MUNICIPALITY OFFICE ONLINE AS PLATFORM CITIZEN SERVICES: SUDAINAWIYEH MUNICIPALITY IN IRAQ

NABEEL MAHDY HADAAD

UNIVERSITI UTARA MALAYSIA
FEBRUARY 2011

MUNICIPALITY OFFICE ONLINE AS PLATFORM CITIZEN SERVICES: SUDAINAWIYEH MUNICIPALITY IN IRAQ

A project submitted to Dean of Research and Postgraduate Studies Office in partial

Fulfillment of the requirement for the degree

Master of Science (Information & Communication Technology)

Universiti Utara Malaysia

By

NABEEL MAHDY HADAAD

PERMISSION TO USE

In presenting this project in partial fulfillment of the requirements for a postgraduate degree from Universiti Utara Malaysia, I agree that the University Library may make it freely available for inspection. I further agree that permission for copying of this project in any manner, in whole or in part, for scholarly purpose may be granted by my supervisor(s) or, in their absence by the Dean of Postgraduate and Research. It is understood that any copying or publication or use of this project or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to Universiti Utara Malaysia for any scholarly use which may be made of any material from my project.

Requests for permission to copy or to make other use of materials in this project, in whole or in part, should be addressed to

Dean of Research and Postgraduate Studies
College of Arts and Sciences
Universiti Utara Malaysia
06010 UUM Sintok
Kedah Darul Aman
Malaysia

ABSTRACT

Municipality activities require interoperability both between municipality offices, and government and private sector. Due to the lack of interoperability, traditional municipalities, and governments face serious problems. These are mainly poor quality and high cost of services, and low economical revenues. E-municipality has been proposed for solving these problems. An interoperability infrastructure is at the heart of e-municipality and e-government applications. Website services have emerged as the next generation of Web-based technology for interoperability.

The motivation of this work is to determine the potentials of the Web site services technologies for an interoperability infrastructure for e- municipality, to lower costs, improve service quality, and increase revenues in municipality. This is an urgent need especially for municipalities in Iraq..

ACKNOWLEDGMENT

وقال تعالى بسم الله الرحمن الرحيم

وَمَا أُوتِيتُمْ مِنْ الْعِلْمِ إِلَّا قَلِيلاً

صدق الله العظيم

By the Name of Allah, the Most Gracious and the Most Merciful At the outset, I would like to thank the Allah of creation, for everything because they made to me owner strength and guidance made me able to have the courage and faith and patience to complete this study.

First, my sincere thanks and gratitude to my supervisor dear ***ASSOC. PROF. ABD GHANI GOLAMDIN*** *as well as* ***Mr. MUSTAFA AL-OBAEDY****, to have the support and guidance and keen on clarify and help me to take the right steps to build the project.*

Offer deep thanks to my family in general, and to my brothers and sisters, especially my ***mother*** *and my* ***wife*** *and dedicate my thanks to my kids:* ***HUSSIN & HADA and NADA***

Offer my thanks and appreciation to all of my friends who helped me in Malaysia and in Iraq with sincere thanks and appreciation to each of the fatigue for the tutorial to my professors respected, in the Faculty of

Information and Communication Technology, especially ***Dr. Fauziah Binti Baharom***

Praise be to Allah

Nabeel Mahdy Hadaad

TABLE OF CONTENTS

LIST OF TABLE

LIST OF FIGURE

CHAPTER 1

INTRODUCTION

1.1 Background

Twenty-first centuries are a time of change, with the Internet. The need for construction, organization and administration of modern societies is invertible. Internet technology has been an agent for breaking the barrier of time and place to facilitate interaction between individuals within the same society or between societies in general.

Internet users are growing steadily, during the period between 2000-2010 the growing number of Internet users in the world by 444.8% as shown in Figure 1.1 (IWS, 2010).

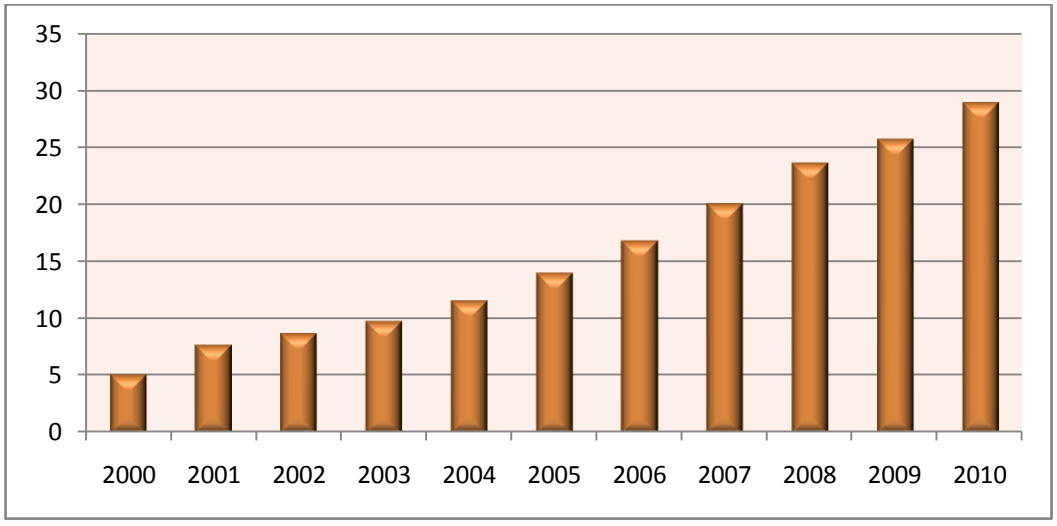


Figure1. 1 Internet Users in the World Growth 2000-2010

This situation led many specialists in different areas to consider seriously how the Internet can be used as a tool to communicate and interact with people and be made a priority in their work, for example, business sector, education sector and government administration. Internet is beyond doubt a major phenomenon of our time (Carcillo & Rosati, 2007).

Within sector of government administration, the development of e-Government as a modern state management also includes local government as a part of public administration. The advantages of using IT within business processes have long been recognized in the private and public sectors, in the latter of which they have become increasingly notable through the growing participation of the citizens in the information society and their awareness and competence to use IT (Wiklund, 2005). Municipalities are one of the most important fields of public sector. It's among parts of public administration, the closest link between people and public administration. Even more, they are specifically oriented to local affairs, which are those, that are the most interesting to the local population.

According to De Jong & Lentz (2006) municipal websites are highly visible manifestations of e-government developments. Though the content and functionality of these websites are rapidly expanding, the usability of municipal websites is as yet underexposed. The internet offers considerable advantages for the communication between municipalities and citizens. Some of these advantages relate to the possibilities of sharing municipal information. Thanks to the internet, it

has become feasible to offer large amounts of information at relatively low costs, and to do so 24 hours a day and seven days a week.

Municipalities create websites so as to allow Internet users to access their own services and to get information about their local government (Naralan, 2008). Congested urban areas and small municipalities vary in their ability to utilize the internet in the same way that they differ in the types of the services they provide. Ownership of municipalities is high in cities, but it is negligible in small towns and villages. Furthermore, that diversification varies among the regions. Plenty of factors impacting Internet website ownership and Internet use include literacy rates, population and development variation.

Iraqi ICT policies for develop services in Iraq are mainly move toward the optimization of ICT tools in order to create a sturdy infrastructure.. Ministry of Municipalities and Public Works in Iraq, in sought to benefit of Iraqi ICT policies for development by automating many of the services within the bodies of the ministry, one of these municipalities are municipal Sudainawiyeh (Brinkerhoff & Taddesse, 2008).

Sudainawiyeh (10 km east of the Nasria city) is a small town in the province of Dhi Qar in Iraq, consisting of more than hundred thousand people with agricultural character (Synnott, 2005). Motivation of this work was to design and develop an online municipality services website for Sudainawiyeh town in Iraq so as to be accessed by citizens from Sudainawiyeh town, and in order to complete municipal transactions.

1.2 Problem statement

Municipalities establish websites in order to enable Internet users to access their own services and to get information about their local government (Naralan, 2008). The e-Municipality website is implemented as an integrated web based aimed at a staged automation of administrative activities. However, through municipality platform the citizens can request the issuance of documents and to submit reports and proposals to the municipal administration, without having to physically visit it. The municipality accepts applications, prepares documents and shall ensure to send the documents requested by postal mail to client service (Dobrev, Stoewer, Makris & Getsova, 2002).

The implementation of ICT policy in services sector is still in an early stage in Iraq. Although, ICT policies for Iraqi to develop services have orientation towards for using of ICT tools in order to automation governmental services, including the municipal services such as provide to request certain documents, construction licenses and so on. (Brinkerhoff & Taddesse, 2008).

On other hand, Sudainawiyeh town it is on the Euphrates river about 380 km southeast of capital, with agricultural character. Agricultural character of the town is imposing a form of the spacing between the many residents of town and the down town (Amowitz, et al., 2004); this situation caused a problem when the citizen needs for access to municipal services.

1.3 Research Question

The main question of this study is how can develop municipality website for Sudainawiyeh town in Iraq?

1. What are the functionalities of municipality website for Sudainawiyeh town in Iraq?
2. Hoe to develop prototype of municipality website for Sudainawiyeh town in Iraq?
3. How to evaluate the prototype of municipality website for Sudainawiyeh town in Iraq?

1.4 Research objective

The main objective of this study is to automated municipality website for Sudainawiyeh town in Iraq. In doing so, these sub-objectives will be accomplished first.

1. To determine the functionalities of designing a municipality website for Sudainawiyeh town in Iraq.
2. To develop prototype of municipality website for Sudainawiyeh town in Iraq.
3. To evaluate the prototype based on its compliance municipality website for Sudainawiyeh town in Iraq.

1.5 Scope of the study

A municipality website is made up of many services provide to the citizens. The research is centered on the scope of Iraq whereby an online municipality services website is to be designed and built for

Sudainawiyeh town in Iraq in order to be accessed by citizens from Sudainawiyeh town in Iraq. The main function of the system is for citizens to interact via the internet in order to complete municipal transactions.

1.6 Significance of the Study

Designing municipality services website for Sudainawiyeh town in Iraq will facilitate the interaction between local government and citizens, make it easy to use and more effective. This research is mostly significant to the citizens, to enable citizens to access the web site by using PC or laptop if it had been provided with internet services. This will provide all citizens effective communication with the municipal transactions in every day. In addition, there is lot of benefits to the citizens and society, by accelerating and facilitating services to citizens; as a result develop the society in many sectors, such as

- Provide many services online for citizens such as giving building usage permit, giving construction permit and so on.
- Improved access to citizen services through online service provision and clearer picture of citizens' needs with improved business intelligence.
- Streamlined internal processes by making information available online for all users and improved responsiveness through better access to accurate citizen records.
- A scalable infrastructure to facilitate delivery of next generation services such as e-planning and e-participation.

1.7 Organization of the Project

This residue of the research is divided into six chapters. The actual chapter gives a brief background of the study whereby the problem of the research is put into light; the objectives and research questions are set. Moreover, the research scope and significance are also pointed out.

Chapter Two (2), provides a review of literature related to the design and development of an e-municipality website to provide municipality services for the citizens in Sudainawiyeh town in Iraq.

Chapter Three (3) emphasizes on the research methodology developed by Vaishnavi and Kuechler (2007), with the elaboration of its five stages (Awareness of the Problem, Suggestion, Development, Evaluation and Conclusion) in correspondence with the development of the municipality website for Sudainawiyeh town in Iraq.

Chapter Four (4) presents the analysis and design of the research that comprises the system users' requirements, system design and prototype development.

Chapter Five (5) provides the result for evaluation the system, its usability as well as easy of use and full assessment of the system.

Finally, chapter six (6) provides the concluding remarks on the system, its limitations as well as suggestions and recommendations for future research.

1.8 Summary

This chapter presents the brief background of the study. It includes the problem statement, Research objectives, the scope in the research and

research significance. The objectives of this research are to design e-municipality website as a prototype of Sudainawiyeh town in Iraq.

CHAPTER 2

LITERATURE REVIEW

In order to exemplify the importance of current study, this chapter provides a background the benefits and services of e-municipality and its role to facilitate the public services to the citizens. In section 2.1 an overview about electronic public services. Then, in section 2.2, review about architecture and security for electronic municipality by identifying the component elements of e-municipality system; in the section 2.3, shows several services of municipality which provide to the citizens. Followed by, discussion about features and design for municipality website, in section 2.4. Then in section 2.5, a general survey on the implementation of e-municipality website in the some countries of the world. Finally, a summary of the chapter displayed in section 2.6.

2.1 Electronic Public Service

Recent attempts to pursue structural and functional reforms in government organizations are heavily grounded in the belief that technological innovation, especially information technology, will

streamline both service generation and delivery operations (Hinnant, & O'Looney, 2004). The introduction of Information and Communication Technologies can radically affect working methods and activities of Public Organization and the delivery of Online Public Services. It is evident that e-government initiatives have to take optimum advantage of the opportunities offered by the use modern technologies. They should increase productivity and improve operational efficiencies while leading to reduced costs (Corradini, Polzonetti & Riganelli, 2009).

According to Anthopoulos & Tsoukalas (2005) public services suggests that "independent public services are legally grounded business of public organizations in an economical sense". They represent the development and delivery of products and services of an organized unit to the public. Public services consist of numbers of steps that are followed, according to a legal framework, in order for a citizen or business affair to be handled. Different e-Government projects around the world consider public services as procedures oriented to specific life events and business situations. These procedures can be simple or composite and fully- or non-automated (Millard, 2004).

2.2 E-Municipality

According to Poister & Streib (2005) a municipality is an administrative division composed of a defined territory and population. While there are many varieties of municipalities, most fall into one of two categories: first a single settlement, a city, town, or village, and second a land area

similar to a township that may contain multiple settlements, or even just part of one, such as a city's borough.

E-Municipality is a new and advanced pattern of management, which improves performance and the managerial qualifications, and improves the work environment to facilitate all services and functionalities that are provided to citizens. In this new system of work, citizens are able to complete all governmental transactions as well as issuing official documents over electronic media like internet, cell phones and landline phones with high speed and efficiency (Dobrev, et al., 2002).

Each municipality provides around 100 different services for its citizens and businesses in its territory. Organization of giving them a one-stop-shop for face to face services is good: for the issue of civil status documents application is made in the front office, and the service is performed immediately. Almost there is no queue. However, the use of municipal services is inconvenient because you have to go to the municipality for which workers and people involved is not easy. (Atkinson, et al., 2003) Walking to the municipality is particularly difficult for citizens who live in other cities or other countries. But residents of this community are worldwide.

The introduction of electronic services is a proposal for a "cardinal decision" for the modernization of the administration. The decision relieves people. This e-platform meets the needs of people in the interests of citizens and businesses. The platform is achieved in two municipalities, through public private partnership and any the

municipalities and contractors, put their resources and work to create a pilot system for municipal e-services.

2.2.1 E-municipality Technology

E-Municipality designed through a number of software, for example, can build a site Municipality based on electronic portal software platform such as Microsoft SharePoint Server 2007 and the management of relationships with customers MS Dynamics CRM 4.0. These two systems are integrated and placed on the Windows Server 2008 platform. There is no limit to the use browsers to use the system, system works with both Internet Explorer, and with browsers for Linux and Macintosh. Pending completion of the module on the use of digital certificates for electronic signatures when will use browsers other than IE (Rumen & Tashev. 2009).

Hardware system, which builds on the electronic platform of Dell servers are storage systems and data from EMC2. Call center does is based entirely on Cisco communication technologies. These are the decisions of the line Cisco Call Manager. Call center is closely integrated with the CRM system. All notifications are recorded in the CRM solution. In the event that at any given time there are no operators to take calls, the signals are recorded as voice messages are stored as a sound file. Subsequently, an employee of the municipality can listen to it every message and based on it to register a new application. Thus, although the municipality is not working around the clock, signals can be submitted at any time.

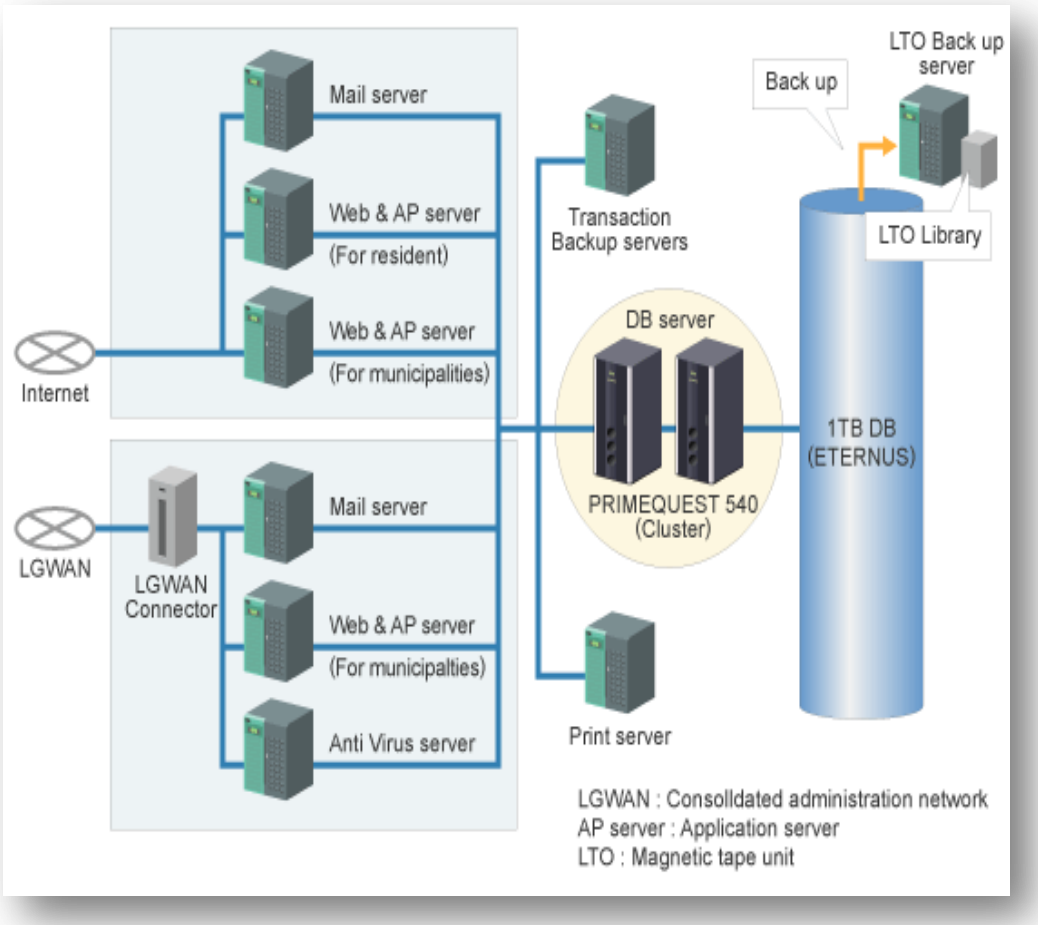


Figure 2.1 Architecture of municipality e-services (Kaliontzoglou, et al., 2005)

2.2.2 Security and Integration

Municipal websites have been attacked in a number of ways over the years. In order to provide a website a combination of server software, website or web-applications software like a WCMS, and client-side (local user) software is used. New vulnerabilities are discovered day to day in all of these types of programs. You can't control how citizens protect their own computers but you can and should protect visitors to your site from inadvertent infection (Charalabidis, 2006).

Security tools have been developed to counteract known vulnerabilities but, as with any security procedure, these tools must be used correctly to accomplish their task of making your website data safe from unauthorized changes, your WebPages safe from defacement, access to your website safe from denial of services attacks, and, if you provide transactions that include personal information or money, safe traffic to and from your server as well as safe storage of information on your server.

Municipal website is hosted through reliable hosting services provider, securing the server software will be a part of the services they provide. If the website is hosted in-house, your staff must follow good security practices to protect your site, keeping all patches up to date; limiting access both electronic and physical; and using cyber security tools to find and eliminate vulnerabilities (Breu, et al., 2005).

Securing the website software also requires careful attention. The code used to develop the website must be written carefully in order to avoid known vulnerabilities. If your site is developed in- house your staff must provide the know-how to build WebPages securely. If you use a WCMS, be sure that it was written securely. Attend, too, to any web-applications you offer through your website, making sure that security concerns have been addressed in their development.

2.3 E-Municipality Services

E-services platform for citizens and businesses can request the issuance of documents and to submit reports and proposals to the municipal administration, without having to physically visit it (Eliason &

Hedström, 2005). For this purpose they may make a request through the Internet via specifically developed for this purpose web portal, or to connect via special phone number. The municipality accepts applications, prepares documents and shall ensure to send the documents requested by postal mail to client service (Ziema & Žeiris, 2004). E-services and the postal mail are free, at the expense of the municipality.

Currently are already done four of e-services:

1. Signals and suggestions: The municipality receives the signal and suggestions through the call center and e-service portal. Signals can be made on any issues and themes - registered in the system will see that this is through free text that is stored in a text box on the site.

2. Request for a visa for the design: electronic application is submitted. To provide additional documents and to obtain a visa national need to visit a local place.

3. Issuance of certificate of marital status: For online submission of application is necessary to have a national certificate for universal electronic signature. E-service is free.

4. Issue of extracts of a death. Is to add new services portal, which on the one hand are more popular, the other - do not require the provision of many additional documents supporting the request for the issue because it will impede or even render electronic communication.

2.4 Municipality Website

There are six major steps in the process of providing good e-municipality functionality. Each of these steps must be taken if the finished product is to meet the needs of the citizens it serves.

2.4.1 Engage Stakeholders

The best municipal websites are designed through collaboration between the people who will be served and the people who will maintain them. Gather community input during the initial stages of website development and continue to engage this group throughout the process. Avoid the all too common mistake of producing a website that mirrors your government structure but does little to facilitate citizens' use of it. Citizens often know very little about how their government works but they are clear about what they want and expect from it (Geist, 2010). Use this information to produce a website that meets your community's needs.

In addition to community stakeholders, include those in the government who will provide ongoing maintenance and content. Their early involvement in the process will foster commitment to it. Remember that outdated content is bad content. Officials and staff should be involved in both content and process decisions. Producing a website that is onerous to maintain will ultimately produce disappointing results (Bakens Foliente & Jasuja, 2005).

IT staff contractor should be involved in the development process from its inception. It is impossible to provide good e-government without the

infrastructure to support it. IT resource requirements must be considered. Website design and development are specialized skills not always available to a municipality through its own staff. They also may not have the resources to provide the hardware, bandwidth and software needed to support e-government. It is important to know upfront what resources can be provided in-house and what must be sought from outside sources.

2.4.2 Clarify Goals and Make Content Choices

An important goal to define early in the development process is keeping within the budget allowable to the project. Keep your goals realistic. Remember that budget constraints are a major consideration. Also, especially for a small municipality with part-time staff and officials, the cost in time must be considered. The initial development of a municipal website, whether done in-house, by a consultant or using specialized software, will take an investment of time to gather the initial information to populate the site and an on-going investment of time to maintain it (Hughes, 2001).

2.4.3 Determine Process

There are three basic choices for implementing a municipal website: Completely in-house; completely contracted; and a combination of both in-house effort and vendor products. Larger municipalities may be capable of designing, developing, and hosting their website completely in-house, but this option is seldom available to small governments (Vizcaíno,, et al., 2007; Lee & Kozar, 2006). The advantage of a website that is developed and maintained wholly in-house is that it offers

a high degree of control over security and the flexibility to adapt, in a timely manner, to changing needs of citizens and their government. A complaint voiced by small municipalities who have wholly contracted for their websites is that it is difficult to respond to changes in need, or even to routinely update content, when all actions have to be performed by someone outside the government. This can be less of a problem for a large government that contracts for web services because their larger budgets afford them priority handling unavailable to smaller customers (Hughes, 2001).

For most small municipalities, a combination of contracted and in-house processes is the best choice. A relatively recent web technology that is facilitating the process of combining in-house and contractor responsibilities is the website content management system (WCMS) (Lee & Kozar, 2006). A WCMS is software that does some of the work of developing your website for you. Usually your responsibility will be limited to making general formatting decisions and adding content. The software will organize that content into web pages, adding navigation and formatting automatically, based on theme or template choices that affect the entire site. The WCMS provides the framework for the site; you provide content.

A primary advantage of using a WCMS is that the skill level needed to develop and maintain a quality municipal website is much less specific, and so, less costly to obtain. Some WCMS have been designed specifically for small municipalities and require little customization to fit the needs of municipal government. Some are more general, written to

be used by a variety of organizations, both public and private. General systems require more technical skill to configure. Although a WCMS will allow you to keep responsibility for content in-house and quickly respond to changes in your community's needs, it will also confine your site within the framework it provides. This may result in less overall flexibility unless the WCMS includes tools to customize pages (Vizcaíno,, et al., 2007).

If not hosted in-house on municipal hardware using connectivity with the internet from municipal facilities, your municipal website must be supported by a hosting service. This service can be a full service hosting facility that owns and operates the hardware used to publish your website on the internet and may provide you tools to manage your website or manage it for you; it may be a data center where you provide the hardware, software and maintenance services needed to run the system but contract for bandwidth through the center; or it could be anything in between (Hartjes & Strauss, 2010). The services offered by hosting companies are as numerous as the companies themselves.

In New York State, a group of small municipalities have formed the Digital Towpath Cooperative to develop and share a website content management system specifically designed for non-technical users in small local governments as well as the hardware to serve it to the internet. They contract collectively for bandwidth, hardware maintenance and other services that support their shared resources (Eliason, 2006).

In Delaware, small municipalities have formed a municipal website development group to support each other in the process of providing municipal websites. They work together to learn to use development tools, to develop policies, and to hear from experts on various subjects related to providing e-government for their communities.

The options available to small municipalities have expanded in recent years. These groups demonstrate that even small municipalities can, by combining their resources, find ways to provide e- government services to their communities.

