

1.1 Introduction

King Khalid University is a one of the best educational institutions in kingdom of Saudi Arabia. It is having best higher educational programs that meet the Market needs and contributed the development of country.

Community College for girls in ABHA is one of colleges belongs to King Khalid University. It aims to apply quality in the educational programs to meet the current market needs. It consists of two departments Computer Science and Business Administration. Also, it involves multiple committees to serve students, graduates, staff members, and community. One of these committee is graduates committee. The most important task for graduate committee is conducting graduates training process.

One of the major issues that face the graduate committee members, the manual process of applying for external training, as this process performed manually, and required for graduates to come to college more than one time to accomplish the training process.

The main idea of this project is to develop a dynamic website used by Community College (Graduation committee) to conduct external training process electronically.

1.2 Problem Statements

1. Time, effort, and high cost are taken to accomplish the traditional paperwork.
2. The difficulties for storing and retrieving reports and other information
3. Absence of a mechanism to follow up the work.

4. Graduates need to come to college more than one time to accomplish the training process manually.

1.3 Objectives

- Save time, effort, and cost.
- In order to accomplish training process, no need for graduates to come college, as everything will have done at home electronically.
- Ability to store and retrieve information easily.

1.4 Methodology and tools

In order to analyze and design the proposed system, we will apply the Object Oriented Analysis and Design (OOAD) method on the water fall model phases. Also we will use the UML notations to document development process phases.

During the system development, the following tools were used: software tools, Hardware tools, and data gathering tools. Table (1.1) describes them in details.

Table (1): Tools

Tools		
Software	Hardware	Data gathering
Backend: SQL Server	Laptop	Interviews
Front end: C# language with Asp.net using MVC technology	Printer	Documents

1.5 Report outlines

This report will include several chapters. The introduction and overview of study are described in chapter one. Chapter two will describe the analysis phase. Design, implementation and testing phases will have covered in chapter three and four respectively. We conclude the report and provide the recommendation in chapter 5.

2.1 Preliminary Analysis

The first step for developing system is a preliminary analysis. The main objectives of preliminary analysis are to identify customer needs, identify solution according to customer needs, and evaluate the solution by feasibility study.

2.1.1 Customer Needs

In order to identify the customer needs, we conducted some interviews with community committee members so that, the requirement of the proposed system become clear and understandable. From this task, we specify the following needs:

- Community graduates will be able to apply for external training online, and no need for them to come to college and do everything from everywhere and every time.
- All information about the graduates, participant and training will be available for use in proposed system and maintained easily.
- Usability (user will figure out how proposed work easily.)
- Responsive (The interface should work fast.)

2.1.2 Proposed Solution

The proposed solution depends on developing website by using ASP.net with MVC technique.

2.2 Feasibility Study

The second stage in preliminary analysis to determine whether the proposed solution is practical enough to implemented. So that the feasibility study is done. There are three types of feasibility study. The following sections describe them in details.

2.2.1 Technical Feasibility

The major issue regarding technical feasibility is to determine if the required resources (trained manpower, software, hardware) are available or not.

We are familiar with software used in the proposed system. So manpower is readily available. The hardware and software also available then the proposed solution technically feasible.

2.2.2 Economic feasibility

This process includes the overall cost of the project. Table (2.1) describes the economic feasibility in details. It is obviously. the proposed total cost will be reasonable compared with the benefits of the proposed system.

Table (2.1): Economic Feasibility

Items	Cost per unit	Quantity	Total cost
Software	650		
Visual studio.net 2015	60	2	120
Windows	750	2	1500
Hardware	1000		1000
Pc computer	2000		2000
Laptop	2500	2	5000
Printer	1200	1	1200
Development	200		200
Analyst	600		600

Developer	1000		1000
Total Cost	12620		

2.2.3 Operational Feasibility

The major is to determine the usability of the proposed system after deployment.

It is clear that, the proposed system will be easy to use, fast response, efficient.

2.3 Expected time to complete a project

In order to specify the expected time to complete a project, a network diagram is defined. As shown in Table (2.2) and Figure (2.1) respectively.

Table (2.2): Projects major Tasks

Task	Task Code	Duration (Days)	Predecessor
Preliminary Analysis	A	6	-
Detailed Analysis	B	10	A
Design(1)	C	10	B
Design(2)	D	10	B
Implementation	E	20	C,D
Finishing	F	10	E

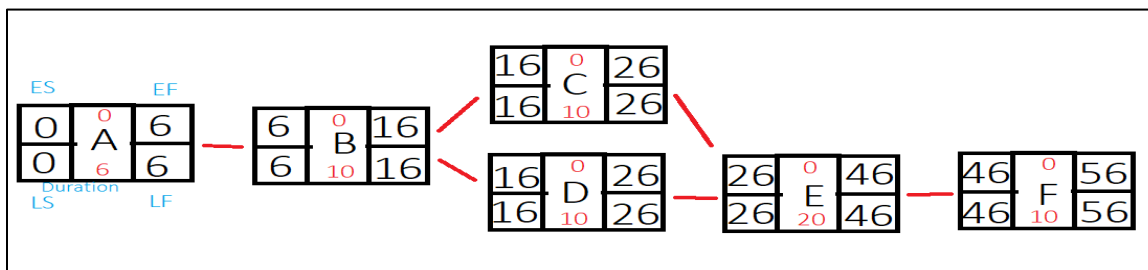


Figure (2.1): Network diagram

According to the network diagram we found the following results:

Critical Paths: A-B-C-E-F and A-B-D-E-F.

Expected time to complete project: $6+10+10+20+10=56$ days.

2.4 Detailed Analysis

The aim of this phase is to elicit requirements and define what does the proposed system need to do, and what's the problem the system trying to solve. Also, this phase involves the process of requirements specification by using use cases notation.

2.4.1 Description of Current System

Community college of girl in ABHA is one of the colleges of King Khalid university in the kingdom of Saudi Arabia. It involves multiple committees to serve students, graduates, staff members, and community. One of these committees is graduates committee. The most important task for graduate committee is conducting graduates training (external, Internal) process as graduates come to college and do these process manually. They have to submit copy of some important documents to one of the committee members such as: graduate certificate, identity, agreement by father to do training, and approval by destination. After revision and rechecking of papers the graduate can start training. As we see, this process requires more time and effort.

2.4.2 Problem statements

1. Time, effort, and high cost are taken to accomplish the traditional paperwork.
2. The difficulties for storing and retrieving reports and other information
3. Absence of a mechanism to follow up the work.

4. Graduates need to come to college more than one time to accomplish the training process manually.

2.4.3 Data gathering tools

In order to gather information about the current system and elicit the customer needs, we have conducted two interviews, one of them with Dr.Amirah who spoke about the requirements of the current system and the needs of the new system and. Other one with Mrs. Amal as she described the current system and what problems which they face them at work.

2.4.4 Use cases

The requirements of the system are defined by using use cases notation. Figure (2.1) describes how the graduate user will interact with the proposed system. The graduate user can login to system, upload files, request for training, view participant, and query a request.

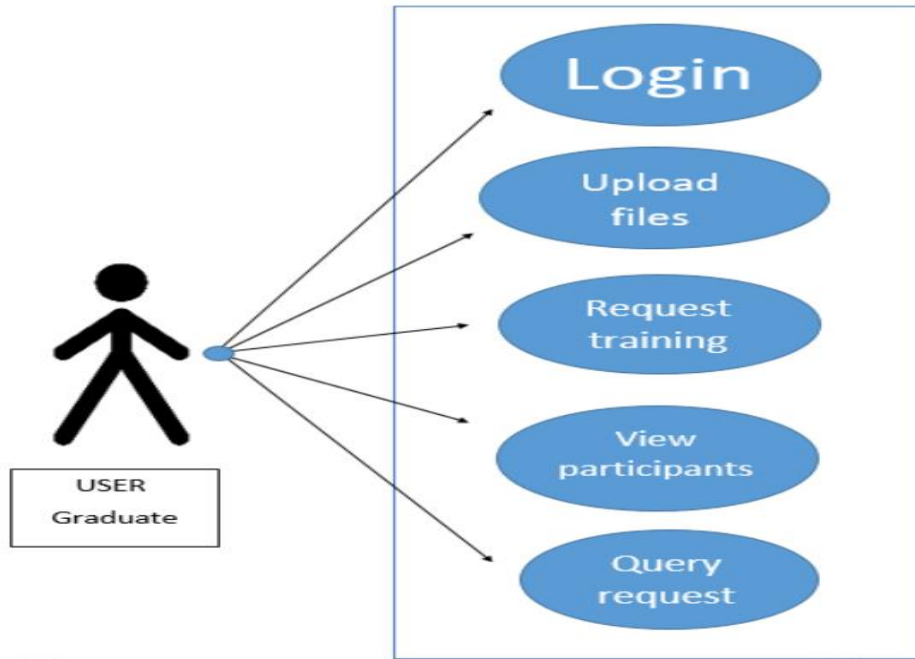


Figure (2.2): Graduate Use Case

On the other hand, the admin use case which depicted in Figure (2.2) shows that, the admin can login to the system, performs CRUD operation (Create, Remove, Update, and Delete) show and response to some request.

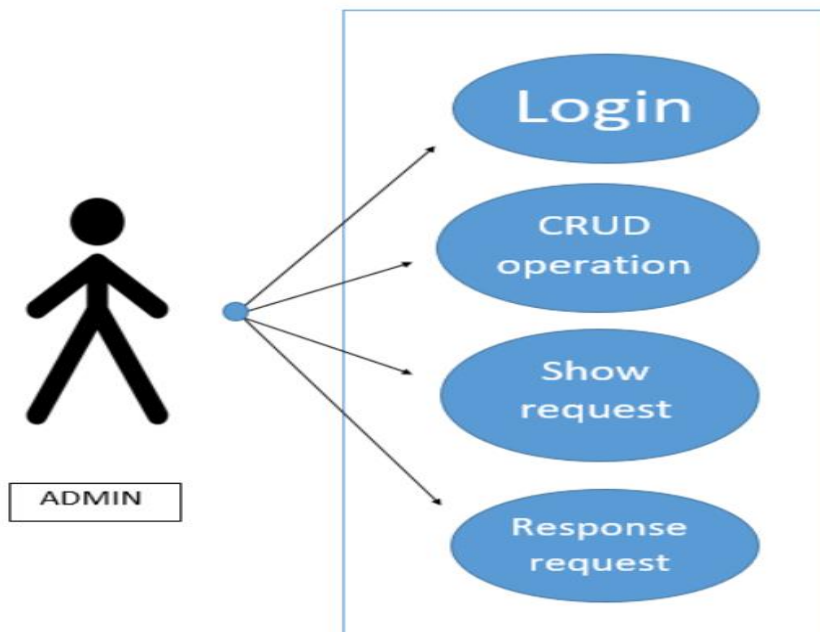


Figure (2.3): Admin Use Case

3.0 Design phase

This chapter includes two sections. The first one shows the database tables which are used to store and retrieve information, and entity relation model to describes the relationships between database tables. Second section depicts the structure design of proposed website supported by activity diagrams to explain how each page will work.

3.1 Database design

The following tables (3.1- 3.11) describe the database of the proposed system.

Table (3.1): Departments

Field Name	Datatype	Key	Description
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Dep_ID	int	Primary Key	Department ID
Dep_Name	Varchar		Department Name

Table (3.2) Programs

Field Name	Datatype	Key	Description
Dep_ID	Int	Composite Primary Key	Department ID
Prog_ID	Int		Program ID
Prog_Name	Varchar		Department Name

Table (3.3) GraduateSem

Field Name	Datatype	Key	Description
Sem_ID	Int	Primary Key	Semester ID
Sem_Name	Varchar		Semester Name

Table (3.4) Grad

Field Name	Datatype	Key	Description
Std_ID	Int	PK	Graduate ID
Std_Name	Varchar		Graduate Name
Dep_Id	Int	FK references to departments	Department ID
Prog_Id	Int	FK references to programs	Program ID
Degree	decimal(3,2)		Degree
Graduate_Date	Datetime		Graduate Date
Sem_ID	Int	FK references to Graduate_Sem	Semester ID
Mobile	Varchar		Mobile
Email	Varchar		Email

Table (3.5) Sections

Field Name	Datatype	Key	Description
Section_ID	Int	Primary Key	Section ID
Section_Name	Varchar		Section Name

Table (3.6) EntityType

Field Name	Datatype	Key	Description
Entity_Type_ID	Int	Primary Key	Destination ID
Entity_Type	Varchar		Destination Name

Table (3.7) Locations

Field Name	Datatype	Key	Description
Location_ID	Int	Primary Key	Location ID
Location_Name	Varchar		Location Name

Table (3.8) Entities

Field Name	Datatype	Key	Description
Entity_ID	Int	PK	Destination ID
Entity_Name	Varchar		Destination Name
Entity_Type_ID	Int	FK references to Entity_Type	Destination type ID
Location_ID	Int	FK references to Locations	Location ID
District	Varchar		District
Street	Varchar		Street
Marked_Place	Varchar		Common place
Phone	Varchar		Phone Number
Mobile	Varchar		Mobile number
Responsible_name	Varchar		Responsible name
Responsible_job	Varchar		Responsible job
Section_ID	Int	FK references to Section	Section ID

Table (3.9) StdTrain

Field Name	Datatype	Key	Description
Id	Int	PK	ID
Std_ID	Int	FK references to Grad	Destination ID
Entity_ID	Int	FK references to Entities	Graduate ID
Start_Date	Datetime		Apply date
End_Date	Datetime		Message

Table (3.10) GradEntity

Field Name	Datatype	Key	Description
ID	Int	PK	ID
Entity_ID	Int	FK references to Entities	Destination ID
Std_ID	Int	FK references to Grad	Graduate ID
ApplyDate	Datetime		Apply date
Message	Nvarchar		Message

Table (3.11): files

Field Name	Datatype	Key	Description
ID	Int	PK	ID
Std_ID	Int	FK references to Grad	Graduate ID
File1	Binary		Files to be downloaded
File2	Binary		
File3	Binary		
File4	Binary		

3.1.1 Entity Relation Model

In order to describe the relationships between database table, the entity relation model is developed as shown in Figure (3.1).

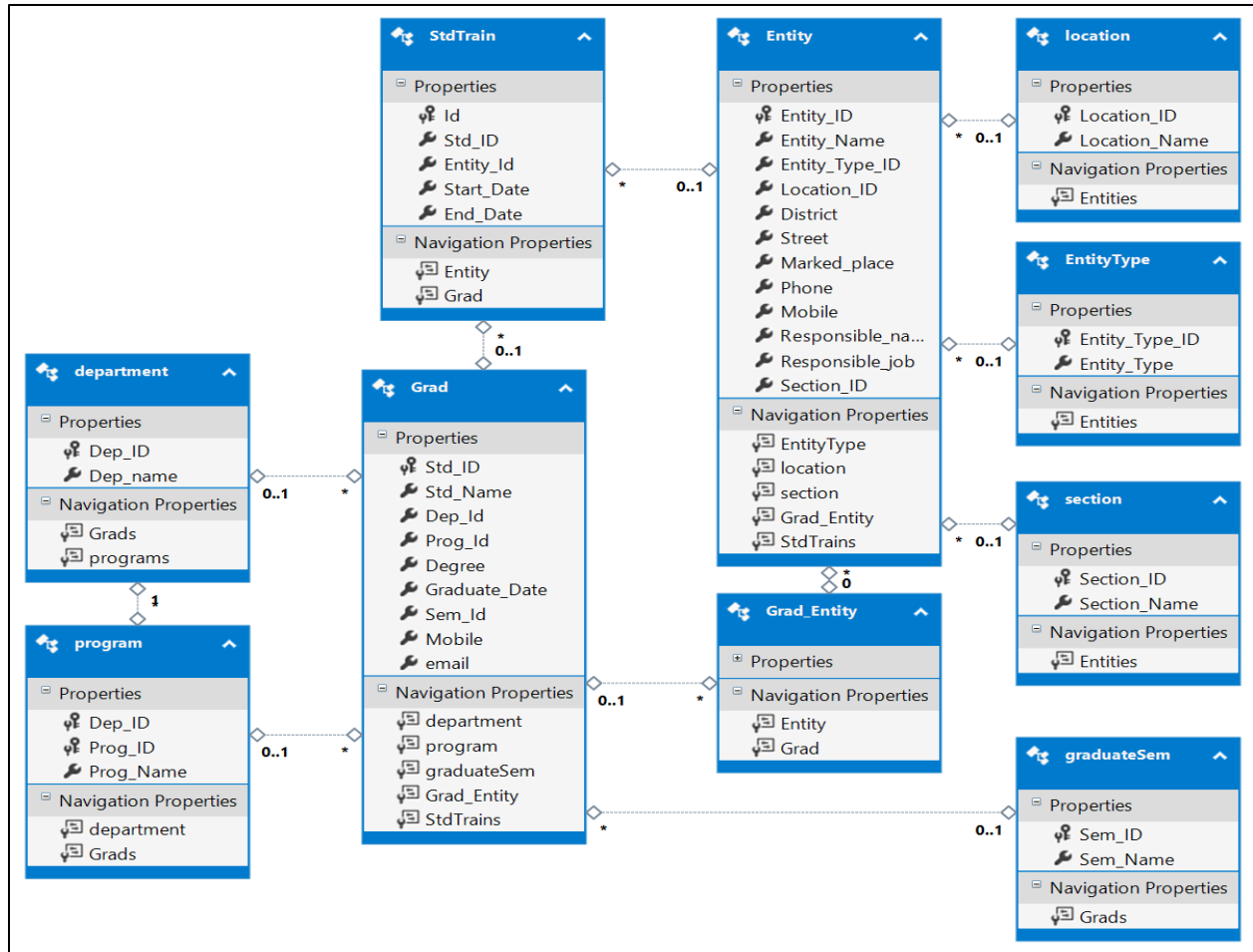


Figure (3.1): Entity Relationships Model

3.2 Proposed Website Structure

The web site divided into two major parts: Admin part in which the administrator to do the CRUD database operations and also response to requested that coming from graduates. The second one is graduate part in which the graduations can apply for external training online. Figure (3.2) demonstrates the structure of the website.

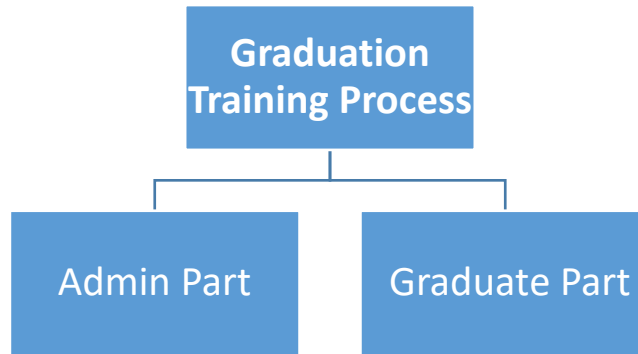


Figure (3.2): Website Structure

3.3 Website Design

The proposed website will contain several pages. The initial design of proposed website is covered here supported by activity diagrams to explain how each page will work.

3.3.1 Home Page

Home page contains all information and services provided by the proposed web site as shown in Figure (3.3).

3.3.2 Pre-Applying for Training Page

In this page the graduates can download all required documentation for applying as depicted in Figure (3.4).



Figure (3.3): Homepage Design



Figure (3.4): Pre-Applying Page

3.3.3 Applying for training page design

The process of applying for external training involves several pages as multi-step process wizard. Figures from (3.5) to (3.8) show these steps. Also the activity diagram is provided in figure (3.9) to demonstrate the training process.



Figure (3.5): Step One



Figure (3.6): Step Two



الصفحة الرئيسية قبل التقديم تقديم طلب تدريب الاستعلام عن طلب التدريب اتصل بنا

تقديم الطلب

١ ٢ ٣ ٤

٢ - البيانات الأساسية:

الرقم الجامعي:

القسم:

تاريخ التخرج: اليوم - الشهر - السنة

المعدل:

رقم الجوال: البريد الإلكتروني: Da****@outlook.sa

التالي

Figure (3.6): Step Three



الصفحة الرئيسية قبل التقديم تقديم طلب تدريب الاستعلام عن طلب التدريب اتصل بنا

تقديم الطلب

١ ٢ ٣ ٤

٣ - التدريبات:

اسم الجهة:

العنوان: ١ - المنطقة: ٢ - الحي:

٣ - الهاتف: ٤ - البريد الإلكتروني: Da****@outlook.sa

اسم المسؤول: وظيفة المسؤول: رقم الجوال:

نوع القطاع:

التالي

Figure (3.7): Step Four



[الصفحة الرئيسية](#)
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تقديم الطلب

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الرقم الجامعي: ٤٣٤٨***** . اسم الخريجة: الاسم الرباعي.

القسم: حاسب الي. البرنامج: برمجة وتشغيل الحاسبات.

تاريخ التخرج: يوم – شهر – سنة هـ. الفصل الدراسي: الثاني.

البريد الإلكتروني: da*****@outlook.sa المعدل: جيد جداً. رقم الجوال: ٥٥٠٨١****. البريد الإلكتروني: *****.

اسم الجهة: *****.

العنوان: المنطقة: *****. الحي: *****. الهاتف: ٠١٧ *****. البريد الإلكتروني: *****.

اسم المسؤول: الاسم الرباعي. وظيفة المسؤول: *****. رقم الجوال: ٥٥٠٩١****.

نوع القطاع: تعليمي حكومي.

ارسال

Figure (3.8): Step Five

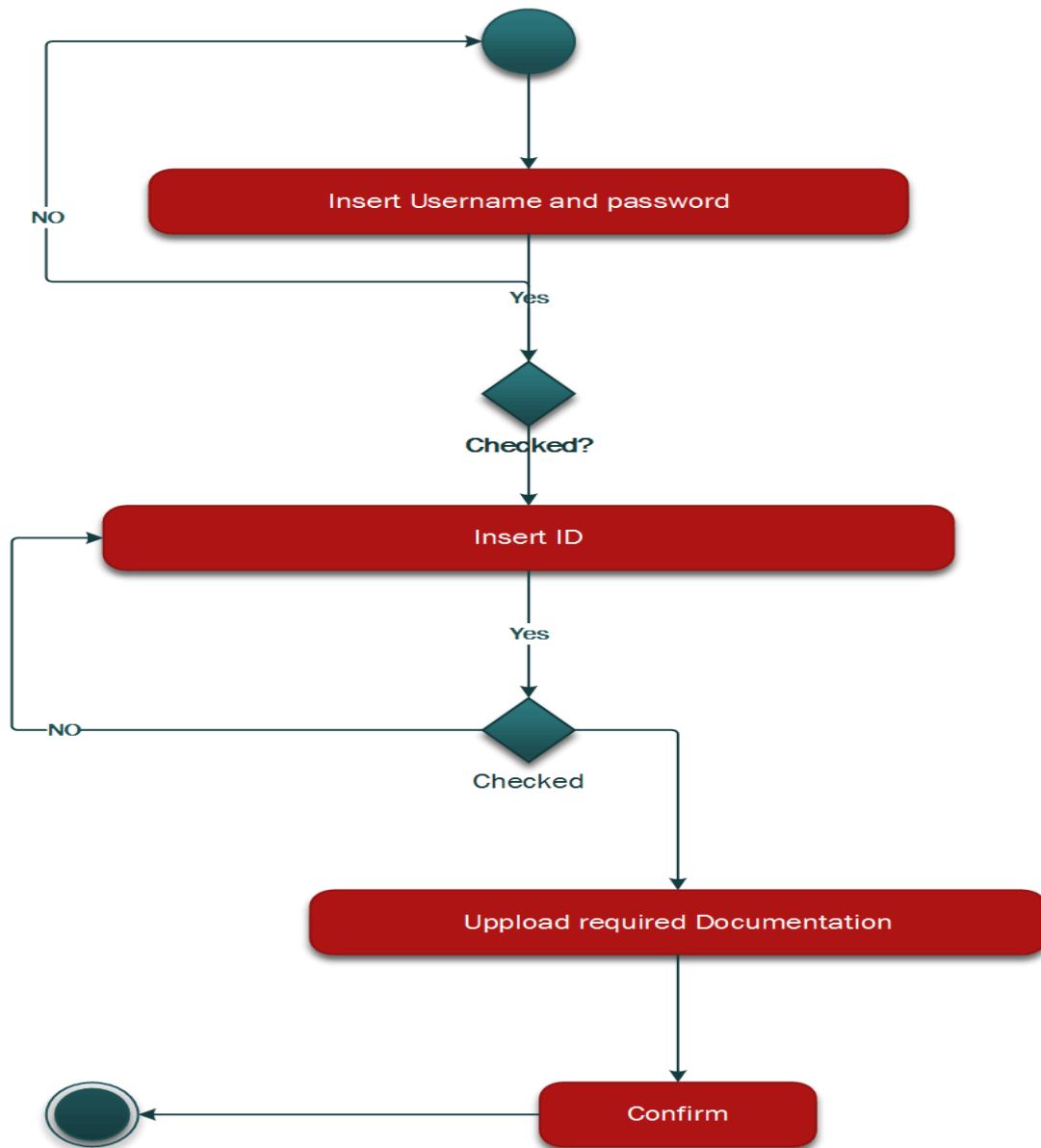


Figure (3.9): Activity diagram

3.3.4 Enquire for Request

After completing the training applying process, the graduate can enquire about her request. Figure (3.10) and Figure (3.11) demonstrate this process.



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الاستعلام عن طلب التدريب

الرقم الجامعي:

2 88d 91

Figure (3.10): Enquire for request



الصفحة الرئيسية قبل التقديم تقديم طلب تدريب الاستعلام عن طلب التدريب اتصل بنا

الاستعلام عن طلب التدريب

١ – تم الموافقة الرجاء مراجعة الكلية.

٢ – هنالك مشكلة في تعبئة الأوراق (الرجاء التواصل).

٣ – تحت الأجراء.

Figure (3.11): Enquire for request

4.0 Implementation and Testing

This chapter includes two sections. The first one will describes how the new website is implemented, and section one will explain how some part of the new website is tested.

4.1 Implementation

The website was implemented using Asp.net with C# (MVC) in front end and SQL server in backend. It contains several pages. The following sections will describe some of them.

4.1.2 Admin and Graduate users

As mentioned in the previous chapters, there are two types of users: Admin user which able to perform database operations and response to graduates requests, and graduate user which can apply for training.

4.1.3 Home Page

The home page considered the entry point of the website. It also displays information about the graduation committee. Figure (4.1) describes the home page.



Figure (4.1): Home page

4.1.4 Admin Page

From admin page, the admin can implement the CRUD operations into database. For example, the admin can add new program, edit, delete, and display some program. Figure (4.2) and figure (4.3) show some of these operations.

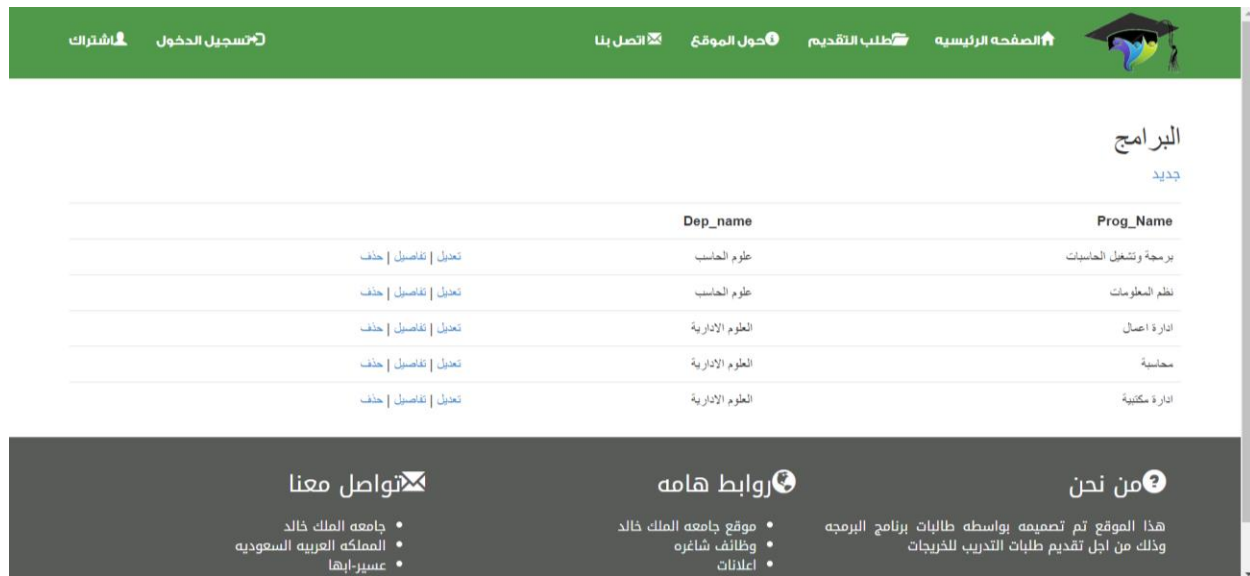


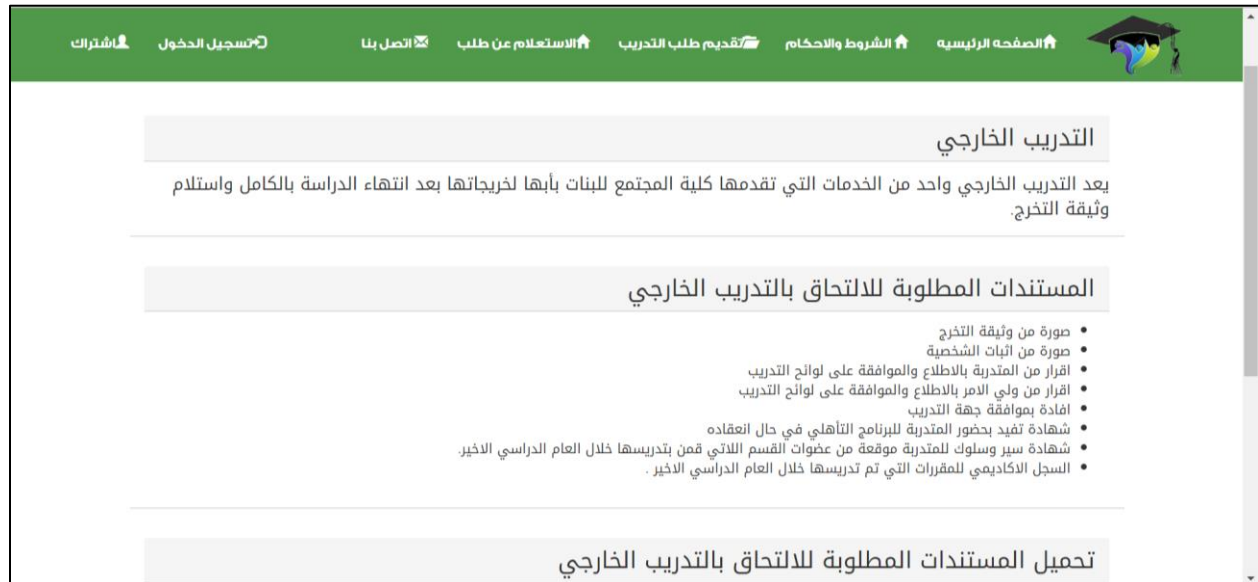
Figure 4.2: Programs page



Figure 4.3: Add new program

4.1.5 Conditions and Rules

From this page the graduate user can read rules and conditions that you have to know before applying for training as shown in figure 4.4



4.1.6 Apply for External training

This process is done with several steps: Firstly, the graduate insert the Student ID, after that her information will display. Secondly, the external destinations will display and user must choose one of them. Finally, the graduate confirm request. The following figures show these steps.



Figure (4.5): Step1

الخطوة الثالثة

تفاصيل الجهات الشريكة

بنك الراجحي	Entity_Name
منطقة عسير	Location_Name
مؤسسات خاصة	Section_Name
حي ثمانان	District
طريق الجامعة	Street
	Marked_place

التقدم الى هذه الجهة |

Figure 4.6: Step4

تمت العملية بنجاح

Message

تأكيد

Back to List

Figure 4.7: Step5

4.2 Testing phase

The proposed system was tested using random data. The test cases are used as a testing tool to make sure that everything in the website working as expected. Figure 4.8 describes how the test process is done to the first step of applying for training.

Test Case Document



Project ID:001
Author of test case: **Dania**
Date of creation: **1/5/2018**
Object: **Step1 page**

Project Name: **Training online system**
Version No:1
Date of release: **1/5/2018**



Test Case ID	Type of test case	Action	Expected result	Actual Result	Status	Bug ID	Remarks
TC 001	GUI	1. Insert ID 2. Click on Next button	Related page will display	As Expected	Pass	---	----

Figure 4.8: Test case

5.1 Conclusion

This project is developed to meet the Graduation Committee needs in community college for girls in ABHA.

The report was started by introducing overview for all project phases. Also the methodology and different tools were use through the system development has been discussed.

During the system development, different phases have been implemented. The project team was started by preliminary analysis to determine whether the proposed system is practical enough to be implemented or not. In order to determine the system requirements and customer needs, a detailed analysis was done by gathering information about current system using interview tool. After that the design and implementation phases have been done respectively. To make sure everything in a website will work as expected, the website was tested using random data. The primary results approved that the new website will be useful and will meet the customer needs.

5.1.1 Strengths of Graduation Training Process Online System

- 4 The new website will meet the most of customer needs.
- 5 Usability (easy to use).
- 6 Fast response
- 7 Security: no one can use the website without login or permission o(authorization and authentication requirements).

5.1.2 Weakness of Graduation Training Process Online System

- The training process involved only the participant destinations.
- The validation of system was not completed.

5.2 Recommendation

- The training process must include also a non-participant destination.
- The validation process must complete to ensure that everything will work as expected.
- The proposed website must be deployed to serve the graduation committee in community college (King Khalid University).

References

1. Alan Dennis, Barbara Haley Wixom, David Tegarden, “*System analysis and design with UML*” 4th edition, SBN 978-1-1-118-03742-3, wiley , February 2012.
2. <https://medium.com/omarelgabrys-blog/object-oriented-analysis-and-design-introduction-part-1-a93b0ca69d36> , access on march 2018.
3. <http://www.tutorialsteacher.com/mvc/asp.net-mvc-tutorials> , access on April 2018.