

**Design and Implementation of Portal System for
Schools in Less-Developed Area
(A field study in Karak governorate)**

تصميم وتنفيذ نظام البوابة الإلكترونية للدارس في المناطق الأقل تطوراً

(دراسة ميدانية في منطقة الكرك)

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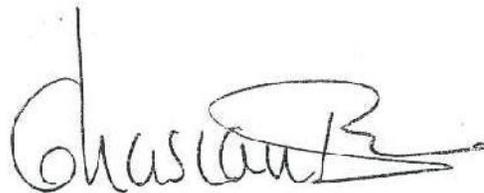
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DEDICATION

I dedicate this thesis to my parents, who first planted the seeds of knowledge and wisdom in me. From my birth and throughout the development of my life, they have encouraged me with love and care to seek out knowledge and excellence. They challenged me to pursue my dreams, which led me to the completion of this endeavor.

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Abstract

This thesis presents the design and implementation of a portal system for schools in less-developed area. The system represents the typical educational system as a computerized system in a way to allow students, parents, teachers, and the school director communicate with each other in a fast and direct way.

The difference between the developed system and others such as EduWave has no accounts for the parents. Therefore they have to use the accounts of their children to access the system. there is some of system has no accounts for the parents and they have to use the accounts of their children to access the system such as Eduwave, all previous systems are directed toward the organizational system in the level of country schools and not dedicated for one school, there is no access to parents, and after applying the school system, some key questions was directed for the teachers, parents, the answer was that he was easily dealt with the system which was developed better than previous systems.

The developed system has an administrative system with some privileges that can add/remove users and assign the account type with privileges. The developed system has mobile-based software which allows the user a large amount of freedom to access the system and make it accessible users according to the username and password. The system which has been developed contains accounts for each user. Each user has an access for some functions that depends on the user type. The most important part is that the Parents can control the marks of their children without need to go to school and ask personally. The software ASP.Net 2008 and SQL Server Management Studio have been used for build the system.

المخلص

تقدم هذه الرسالة تصميم وتنفيذ نظام للمدارس في المناطق الأقل تطوراً. يمثل النظام العملية التعليمية بشكل محوسب بحيث تسمح للطلاب والآباء والمعلمين ومدير المدرسة بالتواصل مع بعضهم البعض بطريقة سريعة ومباشرة. يمتلك النظام نظاماً إداري مع بعض الامتيازات الإدارية بحيث يمكنه من إضافة / إلغاء الأعضاء وتعيين نوع حساب مع إعطائها الامتيازات. بالإضافة إلى أن النظام الذي تم تطويره يمكن استخدامه عن طريق الأجهزة الذكية بحيث تمنح المستخدم الحرية للوصول إلى النظام وجعله في متناول المستخدمين وفقاً لاسم المستخدم وكلمة السر. وقد تم استخدام برنامج ASP.Net 2008 و SQL Server Management Studio لبناء هذا نظام. الفرق بين هذا النظام الذي تم تطويره وغيره من الأنظمة مثل منظومة EduWave بأنه لا يوجد لديه حسابات للوالدين وعليهم استخدام حسابات أبنائهم للوصول إلى النظام والحصول على المعلومات المتعلقة بهم. كما تقدم الأطروحة تعريف المشكلة وأهداف النظام، وتبين النموذج المقترح للنظام وتوضح العلاقات بين الكائنات المكونة للنظام. أخيراً، يتم تقديم صفحة الويب التي يمكن استخدامها للحصول على الاستفادة من هذا النظام واستخدامها في الحياة العملية.

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List of Abbreviations

IT	Information Technology
IBM	International Business Machines
HP	Hewlett-Packard
AMD	Advanced Micro Devices
SANs	Storage Area Networks
PDAs	Personal Digital Assistants
ECCE	Electronic Communities for Computing and Education
ICTs	Information and Communication Technologies
CIPs	Contextual Information Portals
SDLC	Systems Development Life Cycle
DBMS	Database Management System
ER	Entity Relationship
CPU	Central processing unit
ASP	Active Server Pages
WAP	Wireless Application Protocol
WML	Wireless Markup Language
HTML	Hyper Text Markup Language
NIC	Network Information Center
DNS	Domain Name System
IP	Internet Protocol

Chapter One

Introduction

1.1 Introduction

This thesis is the design and implementation of a portal system for schools in less-developed area “a field study in Karak governorate”. The proposed thesis designed a system that can be used by the students, parents, teachers, and the school directors. The system will organize the educational system and will create communication bridges among the system users.

This system will be applied on one of the schools in Karak governorate such as a field study, the inserted data will be real data to make sure efficient system, and we will be to examined and tested the system, to make sure it was free from mistakes and working properly.

(Wenger, 1999) expected that the introduction of the educational portal systems will give a strong motivation to the integration of information technology into education.

The information and communication technology has introduce more powerful ways and tools that help people to be connected in the local communities and schools to the outside world (Nelson & Kellogg, 2004). The system will be loaded with the student’s marks, assignments, etc. by the teachers. However, students will reach all the information, and parents will reach that information about their children as well.

The education model that contains students, teachers, and directors has been redefined by the advent of the information and communication technology. Educational portals utilize communication technology and the learning options in an emerged model. Therefore, Educational portals take the advantage of the connectivity and information delivered and received primarily through wired or wireless networks. Educational portals benefit from the dynamic updating, storage, and sharing of the knowledge and information. Users, location, time, learning, and training approaches are considered as terms that are used in the educational portals for defining the functional framework. Therefore, the educational portals consist of three main components: a community of practice, a body of knowledge, and services to maintain the body of knowledge (Osman, 2010).

Educational portals are gateways to the educational information and services that are targeted at a certain community.

Educational portals provide the interaction, communication and learning among the communities by creating a virtual meeting place. That means, educational portals aim to create connectivity between Future Work people and information. They aim to provide opportunities for shared cognition and social learning approaches (Hawryskiewicz, 2002).

The Internet has transformed the way people access and interacts with information. In the developed world, the continuous availability and comprehensive content of the web makes it a compelling resource for

communication and research. Jordanian schools have a lack access to this resource; Internet access tends to be expensive, unreliable and largely confined to urban areas (Chen, 2011).

1.2 Problem Definition

The following are the most important problems associated with the design and implementation of portal system:

1. What is the appropriate methodology for presenting the learning content that can be suitable for the schools in Al-Karak governorate?
2. How can retrieve the knowledge required according to the user queries?
3. Problems associated with the quality of the user interface, because of the nature of the less-developed area, the interface must be simpler, more effective and compatible with the environment in that area. How can you reach and perform the functions at the user interface in an easy way?
4. Develop the ways for the communication within the portal system between teachers, students, and parents to keep parents updated about the situation(s) of their children. How can you interchange the information between the parents and the teachers, in an easy and simple way?

1.3 Objectives

The thesis aims are:

1. Design a model for a centralized system for secondary school students in the less-developed areas such as Karak.
2. A system that builds the communication bridges between teachers, students and parents through a computerized system.
3. The system makes teachers able to upload the assignments and the tasks; they can exchange mails with students, send instance messages either for a specific student or for all students. Besides that, they can announce the examinations times and deadlines.
4. The system makes students being aware of the schools events by giving them the ability of sending the mail to the teachers, surfing the announcements, receiving the alerts for the deadlines, using reminders, exploring the semester courses schedule, and designing a daily plan for study.
5. The system contains account for the school director. The school director will have an account which is responsible of announcing the semester course schedule for each class, assigning the teacher for each course, put deadlines for the exams, and making the announcement for the organization affairs.

1.4 Motivation

For the importance of the educational portal system, the researcher will design Portal System for Schools. There is a lack of communicability between the school members, students, teachers, and school directors. The inefficient conventional way, that is used for communicating among the school members, resulting slowing down the communication between the school members. Using portal system, the mobiles and the computers can be facilitated for organizing the daily plans and schedule of the school members and will make them reach each other in a fast and efficient way.

Al-Karak is considered as one of the least developed areas in Jordan. Most of the services in Jordan are centralized in the capital city, Amman. Internet has covered the areas in Amman earlier than it in Al-Karak. Therefore, the students in Amman, or the developed areas, are more familiar with Internet and can access and use it easier than Al-Karak students.

1.5 Thesis Overview

The thesis consists of five chapters. Chapter one is the introduction to the general view of information technology and presents the problems associated with the design and implementation of a portal in the educational system together with the objective and motivation of this research. Chapter two

presents the literature survey and related works. Chapter three consists of three parts, overview, description of portal system model, and portal system components. Chapter four presents the design overview, entity relationship diagram, and tables (schema). Chapter five presents the way that depends on it to implement the portal system step by step, these steps are: Introduction, Design Database, Generate the basic operations statements (Code), Design System Forms, Use the basic operations statements and Forms, Register Domain Name, Setup Webpage in Server, and Testing and Results. Finally, Chapter six presents the Conclusion and Future Work.

