

**THE ONLINE DIGITAL LIBRARY:
A PROPOSED APPLICATION PLATFORM:
MY LIBRARY**

**A MASTER THESIS
IN SOFTWARE ENGINEERING
ATILIM UNIVERSITY**

**BY
IZDHAR EMUSATAR**

November 2016

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Approval of the Graduate School of Natural and Applied Sciences, Atılım University.

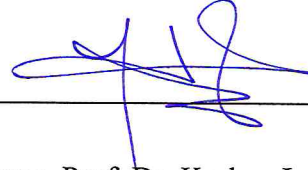
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I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science.



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This is to certify that we have read this thesis and that in our opinion it is fully adequate, The Online Digital Library: A Proposed Application Platform: My Library, as a thesis for the degree of Master of Science.



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STATEMENT OF NONE PLAGIARISM

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ABSTRACT

THE ONLINE DIGITAL LIBRARY:

A PROPOSED APPLICATION PLATFORM:

MY LIBRARY

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M.S., Software Engineering

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The libraries and information centers are characterized by continuous changes and the successive development. One of the most notably of them is the emergence of digital library which was the inevitable result to the development of information and communication. That was led to radical changes in the means of storing and processing the information and in the media that transmit them. Also, it has changes in the forms of organizing and exchanging the information. Thus, that has the positive effects in providing suitable and developed information services to the beneficiaries. As well as, the digital libraries give services which was not possible to provide with the traditional libraries according to the characteristics of the digital libraries which increase the importance of their services for beneficiaries, librarians and publishers alike. The study discusses the researches results and the debate about the digital libraries in terms of concept, developing, importance, the basic contents, the steps to transform to digital libraries, the services provided, the role of the digital library librarian and his skills and the design of comprehensive digital library with services that almost the same services provided by the existence digital libraries in order to access to results which may put the model to create an optimal digital library to meet the information needs of the academic society and support the educational process.

The study includes four sections introduction, digital library infrastructure, a review on My Library project that been designed and conclusion and discussion.

Keywords: Digital Library, Electronic Library, Librarian, Online Environment, Application.



ÖZ

ONLINE DİJİTAL KÜTÜPHANE:

ÖNERİLEN BİR UYGULAMA PLATFORMU:

MY LIBRARY

Emusata, Izdhar

Yazılım Mühendisliği, Yüksek Lisans

Danışmanı: Doç. Dr. Korhan Levent Ertürk

Kasım 2016, 50 sayfa

Kütüphane ve bilgi merkezleri, sürekli değişimler ve birbirini izleyen gelişmeler ile karakterize edilirler. Bu değişim ve gelişmelerden en fazla öne çıkan ise yeni bilgi ve iletişim gelişmelerinin kaçınılmaz bir sonucu olan dijital kütüphanenin ortaya çıkmasıdır. Dijital kütüphanenin ortaya çıkışı, depolama ile bilgi işleme araçlarında ve de bunları ileten ortamlarda radikal değişikliklere yol açmıştır. Ayrıca, ortaya çıkan bu durum bilginin düzenlenmesi ile alınıp verilmesi şekillerinde değişikliklere de sahiptir. Bu yüzden bu durum, yararlanıcılara uygun ve gelişmiş bilgi servislerini sağlamada olumlu etkilere sahiptir. Bunun yanı sıra, dijital kütüphaneler kullanıcılara, kütüphanecilere ve benzeri yayıncılara verdiği hizmetlerin önemini arttıran dijital kütüphanelerin özelliklerine göre geleneksel kütüphaneler ile sağlanması mümkün olmayan hizmetleri vermektedir. Çalışma, araştırma sonuçları ile konsept, gelişim, önem açısından dijital kütüphaneler hakkındaki tartışmayı, dijital kütüphanelere dönüşüm için temel kapsamları ve adımları, sunulan hizmetleri, dijital kütüphanecinin rolü ile yeteneklerini, akademik toplumun bilgi ihtiyacını karşılamak ve eğitim sürecini desteklemek için optimal bir dijital kütüphane oluşturmak üzere model ortaya koyabilen sonuçlara erişmek amacıyla mevcut dijital kütüphaneler tarafından sağlanan hizmetlerle neredeyse aynı olan hizmetlere sahip kapsamlı bir dijital kütüphane tasarımı ele almaktadır. Çalışma; giriş,

dijital kütüphane altyapısı, akademik dijital kütüphanesi oluşturmak için planlama, planlanmış olan My Library (Benim Kütüphanem) projesine genel bir bakış, sonuç ve tartışma olmak üzere beş bölümden oluşmaktadır.

Anahtar Kelimeler: Dijital Kütüphane, Elektronik Kütüphane, Kütüphaneci, Çevrimiçi ortam, Uygulama.



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Chapter One

Introduction

The world witnesses increasingly revolution in the field of information and the used techniques in processing this information to facilitate obtain and use them. This revolution is represented in the use of multiple information systems to facilitating the work inside the libraries and replace the traditional means by other digital means in terms of storing and retrieving information, take advantage in the broadcasting techniques, call the information observatories across the world and sharing the information through creating the information networks or join them. The revolution of information is a logo used by the organizers of human knowledge through the recent years. That revolution which its bases are represented by the subsequent boom that witnessed by the world of communication and what connected to it as tremendous progress for the sake of knowledge exchange. This is resulted by the emergence of new techniques in the world of knowledge production such as the World Wide Web ¹ and what wrought through remarkable development in the electronic publishing art and the emergences of digital library and then digital and electronic library. The logical results that resulted from this revolution of knowledge that changed the view of research to the world of knowledge. The tools became available, easy and the exchange became easy and the publishing easier from its previous across the information networks.

All of that has led us to seek and stand on all-new at this field. The search in the field of digital library due to inability of traditional libraries on providing new developed services to the beneficiaries and information researchers. These libraries imposed by the technical evolution in its dimensions, givens and different tools which look more attractive and reality for the different levels of beneficiaries. Thus, its concepts will vary

¹ https://tr.wikipedia.org/wiki/World_Wide_Web

according to the varying of its dependencies, objectives and audience and the future library will be the digital library which may really not need to real place visited by researchers, beneficiaries and students but it will be a web site and technological equipment's used by the researchers through different sites and places. As well as, these libraries may not need to be their users as humans but they may be used by another information system. Consequently, the libraries became developed information networks that can be deal and interact with different information resources and the optimal exploit of them which consistent with the research and informatics needs to researchers and students. This great leap in the use of information and communication technologies resulted in the emergence of digital libraries in the nineteenth of the last century.

The research projects and their software started to prepare digital libraries in many countries, perhaps the most successful experiments at this way are the experiments of European and American libraries due to having the enormous technical possibilities to deal with technology. The digital library is considered a new form of traditional library where it is relying on new technologies in transforming data and information from the paper form to the electronic and digital form in order to achieve more affectivity and efficiency in storing and processing the information and broadcast to the beneficiaries. It should be noted here, that the used technologies in the digital library provides a suitable environment to work with information resources in their different forms on the internet network. The connecting of these different sources under the digital library gate and place them under integrated structure will provide better work environment and more comprehensive and accurate. As well as of the above, the building of unified work environment and unified entrance for the all information resources in the library and merge them with the information on the internal network of the library such as the system of managing the digital library, books and others will increase the value of the information and that resources contribute the enhancement resources of knowledge for the whole staff of educational organization. There are many factors and special needs require to find the digital library and especially in the academic society to reduce the costs, the development of technologies and communications, fill the researchers needs and facilitate the access to the resources of information especially with this quantity of

productive knowledge annually on the paper, digital forms or any other media. This study try to give scientific and effective plan on how to build and develop a digital library which connects the resources of available information within one pot to promote the ability of educational organization and others researchers to access quickly to the information they need and the positive interaction between them. The study includes the basic theoretical and executive plan to this comprehensive plan and the required programs which support the creation of digital library and increase its interaction.

This thesis consists of four chapters. In Chapter 2, we give the literature review about digital library and the infrastructure that should be available in order to build successful digital library. Chapter Three includes a comprehensive review about My Library that we have designed and created. Finally, derived conclusions and discussions are given in Chapter 5.

Chapter Two

Digital Library Needs and Infrastructure

2.1 Definition of Digital Library

Identifying the concept of digital library is one of the controversial debate problem between the specialists at this area because there is not complete deal about identifying this concept. Also, there several definitions about the digital library in the literature that deal with the electronic library and information technology according to the nature of specialist and their disciplines researches. Furthermore, there are different terms refer to the libraries which characterized by the intensive use of information and communication technology and use the sophisticated systems in storing and retrieving data and transmit them to the researchers and to the recipients institutions, and these terms include electronic library, digital library, virtual library, hybrid library and library without walls and each one of them has different definition as follows:

- **Electronic Library:** It is the library which contains a lot of electronic references such as CDs and connected to the rules and banks of data in electronic way and the electronic hardware configures most of its contents. However, it contains some of the traditional references but not at most [1].
- **Hybrid library:** It contains high-speed multimedia texts (images, voices, tables and objects).
- **Virtual library:** It offers an inputs or access points to the digital information by using many networks including the Internet. Also, the terms of hybrid library may be synonym to the digital libraries according to the National Science Foundation and Association of Research Libraries that locate in the United States [2].
- **Digital library:** It forms entirely from the resources of digital information and needs to linking tools, text languages, network and linking protocols (z39.50).
- **Library without walls:** It contains on digital and electronic information resources and does not need to building.

Through this project we will use the term of digital library without the other terms by virtue of being the most appropriate concept and understandable by professionals.

2.2 Digital Library Needs and Components

There are basic requirements and necessary needs must be available when create the digital library as follows:

1. Legal needs, when converting the textual materials such reports, researches and articles the digital library must get a permission from the right holder pursuant according to the legal of copy and intellectual property rights. Also, it must identify the right and duties for each agencies and institutions.
2. The needs of technical devices that belong of transforming the material of information from traditional to digital, in addition, the needs to computers and communications devices.
3. The needs of technical and qualified humans that capable of dealing with sophisticated and technical devices financially and intellectually.
4. Financial needs necessary to execute and run the project.
5. The needs of programs, linking protocols and retrieving data.

Furthermore, according to Michael [3], the most important infrastructure for digital library axes include. First, organizing the digital services. Also, Creating electronic network include the library needs, contains server with high performance and identify the container of paper information that supposed to get it. As well as, converting the supply process from the traditional to the automatic concepts to communicate immediately with publishers through the electronic network. Furthermore, prepare an index to the direct-dial which contains the traditional and non-traditional holding and the periodic analysis of the feedback and evaluate the performance of the programs. In addition, regularity procedures that ensure the use of the digital library by the researchers and scholars. Besides, the connection between the digital library and the several subparts of that institution and study the needs of the beneficiaries and meeting their demands according to the intensity of popularity on the digital technologies. Attention to copyright and the attention to install specialized programs to protect the

system from viruses and unauthorized use. Also, the network connection between the system, libraries, information centers and control the management of digital group in wisely. Furthermore, the attention to train of workforce to advancing their technical ability and follow the progressing of their performance level. Scheduling the prices of services after studying the most suitable choices and alternatives for the library and the beneficiaries. Finally, the analysis of periodic surveys for the beneficiaries opinions about the type of service and how to present it.

The US National Information Infrastructure Program has identified the following basic points in order to build a digital library. First, the existence of elements which can deal efficiently with voice and text. As well as, multimedia techniques that interact with image and voice in direct and real form. Also, methods and strategies searches can deal with huge amount of information distributed in different places and make them understandable and can be used. Furthermore, the basic infrastructure to develop applications provide permanent and reasonable solutions. Stand-alone technology and can be managed. In addition, the easy use of technology, and there services can access to different level of beneficiaries who have different abilities and qualifications. Besides, high advance technology in areas of security and privacy. Finally, the services can be offered in everywhere and can be easy access.

2.3 Stages of Shift Towards Digital Library

In order to shift from traditional to digital library, it should pass the following phases:

- **First phase:** intensity efforts to prepare a network that can cover the library activities consisting of automatic computers regulating to deal with it server with high performance. Also, it requires good training for technical librarians and upgrade their performance. In addition, it requires the refilling of elite resources of electronic information to check the interactivity of the system affectivity in its experimenting phase.
- **Second Phase:** the focus on weakness treatment that may raise through apply the achievements of first phase. As well as, the refilling of additional digital

information resources to be provided to the library through this period. Finally, the accurate periodic assessment to the all sides of the service to be provided.

- **Third Stage:** Connect the library to the corresponding libraries and information centers on the local level which follows to connecting by the global information database. Furthermore, this phase should take care of whole developing to the system and include the following elements:
 - **Starts to introduce the digital library services:** The dramatic changes that happened by the modern communication revolution which the internet is considered one of them are contributed in exciting the beneficiary and provide him by different kinds of information. Thus, the libraries tend to transform to the modern digital library, which is considered a library that has existing on the global textile [6].
 - **Develop the resource of information on a large scale:** The concept of use the digital resources means to use the remote communication tools to produce, provision and broadcast the information to the beneficiary and often be bibliographical information or complete texts. While, the resources of digital information in the developed concept it does not just cancel the existing of the paperwork container but it provides the direct connection between the production of the information from a side and the beneficiary from another side. Also, it aims to the comprehensive change of common infrastructure of paper or printed book. A long this concept the resource of the information be paperless from the beginning and appear on a form of multiple paragraphs because each author will enter his own data (Article, Book or research in a conference) and according to special software been prepared to this aim and guaranty the discrimination between different paragraphs in per article or chapters of one book to guaranty the systematic retrieval of excerpts from several authors in specific topic.
 - **The automatic storing for the electronic supercharge and protects its contents:** Many libraries in different places of the world have interested in the electronic storing to their contents, develop and speeding to keep with technical

and cultural progress. For example, in New York, the library of business, industry and sciences have been created and the cost of the creation reached to 100 million dollars, which contains on a center for electronic materials and connected with a network consists of 70 stations of databases, as well as, access to CD-ROM in order to keep its data in case of the happening of any problems.

