Educational Web App Development

Capstone Project: Final report

Spring 2015

ID: 47941

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ACKNOWLEDGEMENTS

I would like to express my deep gratitude to my supervisor DR. Mohammed Fouad Abou who helped me with his advices and wise guidance to complete this project despite his busy time and numerous responsibilities. In addition to this, I want to thank all students who helped me by filling the questionnaire concerning their preferences about the proposal portal and their suggestions. Last but not least, I would like to thank my family for their support during my studies at AUI.

F.M. Abbou

5/5/15
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Abstract:

Our capstone project is a web development application of an educational portal. This portal will be useful in the university in term of enhancing the academic performance of students. This kind of website will help students to improve their performance, their understanding and their integrity skills.

Learning path in general needs certain tutoring, supervising, explanation and advising. Those interesting services will be provided by our project. Students need to have an idea about their future courses like description, ideas etc... As computer scientist, I will try to use all my skills learned to boost a good web development project.

This kind of portal provides an academic integrity and performance in the university helping students to improve their self-learning and independent knowledge.
1-Introduction:

Capstone design is among the main courses required before graduating from Al Akhawayn University. The goal of this course is using all information and the knowledge acquired in the university to produce a professional project.

In this project, I will use my knowledge acquired during my four years in my university like programming languages and software engineering methodology in order to produce a professional and consistent project.

The purpose of this project is to make an educational portal where students will have an idea about the future courses, reviews, and discussions about them. The academic performance will be improved by this additional portal where there is a tutoring session schedule, explanations, and reviews. In addition to this, students will find chapters, exercises, and online resources for further information. In addition to this, students can contribute in their own portal by doing their posts, their opinions, and their suggestions.

We should follow several steps to build a good design for our project like: Specification, Feasibility study & Requirements gathered, Questionnaire filled, constructing the database using Sql, description of the database modules, filling the database with the information needed.
**Statistics:**

**Importance of E learning:**

The launch of internet had a great impact in developing education in general in term of information and exchange data or knowledge. As result, a new kind of learning occur which is E learning. By definition, E learning is accessing via internet the educational materiel or even the whole curriculum. Furthermore, e learning facilitates the distant education. People can obtain their degree and their diploma without going to school which make the physical presence so questionable.

![Figure 1: the growth of online learning in U S](1) From 2000 to 2007, Enrollment rate increases from 45000 to 100000

A lot of countries try to lead the technological development in the domain of education. E learning is the highest Indicator in those countries

![Figure 2: significant indicator of E learning by Country](1)
Benefits of E learning:

Saving time is among numerous benefits of e learning. We do not need to spend a lot of hours in classrooms and tutoring session. Secondly, saving money is another benefit. There is no problem of fees, transportation or housing. In addition to this, student can learn better than face to face class. As result, productivity and performance will increase.

Productivity:

E learning has an impact on improving productivity of students. When there is no limit of time or space, the production may increase rapidly. Furthermore, e learning enhances the academic performance of students by providing skills and tools. Student can do their research, exercises and tests via internet without need to check with an instructor. Moreover, this kind of learning seems to be so beneficial during exams and quizzes. Students become self-independent in preparing their materiel and in revising their courses. As result, they may perform well in their learning process.

Motivation:

From these statistics and facts, I recognize the huge growth of E learning in education environment which means E learning will be the future of education. For this reason, I find a great motivation in doing an online learning application as an alternative of physical learning. Educational additional portal is my project to improve academic performance. We do not need teachers or tutors because my portal will be the solution. It provides learning skills, exercises, quizzes, schedules, explanations, stories of success…

Finally, I am so motivated to enhance my learning process by an application that satisfy my needs especially in exams and tests.
2 The social and ethical impact:

The design of this project will allow students to improve their academic performance by different features provided by this additional portal. It will allow also students to interact between each other through discussion section where they can participate by posts, comments, and opinion. This educational portal will contribute to an easier and more efficient learning process at Al Akhawayn University.

3 Abbreviations and Project Details:

3.1 Abbreviations:

HTML: Hypertext Markup Language
CSS: Cascading Style Sheets
AUI: Al Akhawayn University
ERD: Entity Relational Diagram
UCD: Use Case Diagram

3.2-Project Details:

Project: Educational Portal
Purpose: Improve the academic performance
Client: Students
Location: Al Akhawayn University
4 Objectives:

4.1-General Objective:

The objective of the project is to produce a software that enhances the performance of students’ academic life. This project will provide an efficient and effective environment of learning. This portal also will meet the students’ requirement concerning their needs in preparation of exams and understanding their lessons.