2.4.4 Develop Policies

It is imperative that a government clarify the limits for their municipal website through official policy. This policy needs to be clearly stated. Website policy can include terms of use, description of content limitations including external links, privacy policy and accessibility policy. It should also include a disclaimer delineating the municipality's responsibilities for content accuracy and currency (Criado & Ramilo, 2003).

Some municipalities post only an abbreviated version of their policy to the site or opt to include a few lines of disclaimer and/or general policy statements on each page of their site instead of posting their entire policy to a single webpage (Kwaan, et al., 2006). However, all municipalities, whether they post all of the policy or a synopsis of it, should provide visitors to the site a method to obtain the entire document.

The following are links to policies of municipalities from many areas of the country. These and others can be used to help develop a policy for your site. They cover a wide range of topics and use different methods of making the policies available to the public.

2.4.5 Implement the Site

Once the planning and development stages of the website are complete, it is time to implement it. This not only means making the website publically available through the internet, it also means letting your community know the site exists. Use press releases and other communication methods. Train staff to suggest to callers that they use the website to obtain forms and applications instead of waiting for them to be mailed. Add your domain name to letterhead and business cards (Kwaan, et al., 2006). Include the domain in voice mail messages so citizens know they have a way to get quick answers to their questions even if you are unavailable.

2.4.6 Monitor Usage and Adapt the Site As Needed

According to Eaton & Campbell (2008) there are many tools available that will track website usage and report which pages are visited most often, what days of the week visitors choose and what time of day they visit. If your site is hosted, you may be able to purchase this service from your hosting service provider. Also, online surveys can be used to get direct feedback from visitors to the site.

Whatever the tools used, act on the information they gather, adapting your website to provide requested information or access to services, as

possible. A website should be an organic process. It should change as needed to meet the goals outlined during the development process and new goals discovered through the monitoring process (Spiliopoulou, 2000).

2.5 Related Work

The gradual development of information, transaction, and interaction on the website depends on the e-governance model the municipality adopts. Municipal websites are interesting subjects to study for scholars of e-governance, and Internet and democracy in general. in order to exemplify the importance of current study in the next sections highlighting on the Dubai municipality website and Brescia municipality website.

2.5.1 Dubai municipality

In 2001, the Dubai Municipality embarked on a major e-government initiative that was triggered by a wider government initiative to automate all governmental functions. The vision for the Dubai municipality e-services is use e-government solution as the primary delivering channel to provide a single, easy, integrated, and reliable means of access to municipal information and services in order to continuously improve the quality of services provided for the residents, businesses, and partners, reduce internal operational overheads, enhance revenues, and promote Dubai's image as a commercial and tourism hub in the Gulf region (Hörlesberger, El-Nawawi & Khalil, 2007).

Dubai Municipality, had achieved the milestone of migrating 90% of its services to electronic channels by late 2006, thus becoming the first department to meet the 2007 deadline (Sethi & Sethi, 2008). Dubai Municipality rewarded the most frequent user of electronic transactions, the most frequent user of ePay service, as well as other groups of users from different fields.

Figure 2. 2 Dubai Municipality

As shown in figure 2.2., one can clearly notice that Dubai Municipality's website does not contain any images, except for its logo and an old photograph of the Dubai Creek. The remaining space is completely blank with electronic links in text in a limited area that is smaller than the computer screen. This basic design dates back to 2006 as shown in the Internet Archive's "waybackmachine.org" website. The website's links

are almost mixed, with no color areas or borders separating one another. They all use almost the same format and lack graphics that can help users get familiarized with the sections of the homepage content.

Dubai Municipality's website is composed of a brief header incorporating links to the homepage, the sitemap, "Contact Us" page and "Suggestions & Complaints". The website's homepage, however, does not feature any facility for searching the website's content and services. Down below, areas of irregular shapes are allocated for news, announcements, featured links and DM websites. The most important component of the homepage is the side menu, which incorporates several links, the most significant of which is the link to the municipality's services that takes the user to one of the best directories of government services, thanks to its comprehensiveness, classification and rich information.

The Dubai Municipality's website also lacks categorization and its online services are classified on the basis of its administrative division and organizational structure rather than on the classification of categories according to customer needs. However, True to the image of Dubai as a legend in terms of its growth and development, the website of Dubai Municipality boasts impressive design and rich content that is regularly updated. It is also necessary to activate the social networking sites on the website as they will enhance the communication of the Municipality's channels with the public.

2.5.2 Brescia Municipality

The Department of Information Engineering of the University of Brescia is involved in an ongoing collaboration with an Italian government agency, the Brescia Municipality, for designing and developing G2C services. This collaboration has started in 2007 in the context of e-government web content creation and accessibility (Fogli, Colosio & Sacco, 2010)

First analyze the online services made available to Brescia citizens through the municipality website as shown in figure 2.3 (http://www.comune. brescia.it). The Brescia Municipality currently provides several G2C services classified as follows: 1) front office reservation; 2) tax payment; 3) document request; 4) document submission; 5) enrollment in courses or schools. All these services have been implemented according to a form-based metaphor, which reminds the approach citizens adopt in exploiting traditional government services. In the real world, citizens are usually given a sequence of paper forms to be filled in and submitted to a counter for receiving a utility. Similarly, in the virtual world, e-government services have been implemented as a set of web pages, organized as virtual forms, to be filled in and submitted when all data are provided and the necessary operations carried out (Fogli, Provenza & Colosio, 2010).

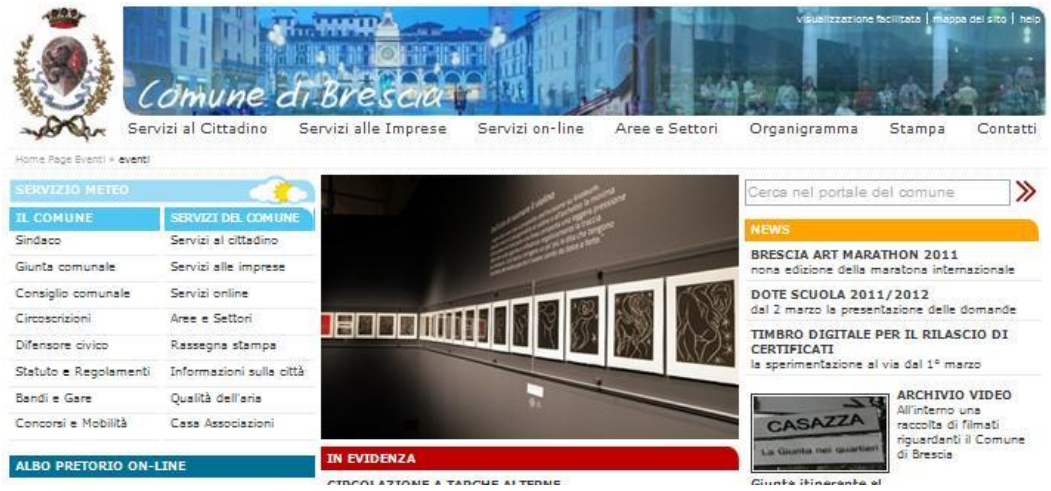


Figure 2. 3 Brescia municipality website

For example, the service for the enrollment in a nursery school is implemented in the municipality website as a 9-step process: 1) citizen identification; 2) input of pupil's data; 3) input of parents' (or guardians') data; 4) specification of parents' work activity; 5) specification of pupil's needs (e.g. specific diet, impairments); 6) choice of school services (full-time or part-time activities); 7) selection of critical issues for the access list to full-time services; 8) religion choice (whether attending Catholic religion courses or not); 9) summary of inserted data and confirmation. In each step, citizens are provided with a form, which contains a limited number of widget types for data insertion (text fields, radio buttons, combo boxes and check boxes). In each form, a section shows the steps performed, the step under execution, and the remaining steps. Figure 2.4 shows a portion of the web page during the enrollment in a nursery school while step 5 is under execution (Fogli, Provenza & Colosio, 2010).

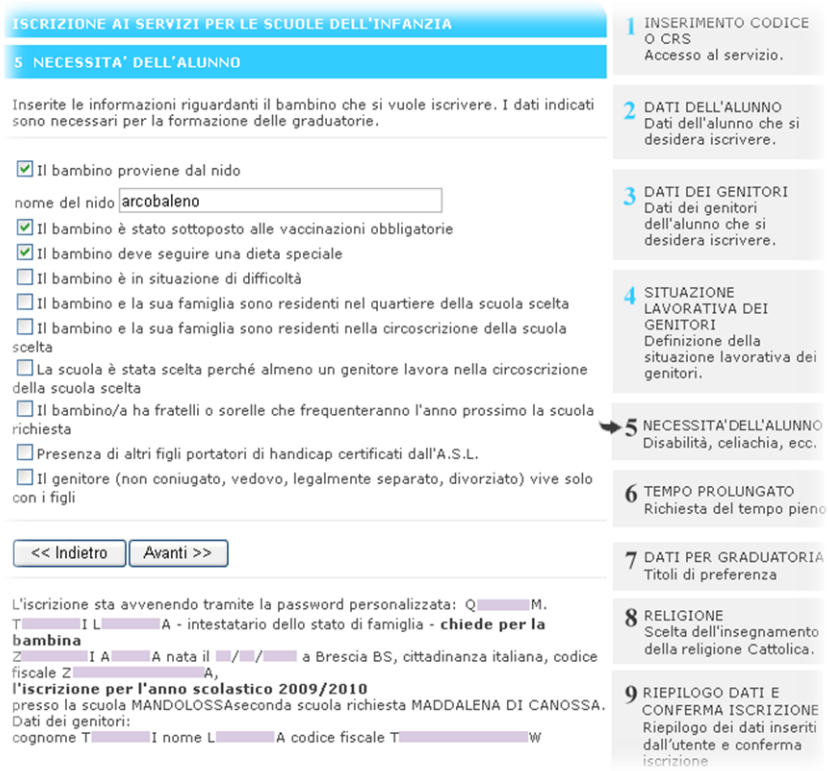


Figure 2. 4 Step 5 of the enrollment service in nursery schools

The form-based metaphor designed for e-government services have proved to be adequate to the heterogeneous population of potential users, due to its low cognitive burden and because it mimics the traditional interaction with paper-based forms. At present, the available online services are daily used by many citizens living in Brescia, even though alternative ways to access the same services are foreseen, e.g. phone calls or direct access to the competent office.

2.6 Summary

The Electronic municipality is new and advanced pattern of management, which improves performance and the managerial qualifications, and improves the work environment to facilitate all services and functionalities that are provided to citizens. In this new

system of work, citizens are able to complete all governmental transactions as well as issuing official documents over electronic media like internet, cell phones and landline phones with high speed and efficiency**.** In general, most countries in transition towards the digital age, and that mean finding solutions for any challenges.

CHAPTER 3

METHODOLOGY

This chapter discuses research methodology used to accomplish the objective of this study. In section 3.1 describes the research methodology that used in this project. Followed by, review about general methodology stage and discussed in section 3.2. Finally, this chapter will end with a short summary in section 3.3.

3.1 Research Methodology

A research is a method to solve problems, based on organized systematic planning; it is the application of logic and objectivity to the understanding of phenomena (Kaplan & Maxwell, 2005). Method is a set of techniques used by the scientific community to investigate the phenomena by providing a framework to make the goal of scientific research and data analysis to reach a conclusion on this investigation. (Krippendorff, 2004). According to Wing (2002), formal methods are mathematical approaches to solving software problems at the requirements, specification and design levels.

Research methodology used in this study is an acceptable method, excellently chosen, described and accepted among many researchers in

information system research design developed by Vaishnavi & Kuechler (2004). The research is conducted in several steps. The following Figure 3.1 illustrates the major steps of the design research methodology.

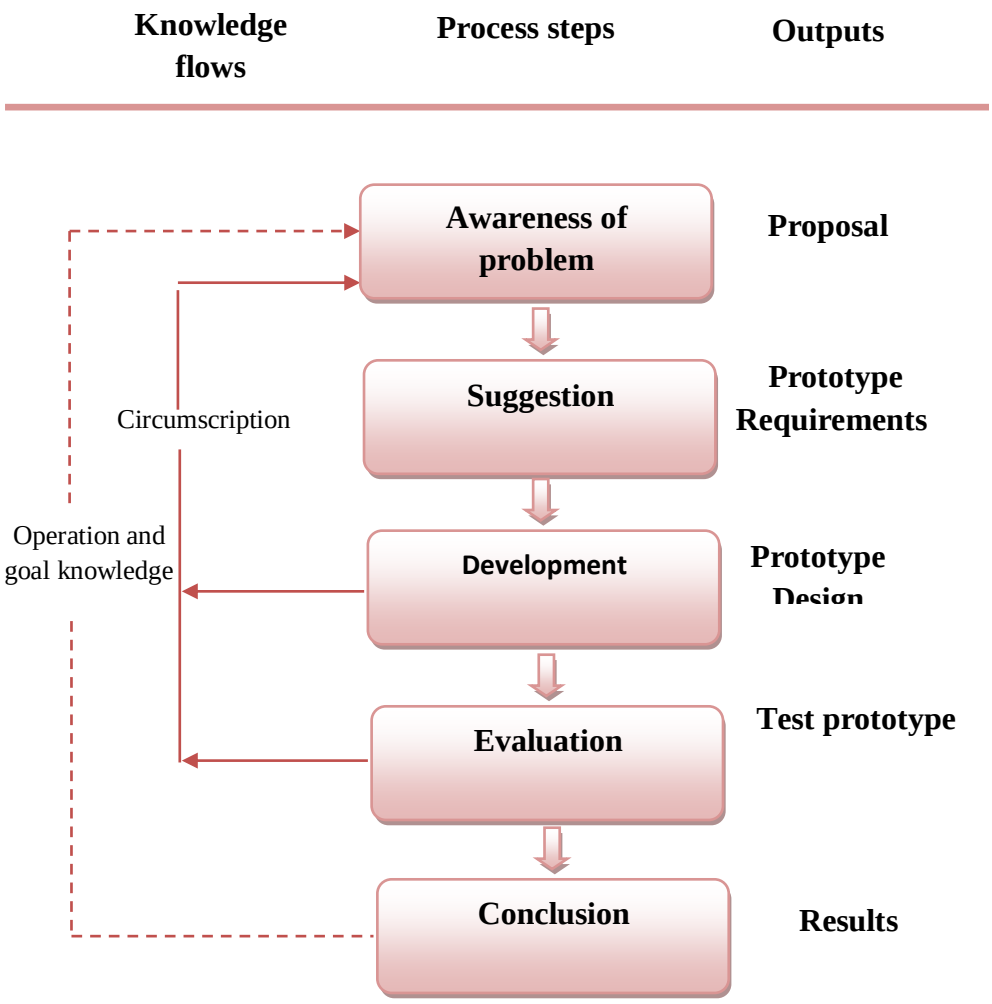


Figure 3.1 Research Design Methodology (Vaishnavi & Kuechler, 2004)

3.2 Stage of Methodology

According to Vaishnavi & Kuechler (2004), a typical design for general method contents five stages are awareness of problem, suggestion, development, evaluation and conclusion.

3.2.1 Awareness of Problem

An awareness of an interesting problem may come from multiple sources; and the most important thing understands the objectives and scope for this problem. This will happen through the interview with the person who is in charge on Sudainawiyeh town, and also the problems which trying to solve. So, the awareness of the problem rises because of the need to develop online municipality website for citizens to interact via the internet in order to complete municipal transactions. After that the problem statement, the objective and the scope will be clear.

This stage methodology is usually done through a series of focused analysis and discussion with business management and business users. These analyses initiate the process of development by establishing a mutual understanding of the objectives, scope, user needs and assess the feasibility of developing the project.

3.2.1.1 Data collection

A multi method approach used in the collection of the data such as observed the current system, interview and document about application form for municipality.

Interview

The researcher have been met Mr : Qasem Meas (admin officer) and we discus some of the main point about the Sudainawiyeh municipality:

i) The current process for the municipal transactions.

The municipal was provide many services for citizen such as provide to request certain documents, land request, construction licenses and stores rental license; and there is only one way to provide this service, which it is the manual process.

ii) Result of the interview.

Mr.: Qasem Meas like the idea and he precede it as effective system, and the researcher have got an appointment to present the system to them.

3.2.2 Suggestion

This study suggests using website for municipality to provide services to the citizens, so the citizen can easily access and in order to complete municipal transactions. The output of this phase is the temporary design of the system includes UML diagrams. The UML diagrams are general use case diagrams, detailed sequence diagrams for each use case, and class diagrams.

In this system development, researcher used a combination of object-oriented approach and regular scheme. As information systems requirements become increasingly complex, to use the combined

approach is more appropriate. Object-oriented offers a conceptual framework that supports the unit in the system. It also aims to provide a mechanism to support the reuse of code design and analysis of design. Although the scheme of providing easy-to-use approach is easy to understand description of the processes involved in the system

In designing the structure of the system, the research used the Object Oriented approach to view the whole of the system processes. The Rational Rose 2000 Enterprise Edition's software was chosen as a tool to develop the diagrams which are use case diagrams, use case specifications and sequence diagrams and all of the system structure (See Chapter 4). Rational Rose 2000 is the most comprehensive, simple and easy tool for system structure development Modeling

3.2.3 Development

Web applications' designers have facing many challenges during development stage of the systems. Most of these challenges are with data handling, organizing, or structuring of the web applications (Sridaran, Padmavathi & Iyakutti, 2009). In this study the prototype has been developed by using Visual Studio 2005.Microsoft.NET Framework provides developers with the opportunity to create and deploy applications and services via the Web.

According to Freeman & Jones (2002), these services can facilitate communication between clients and .NET application servers (such as database servers and so on) through the use of XML queries issued by the client. This environment is attractive to developers because it is a

language-neutral environment that can deliver content to end users, regardless of the platform in use.

In this level the design school system prototype was being build; then, had been develop the web site by using requirement of Usability Guidelines.

According to Nielsen & Loranger (2006), usability guideline is specific to online forms. Usability describes the ability of customers to use an online form to full advantage (so that the technology assists and supports users), and so that the form achieves business objectives. This is to help clients understand why adopting the guidelines will affect their customers. Chen, Kıcıman & Brewer (2002) says online development is necessary part of making Internet services strong to unexpected events, and changes in system requirements.

3.2.4 Evaluation

The evaluation was performed to determine the level of usefulness and operability of the system after the system has been developed; it is tested through a questionnaire. The evaluation is based on usability testing by using System Usability Scale (SUS) proposed by Brooke (Bangor, Kortum & Miller, 2008). The prototype would be evaluated after the development through the people who would use it (residents of Sudainawiyeh). The aim was to see the level of satisfaction and ease of use and operability of the prototype system.

3.2.5 Conclusion

In this stage, the results are consistent with the objectives of the research. Where feedbacks are collected and notes for the purpose of giving an

overview of the possibility of activating the proposed to build a municipality website for Sudainawiyeh town in Iraq.

3.3 Summary

This chapter has discussed the methodology that been used in this project, where the methodology was grouped according to five phases was based on the project objectives as follows: awareness of the problem phase, suggestion phase, development phase, evaluation phase and conclusion phase.

In awareness of the problem phase, ideas, information, issues and problems related to the municipality website for Sudainawiyeh town in Iraq. Gather necessary requirement. In suggestion phase, development of elements will be implemented in software then these are the main focus of requirements analysis. In development phase, the interactions among system components and the system functionalities were identified. In evaluation phase, the system was being tested and the problem encountered was be analyzed to ensure it will provide correct services. Finally, in phase conclusion the study will be made into document which includes detailed information about the system.

CHAPTER 4

SYSTEM ANALYSIS & DESIGN

The present chapter discusses succinctly proposal municipality website for Sudainawiyeh town in Iraq. The outcome of this chapter are determined the requirements of municipality website for Sudainawiyeh and analysis the system using UML language to understood how the system works through designing use case diagram, activity diagram, class diagram, sequence and collaboration diagram. Finally, build the interface for e-municipality for Sudainawiyeh town in Iraq.

4.1 System Requirements

4.1.1 Functional Requirements

Functional requirements are associated with specific functions, tasks or behaviors the system must support (Chung & do Prado Leite, 2009). Municipality website is implemented as an integrated web based aimed at a staged automation of administrative activities. The citizen will interact with the system through interfaces in addition to the requirements appear when it is base on the users interface. Table (4.1) summarizes the functional requirements for the system and gives a brief description of the different requirements.

- M – mandatory requirements (something the system must do)
- D – desirable requirements (something the system preferably should do)
- O– optional requirements (something the system may do)

Table 4. 1 List of Functional Requirements

No	Requirement ID	Requirement Description	Priority
	EMS_01	**Login**	
1.	EMS_01_01	User/Admin can login into the system using his/here "User ID" and "password".	M
	EMS_02	**Logout**	
2.	EMS_02_01	User/Admin can logout the system.	M
	EMS_03	**Homepage**	
3.	EMS_03_01	User/Admin can enter Homepage of the system	M
	EMS_04	**Registration**.	
4	EMS_04_01	User can enter Registration of the system	M
	EMS_05	**Select Services**	
5	EMS_05_01	User/Admin can enter Request land	M
6	EMS_05_02	User /Admin can enter Construction permit.	M
	EMS_06	**Display Photo**	
7	EMS_06_01	User /Admin can view Photo about the Sudainawiyeh	O
	EMS_07	**Display Tourism**	

8	EMS_07_01	User/Admin can view guideline for Tourism	O
	EMS_08	**Display About us**	
9	EMS_08_01	User/Admin can view info about the office of manger	O

4.1.2 Non Functional Requirements

Non-functional requirements are constraints on various attributes of these functions or tasks (Chung & do Prado Leite, 2009). It will capture properties that are not primary for the system to work or features of the system that has to do with performance and quality. However, it's very important because, its can help the system gain competitive advantage over other systems and they are often features that highly desired by the user. Table (4.2) summarizes the non-functional requirements for the system.

Table 4. 2 List of Non-Functional Requirements

No.	Requirement ID	Requirement Description	Priority
	EMS _09	**Usability issues**	
10	EMS _09_01	The system must provide the easy access	M
11	EMS _09_02	The system must have friendly interface	M
	EMS _10	**Operational requirements**	
12	EMS _10_01	The system will have server for the database and connection to the main database.	M
13	EMS_10_02	The system will work over the web	M

		environment with internet explorer. .	
14	EMS_10_03	The system must be current with evolving web standard	M
	EMS _11	**Performance requirement. .**	
15	EMS_11_01	The system database must be updated in real time.	M
16	EMS_11_02	The system should be available 24x7	M
	EMS _12	**Security requirements**	
17	EMS _12_01	Only the person who has user name and password can access the system.	M
	EMS_13	**Reliability issues**	
18	EMS_13_01	Assignment and notes stored in UUM Library must survive against data error and data corruption.	M
19	EMS_13_02	If UUM Library crash, it must be able to return to its normal functional state immediately. This crash must not affect any future task.	M
20	EMS_13_03	The system is able to handle large system request.	M
21	EMS_13_04	UUM Library is immune to virus and hacker attack	M
	EMS_14	**Cultural and political**	
22	EMS_14_01	The system shall comply with insurance industry standards	M

	EMS_15	**Maintainability issues**	
23	EMS_15_01	In case of change or addition demand, the maintainability shall be easily done by integrating new modules and offering new software solutions.	M

4.2 Use Case

Use case approaches are increasingly attracting attention in requirements engineering because the user-centered concept is valuable in eliciting, analyzing, and documenting requirements (Duan, 2009). One of the main goals of the requirements engineering process is to get agreement on the views of the involved users (Knapp, e al., 2004), and use cases are a good way to elicit requirements from a user's point of view (Dedeke & Lieberman, 2006).

Adopting a met model for use-case-based requirements generation helps avoid confusion. The Meta model describes the elements comprising the collection of artifacts developed as part of the solution statement, which in turn resolves a particular problem statement or business need. The solution statement includes the use case narrative, the use case diagram, and the domain model (Dedeke & Lieberman, 2006).

Use cases are not only a requirements description tool; they are also useful in recommended means of aiding the transition from a problem domain-oriented view to a solution-oriented view of the system (Overmyer, Lavoie & Rambow, 2001).

Generally, use case steps are written in an easy-to-understand structured narrative using the vocabulary of the domain. This is engaging for users who can easily follow and validate the use cases, and the accessibility encourages users to be actively involved in defining the requirements.

4.2.1 Use Case Diagram

The Use case diagram is used to identify the primary elements and processes that form the system. The primary elements are termed as "actors" and the processes are called "use cases." The Use case diagram shows which actors interact with each use case. The above statement pretty much sums up what a use case diagram is primarily made up of actors and use cases.

A use case diagram captures the functional aspects of a system. More specifically, it captures the business processes carried out in the system. As you discuss the functionality and processes of the system, you discover significant characteristics of the system that you model in the use case diagram. Due to the simplicity of use case diagrams, and more importantly, because they are shorn of all technical jargon, use case diagrams are a great storyboard tool for user meetings. Use case diagrams have another important use. Use case diagrams define the requirements of the system being modeled and hence are used to write test scripts for the modeled system.

A generalization relationship between use cases “implies that the child use case contains all the attributes, sequences of behavior, and extension points defined in the parent use case, and participates in all relationships of the parent use case.” The child use case may define new behavior

sequences, as well as add behavior into and specialized existing behavior of the parent (Alhir, 2003).