- **Directing the digital library across providing the service:** the digital library must provide the login process for people inside organization which digital library belongs. As well as, the digital library must welcoming to receive the visitors from outside the organization that digital library belong, both from research centers, universities or individuals to use the digital library and enjoy all the services that digital library provides and each member must obtain the digital library membership in order to use an enjoy what we have mentioned above. Also, the digital library must provide the search of databases services and save the results on any storing media or send them by librarians by E-mail, if that resource is available in the digital library shelves [4].

We can identify the requirements that needed to develop the comprehensive digital library, input the information to it and provide the resources of information for beneficiaries in easy and practical concept by four elements:

- **The Hardware Devices:** They include several developed computers, scanners, printers and communication devices to connect to the local network. Also, the devices include the existence of server with a large capacity in order to accommodate the large amount of data to be linked to the digital library.
- **Programs:** They include the systems to maintain the digital information, connectivity of programs and protocols and retrieving data. Also, the programs should be modern and depend on the latest standards and technologies that necessary to manage and update the digital library. As well as, the systems should support the standard of exchanging data that called Z39.50.
- **The Human Element:** He should be qualified technically and technologically and can deal with devices and programs and providing the services of support,

maintenance and training. Also, the human element rehabilitation should start before the adoption of digital library project because he is the first and last element who can contribute to the success or fail the whole project.

- **Digital Resources:** they include books and electronic magazines, digital files, CDs and other information resources.

The digital library also includes an electronic publishing system and content managing and offer great potential to create dynamic sites for any material which be necessary to be published on the network. In addition, the persons who are on the portal should control on what are published on the portal in easy ways. Finally, the system that is responsible of electronic publishing and content managing should contain on many features and facilities such as:

- **Should be easy to use to any user on the network:** the digital library pioneers and beneficiaries are ordinary people and always do not have any experience in information technology. Thus, the digital library content must be easy and understandable for everybody. So, it must be designed that any person can benefit and enjoy by its services without any effort and training. As well as, there must be interfaces to addressing the librarians of the digital library in case of any problem or request from the beneficiary and answer him as fast as possible.
- **Facilitate the moving to any field inside the digital library:** The beneficiary must have the ability to move between different fields of the digital library easily. For instance, different buttons must be found to facilitate to the beneficiary to access to the field that he wants and then to back to the place where he login by one press. Also, the beneficiary must have the ability to view the contents of the book such as its name, author name and publishing year without download.
- **The publishing possibility inside the main page or the pages that belong to the groups:** Some digital libraries provide forums and groups inside its environment in order to exchange the knowledge and thoughts between the

digital library members. So, digital library members can add comments, images or links to another libraries in order to increase the communication process.

- **Provides a complete archive to the content and news:** The digital library should has archive from variety of academic, cultures and media fields such as books, scientific thesis and researches. Also, it should has the ability on searching and retrieving data by different languages with compatibility of global standards of the digital library systems. Furthermore, it should has an index to the contents of all books and the possibility of saving and printing the contents of these books.
- **The research availability by word and text:** Most of the digital library contains on a rectangular search area which gives the beneficiaries the ability to search on several things inside the digital library by writing a word or text in the rectangular search and then display the results which belong to the word or the text that we have written. This operation looks like the searching process that done using google search.
- **The ability of attaching images, voice and video recording with the news:** The digital libraries should have fields been deployed for publishing images, voice and video recording to publish news, articles and conferences with details to give the beneficiary the ability to view different types of information in different areas.
- **Provides a complete protection to the input and supervising system:** The digital library must be heavily protected against intruders and hackers in order to keep the contents of digital library and prevent tempering its contents.
- **Provides a complete control to the permission of the editors:** When designing the digital library and programming it, the librarian will be capable to insert and delete the contents of the digital library and also, entirely control the user inputs, his account and he will give rules and if the user violet them, he will be avoided or his account will be deleted by the librarian. As well as, the powers of beneficiary and his inputs must be defined.

- **The possibility of publishing the entered news only through the supervisors of the portal:** The news that digital library members wish to publish, they are not published unless by taking the agreement of the librarian. For example, if any member in the library wished to upload a book or article to the library, he will upload it and it will be in the inbox of the librarian. If the attachment is matching to the publishing conditions which been identified previously, it will be published and if not it will be discarded.
- **The possibility of publishing news from any place through the Internet:** By exploiting the characteristics which been provided by the World Wide, the librarian can upload the content which he wants to the library from any place in the world using his account. Also, the digital library members have the same rights, where each user can access to the library from any place in the world.
- **The possibility of publishing new pages and special templates for these pages:** The digital library may have the dynamical movement which contain on the possibility of adding new pages or templates in order to do some functions.

We find that the focus includes only these four elements which be mentioned above and there is a possibility to add fifth element which is the copy and intellectual rights protection. Thus, the digital library when converting the textual materials from books and articles to forms can be read electronically must take the permission from the writer.

2.4 Librarian of Digital Library Tasks

The librarian of digital library tasks have changed from the traditional tasks to information consultant, information manager, research prompt, and mediator information in order to process the digital information, interpreting them, translating and analyze them. Also, the librarian of the digital library must mastering the communication skills to answer the beneficiaries questions and to connect to banks and information networks, training the beneficiaries to use systems and developed networks and facilitate the researchers tasks [5]. Furthermore, there is no doubt that digital library will increase the requests for information specialists who have wide knowledge and skills to do many tasks which are:

- **Information consultant who work on help the beneficiaries and direct them to the information banks and resources that meet their needs:** The beneficiaries always need to the help in order to guide them to the different types of information resources inside the digital library such as the search on specific books format, information container or versions of books that belong to specific topic.
- **Training the beneficiary to use the resources and digital systems:** Training the beneficiary such as guides him on use the digital library fields or to registering as a member to the library or even on how to cancel his membership from the library.
- **Act as information analyst to provide selected and valuable results to the researchers and beneficiaries:** This function is done by the librarian and how he can explain to the beneficiary about the field that belong to specific book and the possibility of its presence or not in the library or even help the beneficiary and guides him to search in another library which may contain specific book.
- **Create research files and submit them when needed to the researchers and beneficiaries:** The may collecting specific books or researches for requested topics by the beneficiaries and supply to them if needed. This can increase the relationship between the librarian and the beneficiaries.
- **Create personal digital information files, organize them and submit them when needed:** Sometimes the librarian of the digital library may be organizing the curriculum vitae of authors and scientists and upload them to the library to facilitate to the beneficiaries' access to their lives and realizations.
- **Searching in unknown resources to the beneficiary and submit the research results:** the librarian may help the beneficiary to search in another libraries and unknown places to them for specific topics.
- **Assist the beneficiary to invest the Internet network and its huge ability to get the needed information:** Counselling the researchers on what researches through the internet, so that, they can get on more and accurate information within the search engines that available through the internet.

- **Inform the researchers about all new in the information resources and services when be available:** The librarian sometimes advertising on the new books which been gotten and put them on the digital library shelves. Thus, beneficiary can watch and accessed [6] [7].

These tasks require special training to get special skills in order to face the new and amazing development in information and communication technology. Price had predicated this development, he said that librarians will mastering new skills and the librarian job will take a new form as an important guide to the world of fast growing of information resources in a digital and electronic form. Consequently, according to Price the librarian's job will change from using system on behalf of the beneficiaries to another role which is the consultant role of these beneficiaries. So, this new role of librarians requires them to take new and positive attitude toward the future and get rid of deadlock. As well as, the librarians must realize their need to change and redirecting themselves to deal with the renewable technology. If the current standard for the librarian to find the container that hold the information, so, the new standard should be performed on finding the self-information, provide comprehensive services in line with the spirit of our time and the development of information [8].

One of the qualifying requirements of librarians to deal with the new technology is the perfect knowledge of information resources that read automatically and how to use them most effectively, the perfect knowledge in policies and indexing procedures, formulating search strategies, knowledge in communication technologies and achieve maximize interaction in facilitating the beneficiaries requirements.

This ensures the importance of human element role, and confirming that librarians must realize the importance of redirecting themselves to deal with what produced by the renewable technology. Also, this does not mean the known qualifying requirements that represented by the familiarity with computer science, library, information and communication sciences, and business management but means what is farther of that what the personal and collective preparedness of librarians are. Moreover, there is a

feature must be available for librarians which the flexibility and the ability of innovate. Furthermore, the librarian is not the only profession in modern information technology as new names and jobs have been occurred accompanies with new and modern professions in this field which are:

- **Knowledge Engineer:** The person in the digital library who is responsible on using principles, tools and rules which belong to the artificial intelligence to solve the digital library applications problems which needs to the experts information to solve.
- **Information Counselors:** Works on helping the beneficiaries and guide them to the information resources and banks which may be more responsive to their needs.
- **Information Managers:** The person who responsible on installing, preparing, upgrading and maintenance the databases in the digital library. Also, his function includes the designing of databases strategies, monitoring the system status, develop the performance of the databases and their capacities in addition to the planning of any expansion request in the digital library.
- **Completely Freelance Librarian:** He is the information specialist who works to his own account and he will be responsible on refreshing his information to keep the era.
- **Information Brokers:** The person who has an information about the digital library priorities and identify the resources of the quality services that associated to that policies is called the information brokers [9].

Consequently, the basic goal that be done by the librarian is identifying the place of information or the required information whether the asked of information is business man, company, or researcher or whether this information is about commercial property competition or about the study of scientific or industrial topic or maybe related of identify the background research for specific topic by using the multiple electronic and communication tools as the Internet network or commercial online databases. However,

the most of information specialists are preferring to use the World Wide Web, use of News Groups and Mailing Lists.

There are no doubts that the practical training for people who work in the digital libraries is the basics necessities. As arguably the organized training is considered the most important roles in initializing the librarians to deal with the digital environment and adopting with its requirements and so, the training should be taken seriously and the training programs should be formulated so as to ensure real benefit from the training materials. Also, trainers and trainees must be chosen carefully to achieve the goal of the training program. Furthermore, the experience of the similar organizations and their successful experiences in adoption with the training programs should always be used.

2.5 Digital Library Services

There is no doubts that creating digital library means to create excellent services to facilitate the access to information by researchers. So, there is a need to use technically modern programs consistent with the global existing systems. Also, there is a necessity to know the strength and weakness in it especially the ability of the program to deal with the corresponding program and the local and global databases without resort to multi-interfaces.

As well as, these interface must contain many services that identified the library and its activities and services that provides and provide a list of library contents and give the ability of access to it. Moreover, issuing the library releases and daily update them. Also, it should contain on automatic index for calling the library automatically.

The digital libraries must have the ability to create local databases such as Bibliographies, Bulletins and archive collections, it has to save the local documents that belong to the library or the ministry that belong to it on the network. As well as, the digital library must have the ability of call the information resources through local and global networks. In addition, ability to give the abstracts and full texts. Moreover, it must provide the ability to search in digital journals.

The digital library within its services works on providing a menus for most requested books, make advertising for the new books, the ability to follow links for different

containers of information, works on set up the forums whether, text, voice or by the camera and provide team work to follow that forms and provide the ability to participating in conferences and professional meetings. Finally, the digital library prepare the questionnaires across the network to the library beneficiaries, publish their researches, provide them by the media services by all the new in addition, the services of supporting and problems solving around the clock [10][11].

2.6 Digital Library Characteristics

The digital library has a number of characteristics that made unique from the other traditional libraries, namely [12] [13] [14] [15] [16]:

- 1. The digital library reaches the recipient wherever he is:** The beneficiary does not need any more to go to the traditional library for reading, browsing and view books but he has the ability to wander between dozens of libraries access to the libraries saves and access whatever he wants in spite of his place. Since he just needs a computer connected to the network.
- 2. Use the computer abilities in searching and browsing process:** There is no doubts that the traditional browsing is tired and needs a long time and it may require the help from other people, whereas, the automatic browsing is easiest where the beneficiary can interact with data and information and process them using suitable computer programs, he can get the similar documents using the reference link that directing the read automatically to the document, all of that is done and the beneficiary in his place with no stress and effort just by moving the computer mouse to the document place. Thus, he can reduce the time required to get the information and scientific references.
- 3. The availability of information at any time:** One of the important factors that effect on type and nature of services that offer by libraries for the beneficiaries is the time factor, which configure special importance in the academic library which seek to provide its service for students in suitable times where they able to search and learn in ways that do not incompatible with their schools duties and responsibilities. At the same time, this applies on the public library as diverse the groups of people that benefiting from its service, and the suitable

time for every group is diverse too, which intersect with the official time of the library. Thus, the importance of digital library come into use that fulfill the knowledge needs of beneficiaries in the suitable times without any restrictions. Due to the easy ways to access to the information resources of digital library in every time (24 hours and 7 days in week) which reflecting positively on the researchers services.

4. **Ease of updating the information:** changes and developments must be breasted in the information world and this is very difficult matter if the information container available on traditional media such as papers, whereas, if the information container is available on digital media, the matter will be completely different and the update of information process will be very easy matter. So, if the publisher wants to issue new modifications on any encyclopedias and directories or any other references, he can just add them automatically to the database of the digital library.
5. **The possibility of share information by everybody:** in order to serve numerous number of people in the same time, the traditional library must offer many copies from its contents. Consequently, this previous thing is completely different in the digital library that keep only one copy from its contents and many people can read the same book or view the same images in the same time. In addition, the people who in charge of keeping books will rest from the brining and putting books back on the shelves. Also, they get rid from many problems such borrowing and damaging collectibles and fail to keep them. Also, get rid of the clutter lack of collectibles in the right places. However, the digital library works on finding a solution to guaranty that everybody will benefit from the information containers.
6. **The ability to find new forms of information:** there is no doubts that the digital information containers that available in the information databases is butter than the traditional containers both in terms of storage, save or the publishing, where the digital information containers have many characteristics and abilities which are not available in other. So, if the topic is about

information or statistical data, the beneficiary at that time can do the statistical business and analysis by using computer which is not available in the traditional container.

