundamental hindrances confronting the spread of e-learning in Arab nations are as per the following:

- The requirement for direct correspondence among educators and understudies, which leads numerous instructors to demand the conventional learning.
- The absence of English Language and PC aptitudes for the two instructors and understudies, which implies that the greater part doesn't be able to adapt to e-learning.
- The absence of exact mechanical foundation and legitimate structure which doesn't help in spreading such sort of instruction.
- Other snags were identified with understudies, instructors, the board staff and leaders that can be handled if these nations plan to truly utilize e-learning to support Arab society.[41]

Stamatios A. Theocharis analyzed the instance of Greek Public Administration by inquiring about the advancement of a back-office framework as far as customized administration for government authorities. They additionally show principle highlights and essentials that an incorporated framework must have so as to help a successful, productive and present day back-office. He said that the Networks of open organization and broadband systems have been made and government sites and e-legislative entries have been created so as to make the picture of a modem and efficient open organization concentrated on the client - resident or business .However the issue that remaining parts identifies with the back-office part. Programming applications created are sufficiently bad to significantly help the worker supporting the inward systems. existing frameworks are portrayed by the accompanying:

- Independent programming applications don't bolster interoperability and models that are created dependent upon the situation and every so often cover
- Delay in utilization of electronic marks
- Main accentuation is being given to the improvement of databases, which results into similar information being put away in a wide range of PC frameworks
- Procedures arranged to the, alleged, printed copy as opposed to electronic structure on archives
- Insufficient advancement of data frameworks to help search of regulatory data

He that for this explanation, it is important to concentrate all the procedures of an association and choose which ones can be either joined or wiped out or mechanized or improved, this should be possible by Business Process Reengineering. In their decision they said that Under e-government, general society are not engaged with inner help procedures of open organization, yet just in the filling of the application structure. The improvement of a solid back-office is a basic factor in accomplishing e-government. Significant strong factor is the disentanglement and mechanization of inside techniques followed in open organization just as the powerful aiding of human resources.[42]

Prof. J. Meena he gives a procedure model and a specialized model for an innovation-based instruction framework. The procedure model spotlight on the procedures developing an innovation-based instruction. He that innovation has encouraged e-organization which includes the powerful use of electronic media in the field of organization. The innovation model for working e-organization in higher instructive establishments is likewise talked about together with a review report supporting that innovation-based learning and innovation-based organization are not accessible in totality.

E-organization, an improvement organization framework, utilizes mechanized frameworks/robotization for task the executives and organization. In his decision he said that an innovation-based learning model empowers educators to disperse required data in a quick and successful way, improves foundation of connections among establishments and encourages information sharing and aptitude [43].

Ryan Yonata they have built up an administration data framework for discharges stock in Indonesia. As an e-organization framework, means to encourage the way toward gathering

and overseeing territorial discharges stock information which likewise giving information and data to general society.

This framework gives information and data to people in general and is pictured by discharge map, illustrations/outlines, and correlation measurement. The framework is tried utilizing three strategies: utilitarian testing, ease of use testing utilizing framework ease of use scale, and perception testing. In view of the test outcome, the framework is as of now satisfied utilitarian necessities, ease of use perspectives with a SUS score of 75 and satisfied ease of use and client experience objective, and the representation is reasonable for the clients. In their decision, they said that Indonesian government can utilize the framework highlights to gather, oversee, and manage outflows stock information in all district. Moreover, residents of Indonesia and other invested individuals are additionally ready to get to the information with an increasingly justifiable configuration through visualization.[44]

Hossan et have discussed simple parts influencing accomplishment and disillusionment in executing electronic organization. They guided an investigation with respect to the impression of e-government action of Bangladesh among government specialists. Using the organization outlines web-based endeavor as the purpose of union, they have explained the association between the care, effect of care creation on the motivating force towards the e-government exercises of Bangladesh government laborers. They have recognized inside political need, by and large vision and technique, power of legislative issues and individual situation, strong change the officials, convincing errand the board, aptitudes among the specialists incorporate with this endeavor and adequate imaginative establishment. [45]

Habib and Faisal have introduced the example of overcoming adversity of identification office robotization towards having paperless office as the initial step to computerized Bangladesh. Right now paper, creators have pointed a few essential difficulties in computerized Bangladesh advancement like nonattendance of focal database for residents containing all data, inappropriate information on data innovation among various classes of clients, wasteful utilization of the current IT assets, absence of between departmental participation among different branches of government, overhauling the association chart of the government office, loathsome obstacle in achieving information section of existing reports and so on. This paper absences of giving a particular arrangement or proposal with respect to these issues raised. [46]

Azad et al. proposes to have explicit Government Enterprise Architecture (GEA) to build up their e-Governance applications. They additionally propose to embrace adjusted Federal Enterprise Architecture (FEA) comprising of five reference models including Business, Performance, Data and Information, Application Capabilities and Technology and Standards as GEA for Bangladesh. The idea is by all accounts promising; anyway, any away from on the components of GEA has not been talked about in the paper which makes the general design [47].

Rahman has given an understanding to nearby government and its relationship with ICT. Creator has introduced status and capability of e-administration in correlation with conventional administration alongside working structures by breaking down the equivalent for six nations including Bangladesh, India, Republic of Korea, Pakistan, Singapore and Sri Lanka. A five level nearby e-government hierarchical structure has additionally been introduced in [48].

Mahbubul Alam et creators have talked about difficulties of actualizing electronic administration as difficulties of G2C (absence of education, destitution, frail ICT framework, low degrees of tele-thickness, restricted web get to), difficulties of G2G e-government (deficient ICT foundation inside the legislature, insufficient access to ICT by government authorities, familiarity with government authorities about ICT, non-worthiness of it frameworks, absence of satisfactory preparing programs, absence of ICT experts, lacking human asset limit, no appropriate directing ICT expert for executing e-administration) and gives explicit proposals including development of chances for preparing, training and information sharing for individuals living in rustic and remote territories through separation picking up; characterizing ICT guide and needs to push forward of usage of e-administration undertakings and all the more significantly, making ICT foundation individuals increasingly occupied with e-administration usage process and furthermore making them liable for choosing about ICT related issues.[49] A few excellent examples have been introduced in actualizing electronic administration like UYAP SMS data framework (Turkey), Reti Amiche (Italy) Service Ontario (Canada) and a few others.

The SMS legal data framework, created by the IT Department of the Ministry of Justice of Turkey consequently illuminates every single related gathering who have cases under the watchful eye of the Turkish courts by short message administration (SMS) any legitimate occasion, information or declaration identified with their cases.

Subsequently, parties are never again expected to go to the courts to gather this data upgrades by and large e-availability. The SMS administration doesn't supplant official warnings, as it just means to give cutting-edge fundamental information.[50]

Openings and difficulties of electronic administration in creating nations have been engaged in [50]. V. Ndou presents a definite diagram of e-administration and related phrasings with similar examination of e-administration status in correlation with created nations. The chances of electronic administration has additionally been examined in [50] which incorporates, Cost decrease and proficiency increases, Quality of administration conveyance to organizations, straightforwardness, anticorruption, responsibility fulfillment, increment in the limit of government reach, system and network creation to Improve the nature of dynamic and advance utilization of ICT in different segments of the general public. Breaking down various contextual investigations (which does exclude any from Bangladesh), **V. Ndou** likewise makes sense of two or three difficulties in executing e-governance. A diagram on the present e-administration circumstances, advances and existing obstructions in the Asia-Pacific locale has been pointed in [51] by Wescott. He has likewise introduced various proposals in regard to adapting to difficulties, while augmenting the advantages of e-governance [52].

The study aims to identify the obstacles to the application of electronic administration in the management of human resources, And identify the main mechanisms proposed to overcome obstacles, and adopted the study on the curriculum And the use of the questionnaire as a data collection tool 311 individuals "were selected in the random stratified form of HR managers and staff The main findings of the study are administrative constraints: lack of training courses for resource staff Human resources in the field of electronic administration, and the presence of financial constraints Minia: weak financial allocations For research and advocacy in the field of information technologies, and the presence of human obstacles: the highest confidence level Employees in all electronic transactions, and the presence of technical obstacles Minia: lack of evidence Which is described in the electronic administration application.[53]

Agnieszka Agata Tomaszewicz: presents the results of enhanced scientific research in the area of impact of local e-administration solutions on service efficiency among citizens which result in proposal of the model of local e-administration development. The Population of the study were local authorities in West Pomeranian Voivodeship (urban, including city with powiat rights, urban-rural and rural) and local communities which are serviced by these authorities. The Data collection CAWI technique *(Computer Assisted Web Interviews)*, survey technique, was used among local communities which was drawn on the basis of random sample. Reliability and validity, the questionnaire that was used in the present study was rigorously tested for its content and construction validity. A draft of the final questionnaire was shown to two officials and three academics, in order to test whether it met all theoretical and practical requirements. In his conclusion, he said that the local e-administration has potential to enable, in a considerable manner, contributing to improved service provided for local communities. In conclusion, essential factors which condition the success of implementing the model of local e-administration are as following:

1. Noticing the need for changes by local authorities and their engagement in the process of implementing solutions within the scope of local e-administration on every stage.
2. Accepting efficiency and usability as basic results' measures of implementing the model of e-administration development.
3. Implementing standardization and interoperability as basic factors responsible of work efficiency.
4. Reliable valuation of the project costs and guarantee in financing it.
5. Obtaining proper IT skills by employees and social communities.
6. Using the tele-informatic technology.
7. Participation of local communities and their approval for new tools implemented in municipal administration.
8. Coordination, cooperation, monitoring and evaluation.
9. changing needs of the environment.[54]

Within the research conducted for the needs of eGovernment Readiness Index, five e-administration models were found [55]:

1. centralized- where the information and public services system is organized around the main national portal and presented information are highly unified;

2. decentralized- based on the individual sites, created separately for particular institutions, initiatives and programs in which collective public platforms play only referential function and presented information are not standardized.
3. network- in which systemic character is obtained by the number and kind of links between particular websites.
4. e-participation oriented- in which the base constitutes the tools enabling citizens' engagement in creating the administrational processes and making decisions.
5. e-services oriented- in which computerization of the processes like back-office and front-office are treated as the most important factor in creating e-administration systems.