Chapter Two

Literature Review

2.1 Introduction

The Information Technology (IT) infrastructure has been viewed incorrectly as the hardware and software that make up an organization's information system. The reality is more complex than that, but over and above the hardware and software, there are a range of different services needed to make an organization's IT systems come alive.

Therefore IT infrastructure is really a combination of hardware, software and services. So the IT infrastructure can be defined as the combinations of the following building blocks (Owaied, 2008):

1. People
2. Information
3. Software
4. Processing Machine
5. Storage Media
6. Input and Output Devices
7. Communication Devices

Also (Shipsey R., 2010) describes the major components of an IT infrastructure and claims that, "there are seven major components of an IT infrastructure. The aim is to make these components all work seamlessly

together to make an enterprise system that works anytime”, anywhere. These are:

A. Computer Hardware

The physical components (a personal computer, server, laptop etc) perhaps made by IBM, HP, Dell or Sun Microsystems, and containing a microprocessor, the heart of any computing device, probably made by Intel, AMD or IBM.

B. Operating System

Computers need to know what, when and how to do things and it is the operating system that tells them. Operations such as logging-on, file management and network connectivity are controlled by the operating system. Microsoft Windows, in one or other of its versions, is by far the most prolific operating system. However Unix and Linux, which are often associated with large networks because they require less application overheads and have faster processing, are also available for PCs. Linux open-source software is becoming the operating system of choice for organizations looking to reduce their costs because it is free and reliable.

C. Enterprise Software

The aim of enterprise software applications is to integrate applications into seamless processes across the organization. Customer relationship management and supply chain management systems are the two most popular applications in this category. Thanks to the proliferation of networks, these

applications are becoming popular and affordable for even small- and medium-sized organizations.

D. Data Management and Storage

More and more data, on customers, employees and the business itself, is being gathered by organizations.

Storing and managing this data so that it is easily accessible and provides meaningful information is extremely important. Storage area networks (SANs) provide an economical way to consolidate data from across all of the systems within an organization. Online users want instant access to data and SANs help organizations to provide it deliver this.

E. Networking/Telecommunications

As we progress towards the convergence of all things digital, networking and telecommunications are merging into one. Instead of having one platform for networking computing devices, and another for telecommunications, there are now companies who provide a combination of telephone services, mobile phone connectivity, computers and peripheral devices, handheld PDAs and wireless services as one digital package.

F. Internet Tools

The Internet continues to expand the services that organizations are able to provide to their employees, customers, suppliers and business partners. Intranets and extranets which are built using existing Internet technologies give

organizations an easy and inexpensive method of providing services that were prohibited by cost only a few years ago.

G. Consultancy and System Integration

The systems used in many medium- and large-sized organizations are too complex for the organization to manage them on their own. Integration services provided by companies such as IBM and Hewlett-Packard are necessary to keep everything working and up to date.

In recent years, there is an abundance of research and surveys that have been presented in portal system in the educational operation. This chapter presents a literature survey and an overview of recent research.

2.2 Literature Surveys

The following section introduces the latest work done on portal system in the educational systems.

2.2.1 Collaborative Computing and Education Portal

Geoffrey Fox (2001) presented the research entitled “Architecture and Implementation of a Collaborative Computing and Education Portal”. The study developed web-based education-support management simulation system. The system is called ECCE for electronic communities for computing and education. ECCE is high functionality system taking the advantage of the technology. The system includes distributed object and web technology with active self-defining

objects. The web-based environment offers user productivity through utilizing programming language Java and mobile hand-held clients.

2.2.2 Using Student Perspectives

Abuhamdieh (2004) presented the research entitled "Educational Institutions Portal System Utilization: A Student Perspective". The study examines a recently introduced campus portal in a Midwestern university that has several communications modules, including email, chat, and bulletin board. The portal in general and the bulletin board module in particular are examined.

Several variables pertaining to students' perceptions of the portal and the bulletin board, such as system friendliness and easiness of use, are explored to discover the factors that encourage student system use. The results point to the importance of system design that takes student perspective into consideration. Research conclusions and recommendations are discussed.

2.2.3 Instructions Management in e-Learning Environment

Hsu, et al (2007) conducted a study entitled in: "Customer-Based Portal System for Instructions Management in e-Learning Environment". The study showed that Information and Communication Technologies (ICTs) supply the chance of getting information on the Internet at anytime and anywhere. The educational methods are not longer limited to learn in the classroom.

Moreover, the importance of independent, individual, and adaptive learning will appear. This study uses the Portal technology and Web Services to establish a customized e-Learning and instructions management platform. The experimental

results show that this system includes subsystem modules to provide service for learners to access all required information rapidly and correctly.

Therefore, with Portal technology and the modulation, learners in the Portal platform use easy-to-use and friendly interface to find the information and module quickly to improve the effectiveness of instructions management and e-learning.

2.2.4 Educational Portal as Information Exchange Mechanisms

Osman (2010) presented a study entitled in: "Educational Portal in Oman: towards a connected community". The study aimed to examine the information exchange mechanisms between the connected community members (students, teachers, administrators, policy makers and parents), and the level of utilization, accessibility, and complexity as related to the demographics of the community members. The study based on a descriptive analytic research methodology, using a service- utilization questionnaire. A stratified random sample of four hundred subject participated in the study. The results are presented in reference to the demographic variables of the subjects.

2.2.5 Offline Web Portals

Chen & Power (2011) they conducted a study entitled in: "Design and Implementation of Contextual Information Portals". The paper presents a system for enabling offline web use to satisfy the information needs of disconnected communities. The study describes the design, implementation, evaluation, and pilot deployment of an automated mechanism to construct Contextual Information Portals

(CIPs). CIPs are large searchable information repositories of web pages tailored to the information needs of a target population.

The study combines an efficient classifier with a focused crawler to gather the web pages for the portal for any given topic.

Given a set of topics of interest, the system constructs a CIP containing the most relevant pages from the web across these topics.

Using several secondary school course syllabi, the study demonstrates the effectiveness of our system for constructing CIPs for use as an education resource. The study evaluates our system across several metrics: classification accuracy, crawl scalability, crawl accuracy and harvest rate. We describe the utility and usability of our system based on a preliminary deployment study at an after-school program in India, and also outlines our ongoing larger-scale pilot deployment at five schools in Kenya.

2.3 Related Works

Portal System for Schools in Less-Developed Area of the most important fields that must be studied and work to develop in order to achieve the requirements needed by the users of the system, the following are some works related in this field:

- A. The web-based e-learning software is popular nowadays, and one can find that such programs are one of the most interests in the learning institutions. Such popular web-based programs are EduWave, which is used by the ministry of education in Jordan. The web-based software EduWave is the software that the ministry of education used to communicate with students and the school systems;

EduWave has no mobile-based system. EduWave is used to make students and teachers communicate directly (Web site of the Jordanian ministry of education).

- B. The online registration systems in the Jordanian universities like Yarmouk University in Jordan (Web site of Yarmouk university in Jordan). The registration systems in Jordanian universities such as Yarmouk University.

These systems allow the students to register in the classes and check their marks.

The system has three communicate parts, which are; users, the student, the teacher and the director.

2.4 Comparison between This Portal System and Some Other Systems

2.4.1 Moodle System

Moodle is an Open Source Course Management System, also known as a Learning Management System or a Virtual Learning Environment. It has become very popular among educators around the world as a tool for creating online dynamic web sites for their students. To work, it needs to be installed on a web server somewhere, either on one of your own computers or one at a web hosting company.

- **What is Moodle ?**

The focus of the Moodle project is always on giving educators the best tools to manage and promote learning, but there are many ways to use Moodle:

1. Moodle has features that allow it to scale to very large deployments and hundreds of thousands of students, yet it can also be used for a primary school or an education hobbyist.

2. Many institutions use it as their platform to conduct fully online courses, while some use it simply to augment face-to-face courses (known as blended learning).
3. Many of our users love to use the activity modules (such as forums, databases and wikis) to build richly collaborative communities of learning around their subject matter (in the social constructionist tradition), while others prefer to use Moodle as a way to deliver content to students (such as standard SCORM packages) and assess learning using assignments or quizzes.

2.4.2 Blackboard System

A blackboard system is an artificial intelligence application based on the blackboard architectural model, where a common knowledge base, the "blackboard", is iteratively updated by a diverse group of specialist knowledge sources, starting with a problem specification and ending with a solution. Each knowledge source updates the blackboard with a partial solution when its internal constraints match the blackboard state. In this way, the specialists work together to solve the problem. The blackboard model was originally designed as a way to handle complex, ill-defined problems, where the solution is the sum of its parts.

- **A Blackboard-System Application Consists of Three Major Components**

1. The software specialist modules, which are called knowledge sources. Like the human experts at a blackboard, each knowledge source provides specific expertise needed by the application.