- 7. The ability to decrease the financial costs:** in order to give their services in perfect ways, the traditional libraries need to building with integrated services in suitable place. Also, they need to a number of qualified employees to serve the beneficiaries as required, this thing will completely different in the existing of digital libraries that provide their services with limited number of qualified persons without associating in a particular place, which shows decline of existing a digital libraries as compared with the traditional libraries in the long term. As a result, this reflects on the cost of getting information and the scientific reference by the researcher.
- 8. Preservation on rare staff and perishables:** the digital library work on keeping the rare and perishables staff with black access to them to people who wish to study. For example, the British Library in London keeps the unique copy of Beowulf manuscript that belongs to the medieval. Also, the national Diet Library in Tokyo have made precision digital images for 1236 printed wooden, technical wrapped and other materials from its national heritage in order to make available to the researchers without touching the original copies.

2.7 Obstacles that face the digital library

There is no doubts that digital libraries are considered the perfect solutions for many problems that researchers face in their scientific carriers according to the variety of services that introduce, the benefits resulting therefrom. In spite of, it has encountered many problems and difficulties that may limit its spread. One of the main problems is the high costs that require to create the digital library project. The most important methods that fix this problem is to benefit from the literature survey that belong to this issue to get information from the other experience that belong to this topic. Also, ask the help from other organizations, government agencies and special companies. As well as, there are another issues that belong to the copyright and intellectual protection, whereas, converse the printed materials to digital copies require a permission from the

right holder which require a lot of time and stress in order to get it. We can deal with this problem by initially offer the government of agreement documents as do not need long time to take them. Also, identify the researchers and users on how to get and access to the available digital library. As well as, the lack of the user a wariness on use of modern technology is another problem and can be solved by the extension services and by the training. Furthermore, the focus on coming and emerging generations through various educations institutions, teach and learn them on using these technologies. Finally, work on transform the school libraries to digital libraries [17].

2.8 Models of digital libraries

- 1. My Library Project:** it is a project locates in Malaysia and aims to provide the resources of information to Malaysian community through the digital library initiative. The main goal of this project is to make the Malaysian society as a cognitive society. Also, the project aims to work as starting point for the information services providers to access the service to everybody. As well as, the project works on pushing the existing activities on information industry process and provide knowledge service available through the connecting network in the range of society borders [18].
- 2. Azhar Digital Library:** it aims to attract Muslims from all over the world toward the greatest center for religious information in the world. It contains a collective of oldest heritages manuscripts that Azhar contain them. Azhar digital library is considered the third center of information in the world after Congress and Vatican libraries, the number of manuscripts that find in the library are more than (42) thousands manuscript and the history to some of them is back to (4000) years ago of which are (9) thousand manuscripts have unparalleled in the world. Also, Azhar digital library is offered its service in sex different languages include the Islamic society's interests [19].
- 3. Warraq Digital Library:** this library is especially specialist in the books of Arabic and Islamic heritage and include about (600) address and consider from the more important references. The importance of this library is the access to a set of the most important heritage books and the ability to search through it. The

planning of this project started in the year of (1995) and in (1996) the team work started by preparing the software and in the year of (1997) the teams of input texts started in Syria and Iraq. Finally, in the year of (2000) Warraq project launched on the internet network [20].

- 4. Alttakhassusi Digital Library:** the king Faisal hospital and the research center have offered digital library on the smart network include more than (300) medical magazines and this library is offered the medical information for the whole doctors in spite of their specialists. Also, the processing process on this library is so easy to benefit from it the doctors in addition to the patients. As well as, it motivates the doctors on the continuous medical learning and find the correct medical information. Furthermore, it allows to send articles to doctors each one according to his specialist [21].

2.9 Difficulties that face the researchers on using the digital library, if it is available

- 1.** Uninterested by some researchers by using information technology because their habit with the traditional methods in searching or not have the experience and knowledge in information technology field.
- 2.** Inability to the researcher to use the computer and lack of his knowledge by direct searching mechanisms and especially when the digital library does not employ employee to serve the researchers and help them.
- 3.** Many libraries think that they are digital libraries or going at this way but they are not offer the suitable and enough services to the researches of the information in the optimal form because lack of devices, software or specialists in digital library fields.
- 4.** Many resources and documents which available in the digital library they are still in the foreign languages and especially in English language. Thus, they are used exclusively for people who fluent in English language.
- 5.** The process of setting and organizing are still depending on the documenting language through the indexing and classifications systems, the tools of

detecting and abstracting and others, which are far from using the natural language and many researchers do not have the enough experience to use these tools and mechanisms which effect on the quantity and type of the retrieved information.

6. When the researcher use of systems and networks, he found himself in front of high quantity and variety of documents and resources which effect on lose a long time to choose the suitable of them.
7. Sometimes, the researcher may not has the ability to access to the research texts which been retrieved, where he can just retrieve the bolographic signals or the abstracts frequently, when he asked the entire text of the document he will surprise that it is unavailable or its request may need to a membership or high cost.
8. In addition to the main problems that we have discussed, there are sub problems which that libraries need to development, many of the required documents are still unavailable digitally, the use of the digital library requires financial costs and expenses, the problem of documents security, piracy, sabotage and viruses [22].

2.10 Suggestions which help to solve the difficulties that face the digital libraries

There are many suggestions that supposed to solve the problems effect negatively on the digital library work which are:

- Sensitize researchers on the importance of using computer, information technology and deal with detectors extracts, sites and others.
- Offer devices, software and equipment and supply them to serious researchers freely or with lower possible cost which resulting on encourage the researchers to take benefit of the information technology.
- Rehabilitation and training of the workers in the digital library on use the information technology and how to supply the distinct services to the researchers through it.

- Work on connecting many computers with the suitable information network and must have a web site on the network and to work to cooperate and coordinate with similar libraries which will decrease the costs and increase revenue.
- Must prepares a menus by the specialists sites and publish these menus on researchers through the ongoing ouster service.
- Must works on the inventory of the related digital files to the researcher interest and make him brief on it in immediate way.
- Must work on documenting the corporation between researchers which have the same specialist by providing a list with their names, addresses, their interests and display their products on their colleagues through the E-mails.
- Must works on translating some documents from language to the language that commonly used by the digital library members.
- Seek continuously to ensure the support of their related activities by the scientific research from various resources.

2.11 The Factors that Cooperate on the Success of the Digital Library

1. Offers the resources of the whole text and the retrieval mechanisms and search.
2. Provide electronic text and not just a book in electronic reading format (the text must be dynamically).
3. Follow urged-upon methods in documenting, indexing and dealing with files.
4. Dealing with cases of saving and copy rights on the global level to make the digital library login to the digital containers within their sets and services [22].

2.12 Comparison Between Traditional and Digital Library

There are high and important differences between traditional and digital library as showed below:

Table 1: comparison between digital and traditional library

Digital Library	Traditional Library
Offers its services hourly because it is available through the world wide web and	You have to visit its physical place during the working hours.

can be login into it and benefit from its services at any time.	
Provides digital copies that can be saved through a long time without perish.	Provides paper and traditional resources and the information containers maybe damaged according to the frequently use.
Many beneficiaries can use the same resource in the same time and the variations in use do not lead to any problem.	The one copy be used by one beneficiary in the same time.
Helps on publishing the digital cultural awareness and encourages the researchers and authors to take advantage of multi-media.	The printed containers do not accompany on any catalysts or attachments such as voice and image but it found in separate way.
Keep abreast of technical and scientific progress	The process of updating and developing is slowly and invisible.
The search within it is quickly with quick results	The search within it slow and needs long time and the search result is inaccurately.
Copies of available containers can be saved in multi-media with low cost or none.	The difficulty of transporting the information containers from one place to another or from form to another.

Chapter Three

Planning to Create Academic Digital Library

Naturally the digital library is a part from the traditional library that may connected to it. Also it may be independent and be developed to serve the academic researches purposes. The digital library to achieve its goals it is subject to follow the scientific style in the planning process to fulfill the needs of beneficiaries in high effectively. Also, identifying the goals of digital library and the feasibility study is the basic concept that digital library built depending on it. When planning for the establishment of a digital library can be planned on the basis of the adoption of goals, which determines the goals of the digital library and then, create and design the library to achieve these goals. In other word, the output of the digital library must achieve these goals. It should be noted that, there many characteristics that must be available in the digital library to be an optimal library and these characteristics include complementary, comprehensiveness, accuracy, flexibility, ease to use, balance in groups, security, information security and cost saving. There are two ways in front of the digital library can choose any one of them in order to create a digital library with the need to note the positives and negatives to each one of them. The first way that digital library must be built by external organization that is specialist in this field. The second road that digital library must be built by the library itself to create and implement the digital library or ask the help of specialists from the inside of the home organization such as the management of computer. So, the library at this case needs to bring some devices and asking for a permission to the existing software. However, in both cases, the library washing to create a digital library should have the knowledge to the basics steps of the requested information that we shall discuss them in the following steps.

3.1 Digital Library Goals and Functions

When talking about the goals of any digital library in any academic society it cannot be separated from the goals of any traditional library and its functions and message. Thus, the traditional library represents the basic to the digital library where the function of the digital library represents a part of the home academic organization and cannot be separated completely. The goals of the digital library are to supply information and serve the education process in the universities, encourage scientific research and support it, encourage the self-learning of students and serve the society. The digital library can achieve these goals through the following functions and basic activities [22]. Provide a comprehensive and parallel collection from the source of various digital information that associates with programs of studies, the academic programs and the scientific researches. As well as, organize the sources of digital information through scientific methods which allow use easily, quickly and comfortably. Furthermore, provide various services of information for the beneficiaries' community in direct and indirect methods. Also, train the beneficiaries on how to use the digital library and take advantage of its resources and services and prepare suitable training programs according to that. Cooperate and participate with individuals and cultural institutions to develop the library.

Also, there are numerous studies that have been published in this topic that the goals from creating the academic digital library is to provide the services of the requested information for the academic staff, students and employees without missing the needs of other researchers outside the academic organization. When thinking about the resources of the digital information, there are several questions that must be answered such as: What is the library trying to achieve? What are the beneficiaries' needs? What are the resources that are available in the library (such as: Equipment, programs, technical support, budget and others)? What is the range of achieving the training for each of the information specialist, employee and the beneficiaries? And finally, how to reach the resources and services? Thus, there are three axes for the digital library which are [23]:

- The general index of the library and call its services such the borrow requests and others.
- The collection of digital contents such as the databases, books and the digital libraries.
- The interactive services such as the support, answer queries, ongoing briefing news and others.

Chad Kahi [24] showed that, the concept of optimal digital library project through the possibility of accessing it is clearly linking with the library web page, the easy of the language and understand it, the possibility of accessing through the library index, if possible, a unified search engine, the possibility of browsing and the ability to searching from various options of search, provide the standard and optimal metadata to help in the exploring process and finally, the optimal library project should include multiple forms such as the text, image, voice and video.

3.2 Creation Steps of Digital Library

The main steps to create the digital library can be limited in three steps:

- **The first phase:** The preparation and processing and include the goals setting, beneficiaries and their needs, the resources of information, their types, forms and their presentations methods, the time of their palace and collection, the method of storing and retrieving the information, the types of devices, software, accessories, sizes and quantity, managing the digital library, supervise it, update its data, maintenance and the human frame its qualifications, experiences and training methods.
- **The second phase:** The implementation and completion of the project and include distribution the schedule for completion, insurance equipment's and need such as devices software and configured, numbering the information, provide the human frame and training them, budget and the definition of the services.
- **The third phase:** The lunch of service and include the experiment and test and then launch the services in its final form and evaluation.

3.2.1 The First Phase: The Preparation and Processing

The preparation and processing phase is considered the base and maybe the more difficult one from all the follow phases because it is reliable in the implementation of the other phases. Thus, in this phase, the goals of the digital library been identified and study the feasibility of it and is the base that library built upon it. Also, this phase includes identifying of goals, the beneficiaries and their needs, the resources of the information, types and forms and how to display it and the time to palace and collect it, the method of storing the information and retrieve it, the types of devices, software, accessories, types and quantity, managing the digital library, supervise it, update its information and maintenance, the human frame its qualifications, experiences and training method and the confidentiality of information and its security.

Also, the general and special goals should be identified accurately and clearly and be applicable. As well as, this phase is considered the leader for the follow steps and should be adhered and not to depart from it. However, the digital libraries goals cannot be combined in their goals where each library has its intrinsic characteristic. The following goals represent suggested goals and can be implemented by the digital library and include. Support educational approaches, the academic programs, and the scientific researches by supplying the information and services that enrich these programs. Also, support the beneficiaries to access the sources of various digital information and get it through the scientific approaches and use easily, fatly, and comfortably. In addition, work on the expansion of the beneficiaries' cultures and their knowledge through supply them by news and the needed information. Finally, the cooperation and the participation with the individual and the scientific and cultural organization to develop the digital library.