According to the use case diagram the system has two main components (actor/use case). In this study actor represent by two actors (citizen and admin). The citizen must be registration before login. Citizen after login can display all the function for the system. Admin have all the authorities to display all the function. The use case it represented in the following Figure (4.1):

Figure 4. 1 EMS Use Case Diagram

4.3 Use Case Specification

According to Dutoit & Paech (2002), a use case specification is a document used to capture the specific details of a use case. Use case specifications provide a way to capture the functional requirements of a system. Use case specifications provide a means of organizing all of the different scenarios that exist. They add detail beyond what is shown in a use case diagram. They are a useful tool in communicating with project stakeholders, system users, business analysts, and developers. These specifications define requirements in a way that all consumers of the project can understand, creating a common vocabulary for the impacted parties (Anton, Carter, Dagnino, Dempster & Siege, 2001). All the detail about EMS system has been placed in the appendix B

4.4 Activity Diagram

Activity diagrams represent the business and operational workflows of a system. An Activity diagram is a dynamic diagram that shows the activity and the event that causes the object to be in the particular state. Figure 4.2 descriptions the activity diagram for admin.

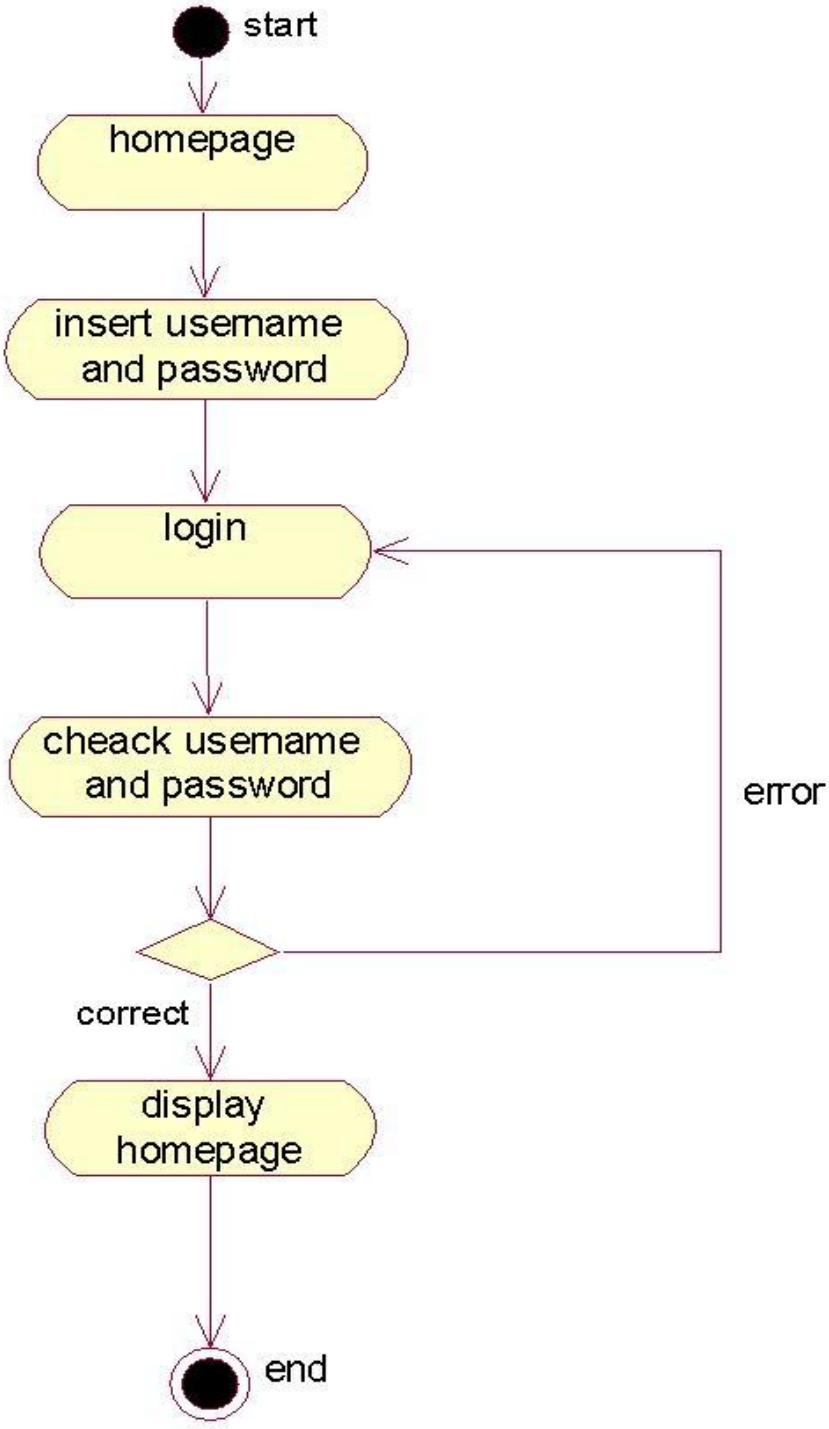


Figure 4. 2 activity diagram for admin

Figure 4.3 illustrate the activity diagram for homepage.

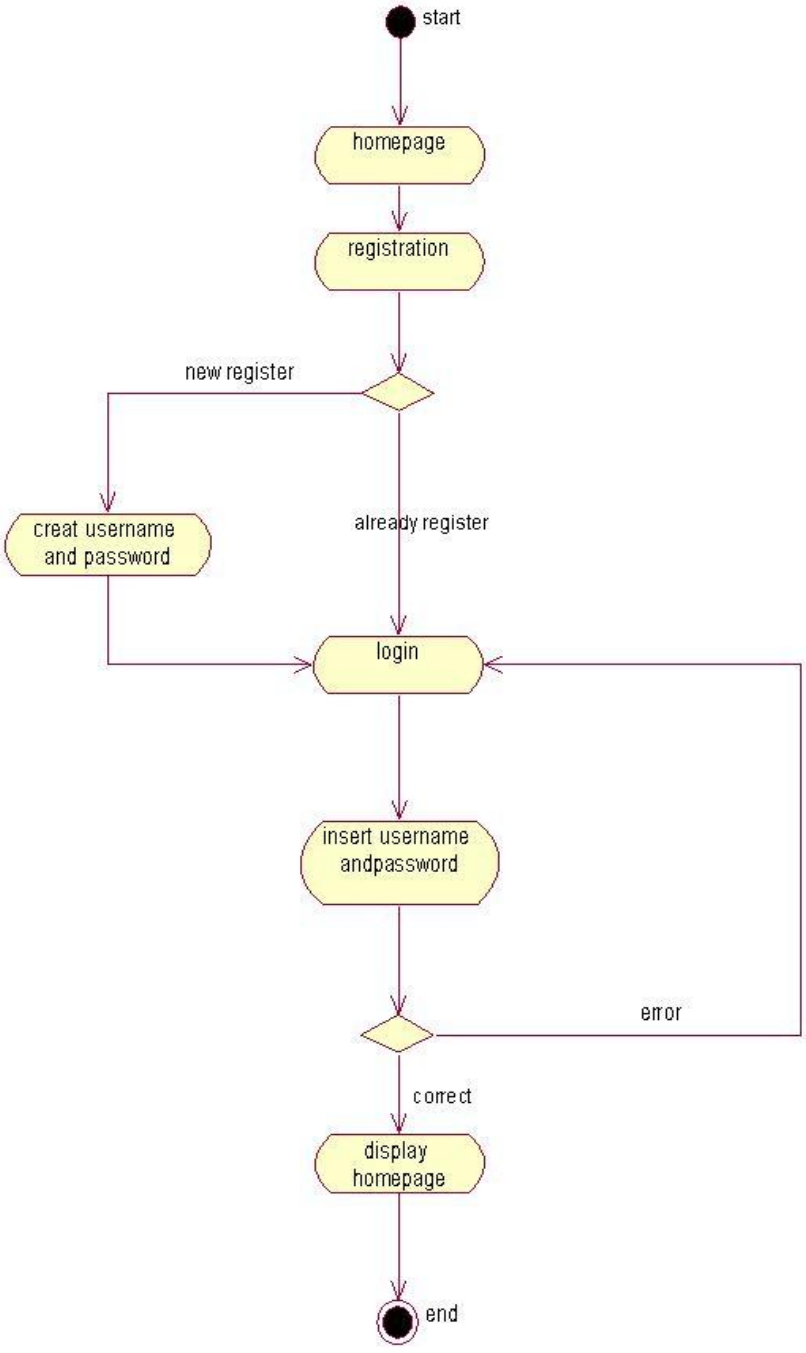


Figure 4. 3 activity diagram for homepage

Figure 4.4 shows the activity diagram for page services.

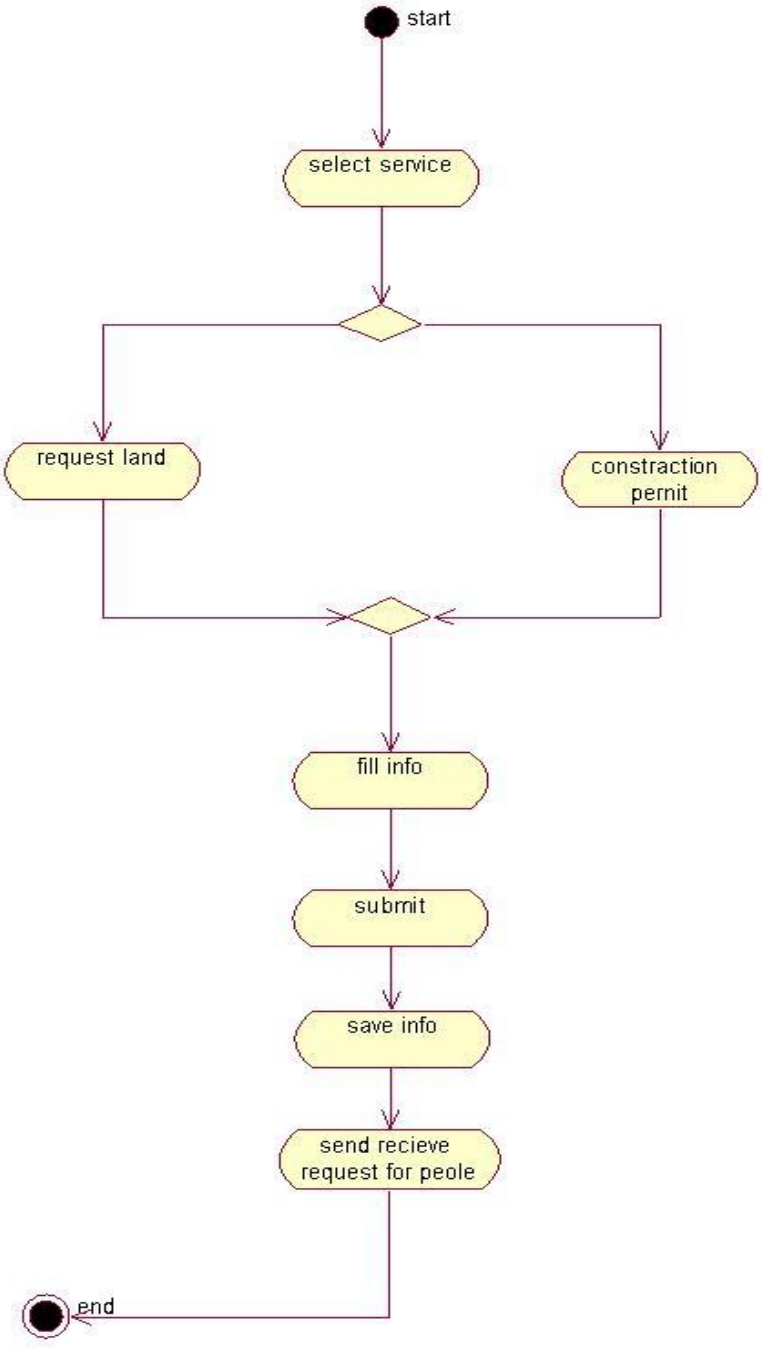


Figure 4. 4 activity diagram for page services

Figure 4.5 illustrate the activity diagram for photo page.

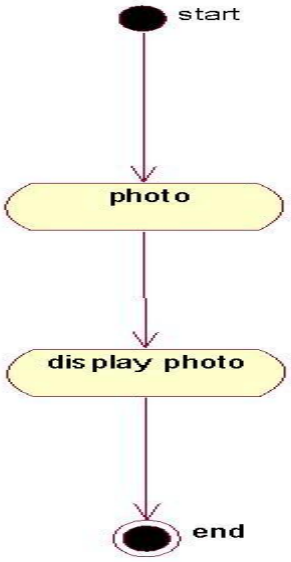


Figure 4. 5 activity diagram for photo page

Figure 4.6 shows the activity diagram for tourism page.

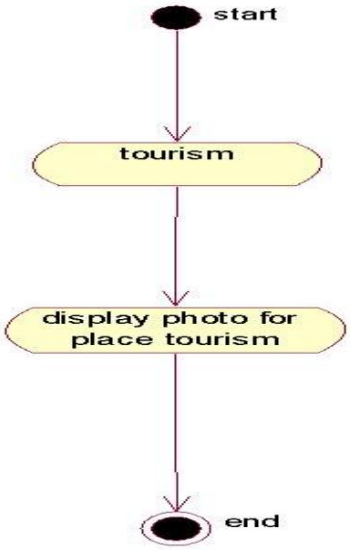


Figure 4. 6 activity diagram for tourism page

Figure 4.7 illustrate the activity diagram for about as page.

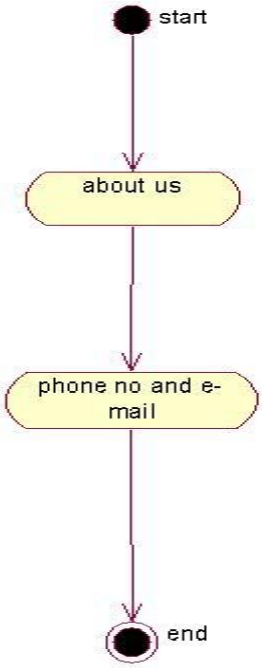


Figure 4. 7 activity diagram for about as page

4.5 Sequence and Diagram

A sequence diagram describes how groups of objects collaborate in accomplishing some system behavior. This collaboration is implemented as a series of messages between objects. Typically, a sequence diagram describes the detailed implementation of a single use case (or one variation of a single use case). Sequence diagrams are not useful for showing the behavior within an object. Consider using state-transition diagrams for that purpose (Li, Liu & Jifeng, 2004).

Homepage

In this sequence diagram as in Figure 4.8, any users can access his/her page by put link in address.

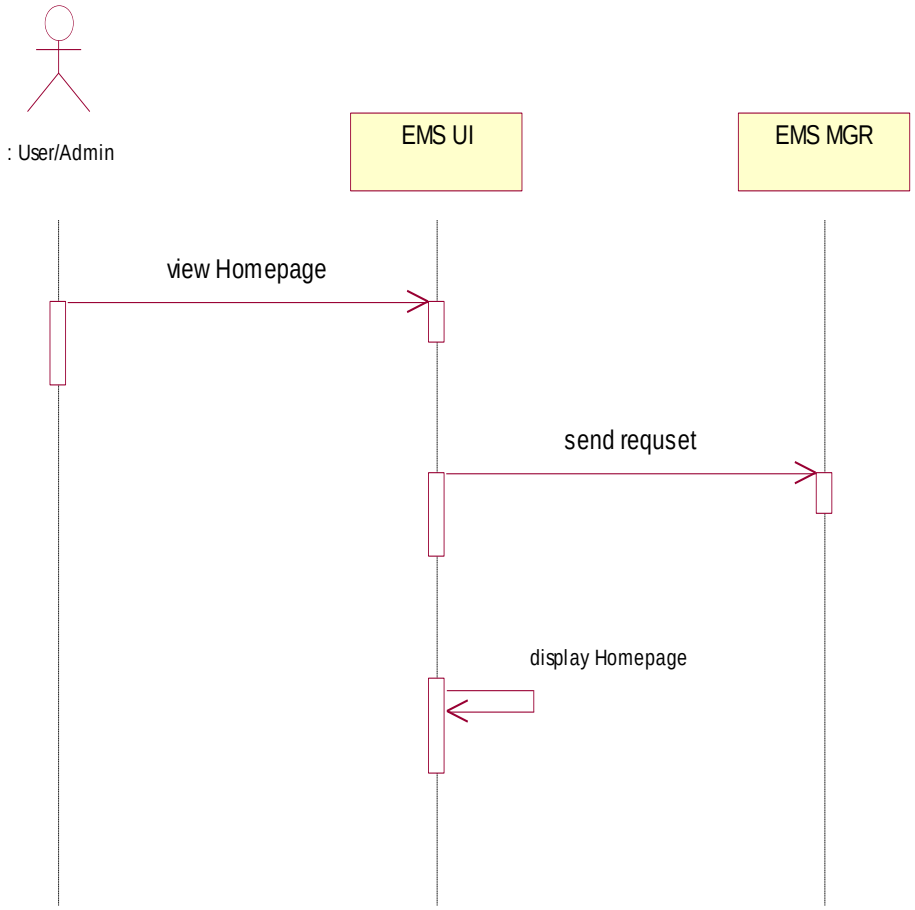


Figure 4. 8 sequence diagram for homepage

Registration

As showing in figure 4.9 it's describe the sequence diagram for registration. Citizen can register to system by input all the information about his/her to create account in municipality of Sudainawiyeh town (Registration is allowed to Sudainawiyeh residents only).

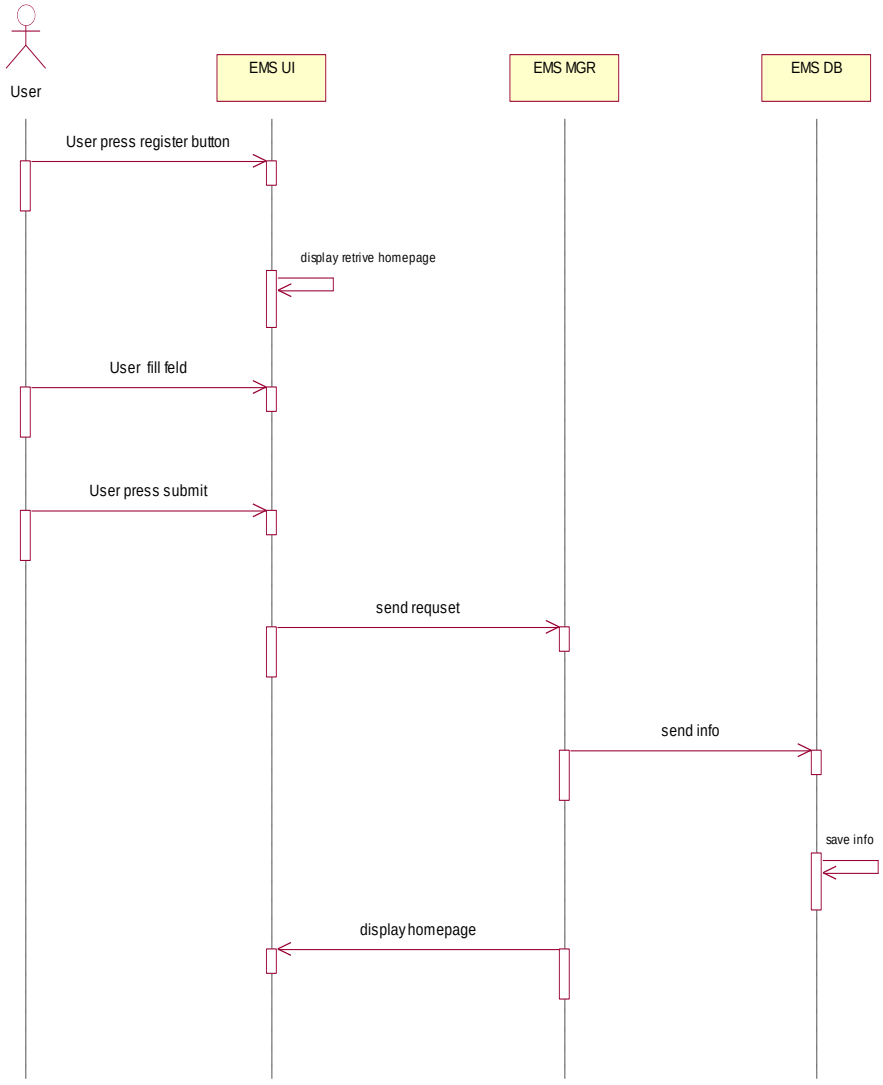


Figure 4. 9 Sequence Diagram for Registration.

Login

As showing in figure 4.10 it's describe the sequence diagram for system login. Citizen can access to system by login his/her account through enter username and password.

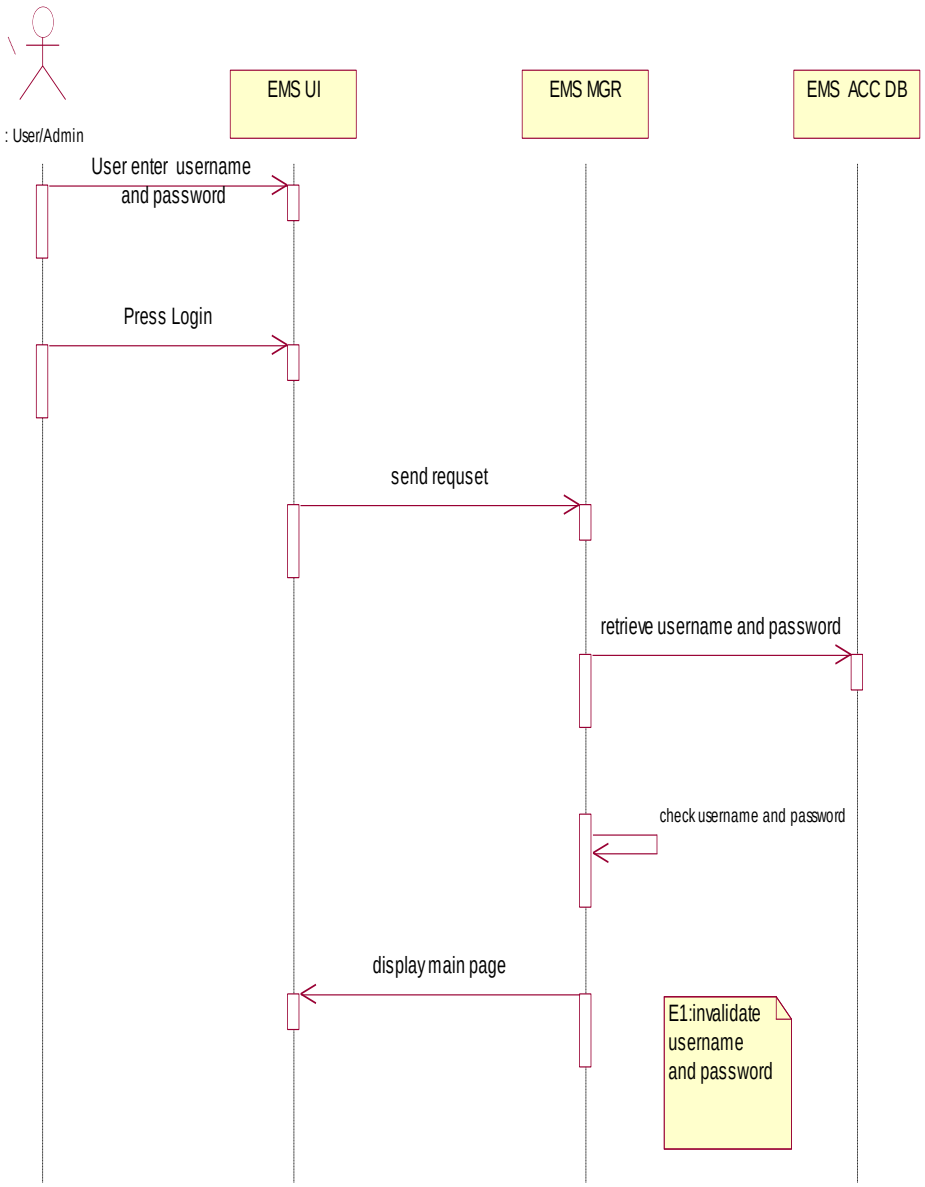


Figure 4. 10 Login Sequence Diagram

Service Page

As showing in figure 4.11 it's describe the sequence diagram for service page. Citizen will view the service and select any service he/she need, then he/she can request the service from municipality via filling the application form online.

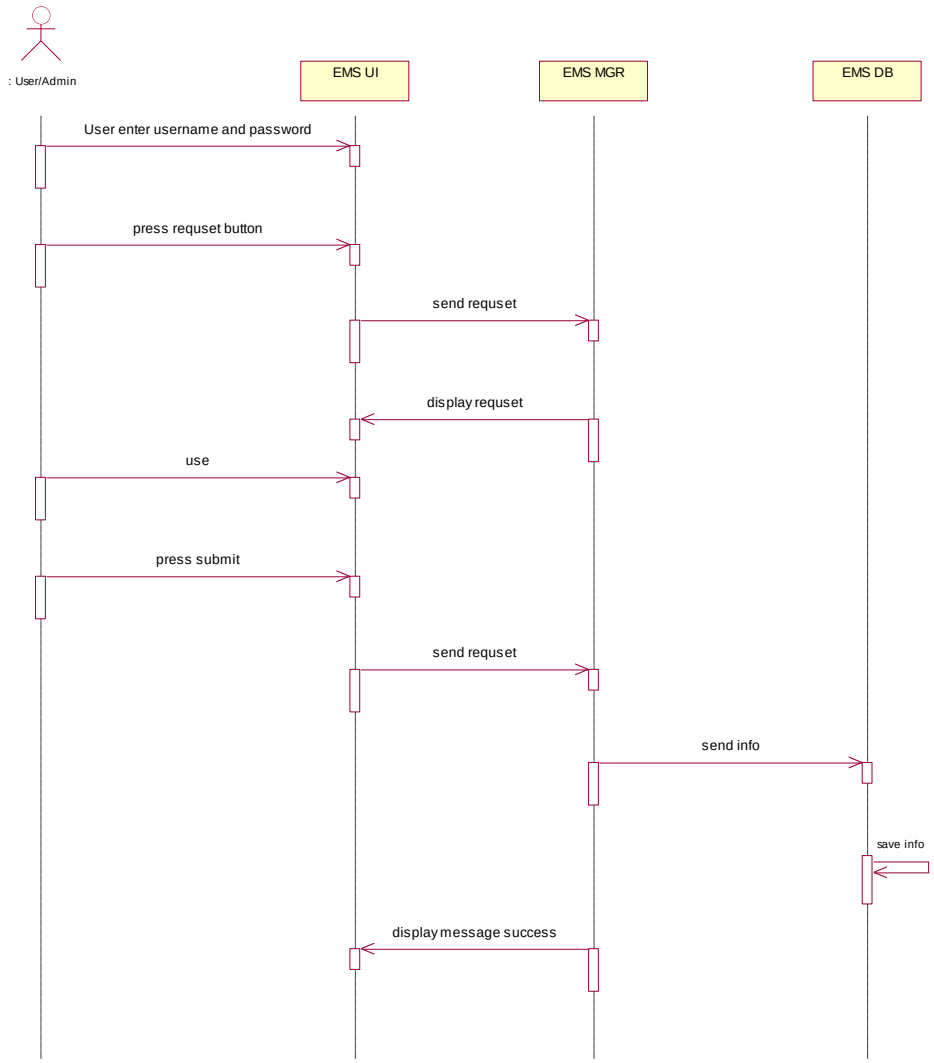


Figure 4. 11 sequence diagram for service page

Photo Page

In this sequence diagram as in Figure 4.12, users can display photo page to view the entire photo about Sudainawiyeh town.