2. The blackboard, a shared repository of problems, partial solutions, suggestions, and contributed information. The blackboard can be thought of as a dynamic "library" of contributions to the current problem that have been recently "published" by other knowledge sources.
3. The control shell, which controls the flow of problem-solving activity in the system. Just as the eager human specialists need a moderator to prevent them from trampling each other in a mad dash to grab the chalk, knowledge sources need a mechanism to organize their use in the most effective and coherent fashion. In a blackboard system, this is provided by the control shell.

- **Flexibility and Efficiency**

Flexibility in a blackboard system is the ability to change the blackboard-database implementation, the insertion/retrieval strategies, and the representation of blackboard objects without modifying knowledge sources or control code and vice versa. Flexibility is important for two reasons. First, the application writer's understanding of the insertion/retrieval characteristics and the representation of blackboard objects may be uncertain and therefore subject to change as the application is developed. Second, even after a prototype of the application has been completed, the number and placement of blackboard objects as the application is used may differ from the prototype. This again requires changes to the blackboard representation in order to achieve the desired level of performance. Therefore, it is important that the blackboard implementation provides enough flexibility to allow these changes without significant changes to the knowledge sources, the control

code, or to the blackboard-database implementation machinery. With sufficient flexibility it is possible to actually “tune” the blackboard representation to the specific characteristics of the application.

Efficiency in the insertion and retrieval of blackboard objects is an equally important design goal. Typically, improving the execution efficiency of blackboard systems is achieved through improvements to the quality and capability of the control components. Reducing the number of “inappropriate” knowledge sources that are executed (by making more informed scheduling decisions) can significantly reduce the time required to arrive at a solution. Making appropriate control decisions should never be neglected in the development of an application. In this paper, however, we assume that a highquality control component and high-quality knowledge sources will be written by the application implementer. We will focus on the remaining source of execution inefficiency, the cost of inserting and retrieving objects from the blackboard.

2.4.3 Portal System for Schools in Less-Developed Area

The proposed thesis is a design of a system that can be used by the students, parents, teachers, and the school directors. The system will organize the educational system and will create communication bridges among the system users.

This system will be applied on one of the schools in Karak governorate such as a field study, the inserted data will be real data to make sure efficient

system, and we will be to examined and tested the system, to make sure it was free from mistakes and working properly.

This system has been implemented on the “Majra secondary School for Boys”, during to some of steps. After all that steps, the director begins the students registration operation to assign them to classes, then determined parents of students to stay fully informed on the conditions of their children, then the director distributed the teachers for each class, and also determined courses. Thus, the system is effective and working properly.

The difference between the developed system in this thesis and other systems can be as follows:

1. there are some systems that have no accounts for the parents and they have to use the accounts of their children to access the system.
2. all previous systems are directed toward the organizational system in the level of country schools and not dedicated for one school.
3. There is no access to parents.
4. There is no mobile system that allows the students more comfortable recourses and easier access to the system.
5. After applying the school system, some key questions were directed for the teachers, parents and near community, and after answering these questions by system components we note that the system is effective and uses easily compared with the previous systems.

Chapter Three

Proposed Portal System

3.1 Introduction

The system considers teachers, students, and directors as users as seen in figure 3.1. The system will have an administrator who is responsible for troubleshooting, failure recovering. Additionally, the administrator defines new users, gives the privileges, freezes the account, deletes accounts, updates the system by adding new functions, and maintains the system security.

This system provides a full communication between the secondary school members, teachers, students, parents and director. It provides an easy, user-friendly, and fast communication besides the full organization. The paper communication will be reduced dramatically. The system will create a community for the secondary school that can be even monitored by the ministry of education. The teachers can reach their students easily and be more contacted and bounded with the students. The students can be alerted in the emergency cases simultaneously. The parents will follow up the situation of their children easily.

Figure 3.1: The General Structure of the Proposed System

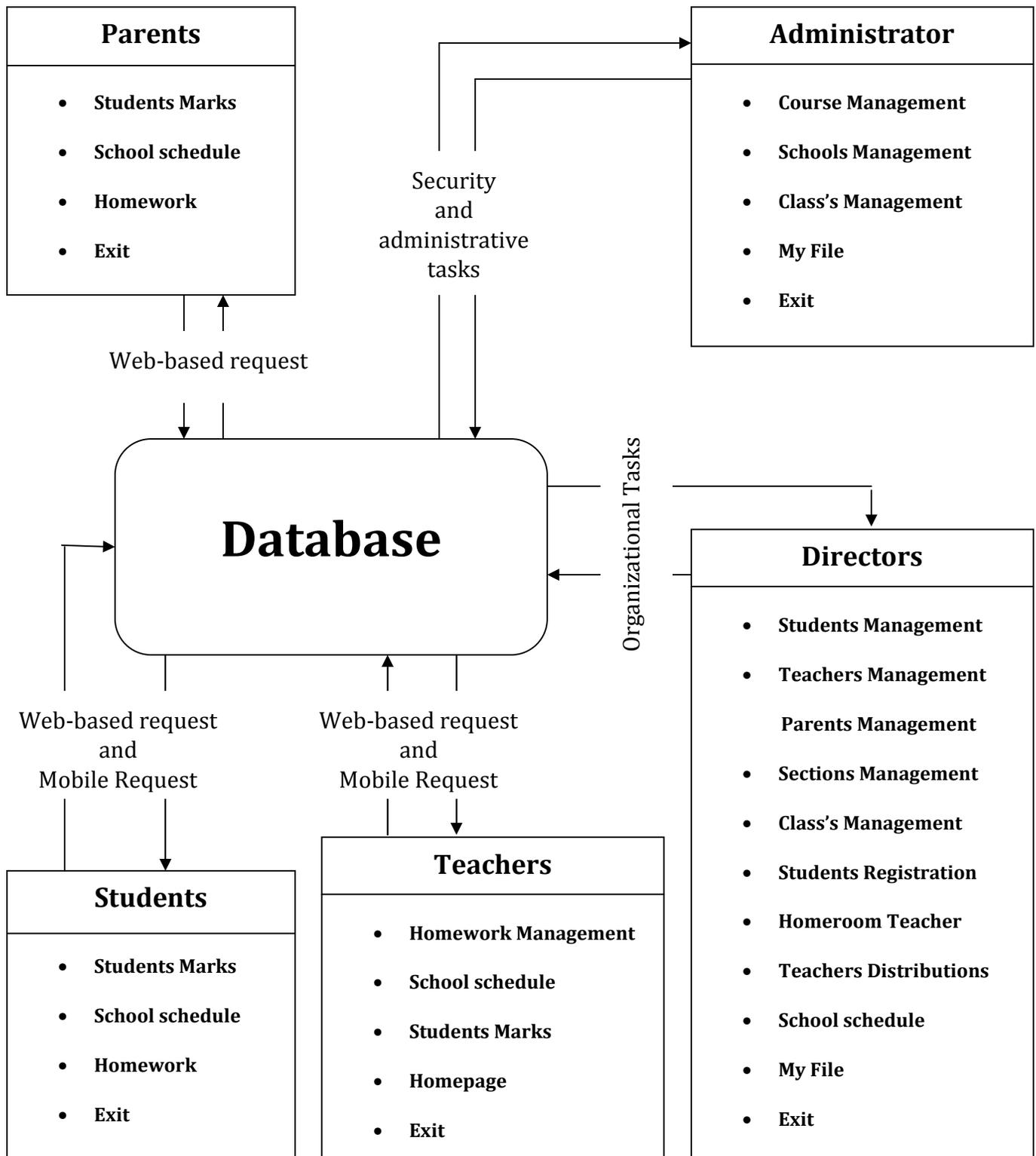


Figure 1

3.2 Requirements for Portal System Model

The portal system model requirements will be organized according to the following:

A. The software: there will be server software, computer-based software. Because the system will be built as web-based application, the system needs an Internet domain to be accessible through World Wide Web. The students and the teachers can reach their accounts through any Internet browser or mobile application. The parents can reach their accounts with through web browser. The administrator and the school director can reach the database and update it through computer-based software. The server software will intermediate students, teachers, parents, school director, and the system administrator. The following are a brief description of the three types of software:

1. The server software will be managed directly by the administrator and will be installed on a central computer in the server's room. It holds the database for the users and manages the security for them. Besides the above mentioned functions of the administrator, the server communicates with users' computers and provides them with services.
2. The computer-based software is used for management purposes. It can be installed on computers inside the school for security purposes. Only the administrator and the school director can use the computer-based software. In this way, the computer-based software can be updated without making the whole system down, the functions can be added easily by the system administrator, the administration and the organization commands cannot be

given without this software. Also, the mobile can be used by the users to browse the daily plan; the courses schedule, the tasks and assignments, and contact information. And we can use it to make the daily plan, perform local alerts in the user level.