Furthermore, in this phase should identify the intended beneficiaries from the digital library. Due to identify the benefices, known their characteristics and qualities is an important point in the design and select the contents or provide the informational services of the digital library. Actually, the beneficiaries' community of the digital library can determining their groups in categories of universities students, the postgraduate student who are enrolled in the schools or enrolled in the study programs

remotely, faculty staff and other researchers. Also, there are official and non-official categories, the scientific departments and research centers inside and outside the scientific institution, in addition to the individual category. There is a need to identify the types of these authorities which is expected to serve them and identify their types of specialists. In the identification of beneficiaries, there is a need to the information is also identified because the successful library should provide the information which fulfill the needs of the beneficiaries accurately and response to the development which may occur on these needs. Also, in the preparation and processing phase the resources of the current information must be identified that digital library wants to supply them and identify the forms and the presentation. The resources of information came on different forms such as the digital files, books and the specialist local and global databases which available through the internet network and work on cataloging these resources and make them searchable and recovery. Furthermore, the quantity of devices, their types, accessories and programs to be ensured both internally built or purchased ready must be identified in the preparation and processing phase. Generally, the identification of types and quantities depend on a number of factors such as the size of the digital library been created, the number of benefices and the size of material and human potential needed [25].

Moreover, the method of storing information, and the types of media that must be kept be identified at this phase. Also, determine the method of retrieving data and benefit from, the types of services that provided by the digital library and its level and means of communication and the implantation method. Since digital library is developed, growing continuously and exposed to change according to the changes in needs must be identified the human frame that will hold the digital library and identify its qualifications, experience and its training method. As well as, identify the method of managing the digital library, supervising it and making it centralized or decentralized and the method of monitoring, information security, updating procedures, modification and maintenance. Finally, there must be clear and specific policy for the digital library be written and documented to include all the respect to the library rules, regulations and procedures.

In the final steps of preparation and processing phase and before proceeding to the next phase has to put the proposed achievement or implementation plan because in this step the different businesses are distributed to the project phases on specific periods of time according to a set of factors and scientific experiences.

3.2.2 Preparation and Processing

The main characteristics of digital library is the possibility of merging the whole services under single ceiling or what called the unified entrance to the digital library. The work at this phase requires a hard effort and experiences which can increase the value of provided services and decrease the efforts that spent at work. As well as, through the implementation phase a completed documentation is done for the information and develop the document to include the whole human and materials required according to the needs. Also, the document describes the digital library services and identify the different designs and needs of the library in accordance with that. Furthermore, this document must be adopted and approved before moving forward in the implementation phase to ensure that final result compatible with the needs and aspirations of officials in the library.

Also, this phases includes insurance the requirements and needs such as hardware and accessories and installation of various software and configured. However, the quantity of devices, software and their types depend on a number of factors such as the size of the digital library supposed to create, the number of beneficiaries, the size of available financial and human materials. Generally, the needs of the digital library from the techniques and devices include Personal Computers, Local Area Network (LAN), printers, protection and security services, database information management systems, electronic publishing, content management systems and the digital files that been implemented locally or available on the internet [26].

The action that is required at this stage can be identified as follows:

- Develop the overall structure and technical design for the webs site of the digital library, the home page of the digital library will be designed, its services, secondary sites and how to manage it and feed it in the contents of information sites.

- Implement the digital library services and configured.
- The provision of the information resources to be utilized which belong to the digital library and upload them with their servers. The resources include the e-book, digital magazines, digital files and other types of the available of information resources.
- Upload the digital information resources on their own servers.
- Connect the various resources of information within the library.
- Connect the digital library and made available through the local enterprise network to achieve the maximum benefit from it.
- Training the workers and specialists in managing the content of the digital library, run it and update it. Also, training programs must be designed and be compatible with the workers needs to give them the ability to deal with the digital library services, its systems and make the best use of it.

To give the beneficiaries the ability to access the information available on the digital library and achieve the best use of it with less effort from any place where they are, it must connect the digital library and make available through the local network of the organization. The best methods to facilitate the usefulness of information on the academic digital library is connecting the local network of the organization by the internet which has established itself as essential and rapidly resource of the information for the millions of computers that associated around the world [27].

To ensure the continuing of the digital library should be take care of technical support, maintenance to the systems and software in the library. This is done either by hiring the technical staff of the supply company or by specialized team inside the organization. The technical staff can work directly or either access the system remotely by phone, fax or e-mail. Frequently, the support includes the following:

- Install the updated copies for the digital library system.
- Repair the breakdowns in the systems and software that appear from time to time.

3.2.3 Third Phase :Launch the Service

After finishing the implementation and completion phase this phase comes which is the phase of operating and launch the service. This phase includes tried and tested for the library contents which include the introduced service, level, speed, accuracy and comprehensiveness and in the test hardware and software will be examined and work the required adjustments if necessary. Also, if the test has been done successfully and achieved the aspiration of the officials are then the service will be launched in its final form and provide the various resources of information and make available in an integrated manner through the digital library. Here we should alert a very important thing which is the necessary to make training to the staff work on the digital library. The categories who are included in the training process are the employees who will be responsible on run the library such as computers operators, data entry operators, the programmers and others. As well as, the supervisor who are responsible on the library in order to introduce them to the nature of the work and the quality of the work to be completed [28].

To achieve the desired goal of the digital library should advertise and market its services in the organizations sector. Also, we should not forget the evaluation process of the digital library (the extent of achieves its goals, contents, services, the level of quality and the size to take advantage of it) and that will be done after the running process with enough time in order to judge it and develop it. However, when we evaluate the digital library we should focus on users because the goals of the digital library is not just to provide high-efficiency groups but the most important is to help the users in their efforts to highlight the best of these groups.

Finally, the digital library must be documented and there is written description belong to it should be issued that includes the digital library goals, contents, procedures and services, which should supported by documents, illustration and descriptive tables. It is worth mentioning that documentation is continuing procedure starts from the beginning of the project and does not end as its end but remains inherent to the library during its work and running [28].

Chapter Four

My Library

4.1 Background

The main goals of this thesis is to create a digital library through the internet which allows its users to enjoy to the library services by using the search property on books and download them free based on book title, author name and book category. The books are categorized and tabulated and the user can easily watch them. While, the administrator of the digital library has more complex functionalities as compared with the user.

There are many digital libraries which are available through the web or what called book stores such as Amazon and Powell's which give their users the possibility of buying and downloading books through the internet for a fee. Most of these digital libraries been designed by using different programming languages such as PHP and HTML. Thus, at this work that we called it MY Library (as we shall see later) we have designed and programmed a digital library by using the following programming languages HTML, CSS3, PHP and MYSQL. Through the web browser any person can login to the library and search for the books which are available in the library by using the search property using the book name, author name or book category. Also, the user can login by using his own account whereas the new user can sign up quickly and enjoy by the library services. The user must give information about his name and communication means that include mobile number and E-mail. The books that available in the library be organized to many types such as poetry, computer science, architecture, English etc.

My library has the following properties and possibilities:

1. Home Page

This is the main page that user will find it when he opens the library site through the web browser that he uses. This page contains many characteristics and interfaces which includes the book categories in the library and the possibility of choosing any category

of the digital library categories and login into it and watch the books that include at this category. Also, this page contains all the book which are available in the library database and each book has a name, author name and illustration image to this book. The main page for my library is showed in Figure 1. Furthermore, the home page has another field which contains the more four books which been downloaded in the library so that the user can watch and take knowledge about the importance of these books as showed in Figure 2.

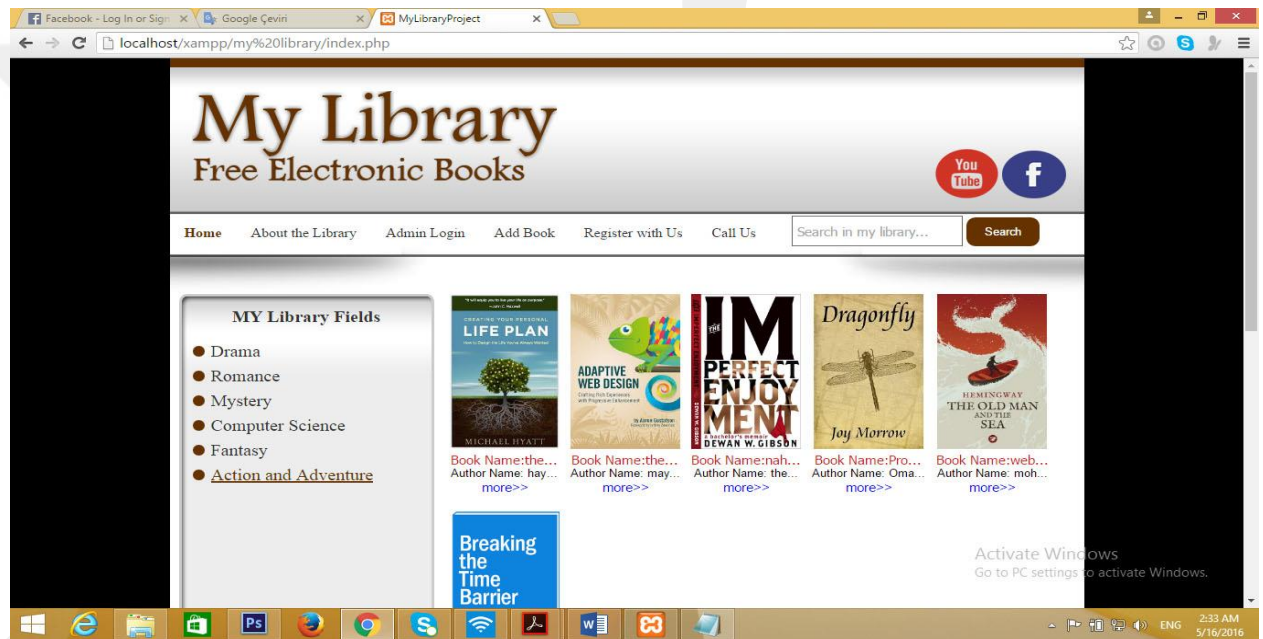


Figure 1: The Main Page of My Library

2. Search

The library contains the possibility on searching of books based on a text button. Also, there are many possibilities of search which are available in the library such as the possibility of searching according to the book name, author name and book category. Thus, you can enter the text or word inside that area and the library will match that text with all the previous fields and if there is a match, it will display the result in another page and you will find the whole books that match your search, otherwise, he will get a message tells you that your search is failed. The interface that will be displayed in case

of successful of the search mechanism is illustrated in Figure 3, while, in case that searching mechanism is failed displayed in Figure 4.

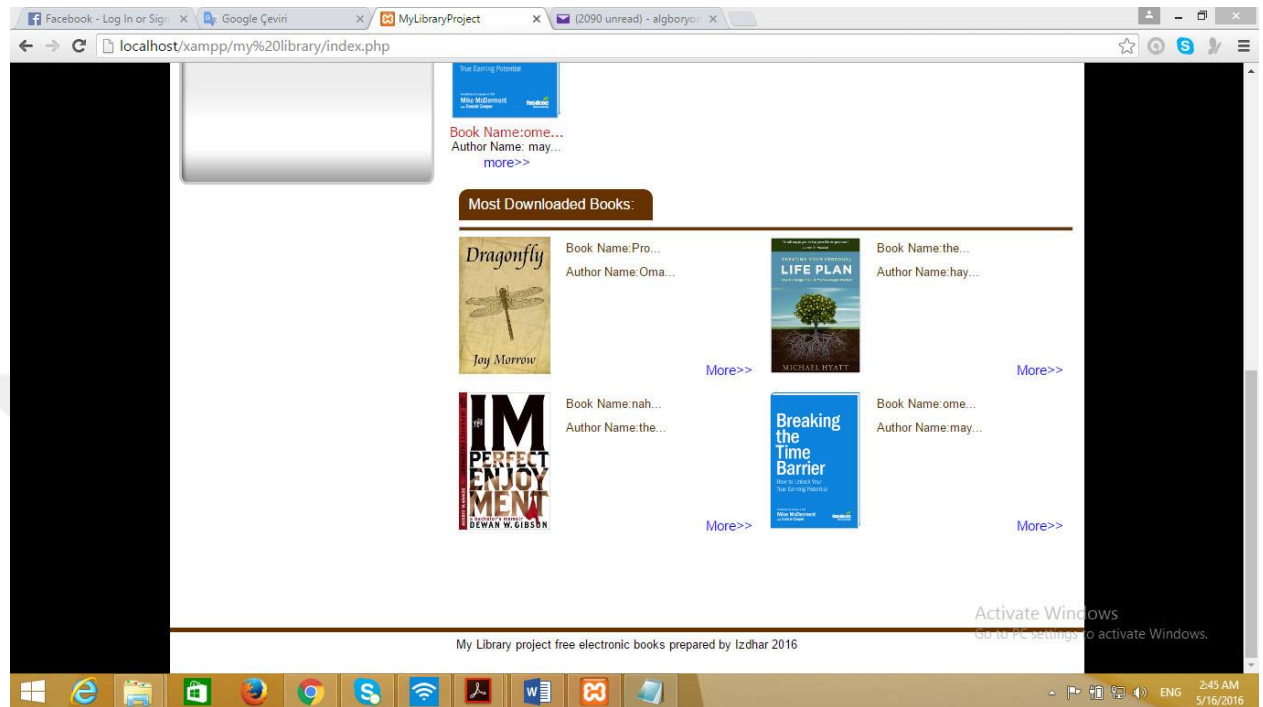


Figure 2: The Most Four Books been downloaded in the Library

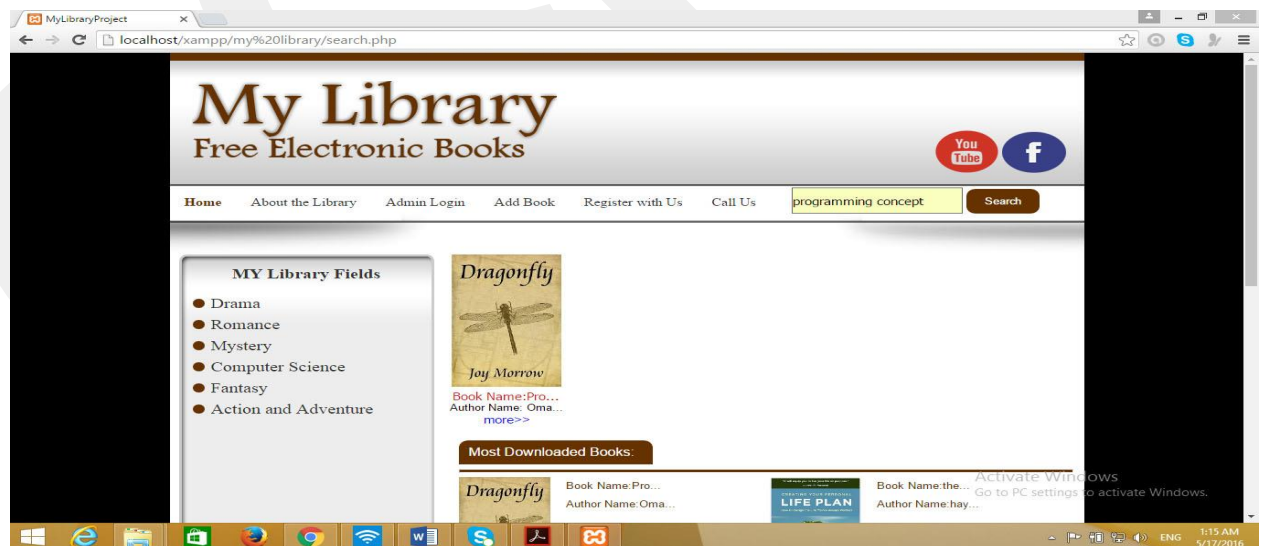


Figure 3: The Successful in Search Process

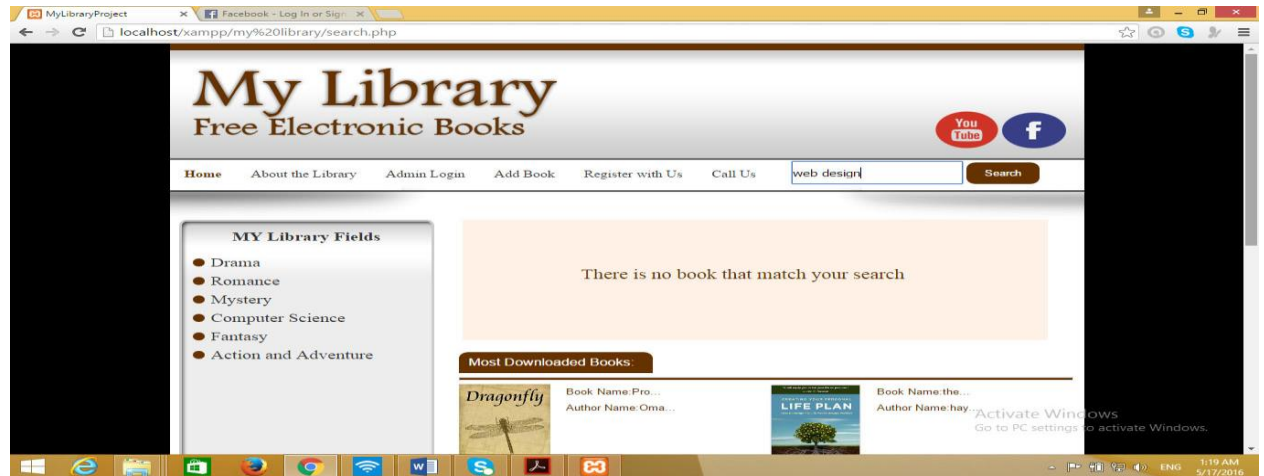


Figure 4: The failed in Search Process

3. My library Fields

This is a menu which locates to the left side of the home page and contains all the book categories. If the person presses on one category, there is another page will be opened to him and shows him all the book that have the pressed category. This characteristic is important in decreasing the search time and available in most of the digital libraries.

4. Book Details

If the user wants to know the details about some book in the library, he can just press the link which called (more>>>) which is available under each book in the home page. Then, the link will take him to the page that contain the book details. However, before the member will move to this page he will find a window, that window will ask him to enter his user name and password. So, if the user is already a member in the library he will login by using his user name and password. If there is a mistake in his user name or password he will prevented from the details page. Otherwise, he has to sign up to be able to enjoy by the characteristic of the library. The login page and the book details is explained in Figure 5 and Figure 6 respectively.

5. About Library

Any person can enter About the Library page and look on the continuous updates that occur on the library and know its characteristics through the screen that we provide. So, any person can take thought about it and read it and everything inside is updated and controlled by the admin as showed in Figure 7.

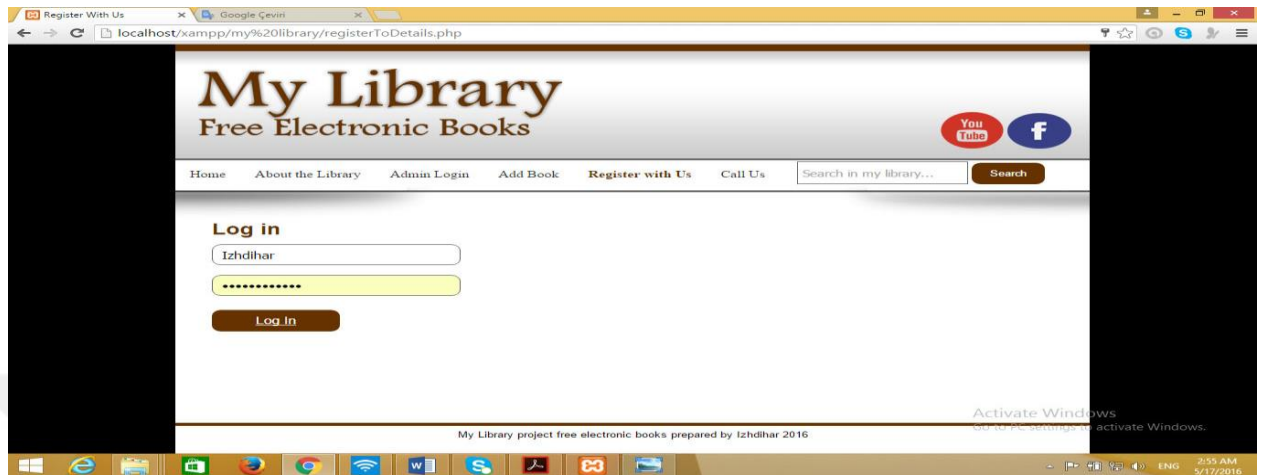


Figure 5: the Login Page



Figure 6: the Book Details Interface

6. Managing User Accounts

The user to be able of downloading books he should be a member in the library in order to do that. Thus, the library contains on interface in order to sign in or sign. The library sign in and sign up interface is showed in Figure 8.

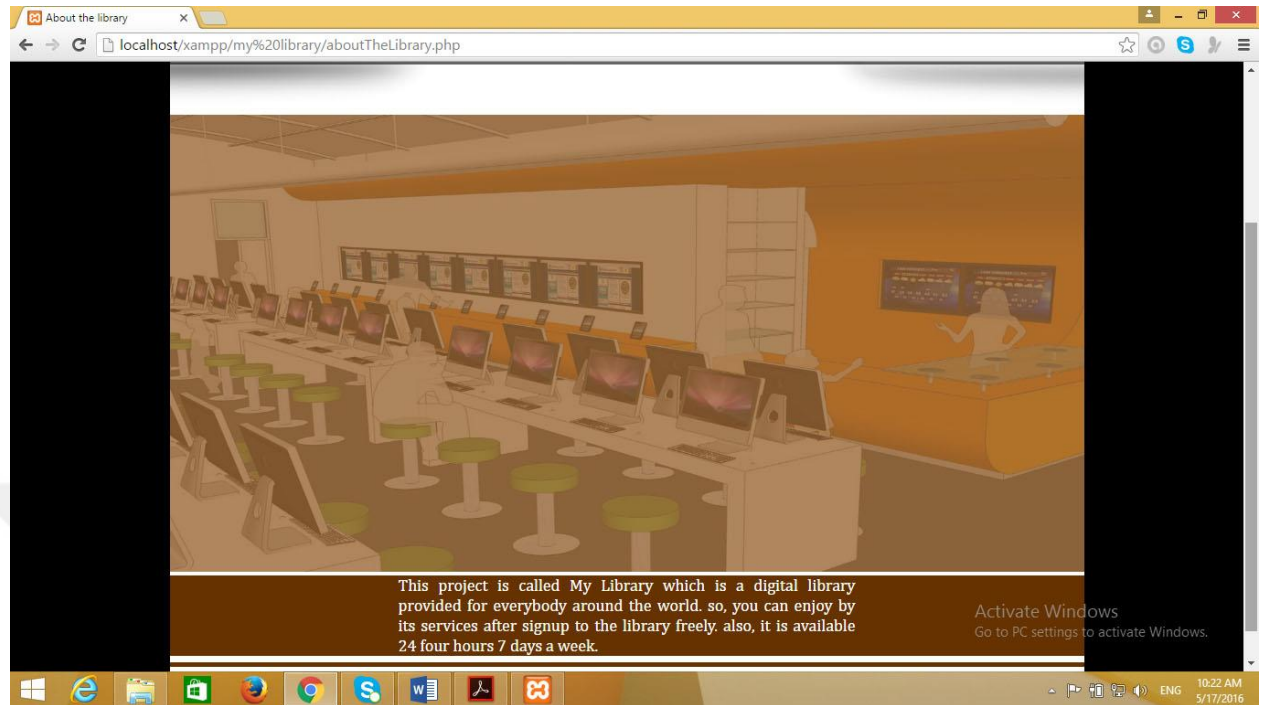


Figure 7: about the library interface

7. Call Us

Any person can send a message to the administrator of the library through the interface which called Call US that is available in the library interface. Furthermore, in order to send a message, the user should enter his name, E-mail and message enquiry as showed in Figure 9. If the data has been entered correctly, the sender will insert Send button and the message will be sent to the administrator database and the administrator can read it and answer the user if he wants.

4.2 Administration

The administrator or the admin of the library has special functions and through them he can control on the whole sides of the library and the basic functions of the administrators in our library include:

- Add/delete/update books
- Delete members.

- Manage members' orders.
- Manage and modify the social channels of the library which are Facebook and YouTube.

The administrator will control the library contents through special interface that been designed especially for him which through he controls the whole part of the library. The admin interface is showed in Figure 10.

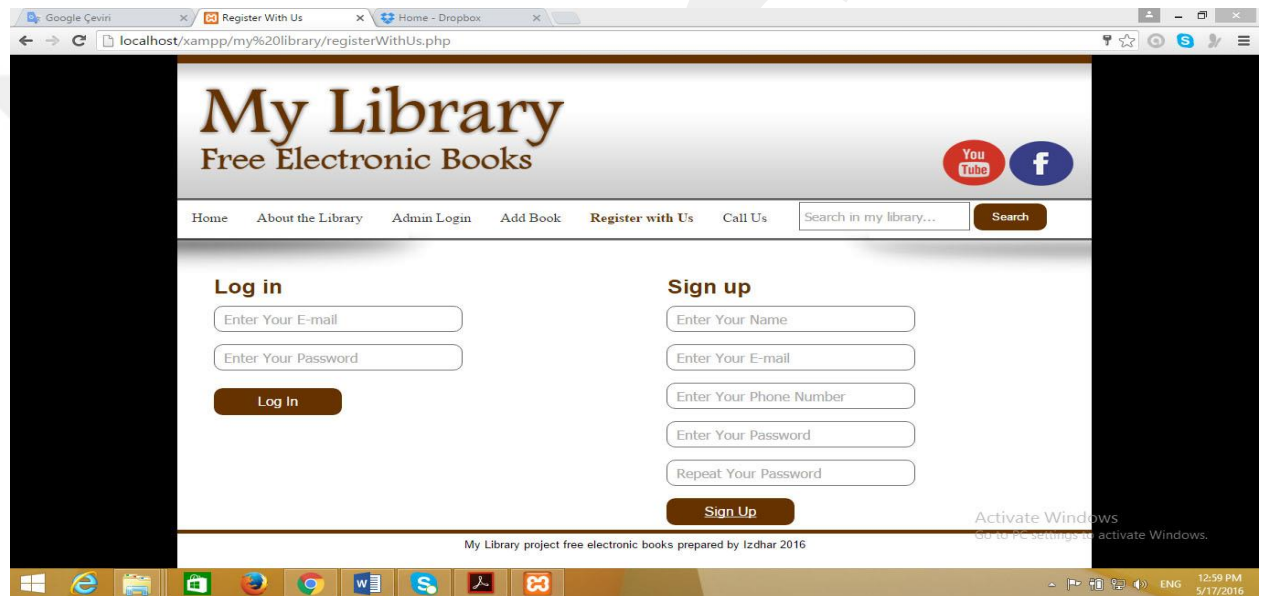


Figure8: Log in and Registration Page of the Members

4.2.1 Add Books

The administrator or the library admin can add book to the library database through the interface which he has in so easily steps. Consequently, in order to add specific book, firstly, he has to enter book name, author name, abstract, book image and book. If the library administrator entered instead of the book image something else, the program will display a message to the administrator and asks him to enter the image correctly. As well as, if the administrator entered instead of the book anything else the program will have an objection. Also, if the administrator was not entering data in the whole fields of the book details, the program will have an objection too. While, if the

administrator has entered everything correctly, the program will display a message to him and tell him that the book has been added correctly to the database. The model of inserting a book successfully to the database is shown in Figure 11.

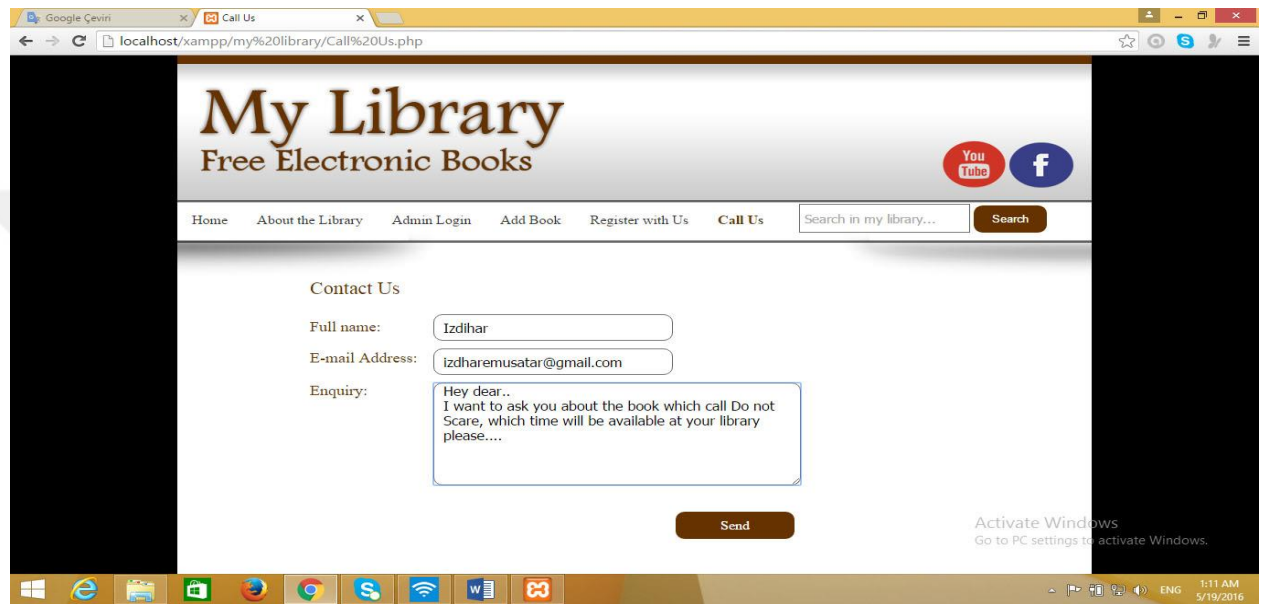


Figure 9: Call Us Interface

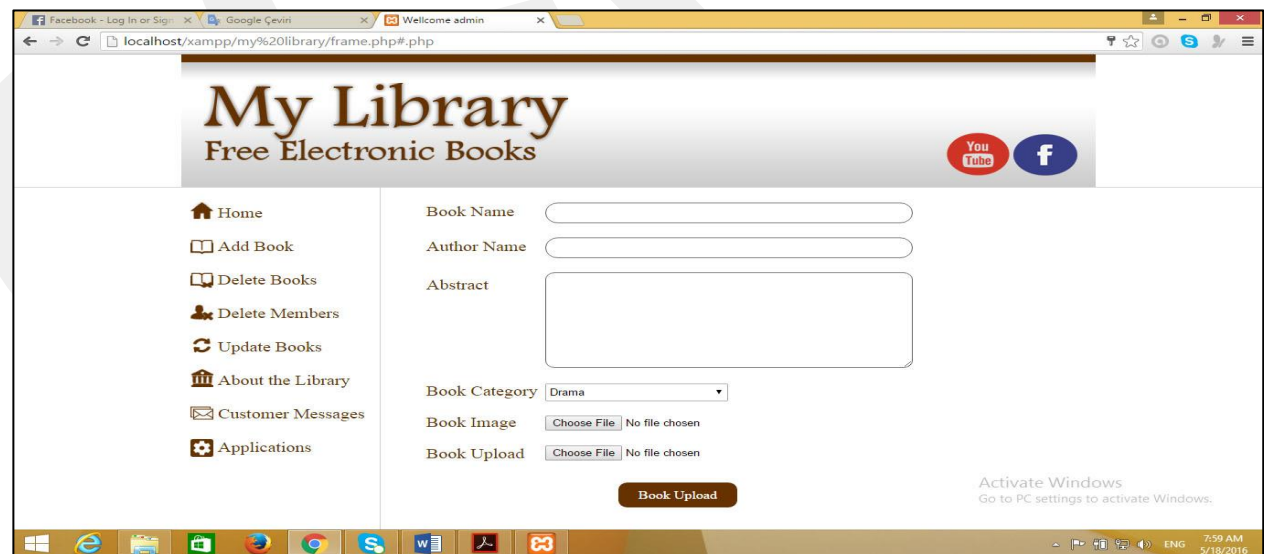


Figure10 Administrator Page

4.2.2 Delete Books

The library administrator can delete any book which is existed in the library through the interface that he has in so easily. When he presses on the button Delete Books which is existed in the administrator window, there is a window will be opened to him which is showed in Figure 12. If the database contains on books, the whole books will be displayed in front of him and he will be free to select any book and delete it. The page will contain a Checkbox that is specified to each book. If he checked any book and press the Delete button the checked book will be deleted finally from the database.

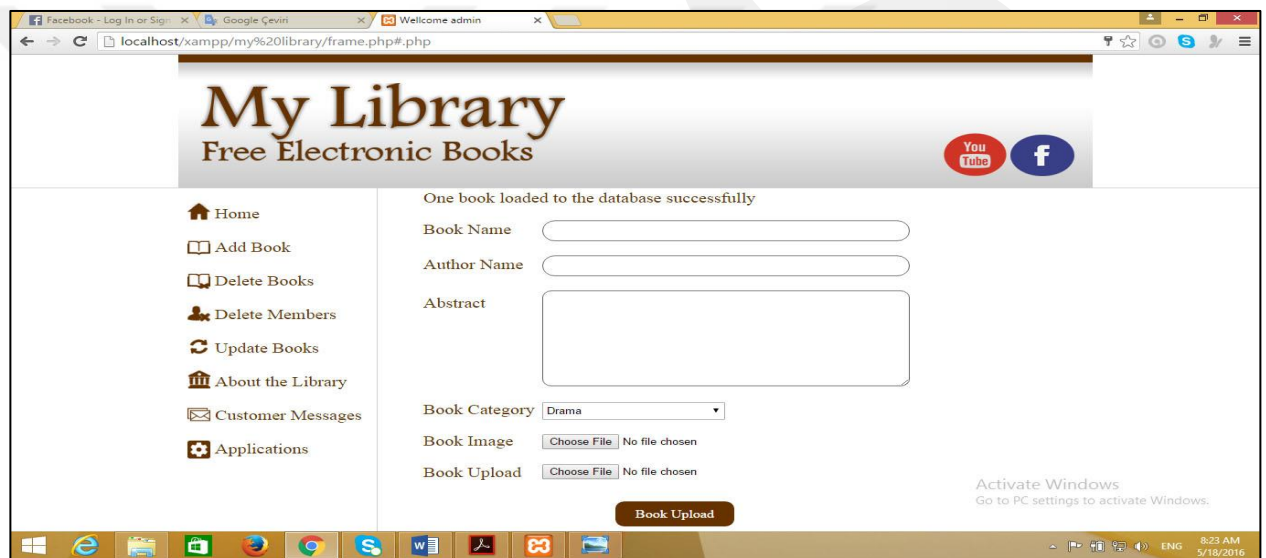


Figure 11: Add Book to the Database Successfully by the Admin

4.2.3 Delete Members

The same applies on delete book which been explained in the previous section is applied here. Where the admin of the page can delete any member that he wants through his interface. As well as, he can display the member information such as name, E-mail and phone number. Figure 13 shows the window of delete some member with his information finally from the database.

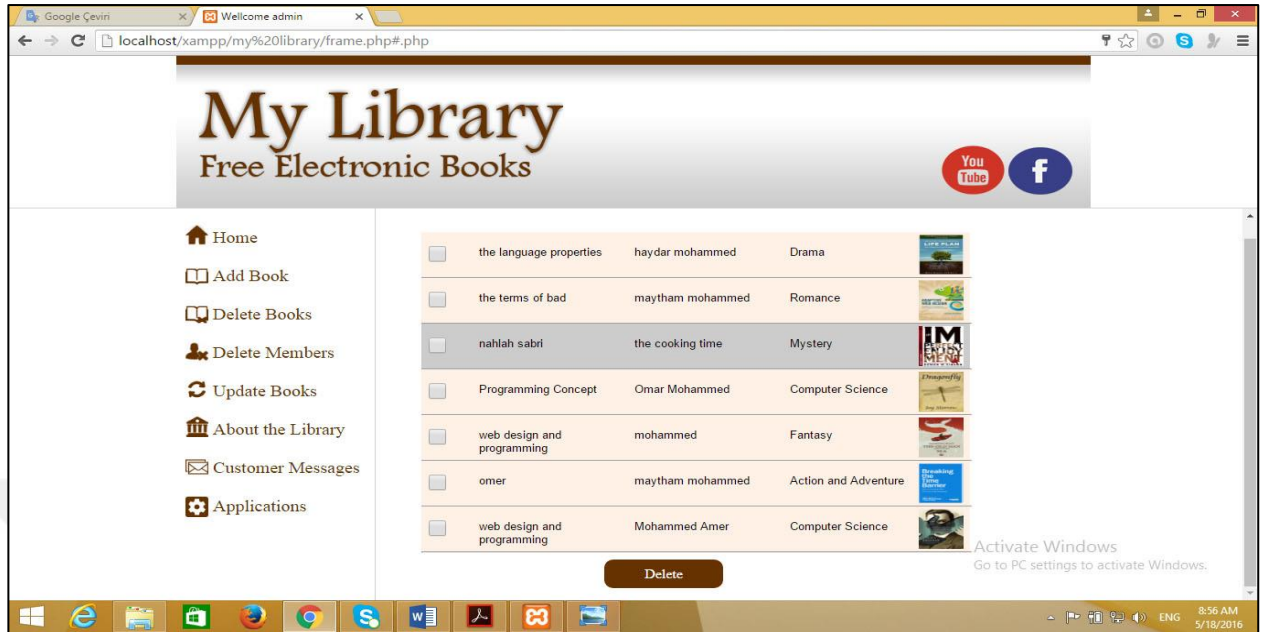


Figure 12: Delete Book\Books from the Database by the Administrator

4.2.4 Update Books

The administrator of the library can update the book information which he wants through the update window that is available in the administrator page. So, when choosing this window, there is a window will be displayed to him which contains the details of each book and a radio button to the left of each book as showed in Figure 14. Thus, when he pressing this button and press Update Book button there is a window will be showed to him will display the chosen book details such as the book name, author name, abstract and book category and the administrator can change or replace the information that he wants. As well as, he will be able to change the book cover and even the book itself as showed in Figure 15.

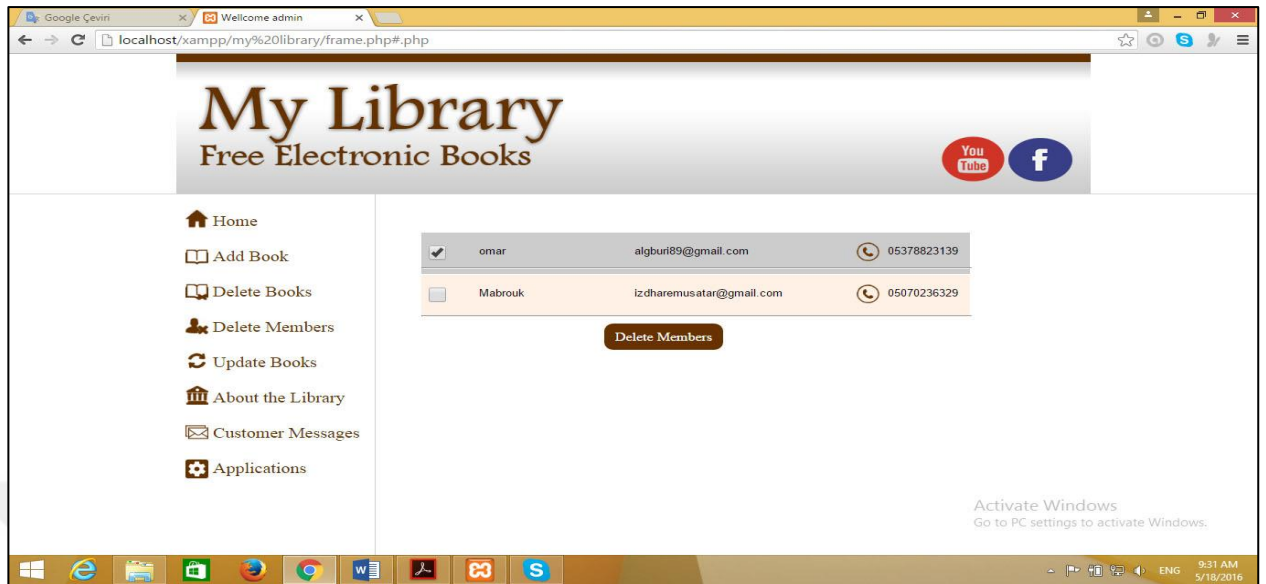


Figure 13: Display Member and his Information and Delete him entirely from the Database

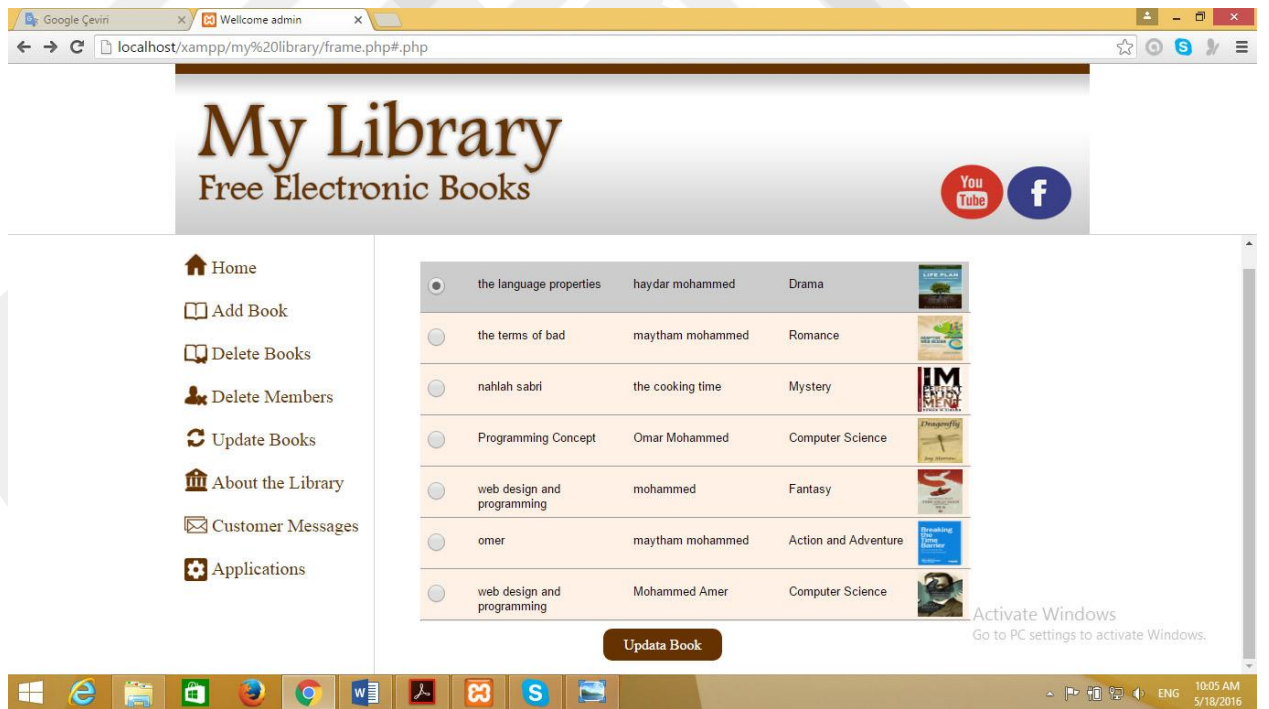


Figure 14: The Details of Each Book with a Radio Button

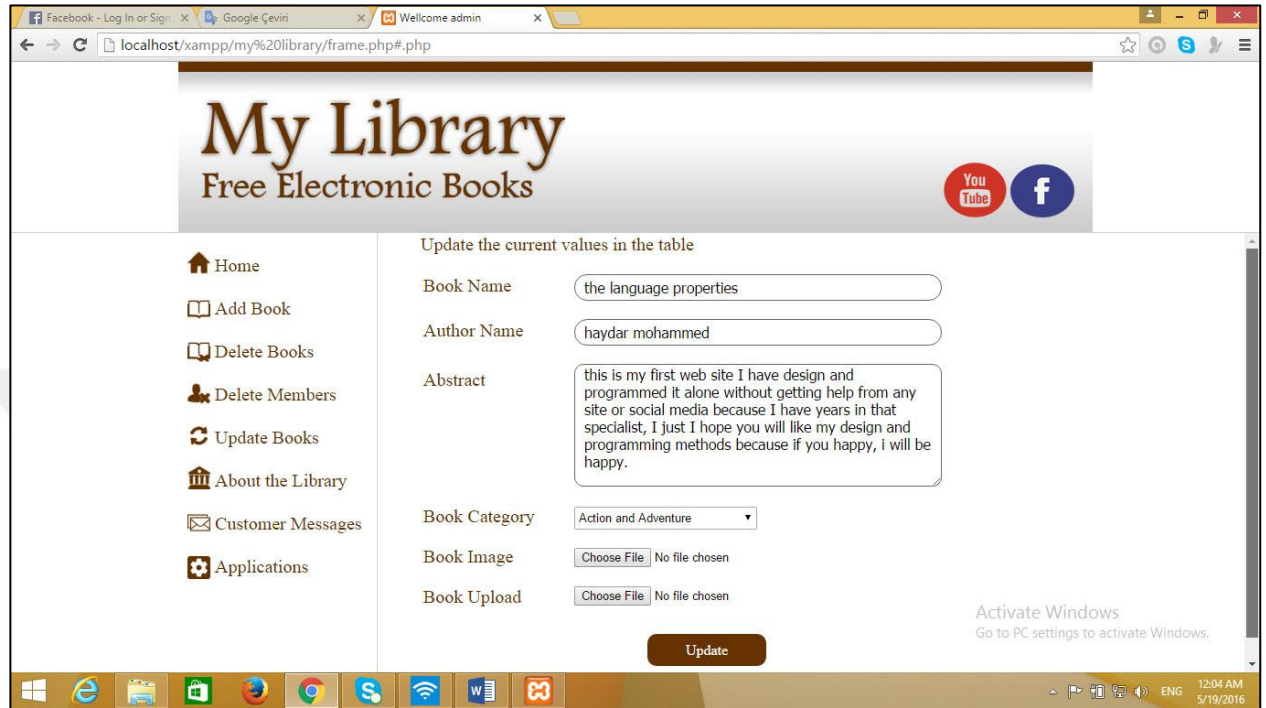


Figure 15: Update the Chosen Book Details

4.2.5 About the Library

The administrator of the library can update the information that gives an image about the structure of the library and the policy of its work through the window that showed in figure 16. When he adds information in that field, the new information will be stored in the database. Where anything will be written then will replace the previous information in order to modify About the Library window which is placed in the main interface of the library and the user can read and view it.

4.2.6 Customers messages

The messages that sent by the library members or any other person will be stored in the database and the library administrator will display and watch them. The message will be arranged from the newest to the oldest according to the data as showed in Figure 17 as in Gmail and Yahoo. There is a radio button to the left of each message and if the admin want to open any one of them he can just press the radio button and then press the button called Display Message. This interface will take him to another interface.

This interface will display the sender name, E-mail and message enquiry as showed in Figure 18. So, the administrator can read the message and if he wants to answer the user he can just press Answer Button and that will display to him another interface as showed in Figure 19. Then, administrator can write the message that he wants and press the send button and the message will be sent to the user E-mail.

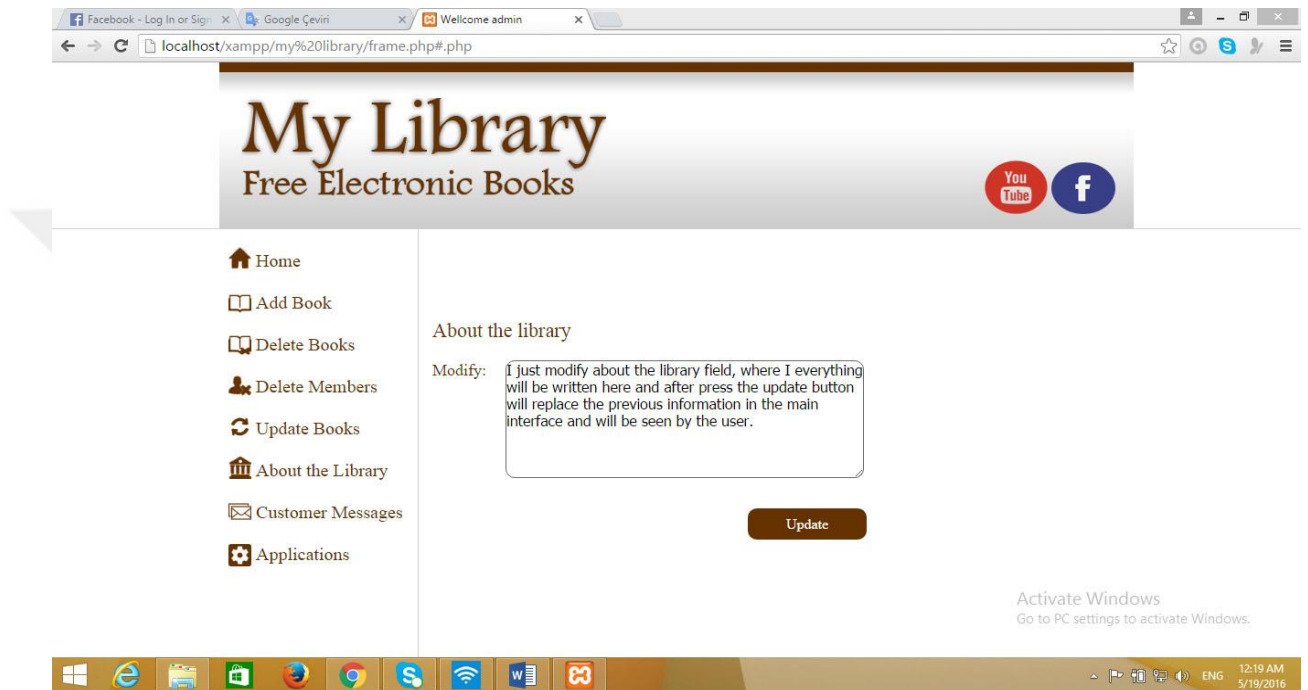


Figure 16: Update about the Library Window

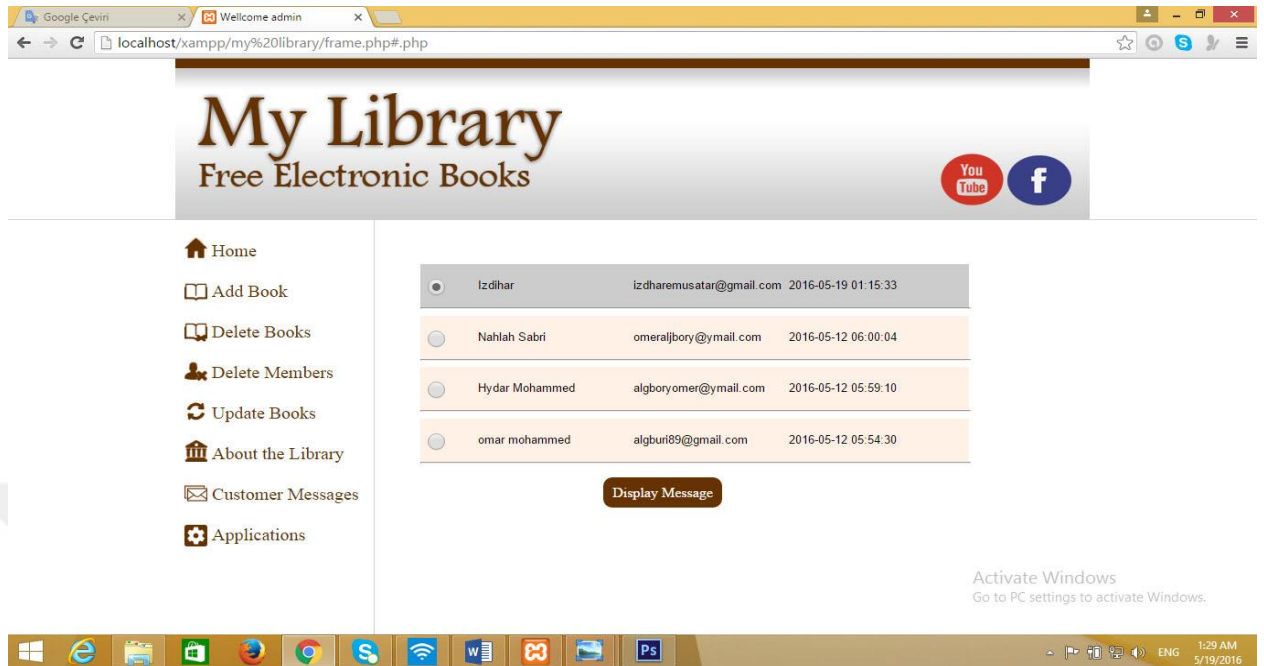


Figure 17: The Message That Sent From Users to the Administrator from Newest to Oldest

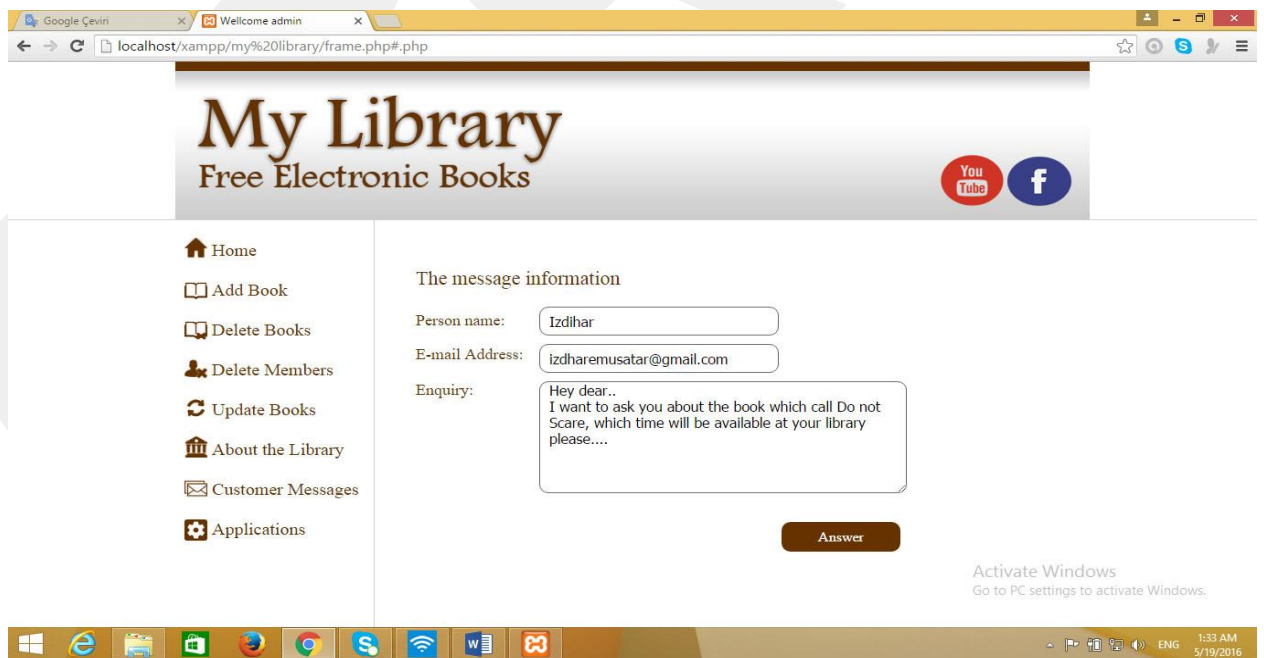


Figure 18: The Message Information Which Been Sent By the User

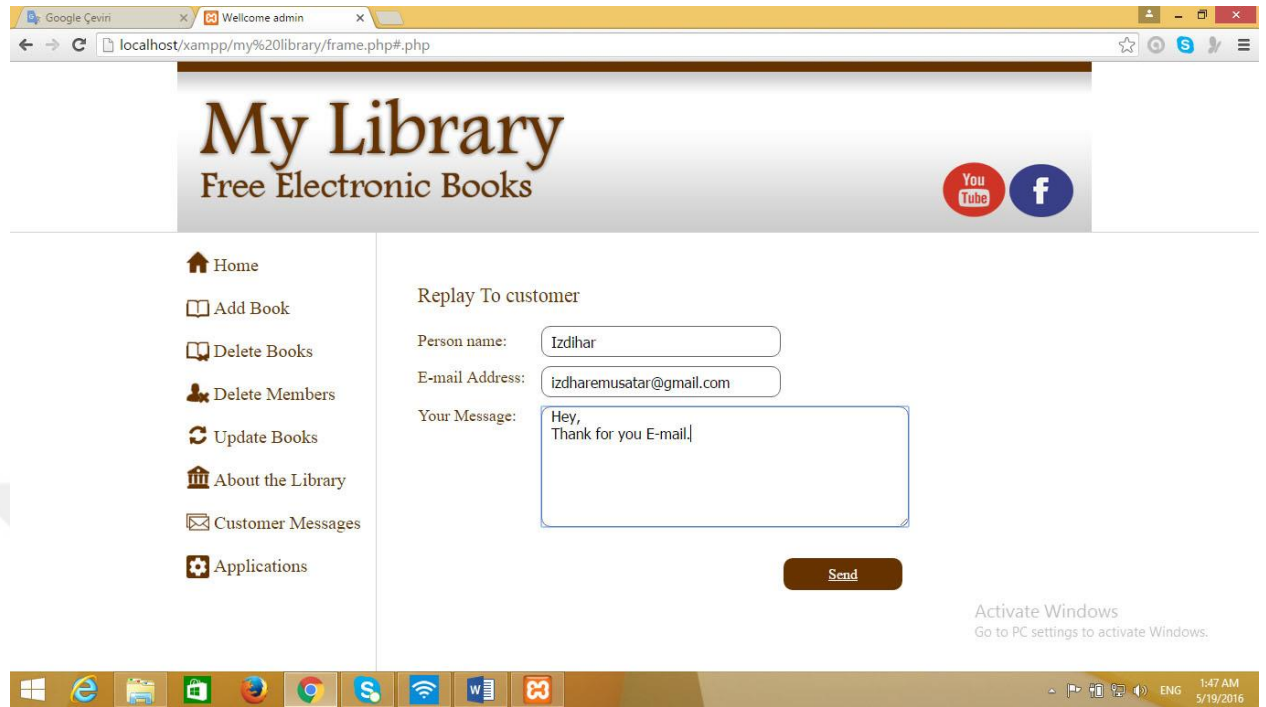


Figure 19: Admin Can Answer the User by Send him a Message Using His E-Mail

4.2.7 Applications

As showed that our library contains channels on social media where each user can follows the development of the library on Facebook and YouTube. Thus, the administrator of the library can add links for Facebook and YouTube which belong to the library. Where in case of adding new page if something happened to the old page and the new page will replace the link of the previous one as showed in Figure 20.

4.3 Main Requirements

The main requirements of My Library thesis are HTML, CSS, PHP and MYSQL in order to design and store the data of the project. Furthermore, in order to run the program you have to use Google Chrome or Mozilla Firefox.

4.4 Critical Use Case Requirements

The two main actors in my library thesis are administrator or admin and the users. The use case diagram for this thesis is showed in Figure 21.

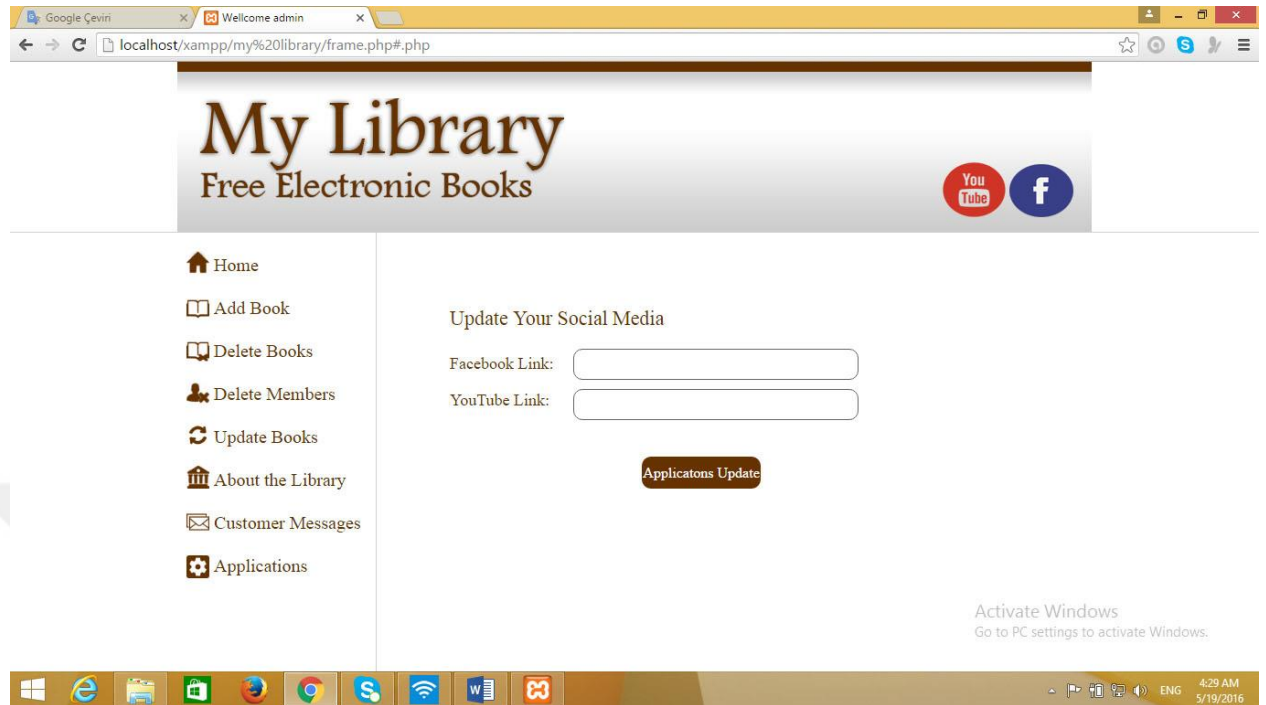


Figure 20: Update the Links of the Social Media Facebook and YouTube

4.5 Architecture Design

The main purpose of this work is to display the architectural design on how to design and programming a digital library. This library contained on most of the characteristics which enjoy by the most of the digital libraries that built. In this library we have explained on how to manage and process user requests and how to communicate with them through calling them by different methods such as phone and E-mail.

4.6 Security

The library enjoy by protective technology because members cannot in any ways access to the database directly. The administrator is the only person that can modify and delete books in addition to the other responsibilities.

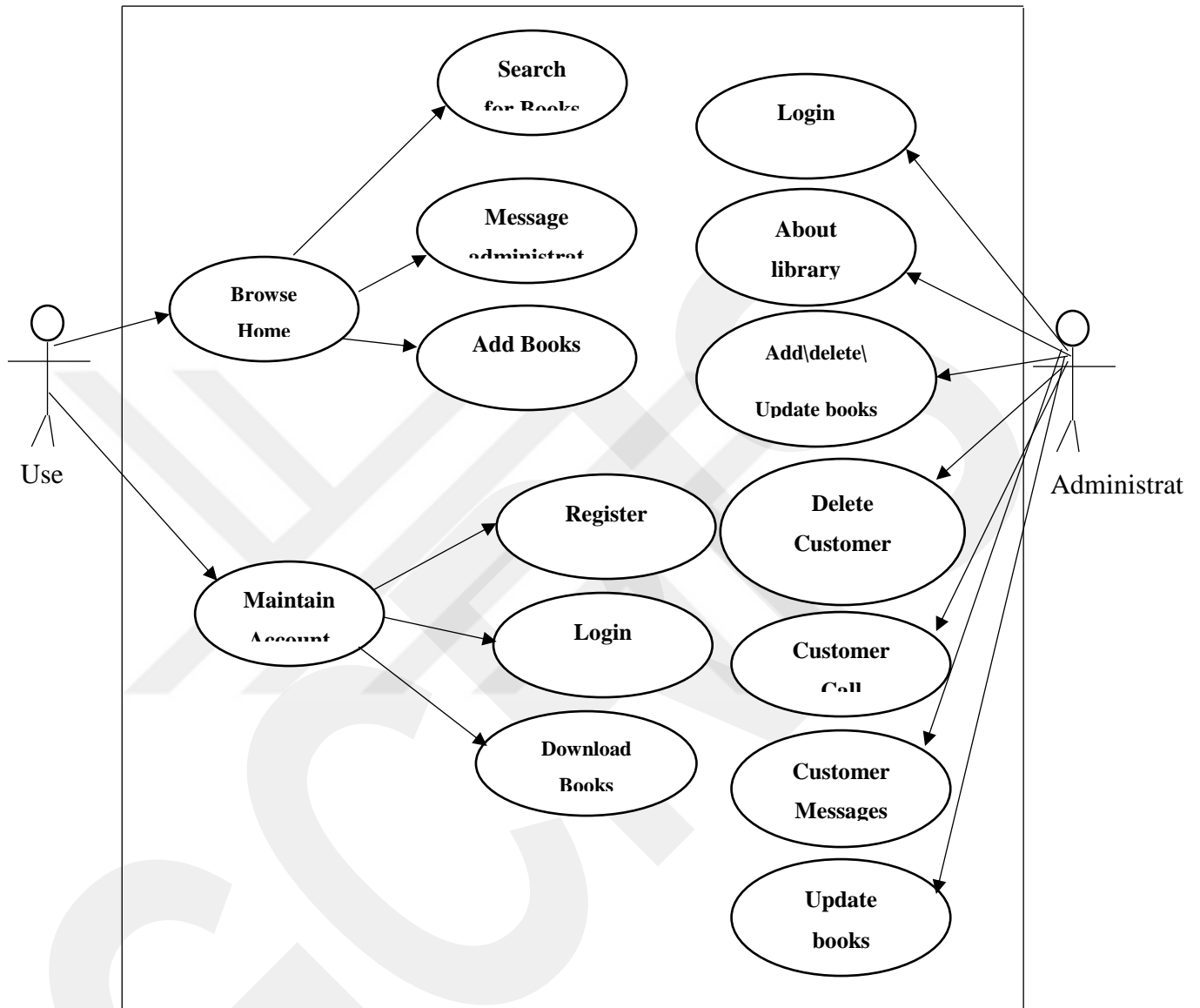


Figure 21: Use Case Diagram

Chapter Five

Conclusion and Discussions

5.1 Conclusion

The start of building a digital library is not considered a civilized luxury but it is a persistent need in order to face the future challenges and to achieve the comprehensive human development goals. Thus, researchers recommended that all academic libraries are initiative to create digital libraries that carefully considered. Also, the researchers recommended to increase the realization of officials in the importance of creating digital libraries and identify them by their characteristics in order to support the education process, time saving, fast delivery, reduce cost, increase the interaction and other benefits. As well as, the development of plans to create digital libraries and especially academic digital libraries and these plans include the goals, policies and beneficiaries. Also, the plans include on the basic plans to create the digital libraries which are the preparation and processing stage, the implementation and completion stage and the service launch. Furthermore, insert independent budget within the digital library budget and should be enough and continuous. Create departments which manage the digital libraries and provide them by the humans spammers that enough and efficient. Also, the digital libraries must not depend on themselves in financing the projects, they can ask the help from other libraries and libraries should corporate with themselves and do not starts from zero. Provide human resources and invest by them because they are the persons who run the digital libraries. Since some services will stay need to the existence of human resources, the staff should be trained extensively and continuously and prepare them to deal with the technologies and get benefit of them. Provide the services of the technical support which include update and upgrade the programs of the digital libraries to the newest versions and fix the software drawbacks which may occur. In MyLibrary we have used Photoshop CS6 in order to design the framework, Html and Css to build it and Php and MySql in order to programming the library and design databases to store the data respectively.

5.2 Discussion

1. The necessity to take benefit from the previous experiences of digital libraries which aimed to provide their services to people remotely.
2. The necessity to take advantages of possibilities provided by the internet network both in the field of the information search, retrieve, share and exchange of the remote learning services.
3. The necessity to provide the financial and moral support to different libraries in order to be able to do an effective role in serving the remotely learning programs for students and people respectively.
4. The necessity to set additional librarians in the digital libraries who specialist in providing the libraries services and information to different types of people.
5. The necessity to expedite in transferring the traditional libraries to digital libraries in order to be able to provide their electronic resources and services in high effectively.

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