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College Of Administrative Science &Informatics

Department Of Information System

Student Relationship Management in Palestine Polytechnic University

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Dedication

To the everlasting spring of tenderness, ... Dear mom

To the fountain of kindness who planted myself in ambition and perseverance, ... my dear father

To those who carry in their eyes memories of my childhood and my youth, ... Sisters and brothers

To those who occupy a portion of my heart, ... My friends

To the land that protects those who deserve to live, ... beloved Palestine

To those who have sacrificed their freedom for the freedom of others, ... Prisoners and detainees

to those who sacrificed their lives, ... Martyrs of pride and dignity

To all lovers of science and knowledge,

To my teacher, ... Dr. Ismail Romi

To my colleagues at the Palestine Polytechnic University,

Project team

Acknowledgment

The team advances great thanks to our ALLAH who innovates our soul, lights our brains ,and illuminates the road of tomorrow…

The team members advance deep thanks to their dear supervisor Ismail Romi who have granted his support , orientation, guidance and advices…

The team advances deep thanks to our lecturers, friends, and to all who contributed the accomplishment of this project…

We can only say for their gratitude …. Thank You …!

Project team

Abstract

This website has been established in order to achieve its aims. This site enables both users, the student and the teacher, to build their personal web page and modify their personal data. In addition, it allows an easy and comfortable student-teacher communications

الملخص

تم بناء هذا الموقع الالكتروني لتحقيق الاهداف المرجوة من المشروع، هذا الموقع يسمح لكل من المستخدمين (الطالب و الاستاذ) ببناء صفحة شخصية والتعديل على بياناته الخاصة ، ويسمح بعملية التواصل بين المشرف والطالب بشكل سهل ومريح ، ويمكّن المستخدم ايضا من اضافة اعلان على الموقع ، ويعرض الموقع للمستخدم اهم الروابط التي من الممكن ان يحتاجها و امكانية اضافة أي رابط يفضل زيارته باستمرار ، ويكون الموقع فيه تخصيص لكل مستخدم بحيث يزيد من راحة المستخدم في الموقع ويشجعه على زيارة الموقع باستمرار ، ويمكّن الطالب من التفاعل مع الاستاذ بشكل افضل ، ويستطيع ايضا اضافة صورته الشخصية.

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1.1 Introduction

Over the past decades there has been a huge revolution for computer based education, where the usage of computer in the field of education in Palestine is still in its beginnings, on the other hand, the need for using the computer in education is increasing day by day.

First, the computer was used in a narrow scale for writing papers and completing home works. Then, the use of the internet aided researchers in obtaining the information needed for carrying out their studies,. Finally, the concept of e-learning, which provides education content to the learner in a good and effective way, emerged in college learning.

The advantage of this type of education it saves time, effort and expenses. In addition, learning through the computer improves the quality of the university learning through providing an attractive learning environment that does not depend on place or time.

1.2 Study problem

Use of the Internet and websites is important in all areas, because it saves time and effort, especially in the educational institutions and universities. Currently, university websites are the only source to provide information to the existing students enrolled in the various courses. Yet it is a one way communication as students can't interact with the websites but only get relevant information from them. This problem is the result of the university weakness in applying students relationship management system.

1.3 Study objectives

1. Create specialized website on internet for student's services.
2. Create an environment, through which teachers and students can communicate.
3. Assist students in research through the exchange of files.
4. User's ability to access their personal information and control it .
5. user's ability to add ads and links on site.

1.4 Study importance

The importance of our project comes from two integrated aspects:

- **Student side:**
  1. Improves student services.
  2. Increases personalized service or one to one service.
  3. Responds to student's needs.
  4. Multichannel integration.
  5. Improves student's knowledge.
- **University side:**
  1. Increases university management interactions, and provides complete information for communicating with students (name, role, telephone number, etc.)
  2. Easier communication with customers, through the use of a variety of social media.

1.5 The study scope:

Hebron – Palestine Polytechnic University.

1.6 limitations of study:

1. This study is applied Just in Palestine Polytechnic University.
2. We must finish this study in 8 months.
3. The inability of financial resources to start the project.
4. the difficulty of changing the idea of creating a site to students relationship management

1.7 Methodology

The team will follow in the analysis and development of this system one of the methods used in software engineering, and this method called (SDLC), which begins from the system planning and then analyzing the requirements and then design the system, and the development and operation of the system and then check the system and this way ends with the application and maintenance of the system. The data related to this system collected through previous studies and the interviews with persons with direct relevance to improve the system.

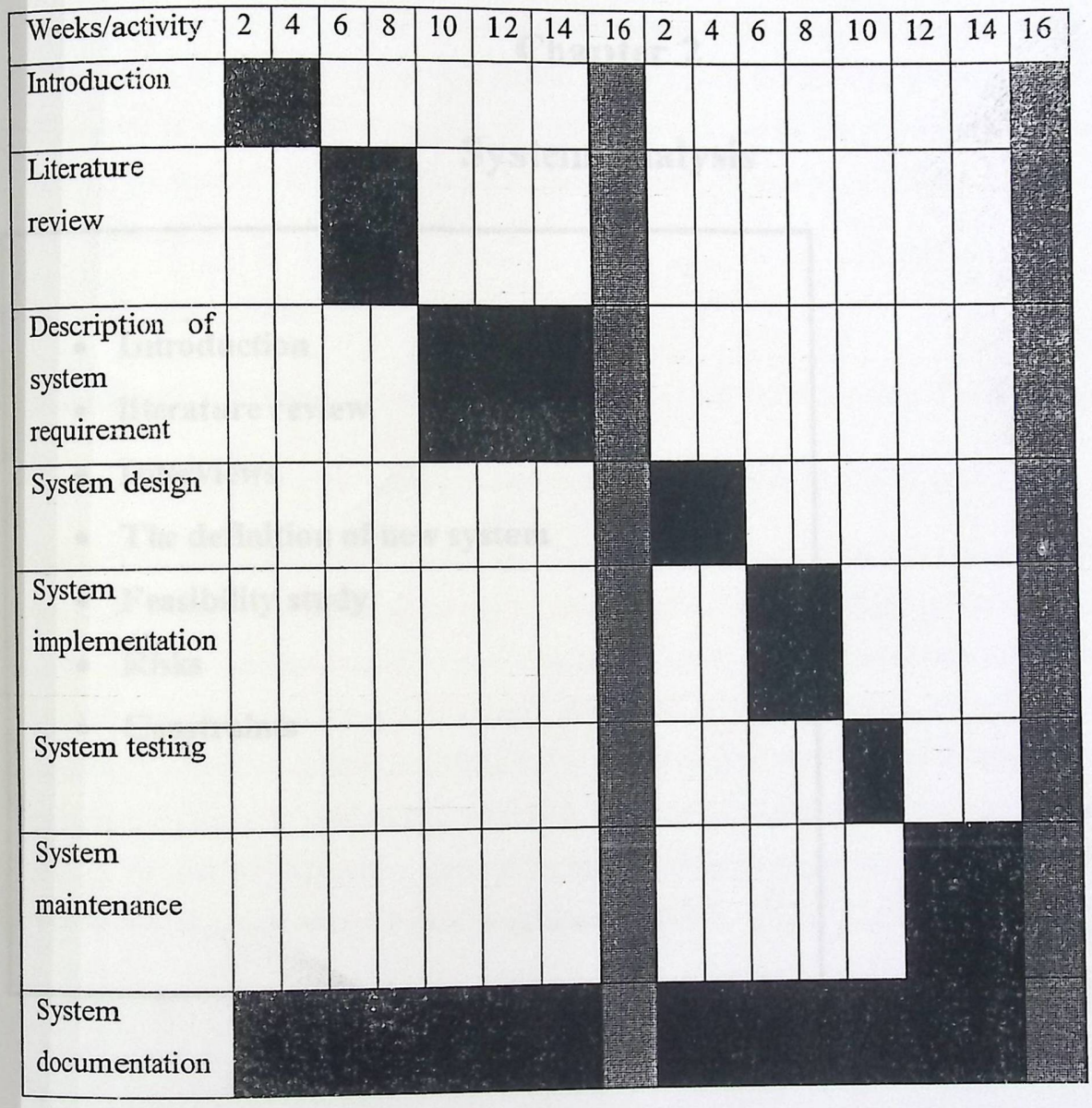
1.8 Project plan

In this section will show time using to improve the university website:

Table (1.1) show the time schedule for all steps the website improving

Activities	**Description**	**Weeks**
Activity 1	introduction	4
Activity 2	Literature review	4
Activity 3	Description of the system requirement	6
Activity 4	System design	4
Activity 5	System implementation	4
Activity 6	System testing	2
Activity 7	System maintenance	4

1.9 Gant Chart



Chapter 2

System analysis

- **Introduction**
- **literature review**
- **Interviews**
- **The definition of new system**
- **Feasibility study**
- **Risks**
- **Constraints**

2.1 Introduction

In this chapter, we will review some of the previous studies that are relevant to the project. Clarification of the new system will follow. Afterwards, the feasibility study of the project, sources to be used and the costs required to develop and operate the project will be determined. Finally, constraints and risks that could be facing the project as well as possible solutions to them will be identified.

2.2 literature review

Relationship Management in Higher Education Information Technology

Conant,R. 2003), *center for applied research, research bulletin*, 13 (2003): pp.1-12

Higher education information technology (IT) service departments face significant challenges to traditional models of providing service to their constituents. Increasingly, these departments are pressured by a combination of internal institutional changes and marketplace developments. IT groups that serve academic institutions also confront a broad range of policy issues and legislative mandates, such as managing the privacy and security of data, accessing and protecting intellectual property, maximizing enterprise resource planning (ERP) systems, managing the increasing cost of technology, developing new funding strategies and structures, and helping faculty leverage technology in their teaching and research.

Relationship management is a holistic, integrated, enterprise-wide approach to managing customer relationships over time. Often, it necessitates a dramatic shift in IT management. The most common criticisms of IT :

1. Lack of responsiveness to academic and business needs Ineffective use of IT resources.
2. Inability to effectively and quickly deploy new technology.
3. System silos organized around business units and technology.
4. Poor communications between IT and its institutional constituents faculty, administera - tors, and students.

Therefore, the nature of relationship management in IT today and its relevance in the higher education environment provides a framework for understanding how its successful execution

can dramatically improve the way clients experience IT. A relationship-management strategy helps align IT resources with customer requirements and it can help alleviate the common criticisms of IT.

Relationship management can be a key strategy for dealing with several challenges unique to the academy, strong emphasis on consensus building, funding . Significant changes in the expectations of incoming students also contribute to the relevance of a relationship-management strategy.

Researchers indicate that 60–70 percent of large companies have created roles for relationship managers, up from 50 percent in 1997.

Customer Relationship Management:

A Vision for Higher Education

Grant, G. ,Anderson, G. 2002, *web portals and higher education technologies to make IT personal*: pp. 22-32.

The best organization in the world will be ineffective if the focus on 'customers' is lost. First and foremost is the treatment of individual students, alumni, parents, friends, and each other (internal customers) .The focus is currently shifting from improving internal operations to concentrating more on customers. Higher education customers are demanding more attention and immediate service—that is, "Internet time." Proactive institutions are now adjusting their practices by refocusing their efforts externally.

Organizations realized that building the in-house technology necessary to achieve these goals was expensive, difficult, and time-consuming. Therefore eliminate the organizational stovepipes that hamper proactive customer interaction. CRM applications are also designed to increase the effectiveness of staff members who interact with customers or prospects. The use of CRM applications can lead to improved customer responsiveness.

CRM is both a business strategy and a set of discrete software tools and technologies, with the goal of reducing costs, increasing revenue, identifying new opportunities and channels for expansion, and improving customer value, satisfaction, profitability, and retention. Within the higher education enterprise, much of new functionality will be focused in the student area. This exciting new level of student-related functionality and performance will have an impact on

students as well as on the administrative staff and management, the faculty, and the institution as a whole.

This paper discussed a survey of 295 companies:

- Up to 42 percent increase in revenue.
- Up to 35 percent decrease in cost of sales.
- Up to 80 percent decrease in order errors.
- Up to 25 percent reduction in the length of sales cycle.
- Up to 2 percent increase in margins.
- Up to 20 percent increase in customer satisfaction ratings.

The researchers result is notion of effective customer information management as a productivity issue is being replaced by the need for effective customer management as a competitive advantage. Tomorrow's systems will go far beyond productivity-related features (such as Web-based student registration) to the development of customer information as a strategic advantage. The concept of students, alumni, faculty members, and staff members as "customers" will become a competitive imperative with profound impact on how colleges and universities attract, retain, and serve customers of all types.

Personalization Offers a New Vision for Relationship Management

Engelbert, N.2012), *OVUM WHITEPAPER*: PP.1-13.

This paper shows higher education industry is on the cusp of rapid and profound change. Powerful forces are calling into question higher education's business model and raising new expectations for the quality and efficiency of service delivery.

Colleges and universities that focus on getting the basics right, such as delivering quality services and cultivating long-term relationships with their students, will emerge from this challenging period for higher education stronger and better positioned for the future. However, institutions must take, without the luxury of added resources, a far more personal and proactive approach to managing student relationships than traditionally has been done in the past.

Institutions that fail to effectively navigate these changes are liable to find it increasingly difficult to thrive or even maintain their status. Therefore ,refocus on basics such as delivering quality services and cultivating long-term relationships with their customers.

The ability to control the branding of the university in a more strategic and consistent way has delivered results. At the most basic level there has been a 12% increase in the number of applied-to-admitted students.

The researchers result is the road ahead will be difficult for higher education. Demographic changes, globalization, and a rapidly evolving and increasingly influential consumer market will have a dramatic impact on colleges and universities. The impact will be particularly acute for those institutions in more competitive markets for student recruitment and with fewer resources for new programs and financial aid .With the caveat that over time the usage of channels should be coordinated according to the goals of the overarching campaign and communications strategy in order to realize improved effectiveness and efficiency outcomes.

Impact of CRM in Mechanizing University's Process, Business and Productivity

Kumar, M. , 2010), *Global Journal of Enterprise Information System*, 2(2): pp.43-48

This paper provides an insight to the application of CRM to automate the university processes to enable them better manage their existing resources. Lack of focus on customers is a major cause for the failure of the organization, Higher education customers are demanding more attention and immediate service that is Internet time.

Currently universities websites are the only source to provide the information to the existing students enrolled in the various courses, announcements, but it is a one way communication as students can't interact with the websites but only get relevant information from them. Also, if you look into the "Contact Us" section of most of the universities they just provide contact details of the University departments and don't have any separate units to resolve the students concerns on daily basis.

Distance education is also a challenging vertical for the universities where they need to do a lot to grab the students from the open market. Also to retain them for future courses would also be a challenge in this competitive market. This can be done by proving them top level support using the CRM operations. Therefore ,this paper attempts to optimize operations by automating routine tasks and standardizing best practices to improve the day to day activities and of course the students/management satisfaction level. It will also enable authorities to make faster decisions

through enhanced tracking of course enrolments and will give the ability to plan for new opportunities.

In the modern era universities are treating their students as "eCustomers", that is why it has become the basic need of every university/ institute to improve its workflow systems by providing better support and strengthen customer support to it is internal and external day to day operations. Improved workflow would enable any organization to better connect with its students, deepen its understanding of participant profiles, and provide support for effective marketing and management campaigns. It is also necessary to make the system as open as possible to its users to avoid possible discrepancies and also promote resource sharing among the internal users.

IT support has become a critical issue for universities, which are offering a greater range of computing resources to students and faculty members , there are many approaches in market today, we believe there are seven main strategies that any university can employ to survive and improve student loyalty like:

1. Implement Ticket System for solving day to day issues

2. Automated Email routing /Case creation via mail

3. Phone call routing

4. Chat

5. SMS Text messages

6. IT help Desk

Every university maintains its information through its internal web site . CRM can be also be targeted University's and the knowledgebase .

The researchers reached to enhance the value and effectiveness of their existing customer relationships, while attracting new and loyal customers. As institutions begin embracing e business and e-learning, the driving forces behind CRM will become even stronger.

Systems will go far beyond productivity related features such as Web-based student registration to the development of customer information as a strategic advantage. The concept of students, alumni, faculty members, and staff members as "customers" will become a competitive imperative with profound impact on how colleges and universities attract, retain, and serve customers of all types .

2.3 Interviews

In the hunt for the previous studies on topics related to the subject of your search to the research team, composed and clear picture and sufficient help us in building a system for CRM , The research team did several interviews with specialists and these interviews:

- Interview with the teachers.
- Interview with the students.

Interview with teachers

Q1: How would you like to interact with the students through the University website?

I am currently interacting with students using my personal university email, also they can send me messages using the university E-learning & I can respond to it, I can also upload some necessary files, like slides and other audio/video materials for students.

Q2: what are services you provided to students through the University website?

The assignment process also through the E-learning website is good, I did write or upload an assignment where students solve & upload it to the website again I did mark it & write any notes on student performance.

Interview with students

Q1: what are the services that you prefer to find in the University website?

E-learning website that I use it to follow the instructor at home.

Q2: through what means, other than the website, would you prefer the university to communicate with you?

By SMS and website email. Connect students online throw PPU.

Q3: In what way you prefer the site to be student specialized?

By adding some icons to choose the language and the theme " color of website and the information that will appear in website related to the major of the students.

2.4 Definition of the new system

CRM is the core business strategy that integrates internal processes and functions, and external networks, to create and deliver value to targeted customers at a profit, and it puts more importance on customer-focused behaviors. implementing CRM applications is one of the important tools that will help managers and companies to increase the satisfaction and loyalty of customers more than before.

The new system is an implementation of customer relationship management on the University through the establishment of an integrated database from which to accomplish all the work and preview the performance efficiency of the staff work and maintain good relationship with the client and the performance of the department as a whole, and the establishment of site to focus more on customers through personalization and dealing with each customer individually.