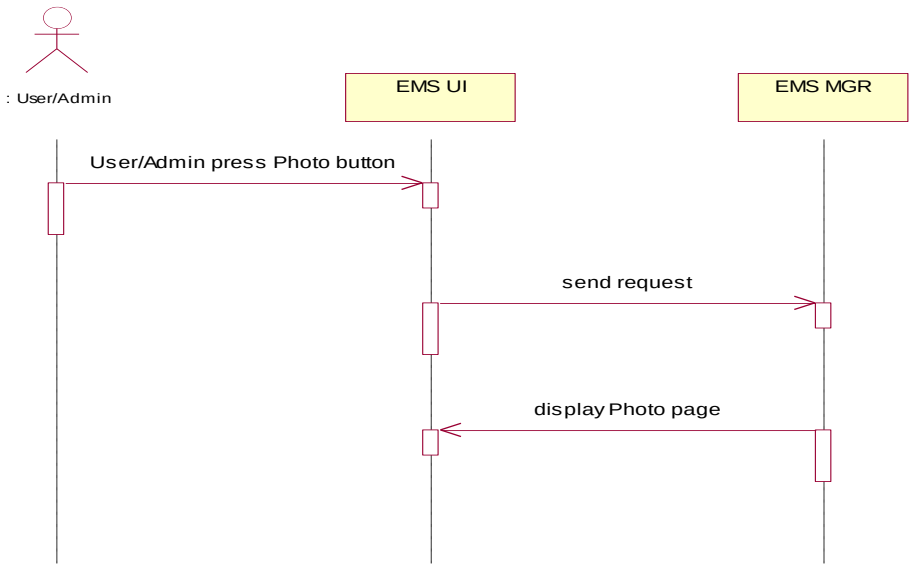


Figure 4. 12 sequence diagram for photo page

Tourism Page

In this sequence diagram as in Figure 4.13, users can display tourism page to view the entire photo about tourism place in Sudainawiyeh town.

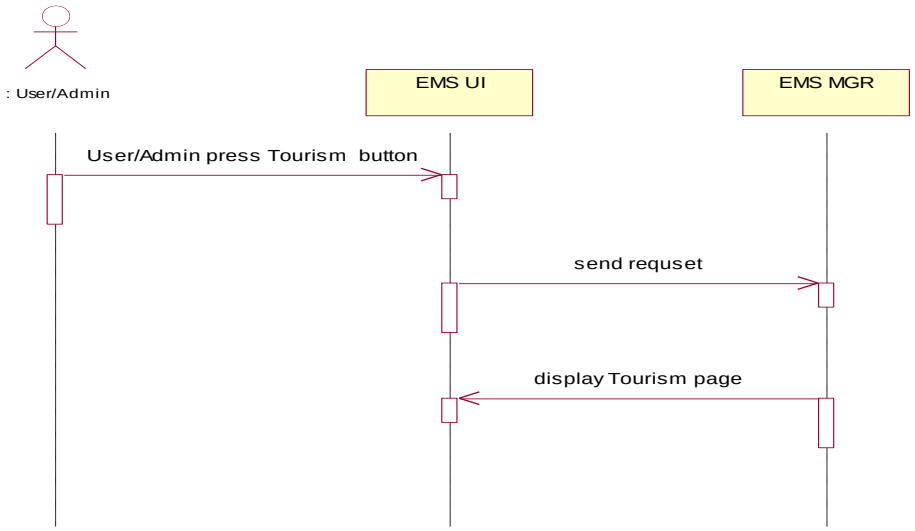


Figure 4. 13 sequence diagram for tourism page

Tourism Page

In this sequence diagram as in Figure 4.14, users can display about as page to contact with municipality of Sudainawiyeh town.

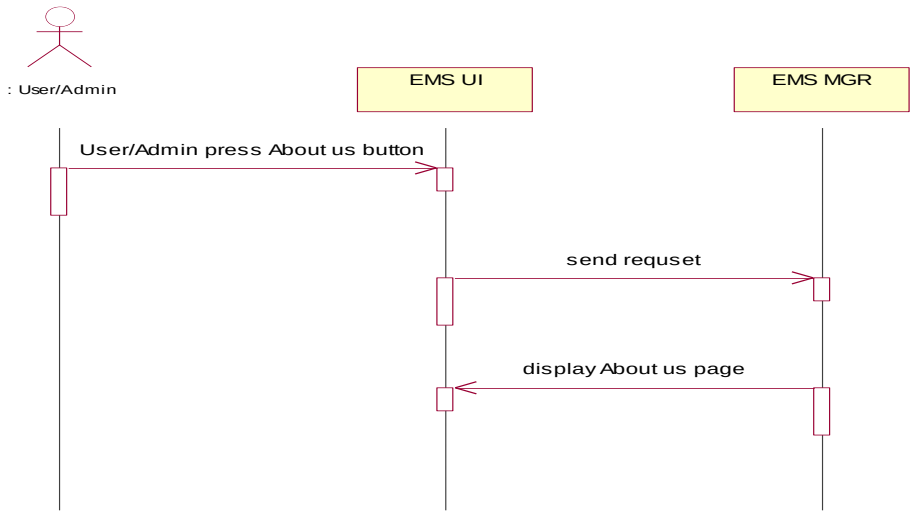


Figure 4. 14 sequence diagram for about as page

Login out

When the users finish his/her work with the system, he/she can leave the system during press login out as shown in figure 4.15.

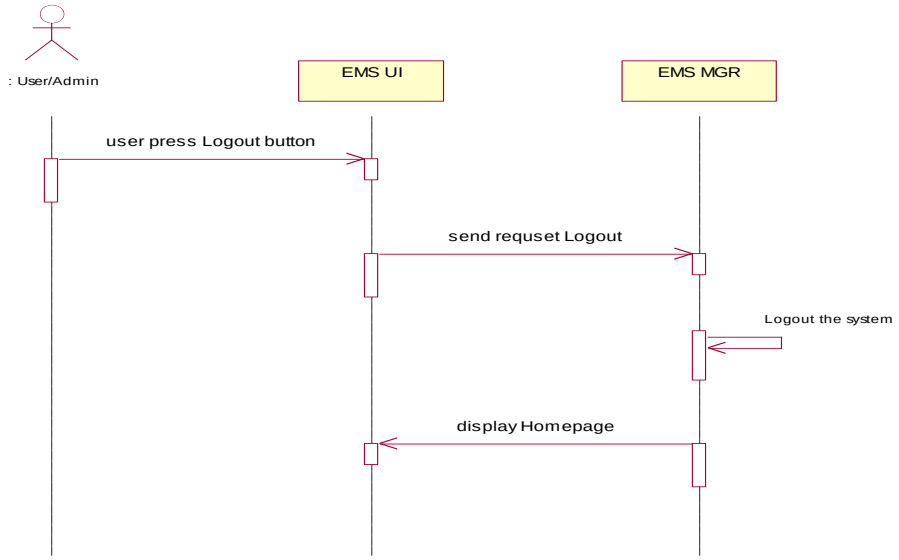


Figure 4. 15 sequence diagram for login out

4.6 Collaboration Diagrams

According Khriss, Elkoutbi & Keller (2004), A collaboration diagram is a graphical representation of a collaboration. The objects in a collaboration diagram are instances of classes in a class diagram. It's illustrated the relationship and interaction between software objects. They require use cases, system operation contracts, and domain model to already exist. The collaboration diagram illustrates messages being sent between classes and objects.

Homepage

In figure 4.16 there is homepage collaboration for the system; its will explain all the details of movement for system in use case homepage.

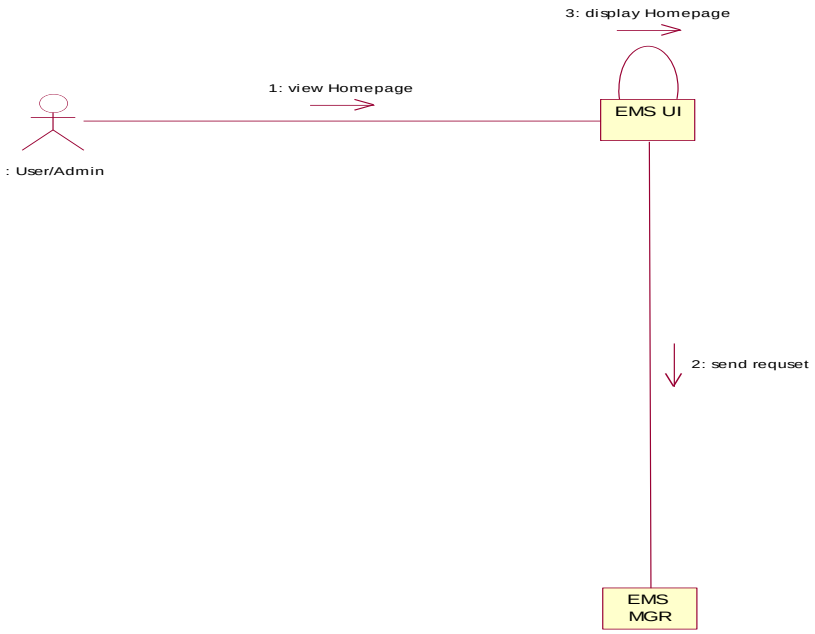


Figure 4. 16 Collaboration Diagram for Homepage

Registration

In figure 4.17 there is registration collaboration for the system; its will explain all the details of movement for system in use case registration.

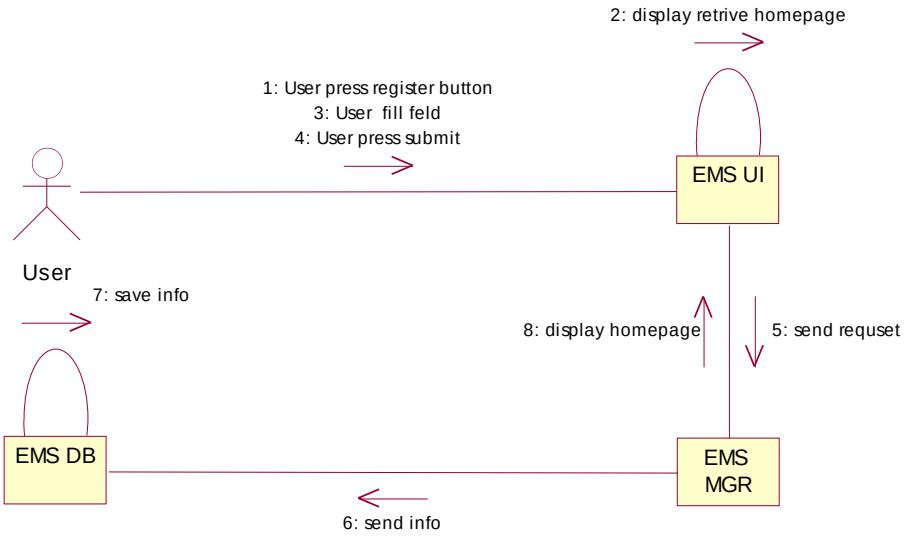


Figure 4. 17 Collaboration Diagram for Registration

Login

In figure 4.18 there is login collaboration for the system; its will explain all the details of movement for system in use case login.

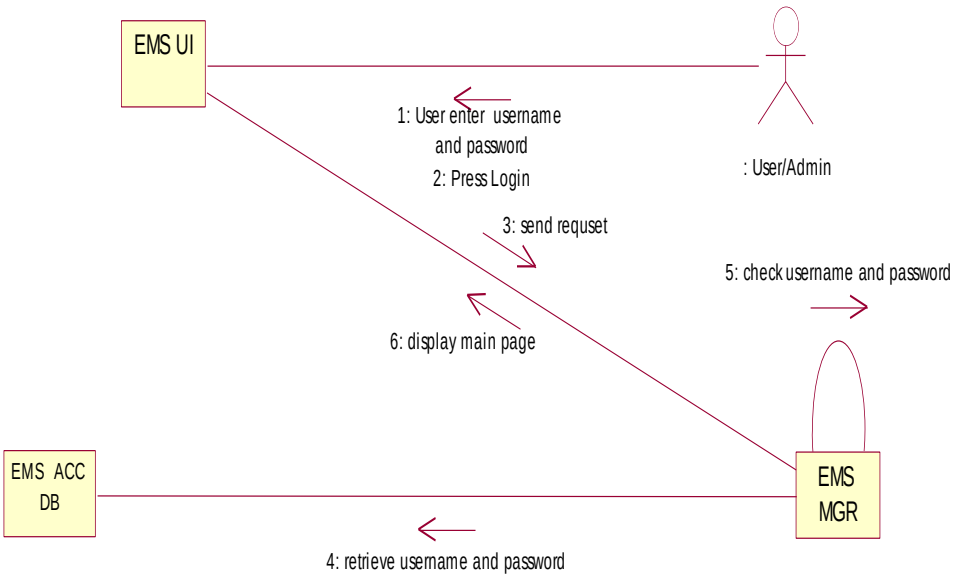


Figure 4. 18 Collaboration Diagram for Login

Services page

In figure 4.19 there is services page collaboration for the system; its will explain all the details of movement for system in use case services page.

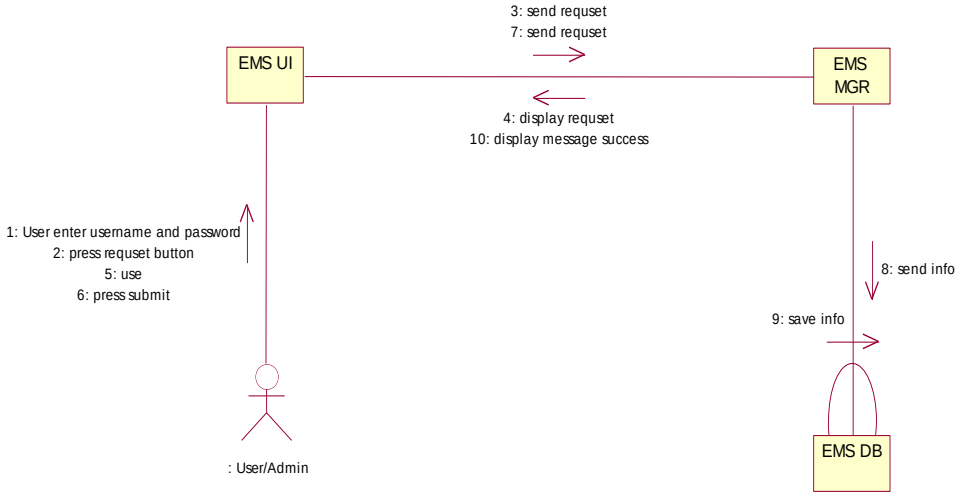


Figure 4. 19 Collaboration Diagram for services page

Photo page

In figure 4.20 there is photo page collaboration for the system; its will explain all the details of movement for system in use case photo page.

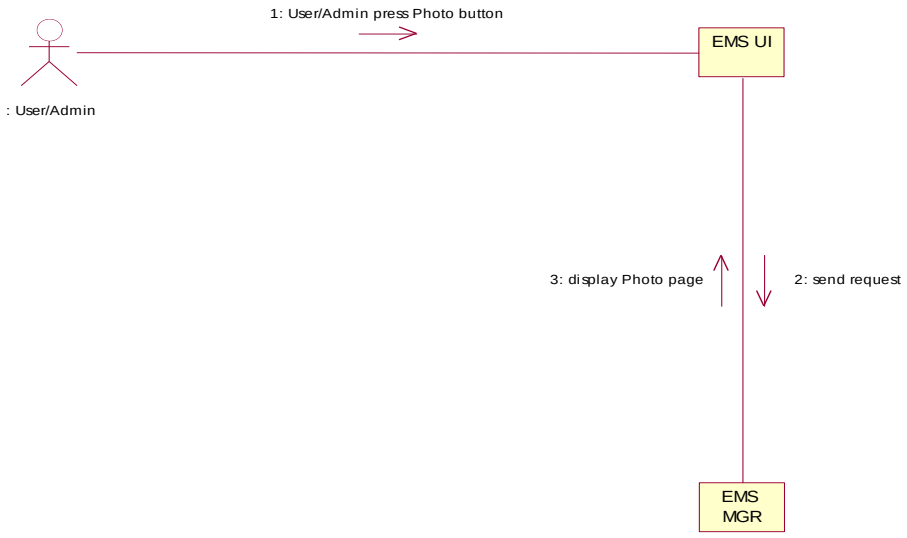


Figure 4. 20 Collaboration Diagram for photo page

Tourism page

In figure 4.21 there is tourism page collaboration for the system; its will explain all the details of movement for system in use case tourism page.

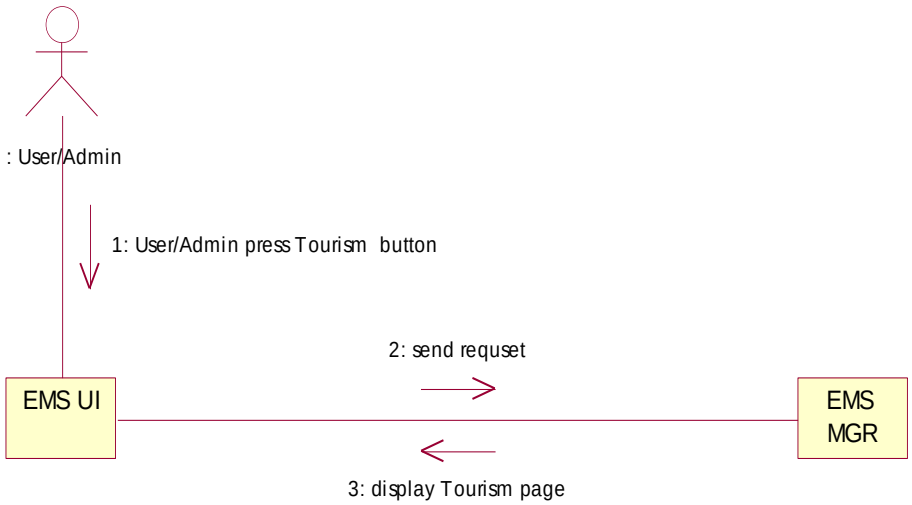


Figure 4. 21 Tourism page collaboration diagram

About as page

In figure 4.22 there is about as page collaboration for the system; its will explain all the details of movement for system in use case about as page.

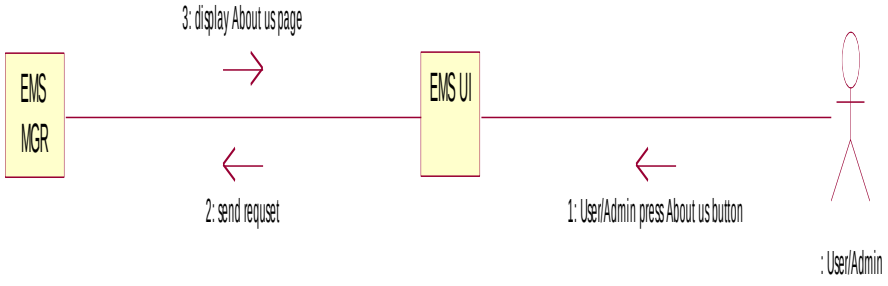


Figure 4. 22 About as page collaboration diagram

Login out

In figure 4.23 there is login out collaboration for the system; its will explain all the details of movement for system in use case login out page.

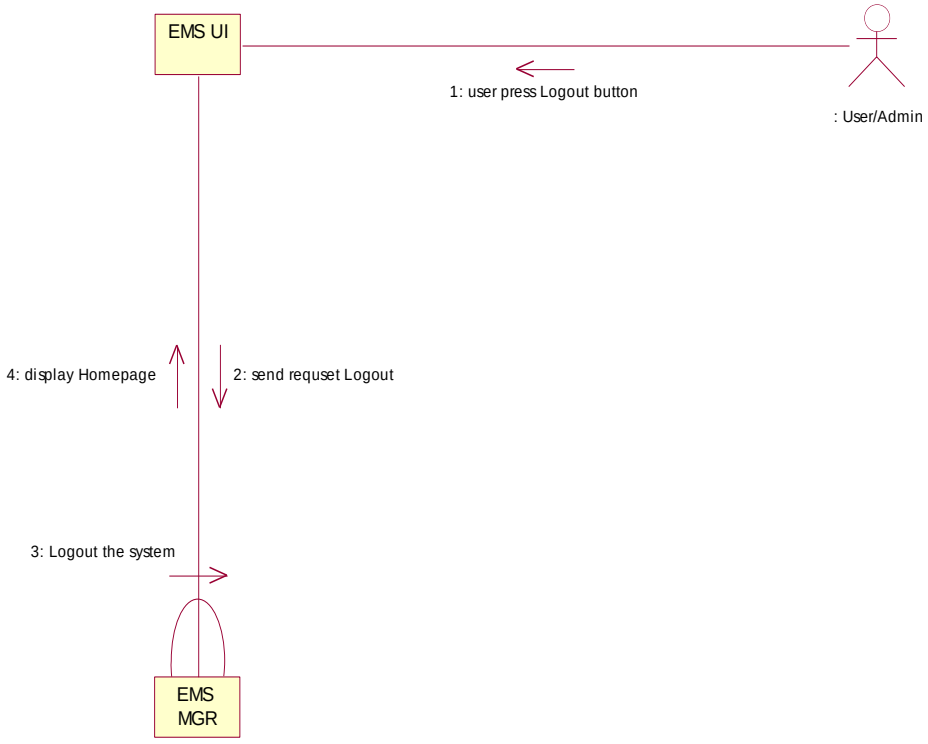


Figure 4. 23 Login out Collaboration Diagram

4.7 Class Diagram

According Berardi, Calvanese, & Giacomo (2005) class diagrams are the mainstay of object-oriented analysis and design. UML 2 class diagrams show the classes of the system, their interrelationships (including inheritance, aggregation, and association), and the operations and attributes of the classes. The class diagram of the system will illustrate in figure 4.24.

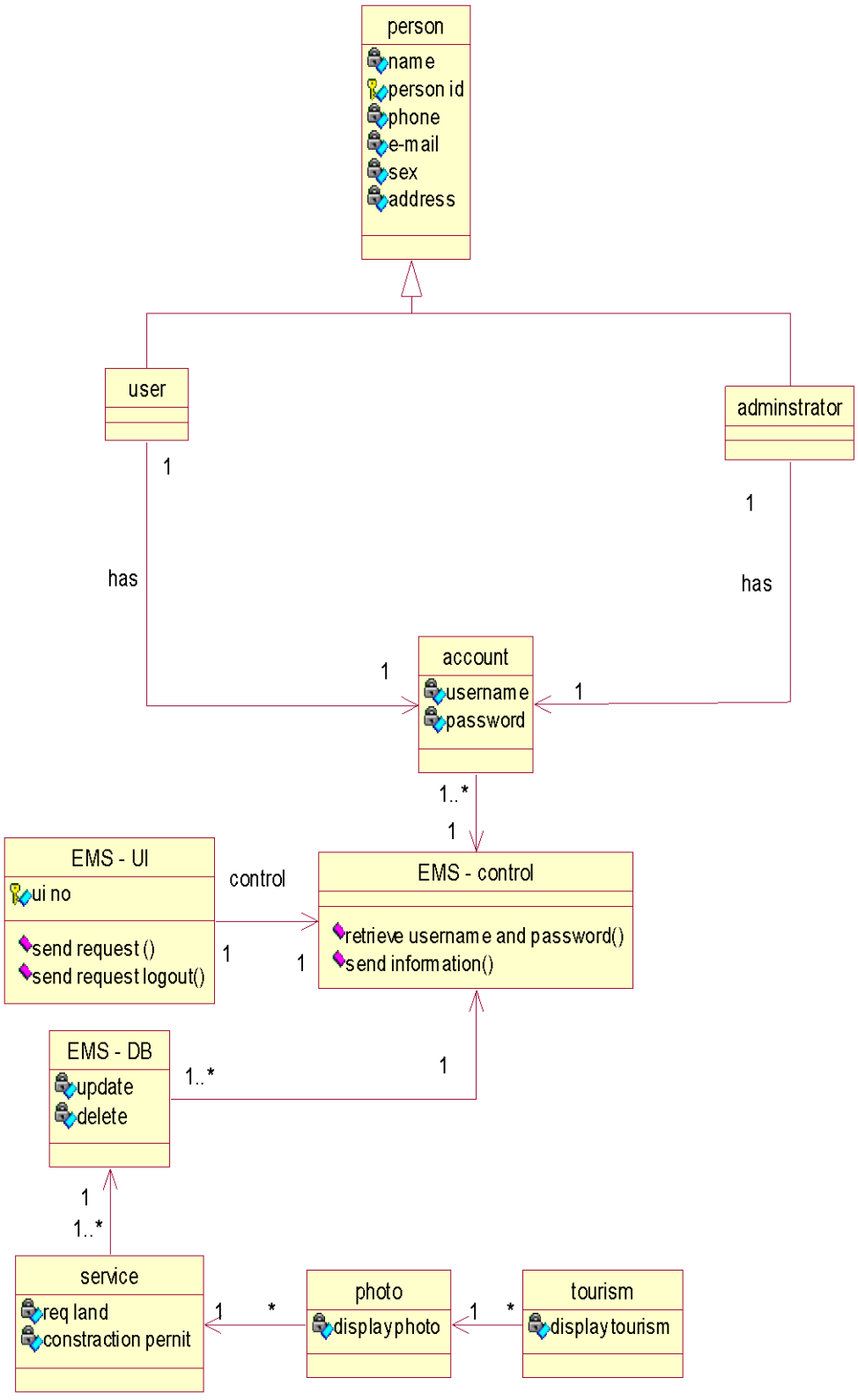


Figure 4. 24 Class Diagram for EMS system

4.8 System Interface

Homepage Interface

The e-municipality for Sudainawiyeh town homepage as illustrated in figure 4.25. Through website the municipality provides information about local government to the citizen. As well as photo about town and tourism place.

Figure 4. 25 Homepage Interface

Registration Interface

The users (citizen & admin) when he/she enter the login page he/she should put the username and password as shown in figure 4.26. The system will verification if the username and password is correct then the users can enter to the e-municipality for Sudainawiyeh town.

Figure 4. 26 Account Manage Interface

Login Interface

This interface will display when the customer enter via using credit card only. The customer can select any number he/she need to withdraw, or he/she can choose the optional about other number to enter the amount he/she need to withdraw as shown in figure 4.15.

Figure 4. 27 Login Interface

Services Interface

Services interface was shown the entire services can municipality provides online to the citizen. These services will be active after login as shown in figure 28.

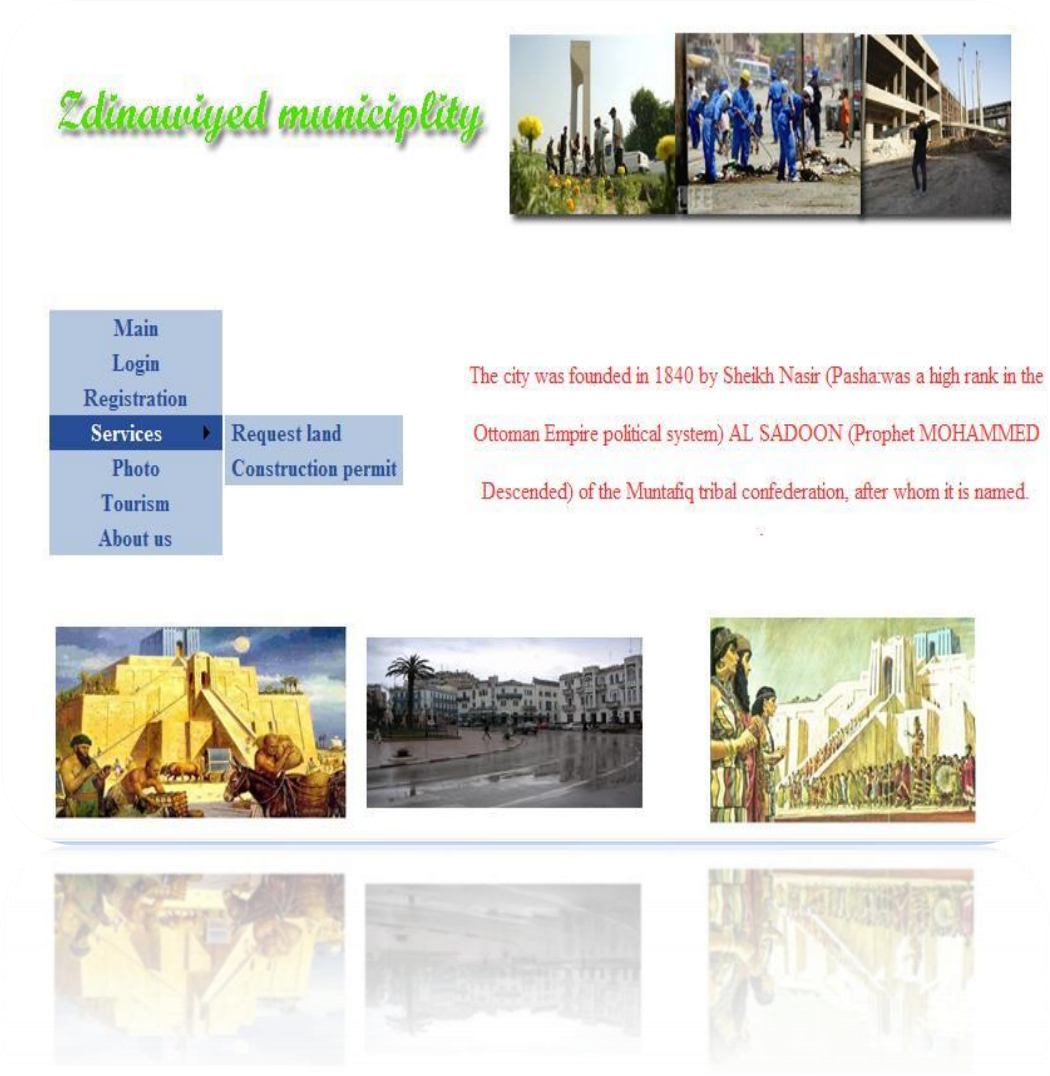


Figure 4. 28 Services Interface

Request Land Application Interface

The citizen can request land from municipality online through filling the application form as shown in figure 29. The citizen must filling all the field then press submit.

Figure 4. 29 Request Land Application Interface

4.9 Summary

This chapter are content the analysis about the system, the requirement, use cases and the entire diagram which describe the function of municipality website for Sudainawiyeh town in Iraq. The result of running the system illustrated that target of the study is done successfully. The output of chapter four is the developed prototype for municipality website for Sudainawiyeh town in Iraq and the design of interface for the prototype.

CHAPTER 5

EVALUATION & RESULTS

This chapter has demonstrated the final phase of this research, to evaluate the prototype of municipality website for Sudainawiyeh town in Iraq that designed and implemented in chapter four. The evaluation is based on usability testing by using System Usability Scale (SUS) proposed by Brooke (Bangor, Kortum & Miller, 2008). This questionnaire consists of 12 questions and likert scale with one to five degrees. In evaluation, the residents of Sudainawiyeh were selected to assess e-municipality Sudainawiyeh prototype efficiency and effectiveness.

The system evaluation measures the system usability that achieved the proposed objective which to improve the interaction between the citizens of Sudainawiyeh town and e-municipality of Sudainawiyeh (EMS). The questionnaire consists of two section, general information and evaluation of user.

5.1 General Information

Prototype for e-municipality of Sudainawiyeh (EMS) was assessed through a sample consists of thirty citizens. The Statistical Package for Social Sciences version 17 has been used to perform descriptive statistics analysis for the collected data. Also the (SPSS) used to determine the frequencies of each question; however, the histogram has been provided in this evaluation.

As shown in Table 5.1, 22 (73.33%) of the respondents were male and 8 (26.66%) were female.

Table 5. 1 Geander of sample

Gender	Frequency	Percentage (%)
Male	22	73.33%
Female	8	26.66%

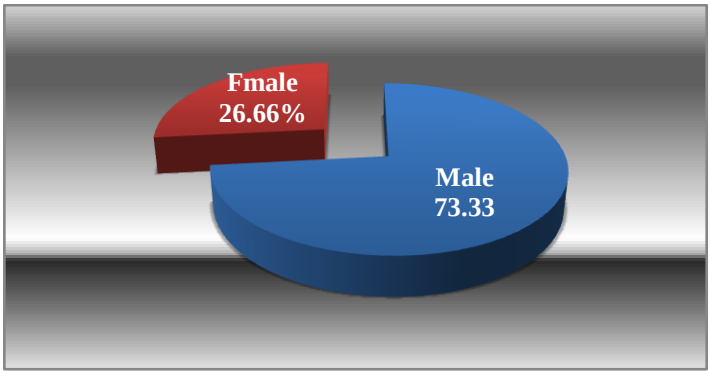


Figure 5. 1 Statistics for semple gender

In table 5.2 the respondents 12 (40%) have degree certificate and the minority of them are master certificate 4 (13.33%). The remaining 8 (26.66%) are diploma and 6 (20%) have high school degree all that shown in figure 5.2.

Table 5. 2 Education of sample

Education	Frequency	Percentage (%)
Master	4	13.33%
Degree	12	40%
Diploma	8	26.66%
High school	6	20%

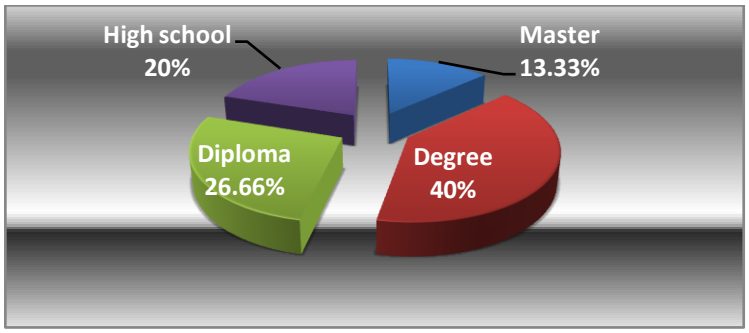


Figure 5. 2 Statistics for simple education

As illustrate in Table 5.3 and figure 5.3, 20 (66.66%) of the respondents were 20-30 years old and 10 (33.33%) were 30-40 years old.

Table 5. 3 Age of sample

Age	Frequency	Percentage (%)
20-30	20	66.66%
30-40	10	33.33%

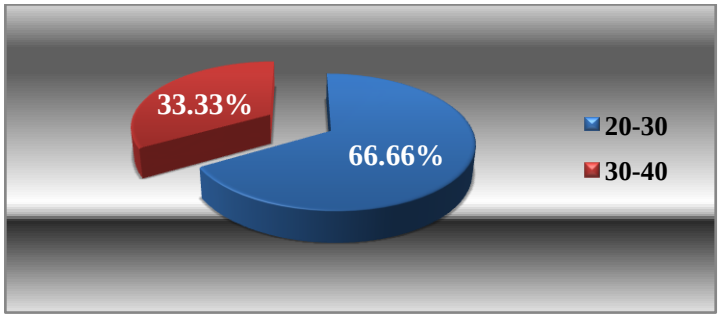


Figure 5. 3 Statistics for simple age

5.2 Evaluation of User

Measure the performance of the system depends mainly on the assessment of users and as described earlier that the system is interested to municipality website for Sudainawiyeh town. Each questions in the measurement has a rate from 1 - 5 (1 mean Strongly Disagree, 2 mean Disagree, 3 mean Neutral, 4 mean Agree, and 5 mean Strongly Agree). As describe in Table 5.4 the survey focus on two dimension the usefulness and easy of use; the result illustrates that the mean for every dimension is around 3.9.

Table 5. 4 attributive statistics for dimensions

Dimension	Number	Mean
Perceived Usefulness	30	3.9111
Perceived Ease of Use	30	3.8500

As shown in tables 5.5 there is an indicate details about the mean for each questions. All the details for the questionnaire are existed in appendix C.

Table 5. 5 Illustrate Statistics for All Elements

PERCEIVED EASE OF USE		Mean
Q1	The system is ease of use.	3.8333
Q2	The system is very friendly to use	3.8000
Q3	It requires the fewest steps possible to accomplish what I want to do with it	3.9333

Q4	I can use it without written instructions	3.7667
Q5	I don't notice any inconsistencies as I use EMS	4.0333
Q6	I can use EMS successfully every time.	4.1000
PERCEIVED USEFULNESS		Mean
Q7	Using EMS helps me to be more effective	3.7667
Q8	Using EMS helps me to be more productive.	3.8000
Q9	Using EMS saves my time when I use it	4.0333
Q10	Using EMS would enhance my effectiveness	3.7667
Q11	Using EMS would make it easier to do my tasks	3.8000
Q12	EMS was everything I would expect it to do.	3.9333

The analysis for question one as illustrate in table 5.6 describes four level of response the high degree focus on level agree with 56.7.0%, which means that the system is easy to use.

Table 5. 6 Q1 ease of use system

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Disagree	2	6.7	6.7	6.7
	Natural	6	20.0	20.0	26.7
	Agree	17	56.7	56.7	83.3
	Strongly Agree	5	16.7	16.7	100.0
	Total	30	100.0	100.0	

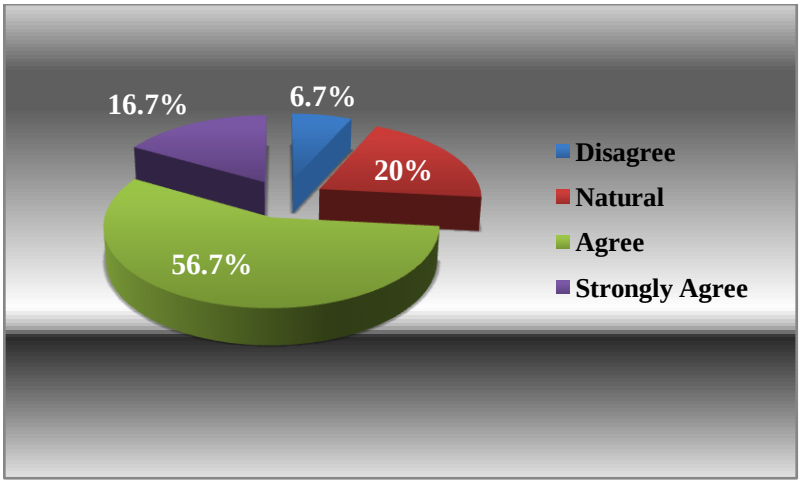


Figure 5. 4 Statistics for question one

The analysis for question two as shown in table 5.7 describes four level of response, the agree level is the first with 43.3% meant 13 users gave 4, then the second level are both natural and strongly agree with 23.3% meant 7 users give 3. Three of users disagree with 10%, which means that the system is friendly to use.

Table 5. 7 Q2 system friendly to use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	10.0	10.0	10.0
	Natural	7	23.3	23.3	33.3
	Agree	13	43.3	43.3	76.7
	Strongly Agree	7	23.3	23.3	100.0
	Total	30	100.0	100.0	

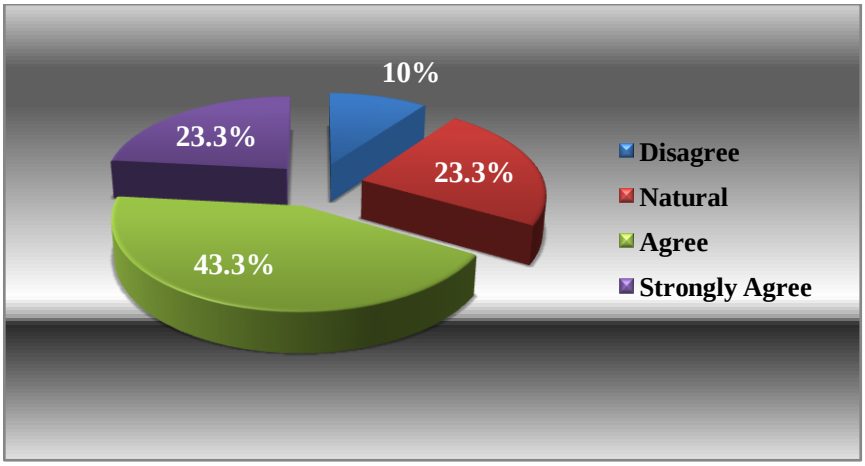


Figure 5. 5 Statistics for question two

The analysis for question three as shown in table 5.8 and figure 5.6 describe four level of response, the agree level is the first with 43.3% meant 13 users gave 4, also, 9 users (30%) strongly agree give to the system; three of users disagree with 10% but 5 of users are natural with that in 16.7%, which that mean system fewest steps possible to accomplish any task.

Table 5. 8 Q3 Required steps to accomplish in system

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	10.0	10.0	10.0
	Natural	5	16.7	16.7	26.7
	Agree	13	43.3	43.3	70.0
	Strongly Agree	9	30.0	30.0	100.0
	Total	30	100.0	100.0	

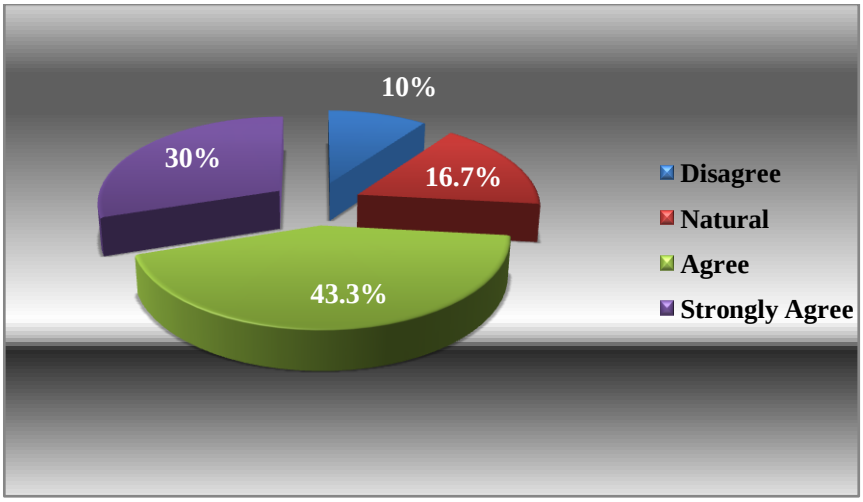


Figure 5. 6 Statistics for question three

The analysis for question four as shown in table 5.9 and figure 5.7 describes four level of response, the agree level is the first with 60% meant 18 users gave 4, then the second level is natural with 26.7% meant 8 users give 3. One of users disagrees with 3.3%, and 3 (10%) users give strongly agree; which that mean system can used without written instructions.

Table 5. 9 Q4 use system without written instructions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	3.3	3.3	3.3
	Natural	8	26.7	26.7	30.0
	Agree	18	60.0	60.0	90.0
	Strongly Agree	3	10.0	10.0	100.0
	Total	30	100.0	100.0	

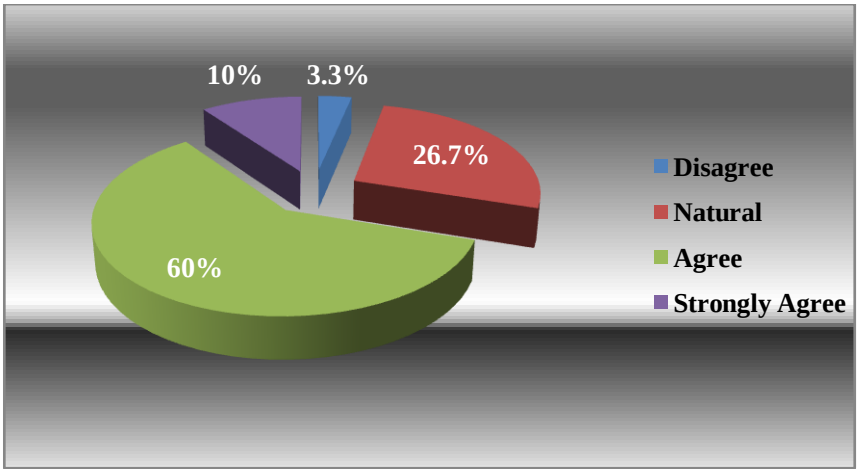


Figure 5. 7 Statistics for question four

The analysis for question five as shown in table 5.10 and figure 5.8 illustrate three level of response, the agree level is the first with 50% meant 15 users gave 4, then the second level is strongly agree with 26.7% meant 8 users give 5. Seven of users natural with 23.3%, which that mean system absence of contradictions.

Table 5. 10 Q5 in system

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Natural	7	23.3	23.3	23.3
	Agree	15	50.0	50.0	73.3
	Strongly Agree	8	26.7	26.7	100.0
	Total	30	100.0	100.0	

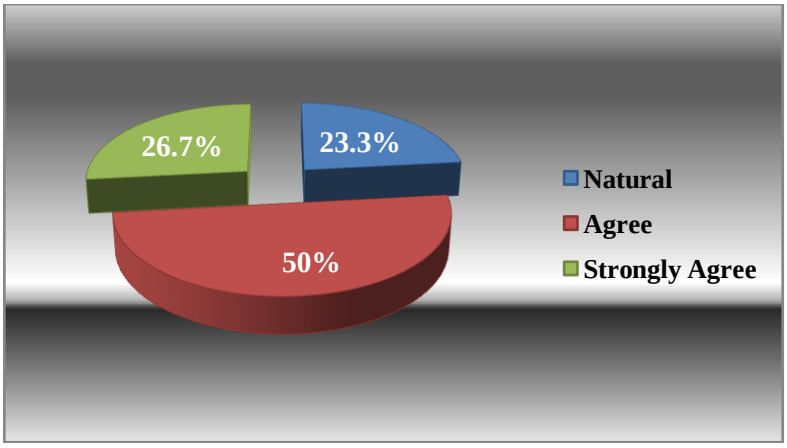


Figure 5. 8 Statistics for question five

The analysis for question six as shown in table 5.11 and figure 5.9 illustrate four level of response, the agree level is the first with 46.7% meant 14 users gave 4, then the second level is strongly agree with 33.3% meant 10 users give 5. One of users disagrees with 3.3%, and 5 (16.7%) users give natural; which that means system was successfully use every time.

Table 5. 11 Q6 successfully use of EMS every time.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	3.3	3.3	3.3
	Natural	5	16.7	16.7	20.0
	Agree	14	46.7	46.7	66.7
	Strongly Agree	10	33.3	33.3	100.0
	Total	30	100.0	100.0	

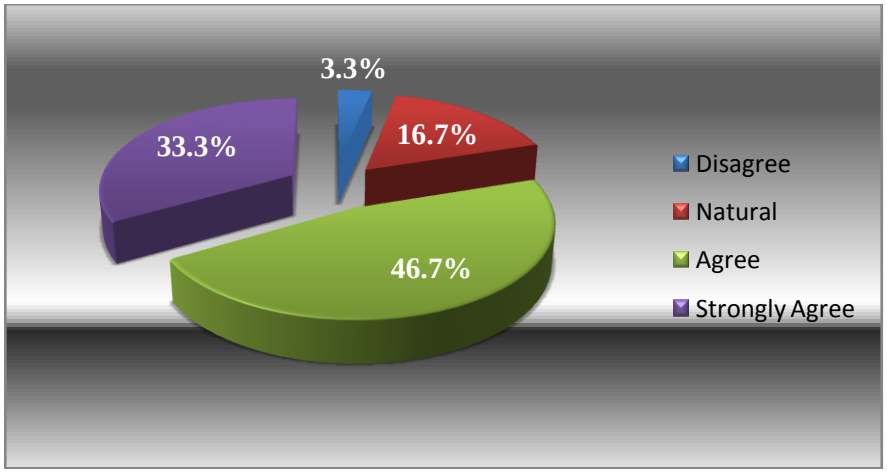


Figure 5. 9 Statistics for question six

The analysis for question seven as shown in table 5.12 and figure 5.10 describes three level of response, the agree level is the first with 50% meant 15 users gave 4, then the second level is natural with 36.7% meant 11 users give 3. Four of users strongly agree with 13.3%, which that means system helps to effective.

.

Table 5. 12 Q7 Using EMS helps to effective

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Natural	11	36.7	36.7	36.7
	Agree	15	50.0	50.0	86.7
	Strongly Agree	4	13.3	13.3	100.0
	Total	30	100.0	100.0	

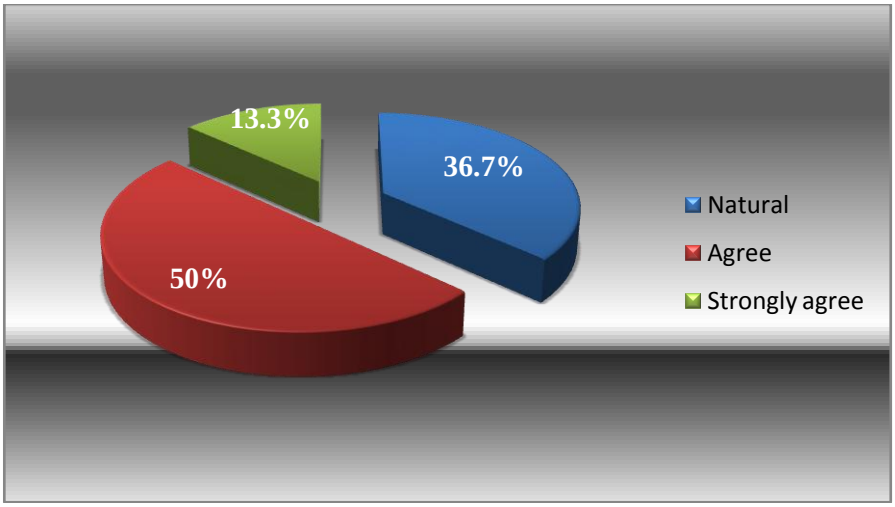


Figure 5. 10 Statistics for question seven

The analysis for question eight as shown in table 5.13 and figure 5.11 describes four level of response, the natural level is the first with 56.7% meant 17 users gave 3, then the second level is agree with 36.7% meant 11 users give 4. One of users disagrees and others strongly agree with same percent 3.3%, which that mean the system helps to productive.