B. The hardware: the systems need a server, standalone computers that can be used by the school director and the system administrator, computer network in the school (Local area network and wireless network), Internet connection, and mobiles. The network which is found in almost every secondary school can be facilitated to the proposed system. Additionally, most of the schools are provided with the Internet. The server will be provided by the database and will be installed in a special server room. The standalone computers represent the control terminals that the administrator and the school director use to update the database. The computer-based software will be installed on the stand alone computers. The Security: Since the security of any system is very importance, therefore will be provided in different ways in many levels as following:

1. The server which is managed by the system administrator: the server will be installed in a safe place where the server room will not be accessible for everyone. Backup of the database will be made frequently and the backup copies will be stored in a separate and safe place. A firewall will be used to prevent the external hacking. And accounts will be created for the users.
2. The stand alone computer which is used by directors: the users for the computer-based software need password to access the system. And

there will be a log file that registers the access time and the user who accessed the system besides the changed that has been made. From other side the mobiles can be managed by the system administrator, the administrator will give the permission for the users to systems.

The system administrator will define an access list that contains the accounts that are allowed to access the account remotely using the mobiles.

3.3 Portal System Components and Its Functions

The system consists of several main parts; these parts have been relied upon to build the system by identifying the tasks and functions of each part. The following subsections are the descriptions of them.

3.3.1 Administrator

The Administrator page consists of different functions that mainly provide the control of the system. The administrative functions within the system are the following:

1. **Course Management:** control the courses by functions Add and Delete Course.
2. **Schools Management:** control the schools by functions Add and Delete school.
3. **Class's Management:** control the classes by functions Add and Delete rows.
4. **My File:** security function that allows changing password.

5. **Exit:** End of work.

3.3.2 Directors

The Directors page consists of different functions that provide an administrative function on the school organization. The administrative functions of the school organization are the following:

1. **Students Management:** Add comprehensive information about students on their database which is required for the school's management about each student.
2. **Teachers Management:** controls the security of teachers accounts by changing passwords for teachers.
3. **Parents Management:** control the parents accounts by adding children to parents and modify their own passwords.
4. **Sections Management:** Add a new section for a particular school and the amendment to the existing people
5. **Class's Management:** controls the organizational tasks of the classes
6. **Students Registration:** control the registration operation for the students and bind them to the class, the school calendar, section, and parent accounts.
7. **Homeroom Teacher:** Determine the homeroom teacher
8. **Teachers Distributions:** Distribution of teachers
9. **School schedule:** See the course schedule
10. **My File:** security function that allows changing password.

11. **Exit:** End of work

3.3.3 Teachers

The teacher's page consists of different functions that provide an administrative function on the class level, these are:

1. **Homework Management:** represents the communication between the students and the teacher, the teacher here can upload the homework, send it to the students, receive the student solutions and correct it.
2. **School schedule:** it provides the course schedule to help him/her to make the study plans.
3. **Students Marks:** provides an online entry of students marks, which can make easy control and view of the marks for other system users.
4. **Homepage:** Back to the main window, which contains information on classes taught by teachers
5. **Exit:** End of work

3.3.4 Parents

The Parents page consists of different functions that make them able to view the status of their child/children in the school. The functions that are found in the parent page are the following:

1. **Students Marks:** allows the parents to see the marks of materials.
2. **School schedule:** allows the parents to see the course schedule.

3. **Homework:** allows the parents to see the homework that the teacher sends to the student.
4. **Exit:** End of work

3.3.5 Students

The Students page consists of different functions that allow the student view some student related tasks and download/upload the home work. The view functions of the students are the following:

1. **Students Marks:** this function is considered as basic function allows the student see their marks of materials.
2. **School schedule:** this function allows the student overview and sees the course schedule.
3. **Homework:** See the homework that the teacher sent to students, and then provide the possibility for the student to answer then re-sent to the teacher in order to be corrected.
4. **Exit:** End of work

Chapter Four

System Design

4.1 Introduction

Data models are tools used in analysis to describe the data requirements and assumptions in the system from a top-down perspective. They also set the stage for the design of databases later on in the SDLC. There are three basic elements in ER models:

1. Entities are the "things" about which we seek information.
2. Attributes are the data we collect about the entities.
3. Relationships provide the structure needed to draw information from multiple entities.

In this system will explicitly define the interfaces of the objects and also the semantics of the operations. Additionally, we will decide how different issues such as DBMS and distribution will be handling. ASP.Net 2008 and SQL Server Management Studio have been used to build the database of the system.

4.2 Entity Relationship Diagram (ER-Diagram)

ER diagram is a popular high-level conceptual data model. This model and its variations are frequently used for the conceptual design of database applications, and many database design tools employ its concepts. ER diagram is a graphical representation of the steps used in a system. ER diagram helps the analyst synthesize new systems. Each candidate system can be described quickly and effectively by an

appropriate entity relationship diagrams through out the life cycle the analyst must be able to communicate effectively with users, programmers and other analysts.

A conceptual schema or conceptual data model is a map of concepts and their relationships used for database. This describes the semantics of an organization and represents a series of assertions about its nature. Specifically, it describes the things of significance to an organization (entity classes), about which it is inclined to collect information, and characteristics of (attributes) and associations between pairs of those things of significance (relationships).

From other side the physical data model represents how the model will be built in the database. A physical database model shows all table structures, including column name, column data type, column constraints, primary key, foreign key, and relationships between tables. Features of a physical data model include:

1. Specification all tables and columns.
2. Foreign keys are used to identify relationships between tables.
3. Denormalization may occur based on user requirements.
4. Physical considerations may cause the physical data model to be quite different from the logical data model.
5. Physical data model will be different for different RDBMS. For example, data type for a column may be different between MySQL and SQL Server.

The steps for physical data model design are as follows:

1. Convert entities into tables.
2. Convert relationships into foreign keys.
3. Convert attributes into columns.
4. Modify the physical data model based on physical constraints / requirements.

ER diagram is a powerful method for efficient internal communication since all persons involved can graphs their meaning quickly. ER diagram also are an effective method for communication with other analyst knowledge of what other have done to solve similar problems

Figure 4.1 presents the Entity Relationship diagram for the proposed Portal System. This diagram shows the entities which must be used in the system and the relationship between them, this ER make the database of our system which we will work on it.

4.3 Tables (Schema)

The table is a set of data elements (values) that is organized using a model of vertical columns (which are identified by their name) and horizontal rows, the cell being the unit where a row and column intersect. A table has a specified number of columns, but can have any number of rows.

A horizontal row, also called a record or tuple represents a single, implicitly structured data item in a table. In simple terms, a database table can be thought of as consisting of rows and columns or fields. Each row in a table represents a set of related data, and every row in the table has the same structure. Each row is identified by the values appearing in a particular column subset which has been identified as a unique key index.

Table is another term for relations; although there is the difference in that a table is usually a multi-set (bag) of rows whereas a relation is a set and does not allow duplicates. Besides the actual data rows, tables generally have associated with them some meta-information, such as constraints on the table or on the values within particular columns.

The data in a table does not have to be physically stored in the database. Views are also relational tables, but their data are calculated at query time. Another example is nicknames, which represent a pointer to a table in another database. In the following subsections are the descriptions of the tables used in the proposed portal system:

4.3.1 The Table of School (Tbl_School)

Table 4.1 present the table used to store all needed information about certain schools. It contains different columns within the same data type except that for schoolId has a different data type “smallint” to make it unique and to be identified as primary key. The columns are: schoolId, schoolName, schoolAddress, schoolTel, and schoolNote within “nvarchar ()” data type, these all columns give the system the needed information about schools to use it when it is needed.

Table 4.1: Tbl_School

	Column Name	Data Type	Allow Nulls
	Fld_SchoolId	smallint	<input type="checkbox"/>
	Fld_SchoolName	nvarchar(50)	<input checked="" type="checkbox"/>
	Fld_SchoolAddress	nvarchar(1000)	<input checked="" type="checkbox"/>
	Fld_SchoolTel	nvarchar(20)	<input checked="" type="checkbox"/>
	Fld_SchoolNote	nvarchar(2000)	<input checked="" type="checkbox"/>
			<input type="checkbox"/>

Table 1

4.3.2 The Table of Student (Tbl_Student)

Table 4.2 show all the data required for the student. It contains different columns, these columns are: StudentName, StudentTel, StudentMobile, StudentBirthPlace, StudentNationalty, StudentPassword, and StudentMail within the same data type “nvarchar()”. The column Student BirthDate is defined as “datetime” data type and StudentId is defined as “int” data type. The column StudentId has been identified as a primary key.

Table 4.2 : Tbl_Student

	Column Name	Data Type	Allow Nulls
▶	Fld_StudentName	nvarchar(100)	<input checked="" type="checkbox"/>
	Fld_StudentTel	nvarchar(20)	<input checked="" type="checkbox"/>
	Fld_StudentMobile	nvarchar(20)	<input checked="" type="checkbox"/>
	Fld_StudentBrithPlace	nvarchar(50)	<input checked="" type="checkbox"/>
	Fld_StudentBrithDate	datetime	<input checked="" type="checkbox"/>
	Fld_StudentNationalty	nvarchar(50)	<input checked="" type="checkbox"/>
	Fld_StudentPassword	nvarchar(20)	<input checked="" type="checkbox"/>
	Fld_StudentUserName	nvarchar(20)	<input checked="" type="checkbox"/>
	Fld_StudentMail	nvarchar(50)	<input checked="" type="checkbox"/>
🔑	Fld_StudentId	int	<input type="checkbox"/>
			<input type="checkbox"/>

Table 2

4.3.3 The Table of Students Marks (Tbl_StudentMark)

Table 4.3 present the table used to add and store the marks of students. It is used to retrieve and check the marks of students by parents and student.