Source : Drive .I, 2012), *The Future of CRM,* : pp. 1-6.

2.5 Determinants of the system

The new system suffers from some limitations, which can be used as incentives for research.

1. Database is accessible only by the system administrator.
2. Languages used are (PHP).
3. The system must be used by the internet and opened through a web explorer.
4. The system must be finished in 8 months.
5. social challenges: the student that is resistant to modern systems, so must the student awareness of the importance of these systems to increase the interaction between students and teachers .

2.6 Feasibility study

-Human resources budget:

The following table specifies the number of developers needed to accomplish the project, and their overall cost per month.

Table (2.1) Human resources budget

Human resources	Quantity	Cost per hour	Overall cost for month	Overall cost
System developer	1	20$	400$	
System designer	1	20$	400$	
System programmer	2	40$	800$	
Total: Overall cost * number of months=1600*8				12800$

-Physical budget:

The following table specifies the needed physical component and their cost.

Table (2.2) Physical budget

Item	Quantity	Specification	Cost
Desktop computer	1	Dell ، core i3 ، ram 2G، Windows 7	720$
Removable desk	3	4GB	30$
Printer	1	Canon	300$
Server	1	HD 500G، BW10T، Ram	Available

		8G ، 24CPU	
Overall cost	1050$		

Source (Dawliah computer co, Hebron-Palestine, 8-5-2013)

-Software budget:

The following table specifies the needed software components and their cost.

Table (2.3) Software Budget

Program	**Cost**
Microsoft windows 7 ultimate	175$
Microsoft visual studio.net 2008	Available
SQL server 2008	100$
Microsoft office 2010	145$
adobe flash CS5	Available
Dreamweaver CS6	Available
Overall cost	420$

Source (Dawliah computer co, Hebron-Palestine, 8-5-2013)

-Overall cost

The following table summarizes the overall cost for the project.

Table (2.4) Overall cost

Human resource cost	Physical resource cost	Software resource cost	Overall cost
800$	1050$	570$	2520$

2.7 Risks

During the planning process, certain risks that are likely to occur, have appeared. Such risks should be avoided during the construction and development of the system. An account of these risks and the means for avoiding them follows:

2.7.1 System risks

1. The problem of breaking connections between the parties because of electricity deficiency or net weakness.

2. The problem of users' availability of internet access.

2.7.2 Working Team risks:

1. Delay in submitting the system.

2. Lack of some requisites, materialistic capabilities and certain appliances for building the system.

3. Change or increase in requirements during building and developing the system.

4. Present students' resistance to change.

2.7.3 Proposed Solutions:

1. Using the UPS as an alternative source of energy.

2. Good planning of all the phases of constructing the system. Also, distribution of roles among the team members in order to hand in the project on time.

3. Studying thoroughly the systems' requirements and conducting interviews before starting to build it.

4. Informing the students with the importance of the new system.

2.8 Constraints

The limitations that should be taken into consideration during developing the process include:

1. Working within the limited budget.
2. Constructing the system within the limited time.
3. The system should have the ability to develop and to be adjusted.

Chapter 3

System requirement

- Introduction
- System requirement
- Validation
- Use case

3.1 Introduction

This chapter introduces the systems' requirements and analyzes the basic steps to develop and complete it. Functional and non-functional requirement will be discussed. In addition, this chapter will contain a use case.

3.2 System requirement

This system includes a set of requirements divided into functional and non-functional requirements which will be clarified as follows:

3.2.1 Functional system requirements:

Functional requirements Collected based on literature review and interviews

Functional requirement for users (student , teacher):

1. Profile :
   Which include personal information , customization , add picture ,change password , change mobile and change e-mail .

   _Personal information:

   Describe personal information which include :(name , birth date, major, type , user page on facebook)

   _customization

   Describe customization which include :(current theme ,current language, font style, font size)

   _Add picture

   _Change password

   Describe change password which include: (old password, new password, confirm new password)

_change mobile

Describe change mobile which include :(student name ,your current mobile number)

_change e-mail

Describe change e-mail which include :(current address , e-mail address)

2. Communication Management

Which include inbox, new massage, sent massage and draft .

_Inbox

Describe inbox which include :(download file ,send, from , subject ,received ,delete)

_New massage

Describe new massage which include :(To ,subject , enter text)

_sent massages

Describe sent massage which include :(to , subject , sent date , delete)

_draft

User can save message as a draft to be completed and sent at a later time.

3. Advertisement management:

Describe advertising management which include :(add, my advertisement)

4. Links

Describe links which include : (PPU, e-library, e-registration, e-learning, facebook/ppu, and so forth)

Functional requirement for administrator :

1. Site update

which include add users and delete users :

_ add

Describe add which include : (add student , add teacher)

_ delete

Describe delete which include : (delete student , delete teacher)

2. Sent Advertise

When user post advertise , the post sent to the administrator and he can accept , or edit or reject the post : (accept , edit ,reject)

3.2.2 Description of the system functional requirements:

3.3.1 Functional requirements for users

Description of profile

Requirement name: Profile.
General description: Show profile and edit personal information, customization, add picture , password , mobile and e-mail .
Input: personal information like(first name , last name ,user page on facebook) . customization like:(current theme ,current language). Change password: (old password, new password, confirm new password). Change mobile: (student name ,your current mobile number). Change e-mail: (current address , e-mail address)
Previous conditions: Enter correct login username, password and security code and the user is member on site.
Output: Profile update.

Table 3.1Description of profile

Description of Communication Management

Requirement name: Communication Management
General description: Possibility to manage communications between users and between users and administrator.
Input: download file, send, from, subject, received, delete, to, enter text
Previous conditions: Enter correct login username and password and security code and the user is member on site.
Output: Communication between users.

Table 3.2 Description of Communication Management

Description of Advertisement management.

Requirement name: Advertisement management.
General description: Ability to add advertisement by users and ability to edit advertisement from system administrator and accept or reject advertise.
Input: add, edit, delete.
Previous conditions: Enter correct login information like username, password and security code, and the user is member.
Output: Add advertisement by users.

Table3.3 Description of Advertisement management.

Description of Links.

Requirement name: Links.
General description: user can go to important websites from this icon.
Input: PPU, library, e-registration, e-learning, facebook/ppu, and so forth
Previous conditions: The user is member on site.
Output: Go to important links.

Table3.4 Description of Links.

3.3.2 Functional requirements for administrator

Description of site update

Requirement name: Site update.
General description : administrator can edit website through add or delete.
Input: add and delete users.
Previous conditions: Enter correct login information's like username, password and security code.
Output: Updated website every time.

Table 3.5 Description of site update

Description of Sent Advertise

Requirement name: Sent Advertise.
General description: When users add advertise the administrator can accept or edit or reject the advertisements.
Input: accept, edit, reject.
Previous conditions: Enter correct login information's like username, password and security code.
Output: Post advertisements by users and administrator.

Table 3.6 Description of Sent Advertise

3.3 Nonfunctional system requirements:

Requirements effects on the basic services provided by the system but not directly related it. And the quality of the system is measured the extent of its conformity with these functions as follows:

- Ease of use
  The system's front page (interface) should be organized, simple to use and comfortable to the sight. In addition, the user should be able to log in and be familiar with all the allowed sections easily. In case of being confronted with any problem, a guidance message appears.
- Integration of the system: the possibility of the system reaches other existing systems such as Facebook and E-mail.
- Coordination and harmony
  The form, color, photos and buttons of the system should be in coordination. The files should be in the same place, at the top, in all pages and the photos should be at the right corner. The colors will also be comfortable to the sight.
- Speed and competence:

The speed of performing the various operations should be high, so the time for the system's response for any operation should not exceed five seconds.

- Security and authority:

  There must be a protection system against any outside effects. In addition, no one, who is not liable, is allowed to log in and interfere with the database. There will be a user's account and limited liabilities for every user, a teacher or a student, on the website. The user is able to log in through entering a user's name, a password and a protection number.

- Interaction: the possibility of working with its surrounding systems and interact with them.

3.4 Test Plan

The process of testing system of the most important stages throughout the development of the system, as is the importance of checking system to verify the reliability of each unit, and each part of the system so as to make sure that it achieves the specifications and requirements, and this process include:

1. system's form testing.

   During this phase, our team has tested all the models of the system. Every operation Was tested separately to make sure it operates accurately.

2. Sub_system testing.

   During this phase, subdivisions of the system, which will be joined later, have been tested. Afterwards, it has been noticed that all subdivisions of the system work with no mistakes.

3. System's integrity testing .

   After testing all the subdivisions separately, they integrated together. Then, they are tested in order to make sure that the whole system works according to expectations.

4. System's acceptability testing .

   This is done through experimenting it with a group of users to see if it achieves the exact needs of the system which has been described in the requirements of the system description document. Furthermore, the subdivisions of the system are tested to make sure that they work together.

5. Stress testing.

is a form of deliberately intense or thorough testing used to determine the stability of a given system or entity and to test stable operation of a part or system outside standard usage.

6. performance testing.
   is in general testing performed to determine how a system performs in terms of responsiveness and stability under a particular workload. It can also serve to investigate, measure, validate or verify other quality attributes of the system, such as scalability, reliability and resource usage.

3.5 Use case

A use case is used in system analysis to identify, clarify, and organize system requirements. It consists of a group of elements that can be used together in a way that will have an effect larger than the sum of the separate elements combined. The use case contain all system activities that have significance to the users.

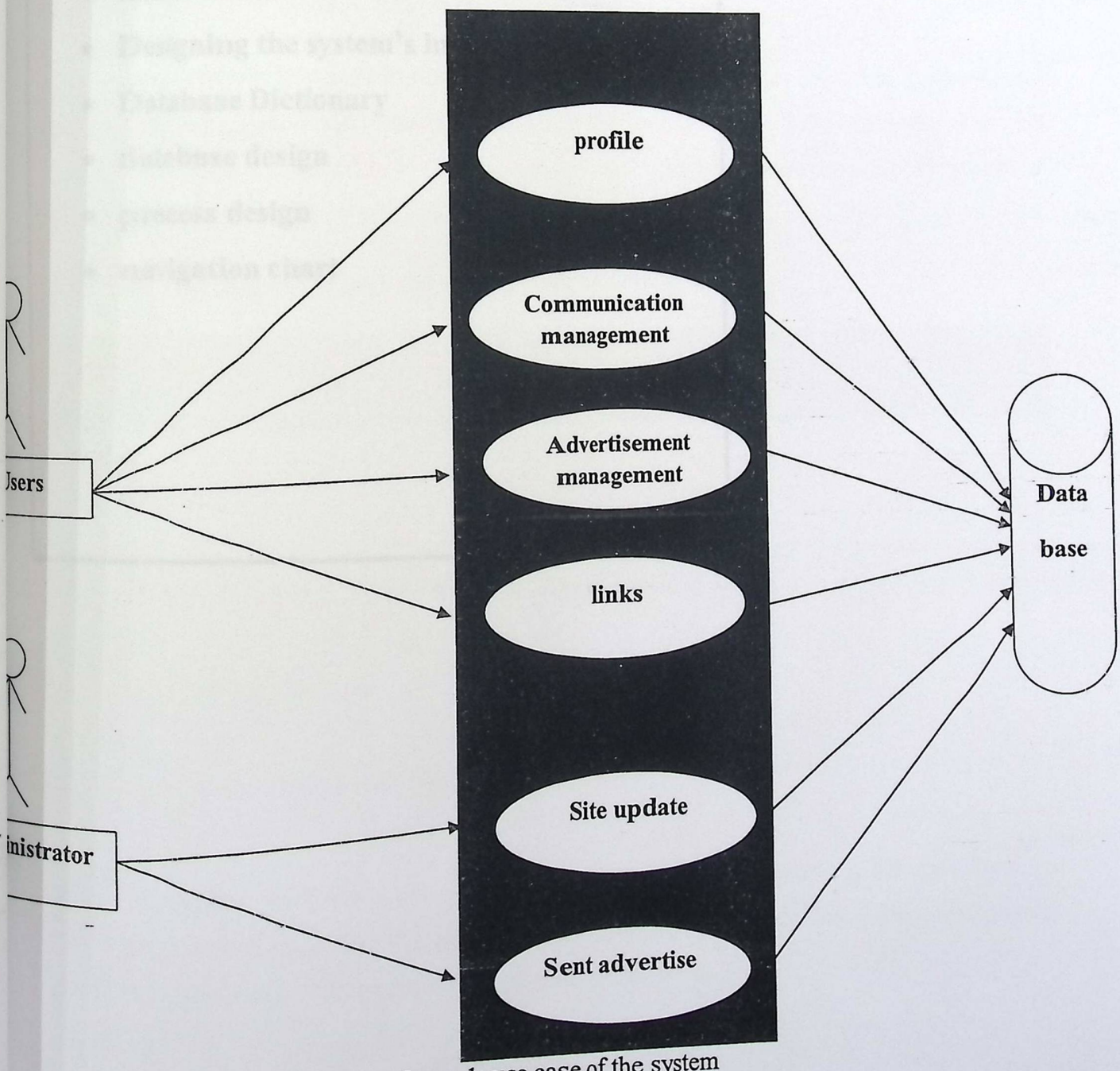


figure 1: use case of the system

Chapter 4

System design

- Introduction
- Designing the system's inputs and output
- Database Dictionary
- database design
- process design
- navigation chart

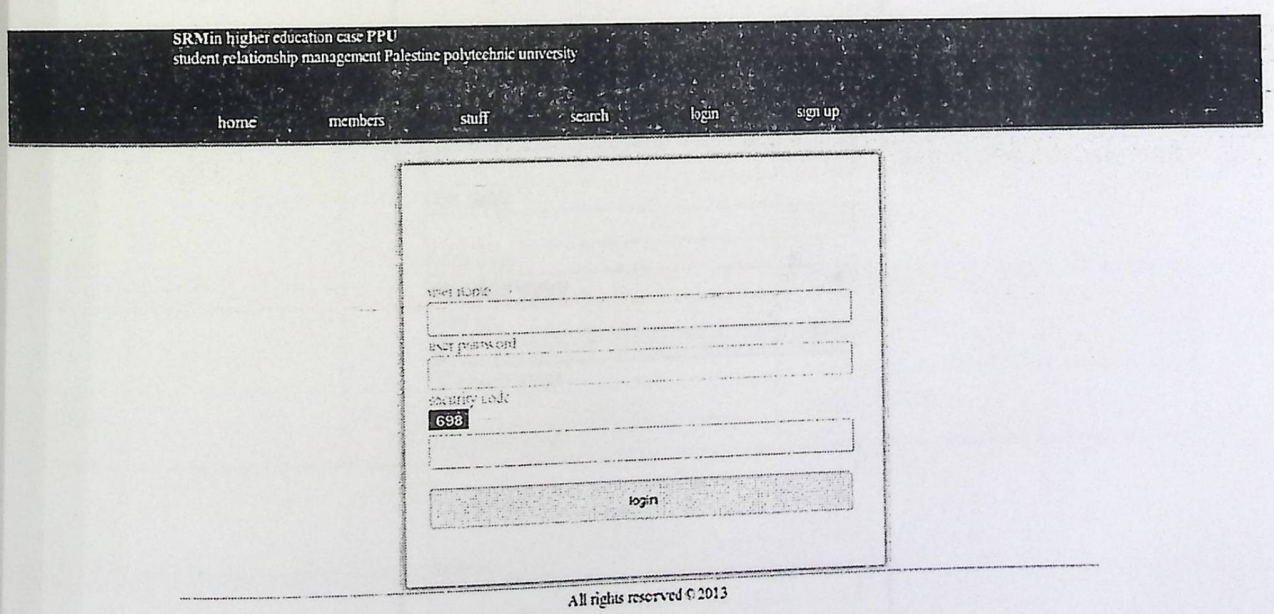
4.1 Introduction:

In this chapter, the structure of the data that explains the process of the activities in the system is displayed. In addition, a database is designed and structured alongside with all the tables and fields it contain. Besides, the system's primary input and output windows are designed. Finally, the testing criteria and the examination plan are portrayed.

4.2 Designing the system's inputs and output

This section contains the user's interfaces, the presence of which is very important in developing any system that manages the relationship between the user and the system, especially when the system has a large number of users. This system has two groups of users; the person in charge of the system (administrator) and the user(a student or a teacher).