4.2-Specific objectives:

We set up in the beginning of our project some main goals that we claim to achieve by the end. These goals and objectives are as follows:

- Deliver software (educational portal) that will help students in their academic life.

- Deliver a complete documentation about the project respecting the standards.

- Meet all the requirements and expectations of our students in the exact deadline.

- Apply the knowledge and skills acquired from previous courses in this project.

5 Project Requirement:

5.1 Non Functional Requirement:

5.1.1 Usability Requirements:

- This portal shall be user friendly and easy to use.
- The system shall be clear and intuitive for students.

5.1.2 Performance Requirements:

Time of response shall be taken into consideration especially of downloading data, pages…
5.1.3 **Space Requirements:**
The size of our database shall be considered especially in the implementation.

5.1.4 **Reliability Requirements:**
- Our portal shall always protect the integrity of the data.
- Our portal shall protect the privacy of the students.
- Our portal shall be available all the time.
- Our portal shall be consistent.

5.1.5 **Portability Requirements:**
Our portal shall be portable which means that it can work in any Operating System.

5.1.6 **Delivery Requirements:**

**Our portal shall be delivered in the due date (respect the deadline):**

<table>
<thead>
<tr>
<th>Week</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>26 January - 30 January</td>
<td>- Meeting with the supervisor</td>
</tr>
<tr>
<td></td>
<td>- Brainstorming of ideas</td>
</tr>
<tr>
<td>2 February - 6 February</td>
<td>- Choose topic of project</td>
</tr>
<tr>
<td></td>
<td>- Submit first deliverable “specification”</td>
</tr>
<tr>
<td>9 February - 20 February</td>
<td>- Gathering the requirement of the project</td>
</tr>
<tr>
<td></td>
<td>- Overview of details</td>
</tr>
<tr>
<td></td>
<td>- Submit the feasibility study</td>
</tr>
<tr>
<td>22 February - 10 April</td>
<td>- Weekly meeting with the advisor</td>
</tr>
<tr>
<td></td>
<td>- Starting the design phase.</td>
</tr>
<tr>
<td></td>
<td>- Submit a weekly diary.</td>
</tr>
<tr>
<td>13 April - 17 April</td>
<td>- Starting the implementation phase</td>
</tr>
</tbody>
</table>
### 20April-24April
- Meeting with the supervisor each week
- Submit the diaries every week
- Finalizing the implementation phase
- Submit the final report
- Staring testing phase

### 30April
- Project defense

### 6May
- Check the whole application and the final report

### 5.1.7 Implementation Requirements:
Implementation is an important stage in the life cycle of any software project so we shall precise a lot of factors and features needed in the implementation step:

- Programming language, we will use C#, ASP.net... [1]

**Computer environment requirement:**

- Operating system: Windows 7, 64bits.
- Visual Studio as an IDE.
- SQL Server/MySQL as a DBMS.

### 5.1.8 Standards Requirements:
- The project should be standardized in IEEE format.

### 5.1.9 Ethical Requirements:
We shall respect the ethical standard to work on this project.

5.1.10 Privacy Requirements:

Our portal shall respect the confidentiality and the privacy of the data dealing with the student’s profile provided in this application.

5.1.11 Safety Requirements:

This portal shall not have any damage to the user, environment, or the surrounding in general.

6 Software engineering Steps:

6-1 Feasibility Study & Requirement gathered:

Developing a website application as an educational portal for student in AUI to share reviews, resources, and comments about courses offered is the goal of this capstone project. After asking some students in AUI about their needs concerning advising services about courses offered during their semester, we got a lot of answers about their requirements like reviews, online resources, online tutoring, comments, opinions and open discussion of previous students. This application will enable students to improve their independent and effective learning in the university.

6-2 Preliminary Requirements:

This project has some different requirements. We need to know all courses offered in Al Akhawayn University in Fall, Spring, and Summer sessions. In addition to this, we should gather enough academic and reliable resources for each course offered. Furthermore, we should open discussion panel where people can discuss their ideas and opinions.
All this information should be gathered by consulting some faculties, advisors, and the enrollment office.

Concerning the non-functional requirement, we should pay attention to the usability of the application like that the web interface shall be friendly and easy to use for all students. In addition, this educational portal should respect the ethical requirement of integrity and academic honesty within the resources and services offered by the application. Furthermore, other non-functional requirements should be respected like portability in all operating system and reliability. This application should be available all the time and consistent.

