

Research Article

proposed a new approach for student absence management

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Article Info	Abstract
Article history: Received 07-04-2021 Received in revised form 17-06-2021 Accepted 06-07-2021 Available online 07-06-2022	<p>This study deals with the proposed a new approach for student absence management, the college is composed of four academic's departments. The data entry (User) can enter the student's absence hours in order to be saved in the database, and then conduct the real-time examination process to be compatible with the conditions that have been set by the educational institution to issue the appropriate decisions (alert, warning, final warning, taking out of the course Academic) and sending notices to students so that they can know the percentage of absence they have in each course.</p>
Keywords: Student's absence SQL C# Language	<p>For the design and programming of this system, we used the Microsoft SQL Server language to build the database and perform addition, deletion and query operations on the entries stored in that database, in addition to using C# Language to design user interfaces for entering data and showing the required reports, in addition to writing the code for linking those interfaces Database.</p>

1. Introduction.

Student's absences system is defined as an integrated system that aims to deal with the student's personal information as well as his absences in the academic curriculum of his semester, as he collects all academic information related to the educational institution students in the classroom and their absences and put that information as information available to both the teaching staff and the staff The administrator of the educational institution, students and their parents.

This system facilitates the discovery of students dropping out of the semester in a specific course or group of courses, and sending an alert and warning them in the event of their absences exceeding the prescribed limit for that, as well as providing various reports that explain those absences, with notifications of the proportions of those absences being given to each from students and their parents in order to inform them about them, either through e-mail or in the form of text messages to their phone numbers. [1]

Data and Information?

It is a set of facts, measurements and observations that are in the form of numbers, letters, symbols and special forms, which are concerned with a specific idea and subject, and the data have no meaning, and for this are collected until they are used. [1]

Information is the product of data processing, as information is data that has been processed by classifying, organizing and analyzing it, and it has a meaning to achieve a specific goal and is used for a specific purpose in order to provide what is called knowledge. [1]

Information Systems.

An information system is a number of elements that intertwine with each other, which play an important role in attracting

and processing information, and then storing it around a specific topic in a systematic manner. [2]

Student's absences management system.

These systems are used in educational institutions to manage student's absences and record their attendance or non-attendance of classes for control of regular attendance in those educational institutions and alert students that their absences exceed the permissible limits. [2]

Advantages of using student absences management systems.

- a) Maintain student data and recover it when needed.
- b) Restore stored data and provide it to decision makers for speedy decision making.
- c) Maintaining the organization of students' attendance to their classes and their regularity in them.
- d) Warning decision-makers in the event of a student exceeding the absence hours prescribed for him.
- e) Ease of accessing data and recovering it when needed. [2]

Disadvantages of using student absences management systems.

- a- You need specialized technicians to manage the system in addition to conducting planning and development operations, and this means additional costs.
- b- We need to buy material components to maintain the work of this system, such as the server and provide a continuous network (Internet), and this also means additional costs.
- c- Since these data are on the cloud, there is a possibility of losing that data due to its exposure to electronic hacking by hackers. So that data must be insured

by the electronic protection companies. This also means extra costs.

- d- Counting the existence of electronic culture in our societies and not believing in it is considered one of the most important obstacles that prevent the spread of that culture in our educational institutions.
- e- The high cost of the physical components and software that we need in the work of this technology in addition to the cost of reserving spaces on the cloud may prevent the application of this technology in some educational institutions. [2]

Categories served by this system.

- a- Teaching staff: The teaching staff of the educational institution can benefit from the information provided by this system on students, such as making use of students' personal information and students' grades in the rest of the subjects, student absences, etc.
- b- The administrative staff: where the administrative cadre affiliated with the educational institution can benefit from the information provided by the system in order to quickly take decisions that concern that institution.
- c- Foundation students and their guardians: by informing them of their degrees, absences, and their administrative orders through which the scientific level can be determined for them.
- 4- The ministry that supervises the educational institution: where the ministry can, through these data, determine the scientific and organizational level of that educational institution. [2]

2. Literature Review.

Absence System for Al-Mustansiriya University, this system aims to the absence system is a sophisticated electronic system, this system is clear and easy to manage the absence of students electronically, which reduces time and effort compared to the absence system paper that takes time and effort in calculating absence, and the absence of students is calculated depending on the number of hours of his absences for each subject.