4.2.1 The login page. (For both the user and the administrator.)

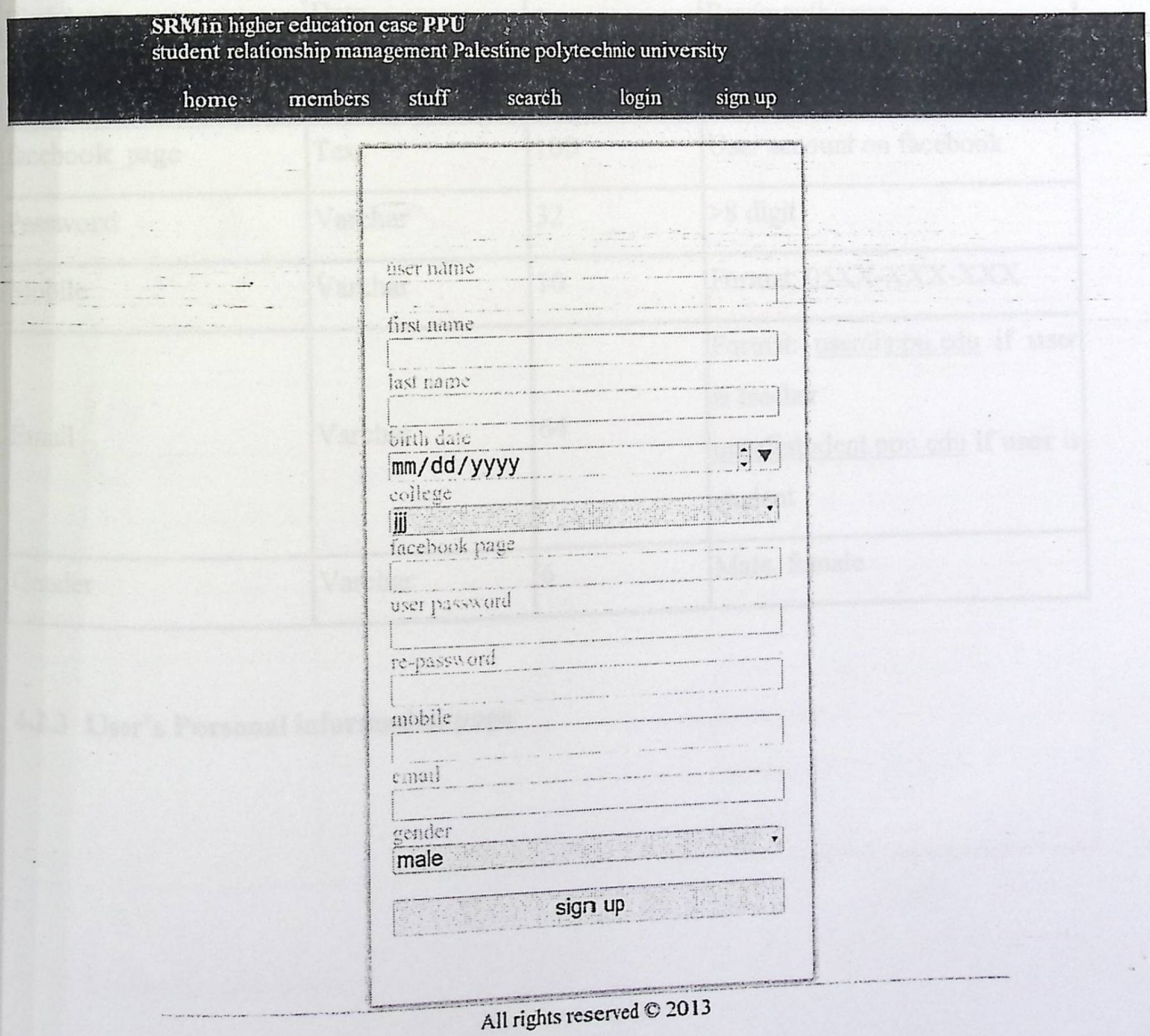


After entering the user's name, password and security number, then clicking the login icon, the information is verified. If the information is correct, the user can log in, but if the information is not correct, a message with the incorrect information appears.

Table 4.1 description of login page

Data item	Type	Size	Constraints
User name	Varchar	32	
Password	Varchar	32	>8 digit
Security code	Varchar	3	

4.2.2 Create an account page.



The user fills in the required information and clicks the 'sign up ' icon. The information is sent to the control panel and a page that shows that appears.

Table 4.2 description of sign up page

Data item	Type	Size	Constraints
User name	Varchar	32	
First name	Varchar	64	
Last name	Varchar	64	
Birthdate	Date		Day/month/year
College	Varchar	24	
facebook_page	Text	100	User account on facebook
Password	Varchar	32	>8 digit
Mobile	Varchar	10	Format: 05XX-XXX-XXX
Email	Varchar	64	Format: user@ppu.edu if user is teacher user@student.ppu.edu if user is student
Gender	Varchar	6	Male, female

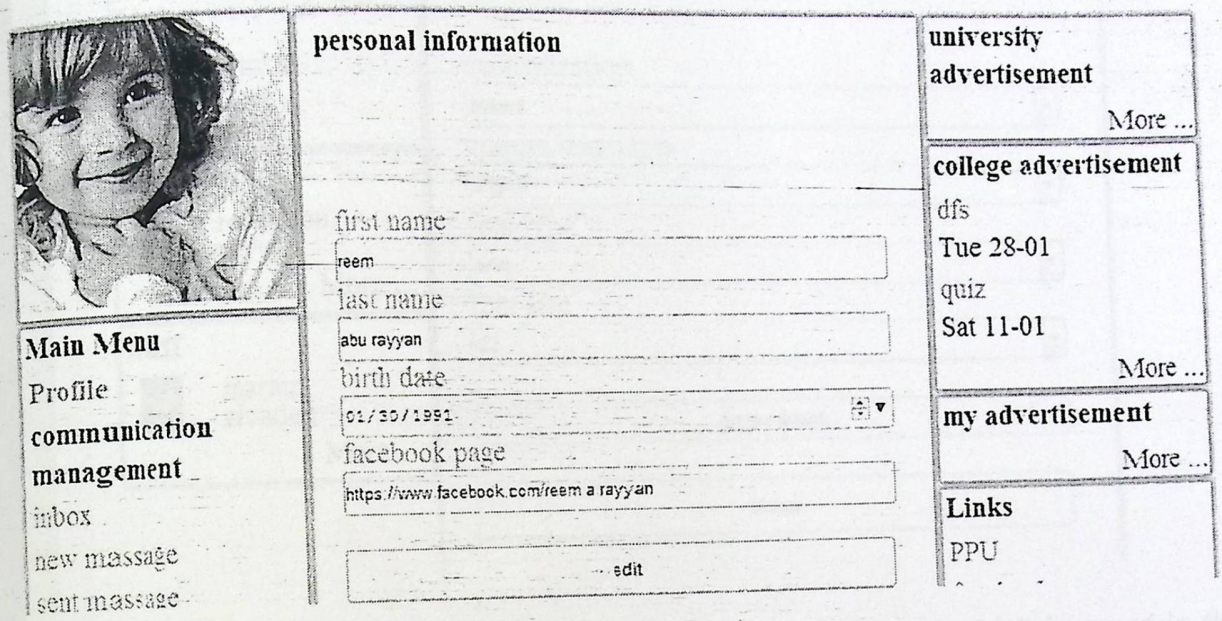
4.2.3 User's Personal information page

The user fills in the required information and clicks the 'sign up ' icon. The information is sent to the control panel and a page that shows that appears.

Table 4.2 description of sign up page

Data item	Type	Size	Constraints
User name	Varchar	32	
First name	Varchar	64	
Last name	Varchar	64	
Birthdate	Date		Day/month/year
College	Varchar	24	
facebook_page	Text	100	User account on facebook
Password	Varchar	32	>8 digit
Mobile	Varchar	10	Format: 05XX-XXX-XXX
Email	Varchar	64	Format: user@ppu.edu if user is teacher user@student.ppu.edu if user is student
Gender	Varchar	6	Male, female

4.2.3 User's Personal information page

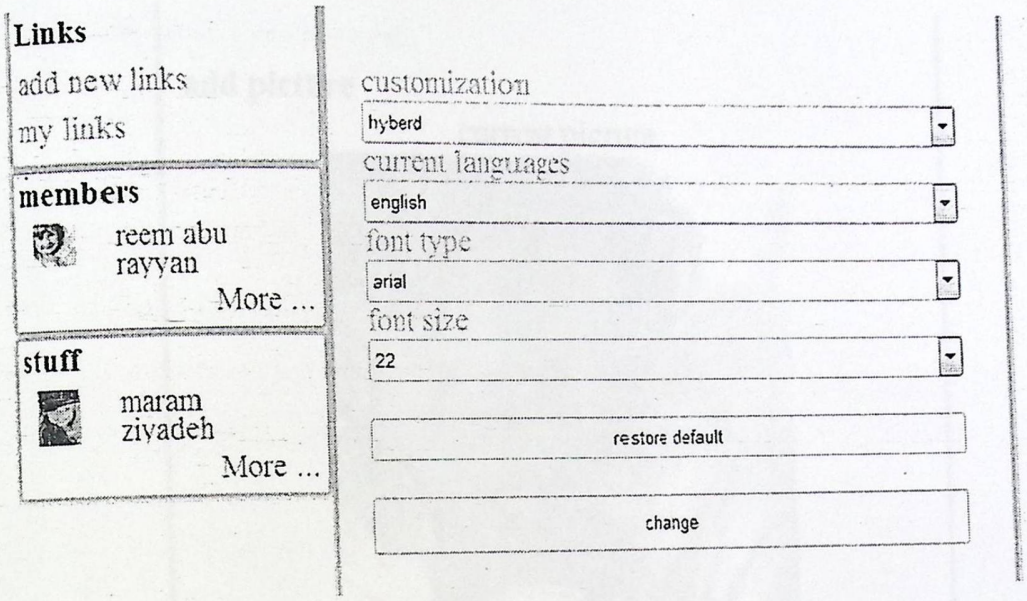


The user's personal information, which was filled in when the account was created, is displayed on this page. An icon appears which allows the user to adjust the information.

Table 4.3 description of personal information page

Data item	Type	Size	Constraints
User name	Varchar	32	
Birthdate	Date		Day/month/year
College	Varchar	24	
Mobile	Number	10	Format: 05XX-XXX-XXX
Email	Text	64	Format: user@ppu.edu if user is teacher user@student.ppu.edu if user is student

4.2.4 Customization page

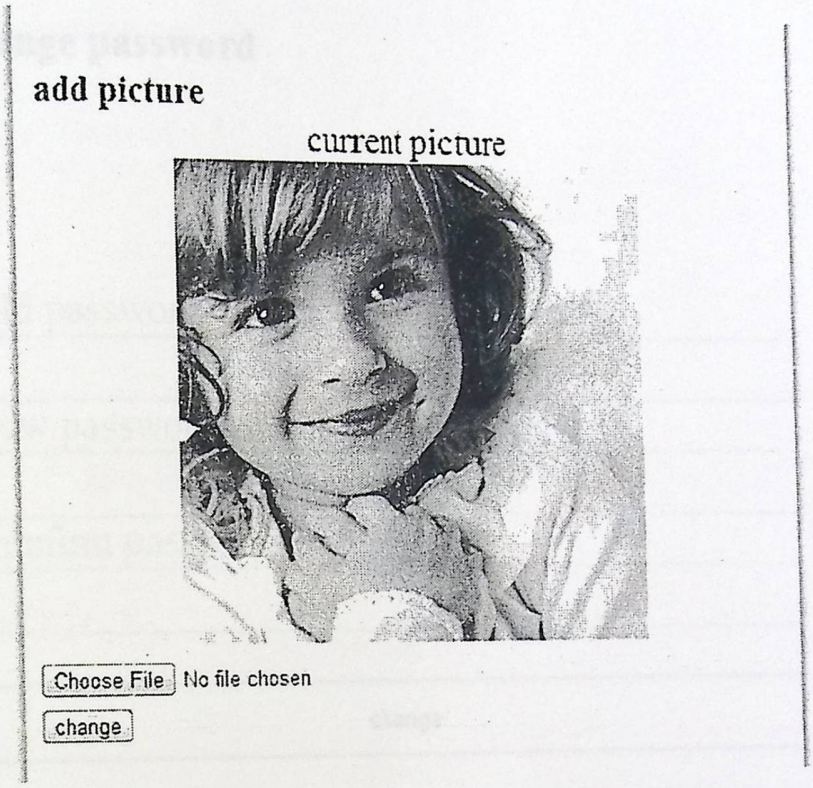


The user is able to change the theme, language and writing style and which is saved in the control panel and is displayed when signing up the next time.

Table 4.4 description of customization page

Data item	Type	Size	Constraints
current_theme	Varchar	10	
current_language	Varchar	7	
font_type	Varchar	20	
font_size	Number	2	

4.2.5 Adding a User's photo page

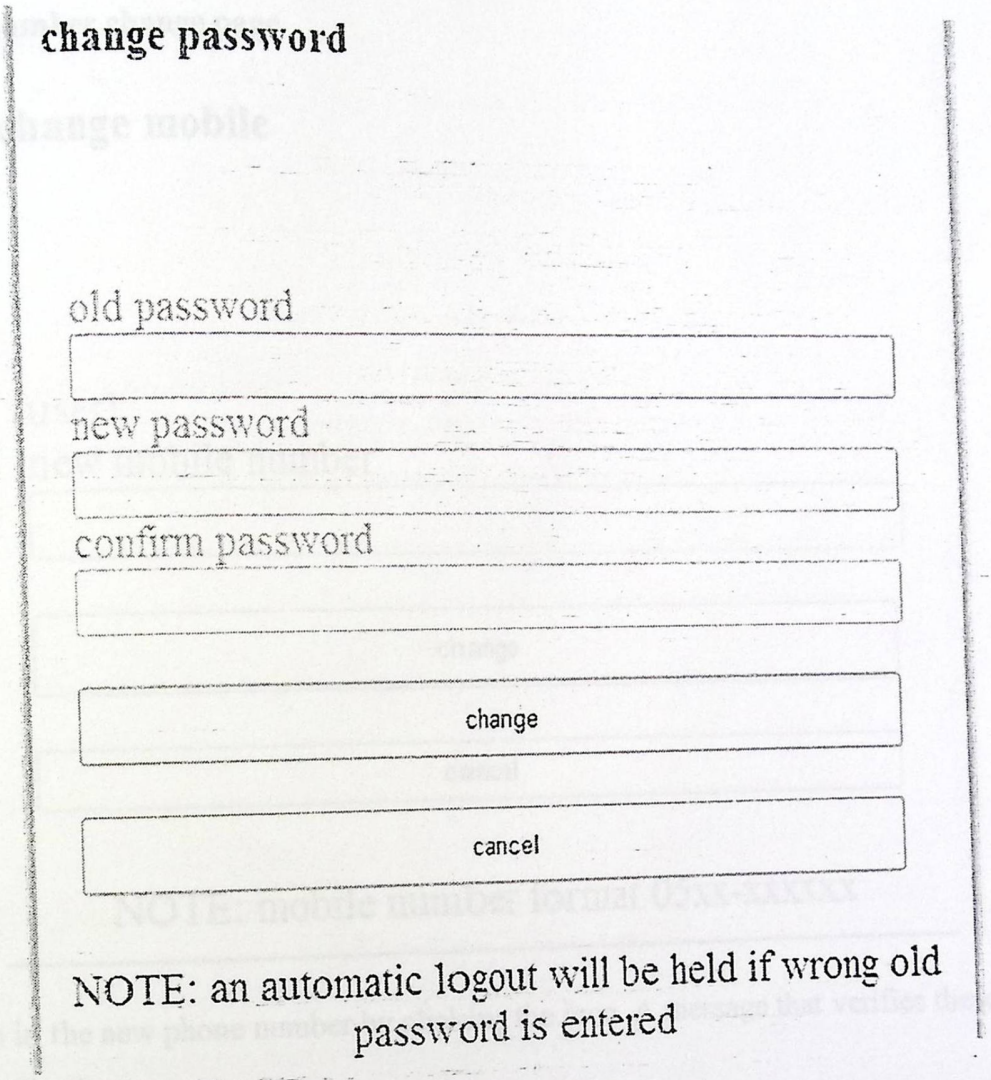


The user clicks adding a personal photo to choose and download one.

Table 4.5 description of adding photo page

Data item	Type	Size	Constraints
Picture	Varchar	64	

4.2.6 Password change page

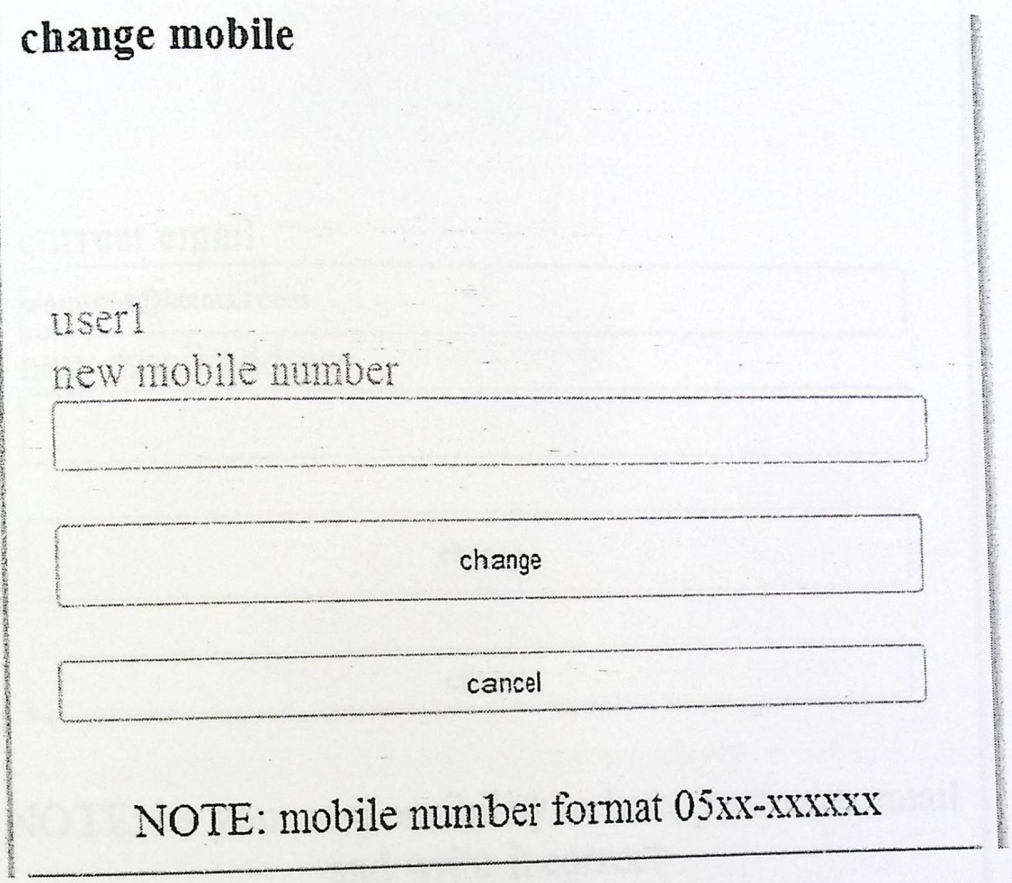


The user is able to enter a new password by clicking password change icon. A message that verifies the change appears if the password matches the good password conditions.