6-3 -My implementation Requirements:

◊ Get some different needed ideas about this educational portal.
◊ Contact some students about their needs concerning this new portal of courses offered.
◊ Gather some functional and non-functional requirements from students and supervisor.
◊ Get answers from student of how they want their educational portal to look like.
◊ Finish the requirement phase.
◊ Get the design phase with the modules needed for the application.
◊ Implement the full web application using the technologies enablers needed.
◊ Test the application by some students, faculties, and supervisor.
◊ Present the capstone project.

6-4 Technological requirements:

To implement this web application, we need some technologies like:

• Visual studio as an IDE.
• Programming language like C#, ASP.net and PHP.
• SQL server: MySQL as a DBMS.
Notes:

This project will have a great impact concerning the effective and independent learning of students. It will improve also their academic performance respecting the integrity, academic honesty, and different policies of the university.

6.5-Questionnaire:

In order to have a successful project, we should ask our clients about their requirements and their preferences that they want to find it in the project. For this purpose, I try to prepare a short questionnaire where students can give me their preferences or their suggestions.

Filled by students in Al Akhawayn University):

1-What useful information do you need in your new portal?
   1- Information about the course
   2- Information about the professor
   3- Information about the grading policy in the course.

2-What kind of tutoring session do you want per?
   1- Chapter
   2- Two chapters
   3- Mid semester

3-How many exercises do you like per chapter?
   1- 20
   2- 53
   3- 63

4-What kind of discussion do you like?
   1- Group discussion between students only
   2- Group discussion including faculty and professor
   3- Group discussion with the two previous options
5- How many online resources do you find enough to have per chapter?
   1- 5
   2- 10
   3- 15

6- What is the criteria that you prefer to have in the members of this portal?
   1- Enrolled in Al Akhawayn University
   2- Having a certificate from the leadership institute
   3- Participating in the community service

7- How many sample exams to want to have for the mid semester?
   1 - 2
   2- 4
   3- 6

8- How often do you prefer to have posts?
   1- Once per week
   2- Twice per week
   3- Three times per week

9- What information would you like to see in this portal? 6-6 Result of the questionnaire:

   1) The majority of students want:
   1- To get information about the grading policy of the course
   2- To get information about the professor
   3- To have tutoring session per midterm semester
   4- To have 5-3 exercises per chapter to enhance their understanding
   5- To have 20 per chapter is sufficient enough
6- To have group discussion with two previous options

7 -To have 10 online resources

8- To join the portal is to participate in the community service
9- To have 4 sample exams
10-To like to have 6 sample exams
11-Most students choose to post once per week.

6-7 Deduction:

This result of this questionnaire should be considered in building the design and precising the features of the web development.

6-8 Design:

6-8-1 Description: (Databases):

Our project will contain the following tables: Course, Member, Tutoring, Book, Sample, Online resource, Comment, Discussion, Posts, Chapters, and exercises.

Course: It is an important table in this project since students are based on their courses to select sample exams, tutoring, chapters, and exercises. Each course has its own code, title, and description that describes and gives an idea to students about their future courses, the semester, year, and schedule concerning the current semester.
**Member:** This portal has many members that enroll and benefit from the services given. Each member has his or her own Username, Password, Email, Birthdate, Major, Security Question, and Security Answer. Every member is a student that has an ID included in the information needed in the membership of the portal, as well as a password for the enrollment.

**Account:** This is a table that the member uses to login to his or her portal. It includes the username and password.

**Program:** This is an important table where the students can select their courses. It includes name, school, type, and year.

**Tutoring:** This is a table concerning tutoring sessions that exist in the university, and the students need to be aware of them. This table has a code, title, descript, schedule, location, and minutes.

**Sample:** This is a table concerning the sample exams that the students need to review and enhance their understanding about the course selected. This sample table includes number, level of difficulty, date (when was given to students in exams), and foreign key course code.

**Online Resource:** This table contains resource number, degree of reliability, and resource link. These resources are needed by the student to look for other required information. It is considered among the additional features of the portal.

**Comment:** This table contains a number as primary key, comment topic, and topic date. The members of the portal can add their comments.

**Discussion:** This table contains number discussion, description, and topics. This discussion is so necessary for students to take part in many debates.

**Posts:** This table contains also number, topic, and description. Students have the right to post their own examples, explanation, reviews, and pictures.
Chapter: Every course has several chapters that is why we need to have a table of chapters that include the number of chapters, topics, and a description.