S. A. Ahsan Rajon et They focus on various approaches of implementing electronic governance in developing countries and explores the specific factors related to the challenges and opportunities in implementing electronic governance. They aim to point the possible solutions in handling the barriers to implement electronic governance. The supporting framework for integrating the overall socio-economic activities under the information and communication technology framework is also conveyed in this paper. The main contributions of their research are Right off the bat, we explore the explicit difficulties and openings while in transit to build up e-administration in creating nations like Bangladesh. We have additionally thought about the current plans and have broken down their viability from the financial and techno-infrastructural purpose. Furthermore, it proposes a total structure for actualizing e-administration. It is the oddity of this takes the general components of electronic administration into account while past investigates (to be best of our discoveries), principally centers around explicit issues or factors of e-governance. Thirdly, this paper leads an overview with an intend to finding the arrangements of the overall difficulties in actualizing electronic administration and examinations the review reactions to reach to explicit result. Fourthly, though the majority of the current looks into propose structure for actualizing electronic administration either by adjusting the current assets or by proposing to re-encourage the framework, it is our significant commitment that, we propose a reasonable, plausible and compelling system for actualizing e-administration by guaranteeing most extreme usage of existing framework and in addition giving a parallel inception of the re-designing procedure. Also, this paper raises a few of concerns which are to some degree

exceptional to Bangladesh and subsequently, those issues were not made sense of by generally looks into.in their conclusion they said that as determining the structure for executing electronic administration. The general examination on the handiness and adequacy to set up e-Government, e-Administration and e-Democracy as e-Governance has been intricately given here. Future works might be devoted to expound the particular issues like catastrophic event time electronic administration structure, e-business and web based business reinforcing perspectives alongside the center electronic administration [56].

3. THIRD CHAPTER SYSTEM ANALYSIS AND DESIGN

In this chapter, online web system design and planning will be presented through Unified Modeling Language UML. The design part for the application is so important for the quality management and to understand how the business are working according to the requirements Usually , the requirements are been collected by analysts and then converted into diagrams .these diagrams to show the developer how the system are working and how the data are been flowed through the system .

Four UML Diagram we will use in this chapter, activity diagram, ER diagram, SQL schema Other complementary diagram is user interface.

3. 1 EMPLOYEES USERS

Employees can perform the following tasks:

- Sign up.
- Login.
- Send application form.
- Edit application form.
- Delete the application.
- View the result of application.
- Manage account.
- Manage visitor.
- Manage applications.
- Manage contacts.
- Manage labs.
- Manage Maintenance.
- Manage production.
- Manage accounting.
- Manage human resources.

Figure (3.1) the Use Case diagram for employee’s role in the system.

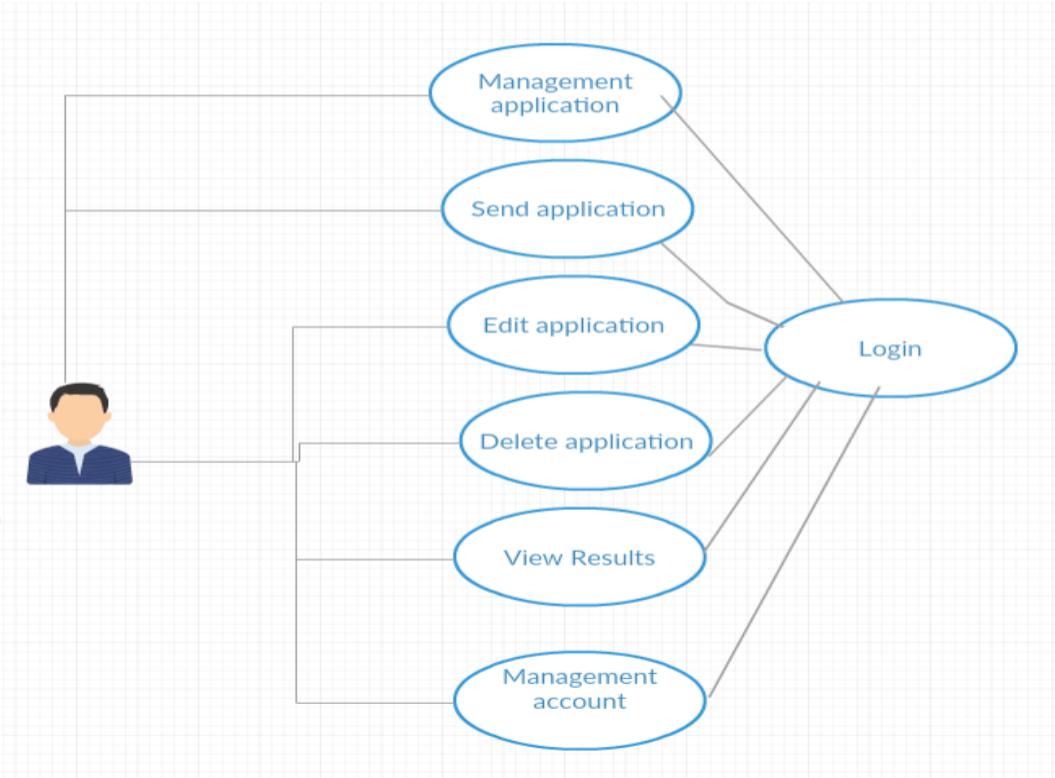

Figure 3.1: Employee's Case Diagram

3. 2 MANAGER USERS

Manager User can perform the following tasks:

- Login.
- View application forms.
- Confirm the application form.
- Refuse the application.
- View the result of application.
- Manage labs
- Manage Maintenance
- Manage production

Figure (3.2) the Use Case diagram for Manager's role in the system.

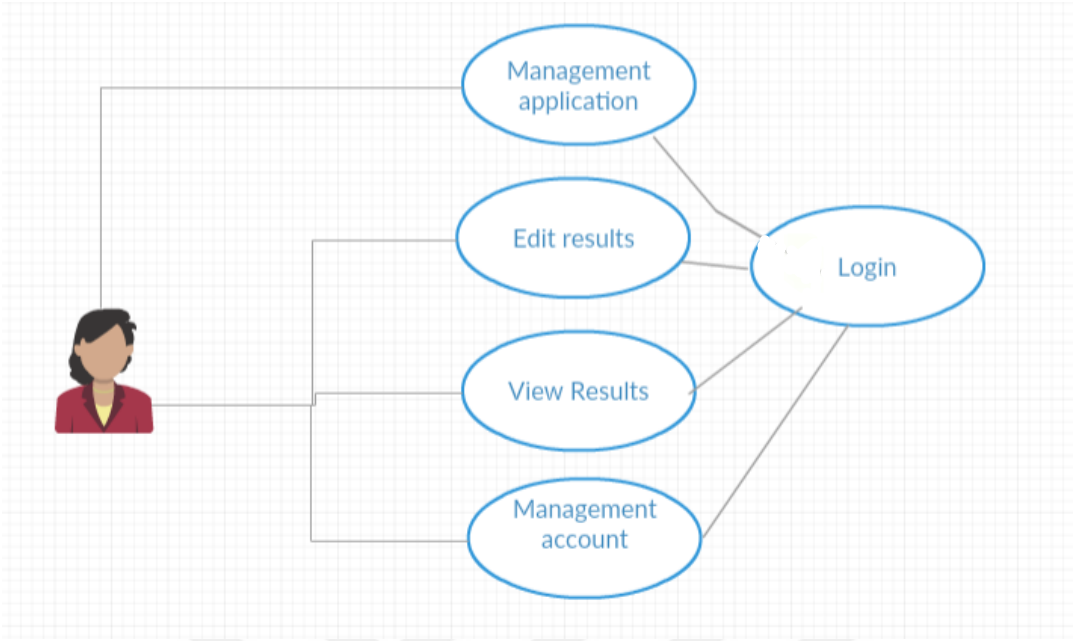

Figure 3.2: manager's Case Diagram

3.3 ADMIN USERS

Admin User can perform the following tasks:

- Login.
- View application forms.
- Confirm the application form.
- Refuse the application form.
- Manage labs
- Manage Maintenance
- Manage production

Figure (3.3) the Use Case diagram for Admin's role in the system.

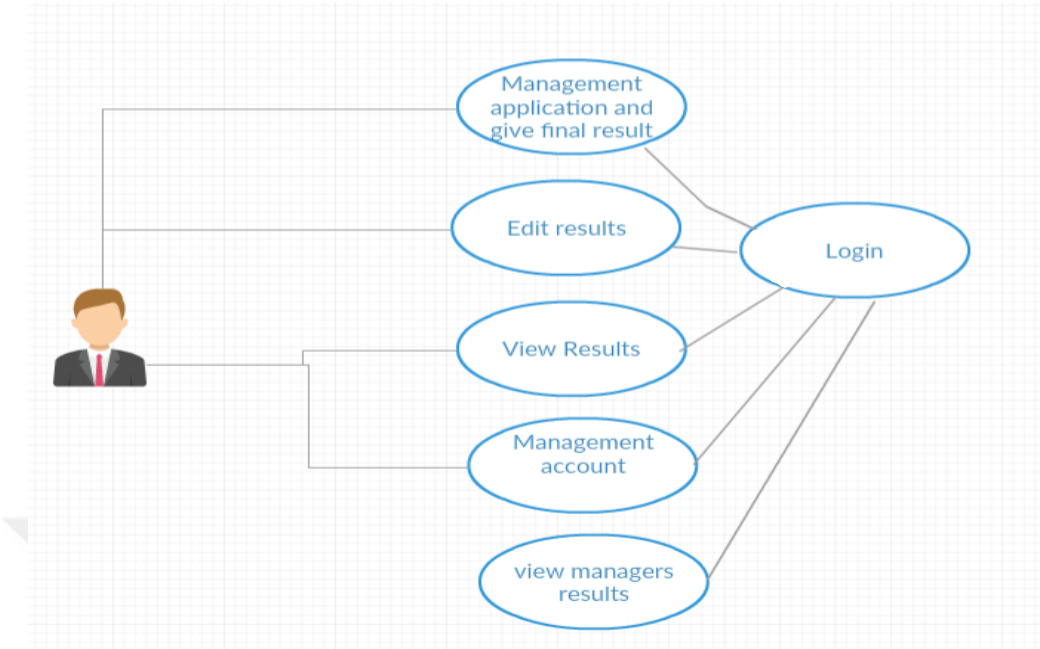

Figure 3. 3: Admin's Case Diagram

3.4 SECURITY SECTION

In this part of the system we can manage the company visitors who are not a company's staff for security management. The flow chart for the security section in Figure (3.4), the Employee login into the system, then insert the visitor information like a name and purpose of the visit. This section is divided into three sections, which are new visitors, visitor management, and also a history search for any. Information regarding visitors.

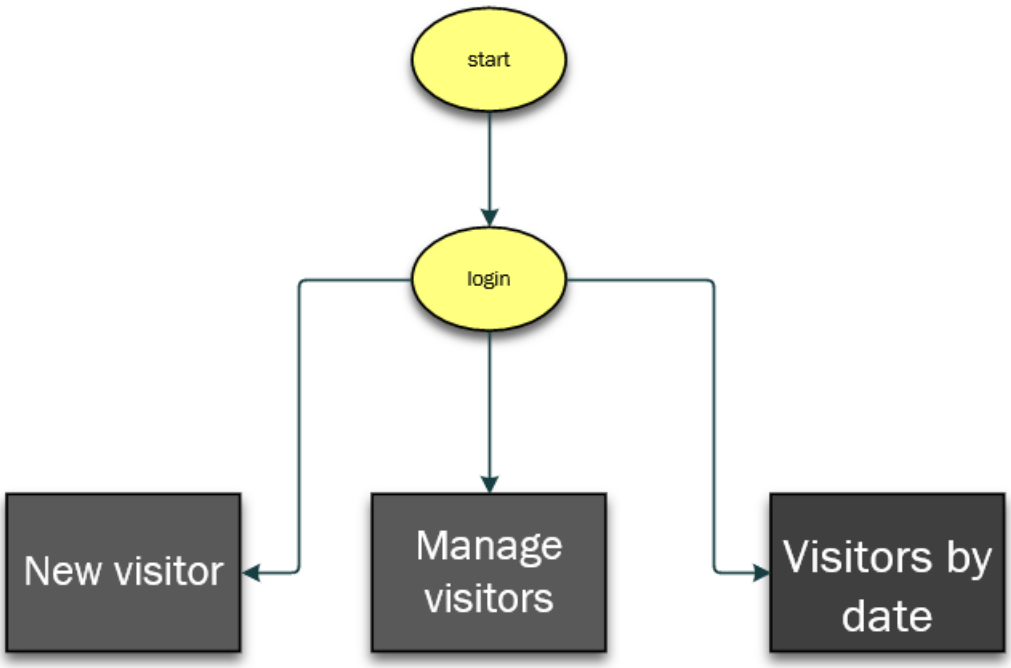

Figure 3.4: Security Section

3.5 CLINIC SECTION

In this scheme, we can manage the medicals appointments for the company's staff and also manage the database for the clinic's staffs .This section is divided into several sections, including information about the clinics, as well as information about the doctors and their duties inside the clinics, information about the clinic rooms and workers, and finally appointments and their administration by the administrative department. The flow chart for the medical clinic department figure (3.5).

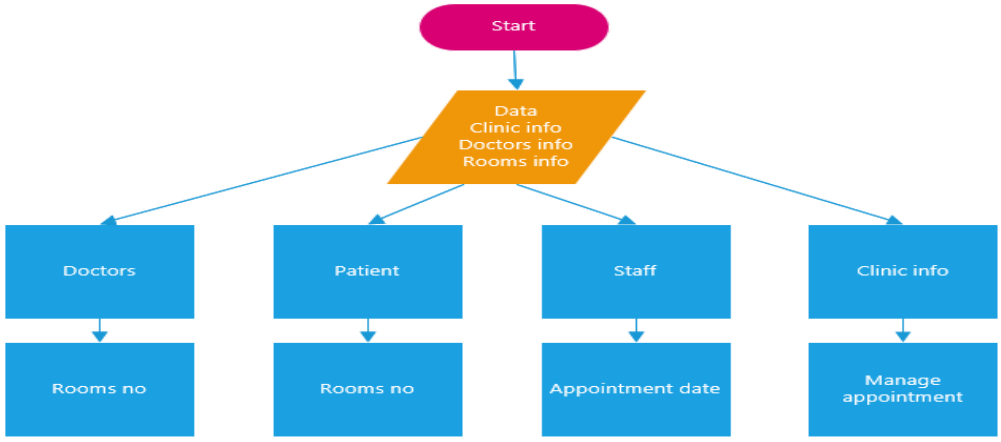

Figure 3.5: Clinic Section

3.6 COMMUNICATIONS SECTION

In figure (3.6) the flow chart for the communications section of this chart during entry. There are two sections, an ordinary user and the highest-privileged user. For the ordinary user he can only see the information and he is not able to modify this information. As for the highest user privileges, he can modify, add and manage the contact information in the field

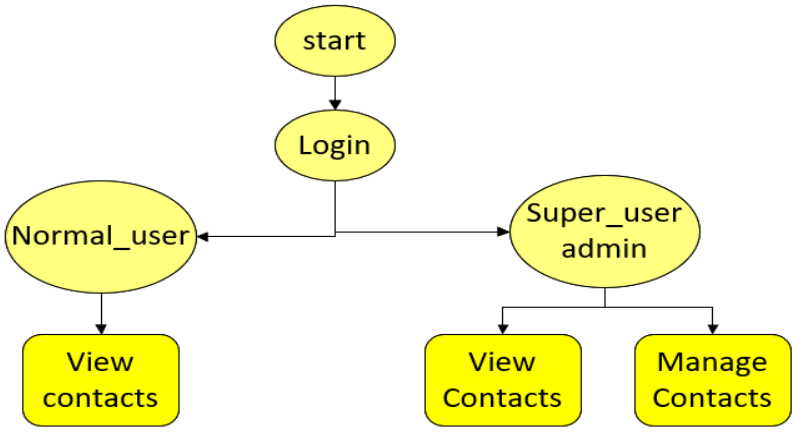

Figure 3.6: Communications section

3.7 LABORATORY SECTION

The laboratory department, there are three levels of responsibility. The employee level is responsible for entering a data in the report database. Also, managing reports. We come to the chief employee's department. There are three tasks, making reports and approving other employees' reports, the results to the higher level of it in the tasks. Finally, the supervisor has the same duties as the chief of staff, but the final approval is belonging to him. Figure (3.7) data flow for the lab section.

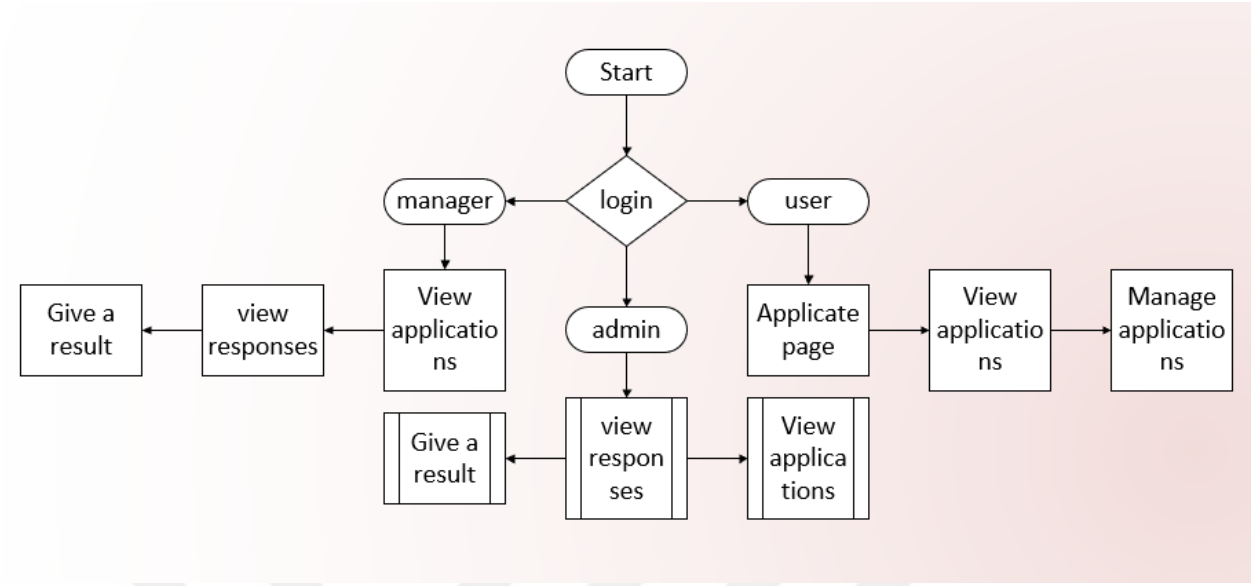

Figure3.7: Lab Section

3.8 MAINTENANCE SECTION

The Maintenance section, there are two levels of responsibility. The employee level is responsible for entering a data in the report database. Also, managing reports, then give the results to the higher level of it in the tasks. Finally, the supervisor has the same duties as the chief of staff, but the final approval is belonging to him. Figure (3.8) the data flow for the Maintenance section.

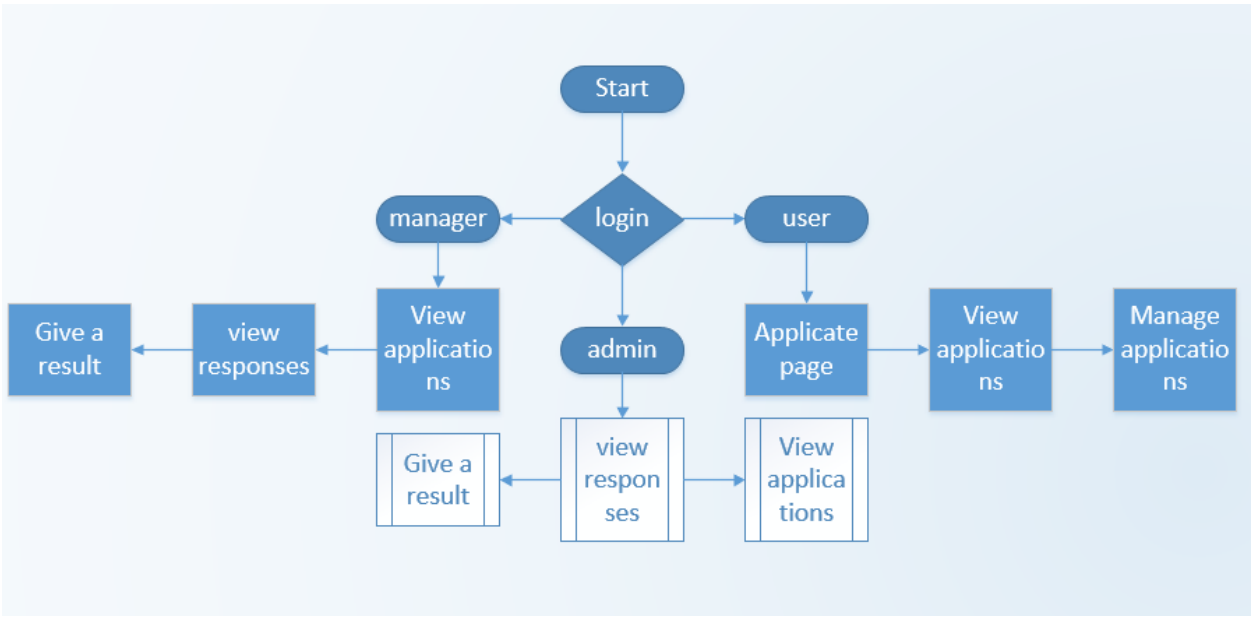

Figure 3.8: Maintenance section

3. 9 MANAGEMENT SECTION

This scheme in figure (3.9) for the Department of Management consists of three vital departments, the Accounting Department, the Human Resources Department, and finally the Production Handling Department. Each of these departments has a specific mechanism in the work, let's start with the Department of Accounting for a close relationship with systems theory in general, which is not a closed system, as it affects and is affected by the environment in which it operates. The human resources department comes from the important departments in any system or company because of its commitment and responsibilities that are distributed among the employees and cares about the affairs of the employees and the progress of their affairs the production handling department is a vital department and it consists of levels of employees and different levels of responsibilities. The regular employees fill in reports according to daily production and send reports to the highest employee in the scale of responsibilities and in turn inspects the reports and give his approval and refer them to me. Department Supervisor.

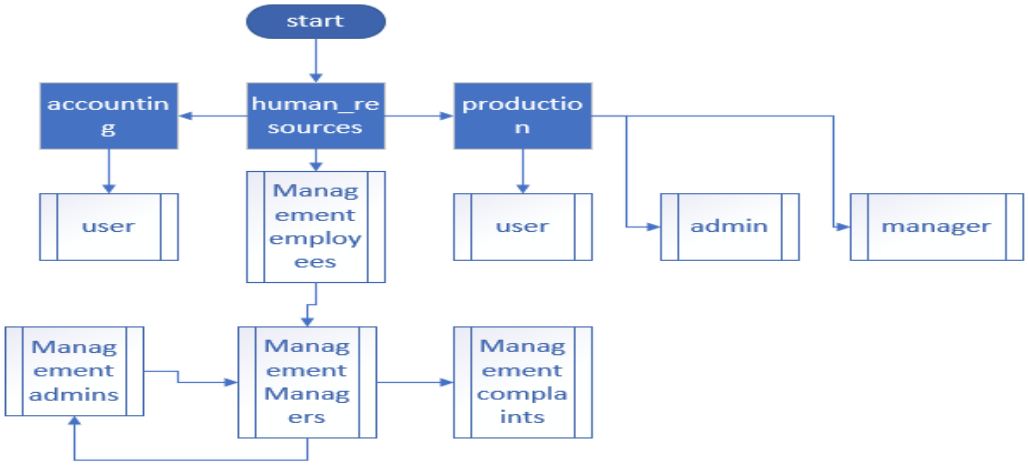

Figure 3.9: management section

3.10 SQL SCHEMA

First note that strictly speaking having a database schema is not always necessary, as is witnessed by the different NoSQL databases, which will in fact often list this as one of their advantages. So, given the additional observation that it can take quite some effort to design and maintain a database schema, it can indeed be asked what their benefit is. In the following I will give what I think are the main ones:

Documentation: The schema gives an overview of the data in the database (for example, of the present tables and their connections). This makes it easier to keep track of what information is and is not present in the database and what it represents, not only for those who created the database, but also for those who have to use and maintain it later on.

Data integrity: The schema contains also the database integrity constraints that need to be maintained by the DBMS. Without such constraints it is up to the applications and users to guard the integrity of the data in the database, which in many cases can lead to unacceptable risks of data inconsistency.

Storage and execution efficiency: A schema tell the DBMS what the structure of the data is that it will find in the database. If this becomes more predictable, for example what the size and type of certain fields and the total size of records is, a more efficient storage and indexing data structure can be chosen to store and access the data. If there is no schema information, a one-size-fits-all data structure has to be chosen. Moreover, with a schema present it will become easier to estimate the cost of certain operations for the query optimizer, especially if with the schema also statistical information such as average sizes and selectivity of certain keys and joins. In Figure (3.10)our SQL.

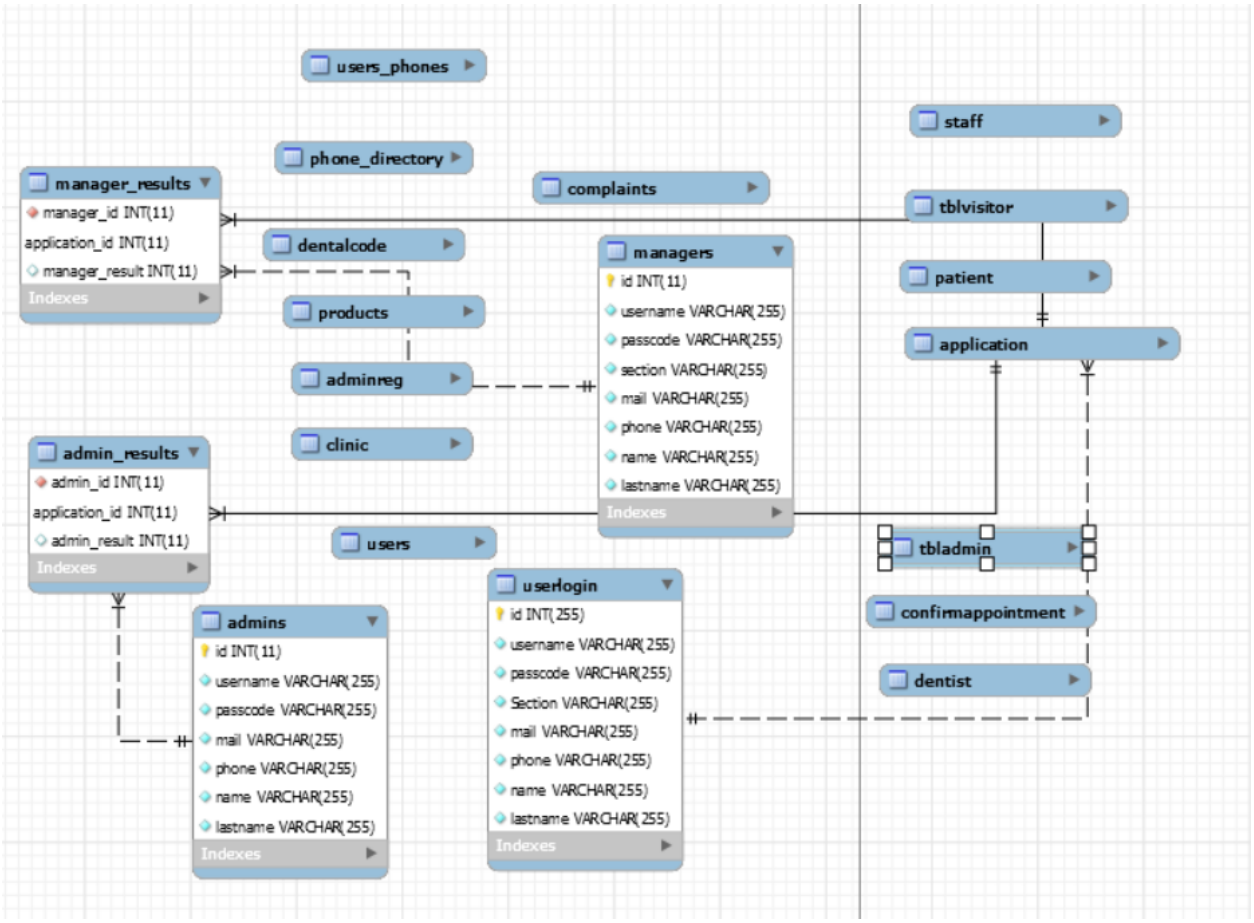

Figure 3.10: SQL Schema

4. FOURTH CHAPTER IMPLEMENTATION AND UNIT TESTING

Technical Needs To build the system, the following tools will be used:

4.1 WAMP SERVER FOR HOSTING THE SYSTEM

WampServer is a Windows web development environment. It allows you to create web applications with Apache2, PHP and a MySQL database. Alongside, PhpMyAdmin allows you to manage easily your [80].

4. 2 MYSQL SERVER

The MySQL server provides a database management system with querying and connectivity capabilities, as well as the ability to have excellent data structure and integration with many different platforms. It can handle large databases reliably and quickly in high-demanding production environments. The MySQL server also provides rich function such as its connectivity, speed, and security that make it suitable for accessing databases.[81]

4. 3 PHP PROGRAMING LANGUAGE

PHP is a popular general-purpose scripting language that is especially suited to web development. Fast, flexible and pragmatic, PHP powers everything from your blog to the most popular websites in the world [82].

4.4 DATABASE TABLES

First of all, we need to build the database tables and make the logical relations among them. As we see in figure (4.4)all tables for our system.

Table	Action	Rows	Type	Collation	Size	Overhead
adminreg	Browse Structure Search Insert Empty Drop	30	InnoDB	latin1_swedish_ci	16 KiB	-
admins	Browse Structure Search Insert Empty Drop	2	InnoDB	latin1_swedish_ci	16 KiB	-
admin_results	Browse Structure Search Insert Empty Drop	14	InnoDB	latin1_swedish_ci	48 KiB	-
application	Browse Structure Search Insert Empty Drop	15	InnoDB	latin1_swedish_ci	32 KiB	-
clinic	Browse Structure Search Insert Empty Drop	1	InnoDB	latin1_swedish_ci	16 KiB	-
complaints	Browse Structure Search Insert Empty Drop	2	MyISAM	latin1_swedish_ci	2.2 KiB	60 B
confirmappointment	Browse Structure Search Insert Empty Drop	1	MyISAM	latin1_swedish_ci	2 KiB	-
dentalcode	Browse Structure Search Insert Empty Drop	7	InnoDB	latin1_swedish_ci	16 KiB	-
dentist	Browse Structure Search Insert Empty Drop	2	InnoDB	latin1_swedish_ci	16 KiB	-
managers	Browse Structure Search Insert Empty Drop	4	InnoDB	latin1_swedish_ci	16 KiB	-
manager_results	Browse Structure Search Insert Empty Drop	14	InnoDB	latin1_swedish_ci	48 KiB	-
patient	Browse Structure Search Insert Empty Drop	2	InnoDB	latin1_swedish_ci	16 KiB	-
phone_directory	Browse Structure Search Insert Empty Drop	1	MyISAM	latin1_swedish_ci	2.1 KiB	32 B
products	Browse Structure Search Insert Empty Drop	3	MyISAM	latin1_swedish_ci	2.2 KiB	20 B
staff	Browse Structure Search Insert Empty Drop	0	InnoDB	latin1_swedish_ci	16 KiB	-
tbladmin	Browse Structure Search Insert Empty Drop	2	InnoDB	latin1_swedish_ci	16 KiB	-
tblvisitor	Browse Structure Search Insert Empty Drop	2	InnoDB	latin1_swedish_ci	16 KiB	-
userlogin	Browse Structure Search Insert Empty Drop	6	InnoDB	latin1_swedish_ci	16 KiB	-
users	Browse Structure Search Insert Empty Drop	1	MyISAM	utf8_general_ci	2 KiB	-
users_phones	Browse Structure Search Insert Empty Drop	2	MyISAM	latin1_swedish_ci	2.1 KiB	-
20 tables	Sum	111	MyISAM	latin1_swedish_ci	316.6 KiB	112 B

Figure 4.4: System's database tables

4.5 THE DATABASE RECORD FOR ADMIN

Shows in Figure (4.5) .

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	id	int(11)			No	None		AUTO_INCREMENT	Change Drop More
2	username	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
3	passcode	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
4	mail	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
5	phone	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
6	name	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
7	lastname	varchar(255)	latin1_swedish_ci		No	None			Change Drop More

Figure 4.5: Admin record

4.6 THE DATABASE RECORD FOR APPLICATION

In Figure(4.6)

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	id	int(11)			No	None		AUTO_INCREMENT	Change Drop More
2	user_id	int(255)			No	None			Change Drop More
3	pname	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
4	pid	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
5	date	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
6	description_lab_daily	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
7	description_lab_needs	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
8	e_daily	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
9	e_needs	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
10	c_daily	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
11	c_needs	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
12	m_daily	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
13	m_needs	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
14	a_daily	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
15	a_needs	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
16	p_daily	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
17	p_needs	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
18	final_result	int(11)			No	0			Change Drop More
19	manager_result	int(11)			No	0			Change Drop More
20	admin_result	int(11)			No	0			Change Drop More

Figure 4.6: Application record

4.7 THE ADMİN RECORD

In figure (4.7).

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	ID	int(5)			No	None		AUTO_INCREMENT	Change Drop More
2	AdminName	varchar(45)	latin1_swedish_ci		Yes	NULL			Change Drop More
3	UserName	char(45)	latin1_swedish_ci		Yes	NULL			Change Drop More
4	MobileNumber	bigint(11)			Yes	NULL			Change Drop More
5	Email	varchar(120)	latin1_swedish_ci		Yes	NULL			Change Drop More
6	Password	varchar(120)	latin1_swedish_ci		Yes	NULL			Change Drop More
7	AdminRegdate	timestamp			Yes	CURRENT_TIMESTAMP			Change Drop More

Figure 4.7: The Admin Record

4.8 THE VİSTORS RECORD

In figure (4.8).

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	ID	int(5)			No	None		AUTO_INCREMENT	Change Drop More
2	VisitorName	varchar(120)	latin1_swedish_ci		Yes	NULL			Change Drop More
3	MobileNumber	bigint(11)			Yes	NULL			Change Drop More
4	Address	varchar(250)	latin1_swedish_ci		Yes	NULL			Change Drop More
5	Apartment	varchar(120)	latin1_swedish_ci		No	None			Change Drop More
6	Floor	varchar(120)	latin1_swedish_ci		No	None			Change Drop More
7	WhomtoMeet	varchar(120)	latin1_swedish_ci		Yes	NULL			Change Drop More
8	ReasontoMeet	varchar(120)	latin1_swedish_ci		Yes	NULL			Change Drop More
9	EnterDate	timestamp			Yes	CURRENT_TIMESTAMP			Change Drop More
10	remark	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
11	outtime	timestamp		on update CURRENT_TIMESTAMP	Yes	NULL		ON UPDATE CURRENT_TIMESTAMP	Change Drop More

Figure 4.8: The Visitors Record

4.9 THE STAFF RECORD

In figure (4.9).

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	sid	int(255)			No	None		AUTO_INCREMENT	Change Drop More
2	name	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
3	age	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
4	sex	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
5	phone	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
6	email	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
7	address	text	latin1_swedish_ci		No	None			Change Drop More
8	registration_date	datetime			No	None			Change Drop More

Figure 4.9: The Staff Record

4.10 USER INTERFACE IMPLEMENTATION

The user interface plays a big role in how the user and employee interact with the system and helps him a lot in understanding it. It is also known that the user interface is the basis of the success of every system or system and depends on the imagination and creativity of the designer in choosing colors and icons.

4.11 MAIN PAGE

The Main page interface is one of the most important parts of the system because the user interface is the link between the user and the desired function of the system. The figure (4.11) is the main page interface.

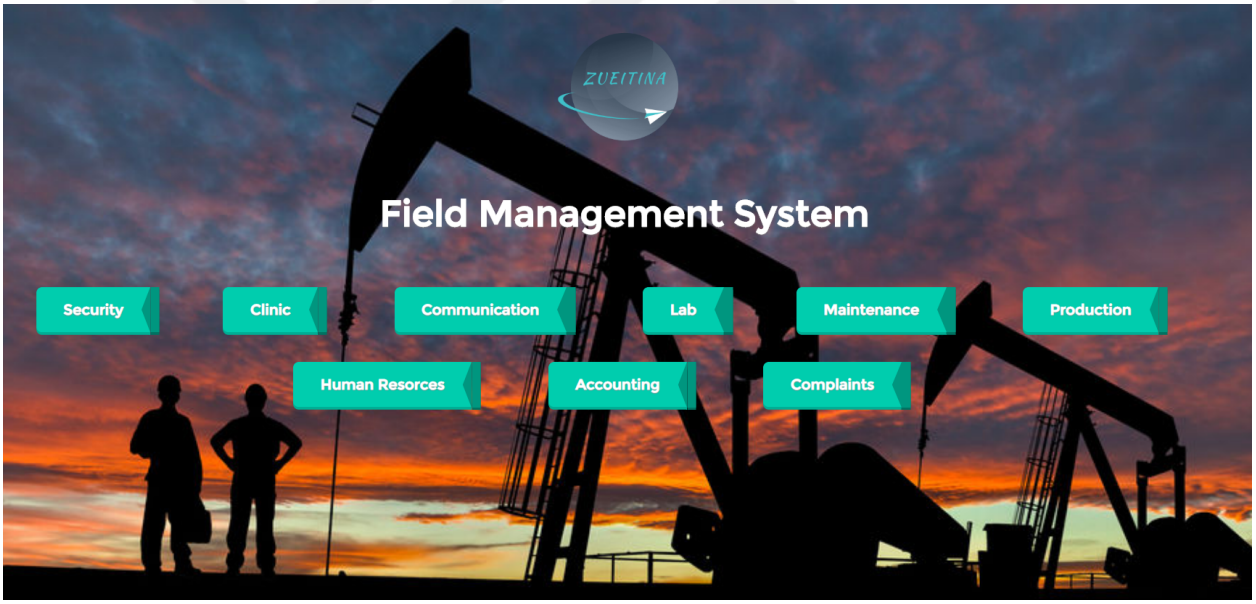

Figure 4.11: Main Page Interface

4.12 SECURITY INTERFACE

As we see in figure (4.12) the main interface for security department, we can see the details for company visitors such as history date for visitors etc.

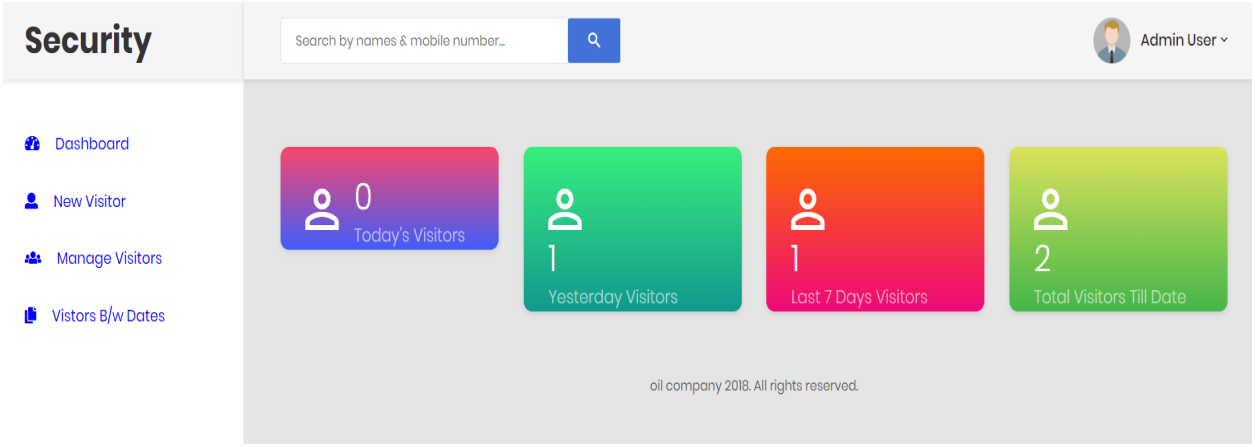

Figure 4.12: security main page

To add a new visitor as in figure (4.13) we can fill the data form for a new visitor such as name and other personal information.

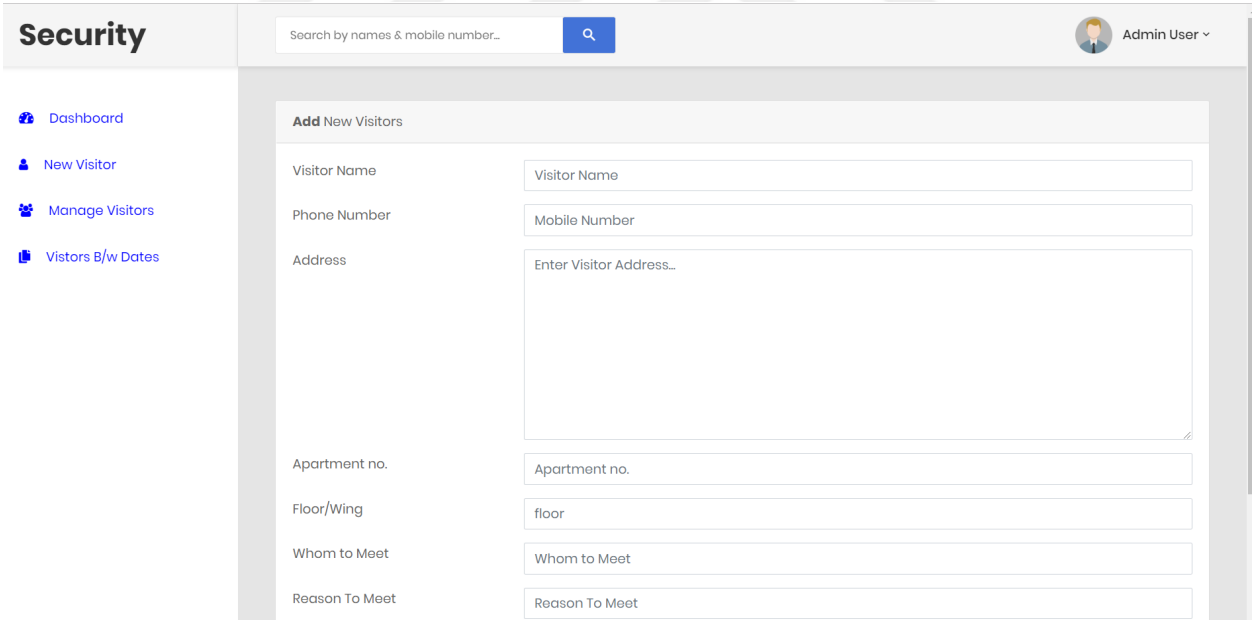

Figure 4.13: add new visitor

In figure (4.14) the information management interface for visitors.