Table 4.6 description of change password page

Data item	Type	Size	Constraints
Old Password	Varchar	32	>8 digits
New password	Varchar	32	>8 digit
Confirm password	Varchar	32	>8 digit

4.2.7 mobile number change page

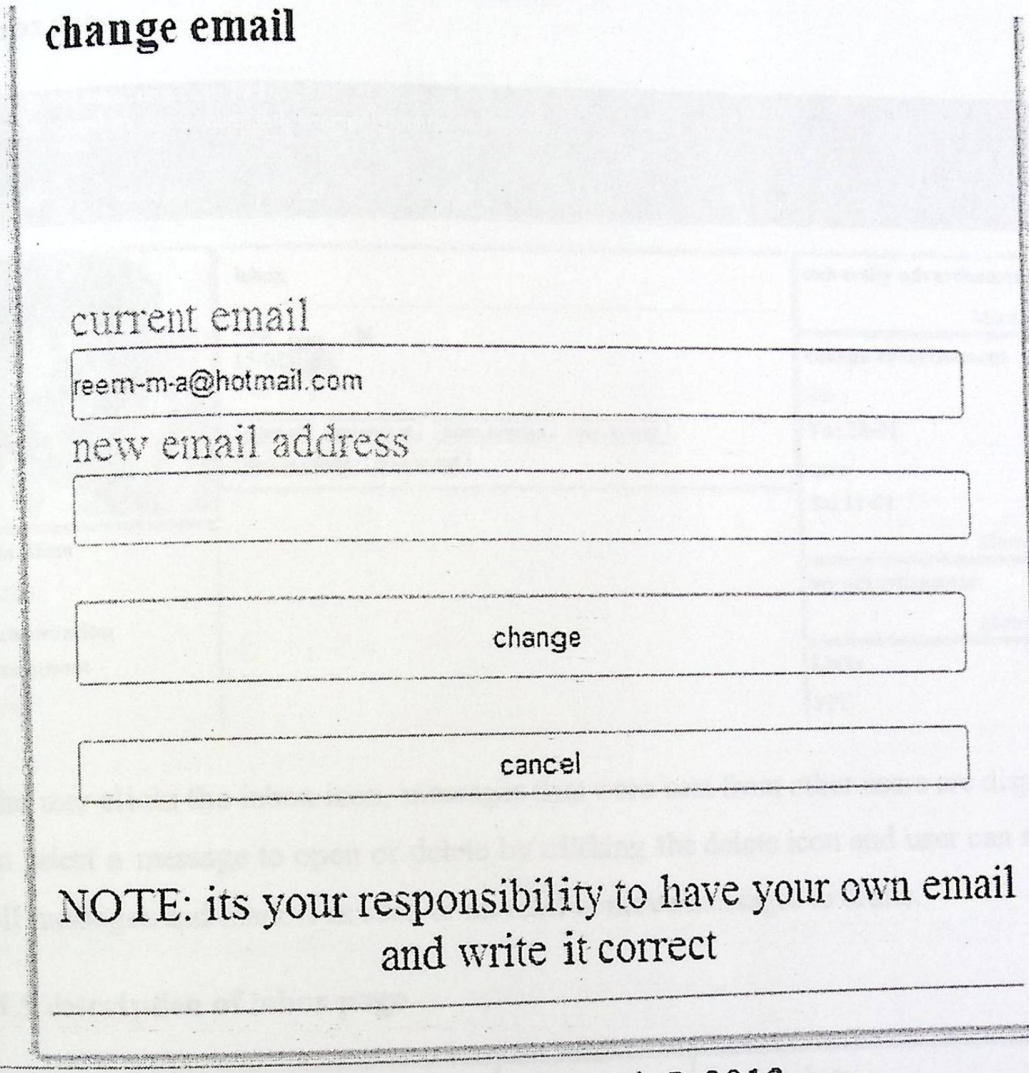


The user fills in the new phone number by clicking the icon. A message that verifies the change appears accordingly.

Table 4.7 description of mobile number change page

Data item	Type	Size	Constraints
Mobile	Varchar	10	Format: 05XX-XXX-XXX

4.2.8 Email change page



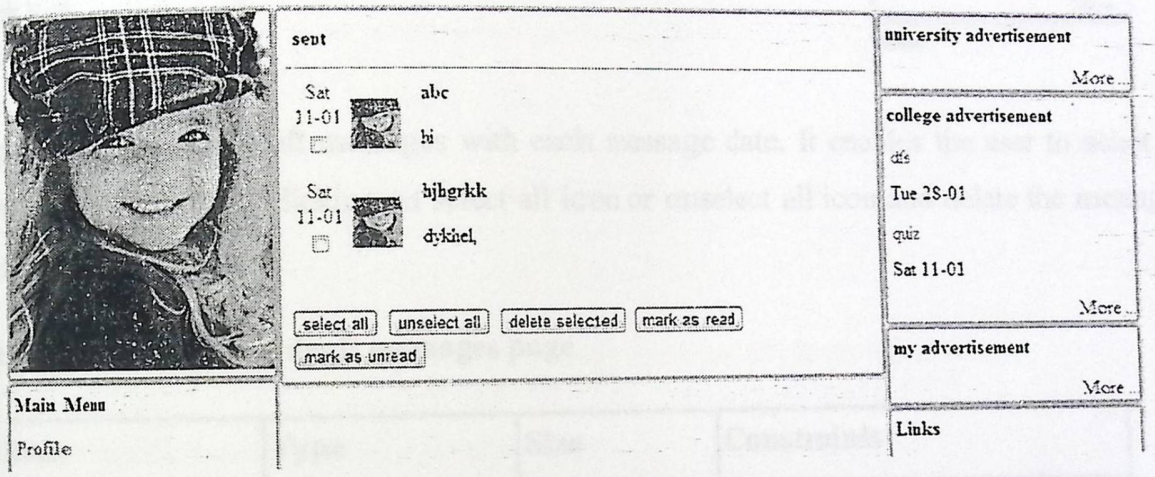
The user enters the new email and click the change icon. A message that verifies the change appears accordingly.

Table 4.8 description of change email page

Data item	Type	Size	Constraints
Current email	Varchar	64	
New email	Varchar	64	

Subject	Varchar	128	
Text	Text	1000	
File	Varchar	128	

4.2.11 Sent messages page

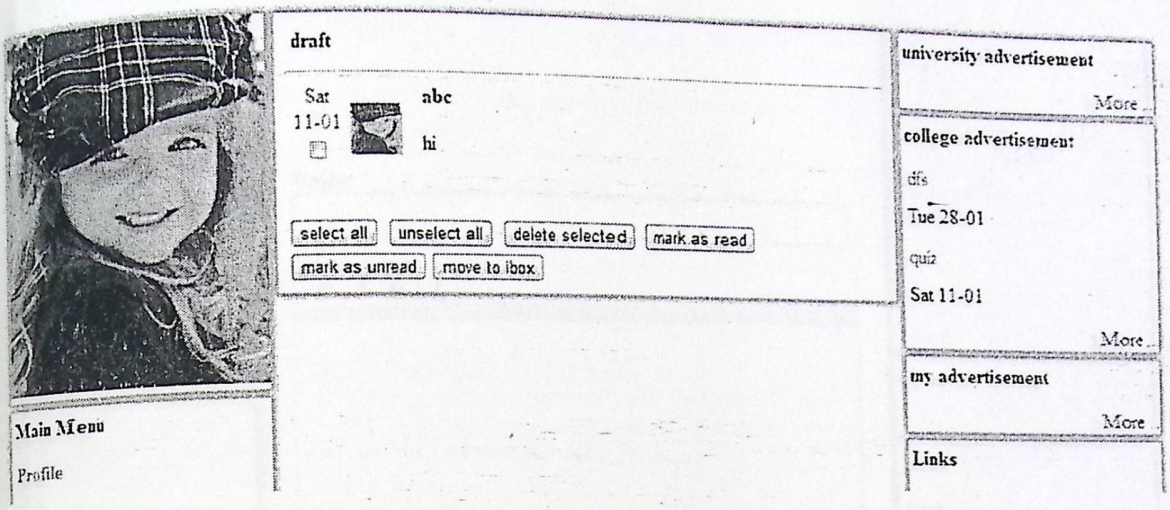


This page displays the sent messages with each message date. It enables the user to select or un select all messages by clicking on select all icon or unselect all icon and delete the messages by clicking the delete icon.

Table 4.11 description of sent messages page

Data item	Type	Size	Constraints
Sent message subject	Varchar	128	
Sent date	Timestamp		

4.2.12 draft messages page

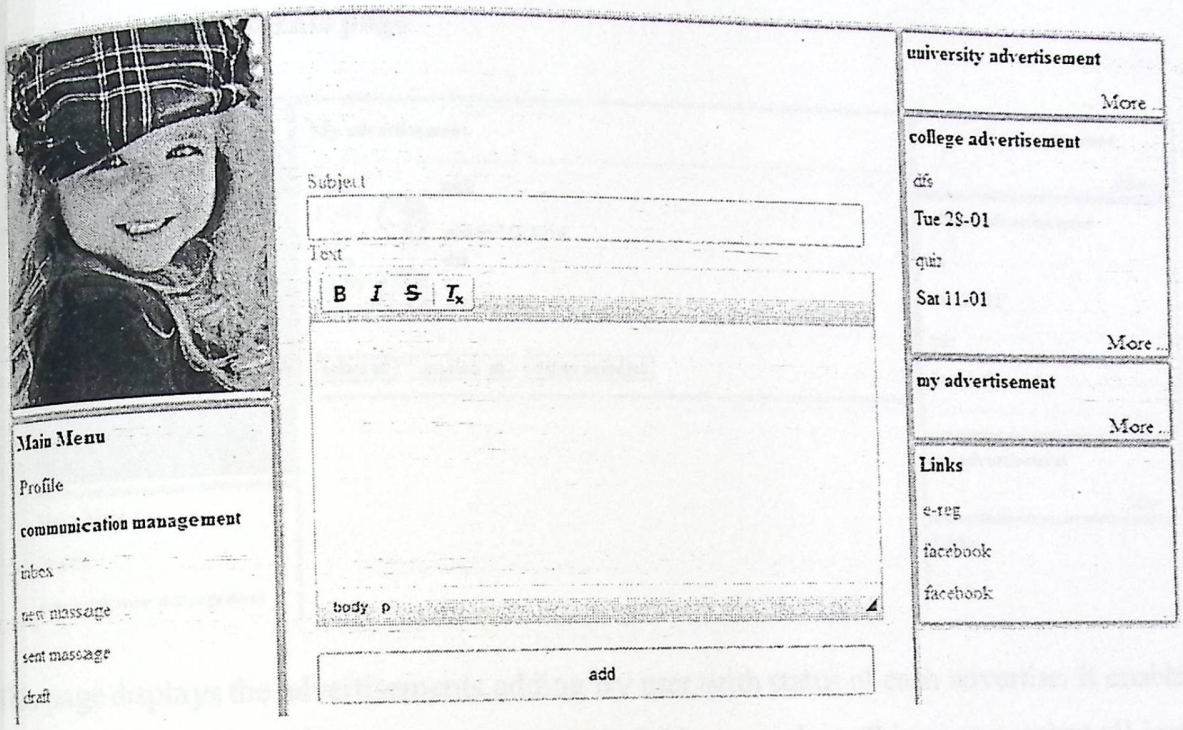


This page displays the draft messages with each message date. It enables the user to select or unselect all messages by clicking on select all icon or unselect all icon and delete the messages by clicking the delete icon.

Table 4.12 description of draft messages page

Data item	Type	Size	Constraints
Saved message subject	Varchar	128	
Save date	Timestamp		

4.2.13 adding advertise page

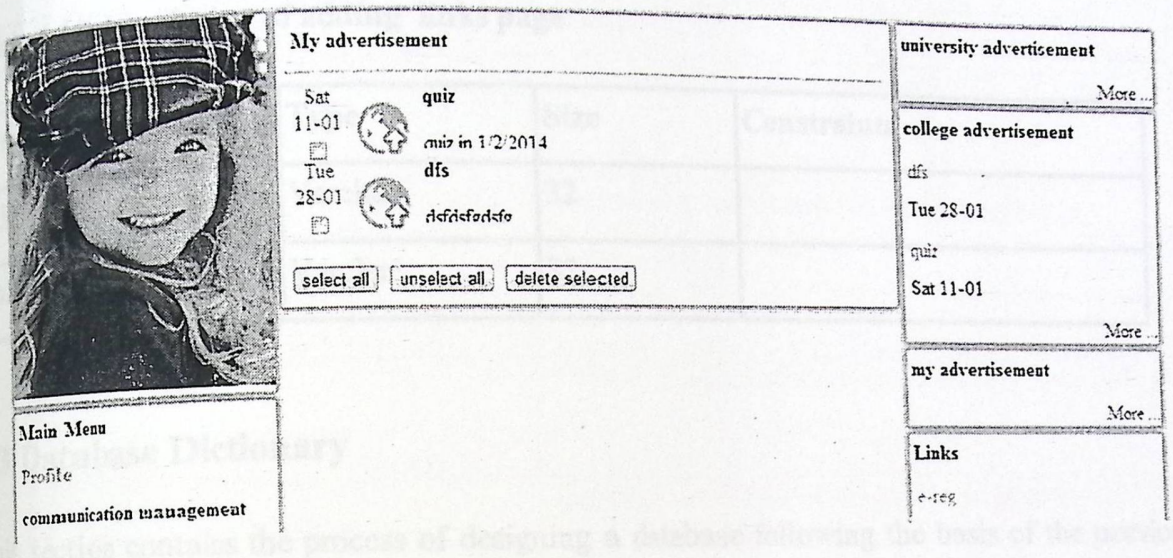


Enables the user to add advertise by typing advertise text and click on Add button.

Table 4.13 description of adding advertise page

Data item	Type	Size	Constraints
Subject	Varchar	128	
Text	Text	1000	

4.2.14 user advertisements page

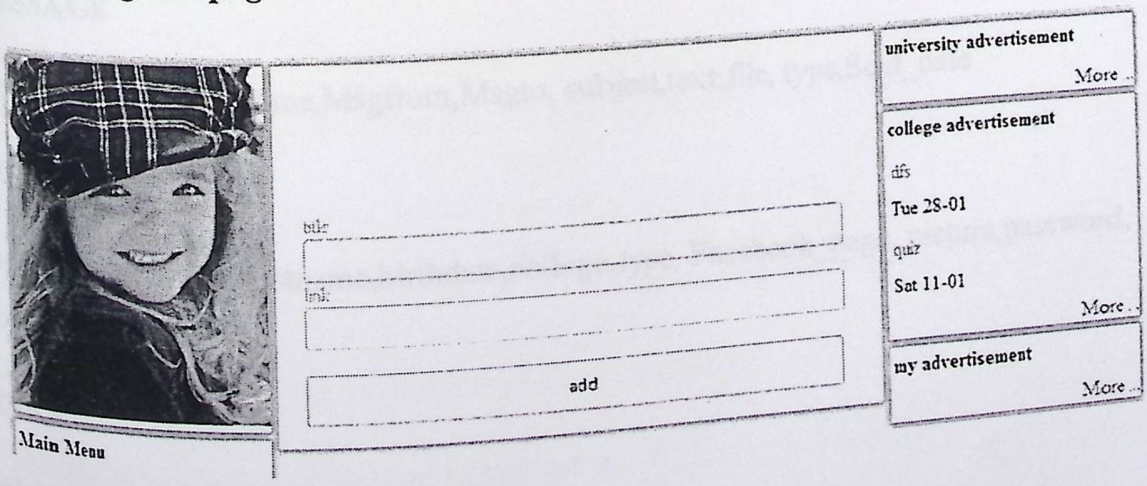


This page displays the advertisements adding by user with status of each advertise. It enables the user to select or unselect all advertisements by clicking on select all icon or unselect all icon and delete the advertisements by clicking the delete icon.

Table 4.14 description of user advertisements page

Data item	Type	Size	Constraints
Type	Varchar	9	Active, not active
Publish date	Timestamp		

4.2.15 adding link page



Enables the user to add links by typing link title and URL and click on Add button.

Table 4.15 description of adding links page

Data item	Type	Size	Constraints
Title	Varchar	32	
Link	Varchar	32	

4.3 Database Dictionary

This section contains the process of designing a database following the basis of the previously identified requirement for the development of this system. Thus, this section explains all the database requirements through the database tables.

4.3.1 Database Requirements

ADVERTISING

Advertisenumber, username,Advertising_title , Advertising_text,
Advertising_type,Advertising_publish,Advertising_adding_date

COLLEGE

collegeid ، collegename

MESSAGE

Messagenumber, username,Msgfrom,Msgto, subject,text,file, type,Sent_date

USERS

Username, firstname, lastname,birthdate,college,type, Facebook_page, picture,password, mobile,e-mail, gender

LINKS

Linksnumber, username, title, linksurl

4.3.2 Description of tables

Table name	Occupation
Advertising	Contains information about ads
College	Contains information about the majors in the university
Message	Contains information about the messages
Users	Contains information about the user data
Links	Contains information about the links

Table (4.16) Description of database tables

Advertisement: This section contains advertisement information.

College: This section has information about the different fields in the college.

Messages: This section has information about messaging.

Users: This section has the users' personal information.

Links: This section has links the users add.

4.3.2.1 Advertising Table

Advertisenumber: It is a number given to an advertisement when written.