This table has different relationships in compare with other tables such as Tbl_Teacher, Tbl_Course, Tbl_Section, and Tbl_Student. It contains different columns, these columns are: StudentId, TeacherId, SectionId, CourseId which have the same data type “int”.

The columns of SchoolId and SemesterId have “smallint” data type. The four columns FirstMark, SecondMark, ShareMark, and Final have “Float” data type. Finally, the column RegYear has “nchar()” data type.

Table 4.3: Tbl_StudentMark

	Column Name	Data Type	Allow Nulls
	Fld_StudentId	int	<input type="checkbox"/>
	Fld_TeacherId	int	<input checked="" type="checkbox"/>
	Fld_SectionId	int	<input type="checkbox"/>
	Fld_SchoolId	smallint	<input checked="" type="checkbox"/>
	Fld_CourseId	int	<input type="checkbox"/>
	FristMark	float	<input checked="" type="checkbox"/>
	SecondMark	float	<input checked="" type="checkbox"/>
	ShareMark	float	<input checked="" type="checkbox"/>
	Final	float	<input checked="" type="checkbox"/>
	Fld_SemesterId	smallint	<input checked="" type="checkbox"/>
	Fld_RegYear	nchar(4)	<input checked="" type="checkbox"/>
			<input type="checkbox"/>

Table 3

4.3.4 The Table of Courses (Tbl_Course)

Table 4.4 show the table used for store all needed data about all courses. It contains different columns within the same data type except the courseId which have different data type to be unique and to be identified as primary key. The column ClassId is defined “int” data type. The columns courseMarkMax, courseMarkmIN, courseName, courseNote are “nvarchar()” data type, these all columns give the system needed information about courses to be used when it is needed.

Table 4.4: Tbl_Course

	Column Name	Data Type	Allow Nulls
	Fld_CourseId	int	<input type="checkbox"/>
	Fld_ClassId	int	<input checked="" type="checkbox"/>
	Fld_CourseMarkMax	nvarchar(50)	<input checked="" type="checkbox"/>
	Fld_CourseMarkMin	nvarchar(50)	<input checked="" type="checkbox"/>
	Fld_CourseName	nvarchar(50)	<input checked="" type="checkbox"/>
	Fld_CourseNote	nvarchar(50)	<input checked="" type="checkbox"/>
			<input type="checkbox"/>

Table 4

4.3.5 Table of Materials Taught by The Teacher

(Tbl_rel_Course_Teacher)

Table 4.5 present the table that used to identify the courses that taught by the teacher. It contains different columns within, these are: userId, sectionId, and courseId which are defined as “int” data type. The column Rel_super is defined as “bit” data type.

Table 4.5 : Tbl_rel_Course_Teacher

Table 5

	Column Name	Data Type	Allow Nuls
	Fld_UserId	int	<input type="checkbox"/>
	Fld_SectionId	int	<input type="checkbox"/>
	Fld_Rel_Super	bit	<input checked="" type="checkbox"/>
	Fld_CourseId	int	<input type="checkbox"/>
			<input type="checkbox"/>

4.3.6 The table of Permissions (Tbl_Permission)

Table 4.6 present the table used to identify and verify the users who can login to the system. It is consisted of two columns only, the first column is permissionId within “tinyint” data type, and the second one is permissionName within “nvarchar()” data type

Table 4.6 : Tbl_permission

Table 6

Column Name	Data Type	Allow Nulls
 Fld_PermissionId	tinyint	<input type="checkbox"/>
Fld_PermissionName	nvarchar(100)	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

4.3.7 The Table of Classes (Tbl_Class)

Table 4.7 show the table used to identify new class, it is consisted of two columns, the first column is classId within “int” data type, and the second one is className within “nvarchar()” data type

Table 4.7 : Tbl_Class

Table 7

Column Name	Data Type	Allow Nulls
 Fld_ClassId	int	<input type="checkbox"/>
Fld_ClassName	nvarchar(100)	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

4.3.8 The Table of Semesters (Tbl_Semester)

Table 4.8 present the table that used to identify the first semester and the second semester. It is consisted of two columns, the first column is semesterId within “smallint” data type, and the second one is semesterName within “nvarchar()” data type.

Table 4.8 : Tbl_Semester

Table 8

Column Name	Data Type	Allow Nulls
 Fld_SemesterId	smallint	<input type="checkbox"/>
Fld_SemesterName	nvarchar(50)	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

4.3.9 The Table of Sections (Tbl_Section)

Table 4.9 show the table used to add and store class sections. It is used to retrieve and check the class section and control them. Which makes it possible to determine the section that the student can register. This table has different relationship with the other tables such as Tbl_School, and Tbl_Class.

It contains different columns, these columns are: SectionId, and ClassId within the same data type “int”, SchoolId within “smallint” data type, SectionName, within “nvarchar()” data type, and finally, code within “nchar()” data type.

Table 4.9 : Tbl_Section

	Column Name	Data Type	Allow Nulls
	Fld_SectionId	int	<input type="checkbox"/>
	Fld_SectionName	nvarchar(50)	<input checked="" type="checkbox"/>
	Fld_ClassId	int	<input checked="" type="checkbox"/>
	Fld_SchoolId	smallint	<input checked="" type="checkbox"/>
	Fld_Code	nchar(5)	<input checked="" type="checkbox"/>
			<input type="checkbox"/>

Table 9

4.3.10 The Table of Homework (Tbl_Homework)

Table 4.10 present the table used for storing all homework information in DB, and send it to students. it contains different columns, these columns are: homeworkName, homeworkFile and homeworkNote within the same data type “nvarchar()”, homeworkId, SectionId, and homeworkOwnerId within “int” data type, homeworkBrif within “ntext” data type, homeworkFrom, homeworkTo, and homeworkDate within “date” data type, semesterId within “smallint” data type, and RegYear within “char()” data type. In this table the primary key is homeworkId.

Table 4.10 : Tbl_Homework

	Column Name	Data Type	Allow Nulls
	Fld_HomeWorkId	int	<input type="checkbox"/>
	Fld_HomeWorkName	nvarchar(200)	<input checked="" type="checkbox"/>
	Fld_HomeWorkBrif	ntext	<input checked="" type="checkbox"/>
	Fld_HomeWorkNote	nvarchar(2000)	<input checked="" type="checkbox"/>
	Fld_HomeWorkFile	nvarchar(50)	<input checked="" type="checkbox"/>
	Fld_HomeWorkFrom	date	<input checked="" type="checkbox"/>
	Fld_HomeWorkTo	date	<input checked="" type="checkbox"/>
	Fld_HomeWorkDate	date	<input checked="" type="checkbox"/>
	Fld_SemesterId	smallint	<input checked="" type="checkbox"/>
	FldRegYear	char(10)	<input checked="" type="checkbox"/>
	Fld_SectionId	int	<input checked="" type="checkbox"/>
	Fld_HomeWorkOwnerId	int	<input checked="" type="checkbox"/>
			<input type="checkbox"/>

Table 10

4.3.11 The Table of Students Answers (Tbl_Solve)

Table 4.11 show the table that is used for storing all student answer for homework. It contains different columns, these columns are: homeworkId, studentId within data type “int”, and solveFile and solveNote within “nvarchar()” data type.

Table 4.11 : Tbl_Solve

	Column Name	Data Type	Allow Nulls
	Fld_HomeWorkId	int	<input type="checkbox"/>
	Fld_SolveFile	nvarchar(50)	<input checked="" type="checkbox"/>
	Fld_StudentId	int	<input type="checkbox"/>
	Fld_SolveNote	nvarchar(4000)	<input checked="" type="checkbox"/>
			<input type="checkbox"/>

Table 11

4.3.12 The Table of Calendar (Tbl_Calendar)

Table 4.12 show the table used to allow the administrator, directors, teachers, students and parents to overview and see the course schedule. It contains different columns, these columns are: RegYear within “char()” data type, SectionId, and classId within “int” data type, calenderBody within “ntext” data type, calenderTitle within “nvarchar()” data type, and SchoolId within “smallint” data type.

Table 4.12 : Tbl_Calendar

	Column Name	Data Type	Allow Nulls
	Fld_RegYear	char(4)	<input type="checkbox"/>
	Fld_SectionId	int	<input type="checkbox"/>
	Fld_SchoolId	smallint	<input type="checkbox"/>
	CalenderTitle	nvarchar(100)	<input checked="" type="checkbox"/>
	CalenderBody	ntext	<input checked="" type="checkbox"/>
	Fld_ClassId	int	<input type="checkbox"/>
			<input type="checkbox"/>

Table 12

4.3.13 The Table of Students Registrations (Tbl_Reg)

Table 4.13 present the table used to register students in the schools and determine the class, section, and semester. It contains different columns, these columns are: RegYear within “char()” data type, RegId, StudentId, SectionId, and ClassId within “int” data type, RegDate within “datetime” data type, RegNote within “nvarchar()” data type, and SchoolId and SemesterId within “smallint” data type. In this table the primary key is RegId.

Table 4.13 : Tbl_Reg

	Column Name	Data Type	Allow Nulls
	Fld_RegId	int	<input type="checkbox"/>
	Fld_StudentId	int	<input checked="" type="checkbox"/>
	Fld_ClassId	int	<input checked="" type="checkbox"/>
	Fld_RegYear	char(4)	<input checked="" type="checkbox"/>
	Fld_RegDate	datetime	<input checked="" type="checkbox"/>
	Fld_RegNote	nvarchar(100)	<input checked="" type="checkbox"/>
	Fld_SchoolId	smallint	<input checked="" type="checkbox"/>
	Fld_SemesterId	smallint	<input checked="" type="checkbox"/>
	Fld_SectionId	int	<input checked="" type="checkbox"/>
			<input type="checkbox"/>

Table 13

4.3.14 The Table of Children of Parents (Tbl_rel_Parent_Student)

Table 4.14 show the table that used for determining the Children of parents in the schools and it is used by the system to help the parents to retrieve the information that needed about their children. It contains two columns, these columns are: StudentId and UserId within “int” data type.

Table 4.14 : Tbl_rel_Parent_Student

	Column Name	Data Type	Allow Nulls
	Fld_StudentId	int	<input type="checkbox"/>
	Fld_UserId	int	<input type="checkbox"/>
			<input type="checkbox"/>

Table 14

4.3.15 The Table of Users (Tbl_User)

Table 4.15 present the table used for determining all users of the portal system and it contains the username and password. It contains different columns, these columns are: UserId within “int” data type, SchoolId within “smallint” data type, permissionId within “tinyint” data type, Userusername, password, and mail within “nvarchar()” data type Finally, the primary key is UserId.

Table 4.15 : Tbl_User

	Column Name	Data Type	Allow Nulls
	Fld_UserId	int	<input type="checkbox"/>
	Fld_UserUsername	nvarchar(20)	<input checked="" type="checkbox"/>
	Fld_Password	nvarchar(20)	<input checked="" type="checkbox"/>
	Fld_PermissionId	tinyint	<input checked="" type="checkbox"/>
	Fld_Mail	nvarchar(50)	<input checked="" type="checkbox"/>
	Fld_SchoolId	smallint	<input checked="" type="checkbox"/>
			<input type="checkbox"/>

Table 15

Chapter Five

Implementation and Results

5.1 Introduction

Implementation is the carrying out, execution, or practice of a plan, a method, or any design for doing something. As such, implementation is the action that must follow any preliminary thinking in order for something to actually happen. In an information technology context, implementation encompasses all the processes involved in getting new software or hardware operating properly in its environment, including installation, configuration, running, testing, and making necessary changes. The word deployment is sometimes used to mean the same thing.

In this thesis the implementation was done in several phases. Phases were similar to the proposed work and output of each phase was an input to the next phase. The following are the phases of implementation for the portal system:

5.2 Phase One: Database Design

The use of SQL Server 2008 to reach the first phases, where create all tables that needed to built the portal system and define the columns and data type for each table, after that create the relationships between these tables. The use of SQL server 2008 has many benefits, these are:

5.2.1 Security and Data Auditing

- Transparent Data Encryption - This is encrypting the data while it is on disk and remains transparent to applications
- External Key Management - This new functionality relates to consolidation of key management and integration with external products
- Data Auditing - This is one core feature of SQL Server 2008 that will include a number of new features include to:
 - The introduction of first class 'AUDIT' objects
 - Auditing DDL (data definition language) commands
 - Support for multiple logging targets

5.2.2 Availability and Reliability

- CPUs - Support for pluggable CPUs which means that a CPU can be added on the fly and recognized by SQL Server 2008 just like memory in SQL Server 2005
- Database Mirroring - Enhanced Database Mirroring to include compression of mirror streams, enhanced performance and automatic page-level repair for the principal and mirror

5.2.3 Management

- Policy-Based Management Framework - The ability to manage objects via policies as opposed to traditional scripts with inherent monitoring and enforcement.
- Microsoft System Center - Integration with Microsoft System Center which is a product from Microsoft to improve operational costs.
- Extended Events - Another new feature is Extended Events which is a high performance yet light weight tracing infrastructure with insight into the core engine independent of SQL Trace.

5.2.4 New Data Types

- Date Time Data Type - The datetime data type will now be able to support the following:
 - Precision to the 100th nanosecond which is 7 digits past second.
 - Time-zone datetime offset to translate the datetimes across numerous time zones.
 - Rather than having to parse the datetime for just the date or just the time, now SQL Server 2008 will have date only support as well as time only support

- HierarchyID - With the introduction of the HierarchyID data type this data type will be hierarchical-aware and will be accompanied by built-in functions, methods, etc. to support complex hierarchies in your data with .NET

5.3 Phase Two: Generate the Basic Operations Statements (Code)

1. ADD
2. DELETE
3. SELECT
4. UPDATE

Note: See the generated code in Appendix

5.4 Phase Three: Design System Forms

We used ASP.Net to build forms, and reports of the system, ASP.Net has benefits such as:

5.4.1 Easy Programming Model

- ASP.NET makes building real world Web applications dramatically easier. ASP.NET server controls enable an HTML-like style of declarative programming that let you build great pages with far less code than with classic ASP. Displaying data, validating user input, and

uploading files are all amazingly easy. Best of all, ASP.NET pages work in all browsers including Netscape, Opera, AOL, and Internet Explorer.

5.4.2 Flexible Language Options

- ASP.NET lets you leverage your current programming language skills. Unlike classic ASP, which supports only interpreted VBScript and JScript, ASP.NET now supports more than 25 .NET languages (built-in support for VB.NET, C#, and JScript.NET), giving you unprecedented flexibility in your choice of language.

5.4.3 Compiled Execution

- ASP.NET is much faster than classic ASP, while preserving the "just hit save" update model of ASP. However, no explicit compile step is required. ASP.NET will automatically detect any changes, dynamically compile the files if needed, and store the compiled results to reuse for subsequent requests. Dynamic compilation ensures that your application is always up to date, and compiled execution makes it fast. Most applications migrated from classic ASP see a 3x to 5x increase in pages served.

5.4.4 Web-Farm Session State

- ASP.NET session state lets you share session data user-specific state values across all machines in your Web farm. Now a user can hit different servers in the Web farm over multiple requests and still have full access to her session. And since business components created with the .NET Framework are free-threaded, you no longer need to worry about thread affinity.

5.4.5 Enhanced Reliability

- ASP.NET ensures that your application is always available to your users.

5.4.6 Mobile Web Device Support

- ASP.NET Mobile Controls let you easily target cell phones, PDAs and over 80 mobile Web devices. You write your application just once, and the mobile controls automatically generate WAP/WML, HTML, or iMode as required by the requesting device.

5.5 Phase Four: Use the basic operations statements and Forms

In this phase we use the basic operations statements and system forms, by establishing and writing code as we need to get the functions as we want, the four basic operations statements ADD, DELETE, SELECT, and UPDATE have the same general form but does not have the same exactly code.

5.6 Phase Five: Register Domain Name

A **domain name registry** is a database of all domain names registered in a top-level domain. A registry operator, also called a network information center (NIC), is the part of the Domain Name System (DNS) of the Internet that keeps the database of domain names, and generates the zone files which convert domain names to IP addresses. Each NIC is an organization that manages the registration of Domain names within the top-level domains for which it is responsible, controls the policies of domain name allocation, and technically operates its top-level domain. It is potentially distinct from a domain name registrar.

So we buy a domain name From a website, this process is called “Register Domain Name”, here in this thesis the needed register domain name is “schools-portal”

5.7 Phase Six: Setup Webpage in Server

The most important phase is to setup a webpage in server, that means using the register domain name to upload the portal system in web

www.school-portal.com is the website that has been working on it during this thesis, as seen in figure 5.1, which contains a site for schools, where we provide all the functions required to administrator, directors, teachers, parents, and students.

5.8 Phase Seven: Implementation of The System Using Real Data

This phase has been implemented on the “Majra secondary School for Boys”, the implementation of the system are as follows:

1. Determine the system Administrator: here, the system administrator is the Ministry of Education.
2. Determine the Director: here, the Director is the school director.
3. Determine Teachers: by entering the names of teachers and all of information that needed.
4. Determine Students: through the use of school records, to enter the all students information as we need.
5. Determine Parents: identify the parents of the students by the system administrator to be able to stay fully informed on the conditions of their children during the school year.
6. Determine the classes: by identify the classes in the school

7. Determine the courses: by identify the courses for each class in the school during to the ministry of education rules.
8. Determine the homeroom teacher: identify the teacher responsible for each row, manages all information pertaining to this class
9. Determine the teachers distributions: identify teachers for all classes, to start the educational operation.

After all that steps, the director begins the students registration operation to assign them to classes, then determined parents of students to stay fully informed on the conditions of their children, then the director distributed the teachers for each class, is also determined courses.

Thus, the system is effective and working properly, and in this way we have implemented the system on one of Al- Karak governorate school, this school is "Majra secondary School for Boys".

Figure 5.1: The First page in the portal system

نظام إدارة المدارس

اختيار واجهة التحكم

دخول المدير	هل انت مدير النظام؟
دخول مدراء المدارس	هل انت مدير مدرسة؟
دخول المعلمين	هل انت معلم؟
دخول اولياء الامور	هل انت ولي امر طالب؟
دخول الطلاب	هل انت طالب؟

Figure 3

5.9 Testing and Results

Software testing is an investigation conducted to provide stakeholders with information about the quality of the product or service under test.

Software testing can also provide an objective, independent view of the software to allow the business to appreciate and understand the risks of software implementation. Test techniques include, but are not limited to, the process of executing a program or application with the intent of finding software bugs (errors or other defects).

Software testing can be stated as the process of validating and verifying that a software application:

1. meets the requirements that guided its design and development.
2. works as expected.
3. can be implemented with the same characteristics.
4. satisfies the needs of all users.

Software testing, depending on the testing method employed, can be implemented at any time in the development process. Traditionally most of the test effort occurs after the requirements have been defined and the coding process has been completed, but in the Agile approaches most of the test effort is on-going. As such, the methodology of the test is governed by the chosen software development methodology. Now, we test the portal system by take snapshot for some of screen, to ensure the validity of the portal system.

1. ADD Student Information in DB

To satisfy the students' query for store information about particular student, we must fill all needed data in all fields, then the director must press the "Store" button to do the operations as in figure 5.2.

Figure 5.2: The ADD Student page

The screenshot shows a web browser window with the URL <http://localhost:3157/fahcli/AcmirSchool>. The page title is 'نظام ادارة المدارس' (School Management System). The main content area is titled 'اضافة طالب' (Add Student) and contains a form with the following fields:

Field Label	Value
اسم الطالب (Student Name)	احمد منصور (Ahmed Mansour)
هاتف (Phone)	3406967
خطوي (Mobile)	017788543322
مكان الولادة (Place of Birth)	الترك (Terk)
تاريخ الولادة (Date of Birth)	1/9/1983
الجنسية (Nationality)	ارنية (Arnie)
اسم المستخدم (Username)	ahmed
كلمة السر (Password)	ahmed@345
البريد الالكتروني (Email)	ahamd@helma1.com

At the bottom of the form, there are two buttons: 'تسجيل هذا الطالب' (Register this student) and 'تغرين' (Refresh).

On the right side of the page, there is a sidebar titled 'مدير المدرسة' (School Director) with a list of navigation links:

- ادارة الطلاب (Student Management)
- ادارة المعلمين (Teacher Management)
- ادارة الواجبات المنزلية (Homework Management)
- ادارة المنهج (Curriculum Management)
- ادارة الصفوف (Classroom Management)
- تسجيل الطلاب (Student Registration)
- ادارة المنهج (Curriculum Management)
- توزيع المعلمين (Teacher Distribution)
- التقويم الدراسي (Academic Calendar)
- ملف (File)
- خروج (Logout)

At the bottom of the page, there is a footer that says 'جميع الحقوق محفوظة' (All rights reserved).

Figure 4

2. ADD Student to Ensure Store in DB

In order to ensure the registration, the system will display all fields, and then the director can choose between Edit student information and then do the registration operation, or delete to undo the last operation. Here, note that the process of **ADD Student** was successful as seen in figure 5.3.

Figure 5.3: The ADD Student page

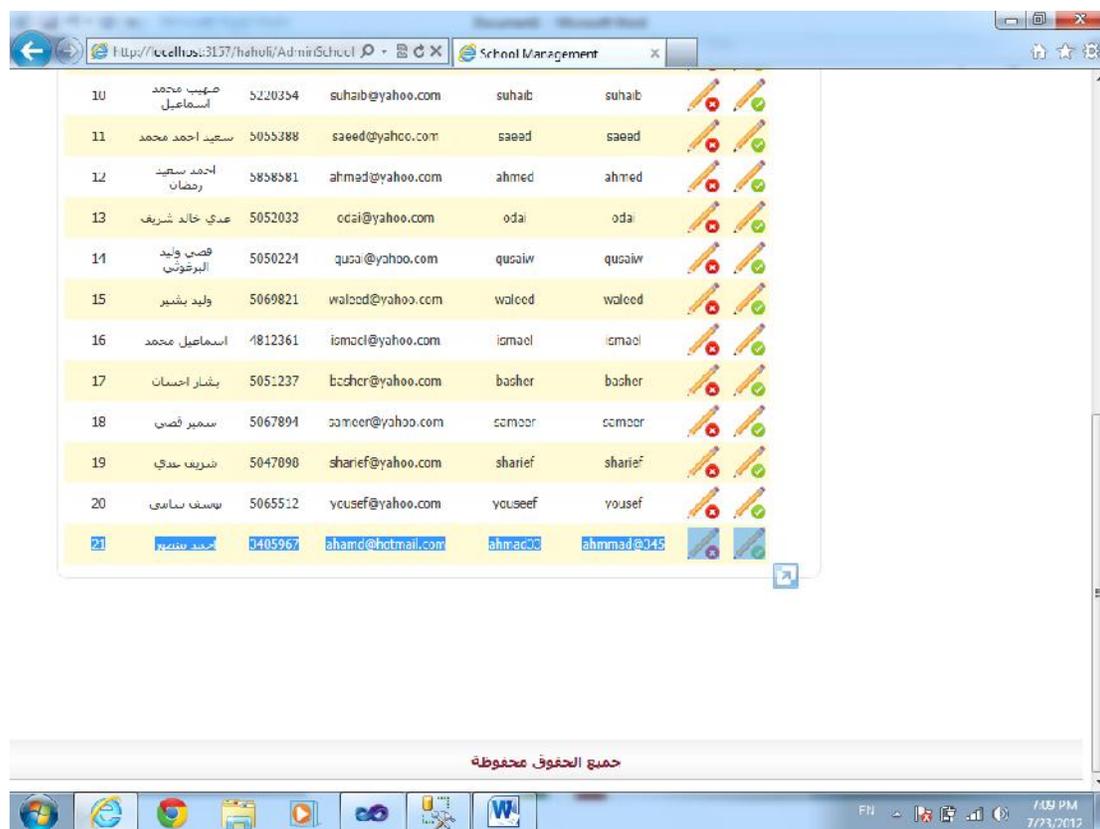


Figure 5

3. ADD Course Information in DB

To satisfy the courses query for storing information about particular course, we follow all needed course information by following it in all fields, then we press the “store” button to do the operation. as seen in figure 5.4.

Figure 5.4: The ADD Course page

The screenshot shows a web browser window with the URL `http://localhost:3157/Isahali/Admin/AddC`. The page title is "نظام إدارة المدارس" (School Management System). The main content area is titled "اضافة مادة" (Add Course) and contains a form with the following fields:

- رقم المادة (Course Number): 701
- اسم المادة (Course Name): الزيادة الثانية
- الصف (Level):
- العلامة العظمى (Maximum Grade): 100
- العلامة الصغرى (Minimum Grade): 50
- ملاحظة (Note): هذه المادة يكون محاضرة

At the bottom of the form is a "تخزين" (Save) button. To the right of the form is a sidebar titled "مدير المدرسة" (School Manager) with the following navigation links:

- [إدارة المدارس](#)
- [إدارة الصفوف](#)
- [إدارة المعلمين](#)
- [إدارة الطلاب](#)
- [إدارة الصفات](#)

At the bottom of the page, there is a footer that says "جميع الحقوق محفوظة" (All rights reserved). The Windows taskbar at the bottom shows the date and time as 7/7/2012, 1:17 PM.

Figure 6

4. ADD Course to Ensure Store in DB

The system will display all fields that we follow, and then the director can be choose between Edit Course information, or delete to undo the last operation. Here, note that the process of **ADD Course** was successful as seen in figure 5.5.

Figure 5.5: The ADD Course page

611	رياضيات	100	50	الصف السادس		
612	لغة عربية	100	50	الصف السادس		
613	لغة انجليزية	100	50	الصف الاول		
614	تأويل	100	50	الصف السادس		
615	جغرافيا	100	50	الصف السادس		
616	تاريخ	100	50	الصف السادس		
617	وطنية	100	50	الصف السادس		
618	دين	100	50	الصف السادس		
619	حاسوب	100	50	الصف السادس		
620	مهنى	100	50	الصف السادس		
621	تربية رياضية	100	50	الصف السادس		
701	التربية الفنية	100	50	هذه المادة غير مختتمية		

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Figure 7

5. DELETE Course Information From DB

To ensure the delete process, we select the course that want to delete it by pressing the delete button, then press “Ok” in the message that appeared on the screen to confirm the delete process, then the system will remove that course from the list of courses, this operations can be done as seen in figure 5.6.