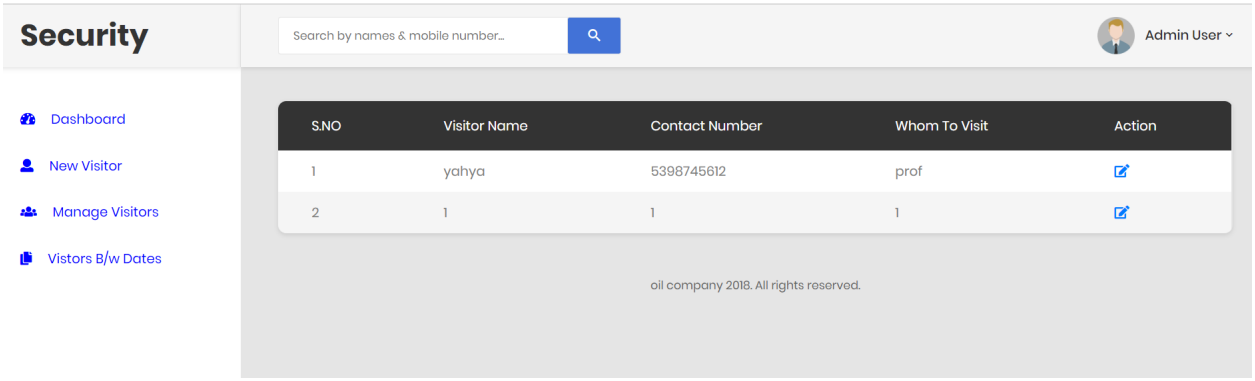

Figure 4.14: manage visitor

in figure (4.15) we can search for visitors by selecting the date from, and then by button search the result will emerge.

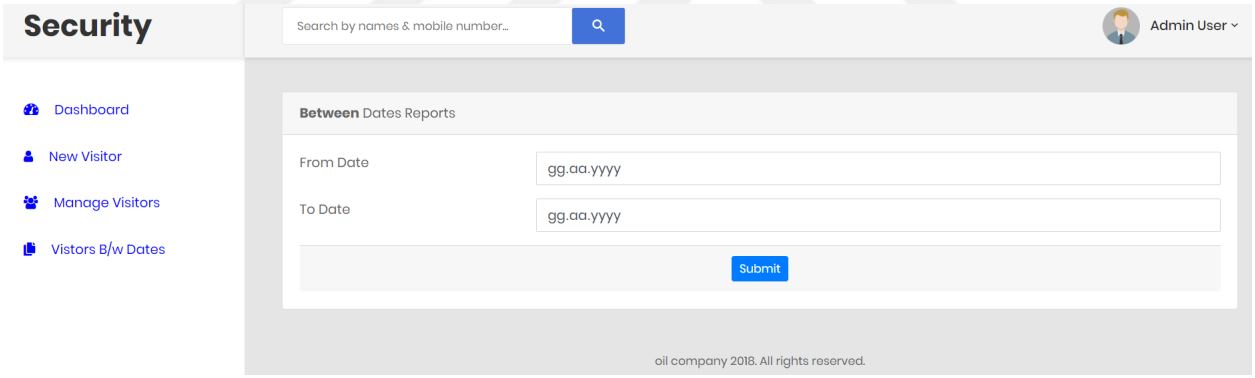

Figure 4.15: Visitors by Date

4.13 HOSPITAL INTERFACE

This section displays the medical features provided by the clinic, and clearly displays the departments within the clinic or the medical center of the field well and the doctors working in this clinic or department can be registered and then the account of each clinic and the account of each doctor working in it can be known. Medical reservations are shown through the clinic or medical center. As it shows in figure (4.16).

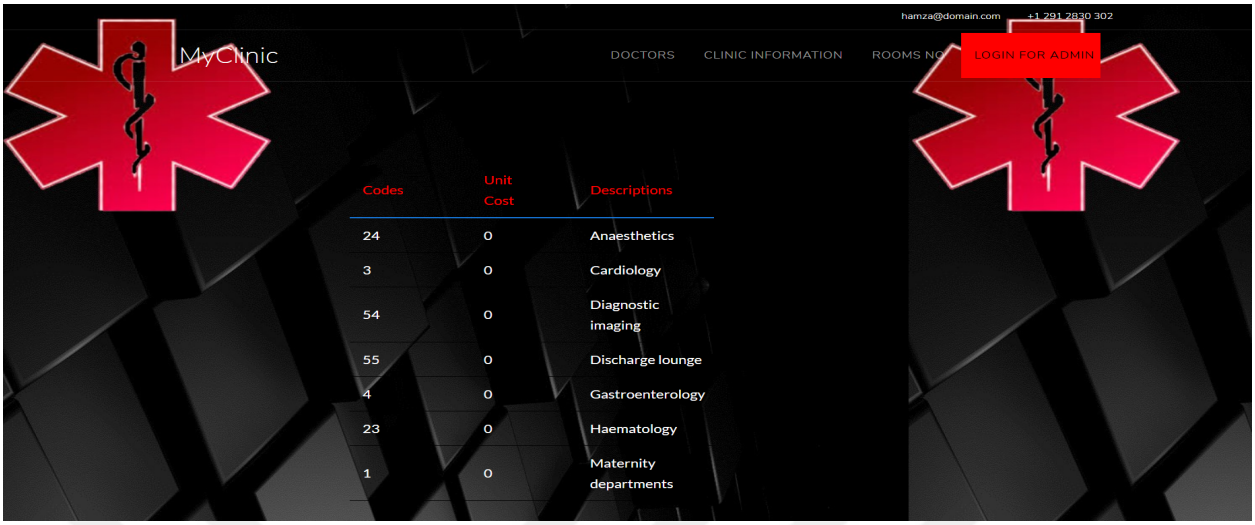

Figure 4.16: Hospital Section

in figure (4.17)the login interface for administration to access the main interface to manage the patient's information and appointments.

Figure 4.17: login page

as we see in figure (4.18)interface for manage patients and staff records (add, edit, browse, search, delete) ، manage the appointments (add, edit, print, browse, search, delete). Manage insurance company data (add, edit, browse, search, delete). Record customer visits and transfer them to different clinics.

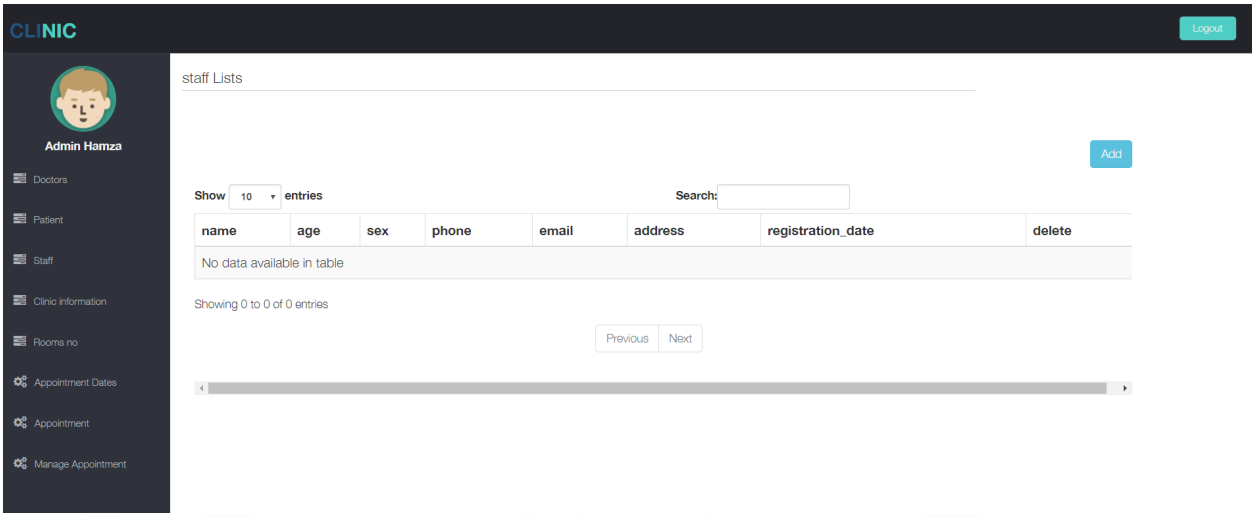

Figure 4.18: Clinic Admin Portal

4.14 LAB INTERFACE

The employee interface to make daily reports, it shown in the figure (4.19)the input boxes for employee to fill in the reports data. In figure (4.20)the interface for chief supervisor to manage the reports that have been come for employee, he can verify the data and gives the approval on report to be directed for higher authorities, such as supervisor of the department as it be shown in figure (4.21) .

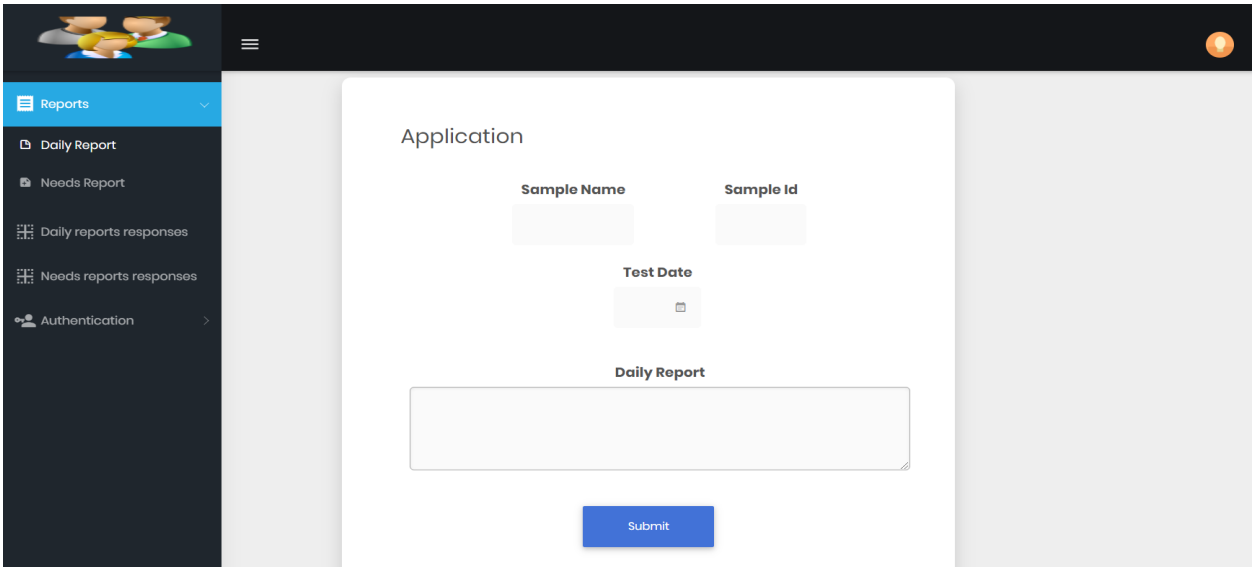

Figure 4.19: Employee Interface to Make Report

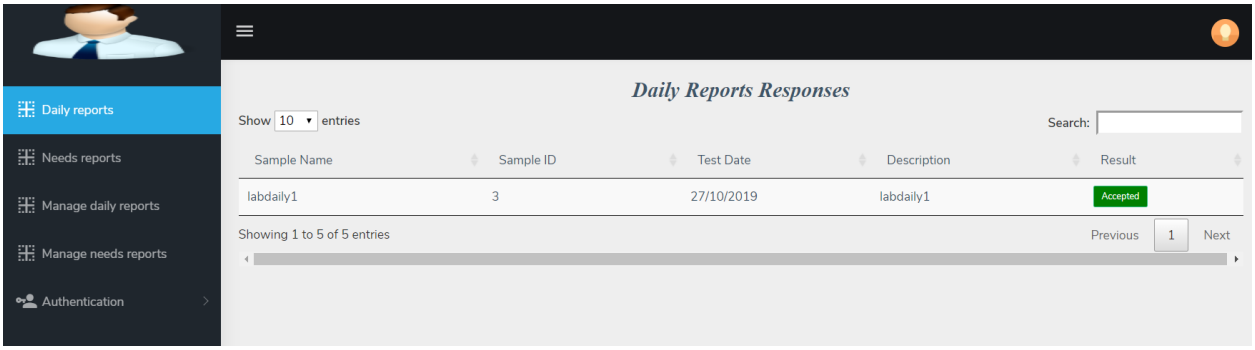

Figure 4.20: Lab Manager Table

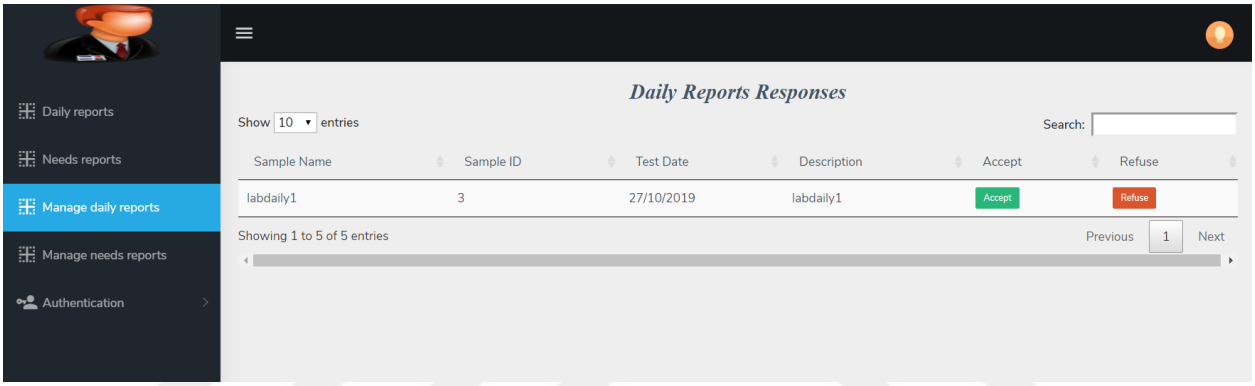

Figure 4.21: Lab Admin Portal

4.15 MAINTENANCE INTERFACE

The Maintenance Department consists of daily reports, and daily needs, the employee interface to make daily reports, as it shown in the figure (4.22) the input boxes for employee to fill in the reports data. In figure (4.23) the interface for Maintenance chief supervisor to manage the reports that have been come for employee, he can verify the data and gives the approval on report to be directed for higher authorities, such as supervisor of the department as it be shown in figure (4.24).

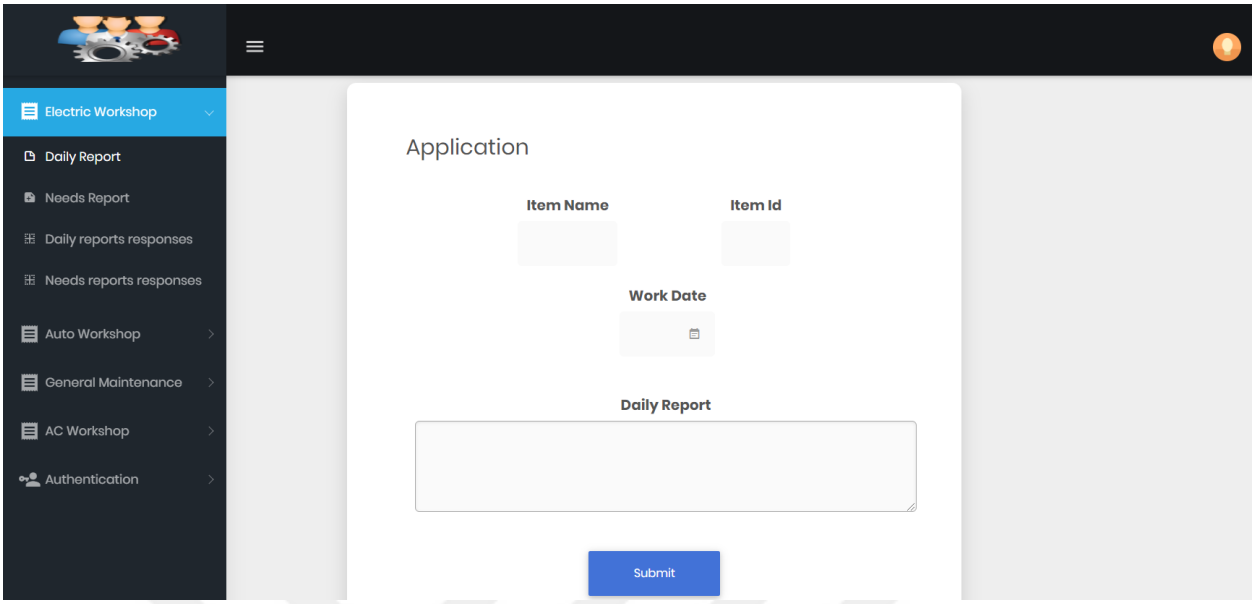

Figure 4.22: Employee Interface for Maintenance

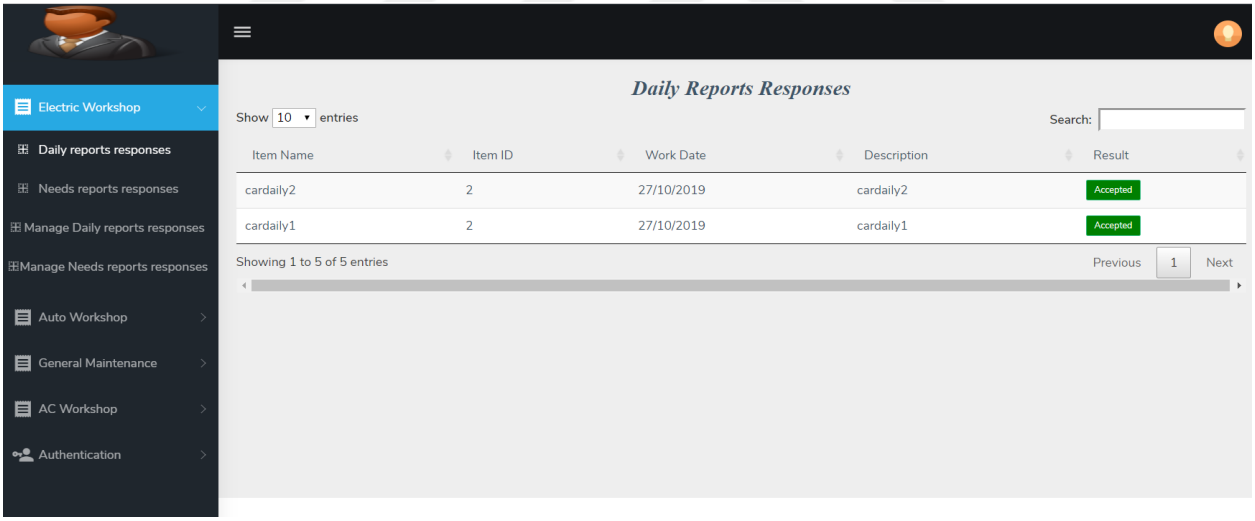

Figure 4.23: Manager portal

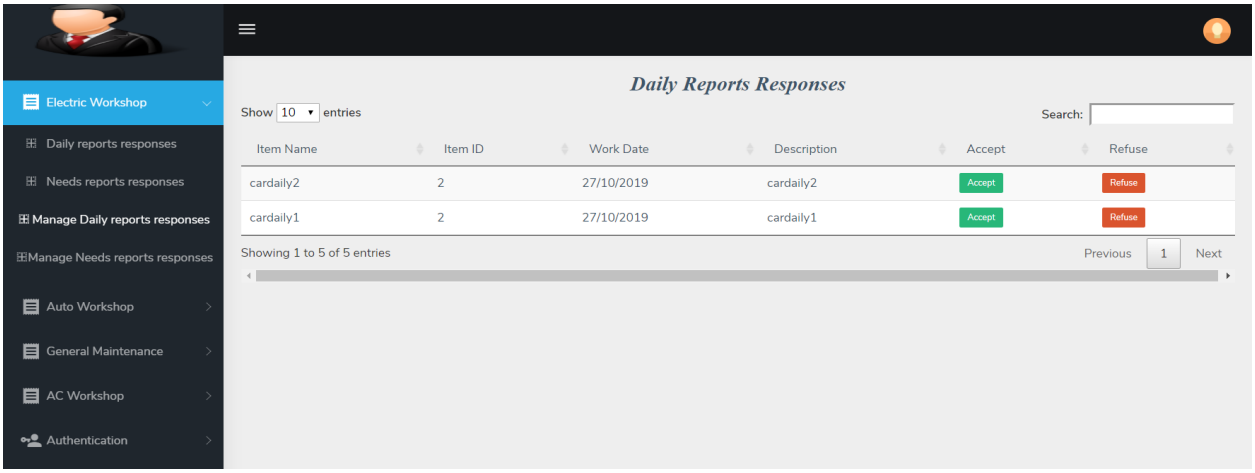

Figure 4.24: Interface for Supervisor of The Department

4.16 INTERFACE FOR ACCOUNTING

The interface of the General Administration of the General Financial Accounting Department consists of daily reports, the process of entering purchases and expenses into the field, and the employee adds purchases by name and description. Price and date as it shows in figure (4.25).

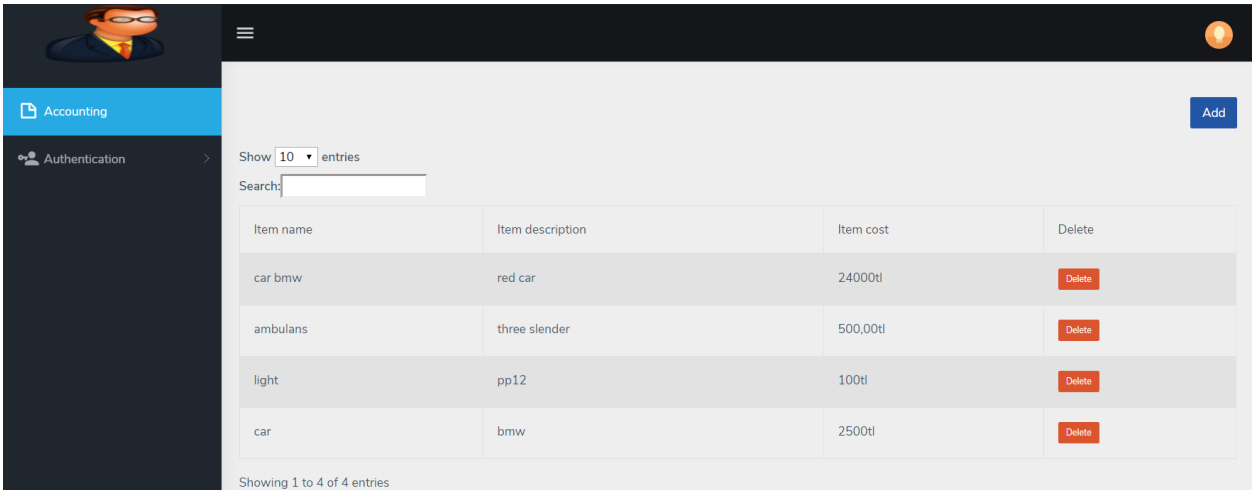

Figure 4.25: Accounting user portal

4.17 HUMAN RESOURCES INTERFACE

In figure (4.26) the user interface for the human resources department, and there are four main sections, including the staff section, and employee information is added. The same steps apply to the chief supervisor and department heads from entering data within the system and the last section is the complaints department of employees.

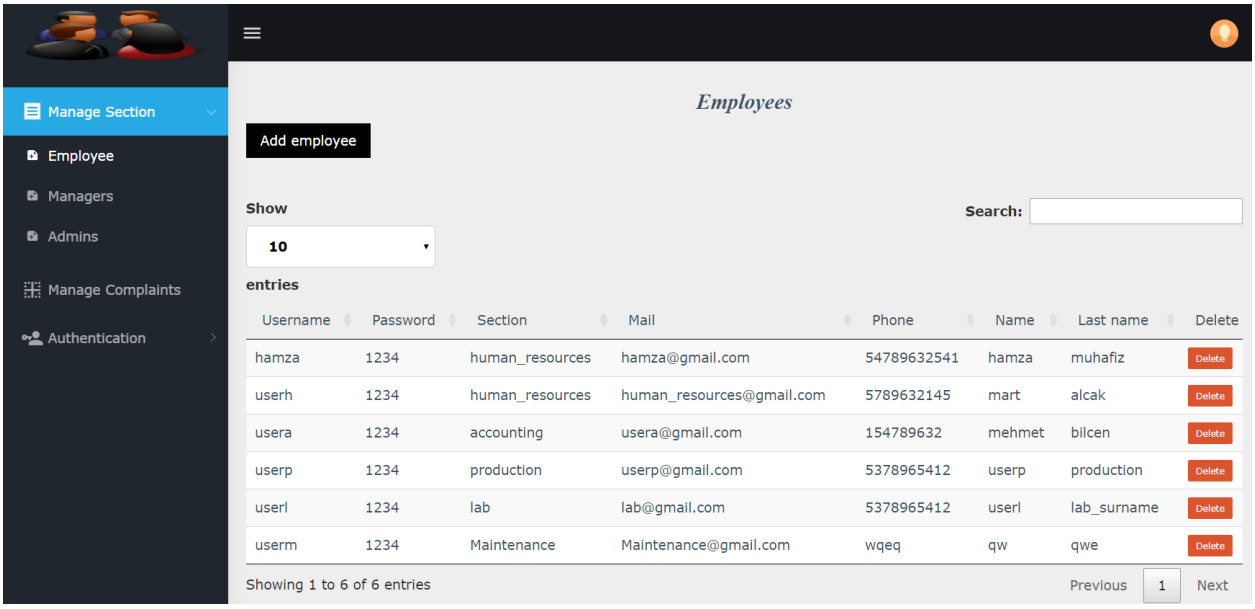

Figure 4.26: Human resources portal

4.18 PRODUCTION INTERFACE

In figure (4.27) the user interface of the Production and Handling department consists of daily reports, approvals for daily reports in addition to fill in reports requirements which are the product name and shipment date. Explain information about shipped products to be shipped or stored in Oil tanks.

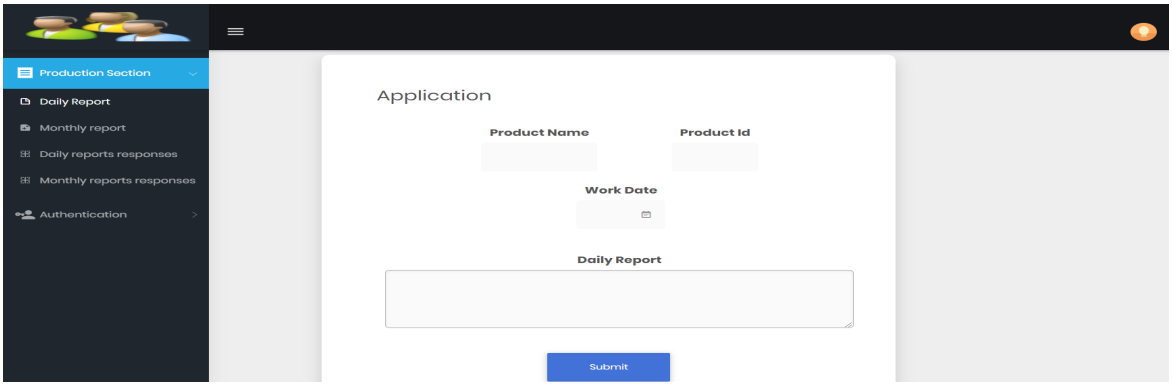

Figure 4.27: Production interface

5. FIFTH CHAPTER TESTING RESULTS

Use Case1: for Login page

Table 5.1: Login in use case table

user	System
	0) The System will display login form
1) The User will select “login in”	2) The System will bring up login form
	4) The System will bring up the login page
5) The User insert his info and click login	6) The System will bring up main page

Use Case 2: manage applications:

Table 5.2: Manage application form

Admin	System
0) user complete the field and press submit	1) The system post the form to the server
2) The user press manage application	3) The System displays update form
4) The user press delete form	5) The System displays deleting message and delete the from db .

Use Case 3: Manage account:

Table 5.3: Manage account

Admin	System
0) The user press manage account.	1) The system displays update form
2) when user press enter	3) The System update all with new info.

Use case 4: Manager login

Table 5.4: Login in use case table

manager	System
	0) The System will display login form
5) The manager inserts the info and click login	6) The System will bring up main page

Use Case 5: manage user application forms

Table 5.5: Manage application form

0) The manager press view result	1) The system displays the final result which manager evaluated.
2)when manager press 'manage applications'	3)the system views all applications and gives the manager two choices either to accept or reject

Use Case 6: Application Results

Table 5.6: View application result

0) The manager press view result	1) The system displays the manager result which manager.

Use Case 7: Manage account

Table 5.7: Manage account

Manager	**System**
0) The manager press manage account.	1) The system displays update form
2) when manager press enter	3) The System update all with new info.

Use case 8: Admin login

Table 5.8: Login in use case table

admin	**System**
	0) The System will display login form
5) The admin inserts his info and click login	6) The System will bring up main page

Use Case 9: manage user application forms

Table 5.9: Manage application form

Admin	**System**
0) The admin press view result	1) The system displays the final result which **admin**.
2)when admin press 'manage applications'	3)the system views all applications and gives the **admin** two choices either to accept or reject as **final** result

Use Case 10: Manage account

Table 5.10: Manage account

Admin	**System**
0) The manager press admin account.	1) The system displays update form
2) when admin press enter	3) The System update all with new info.

Use Case 11: View managers results

Table 5.11: View manager results

0) The admin press view evaluations of manager	1) The system displays the results which **manager** evaluated.

6. CONCLUSION AND FUTURE WORKS

In this study, we discussed the E-management and we design an e-management system for oil company reports. The proposed design is done by using the information systems components through web-based application using PHP and MySQL.

The system proposed achieved the purpose of this study. For example, applying an electronic system for reports management, this system contains database for storing the report resources information for the company, it provides access easily to data through GUI which contains many of keys to conduct different processes on data, such as modification and query. This system allows just for authorized users to access the system through protection windows.

Also, the proposed system leads to convert the paper information to electronic information and saved it in the database. Protecting the information electronically, which were in previous as a paper documents prone to damage. Still, there is some improvements for future works, the researcher can evaluate the proposed system through his work in company and seeing the current system which is used in the company. For example, using are fields of database in retrieval the data through the system interfaces is faster in search process. The system speed to insert, update and retrieval the data, provides time and effort. Finally, company support in decision making through data accuracy, speed and realism that represents information about ability of real company without exaggerating in the estimates.

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