Username: It is a name given to a user at the time of registration.

Advertising-title: this field has the title of the advertisement, which has 128 digits.

Advertising-text: This field has the text of the advertisement.

Advertising-type: this field has the type of advertise (active or not active)

Advertising_publish: This field has the advertisement publishing.

Advertising_adding_date: this field has the date of adding the advertisement.

4.3.2.2 college table

collegeid : This field has the college number.

collegename: this field has the college name that consists of 64 digits.

4.3.2.3 Messages tables

Messagenumber: This field has the given message number.

Username: It is a name given to a user at the time of registration.

Msgfrom: This field contains the sender's number.

Msgto: This field has the recipient number.

Subject: This field has the subject of the message, which contains 128 digits.

Text: This section has the text of the message.

File: This field has the downloaded messages.

type: this field has the message type (read or unread).

Sent date: This field contains the date the message was sent. This date is given through the database.

4.3.2.4 User's Table

Usernumber: This is a number given to the user, through the system, at the time of registration.

firstname: This section has the user's first name that consists of 64 digits.

lastname: This section has the user's last name that consists of 64 digits.

Birthdate: This section has the birth date of the user.

Advertising_publish: This field has the advertisement publishing.

Advertising_adding_date: this field has the date of adding the advertisement.

4.3.2.2 college table

collegeid : This field has the college number.

collegename: this field has the college name that consists of 64 digits.

4.3.2.3 Messages tables

Messagenumber: This field has the given message number.

Username: It is a name given to a user at the time of registration.

Msgfrom: This field contains the sender's number.

Msgto: This field has the recipient number.

Subject: This field has the subject of the message, which contains 128 digits.

Text: This section has the text of the message.

File: This field has the downloaded messages.

type: this field has the message type (read or unread).

Sent date: This field contains the date the message was sent. This date is given through the database.

4.3.2.4 User's Table

Usernumber: This is a number given to the user, through the system, at the time of registration.

firstname: This section has the user's first name that consists of 64 digits.

lastname: This section has the user's last name that consists of 64 digits.

Birthdate: This section has the birth date of the user.

ollege: This section has the different fields in the college.

ype: This section has the type of the user (teacher, student).

acebook_page : This field has the user's account in the facebook.

icture: This section enables the user to add a picture.

assword: This section has the user's password that consists of 32 digits.

Mobile: this section has the user's mobile number that consists of 10 digits.

E-mail : This field has the user's e-mail that consists of 64 digits.

gender: This section contains the user's gender.

4.3.2.5 links table

linksnumber: This is a number given to the link, through the system.

username: This section has the user's name that consists of 32 digits.

linkstitle: This field has the title of the link, which contains 32 digits.

Linksurl: This field has the URL of the link, which contains 64 digits.

4.4 database design

This section contains the process of designing a database following the basis of the previously identified requirement for the development of this system. Thus, this section from system design shows database tables and fields and relations arnong them.

6.4.1 database tables

-Advertising table

Column	Type	Null	Default	Comments
Advertisingnumber	int(6)	No		

Username	varchar(32)	No		
advertising_title	varchar(128)	No		
advertising_text	Text	No		
advertising_type	int(1)	No		
advertising_publish	int(1)	No		
advertising_adding_date	Timestamp	No	CURRENT_TIMESTAMP	

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	advertisingnumber	3	A	No	
Usersnumber	BTREE	No	No	Username	3	A	No	

-College table

Column	Type	Null	Default	Comments
Collegeid	int(1)	No		
collegename	varchar(64)	No		

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	Collegeid	1	A	No	

-Links table

Column	Type	Null	Default	Comments
Linksnumber	int(11)	No		
Username	varchar(32)	No		
Title	varchar(32)	No		
Linksurl	varchar(64)	No		

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	linksnumber	0	A	No	
Username	BTREE	No	No	username	0	A	No	

-Message table

Column	Type	Null	Default	Comments
messagenumber	int(6)	No		
Username	varchar(32)	No		
Msgfrom	varchar(32)	No		
Msgto	varchar(32)	No		
Subject	varchar(128)	No		
Text	Text	No		
File	varchar(128)	No		
Type	int(1)	No		

sent_date	Timestamp	No	CURRENT_TIMESTAMP	

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	Messagenumber	0	A	No	
Username	BTREE	No	No	Username	0	A	No	

-Users table

Column	Type	Null	Default	Comments
Username	varchar(32)	No		
Firstname	varchar(64)	No		
Lastname	varchar(64)	No		
Birthdate	Date	No		
College	int(1)	No		
Type	int(1)	No		
facebook_page	Text	No		
Picture	varchar(64)	No		
Password	varchar(32)	No		
Mobile	varchar(10)	No		
Email	varchar(64)	No		
Gender	int(1)	No		

Indexes

Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
PRIMARY	BTREE	Yes	No	username	5	A	No	
Email	BTREE	Yes	No	Email	5	A	No	
Mobile	BTREE	Yes	No	Mobile	5	A	No	
College	BTREE	No	No	College	2	A	No	

4.4.2 UML

UML (unified modeling language): is an industry standard modeling language with a rich graphical notation, and comprehensive set of diagrams and elements.

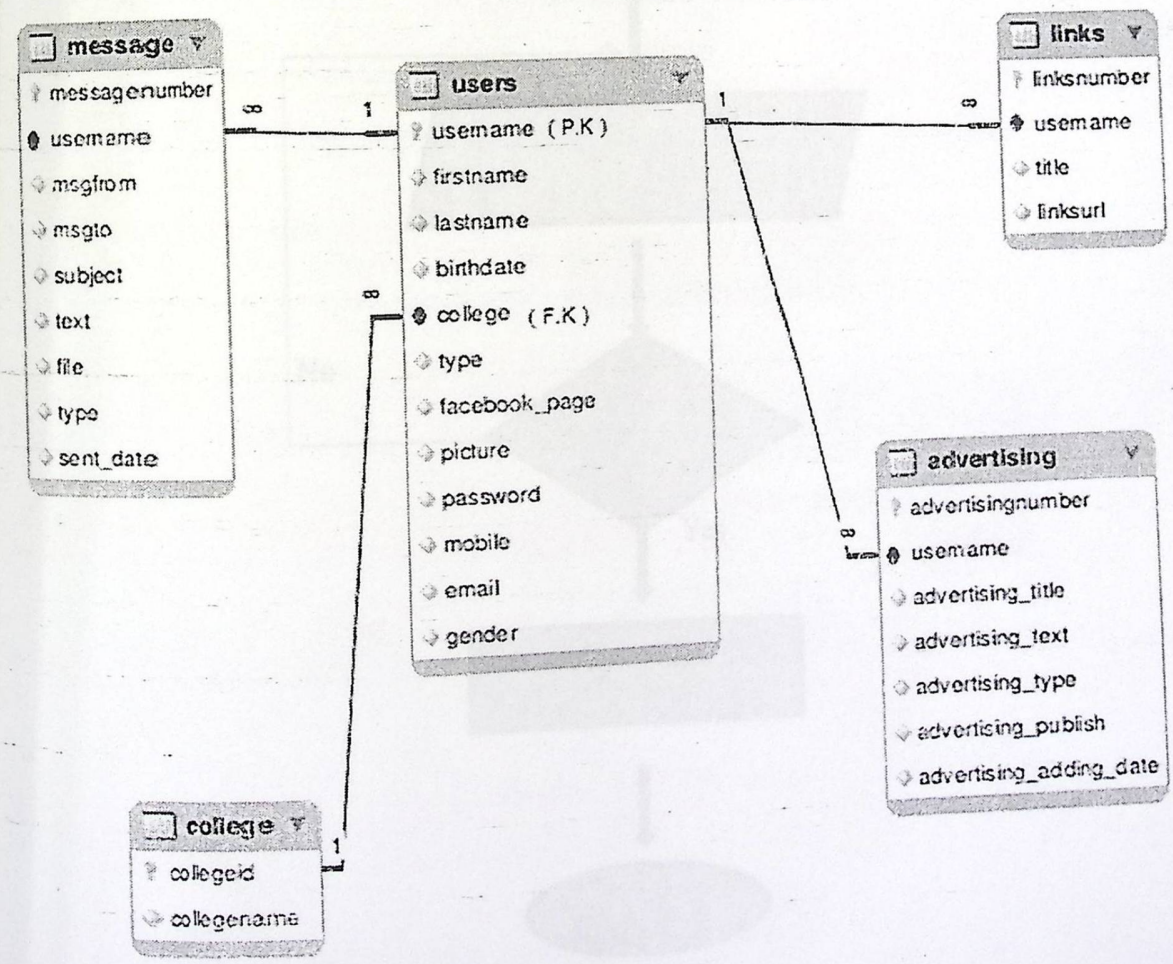


Figure (4.1) UML

4.5 process design

This chapter explains in detail the flow of the data including the inputs, outputs and the basis for all the requirements of the functions mentioned , through the designed process of the different actions.

4.5.1 log in: This design demonstrates the flow of the data for the administrator and the user's sign in. This can be done through entering the user's name, password and security code.

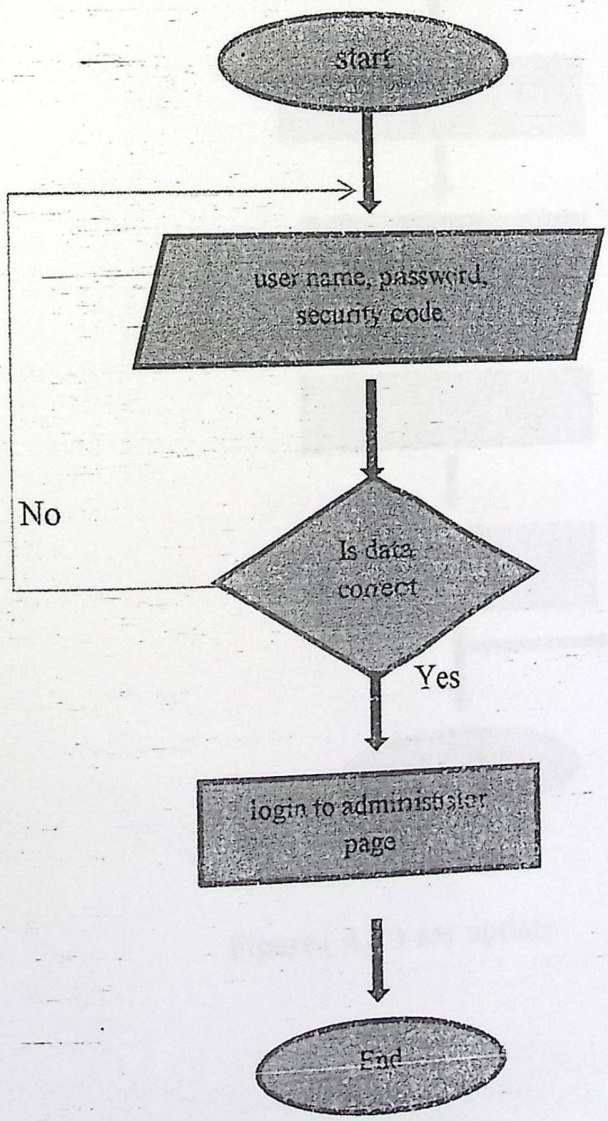


figure 4.1 log in

4.5.2 Site update by administrator: The system's authority signs in and adds a new user or deletes one through entering a user name. The adjustment is saved and stored in the database.

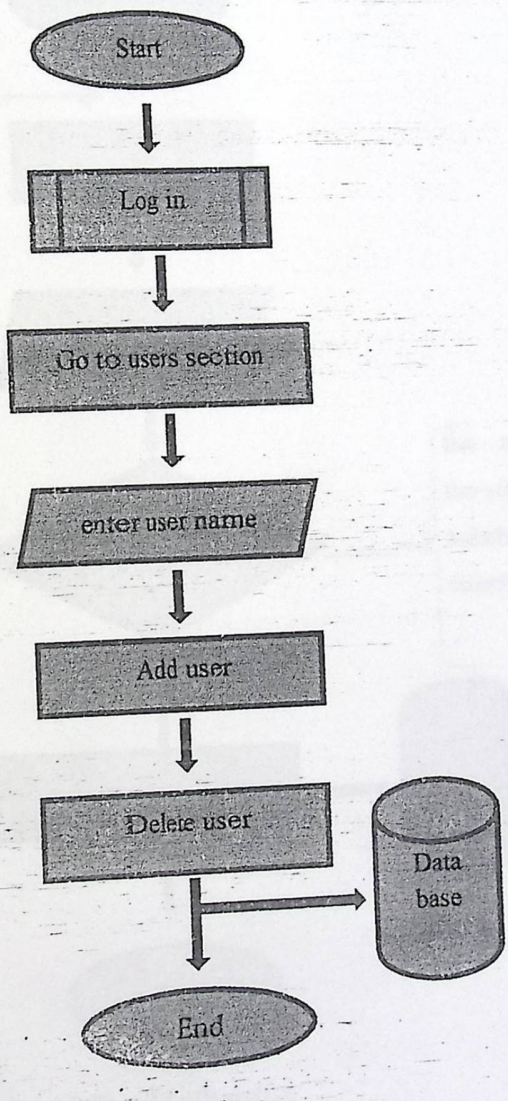


Figure (4.2) site update

4.5.3 add advertise: This design explains how the user can add an advertisement. Then, the administrator examines whether the content and formulation of the advertisement conforms to the conditions. If approved the advertisement will be displayed. Otherwise, it will not.

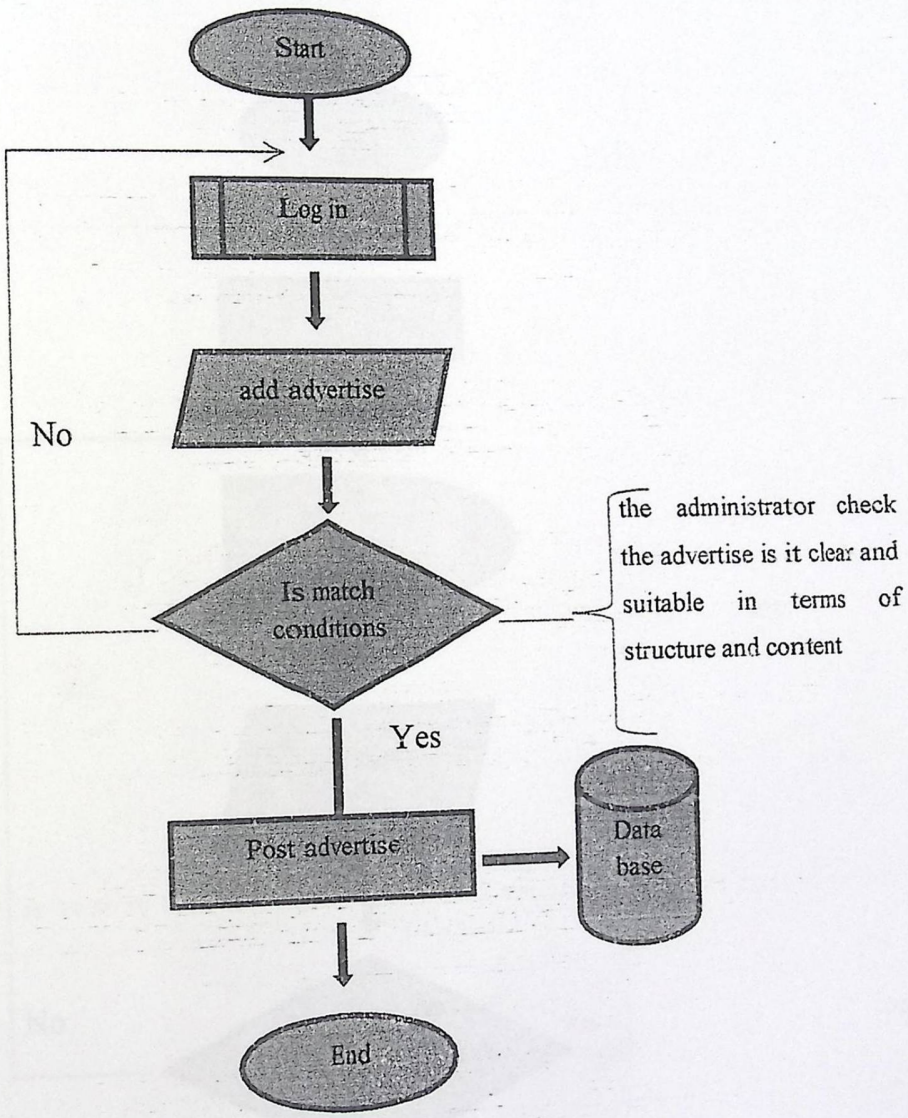


Figure (4.3) add advertise

4.5.4 edit personal information by user: This design demonstrates the procedure of modifying the user's personal data. When the user signs in, the stored personal data is displayed and the user makes the adjustments, which is stored in the database. If the adjustment is not approved, the personal data page is displayed.

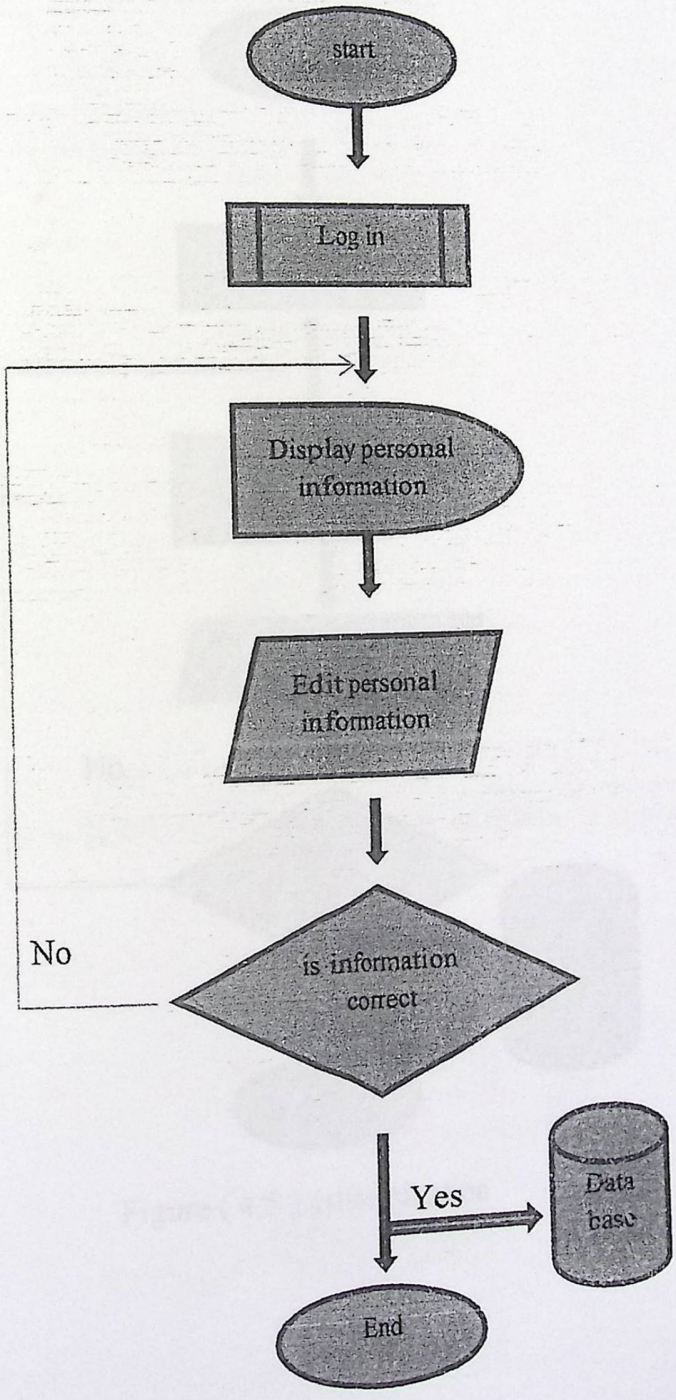


Figure (4.4) edit personal information by user

4.5.5 Customization: This design shows the procedure of customization. The user adjusts the information , such as font type and size, theme and language. When the user clicks customization, this page is displayed. Then after making the changes and saving them, they are stored in the database. Thus, the new design appears the next time the page is visited.

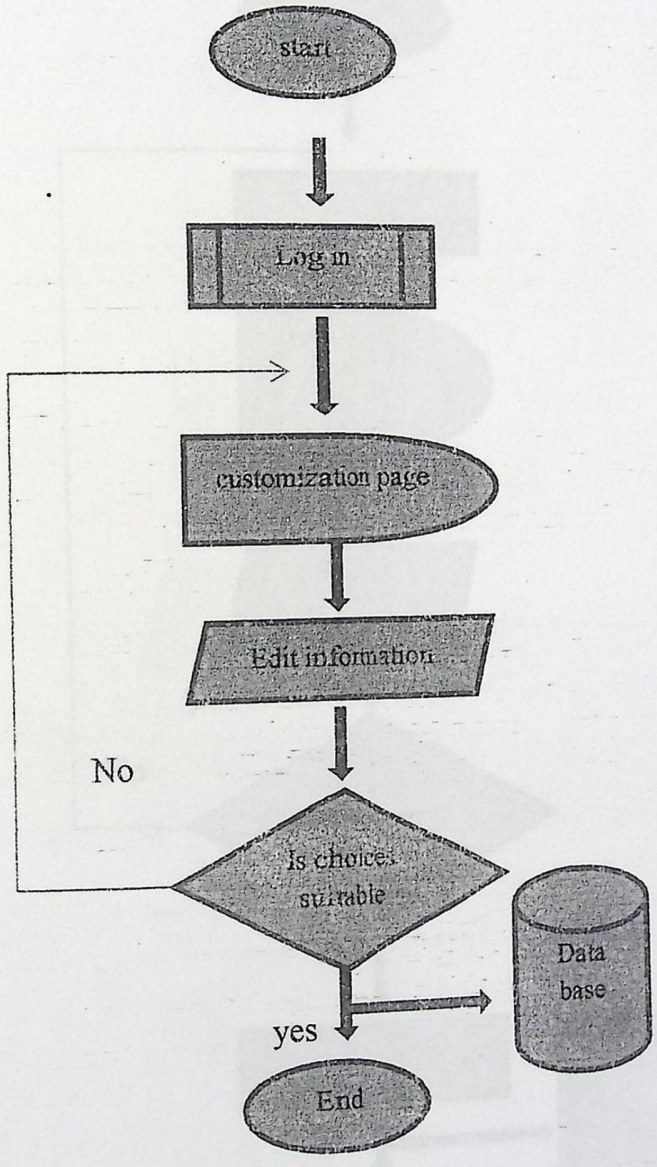


Figure (4.5) customization

4.5.6 add picture: this design displays the procedure of adding a user's personal photo. When the user signs in and clicks adding a photo, the page is displayed and the user downloads a stored photo. The system checks the size of the photo. If the size is appropriate, the photo will be added. Otherwise, the adding photo page is displayed, with no changes.

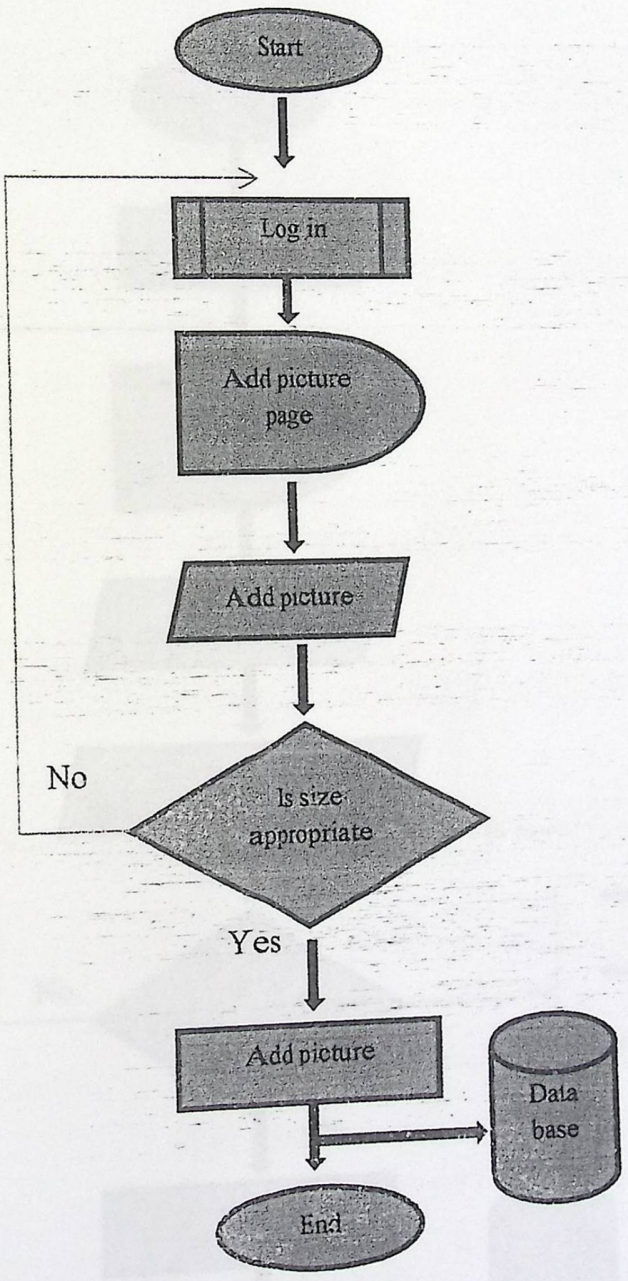


Figure (4.6) add picture

4.5.7 change password: this design explains the procedure of changing the password. The user signs in, clicks the password change page, enters and confirms the new password. The system checks whether the password conforms to the conditions. For instance, the password must not be less than 8 digits. If approved, the password will be changed. Otherwise, the previous page is displayed.

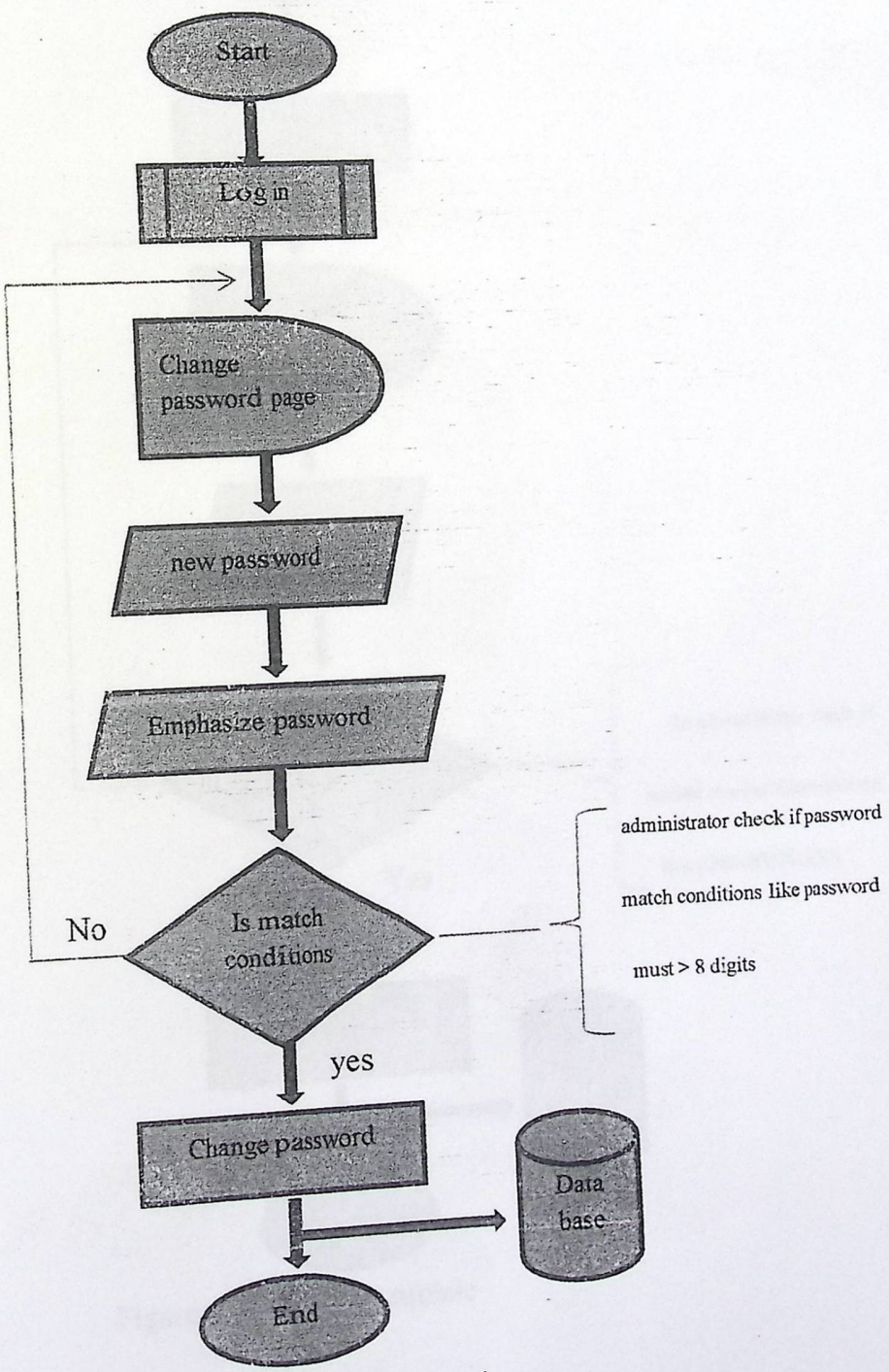


Figure (4.7) change password

4.5.8 change mobile by system user: The user signs in the mobile number change page and enters the new number. If this number is approved it will be stored in the database. If it is not approved, the previous mobile number change page is displayed.

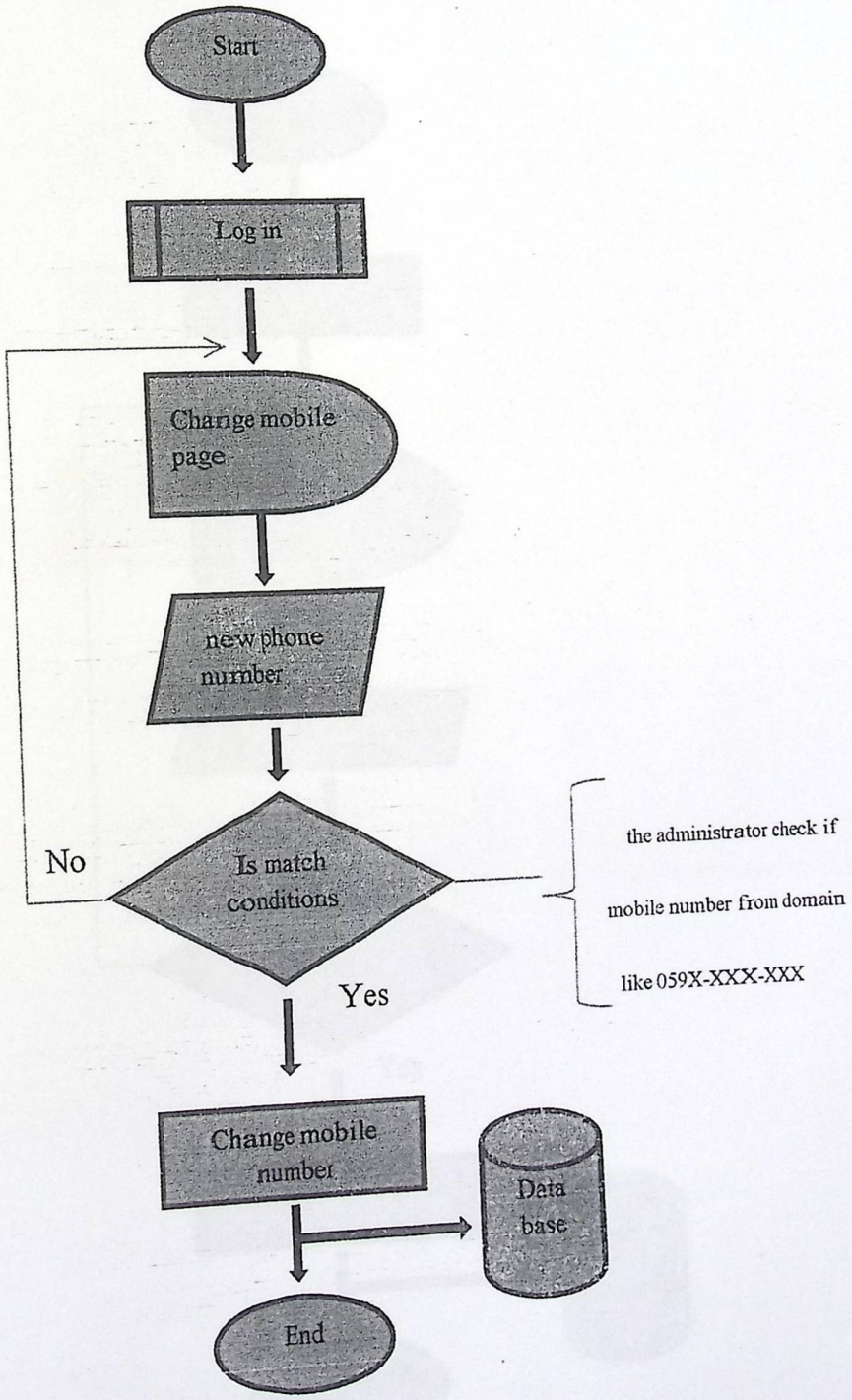


Figure (4.8) change mobile

4.5.9 change email by system user: The user signs in the site and clicks the mobile change page. The window is displayed and the user enters the new email and clicks the change button. Thus, it is stored in the database. The user then clicks the close button and returns to the previous change email page.

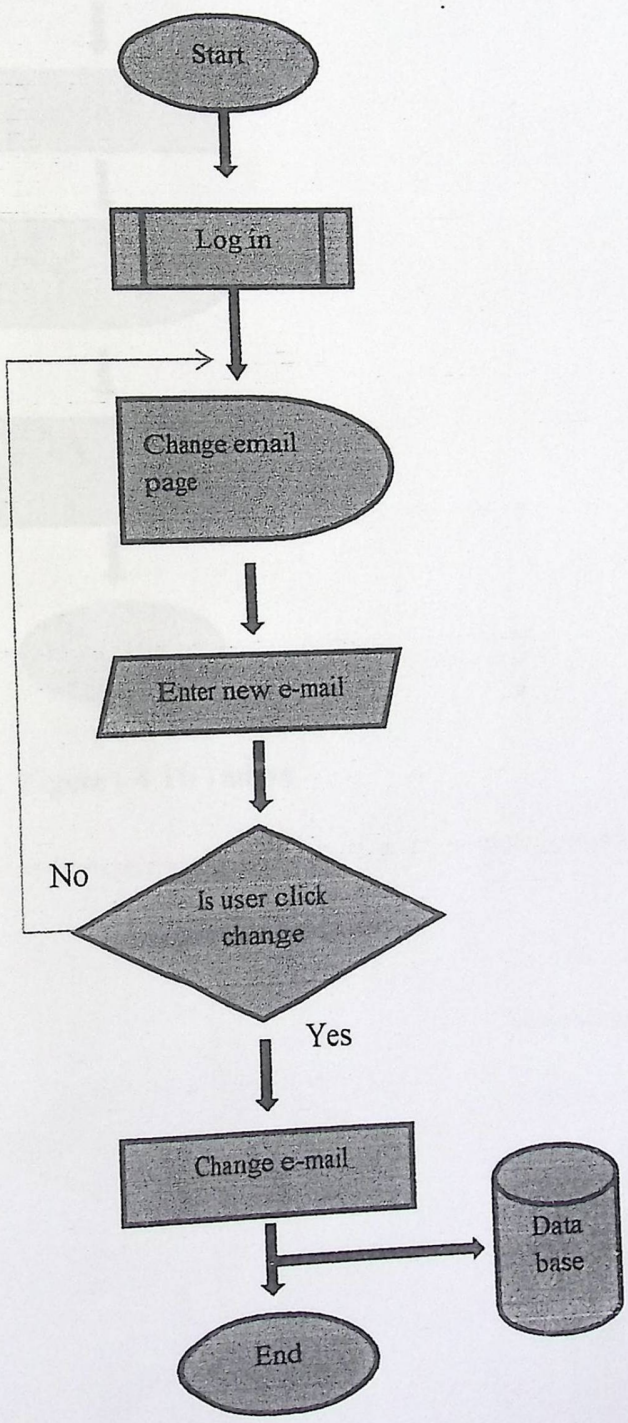


Figure (4.9) change e-mail

4.5.10 inbox: The user signs in, checks the inbox page and reads the messages.

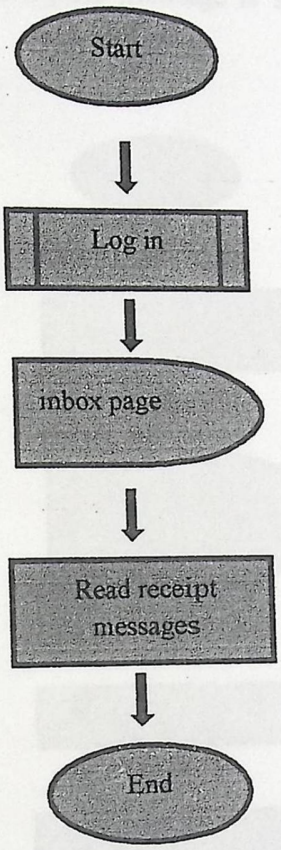


Figure (4.10) inbox

4.5.11 send message: After signing in, the user clicks the sending a new message page, types the text, the subject, the receiver of the message and clicks the send icon. The system checks the message. If all the fields are filled in, the message is sent. Otherwise, the previous sending a new message page is displayed.

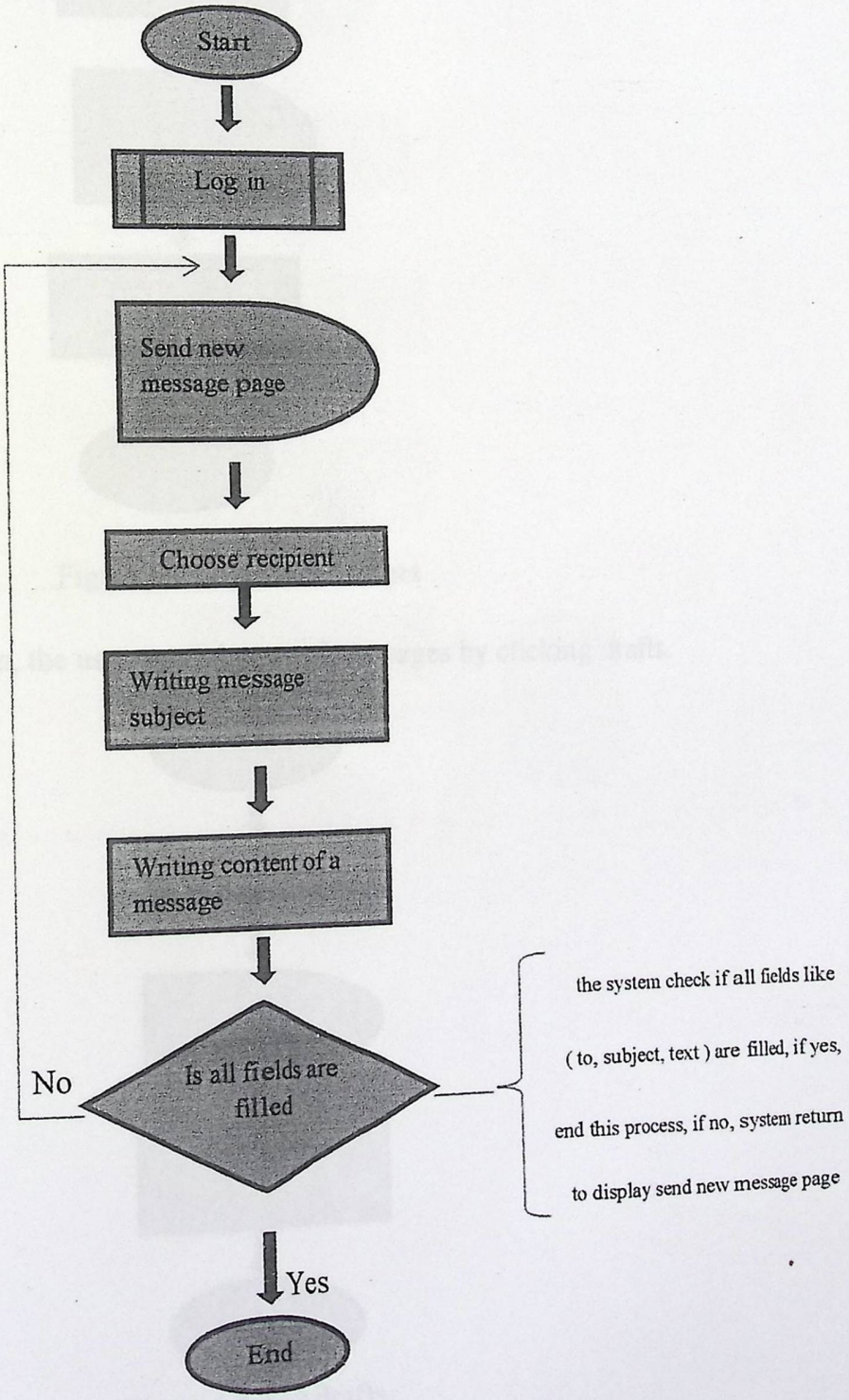


figure (4.11) send message

4.5.12 sent message: After signing in, the user checks the sent messages page and reads them.

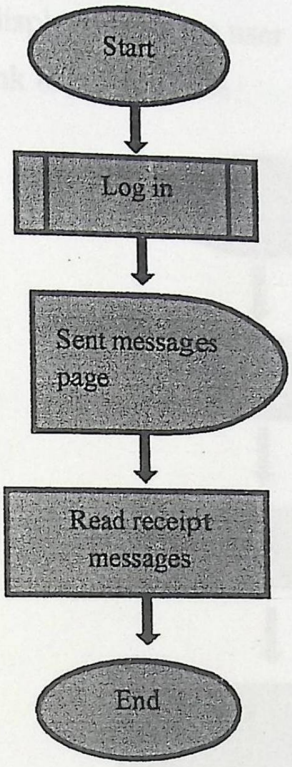


Figure (4.12) sent messages

4.5.13 drafts: After signing in, the user reads the saved messages by clicking drafts.

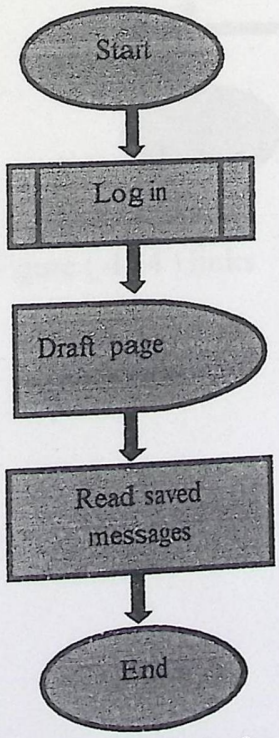


Figure (4.13) drafts

4.5.14 links: the user signs in and reads the available links. The user clicks the addition button to add a new link. A window is displayed and the user enters the link and performs an addition. Then the system stores the new link in the database.

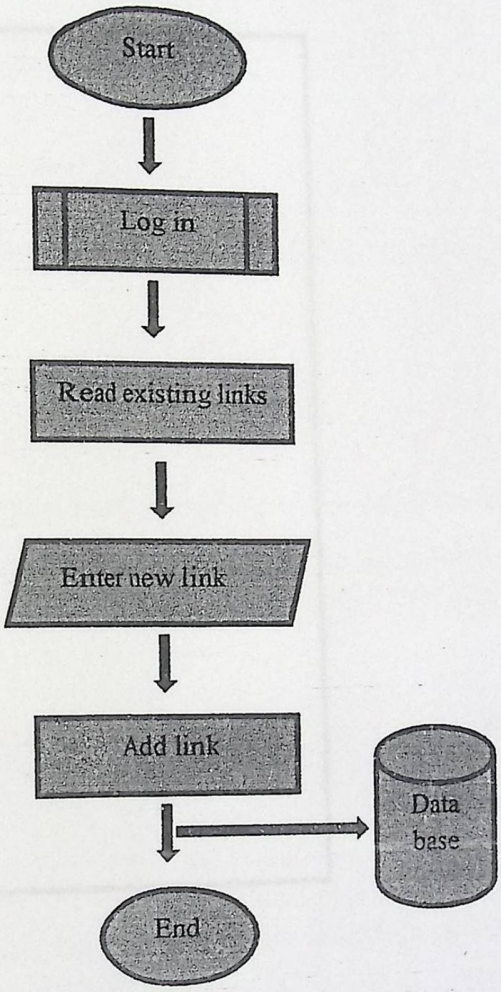


Figure (4.14) links

4.6 navigation chart

Chapter 5

System development

- Introduction
- Requirements
- System Programming
- system testing

5.1 Introduction

This chapter discusses the implementation phase at which more technical details of this Project, tools, physical equipment's, and environments for essential programs that are Required for developing and implementing the system

5.2 requirements

For completing the project a collection of software and equipment's were used. These Include the following:

1.Windows XP

Windows XP is most famous and used now that is support many requirements needed in this project. A supporting platform must be used, and windows XP is the best choice.

2. Microsoft office 2010

It is a complete package to facilitate the various work such as word processing and presentations, its include, Microsoft office word 2010 , Microsoft office power point .

3. PHP language

PHP is considered to be a simple, opened, free, easy to learn language. It accomplishes a wide range of database functions and links net connections. In addition, PHP reinforces many programming languages such as java and xml and it forms a wide and easily expanding cycle. The reason behind this is its simple formula which emulates C language in general. PHP needs a server of Apache type, which is also free and goes automatically with PHP.

4. My sql

Mysql is an examined and approved database system that is used for serious tasks' implementations in large establishments around the world.

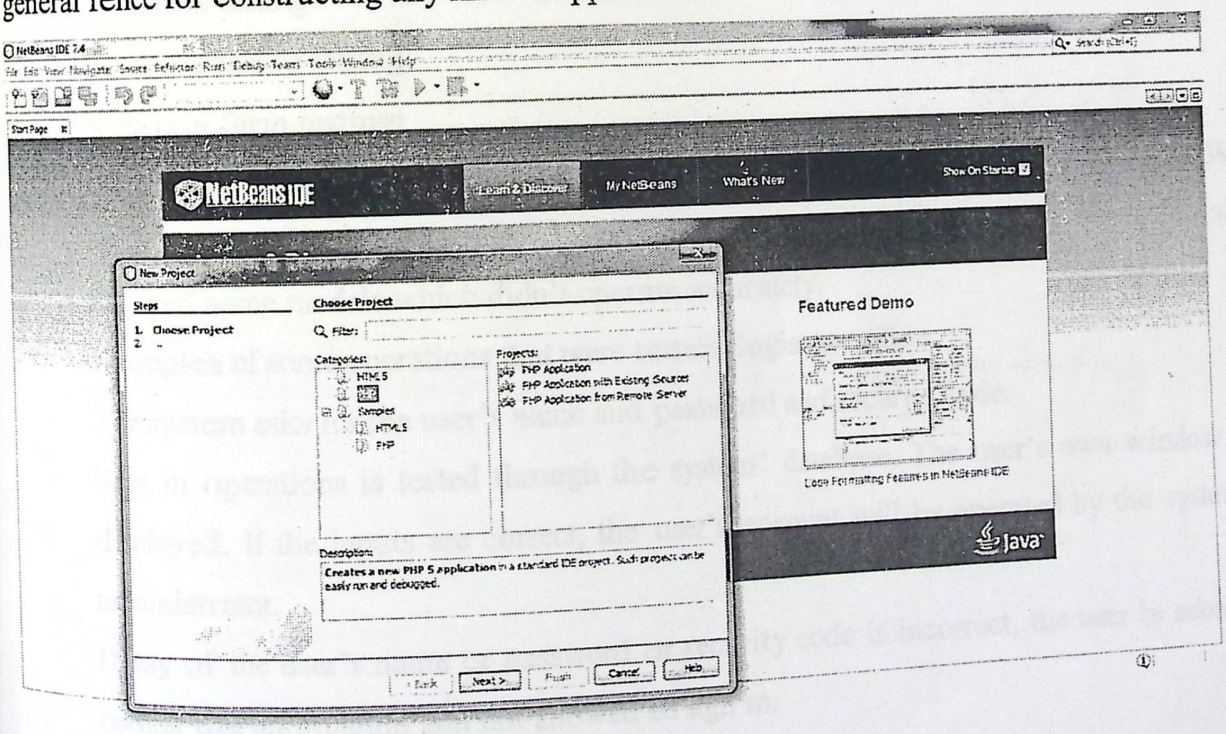
My sqlis known for the short time it needs for accomplishing a certain inquiry and providing the results. This trait makes most programmers choose My sql. Furthermore, My sql is considered to be one of the most well-known, trustworthy databases. It consists of a complicated system for

controlling as well as a limited privilege system for limiting database users' ability to access the data. Another quality of My sql is that it is simple to use and is designed for running large databases more quickly.

5. **MySQL Workbench** is a unified visual tool for database architects, developers, and DBAs. MySQL Workbench provides data modeling, SQL development, and comprehensive administration tools for server configuration, user administration, backup, and much more. MySQL Workbench is available on Windows, Linux and Mac OS X.

6. **App Server:** is a very important element since it provides the pages of the system with security and protection.

7. **NetBeans:** A development integrated medium that is built on criteria . It is written in java. The NetBeans project consists of a development opened source medium with all qualifications. In addition, it includes a very rich basic system for the client's application that can be used as a general fence for constructing any kind of application.



5.3 System Programming

The system consists of two parts. Each uses a different developing environment. The first has used NetBeans for constructing the special website of the system, the control panel and the database. The second part of the system has used PHP for programming. Afterwards, integrity between all the parts of the system and the database was established.

5.4 system testing

It is one of the most important phases in the development of the system. Its importance (Systems' testing) is in checking the reliability of all the parts of the system. It checks whether the system achieves all the requirements and works according to what it is expected to do. In this chapter, all the testing phases are discussed.

System's testing operations:

Testing operations which includes the following:

1. system's form testing.
2. Sub_system testing.
3. System's integrity testing .
4. System's acceptability testing .
5. Stress testing.
6. Performance testing.

- **System's form testing:**

  During this phase, our team has tested all the models of the system. Every operation Was tested separately to make sure it operates accurately. In addition, our team has also repaired some models which didn't operate accurately.

  Examples of some operations that were tested: login operation.

- The system asks for the user's name and password and security code.
- Sign in operations is tested through the system' database. The user's own window is displayed. If the inputs are correct, the user's account will be operated by the system's administrator.
- If any of the user's name or password or security code is incorrect, the user is asked to reenter the information and not allowed to sign in.

❖ **Login operation**

Case	Inputs	Expected results	Actual results	Notes

Login Case	User's type: administrator User's name: admin Password: admin Security code:234	Correct data	Go to administrator page	Successful login
Login Case	User's type: administrator User's name: admin Password: admin Security code:212	Incorrect data	Return to home page	login failure due to incorrect data
Login Case	User's type: user User's name: user Password: 987654321 Security code :323	Correct data	Go to student's page	Successful login
Login Case	User's type: user User's name: user Password: 98765432 Security code :511	Incorrect data	Return to home page	login failure due to incorrect data

Table 5.1 login operation

- **Sub-system testing**

During this phase, subdivisions of the system, which will be joined later, have been tested. Afterwards, it has been noticed that all subdivisions of the system work with no mistakes.

Login testing

The user enters the user's name and password and security code then clicks **login.** The data is tested and the user is verified to be registered before allowed to login. But if the inputs are incorrect, a message that asks for a user's name, appears.

- **System integrity testing:**

After testing all the subdivisions separately, they integrated together. Then, they are tested in order to make sure that the whole system works according to expectations. For example, some of the sub- divisions that were tested are:

Login testing

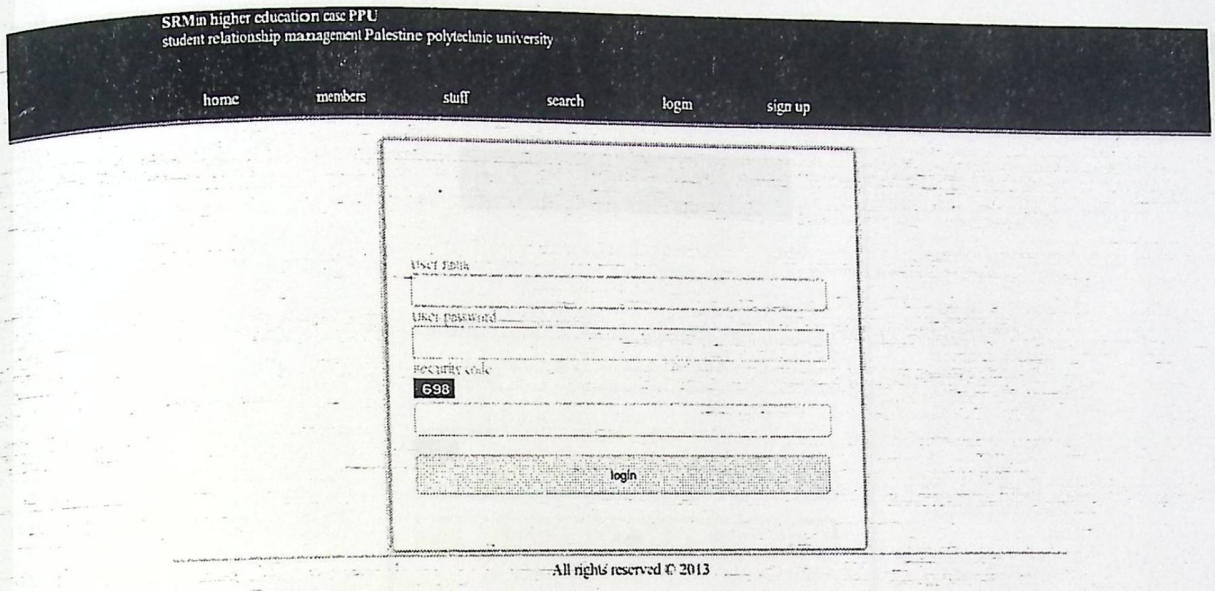
- You have signed in as an administrator, a teacher or a student.
- The administrator's, teacher's or student's window.
- Their own data adjustments

- **System acceptability testing:**

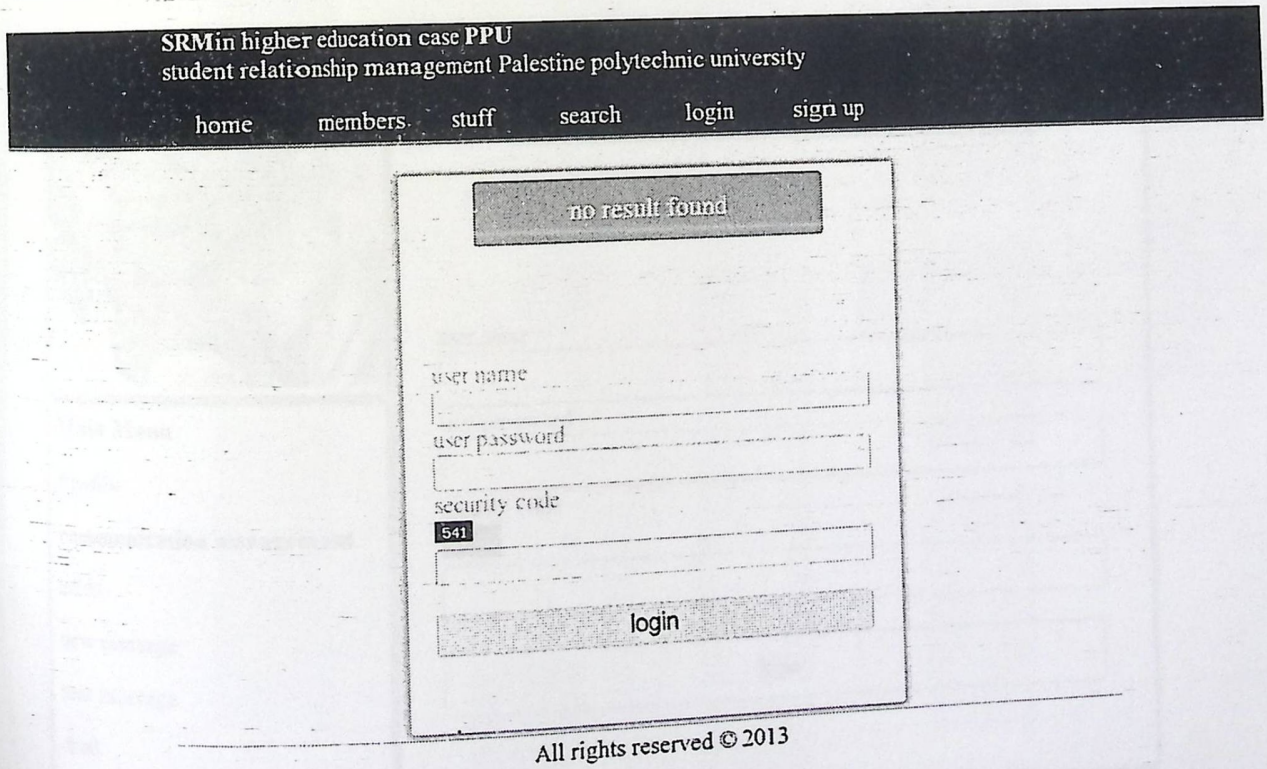
This phase explains the extent to which the system accomplishes the above requirements. This is done through experimenting it with a group of users to see if it achieves the exact needs of the system which has been described in the requirements of the system description document. Furthermore, the subdivisions of the system are tested to make sure that they work together.

Example of login process:

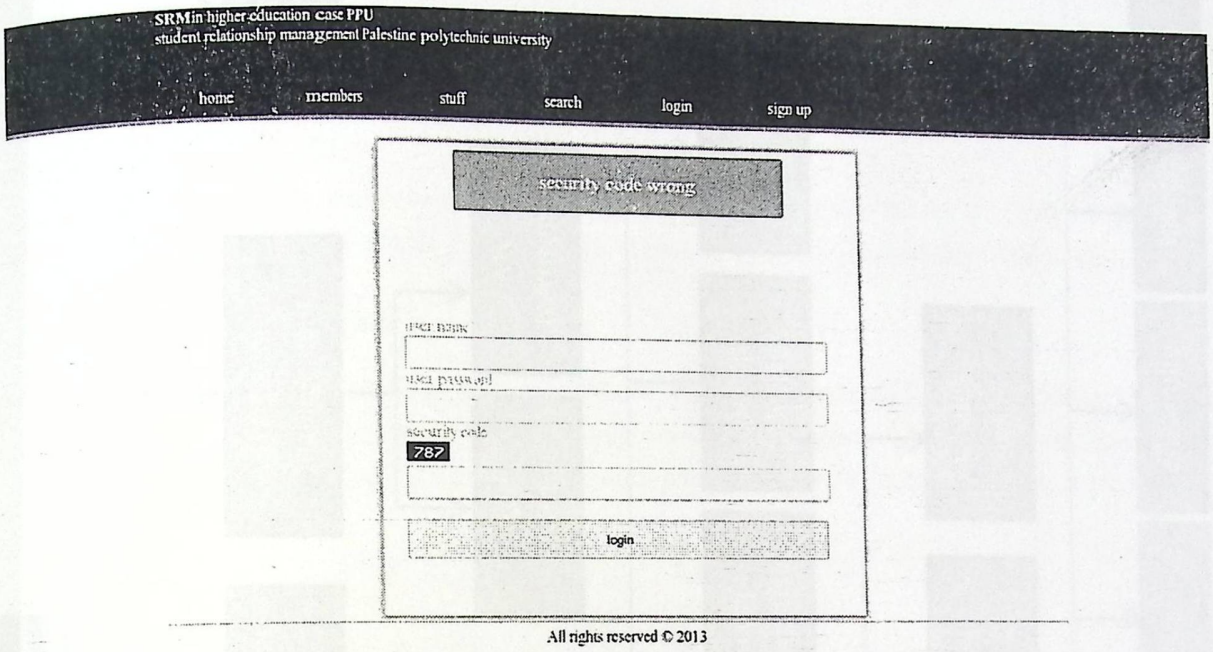
Login page:



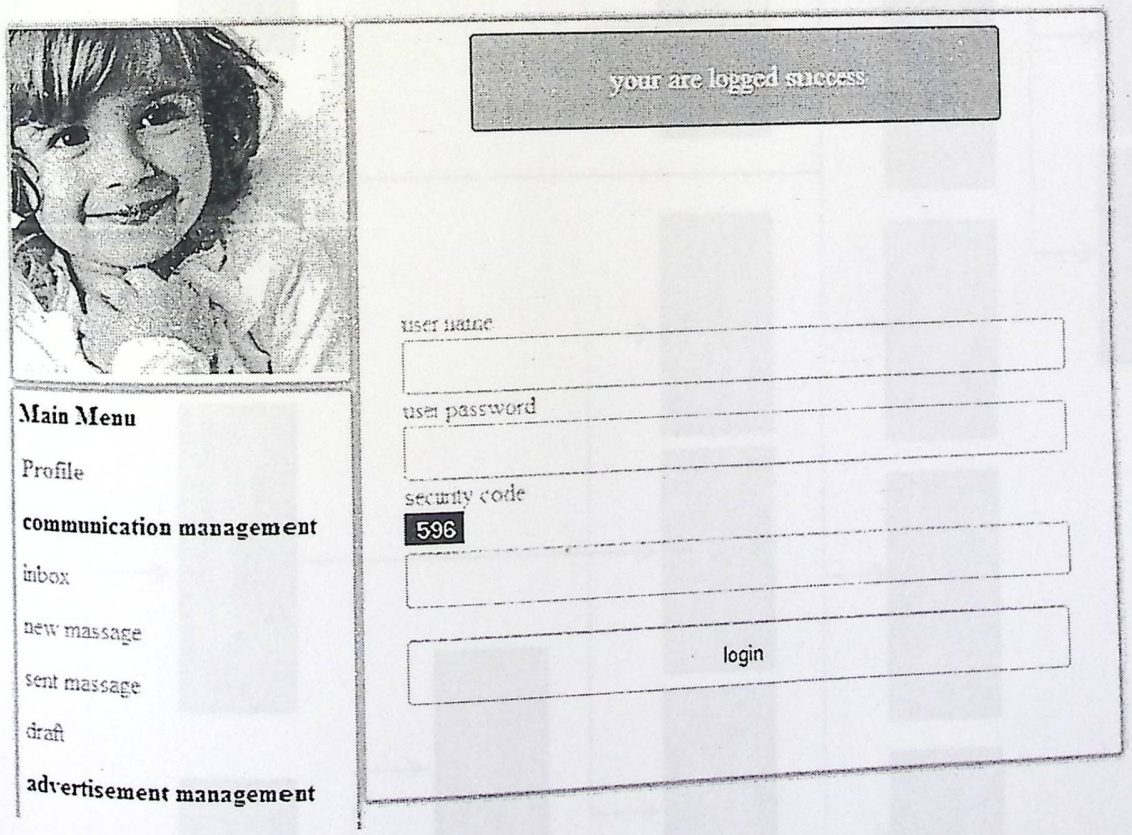
Enter error user name:



Enter error security code:



Enter correct information:



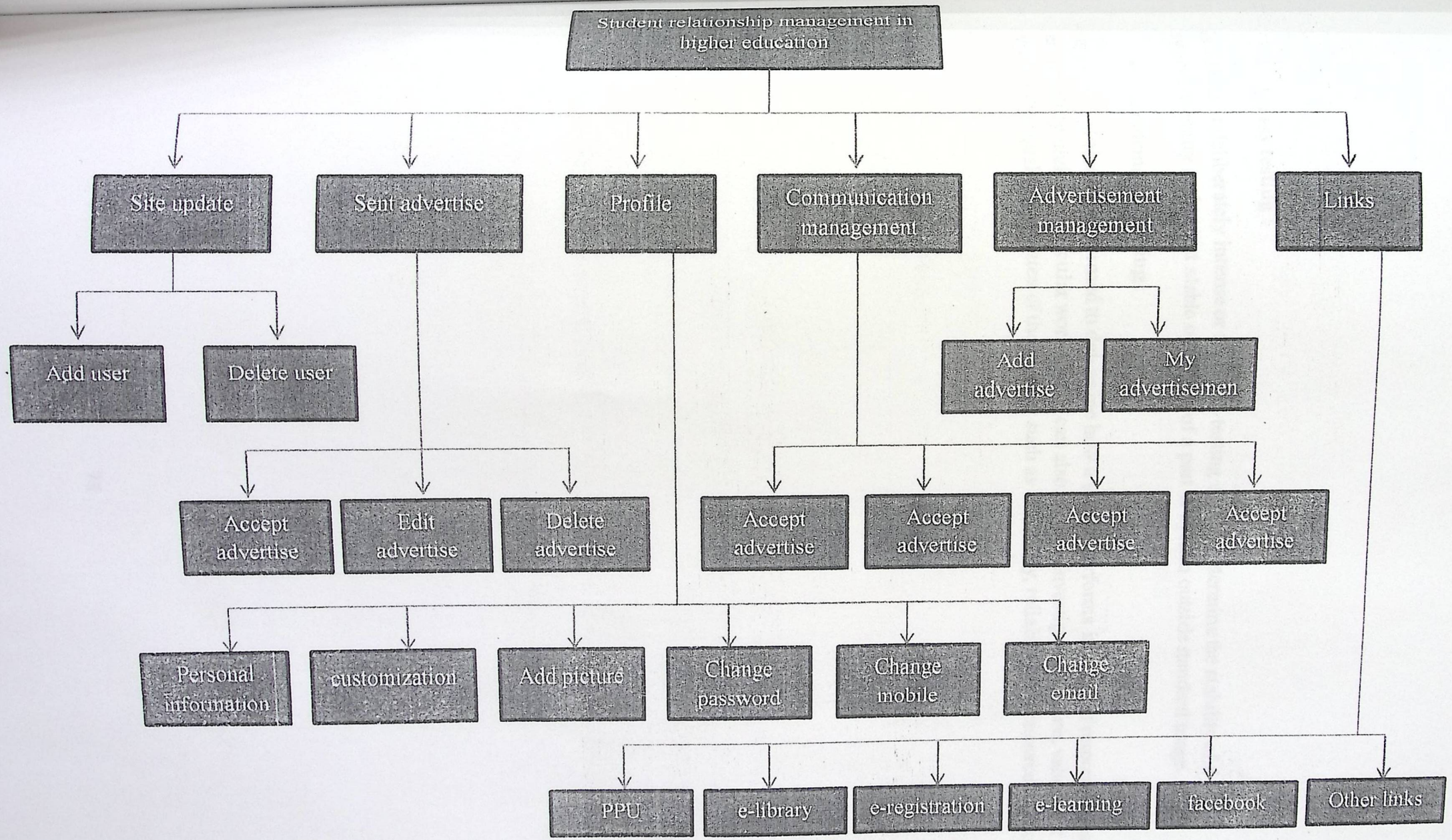


Table (4.6) navigation chart

- **Stress testing :**

is a form of deliberately intense or thorough testing used to determine the stability of a given system or entity and to test stable operation of a part or system outside standard usage.

- **performance testing:**

is in general testing performed to determine how a system performs in terms of responsiveness and stability under a particular workload. It can also serve to investigate, measure, validate or verify other quality attributes of the system, such as scalability, reliability and resource usage.

Chapter 6

System operation

- **Introduction**
- **Relay the system**
- **System maintenance**

6.1 Introduction:

After the completion of development and testing the system, it becomes eligible to take a place in the work in real environment. As known, the user does not have the experience and adequate information about a new introduced program or software. Developer and programmer must provide users with needed steps information and guidance for deployment and maintaining the system. This chapter clarifies necessary operations to relay and maintain the system.

6.2 relay the system

After ensuring that the working environment includes all the working elements mentioned in the third chapter above, and making sure it works properly, the website was published through the domain that the team members will be reserved. The website, www.srm.com, was worked upon to provide the requirements requested from it.

6.3 system maintenance

MySql maintenance:

The database of the system is considered its main element. The database contains the special tables of the system, which contain very important information. Therefore, it is essential to maintain the confidentiality of the data through giving every user a user's name, a password and a security number while communicating through the website. After verifying the sign in data, the user is able to sign in MySql.

App server maintenance:

App Server is a very important element since it provides the pages of the system with security and protection. Therefore, App Server concoctions must be verified. In addition, the server must work efficiently.

Adjustment and Addition Maintenance:

The system needs adjustment and development with time. Thus, it must be able to assimilate such improvement without making any unwanted results. The efficiency and the database information must also be maintained with no defect.

Development Maintenance:

Periodical reports must be obtained from the system's users in order to adjust the system to suit the changing needs of the users.

Backup Policy:

Through the process of adjusting the system, some errors in the system or the database might sometimes occur. These errors might cause the system to stop. In order to avoid this problem, all the information in the database of the system is backed up and saved. A CD must be constructed for recovering the system when a defect is detected. This process must be done periodically.

Chapter 7

Conclusion

- **Introduction**
- **Conclusion**
- **Recommendation and future work**

7.1 introduction

After finishing the development of the student relationship management system, the project team was able to accomplish the desired goals of the system. The required functions were successfully accomplished and the team arrived at several recommendations that help to increase the efficiency of the system in the future.

7.2 conclusion

1. Implementing this system saves the time and effort of its users through the simplicity of communication among students and their teachers and their ability to control their personal pages.
2. Through this system, the service level increases as the students feel comfortable when using the site.
3. The electronic website has been established.
4. The system's response speed and simplicity helped to achieve most of the teachers and students' needs.
5. This system enables the person in authority to perform the various acts of addition, deleting or modifying the registered students or teachers' information.

7.3 Recommendation and future work

1. We recommend the actual implementation of this system at college.
2. The possibility of developing the system to include all fields in the future is advised.
3. Holding a lecture to inform the users about the system and how to use it is also important.
4. Developing the system to be applied on the phone.
5. Increasing the efficiency of the system can be obtained through allowing the users to evaluate the site.

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