Table 5. 13 Q8 Using EMS helps to productive.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	3.3	3.3	3.3
	Natural	17	56.7	56.7	60.0
	Agree	11	36.7	36.7	96.7
	Strongly Agree	1	3.3	3.3	100.0
	Total	30	100.0	100.0	

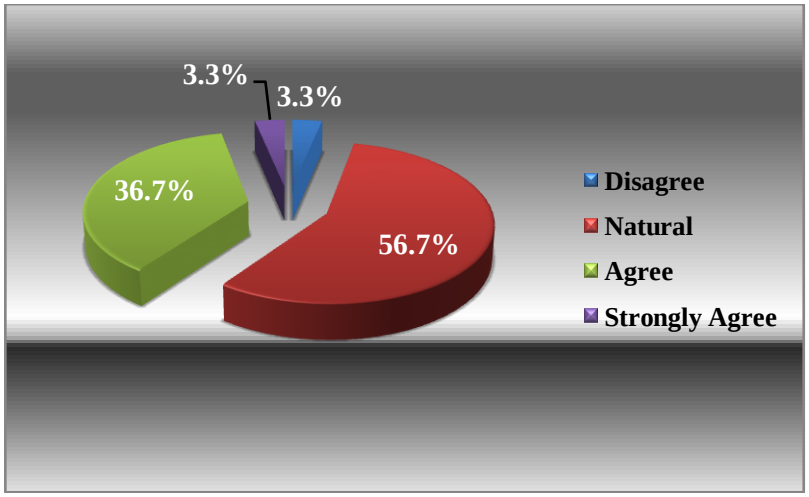


Figure 5. 11 Statistics for question eight

The analysis for question nine as shown in table 5.14 and figure 5.12 illustrate three level of response, the agree level is the first with 36.7% meant 11 users gave 4, then the second level is strongly agree with 33.3% meant 10 users give 5. Nine of users give natural with 30%, which that mean the system are saves time.

Table 5. 14 Q9 Using EMS saves time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Natural	9	30.0	30.0	30.0
	Agree	11	36.7	36.7	66.7
	Strongly Agree	10	33.3	33.3	100.0
	Total	30	100.0	100.0	

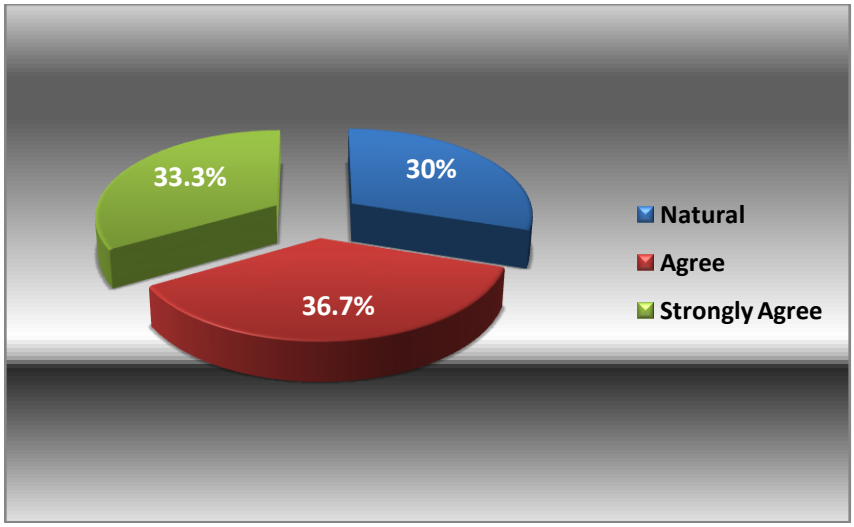


Figure 5. 12 Statistics for question nine

The analysis for question ten as shown in table 5.15 and figure 5.13 describes four level of response, the natural level is the first with 33.3% meant 10 users gave 3, then the second level is strongly agree with 30% meant 9 users give 4. Three of users disagree in 10% and 8 users give agree in 26.7%, which that mean the system is enhance effectiveness.

Table 5. 15 Q10 Using EMS would enhance effectiveness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	10.0	10.0	10.0
	Natural	10	33.3	33.3	43.3
	Agree	8	26.7	26.7	70.0
	Strongly Agree	9	30.0	30.0	100.0
	Total	30	100.0	100.0	

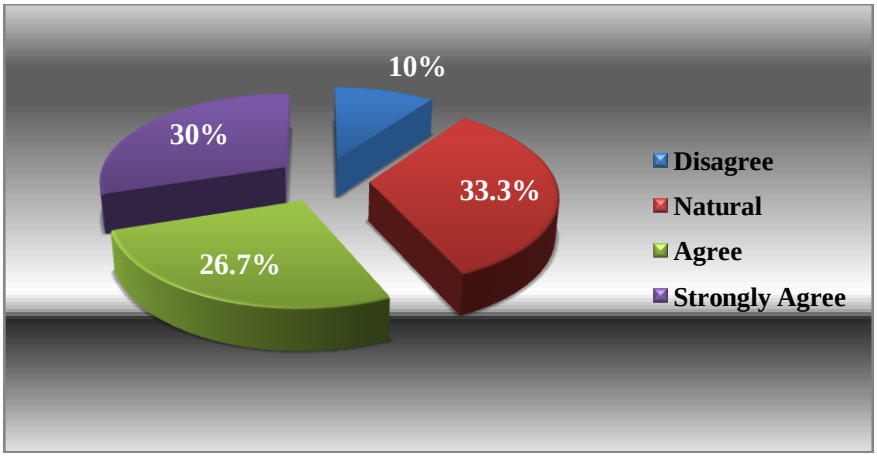


Figure 5. 13 Statistics for question ten

The analysis for question eleven as shown in table 5.16 and figure 5.14 describes four level of response, the agree level is the first with 40% meant 12 users gave 4, at the same time, the second level is natural with 30.7% meant 9 users give 3. Twos of users disagree in 6.7% and 7 users give strongly agree in 23.3%, which that mean the system is easy to do tasks.

Table 5. 16 Q11 EMS would make easy to do tasks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	6.7	6.7	6.7
	Natural	9	30.0	30.0	36.7
	Agree	12	40.0	40.0	76.7
	Strongly Agree	7	23.3	23.3	100.0
	Total	30	100.0	100.0	

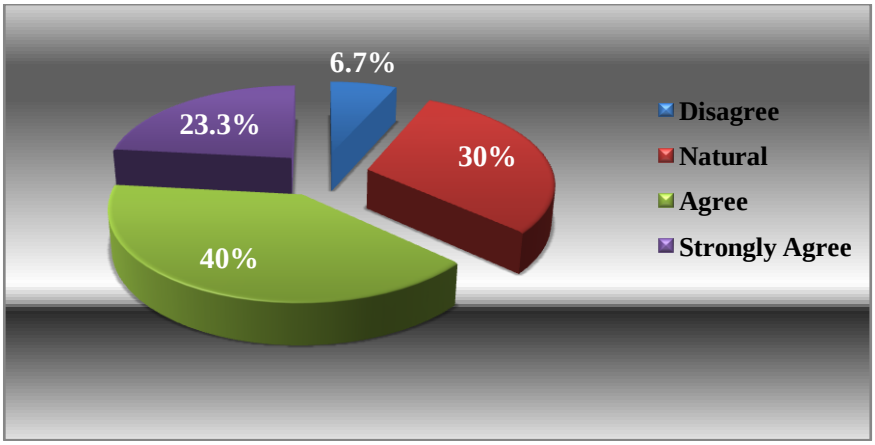


Figure 5. 14 Statistics for question eleven

The analysis for last questions as shown in table 5.15 and figure 5.12 illustrate four level of response, the agree level is the first with 36.7% meant 11 users gave 4, then the second level is strongly agree with 30% meant 9 users give 5 and in the same level the natural with same degree. One of users disagrees with 3.3%, which that means system is provides all the needs of users.

Table 5. 17 Q12 EMS was everything expects it to do.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	3.3	3.3	3.3
	Natural	9	30.0	30.0	33.3
	Agree	11	36.7	36.7	70.0
	Strongly Agree	9	30.0	30.0	100.0
	Total	30	100.0	100.0	

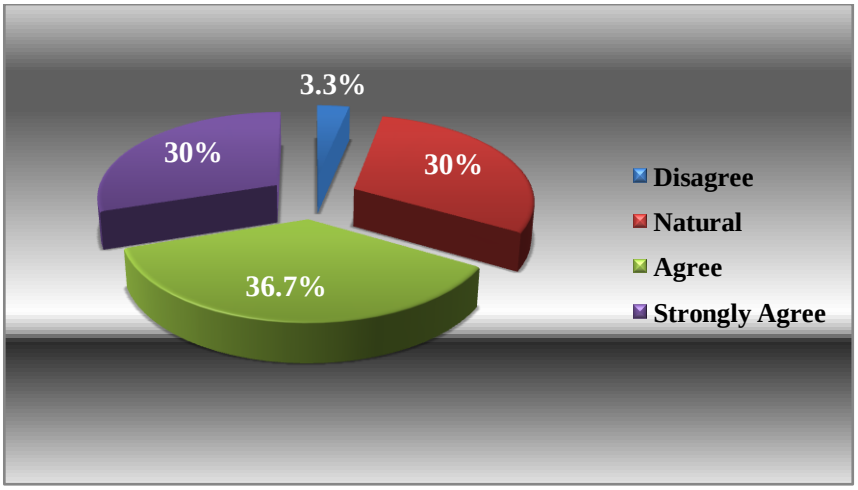


Figure 5. 15 Statistics for question twelve

5.3 Summary

Evaluation takes part in an important part in the development process and can uncover usability deficits early during the design. In further works, more usability tests for the re-design application with real customer should be conducted. Interviews with these test persons and evaluation to reach more people will help to shape application and better meet the user's opinion, requirements and expectations. The overall results were encouraging but always improvement is definitely needed.

CHAPTER 6

CONCLUSIONS AND RECOMMENDED FURTHER STUDY

This chapter shows an overall conclusion of the project. Several implications for both research and practice emerged and are discussed in following section, and then recommendations for future research are made, finally, the conclusion of the study.

6.1 Discussion

The purpose of this research is to identify the following:

- Can develop municipality website for Sudainawiyeh town in Iraq?

Drawing on the research result, will discusses how the finding support the objective of this study. This study highlighting on the electronic municipality is municipalities establish websites in order to enable Internet users to access their own services and to get information about their local government (Naralan, 2008). However, through municipality platform the citizens can request the issuance of documents and to submit reports and proposals to the municipal administration, without having to physically visit it.

However, the implementation of ICT policy in services sector is still in an early stage in Iraq. Although, ICT policies for Iraqi to develop

services have orientation towards for using of ICT tools in order to automation governmental services, including the municipal services (Brinkerhoff & Taddesse, 2008). This study focuses on municipality of Sudainawiyeh town; Sudainawiyeh town is an agricultural character. Agricultural character of the town is imposing a form of the spacing between the many residents of town and the down town. That's what the study aims to achieve

Objective 1:

In this research developed the system requirements to determine the functionalities of designing a municipality website for Sudainawiyeh town in Iraq. As a result, have been identified the following requirements.

Citizen must be registration before enters the system, registration page have information form such as (national ID, name, e-mail etc.), national ID which determines the acceptance or rejection of Citizen Registration (Registration is allowed to Sudainawiyeh residents only) before submit, citizen must fill all the fields. After registration the citizen can login to the system then navigation via the website. Citizen can request any online services provide from municipality such as request land through filling online application form.

Objective 2:

E-municipality website is implemented as an integrated web based aimed at a staged automation of administrative activities. However, through municipality platform the citizens can request the issuance of documents and to submit reports and proposals to the municipal administration,

without having to physically visit it. The municipality accepts applications, prepares documents and shall ensure to send the documents requested by postal mail to client service.

The system was implemented using ASP.net environment with C# language, and the database designed by using SQL. However, the system is compatible with all operating system.

Objective 3:

The best municipal websites are designed through collaboration between the people who will be served and the people who will maintain them. Gather community input during the initial stages of website development and continue to engage this group throughout the process. Avoid the all too common mistake of producing a website that mirrors your municipality structure but does little to facilitate citizens' use of it. Citizens often know very little about how their municipality works but they are clear about what they want and expect from it.

All above depend on the evaluating of the system. The evaluation is based on usability testing by using System Usability Scale (SUS) proposed by Brooke (Bangor, Kortum & Miller, 2008). Prototype was assessed through a sample consists of thirteen customers; and the results have been positive.

6.2 Limitation

E-services platform for citizens and businesses can request the issuance of documents and to submit reports and proposals to the municipal administration, without having to physically visit it. A municipality

website is made up of many services provide to the citizens. For this research, the researcher was focused on construction of prototype e-municipality of Sudainawiyeh town help citizens to interact via the internet in order to complete municipal transactions. Furthermore, show the results, to evaluate the government services situation for the citizens and the society in general.

6.3 Contribution

This research obtained the following contributions in the public services sector, electronic municipality fields:

a) Use of the facilities in the area of information and communication technology to development of public services sector, especially municipality services.
b) Give a picture of possible solutions to activate the municipal services online, through construct website for municipality provide documents and information for Sudainawiyeh's citizens.
c) It uses the facilities in the area of information and communication technology to create stability in the electoral process in modern societies.

6.4 Future Work

The spread of the computer and the growth of the number of users quickly, putting information technology in the areas of new research and development vehicle. Accompanied by the continuous development and facility earned this area the flexibility to cope with all the sciences.

Through this research was to highlight on an important aspect in the life of society through dealing with municipal transactions through e-municipality and problems that occur with it. It is recommended that, the future research in this field covers the followings:

a. It can be development of the e-municipality system and make it absorb more of the government services that need to automate.
b. Through the system can extend the notion of electronic municipality services to include participation of citizens in the management of public affairs and questionnaires put up, this interact helps for the advancement of public management in generally.

6.5 Conclusion

The introduction of Information and Communication Technologies can radically affect working methods and activities of Public Organization and the delivery of Online Public Services. Public services suggest that independent public services are legally grounded business of public organizations in an economical sense. They represent the development and delivery of products and services of an organized unit to the public. E-services platform for citizens and businesses can request the issuance of documents and to submit reports and proposals to the municipal administration, without having to physically visit it.

E-Municipality is a new and advanced pattern of management, which improves performance and the managerial qualifications, and improves the work environment to facilitate all services and functionalities that are provided to citizens. In this new system of work, citizens are able to

complete all governmental transactions as well as issuing official documents over electronic media like internet, cell phones and landline phones with high speed and efficiency

Sudainawiyeh town it is on the Euphrates River about 380 km southeast of capital, with agricultural character. Agricultural character of the town is imposing a form of the spacing between the many residents of town and the down town. Motivation of this work was to design and develop an online municipality services website for Sudainawiyeh town in Iraq so as to be accessed by citizens from Sudainawiyeh town, and in order to complete municipal transactions.

Through this study was designed e-municipality system for Sudainawiyeh town in Iraq to facilities the services to the citizens. System was developing by using C# language under ASP.net environment. Moreover, was evaluation based on usability testing by using System Usability Scale (SUS) proposed by Brooke and prototype was assessed through a sample consists of thirteen citizens; and the results have been positive.

Finally, the rapid development of information and communication technology accelerates the growth of many areas especially service sector, which is the basis for the formation of modern societies

REFERENCES

Abdulahi, R., & Demisse, A. (2009). *Challenges of E-Payment Service in Commercial Bank of Ethiopia.* Paper presented at the Management and Service Science, 2009. MASS '09. , Wuhan, 1- 4.

Alhir, S. S. (2003). *Learning UML*: O'Reilly & Associates, Inc. Sebastopol, CA, USA.

Bangor, A., Kortum, P. T., & Miller, J. T. (2008). An empirical evaluation of the system usability scale. *International Journal of Human-Computer Interaction, 24*(6), 574-594.

Beck, K., & Fowler, M. (2000). *Planning extreme programming*. Boston, MA, USA: Addison-Wesley Longman Publishing Co. Inc.

Berardi, D., Calvanese, D., & De Giacomo, G. (2005). Reasoning on UML class diagrams. *Artificial Intelligence, 168*(1-2), 70-118.

Caparroz, R., Martuscelli, P., Scherer-Neto, P., Miyaki, C. Y., & Wajntal, A. (2006). Genetic variability in the Red-tailed Amazon (Amazona brasiliensis, Psittaciformes) assessed by DNA fingerprinting. *Revista Brasileira de Ornitologia, 14*(1), 15-19.

Cavoukian, A. (1999). *Consumer Biometric Applications: A Discussion Paper*: Information and Privacy Commissioner/Ontario. Retrieved November 28, 2010, from http://www.ontla.on.ca/library/repository/mon/10000/211727.pdf

Cavoukian, A., & Stoianov, A. (2007). Biometric encryption. *Biometric Technology Today, 15*(3), 11.

Chung, L., & do Prado Leite, J. (2009). On non-functional requirements in software engineering. *Conceptual Modeling: Foundations and Applications*, 363-379.

Coventry, L., De Angeli, A., & Johnson, G. (2003a). Biometric verification at a self service interface. *Contemporary Ergonomics*, 247-252.

Coventry, L., De Angeli, A., & Johnson, G. (2003b). *Usability and biometric verification at the ATM interface.* Paper presented at the Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, New York. ACM Press. pp. 153-160.

Darwish, A., Zaki, W., Saad, O., Nassar, N., & Schaefer, G. (2010). *Human Authentication Using Face and Fingerprint Biometrics.* Paper presented at the Computational Intelligence, Communication Systems and Networks (CICSyN), Liverpool, United Kingdom, 274-278.

Das, R. (2005). An introduction to biometrics. *Military Technology, 29*(7), 20-27.

Dedeke, A., & Lieberman, B. (2006). Qualifying use case diagram associations. *Computer, 39*(6), 23-29.

Duan, J. (2009). *An approach for modeling business application using refined use case.* Paper presented at the ISECS International Colloquium on Computing, Communication, Control, and Management (CCCM 2009), Sanya. China. pp 404 - 407.

Fogli, D., Provenza, L. P., & Colosio, S. (2010). *Metadesigning e-government services: a case study in a local agency.* Paper presented at the International Conference on Advanced Visual Interfaces. , Roma, Italy. pp. 406-406.

Fogli, D., Colosio, S., & Sacco, M. (2010). Managing accessibility in local e-government websites through end-user development: a case study. *Universal Access in the Information Society, 9*(1), 35-50.

Guerette, R., & Clarke, R. (2003). Product life cycles and crime: Automated teller machines and robbery. *Security Journal, 16*(1), 7-18.

Halal, W. (2006). Technology's Promise: Highlights from the TechCast Project. *Futurist, 40*(6), 41.

Han, F., Hu, J., Yu, X., Feng, Y., & Zhou, J. (2005). A novel hybrid crypto-biometric authentication scheme for ATM based banking applications. *Advances in Biometrics*, 675-681.

Hannan, T. (2007). ATM surcharge bans and bank market structure: The case of Iowa and its neighbors. *Journal of Banking & Finance, 31*(4), 1061-1082.

Hayashi, F., Sullivan, R., & Weiner, S. (2003). *A guide to the ATM and debit card industry*: Payments System Research Dept., Federal Reserve Bank of Kansas City.

Hidano, S., Ohki, T., Komatsu, N., & Kasahara, M. (2009). *On biometric encryption using fingerprint and it's security evaluation.* Paper presented at the Control, Automation, Robotics and Vision, 2008. ICARCV 2008. 10th International Conference Hanoi. pp.950-956.

Hörlesberger, M., El-Nawawi, M., & Khalil, T. M. (2007). *Challenges in the management of new technologies*: World Scientific Pub Co Inc.

IBG (2005). *Biometric market and industry overview.* Retrieved November 28, 2010, from http://www.biometricgroup.com/reports/public/CBT8_Overview.pdf

Jain, A., Hong, L., & Pankanti, S. (2000). Biometric identification. *Communications of the ACM, 43*(2), 90-98.

Jang, S. H., Kim, Y. H., Cho, S. H., Lee, J. H., Park, J. W., & Kwon, Y. H. (2003). Cortical reorganization induced by task-oriented training in chronic hemiplegic stroke patients. *Neuroreport, 14*(1), 137.

Jeong, W., Cha, M. K., & Kim, I. H. (2000). Thioredoxin-dependent hydroperoxide peroxidase activity of bacterioferritin comigratory protein (BCP) as a new member of the thiol-specific antioxidant protein (TSA)/alkyl hydroperoxide peroxidase C (AhpC) family. *Journal of Biological Chemistry, 275*(4), 2924.

Knapp, A., Koch, N., Zhang, G., & Hassler, H. M. (2004). Modeling business processes in web applications with ArgoUWE. *2004-The Unified Modelling Language*, 69-83.

Lamon, P., Nourbakhsh, I., Jensen, B., & Siegwart, R. (2005). *Deriving and matching image fingerprint sequences for mobile robot localization.* Paper presented at the Robotics and Automation, 2001. Proceedings 2001 ICRA. IEEE International Conference, Lausanne, Switzerland. pp. 1609-1614.

Lee, M. (2006). Global ATM Security Alliance focuses on insider fraud. *ATMMarketplace, http://www. atmmarketplace. com/article. php? id, 7154*.

Lee, S., Choi, H., Choi, K., & Kim, J. (2008). Fingerprint-quality index using gradient components. IEEE Transactions on Information Forensics and Security, 3(4), 792-800.

Levine, D. E. (2000). Voice security: Biometrics keeps information secure. *Audio Technologies, 6*(8), 60-63.

Li, X., Liu, Z., & Jifeng, H. (2004). *A formal semantics of UML sequence diagram*. Paper presented at the Software Engineering Conference. Australia. pp168.

Matutes, C., & Padilla, A. (1994). Shared ATM networks and banking competition. *European Economic Review, 38*(5), 1113-1138.

McAndrews, J. (2003). Automated teller machine network pricing-a review of the literature. *Review of Network Economics, 2*(2), 146-158.

Nielsen, J. (2002). The usability engineering life cycle. *Computer, 25*(3), 12-22.

Olatokun, W., Gaborone, B., & Igbinedion, L. (2009). The Adoption of Automatic Teller Machines in Nigeria: An Application of the Theory of Diffusion of Innovation. *Growing Information: Part I, 6*, 373.

Overmyer, S. P., Lavoie, B., & Rambow, O. (2001). *Conceptual modeling through linguistic analysis using LIDA.* Paper presented at the 23rd International Conference on Software Engineering. Toronto, 12–19 May. IEEE Computer Society Press, Toronto. pp. 401–410.

Peretti, K. K. (2009). DATA BREACHES: What the Underground World of "Carding" Reveals. *the Santa Clara Computer and High Technology Journal, 25*(2), 375-413.

Prabhakar, S., Pankanti, S., & Jain, A. (2003). Biometric recognition: Security and privacy concerns. *Security & Privacy, IEEE, 1*(2), 33-42.

Qadrei, A., & Habib, S. (2009). *Allocation of Heterogeneous Banks' Automated Teller Machines.* Paper presented at the Intensive Applications and Services, 2009. INTENSIVE '09. First International Conference alencia. pp 16-24

Rhodes, K. A. (2003). *Challenges in using biometrics*. United States General Accounting Office. Retrieved November 24, 2010, from http://www.gao.gov/new.items/d031137t.pdf.

Ross, A., & Jain, A. (2003). Information fusion in biometrics. *Pattern Recognition Letters, 24*(13), 2115-2125.

Sethi, N., & Sethi, V. (2008). E-government Implementation: A Case Study of Dubai e-Government. Retrieved November 28, 2010, from http://www.csi-sigegov.org/egovernance_pdf/22_185-195.pdf.

Sha, L., Zhao, F., & Tang, X. (2003). *Improved fingercode for filterbank-based fingerprint matching.* Paper presented at the Image Processing, 2003. ICIP 2003. Proceedings. 2003 International Conference, china.

Sommerville, I. (2007). Software Engineering. Eighth: Addison-Wesley. ISBN 0-321-31379-8.

Sridaran, R., Padmavathi, G. & Iyakutti, K. (2009). A Survey of Design Pattern Based Web Applications. Journal of Object Technology, vol. 8, no. 2, pp. 61-70.

Stavins, J. (2000). ATM fees: does bank size matter? *New England Economic Review,* 13-24.

Sugiura, A., & Koseki, Y. (1998). *A user interface using fingerprint recognition: holding commands and data objects on fingers.* Paper presented at the Proceedings of the 28th international conference on Human factors in computing systems NY, USA. pp. 581-590.

Sullivan, R. J. (2008). Can smart cards reduce payments fraud and identity theft? *Federal Reserve Bank of Kansas City, Economic Review, 93*(3), 35-62.

Uludag , U., Pankanti, S., Prabhakar, S., & Jain, A. (2004). Biometric cryptosystems: issues and challenges. *Proceedings of the IEEE, 92*(6), 948-960.

Vaishnavi V & Kuechler B (2004). Design Research in information system [Electronic Version] Retrieved September 05, 2010, from http://www.isworld.org/Researchdesign/drisISworld.htm

Walsh, N. (2005). ATM fraud prompts card rethink? *Card Technology Today, 17*(2), 10-14.

Wang, J., Wang, W., Li, R., Li, Y., Tian, G., Goodman, L., et al. (2008). The diploid genome sequence of an Asian individual. *Nature, 456*(7218), 60-65.

Wen, C., Guo, T., & Wang, S. (2010). *Fingerprint Feature-Point Matching Based on Motion Coherence.* Paper presented at the Future Information Technology and Management Engineering, 2009. FITME '09. Second International Conference Sanya. pp.226-229.

Wu, J., Xie, S. J., Seo, D. H., & Lee, W. D. (2008). *A new approach for classification of fingerprint image quality.* Paper presented at the Cognitive Informatics, 2008. ICCI 2008. 7th IEEE International Conference, Stanford, CA. pp.375-383.

Yanez, M., & Gomez, A. (2004). ATM & BIOMETRICS: A SOCIOTECHNICAL BUSINESS MODEL. *P7–9. University of Miami, School of Business Administration*. Relative January 16th 2011 from http://www.iamot.org/conference/index.php/ocs/4/paper/view/1104/479

Yanez, M., & Gomez, A. (2004). ATM & BIOMETRICS: A SOCIOTECHNICAL BUSINESS MODEL. *P7–9. University of Miami, School of Business Administration*.

Yang, Y., & Mi, J. (2010). *ATM terminal design is based on fingerprint recognition.* Paper presented at the Computer Engineering and Technology (ICCET), 2010 2nd International Conference Chengdu. V1-92.

Yun, Y. (2002). The '123'of Biometric Technology. *Synthesis Journal, 2002*. Retrieved November 23, 2010, from http://www.itsc.org.sg/synthesis/2002/biometric.pdf.

Zhou, J., Su, G., Jiang, C., Deng, Y., & Li, C. (2007). A face and fingerprint identity authentication system based on multi-route detection. *Neurocomputing, 70*(4-6), 922-931.

APPENDIX A

Homepage

```
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="index1.aspx.cs"
Inherits="index1" %>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml" >
<head runat="server">
   <title>Untitled Page</title>
</head>
<body>
   <form id="form1" runat="server">
   <div>
      <table style="z-index: 100; left: 143px; position: absolute; top: 14px">
         <tr>
            <td colspan="3" style="width: 152px">
               <img src="img/tit.bmp" />             
 
                         </td>
            <td colspan="2" style="width: 144px">
               <img src="img/tit2.bmp" /></td>
         </tr>
         <tr>
            <td style="margin-top: 0px; width: 31px; height: 2px">
            </td>
            <td colspan="1" rowspan="3" style="width: 1px">
            </td>
            <td colspan="3" style="height: 2px">
            </td>
         </tr>
         <tr>
            <td style="width: 21px; height: 68px; margin-top: 0px; padding-top: 0px;">
               <asp:Menu ID="Menu1" runat="server" BackColor="#B5C7DE"
DynamicHorizontalOffset="2"
                  Font-Names="Times New Roman" Font-Size="12pt" ForeColor="#284E98"
StaticSubMenuIndent="10px"
                  Width="138px" style="vertical-align: text-bottom; text-align: center" Font-
Bold="True">
                  <StaticSelectedStyle BackColor="#507CD1" />
                  <StaticMenuItemStyle HorizontalPadding="5px" VerticalPadding="2px" />
                  <DynamicHoverStyle BackColor="#284E98" ForeColor="White" />
                  <DynamicMenuStyle BackColor="#B5C7DE" />
                  <DynamicSelectedStyle BackColor="#507CD1" />
                  <DynamicMenuItemStyle HorizontalPadding="5px" VerticalPadding="2px" />
                  <StaticHoverStyle BackColor="#284E98" ForeColor="White" />
                  <Items>
                     <asp:MenuItem Text="Main" Value="Seveice">
                     </asp:MenuItem>
                     <asp:MenuItem Text="Login" Value="Login"
NavigateUrl="~/reg.aspx"></asp:MenuItem>
                     <asp:MenuItem NavigateUrl="~/log.aspx" Text="Registration"
Value="Registration"></asp:MenuItem>
```

```
                    <asp:MenuItem Text="Services" Value="Services">
                      <asp:MenuItem Text="Request land" Value="Request
land"></asp:MenuItem>
                      <asp:MenuItem Text="Construction permit" Value="Construction
permit"></asp:MenuItem>
                    </asp:MenuItem>
                    <asp:MenuItem Text="Photo" Value="Photo"></asp:MenuItem>
                    <asp:MenuItem Text="Tourism" Value="Tourism"></asp:MenuItem>
                    <asp:MenuItem Text="About us" Value="About us"></asp:MenuItem>
                  </Items>
                </asp:Menu>
              </td>
              <td colspan="3" style="height: 68px">
                <p class="MsoNormal" style="margin: 0cm 0cm 10pt; line-height: normal; text-
align: center;
                  mso-margin-top-alt: auto; mso-margin-bottom-alt: auto">
                  <span style="font-size: 12pt; color: #ff3333; font-family: 'Times New
Roman','serif';
                    mso-fareast-font-family: 'Times New Roman'"><marquee  behavior="scroll"
direction="up" style="height: 170px; text-align: center" scrollamount="1" >The city was founded
in
    1840 by Sheikh Nasir (Pasha:was a high rank in the<BR /><BR /> Ottoman
    Empire political system) AL SADOON (Prophet MOHAMMED<BR /><BR />
    Descended) of the Muntafiq tribal confederation, after whom it is named.
    <BR /><BR />During World War I the British conquered the city, controlled
    at the time by<BR /><BR /> the Ottoman Empire, in July 1915. Some 400
    British and Indian and up to<BR /><BR /> 2,000 Turkish soldiers were
    killed in the battle for Nasiriyah on 24 July <BR /><BR />1915. Nasiriyah
    is where the Iraqi Communist Party was founded around<BR /><BR /> 1932. It
    was mostly dominated by secular and leftist groups, and the founder<BR
    /><BR /> of the Iraqi Baath Party, Foud al-Rikaby, was from Nasiriyah.
    During 1932-<BR /><BR />1963 the city was the center for liberal and
    progressive thinking<BR /><BR /></marquee>  .
                  </span>
                </p>
                <p class="MsoNormal" style="margin: 0cm 0cm 10pt">
                  <o:p><SPAN
    style="FONT-SIZE: 11pt; FONT-FAMILY: Calibri"> </SPAN></o:p>
                        <span style="font-size: 11pt; font-family:
Calibri"></span>
                </p>
              </td>
            </tr>
            <tr>
              <td style="width: 31px; height: 73px; text-align: center;">
                <img src="img/nasrya2.jpg" style="width: 232px; height: 126px" /></td>
              <td colspan="2" style="height: 73px; width: 144px; text-align: center;">
                <img src="img/larach10.jpg" style="width: 220px; height: 112px" /></td>
              <td style="width: 100px; height: 73px">
                           
                <img src="img/nasrya1.jpg" style="width: 212px; height: 135px" /></td>
            </tr>
            <tr>
              <td colspan="5" style="height: 73px">
              </td>
            </tr>
          </table>

        </div>
        </form>
```

```
</body>
</html>
```

Form of requset land

```
 <%@ Page Language="C#" AutoEventWireup="true" CodeFile="form.aspx.cs" Inherits="form"
%>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml" >
<head runat="server">
   <title>Untitled Page</title>
</head>
<body style="font-family: Times New Roman">
   <form id="form1" runat="server">
   <div>
      <table style="z-index: 100; left: 318px; position: absolute; top: 207px">
         <tr>
            <td colspan="3" style="text-align: center">
               <strong><span style="color: #0000ff">Republic of Iraq<br />
                  <span class="Apple-style-span" style="font-weight: normal; word-spacing: 0px;
text-transform: none; text-indent: 0px; line-height: normal; font-style: normal;
                     white-space: normal; letter-spacing: normal; border-collapse: separate; font-
variant: normal;
                     orphans: 2; widows: 2; webkit-border-horizontal-spacing: 0px; webkit-border-
vertical-spacing: 0px;
                     webkit-text-decorations-in-effect: none; webkit-text-size-adjust: auto; webkit-
text-stroke-width: 0px">
                     <span class="Apple-style-span"><span style="font-size: 16pt"><span
style="color: #3300ff">
                        <span class="hps" title="Click for alternate translations">
                        Form</span><span class="Apple-converted-space"> </span><span
class="hps" title="Click for alternate translations">
                           to</span><span class="Apple-converted-space"> </span><span
class="hps" title="Click for alternate translations">
                              request</span><span class="Apple-converted-space"> </span><span
class="hps" title="Click for alternate translations">
                                 a piece</span><span class="Apple-converted-space"> </span><span
class="hps" title="Click for alternate translations">
                                    of residential
land</span></span></span></span></span></span></strong></td>
         </tr>
         <tr>
            <td style="width: 132px; text-align: center">
                <span style="color: #0000cc">Name </span>
            </td>
            <td style="width: 100px">
               <asp:TextBox ID="TextBox1" runat="server"></asp:TextBox></td>
            <td style="width: 116px">
               <asp:RequiredFieldValidator ID="RequiredFieldValidator1" runat="server"
ControlToValidate="TextBox1"
```

```
                ErrorMessage="*"></asp:RequiredFieldValidator></td>
        </tr>
        <tr>
            <td style="width: 132px; text-align: center">
                <span style="color: #0000cc">
                ID</span></td>
            <td style="width: 100px">
                <asp:TextBox ID="TextBox2" runat="server"></asp:TextBox></td>
            <td style="width: 116px">
                <asp:RequiredFieldValidator ID="RequiredFieldValidator2" runat="server"
ControlToValidate="TextBox2"
                ErrorMessage="*"></asp:RequiredFieldValidator></td>
        </tr>
        <tr>
            <td style="width: 132px; text-align: center">
                <span style="color: #0000cc">
                Gender</span></td>
            <td style="width: 100px">
                <asp:DropDownList ID="DropDownList2" runat="server">
                    <asp:ListItem>male</asp:ListItem>
                    <asp:ListItem>female</asp:ListItem>
                </asp:DropDownList></td>
            <td style="width: 116px">
            </td>
        </tr>
        <tr>
            <td style="width: 132px; text-align: center">
                <span style="color: #0000cc">
                Old</span></td>
            <td style="width: 100px">
                <asp:TextBox ID="TextBox3" runat="server"></asp:TextBox></td>
            <td style="width: 116px">
                <asp:RequiredFieldValidator ID="RequiredFieldValidator4" runat="server"
ControlToValidate="TextBox3"
                ErrorMessage="*"></asp:RequiredFieldValidator></td>
        </tr>
        <tr>
            <td style="width: 132px; text-align: center">
                <span style="color: #3300cc">
                Marital Status</span></td>
            <td style="width: 100px">
                <asp:DropDownList ID="DropDownList3" runat="server">
                    <asp:ListItem>Married</asp:ListItem>
                    <asp:ListItem>Single</asp:ListItem>
                    <asp:ListItem>Absolute</asp:ListItem>
                </asp:DropDownList></td>
            <td style="width: 116px">
            </td>
        </tr>
        <tr>
            <td style="width: 132px; text-align: center">
                <span style="color: #3300cc">Jop</span></td>
            <td style="width: 100px">
                <asp:DropDownList ID="DropDownList1" runat="server">
                    <asp:ListItem>yes</asp:ListItem>
                    <asp:ListItem>No</asp:ListItem>
                </asp:DropDownList></td>
            <td style="width: 116px">
            </td>
        </tr>
```

```
            <tr>
                <td style="width: 132px; text-align: center">
                    <span style="color: #0000cc">
                    Typy the Jop</span></td>
                <td style="width: 100px">
                    <asp:TextBox ID="TextBox6" runat="server"></asp:TextBox></td>
                <td style="width: 116px">
                </td>
            </tr>
            <tr>
                <td style="width: 132px; text-align: center">
                    <span style="color: #0000ff">
                    Number of Childern</span></td>
                <td style="width: 100px">
                    <asp:TextBox ID="TextBox7" runat="server"></asp:TextBox></td>
                <td style="width: 116px">
                </td>
            </tr>
            <tr>
                <td style="width: 132px; text-align: center">
                    <span style="color: #0000cc">
                    Name the Wife</span></td>
                <td style="width: 100px">
                    <asp:TextBox ID="TextBox8" runat="server"></asp:TextBox></td>
                <td style="width: 116px">
                </td>
            </tr>
            <tr>
                <td style="width: 132px; text-align: center">
                    <span style="color: #0000ff">
                    Name the Husband</span></td>
                <td style="width: 100px">
                    <asp:TextBox ID="TextBox9" runat="server"></asp:TextBox></td>
                <td style="width: 116px">
                </td>
            </tr>
            <tr>
                <td style="width: 132px; text-align: center">
                    <span style="color: #0000cc">
                    Date the Request</span></td>
                <td style="width: 100px">
                    <asp:TextBox ID="TextBox10" runat="server"></asp:TextBox></td>
                <td style="width: 116px">
                    <asp:RequiredFieldValidator ID="RequiredFieldValidator3" runat="server"
ControlToValidate="TextBox10"
                        ErrorMessage="*"></asp:RequiredFieldValidator></td>
            </tr>
            <tr>
                <td style="width: 132px; text-align: center">
                </td>
                <td style="width: 100px">
                    <asp:Button ID="Button1" runat="server" OnClick="Button1_Click" Text="submit"
/></td>
                <td style="width: 116px">
                </td>
            </tr>
            <tr>
                <td style="width: 132px; height: 20px; text-align: center">
                </td>
                <td style="width: 100px; height: 20px">
```

```
            </td>
            <td style="width: 116px; height: 20px">
            </td>
        </tr>
        <tr>
            <td style="width: 132px; height: 20px; text-align: center">
            </td>
            <td style="width: 100px; height: 20px">
            </td>
            <td style="width: 116px; height: 20px">
            </td>
        </tr>
        <tr>
            <td style="width: 132px; height: 20px">
            </td>
            <td style="width: 100px; height: 20px">
            </td>
            <td style="width: 116px; height: 20px">
            </td>
        </tr>
    </table>
    <asp:SqlDataSource ID="SqlDataSource1" runat="server"
ConflictDetection="CompareAllValues"
        ConnectionString="<%$ ConnectionStrings:DatabaseConnectionString1 %>"
DeleteCommand="DELETE FROM [form] WHERE [infoID] = @original_infoID AND
(([Name] = @original_Name) OR ([Name] IS NULL AND @original_Name IS NULL)) AND
(([ID] = @original_ID) OR ([ID] IS NULL AND @original_ID IS NULL)) AND (([Old] =
@original_Old) OR ([Old] IS NULL AND @original_Old IS NULL)) AND (([Gender] =
@original_Gender) OR ([Gender] IS NULL AND @original_Gender IS NULL)) AND (([Marital
status] = @original_Marital_status) OR ([Marital status] IS NULL AND
@original_Marital_status IS NULL)) AND (([Job] = @original_Job) OR ([Job] IS NULL AND
@original_Job IS NULL)) AND (([Type the Job] = @original_Type_the_Job) OR ([Type the
Job] IS NULL AND @original_Type_the_Job IS NULL)) AND (([The number of
children&amp;#13;&amp;#10;The number of children] =
@original_The_number_of_children_The_number_of_children) OR ([The number of
children&amp;#13;&amp;#10;The number of children] IS NULL AND
@original_The_number_of_children_The_number_of_children IS NULL)) AND (([Name the
Wife] = @original_Name_the_Wife) OR ([Name the Wife] IS NULL AND
@original_Name_the_Wife IS NULL)) AND (([Name  the Husband] =
@original_Name_the_Husband) OR ([Name  the Husband] IS NULL AND
@original_Name_the_Husband IS NULL)) AND (([Date the request] =
@original_Date_the_request) OR ([Date the request] IS NULL AND
@original_Date_the_request IS NULL))"
        InsertCommand="INSERT INTO [form] ([Name], [ID], [Old], [Gender], [Marital status],
[Job], [Type the Job], [The number of children&amp;#13;&amp;#10;The number of children], [Name the
Wife], [Name  the Husband], [Date the request]) VALUES (@Name, @ID, @Old, @Gender,
@Marital_status, @Job, @Type_the_Job, @The_number_of_children_The_number_of_children,
@Name_the_Wife, @Name_the_Husband, @Date_the_request)"
        OldValuesParameterFormatString="original_{0}" SelectCommand="SELECT * FROM
[form]"
        UpdateCommand="UPDATE [form] SET [Name] = @Name, [ID] = @ID, [Old] = @Old,
[Gender] = @Gender, [Marital status] = @Marital_status, [Job] = @Job, [Type the Job] =
@Type_the_Job, [The number of children&amp;#13;&amp;#10;The number of children] =
@The_number_of_children_The_number_of_children, [Name the Wife] = @Name_the_Wife,
[Name  the Husband] = @Name_the_Husband, [Date the request] = @Date_the_request WHERE
[infoID] = @original_infoID AND (([Name] = @original_Name) OR ([Name] IS NULL AND
@original_Name IS NULL)) AND (([ID] = @original_ID) OR ([ID] IS NULL AND
@original_ID IS NULL)) AND (([Old] = @original_Old) OR ([Old] IS NULL AND
@original_Old IS NULL)) AND (([Gender] = @original_Gender) OR ([Gender] IS NULL AND
@original_Gender IS NULL)) AND (([Marital status] = @original_Marital_status) OR ([Marital
```

```
status] IS NULL AND @original_Marital_status IS NULL)) AND (([Job] = @original_Job) OR
([Job] IS NULL AND @original_Job IS NULL)) AND (([Type the Job] =
@original_Type_the_Job) OR ([Type the Job] IS NULL AND @original_Type_the_Job IS
NULL)) AND (([The number of children&amp;#13;&amp;#10;The number of children] =
@original_The_number_of_children_The_number_of_children) OR ([The number of
children&amp;#13;&amp;#10;The number of children] IS NULL AND
@original_The_number_of_children_The_number_of_children IS NULL)) AND (([Name the
Wife] = @original_Name_the_Wife) OR ([Name the Wife] IS NULL AND
@original_Name_the_Wife IS NULL)) AND (([Name  the Husband] =
@original_Name_the_Husband) OR ([Name  the Husband] IS NULL AND
@original_Name_the_Husband IS NULL)) AND (([Date the request] =
@original_Date_the_request) OR ([Date the request] IS NULL AND
@original_Date_the_request IS NULL))">
        <DeleteParameters>
          <asp:Parameter Name="original_infoID" Type="Int32" />
          <asp:Parameter Name="original_Name" Type="String" />
          <asp:Parameter Name="original_ID" Type="String" />
          <asp:Parameter Name="original_Old" Type="String" />
          <asp:Parameter Name="original_Gender" Type="String" />
          <asp:Parameter Name="original_Marital_status" Type="String" />
          <asp:Parameter Name="original_Job" Type="String" />
          <asp:Parameter Name="original_Type_the_Job" Type="String" />
          <asp:Parameter Name="original_The_number_of_children_The_number_of_children"
Type="String" />
          <asp:Parameter Name="original_Name_the_Wife" Type="String" />
          <asp:Parameter Name="original_Name_the_Husband" Type="String" />
          <asp:Parameter Name="original_Date_the_request" Type="String" />
        </DeleteParameters>
        <UpdateParameters>
          <asp:Parameter Name="Name" Type="String" />
          <asp:Parameter Name="ID" Type="String" />
          <asp:Parameter Name="Old" Type="String" />
          <asp:Parameter Name="Gender" Type="String" />
          <asp:Parameter Name="Marital_status" Type="String" />
          <asp:Parameter Name="Job" Type="String" />
          <asp:Parameter Name="Type_the_Job" Type="String" />
          <asp:Parameter Name="The_number_of_children_The_number_of_children"
Type="String" />
          <asp:Parameter Name="Name_the_Wife" Type="String" />
          <asp:Parameter Name="Name_the_Husband" Type="String" />
          <asp:Parameter Name="Date_the_request" Type="String" />
          <asp:Parameter Name="original_infoID" Type="Int32" />
          <asp:Parameter Name="original_Name" Type="String" />
          <asp:Parameter Name="original_ID" Type="String" />
          <asp:Parameter Name="original_Old" Type="String" />
          <asp:Parameter Name="original_Gender" Type="String" />
          <asp:Parameter Name="original_Marital_status" Type="String" />
          <asp:Parameter Name="original_Job" Type="String" />
          <asp:Parameter Name="original_Type_the_Job" Type="String" />
          <asp:Parameter Name="original_The_number_of_children_The_number_of_children"
Type="String" />
          <asp:Parameter Name="original_Name_the_Wife" Type="String" />
          <asp:Parameter Name="original_Name_the_Husband" Type="String" />
          <asp:Parameter Name="original_Date_the_request" Type="String" />
        </UpdateParameters>
        <InsertParameters>
          <asp:ControlParameter ControlID="TextBox1" Name="Name" PropertyName="Text"
Type="String" />
          <asp:ControlParameter ControlID="TextBox2" Name="ID" PropertyName="Text"
Type="String" />
```

```
            <asp:ControlParameter ControlID="TextBox3" Name="Old" PropertyName="Text"
Type="String" />
            <asp:ControlParameter ControlID="DropDownList2" Name="Gender"
PropertyName="SelectedValue"
                Type="String" />
            <asp:ControlParameter ControlID="DropDownList3" Name="Marital_status"
PropertyName="SelectedValue"
                Type="String" />
            <asp:ControlParameter ControlID="DropDownList1" Name="Job"
PropertyName="SelectedValue"
                Type="String" />
            <asp:ControlParameter ControlID="TextBox6" Name="Type_the_Job"
PropertyName="Text"
                Type="String" />
            <asp:ControlParameter ControlID="TextBox7"
Name="The_number_of_children_The_number_of_children"
                PropertyName="Text" Type="String" />
            <asp:ControlParameter ControlID="TextBox8" Name="Name_the_Wife"
PropertyName="Text"
                Type="String" />
            <asp:ControlParameter ControlID="TextBox9" Name="Name_the_Husband"
PropertyName="Text"
                Type="String" />
            <asp:ControlParameter ControlID="TextBox10" Name="Date_the_request"
PropertyName="Text"
                Type="String" />
        </InsertParameters>
    </asp:SqlDataSource>
     
    <img src="img/4%20copy.jpg" style="z-index: 99; left: 238px; position: absolute;
        top: 39px" />

  </div>
  </form>
</body>
</html>
```

Registration

```
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="log.aspx.cs" Inherits="log" %>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml" >
<head runat="server">
   <title>Untitled Page</title>
</head>
<body style="font-size: 12pt; font-family: Times New Roman">
   <form id="form1" runat="server">
   <div>
      <table style="z-index: 100; left: 457px; position: absolute; top: 192px">
         <tr>
            <td style="width: 100px">
            </td>
            <td style="width: 100px; text-align: center">
               Registeration</td>
            <td style="width: 100px">
            </td>
         </tr>
         <tr>
            <td style="width: 100px; text-align: center">
               Name</td>
            <td style="width: 100px">
               <asp:TextBox ID="TextBox1" runat="server"></asp:TextBox></td>
            <td style="width: 100px">
               <asp:RequiredFieldValidator ID="RequiredFieldValidator1" runat="server"
ControlToValidate="TextBox1"
                  ErrorMessage="*"></asp:RequiredFieldValidator></td>
         </tr>
         <tr>
            <td style="width: 100px; height: 26px; text-align: center">
               Password</td>
            <td style="width: 100px; height: 26px">
               <asp:TextBox ID="TextBox2" runat="server"></asp:TextBox></td>
            <td style="width: 100px; height: 26px">
               <asp:RequiredFieldValidator ID="RequiredFieldValidator2" runat="server"
ControlToValidate="TextBox2"
                  ErrorMessage="*"></asp:RequiredFieldValidator></td>
         </tr>
         <tr>
            <td style="width: 100px; text-align: center">
               <span class="Apple-style-span" style="font-weight: normal; word-spacing: 0px;
text-transform: none;
                  color: rgb(0,0,0); text-indent: 0px; line-height: normal; font-style: normal;
                  white-space: normal; letter-spacing: normal; border-collapse: separate; font-
variant: normal;
                  orphans: 2; widows: 2; webkit-border-horizontal-spacing: 0px; webkit-border-
vertical-spacing: 0px;
                  webkit-text-decorations-in-effect: none; webkit-text-size-adjust: auto; webkit-text-
stroke-width: 0px">
                  <span class="Apple-style-span">Gender</span></span></td>
            <td style="width: 100px">
               <asp:DropDownList ID="DropDownList1" runat="server">
                  <asp:ListItem>male</asp:ListItem>
                  <asp:ListItem>female</asp:ListItem>
               </asp:DropDownList></td>
```

```
            <td style="width: 100px">
            </td>
        </tr>
        <tr>
            <td style="width: 100px; text-align: center">
                Phone</td>
            <td style="width: 100px">
                <asp:TextBox ID="TextBox4" runat="server"></asp:TextBox></td>
            <td style="width: 100px">
                <asp:RequiredFieldValidator ID="RequiredFieldValidator3" runat="server"
ControlToValidate="TextBox4"
                    ErrorMessage="*"></asp:RequiredFieldValidator></td>
        </tr>
        <tr>
            <td style="width: 100px; text-align: center">
                Email</td>
            <td style="width: 100px">
                <asp:TextBox ID="TextBox5" runat="server"></asp:TextBox></td>
            <td style="width: 100px">
                <asp:RequiredFieldValidator ID="RequiredFieldValidator4" runat="server"
ControlToValidate="TextBox5"
                    ErrorMessage="*"></asp:RequiredFieldValidator></td>
        </tr>
        <tr>
            <td style="width: 100px; text-align: center">
                Address</td>
            <td style="width: 100px">
                <asp:TextBox ID="TextBox6" runat="server"></asp:TextBox></td>
            <td style="width: 100px">
                <asp:RequiredFieldValidator ID="RequiredFieldValidator5" runat="server"
ControlToValidate="TextBox6"
                    ErrorMessage="*"></asp:RequiredFieldValidator></td>
        </tr>
        <tr>
            <td style="width: 100px">
            </td>
            <td style="width: 100px">
                <asp:Button ID="Button1" runat="server" OnClick="Button1_Click" Text="OK"
Width="74px" /></td>
            <td style="width: 100px">
            </td>
        </tr>
    </table>
    <asp:SqlDataSource ID="SqlDataSource1" runat="server"
ConflictDetection="CompareAllValues"
        ConnectionString="<%$ ConnectionStrings:DatabaseConnectionString1 %>"
DeleteCommand="DELETE FROM [reges] WHERE [regid] = @original_regid AND
(([username] = @original_username) OR ([username] IS NULL AND @original_username IS
NULL)) AND (([password] = @original_password) OR ([password] IS NULL AND
@original_password IS NULL)) AND (([Gender] = @original_Gender) OR ([Gender] IS NULL
AND @original_Gender IS NULL)) AND (([Phone] = @original_Phone) OR ([Phone] IS NULL
AND @original_Phone IS NULL)) AND (([email] = @original_email) OR ([email] IS NULL
AND @original_email IS NULL)) AND (([address] = @original_address) OR ([address] IS
NULL AND @original_address IS NULL))"
        InsertCommand="INSERT INTO [reges] ([username], [password], [Gender], [Phone],
[email], [address]) VALUES (@username, @password, @Gender, @Phone, @email, @address)"
        OldValuesParameterFormatString="original_{0}" SelectCommand="SELECT * FROM
[reges]"
        UpdateCommand="UPDATE [reges] SET [username] = @username, [password] =
@password, [Gender] = @Gender, [Phone] = @Phone, [email] = @email, [address] = @address
```

```
WHERE [regid] = @original_regid AND (([username] = @original_username) OR ([username]
IS NULL AND @original_username IS NULL)) AND (([password] = @original_password) OR
([password] IS NULL AND @original_password IS NULL)) AND (([Gender] =
@original_Gender) OR ([Gender] IS NULL AND @original_Gender IS NULL)) AND (([Phone]
= @original_Phone) OR ([Phone] IS NULL AND @original_Phone IS NULL)) AND (([email] =
@original_email) OR ([email] IS NULL AND @original_email IS NULL)) AND (([address] =
@original_address) OR ([address] IS NULL AND @original_address IS NULL))">
        <DeleteParameters>
          <asp:Parameter Name="original_regid" Type="Int32" />
          <asp:Parameter Name="original_username" Type="String" />
          <asp:Parameter Name="original_password" Type="String" />
          <asp:Parameter Name="original_Gender" Type="String" />
          <asp:Parameter Name="original_Phone" Type="String" />
          <asp:Parameter Name="original_email" Type="String" />
          <asp:Parameter Name="original_address" Type="String" />
        </DeleteParameters>
        <UpdateParameters>
          <asp:Parameter Name="username" Type="String" />
          <asp:Parameter Name="password" Type="String" />
          <asp:Parameter Name="Gender" Type="String" />
          <asp:Parameter Name="Phone" Type="String" />
          <asp:Parameter Name="email" Type="String" />
          <asp:Parameter Name="address" Type="String" />
          <asp:Parameter Name="original_regid" Type="Int32" />
          <asp:Parameter Name="original_username" Type="String" />
          <asp:Parameter Name="original_password" Type="String" />
          <asp:Parameter Name="original_Gender" Type="String" />
          <asp:Parameter Name="original_Phone" Type="String" />
          <asp:Parameter Name="original_email" Type="String" />
          <asp:Parameter Name="original_address" Type="String" />
        </UpdateParameters>
        <InsertParameters>
          <asp:ControlParameter ControlID="TextBox1" Name="username"
PropertyName="Text" Type="String" />
          <asp:ControlParameter ControlID="TextBox2" Name="password"
PropertyName="Text" Type="String" />
          <asp:ControlParameter ControlID="DropDownList1" Name="Gender"
PropertyName="SelectedValue"
            Type="String" />
          <asp:ControlParameter ControlID="TextBox4" Name="Phone" PropertyName="Text"
Type="String" />
          <asp:ControlParameter ControlID="TextBox5" Name="email" PropertyName="Text"
Type="String" />
          <asp:ControlParameter ControlID="TextBox6" Name="address"
PropertyName="Text" Type="String" />
        </InsertParameters>
      </asp:SqlDataSource>
      <asp:HyperLink ID="HyperLink1" runat="server" Font-Bold="True"
ForeColor="#0000C0"
        NavigateUrl="~/index1.aspx">Back</asp:HyperLink></div>
    </form>
</body>
</html>
```

Login

```
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="reg.aspx.cs" Inherits="reg" %>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml" >
<head runat="server">
   <title>Untitled Page</title>
</head>
<body>
   <form id="form1" runat="server">
   <div>
      <table style="z-index: 100; left: 337px; position: absolute; top: 214px">
         <tr>
            <td style="width: 100px">
            </td>
            <td style="width: 100px">
            </td>
            <td style="width: 100px">
            </td>
         </tr>
         <tr>
            <td style="width: 100px; text-align: center">
               Name</td>
            <td style="width: 100px">
               <asp:TextBox ID="TextBox1" runat="server"></asp:TextBox></td>
            <td style="width: 100px">
               <asp:RequiredFieldValidator ID="RequiredFieldValidator1" runat="server"
ControlToValidate="TextBox1"
                  ErrorMessage="*"></asp:RequiredFieldValidator></td>
         </tr>
         <tr>
            <td style="width: 100px; text-align: center">
               Password</td>
            <td style="width: 100px">
               <asp:TextBox ID="TextBox2" runat="server"></asp:TextBox></td>
            <td style="width: 100px">
               <asp:RequiredFieldValidator ID="RequiredFieldValidator2" runat="server"
ControlToValidate="TextBox2"
                  ErrorMessage="*"></asp:RequiredFieldValidator></td>
         </tr>
         <tr>
            <td style="width: 100px; text-align: center">
               <asp:Button ID="Button1" runat="server" OnClick="Button1_Click" Text="Button"
/></td>
            <td style="width: 100px">
               <asp:Label ID="Label1" runat="server" Font-Bold="True" ForeColor="Red"
Text="Try again plase" Visible="False" Width="134px"></asp:Label></td>
            <td style="width: 100px">
            </td>
         </tr>
      </table>
      <asp:SqlDataSource ID="SqlDataSource1" runat="server" ConnectionString="<%$
ConnectionStrings:DatabaseConnectionString1 %>"
         SelectCommand="SELECT * FROM [reges]"></asp:SqlDataSource>
      <br />
      <asp:HyperLink ID="HyperLink1" runat="server" Font-Bold="True"
ForeColor="#0000C0"
```

```
        NavigateUrl="~/index1.aspx">Back</asp:HyperLink>

    </div>
    </form>
</body>
</html>
```

Many Services

```
<%@ Page Language="C#" AutoEventWireup="true" CodeFile="mainpageact.aspx.cs"
Inherits="mainpageact" %>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml" >
<head id="Head1" runat="server">
   <title>Untitled Page</title>
</head>
<body>
   <form id="form1" runat="server">
   <div>
      <table style="z-index: 100; left: 143px; position: absolute; top: 14px">
         <tr>
            <td colspan="3" style="width: 152px">
               <img src="img/tit.bmp" />             
 
                         </td>
            <td colspan="2" style="width: 144px">
               <img src="img/tit2.bmp" /></td>
         </tr>
         <tr>
            <td style="margin-top: 0px; width: 31px; height: 2px">
            </td>
            <td colspan="1" rowspan="3" style="width: 1px">
            </td>
            <td colspan="3" style="height: 2px">
            </td>
         </tr>
         <tr>
            <td style="width: 21px; height: 68px; margin-top: 0px; padding-top: 0px;">
               <asp:Menu ID="Menu1" runat="server" BackColor="#B5C7DE"
DynamicHorizontalOffset="2"
                  Font-Names="Times New Roman" Font-Size="12pt" ForeColor="#284E98"
StaticSubMenuIndent="10px"
                  Width="138px" style="vertical-align: text-bottom; text-align: center" Font-
Bold="True">
                  <StaticSelectedStyle BackColor="#507CD1" />
                  <StaticMenuItemStyle HorizontalPadding="5px" VerticalPadding="2px" />
                  <DynamicHoverStyle BackColor="#284E98" ForeColor="White" />
                  <DynamicMenuStyle BackColor="#B5C7DE" />
                  <DynamicSelectedStyle BackColor="#507CD1" />
                  <DynamicMenuItemStyle HorizontalPadding="5px" VerticalPadding="2px" />
                  <StaticHoverStyle BackColor="#284E98" ForeColor="White" />
                  <Items>
                     <asp:MenuItem Text="Main" Value="Seveice">
                     </asp:MenuItem>
                     <asp:MenuItem Text="Login" Value="Login"
NavigateUrl="~/reg.aspx"></asp:MenuItem>
                     <asp:MenuItem NavigateUrl="~/log.aspx" Text="Registration"
Value="Registration"></asp:MenuItem>
                     <asp:MenuItem Text="Services" Value="Services">
                        <asp:MenuItem NavigateUrl="~/form.aspx" Text="Request land"
Value="Request land"></asp:MenuItem>
                        <asp:MenuItem Text="Construction permit" Value="Construction
permit"></asp:MenuItem>
```

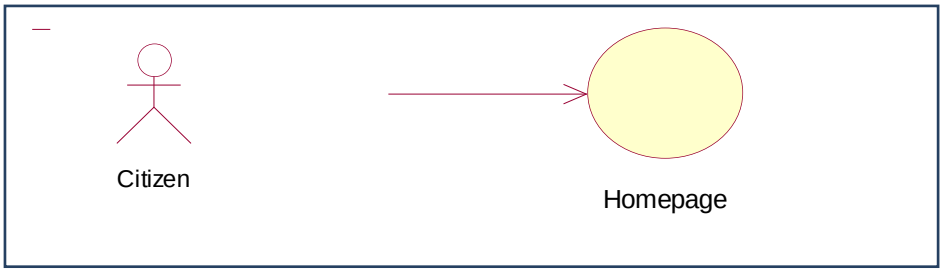
```
                    </asp:MenuItem>
                    <asp:MenuItem Text="Photo" Value="Photo"></asp:MenuItem>
                    <asp:MenuItem Text="Tourism" Value="Tourism"></asp:MenuItem>
                    <asp:MenuItem Text="About us" Value="About us"></asp:MenuItem>
                  </Items>
                </asp:Menu>
              </td>
              <td colspan="3" style="height: 68px">
                <p class="MsoNormal" style="margin: 0cm 0cm 10pt; line-height: normal; text-
align: center;
                    mso-margin-top-alt: auto; mso-margin-bottom-alt: auto">
                    <span style="font-size: 12pt; color: #ff3333; font-family: 'Times New
Roman','serif';
                      mso-fareast-font-family: 'Times New Roman'"><marquee  behavior="scroll"
direction="up" style="height: 170px; text-align: center" scrollamount="1" >The city was founded
in
    1840 by Sheikh Nasir (Pasha:was a high rank in the<BR /><BR /> Ottoman
    Empire political system) AL SADOON (Prophet MOHAMMED<BR /><BR />
    Descended) of the Muntafiq tribal confederation, after whom it is named.
    <BR /><BR />During World War I the British conquered the city, controlled
    at the time by<BR /><BR /> the Ottoman Empire, in July 1915. Some 400
    British and Indian and up to<BR /><BR /> 2,000 Turkish soldiers were
    killed in the battle for Nasiriyah on 24 July <BR /><BR />1915. Nasiriyah
    is where the Iraqi Communist Party was founded around<BR /><BR /> 1932. It
    was mostly dominated by secular and leftist groups, and the founder<BR
    /><BR /> of the Iraqi Baath Party, Foud al-Rikaby, was from Nasiriyah.
    During 1932-<BR /><BR />1963 the city was the center for liberal and
    progressive thinking<BR /><BR /></marquee>  .
                    </span>
                </p>
                <p class="MsoNormal" style="margin: 0cm 0cm 10pt">
                  <o:p><SPAN
    style="FONT-SIZE: 11pt; FONT-FAMILY: Calibri"> </SPAN></o:p>
                       <span style="font-size: 11pt; font-family: Calibri"></span>
                </p>
              </td>
            </tr>
            <tr>
              <td style="width: 31px; height: 73px; text-align: center;">
                <img src="img/nasrya2.jpg" style="width: 232px; height: 126px" /></td>
              <td colspan="2" style="height: 73px; width: 144px; text-align: center;">
                <img src="img/larach10.jpg" style="width: 220px; height: 112px" /></td>
              <td style="width: 100px; height: 73px">
                           
                <img src="img/nasrya1.jpg" style="width: 212px; height: 135px" /></td>
            </tr>
            <tr>
              <td colspan="5" style="height: 73px">
              </td>
            </tr>
          </table>

      </div>
      </form>
</body>
</html>
```

APPINDIX B

USE CASE SPECIFICATION FOR EMS

1. Use case: Home Page



BRIEF DESCRIPTION

This use case is initiated by the user. This use case will enable the user to see the home page of the web site that contains general information and instruction to users; and by which the user can select log in.

PRE-CONDITIONS

The computer is connected to internet.

CHARACTERISTIC OF ACTIVATION

Event Driven (on user's credit demand)

FLOW OF EVENTS

Basic Flow (EMS _01)

- This use case begins when the user writes the URL of the site in the internet explorer address bar and presses enter to access the website.

- The system will display the main page of the site on the screen.
- The user can surf the information and the instructions and select the registration option.

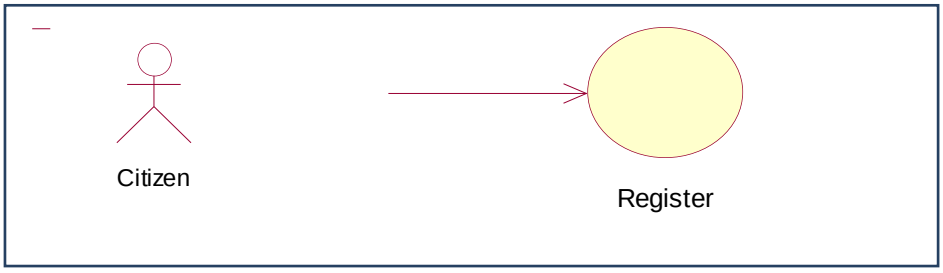
Exceptional Flow

Not Applicable.

POST-CONDITIONS

User will be able to proceed to other activities

2. Use case: Register



BRIEF DESCRIPTION

This use case is initiated by the citizen. This use case will enable the user to make account in the municipality website.

PRE-CONDITIONS

The user must be from Sudainawiyeh.

CHARACTERISTIC OF ACTIVATION

Event Driven (on user's demand)

FLOW OF EVENTS

Basic Flow (ESM _02)

- This use case begins when the user click register button.
- System will display for the citizen the register page.
- Citizen will provide the information about himself via filling all the fields, then click submit.
- System will display successful message.

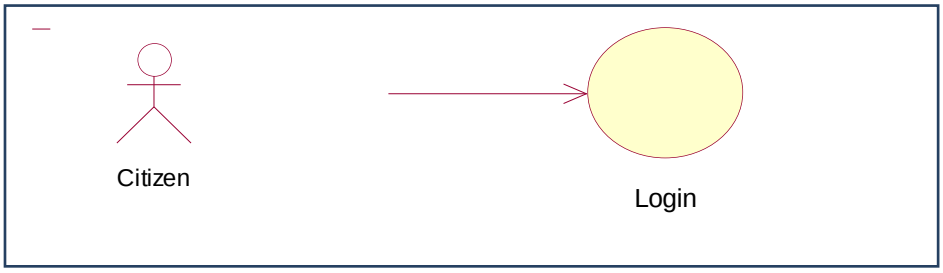
Exceptional Flow

E-2: the citizen must be fill all the field

POST-CONDITIONS

User will be able to proceed to other activities

3. USE CASE: Login



BRIEF DESCRIPTION

This use case is initiated by the citizen. This use case will enable the user to login during use name and password.

PRE-CONDITIONS

The user must be having an account.

CHARACTERISTIC OF ACTIVATION

Event Driven (on user's demand)

FLOW OF EVENTS

Basic Flow (EMS _03)

- This use case begins when the user press Login Button.
- The system will display login page.
- The user insert username and password
- The systems will Verification from username and password and then display main page.

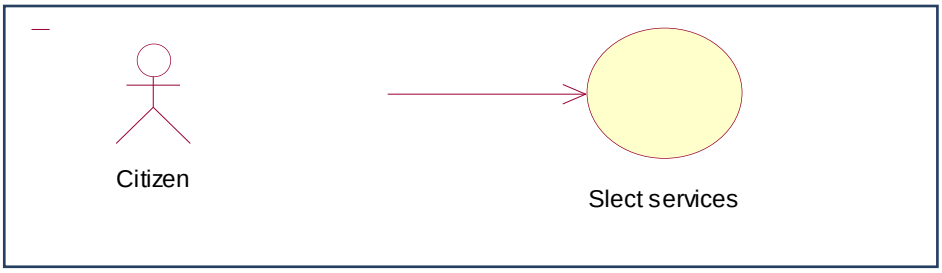
Exceptional Flow

E-2: the username or password in not correct..

POST-CONDITIONS

User will be able to proceed to other activities

4. Use case: Select services



BRIEF DESCRIPTION

This use case is initiated by the user (citizen). This use case will enable the citizen to select the services.

PRE-CONDITIONS

The customer must be having an account.

CHARACTERISTIC OF ACTIVATION

Event Driven (on user's demand)

FLOW OF EVENTS

Basic Flow (EMS _04)

- This use case begins when the user select on services button.
- The system will display all the services provide to citizen from municipality.
- Citizen can click on any services available by click on request land button for example.
- System will display request land page.

- Citizen must fill all the fields in application form for request land online, then click submit.
- The system will display successful message.

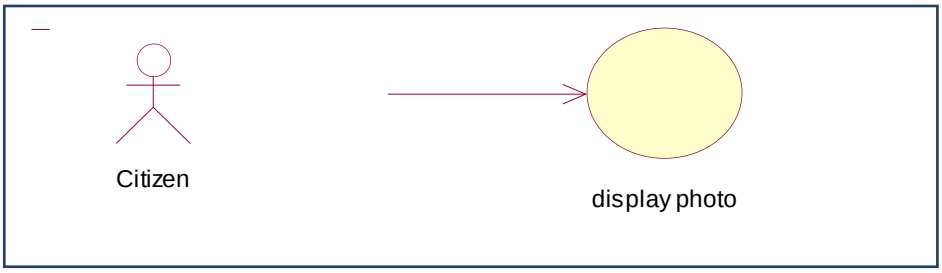
Exceptional Flow

E-2: the citizen must have account.

POST-CONDITIONS

User will be able to proceed to other activities

5. Use case: Display photo



BRIEF DESCRIPTION

This use case is initiated by the user (citizen). This use case will enable the citizen to view gallery photo for the town.

PRE-CONDITIONS

Already the user login into the system.

CHARACTERISTIC OF ACTIVATION

Event Driven (on user's demand)

FLOW OF EVENTS

Basic Flow (EMS _05)

- This use case begins when the user press “photo” button.
- The system will display photo page.
- Citizen can view the entire photo gallery for the Sudainawiyeh town in Iraq.

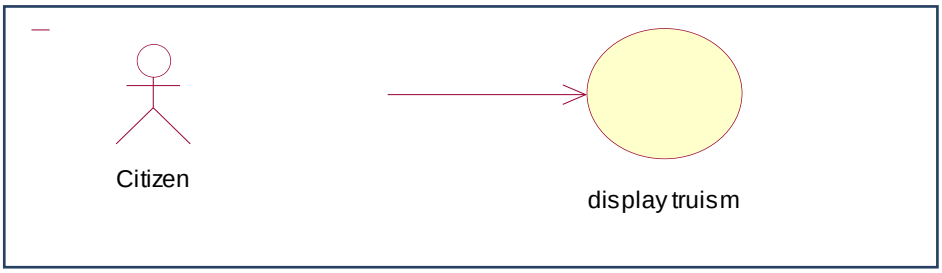
Exceptional Flow

Not Applicable.

POST-CONDITIONS

Not Applicable

6. Use case: Display truism



BRIEF DESCRIPTION

This use case is initiated by the user (citizen). This use case will enable the citizen to view truism gallery for the town.

PRE-CONDITIONS

Already the user login into the system.

CHARACTERISTIC OF ACTIVATION

Event Driven (on user's demand)

FLOW OF EVENTS

Basic Flow (EMS_06)

- This use case begins when the user press "truism" button.
- The system will display photo page.
- Citizen can view the entire truism gallery for the Sudainawiyeh town in Iraq.

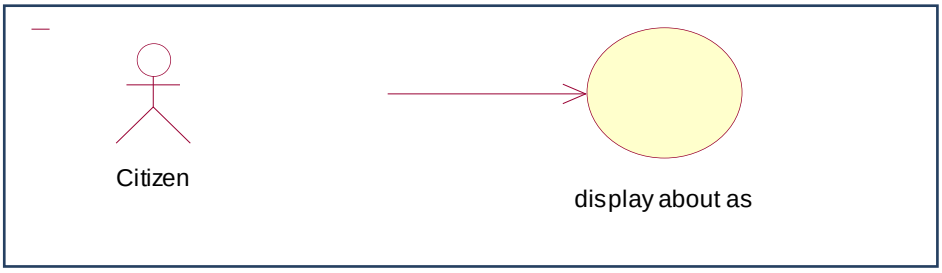
Exceptional Flow

Not Applicable.

POST-CONDITIONS

Not Applicable

7. Use case: Display about as



BRIEF DESCRIPTION

This use case is initiated by the user (citizen). This use case will enable the citizen to contact with the municipality office.

PRE-CONDITIONS

Already the user login into the system.

CHARACTERISTIC OF ACTIVATION

Event Driven (on user's demand)

FLOW OF EVENTS

Basic Flow (EMS _07)

- This use case begins when the user press "about as" button.
- The system will display photo page.
- Citizen can contact with municipality office through e-mail or phone number, if he/she have inquiry.

Exceptional Flow

Not Applicable.

POST-CONDITIONS

Not Applicable

APPENDIX C

COLLEGE OF ATRS AND SCIENCES

UNIVERSITY UTARA MALAYSIA

Municipality Office Online As Platform Citizen Services: Sudainawiyeh Municipality in Iraq

I am Master of Science (Information & communication Technology) student at final semester in University Utara Malaysia. Currently, I am performing this questionnaire to help me gain an understanding of the user who used E-Municipality for Sudainawiyeh town in Iraq. This questionnaire aims to understand general information about system user's and the usability of the system. The results from this questionnaire will help me to understand the system requirements for developing an E-Municipality prototype system for Sudainawiyeh town in Iraq.

All your information will be held in strictest confidence and it will be used for research purpose only. Your insights a feedback in making this study successful is highly appreciated. If you have any queries or if you like to know the result of this study, please do contact me at 019-4623865or through the e-mail: neabeel_hadaad@yahoo.com. This questionnaire consists of two sections:

- Section A - General Information
- Section B - System Usability

This questionnaire is adopted from Brooke (Bangor, Kortum & Miller, 2008) System Usability Scale (SUS).

Thank you for your valuable time and help in completing this questionnaire.

MSc. ICT Candidate

Nabeel Hadaad

QUESTIONNAIRE

System to Be Evaluated:

E-MUNICIPALITY FOR SUDAINAWIYEH (EMS)

Objective:

Obtain your view on the evaluation of EMS.

Please answer **all** questions from each segment.

1) General Information

This segment is about your background information. Please fill up the blanks and mark [√] where appropriate.

1. Gender: [ ] Male [ ] Female

2. Age: _____ Years.

3. Education background

[ ] High School [ ] Diploma [ ] Degree [ ] Master [ ] Ph.D.

2) Assessment System for Knowledge Sharing among Teacher Prototype Evaluation

Please rate the usefulness and ease of use of Automatic Teller Machines Using Fingerprint Technique (EMS)

	PERCEIVED USEFULNESS	**1**	**2**	**3**	**4**	**5**
Q1	Using ASKST helps me to be more effective	O	O	O	O	O
Q2	Using ASKST helps me to be more productive.	O	O	O	O	O
Q3	Using ASKST saves my time when I use it	O	O	O	O	O
Q4	Using ASKST would enhance my effectiveness	O	O	O	O	O
Q5	Using ASKST would make it easier to do my tasks	O	O	O	O	O
Q6	ASKST was everything I would expect it to do.	O	O	O	O	O
	PERCEIVED EASE OF USE	**1**	**2**	**3**	**4**	**5**
Q7	ASKST is simple to use.	O	O	O	O	O
Q8	ASKST is very friendly to use	O	O	O	O	O
Q9	It requires the fewest steps possible to accomplish what I want to do with it	O	O	O	O	O
Q10	I can use it without written instructions	O	O	O	O	O
Q11	I don't notice any inconsistencies as I use ASKST	O	O	O	O	O
Q12	I can use ASKST successfully every time.	O	O	O	O	O

Document for municipality of Sudainawiyeh town in Iraq

جمهورية العراق

((استمارة))

استمارة تقديم طلب تخصيص قطعة ارض سكنية خاصة بالشرائح المشمولة بكتاب مكتب رئيس الوزراء المرقم م.ر.ن ٤٢٤/٢٤/ في ٢٥/ ٢٠٠٦/٦ م ٠

١ـ الاسم الثلاثي واللقب لطالب التخصيص :
٢ـ مسقط الرأس حسب هوية الأحوال المدنية :المحافظة :.....قضاء.....ناحية.....
٣ـرقم هوية الأحوال المدنية:.....رقم الصحيفة.....رقم السجل .....
٤ـاسم الدائرة التي صدرت منها :.....
٥ـمحافظة :.....
٦ـالمواليد :..... تاريخ التعين : / /
٧ـ اسم الزوج :..... اسم الزوجة : .....
٨ـ عدد الأولاد : .....
٩ـالعنوان حسب البطاقة السكنية : محلة .....زقاق.....دار.....هاتف.....
١٠ـ تاريخ تقديم طلب تخصيص قطعة الأرض : / / ٢٠٠ البلدية التي يرغب بها .....

اسم الوزارة : العدد :

اسم الدائرة التي ينتمي إليها : التاريخ :
/ / ٢٠٠

نؤيد بأنة السيد( )موظف في دائرتنا ومستمر في الخدمة

وتاريخ التعين : / / أي عدد سنين الخدمة بلغت (/ سنة) وبناء على طلبه والتعهد المقدم من قبله زود بهذا التأيد مع التقدير ...

توقيع مقدم الطلب ختم الدائرة تأيد المراجع التي ترتبط به دائرته