Exercise: This table contains also number, topic, level of difficulty, and date. Each chapter has many exercises.

Contact: This table is used by student in order to ask for help, to answer their own questions, or when they find any kind of technical problem in the portal.

Teacher: This table contains the name of the teacher, degree, research area, grants, reviews, and a bibliography. This table is so important to inspire students from the experience of their teacher.

Main functions:

1- Manage course:
   1.1 Add course
   1.2 Delete course
   1.3 Search course by:
      1.3.1 Name
      1.3.2 ID

2- Manage Member:
   2.1 Add Member
   2.2 Delete Member

3- Manage Account:
   3.1 Add Account
   3.2 Delete Account
4-Manage Program:
   4.1 Add Program
   4.2 Delete Program

5-Manage Tutoring:
   5.1 Add Tutoring
   5.2 Delete Tutoring

6-Manage Sample:
   6.1 Add Sample
   6.2 Delete Sample

7-Manage Online Resource:
   7.1 Add Online Resource
   7.2 Delete Online Resource

8-Manage Comment:
   8.1 Add Comment
   8.2 Delete Comment

9-Manage Discussion:
   9.1 Add Discussion
   9.2 Delete Discussion

10- Manage Posts:
   10.1 Add Posts
   10.2 Delete Posts
11 Manage Chapter:
   11.1 Add Chapter
   11.2 Delete Chapter

12 Manage Exercise:
   12.1 Add Exercise
   12.2 Delete Exercise

13 Manage Contact:
   13.1 Add Contact
   13.2 Delete Contact

14 Manage Teacher:
   14.1 Add Teacher
   14.2 Delete Teacher
   14.3 Search course by: Name

Functions used by Student:

1. Account:

1.1 Input:
   Student should click on register

1.2 Output:
   Student create its own account

2. Profile:

2.1 Input:
   Student should click on add
2.2 Output:
    Student can add his own information

2.3 Input:
    Student should click on delete

2.4 Output:
    Student can delete his own information

3. Search Function

3.1 Tutoring by:
    3.1.1 Title
    3.1.2 Code

3.2 Teacher by:
    3.1 Name

3.3 Exercise by:
    3.3.1 Topic
    3.3.2 Level
    3.3.3 Num

3.4 Chapter by:
    3.4.1 Course_code
    3.4.2 Num
    3.4.3 Topic
3.5 Sample by:

3.5.1 Num

3.5.2 Level

3.6 Online Resource by:

3.6.1 Num

3.6.2 Course_code

4. Discussion:

4.1 Input:

Student should click on open.

4.2 Output:

Student can add his own discussion panel.

4.3 Input:

Student should click on delete.

4.4 Output:

Student can delete his own discussion panel.

5. Comment:

5.1 Input:

Student should click on add

5.2 Output:

Student can add comment

5.3 Input:

Student should click on delete
5.4 Output:

Student can delete comment

6-8-2 Diagrams used:

6-8-2-1 -The Entity Relationship diagram:

The ERD is a diagram describing the relationships between the different entities in a business domain. The ERD for our capstone is as follows:
Those entities describes the tables needed in our database system. We represent the relation between each entity. Furthermore, we clarify the attributes of each table with their primary keys.

6-8-2-2–Use case Diagram:

The use case is a diagram that displays the relationship between the actor and the system. It includes the boundary, use cases, actors and the relationship between use cases and actors.
**Include**: Action that includes other actions.

**Extend**: Action is a key that gives the possibility of doing other actions. [5]

### 6-7-2-3 Specification of use cases:

<table>
<thead>
<tr>
<th>Use Case ID:</th>
<th>001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Case Name:</td>
<td>Create Profile</td>
</tr>
<tr>
<td>Actors:</td>
<td>Student</td>
</tr>
<tr>
<td><strong>Description</strong>:</td>
<td>The student will create his profile to be able to login and to benefit from The services of this academic portal.</td>
</tr>
<tr>
<td><strong>Preconditions</strong>:</td>
<td>The system is idle.</td>
</tr>
</tbody>
</table>
| **Main Flow**: | This use case starts when the student selects “Sign up” Button  
1- The student has to fill the information needed in the profile |
| **Post conditions**: | The student profile is created successfully. |

Specification of use case is required in software engineering steps. It contains ID, NAME ACTORS, DESCRIPTION, MAIN FLOW, PRECONDITION AND POSTCONDITION.