Absence is the process of entering the number of hours of absence for each student during the course by the employee responsible for absences, and if the student's absences exceed the upper limit of absences, a percentage will be raised for him after announcing the report of students' absence to 10%, and this process can be given (raising the percentage) once for the student to avoid his dismissal because it exceeded the number of hours of absence specified. [3]

The study seeks to design a unified electronic information system to manage the attendance of students at the Lebanese French University / Erbil as a system that facilitates the process of entering and calculating students' absences and issuing chapter reports against the students who passed, so that the traditional (paper) method of registering absences can be replaced by a technological method based on a system Integrated management of student attendance so that the information is accurate and not subject to tampering by students. [4]

Another study that a suggested model for using the student attendance management information system / case study at the Lebanese French University / Erbil.



Figure No. (1) shows the Absence System for Al-Mustansiriyah University



Figure No. (2) shows the student attendance management information system / Lebanese French University / Erbil.

While absence System for Dentistry College\University of Basra organized a seminar on the application of the electronic system in the field of student absences registration using the Excel program to

give quick and correct results to reduce time and effort.

And that the program preserves the rights of students and at the same time protects teachers from making mistakes

when confirming attendance of the absence of students.

Where the system was used, applied and approved to raise absences on the student's profile, which helps in automating

absences and converting them from a paper system to an electronic system in order to increase accuracy in performance. [5]



Besides, Student absences registration program\Yarmouk University College, used to registration student absences Automatically. This system was designed using two languages (ASP.NET & C #) to design web pages and (Sql Server) to create and link databases with each other, and the advantages of the program's interface are ease and clearly of the user, The program has been uploaded to the college's official website on the Internet to be able to access it at any time. This method currently used to record absences and attendance of students, gives the teachers the ease and speed in registering students 'absences and attendance, as well as providing, with effort, the advantage of providing management with reports and the number of absentees, the student or guardian can also see the number of hours of the student's absence by logging into the official college website, where the program is easily available. [6]

Other system that using for recording attendance and absence of students for university of Mosul, the advantages of this system in terms of its vastness, for example, it saves a lot of time and effort in registering the attendance of students on paper. It provides the number of hours of absence for each student and gives initial and final warnings to each student if it exceeds the limit of the number of hours of absence without an official excuse in addition to the ability to inform the university administration of the absence of all students periodically and continuously, and in this program my language (C # & VB.NET) was used And also (sql) language to build the program databases and link them with each other, which increases the advantages of this program that it contains a password that gives it protection and prevents the manipulation of its information, and this program also has an easy and smooth interface that facilitates the user's interaction With the program and take advantage of all its advantages. [7]



Figure No. (4) shows the student absences registration program\Yarmouk University College.



Figure No. (5) shows the recording attendance and absence of students \ University of Mosul.

3. Material and Methods

3.1. Overview.

Systems are a group of components and sections that interconnect with one another, in order to accomplish a work. As

for information, it is data that is converted and processed in order to give you a real meaning and goal, that is, to have value, so information systems are the processes that they are interconnected with each

other in order to work on data and process it until it turns into useful information, and in our research, we will show the stages of building and developing our system.

3.2. System Stages Building.

The system development life cycle framework provides a series of activities for system designers and developers to follow. It consists of a set of steps or stages in which each stage of SDLC uses the results of its predecessor.

The SDLC adheres to the important milestones that are indispensable to developers, such as planning, analysis, design, and implementation, and will be explained in the next section. [8]

3.2.1. The Analysis phases.

Analysis is a very important process before starting the programming process;

it is a very accurate process and it is necessary to study it with high accuracy, and requires high skill from a system analyst, computer engineer or programmer. The analysis includes the collection and analysis of all of the following:

Collection and classification of information about the system: The collection of information is from the person or entity that requested the program and extracting the required. Classification of information according to its importance, and determining whether it was a significant influence or was an external factor.

Knowing precisely what the desired results and tasks are from the System: This is done based on repeated conversations with the party that requested the system to get to know and confirm those desired results from the program accurately. [9]

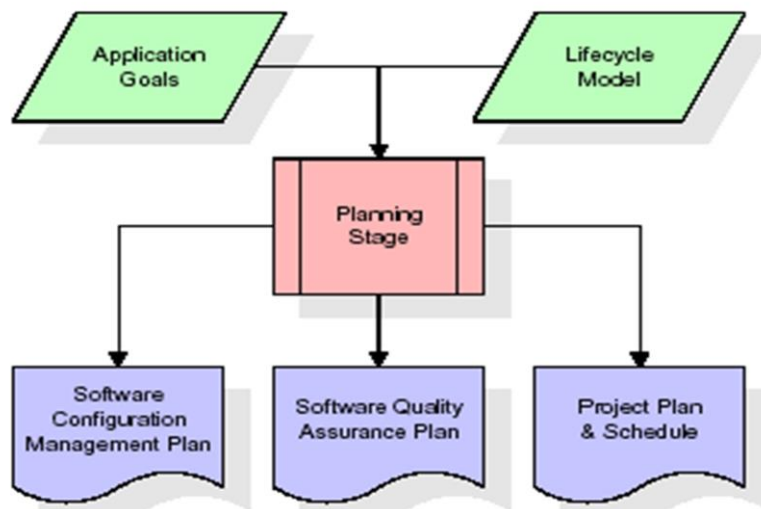


Figure No. (6) shows the Analysis phases.

3.2.2. Feasibility study phases.

Stages of the feasibility study The initial study stage of the project, in which a preliminary report is conducted by surveys by a consultant, as soon as it is presented to the project owner, while verifying the

extent of the probability of the project's success, through the following: Study of the project idea: intended to know the extent of the market need for the good or service to be Submit it. A study of the surrounding environmental conditions and

influences: through the extent of competition, the size of prices, the size of the market, and the requirements of the project, such as: the workforce, equipment, and others. [9]

3.2.3. Planning & Design Phases.

The planning stage establishes a bird's eye view of the intended software product, and uses this to establish the basic project structure, evaluate feasibility and risks associated with the project, and describe appropriate management and technical approaches, the following figure show the design phase of our system. [9]

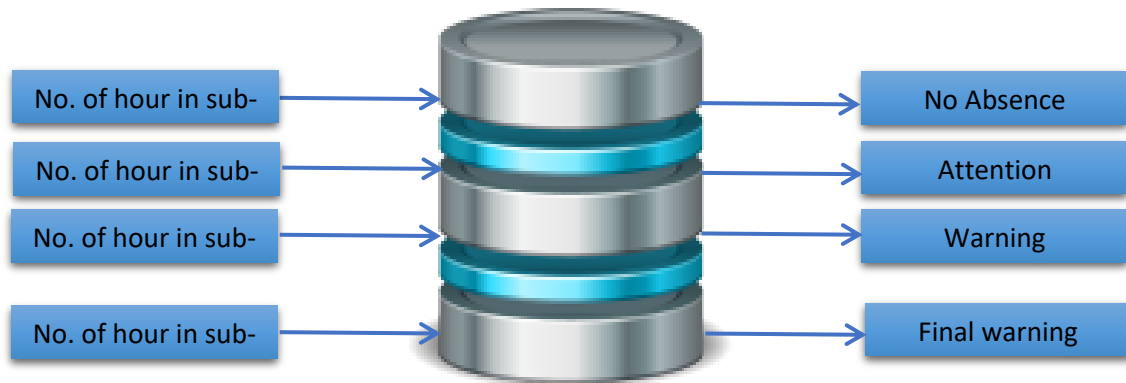


Figure No. (7) shows the design phases

3.3. Specific Hardware & Software Requirements Stage.

3.3.1. Specific Hardware Requirements.

In order for the system to work in an integrated manner, we will need a local server with which a group of computers are used to enter the students' absences and display and modify the data stored, those computers are connected to each other through a local network in order to deliver and apply all updates to all computers in all departments of the college, As well as providing a set of printers that are used to print reports in order to submit

3.3.2.1. The Proposed System Components.

As mentioned earlier, the proposed system consists of the following pages:

1. System Login page.
2. Absences of the Department of Computer Technology Engineering page.

these reports to the competent authorities to take appropriate decisions.

As for computers, we need the following specifications:

- CPU Core i5 , 4th generation, 3.720 Ghz.
- Internal hard 500 GB.
- RAM 4 GB.
- Video Card Internal Sharing 1 GB.

3.3.2. Specific Software Requirements.

In order to design and program the system, we will need a set of software that is used in designing system interfaces and tables, as well as designing and building system reports. This software includes the following.

3. Absences of the Department of Islamic Education page.
4. Absences of the Department of Business Administration page.
5. Absences of the Department of Anesthesia page.

The function of these pages records the number of hours of student attendance, as well as the number of hours of absence

of the student, the calculation of the number of hours of absence before the initial warning is given, as well as the final warning and the calculation of the average number of hours of absence to give the student the dismissal decision, as well as calculating the number of times the student is allowed to be absent before dismissal.

The system interface page has its own privacy and protection function as it only allows certain people (administrators) to access it so that information is not tampered with and changed by other people because it is protected by a password and username to provide more protection and security for the program. [10]

3.3.2.2. Data base building.

In our system we use Microsoft SQL Server language to build our tables which are using to store the data, SQL Server is Microsoft's relational database management system (RDBMS). It is a full-featured database primarily designed to compete against competitors Oracle Database (DB) and MySQL, like all major RDBMS, SQL Server supports ANSI SQL, the standard SQL language. However, SQL Server also contains T-SQL, its own SQL implementation. SQL Server Management Studio (SSMS) (previously known as Enterprise Manager) is SQL Server's main interface tool, we build four tables, its listed in below:

1. Absences table for Department of Computer Technology Engineering.
2. Absences table for Department of Islamic Education page.
3. Absences table for Department of Business Administration page.
4. Absences table for Department of Anesthesia page.

All these above tables are used for store the student's information and his absences, such that the relation between server

and database is showing in the following figure.

As we previously knew that SQL is a fourth-generation language whose function is to create relational databases and deal with them and one of the most important components of databases are tables because the origin of databases is a set of tables that are related to each other so it is considered one of the most important components. In our research we use this language to make the following actions:

- build our tables, like student's information tables, students absence tables for Various departments in our college.
- make the query, recall and archive data from records and tables in database.
- Add, modify or delete records and tables in the database.
- Maintain the protection, integrity and accuracy of the data contained in the records and tables of databases. [11]

3.4. System programming (Coding) Phase.

The programming process follows rules for the language chosen by the programmer, each programming language has its own characteristics that distinguish it from the other and make it suitable in varying degrees for each type of program according to the task required of this system. The programming languages, also have common characteristics and shared borders, since all of these languages are designed to deal with computers. Software languages develop with the development of hardware. When the computer was invented in the forties and fifties of the last century. [12]

3.5. The test phases.

3.5.1. Function Testing.

It is intended to test the system after assembling all its components to ensure that it performs the function it has to per-

form, and that is described in the system requirements documents. When the system passes this test, we can consider this system as a Functioning System. [12]

3.5.2. Performance Testing Phase.

In this step, program performance is tested in the customer's work environment to ensure that the system is compatible with the rest of the requirements. When the system passes this test, the validated system is certified, so we consider that the system is ready according to our understanding of what the customer requested. [12].

4. Results & Discussion.

4.1. Results.

The designing of university student absences systems and applying them has many benefits, they are listed in below:

- 1- Providing the necessary effort to search and retrieve the number of hours of student absences or their initial and final warnings.
- 2- Reducing the time it takes to deliver the number of students' daily or annual absences from a certain academic department to the relevant administrative authorities or vice versa, which leads to the completion of the tasks assigned to the employees easily and in addition to the speed, and bypassing the administrative bureaucracy found in most institutions Government.
- 3- Preserving the students' names, information, absences and warnings from damage by converting them into electronic copies, and making more than one copy of these documents.
- 4- The possibility of transferring the absences of a specific academic department easily and conveniently from one place to another.
- 5- The possibility of accessing students' absences for any study section or obtaining the number of hours of absence and the number of alerts for any student

with ease and ease at any time and from anywhere through the use of the Internet.

4.2. Conclusion.

In view of the great and many benefits that we may obtain through the work of these electronic systems, we conclude this research with the following recommendations:

- 1- we build our system to work at a computers device only, to obtain success for this system we should build an application that works at smart devices, like smart phone & tablet.
- 2- Increasing the electronic culture and awareness of the advanced leaders in other universities and colleges in the country due to the time and effort that these systems provide in addition to accuracy in producing information.
- 3- Increasing the electronic knowledge of the teaching and administrative.
- 4- When analyzing these systems, you must ensure that they meet the aspirations of the beneficiaries by doing all the work and activities that universities and colleges need in conducting the tasks entrusted to them.
- 5- Conducting a good and extensive analysis of the system before designing it and using several methods in the process of analyzing one system and then choosing the best and shortest method in addition to taking into consideration the low cost because this will greatly reduce the time and effort spent in building the program later.
- 6- Testing the system many times to ensure that it is free from technical and technical errors helps to succeed in the work of this program with accurate images and thus increase the reliability of it by the university administrative staff.

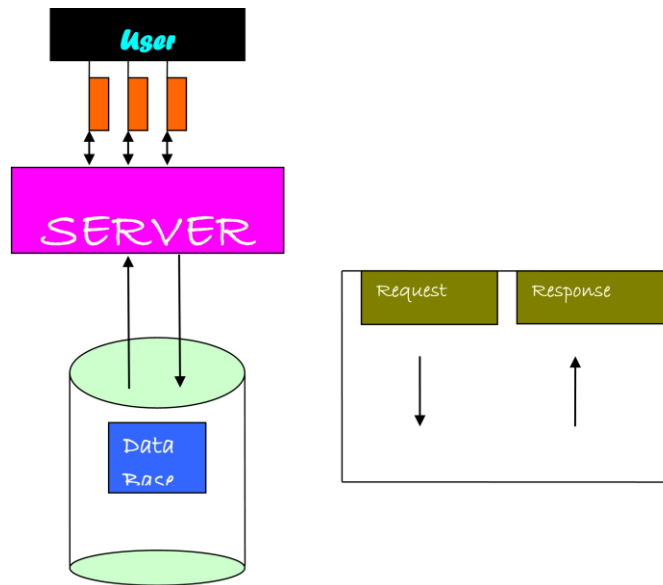


Figure No. (8) shows the MS SQL Server database.

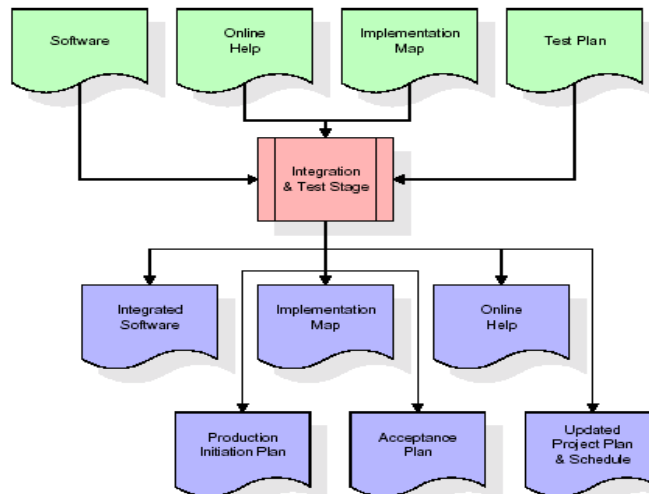


Figure No. (9) shows the Performance Testing Phase.

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