Figure 5.6: The DELETE Course page

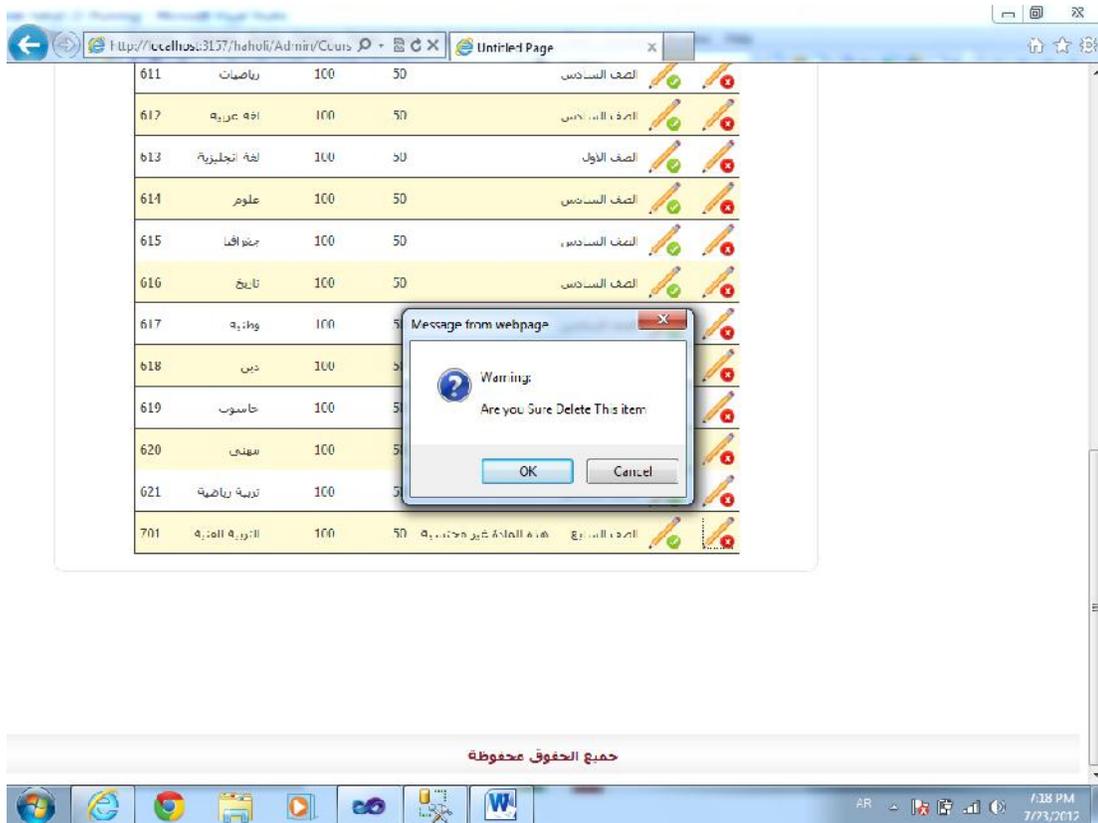


Figure 8

6. DELETE Course to Ensure Store in DB

After the previous operation, the system will show the list of courses in new page, this page show the process of **DELETE Course** was successful as seen in figure 5.7.

Figure 5.7: The DELETE Course page

520	تربية فنية	1.00	50	الصف الخامس		
611	رياضيات	1.00	50	الصف السادس		
612	لغة عربية	1.00	50	الصف السادس		
613	لغة انجليزية	1.00	50	الصف الاول		
614	علوم	1.00	50	الصف السادس		
615	جغرافيا	1.00	50	الصف السادس		
616	تاريخ	1.00	50	الصف السادس		
617	وطنية	1.00	50	الصف السادس		
618	دين	1.00	50	الصف السادس		
619	حاسوب	1.00	50	الصف السادس		
620	جهدى	1.00	50	الصف السادس		
621	تربية رياضية	1.00	50	الصف السادس		

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Figure 9

Chapter Six

Conclusion and Future Work

6.1 Conclusion

1. Design and Implementation of Portal System for Schools in Less-Developed Area is a thesis that is designed to replace the typical school system. The system tries to break the barriers between the people inside this system. The people are the students, students' parents, teachers, and the school director.
2. Develop a system that contains accounts for each user, each user has an access for some functions that depends on the user type.
3. Develop various functions for each user. The functions that the teacher can access are summarized by controlling the flowing of the lectures and communicating with students by uploading the homework, corrections, marks, and gloss organization. The student can upload the solutions to the system and download the homework, receive the marks, communicate with the teacher and see the school time-table. Parents can control the marks of their children without need to go to school and ask personally. The school director can control the organization of the school from the system, and the organized schedule reaches the system users as soon as it uploaded.

4. Integrate software ASP.Net 2008 and SQL Server to develop the system. The software ASP.Net has been used to make the graphical user interface that the users use. The interface provides an easy navigation among the different functions and simple school organization surfing. The interface is used as input for the database at which the tables are updated and keep the information secured and permanent.
5. Web-based system has been developed. The web-based system provides an access to the system for the users. The web-based software established a communicate bridge between all users and can use to communicate with the data base.
6. Develop a user friendly and real time system that provides a comfortable accessibility to the system for the users, and communication with all system users in real time. This way makes the communication between the system users very simple and very fast. The control of the teaching system in the school can be managed simply, and the problems and miscommunication can be overcome by this system. Additionally, the parents can control their children and follow them simply and easily. Finally, this system provides a mobile access which makes the communication simpler and easier.

6.2 Future Works

The following items can be improved in the future:

1. Improve and develop the level of security, to make the system able to save files from tampering with it or modification by any external intruder.
2. Applied the system on whole area (a group of schools) rather than applied on one school, to ensure that the system have more efficiency, and Can store a huge amount of data in the database.
3. The system can be developed to provide conference lectures, or video conference.
4. Update the system functions to find an easy communication way between all components.
5. Provide and online exams which provides the marks to the student directly. This opens the chance for the student to use the system to follow the mistakes that were made during the exam. In addition, this way will reduce the work load for the teachers and motivate them to invent a new way to develop the teaching methods.
6. The system can be developed to store recorded lectures. A lot of schools and universities in worldwide record lectures and upload

it for the students to review it later, and this system can be developed to provide this service.

Appendix

This appendix contains the basic operations statements (code), which will be used in the program, these operations are:

1. Add

- e.g. cod for **add course**

```
INSERT      INTO [dbo].[Tbl_Course] ([Fld_CourseId], [Fld_ClassId],  
                                     [Fld_CourseMarkMax], [Fld_CourseMarkMin],  
                                     [Fld_CourseName], [Fld_CourseNote])  
VALUES (@Fld_CourseId, @Fld_ClassId,  
         @Fld_CourseMarkMax, @Fld_CourseMarkMin,  
         @Fld_CourseName, @Fld_CourseNote)
```

2. Delete

- e.g. cod for **delete course depending on course ID**

```
DELETE      FROM [dbo].[Tbl_Course]  
WHERE (([Fld_CourseId] = @Original_Fld_CourseId))
```

3. Select

- e.g. cod for **show course information depending on course ID**

```
SELECT    Tbl_Course.Fld_CourseId, Tbl_Course.Fld_ClassId,  
           Tbl_Course.Fld_CourseMarkMax,  
           Tbl_Course.Fld_CourseMarkMin,  
           Tbl_Course.Fld_CourseName, Tbl_Course.Fld_CourseNote,  
           Tbl_Class.Fld_ClassName  
  
FROM      Tbl_Course INNER JOIN  
           Tbl_Class ON Tbl_Course.Fld_ClassId  
           = Tbl_Class.Fld_ClassId  
  
WHERE     (Tbl_Course.Fld_CourseId = @id)
```

- e.g. cod for **show all courses**

```
SELECT     Fld_CourseId, Fld_ClassId, Fld_CourseMarkMax,  
           Fld_CourseMarkMin, Fld_CourseName, Fld_CourseNote  
  
FROM      dbo.Tbl_Course
```

4. Update

- e.g. cod for **update course information depending on course ID**

UPDATE Tbl_Course

SET Fld_CourseId = @Fld_CourseId, Fld_ClassId =

@Fld_ClassId, Fld_CourseMarkMax =

@Fld_CourseMarkMax, Fld_CourseMarkMin =

@Fld_CourseMarkMin, Fld_CourseName =

@Fld_CourseName, Fld_CourseNote = @Fld_CourseNote

WHERE (Fld_CourseId = @Original_Fld_CourseId)

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