**PRECONDITION**: condition needed before doing the action.

**POSTCONDITION**: condition satisfied after doing this action.
<table>
<thead>
<tr>
<th>Use case ID</th>
<th>002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Case Name:</td>
<td>Modify profile</td>
</tr>
<tr>
<td>Actors:</td>
<td>Student</td>
</tr>
<tr>
<td>Description:</td>
<td>The student will be able to change his information</td>
</tr>
<tr>
<td>Preconditions:</td>
<td>The system is idle.</td>
</tr>
<tr>
<td>Main Flow:</td>
<td>This use case starts when the student selects “Modify Profile” button The student has to fill the information needed to modify his profile</td>
</tr>
<tr>
<td>Post conditions:</td>
<td>The Profile’s information is modified Successfully.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use case ID</th>
<th>003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Case Name:</td>
<td>Select Chapter</td>
</tr>
<tr>
<td>Actors:</td>
<td>Students</td>
</tr>
<tr>
<td>Description:</td>
<td>The student should be able to select his chapter needed</td>
</tr>
<tr>
<td>Preconditions:</td>
<td>The system is idle. The profile of the student is already created</td>
</tr>
<tr>
<td>Main Flow:</td>
<td>This use case starts when the students selects “Chapter” button</td>
</tr>
<tr>
<td>Post conditions:</td>
<td>Chapter needed is selected.</td>
</tr>
<tr>
<td>Use case ID</td>
<td>004</td>
</tr>
<tr>
<td>-------------</td>
<td>-----</td>
</tr>
<tr>
<td><strong>Use Case Name:</strong></td>
<td>Make Contact</td>
</tr>
<tr>
<td><strong>Actors:</strong></td>
<td>Students</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>The student should be able to make his contact</td>
</tr>
<tr>
<td><strong>Preconditions:</strong></td>
<td>The system is idle.</td>
</tr>
<tr>
<td></td>
<td>The profile of the student is already created</td>
</tr>
<tr>
<td><strong>Main Flow:</strong></td>
<td>This use case starts when the students selects “Contact” button</td>
</tr>
<tr>
<td><strong>Post conditions:</strong></td>
<td>Contact needed is selected.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use case ID</th>
<th>005</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Use Case Name:</strong></td>
<td>Select sample</td>
</tr>
<tr>
<td><strong>Actors:</strong></td>
<td>Students</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>The student should be able to select his sample</td>
</tr>
<tr>
<td><strong>Preconditions:</strong></td>
<td>The system is idle.</td>
</tr>
<tr>
<td></td>
<td>The profile of the student is already created</td>
</tr>
<tr>
<td><strong>Main Flow:</strong></td>
<td>This use case starts when the students selects “Sample” button</td>
</tr>
<tr>
<td><strong>Post conditions:</strong></td>
<td>Sample needed is selected.</td>
</tr>
<tr>
<td>Use Case ID:</td>
<td>006</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Use Case Name:</td>
<td>Select exercise</td>
</tr>
<tr>
<td>Actors:</td>
<td>Student</td>
</tr>
<tr>
<td>Description:</td>
<td>The student selects the exercise needed</td>
</tr>
<tr>
<td>Preconditions:</td>
<td>The system is idle.</td>
</tr>
<tr>
<td>Main Flow:</td>
<td>This use case starts when the student selects “exercise” Button.</td>
</tr>
<tr>
<td>Post conditions:</td>
<td>The exercise needed is selected.</td>
</tr>
</tbody>
</table>

**6-7-2-3 Sequence Diagram:**

I used the sequence diagram to be able to visualize the sequence of diagram and their functionalities. I chose this diagram to overview the system and its interaction with the user.

Our student should first register by clicking on the signing button. Then the portal should be connected to the web server which return create the profile page. The user will find in its screen create profile page. Once the user see this message, he should submit its information to be posted in its profile. Then he clicks on the button submit. Once the information are submitted, the system send them to web server then to the DB or database to be verified. If there is any invalid
information, an error message should be displayed in the screen to the portal. After that, message of entering a valid information should be displayed again in the screen. The user should re-enter valid information. The system does the same operation until the information be verified by DB.

Once the DB checks the valid information, the whole profile is saved. Finally, a successful message is displayed to the user concerning creation profile in his portal.

![Sequence Diagram]

**Figure 5: Sequence Diagram**
7 Implementation

7.1 The Web APPLICATION:

We opted for HTML as a markup language for the creation of our web page[3]

Html is by definition the standard protocol for formatting web pages, it controls the format of web pages in the browser concerning words and images.

Note: markup is set of symbols found in the word processing to control then structure of the documents.

We use CSS

CSS stands for Cascading Style Sheets. It is by definition a style sheet language that define the presentation of page written in a markup language. It was introduced in 1990 and published by World Wide Web Consortium

We use JavaScript

JavaScript is a programming language used in the domain web application. It is developed by Netscape in order to improve the dynamism of websites and their interaction in general. JavaScript uses some similar structures found in java language.

I spent a lot days in implementing the application to finally get a web application ready to be presented in the final defense. Web application should be well designed and flexible to use by students.
protected void Button1_Click(object sender, EventArgs e)
{
    String con = (@"server=AUI-PC\SQLEXPRESS;database=database1;integrated security=true");
    SqlConnection cn = new SqlConnection(con);
    SqlCommand cmd = new SqlCommand("select * from Mem where username='" + TextBox1.Text + "' AND Pass='" + TextBox2.Text + "'", cn);
    cn.Open();
    SqlDataReader dr;
    // Figure 6: Example Login Function

    Figure8: Example CSS

    /  * header */
    header {
        height:10px;
        width:100%;
        overflow:hidden;
    }

    /  * footer */
    footer {
        display:block;
        margin-top:10px;
    }

}
Figure 10: Login

Figure 11: Login Failure
**Welcome to your portal**

**PROFILE**

<table>
<thead>
<tr>
<th>First</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Last</td>
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<tr>
<td>Email</td>
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<td>School ID</td>
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<td>Level</td>
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</tbody>
</table>

**Figure 12: Profile**

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**Welcome to our portal**

**NEW PROGRAMS**

- Honor Program
- Leadership Program

**Figure 13: Home page**
Welcome to our portal

Your academic performance will be improved by this additional portal.

where there is tutoring session schedule, explanations and reviews. In addition to this, students will find chapters, exercises and online resources for further information. In addition to students can contribute in their own portal by doing their posts, their opinions and their suggestions.

Figure 14: Mission statement

Welcome to your skills

Student’s learning style is an important feature that help student to achieve academically:

1. Visual learning
2. Auditory learning
3. Kinesthetic learning

1. Visual learning: Students learn words and definitions by reading them with repetition and by visualizing the words in their heads.

2. Auditory learning: Students need to recite words and definitions in repetition. They may need to have the words and meanings recorded and played back can listen to them.

3. Kinesthetic learning: Students prefer to write out the words and definitions draw pictures that remind them of the word’s meaning.

Figure 15: student after choosing the course, he can view exercises of each

Welcome to your advanced programming!

- Chapter 1
  - Exercises Solution
- Chapter 2
  - Exercises Solution
- Chapter 3
  - Exercises Solution
- Chapter 4
  - Exercises Solution
- Chapter 5
  - Exercises Solution

Figure 16: Page of developing student’s skills
In Figure 16, student can click on his favorite way of learning visual, auditory…. And check The tools to develop this kind of learning. This page helps students to recognize his learning mind in classroom or in his own space. An important part of academic achievement is the discovery of learning style. He can even share personal stories with others concerning results and achievements.

Menu1: Resources Provided by portal

Menu2: The portal provide exercises and samples

Figure 17: Important date needed by students.

Figure 18: course selection page
**8 Result:**

Finally, we get our portal ready to use in any educational environment. This portal will improve our academic performance and skills. This application is also ready to be boosted by any other beneficial facility needed in the academic domain.

Our student has an additional portal. After his registration, he can use it easily.

**Future work:**

My suggestion about exercises and chapter may change to include the whole program and the whole major in the future. The academic environment need this kind of additional portal to enhance the academia in general. As explained earlier, the possibility of maintaining and improving the portal with new features as needed make it more flexible and maintainable.

**Android:**

Android is among the future plan of this application. This portal should be accessible even in mobile phone to facilitate its usage. It should be compatible with phones. The functionality and the effectiveness of this application include the compatibility features provided by the app within different phone devices.
Conclusion:

This educational portal is an opportunity for students to share their resources, reviews, and comments between one another. The main goal of this project is to develop many skills of students during their learning like self-learning and independent knowledge. A student enhances his or her academic performance through this additional portal by doing his or her own research and discussion.

For me this was a great opportunity to sharpen my skills as a computer scientist and to make a project that meets professional standards, as well as offering to my university an additional portal that helps students in their learning path.

All in all, this experience helped me in terms of practicing my knowledge acquired in my university. I should thank all people who participated in making this project successfully especially my supervisor and my family.
References:


