An Approach for Receiving Final Year Grade Via an Online System for Bachelor Students, Universities Case Study: university of Sulaimani-College of Dentistry

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Abstract

Nowadays, online system and internet services, in general, have been developed quickly all over the world in different working areas. Especially, among different organizations both governmental and private sectors. And this is through computerizing all the physical working process into the computer system. This paper discussed a new methodology for the university grading system, which helps students to receive their final grade via a web page. By using this technique, universities will lessen the consumption of papers for grades and reduce the amount of loading students on university sectors particularly on the day of giving a grade. Also, it will be one of the newest online development application for university of sulaimani and the country in general.

Keyword: *Mobile Online Grade, Network Protocols, Web Application, Software Platform.*

1. Introduction

This The online system is a new technique that converts any kind of working areas- physical actions in different organizations into system software management, which means the number of working papers and physical documents will be reduced into some extent which is helpful for recycling purposes [1].

In actual fact, there are varieties of numbers of an online system which exists online and through the different web-like and online pages. However, in this research paper, the main focus goes to the one specific example of the online system, which is proposing an online grading system for university students-Bachelor study degree.

In our proposed system there are comparison points among the different process of grading system from different years, which means there were different ways used in the University of Sulaimani for students to get their grade. Also, in this research different points are discussed to show how to improve the old version process and develop the old techniques.

Furthermore, this system creates another facility which goes along the grading system, and this facility is called grade claiming process. In previous, the university that process was gone with using a small piece of paper which was not clear in order to fill the blanks.

The outcome of this new system for the Dentistry College will change the old tradition grading process into the systematic process which will lead to providing many kinds of technical improvements and advantages. Also, the main benefit is to bring a new idea to the Kurdistan universities in general and Sulaimani University – College of Dentistry specifically.

This research paper is organized into different sections, which try to show the discussion of main related points for changing the behavior of old version into the newest idea of publishing grades with through online web application pages.

These sections also, try to show the outcome and drawback of these changes, and how they can help the education sector to get an improvement compared to previous years, and what they can change. So that, the question of this paper is that how the new proposing system for the College of Dentistry at the University of Sulaimani can provide an improvement in the term of technologies. The answers to this question are mentioned in the next following sections by showing the number of methodologies and techniques.

2. Literature Review

Internet technology is referred to hardware, software, networking, transfer protocol, technical and web technologies. Also, it meant by using the internet to connect computers from different countries with different routing connections globally[2].

The figure 1 shows the main task of Internet that transfers different types of online system data, for instance video, audio, images and texts, from different sources to different destinations, as the data will be transferred globally to reach its endpoints which are either server, computers or any other kind of technological device able to send and receive data[3].
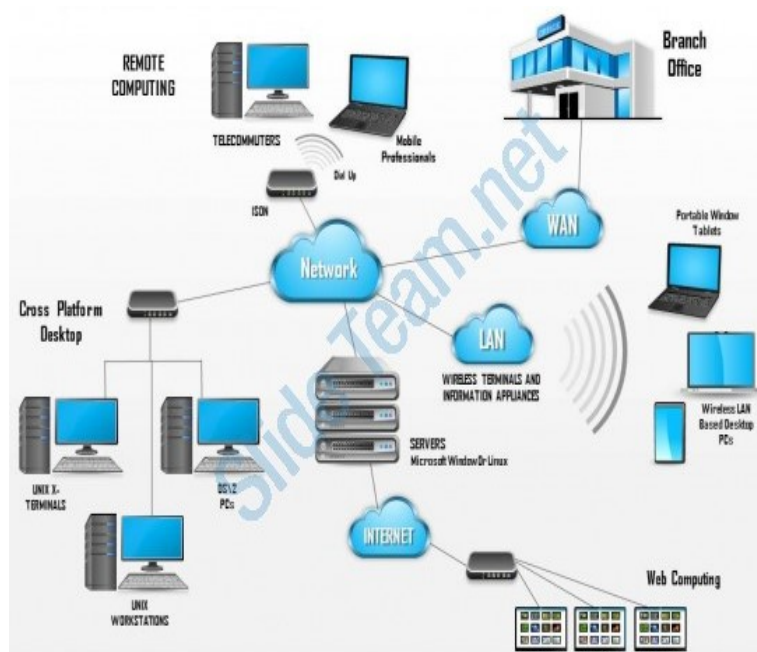

Figure 1. Internet connection

In addition, every online system with internet connections stream through the process of transmission, which is held with some networking levels and layers, and the two main layers that have a core role in data transactions are networking layer and Data link layer. However, there are other important networking layers contributes besides another layer for the transaction process, for example, Application, Presentation, Session, Transport, Network, Data Link and Physical Layers in order. as it is shown in figure 2[4, 5].
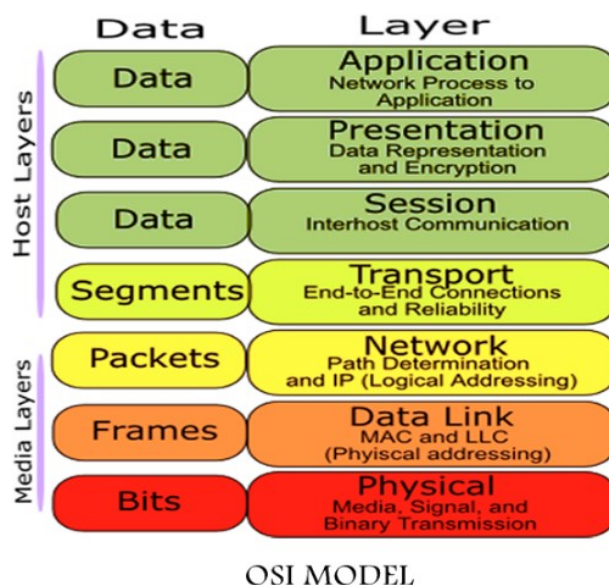
Figure 2. OSI Model (Data and layers)

In contrast, there are some issues regarding internet connections and online systems, besides the network interruption and dawdling connections, there is another issue which is security devotions. There are many online systems faced that issue, which intruder people try to hack the system and steal information and sensitive data for their own purposes[6].

Moreover, there are some procedures that can be used along with each kind of online system, especially that system what works online, in other meaning applications that required online connections in order to function properly. Those techniques such as providing antiviruses, firewall, and email scan and sophisticated passwords for securing accounts[7].
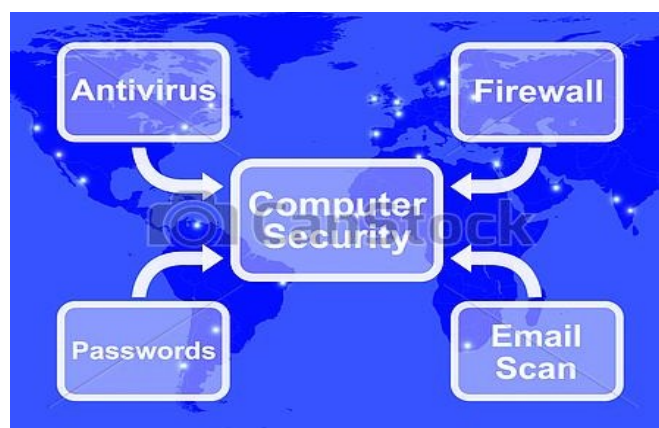

Figure 3. Internet security Process

Furthermore, the users of any kind of system even though an offline system that works without internet connections, it is important to have a knowledge how to use the system securely and must have clue how to protect their account related to the applications. In fact, in each system, there is a specific process for securing the system, for example, some system depends on password, while some other put security along with biometrics (eye recognition, face recognition, .etc.)[8].

Although there are the possibility of existing security issues in software system-online and offline, the most issues are returned to users of systems, hence users are responsible for creating a security breach, which means it is not the system fault as it is shown in figure 4. For instance, the user might share the password of the online system with other users, forgetting sign out from the system, giving full access to the system with people and using the system in a wrong process[9, 10].
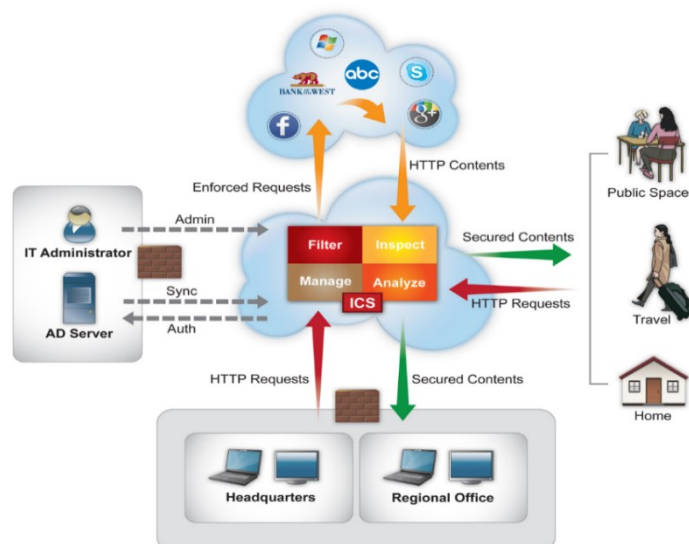

Figure 4. Online application security Process

There are some organizations especially private and public sectors use systems based on the requirement related to the organization for their working process. For example, universities have any kinds of online system software to accomplish their daily task- a student panel that can exchange data teacher side, in return teachers have an account to give new information to students. As an example, most universities use student and teacher panel to exchange information as well as news and lecture materials. In addition, the date of publishing grade will be don't through the online process, it is shown in figure 5[11].
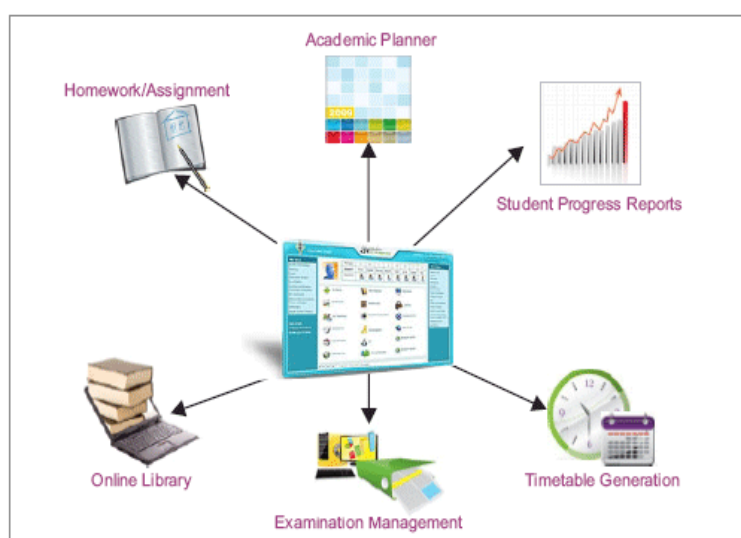

Figure 5. University Online Application Process

Also, the grading system is used in the most different education sectors in developing countries, this is including schools, colleges, institutes, and universities. That is clear that the process at the early time was done based on using paper process, later on with development of technologies they came to account that they are able to create such system that will be able to reduce the number of efforts and wasting time[12].

That is obvious each organization uses different ways of techniques for publishing the students' grade with different amount grading range, however it does not affect the online process because the system will convert what are exist in reality to the systematic processing management. Especially with different types of grades, subjects and academic level that the learner including students in the process.

The figure 7 shows the type grade calculation in one of university that gives the grade to students with letters (A, B, C, D, and F), also, some universities gave the grade in the way of showing the average level (Fail, Fair, Average, Good, Very good and Excellent) as they are shown in figure 6 and 7.
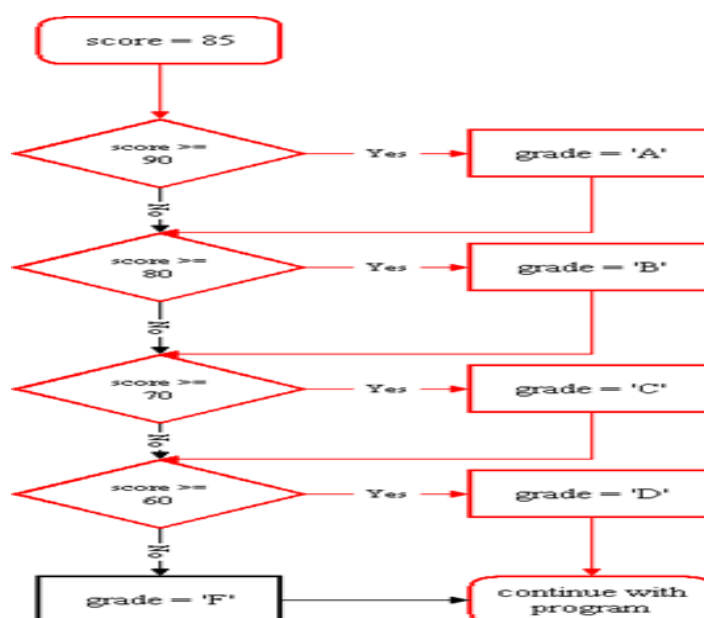

Figure 6. An example of the online giving grade in letters

Percentages (%)	Grade
90 and more	Excellent
From 85 to less than 90	
From 82.5 to less than 85	Very good
From 77.5 to less than 82.5	
From 75 to less than 77.5	
From 72.5 to less than 75	Good
From 67.5 to less than 72.5	
From 65 to less than 67.5	
From 62.5 to less than 65	Satisfactory
From 60 to less than 62.5	
Less than 60	Fail

Figure 7. An example of the online giving grade in levels

In the past few years or earlier years of internet ages, the working process in universities and governments was by using paper documents and lots of printed sheets that was led to consume a large amount of wasting papers. However, there was a lot of demand by people to accomplish their working task at offices even though consuming a lot of wasting papers[12, 13].In addition to wasting papers, the old version made people visit their organizations to finish their work, which means people should transport from long distance using cars and sometimes the place is distant that take a long time to reach .And the most important advantages of the systematic process is to reduce the amount of visiting people to the organization places and creating crows on the place and making dawdling of the working process[14, 15].
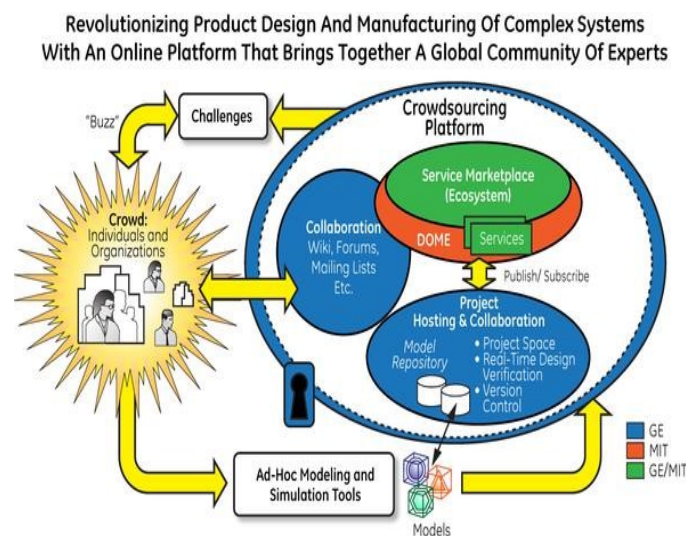

Figure 8. Crowding and its effect on organizations

In paper[16], states that there could be a web based system for student high school to participate on online grading system, which students participate in online exam for all the courses that are available by the university via online web pages.

Also, in his students after they participated in all these processes, they will fill a form of questionaries' on the usability of the website, the figure 10 illustrate the working process in the web pages as a flowchart. However, in this paper it has been mentioned that all the grades in different routes of studying and grading process from different assessments has been set, and used to calculate the final grade.
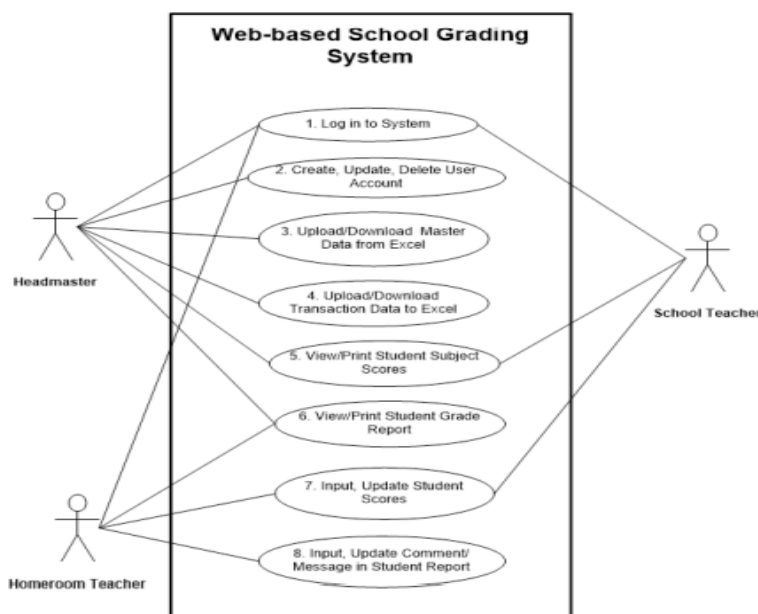
Figure 9. Flowchart of school online system for grades

In addition, Hendra mentioned in his paper the security that are provided by the website, which is using username and password to enter to the system, this is considered as a high level of security according to author as shown in figure 10.
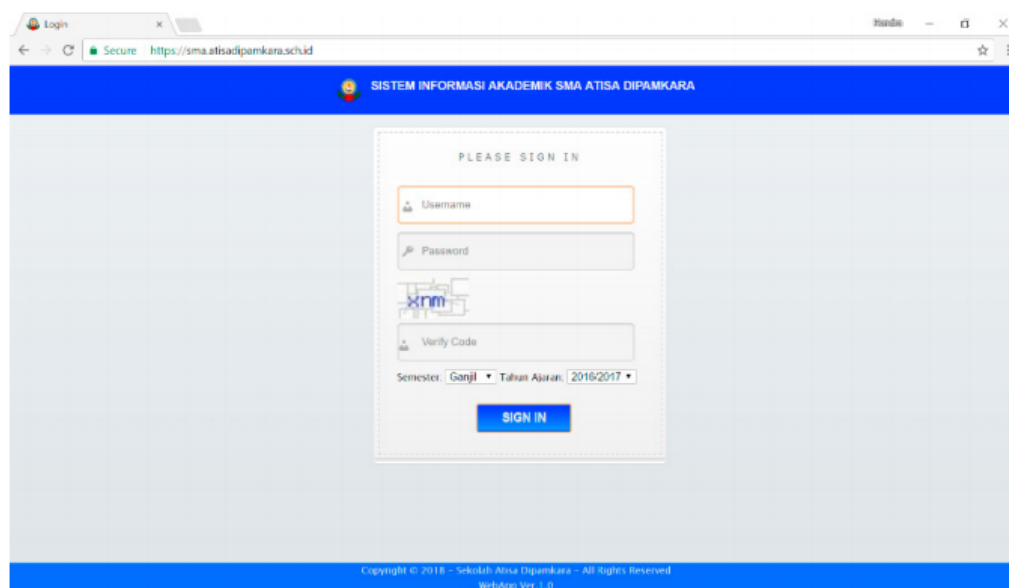

Figure 10. Security part for the web page

While in paper[17], indicated that the good method to publish and deliver grades to the student is via using online application system, which is called online grade system. Nevertheless, the author mentioned a new technique in the paper, which is all teachers and tutors around the university to enter their grade to online web pages.

For instance, a lecturer that teach a specific topic or course, for each assessments including quizzes, practical, assignments, activities. Also, the system has been added a feature which a mathematical equations, that can calculate all the grades and find the final result for each students. Also, students enter to their account via username and password on the website, and each student can see their result only.
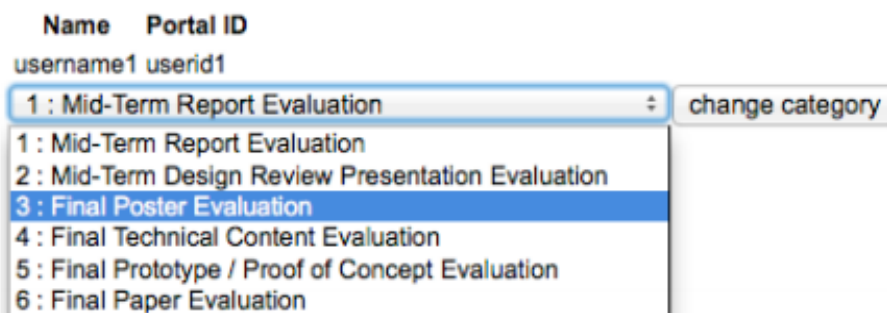

Figure 11. Security part for the web page

3. Implementation and Design

3. 1. System Requirements

As it is clear that each system has own requirements to be implemented, and these requirements are divided on two parts, which are software and hardware requirements. Also, these necessities vary from one software to another based on the needs and contents of the software (web application).

The main requirement of this proposed system are hardware and software. The software requirements are:
- PHP (web programming pages).
- HTML and CSS (For web page design and contents).
- Database Management system application (MYSQL- for storing data).
- Web server plus online web hosting (For lunching the web application).
- An operating system to execute and view the system.
- A web browser to display the web pages

However, as there are requirements related to software necessities, there are hardware requirements as well:
1. Client /Server sides.
2. Internet connection- Wireless router or Internet cable.
3. A computer with any manufacture that is able to operate and lunch programs.
4. Any technical device that has ability to connect to the internet.

3. 2. System design

In system design, it is an important part of any academic research to show the main important point of designing the system in software and hardware, and it describes the act of working system in different ways[18].

3.2.1 Database role

The database that used in this system is MySQL along with phpmyadmin as interface, this database holds all the required data from students including names, stages attended course for each class and their grades, and student code (a specific code for each student). Therefore, all the final grades for each student will be saved in My SQL database.

3.2.2 The design system

Coding system is used to design all the software application or web application, by using different programming languages (JAVA, C#, C++, etc.). In this system the PHP programming is used a technical programming, and HTML with CSS controlled by Ajax and J Query is used to design the interface and GUI.

Figure 12. Security part for the web page

3.2.3 The coding and functionality

This application website is classified as dynamic website, as it is exchange data from database tables that is specified for storing student and exam details information. Also, the website is consist of PHP web pages that display all the required information for students, hence the student interact with the database directly through the GUI that are set on the web pages. The main functionality of this website can be shown as in the following chart.
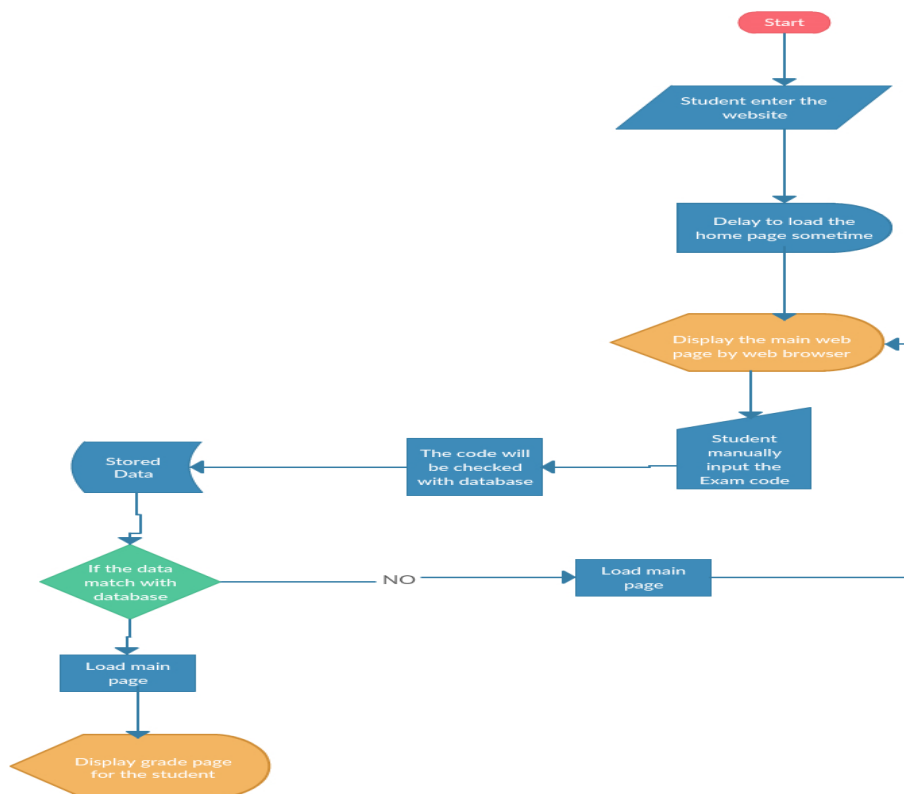
Figure 13. Flowchart for the working system

3.2.4 The methodology that used to answer the question

The research question that was raised in this paper, is that "How to replace the old technique for distributing student grades in university schools to modern technology". The methodology that is used to answer that question:

- First of all, analyzing the main requirement for creating the web system.
- Secondly, understanding the methodology of old system, which was done by paper works.
- After that, understanding the other techniques or the similarity methods that are used by other universities to collect the basic idea and finding the comparison ideas.
- Then, transfer the old system to computerized system, and finalize the working system.
- Also, this paper held a questionnaire among students to show how successful the new proposed system.

The general action of the system, is shown in scenario diagram in the figure 13, which is shown in six scenario as the following steps:

1) Student should have the code, getting from dentistry school.
2) Student must enter to the website, and enter the URL.
3) Student an access the website either from mobile or computer, multiple platform.
4) Enter the code, if the code is incorrect, should enter the correct code.
5) Then the student must confirm to get the code from another page.
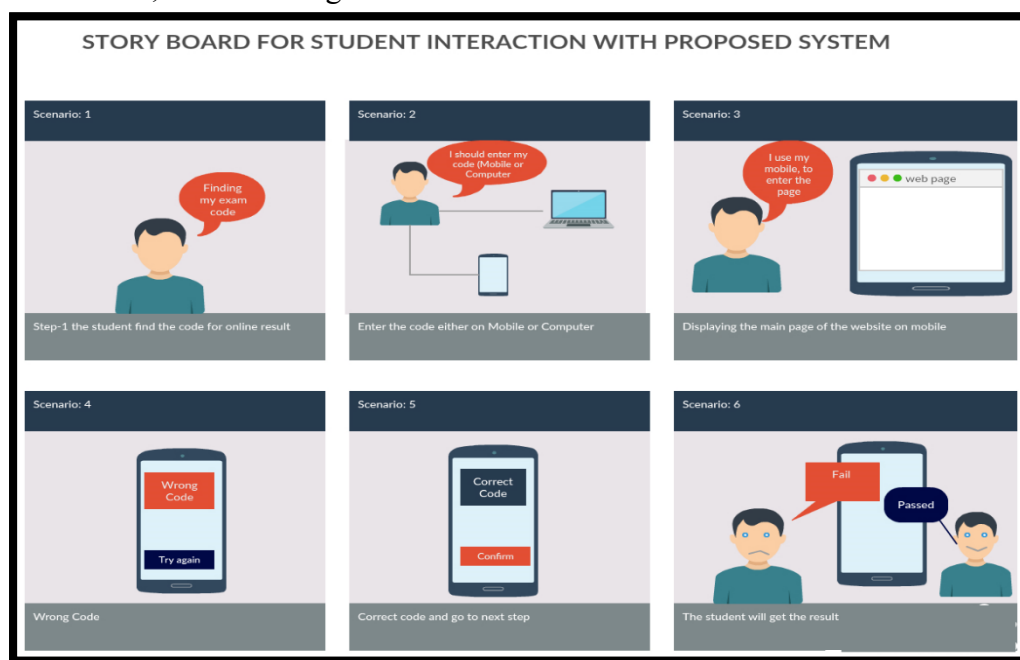6) At the end, student will get the result.

Figure 14. Storyboard for the working system

4. Results

In order to show the effective and role of this research on our college, and showing how it can help such community as dentistry field to tackle a new application. So that, after the end of the process of getting the results, this research held a questionnaire among all the student for all stages, to show how effective this paper idea and the proposed system.

Actually, there are different rate of answers for each question, and the most of the questionnaires were based on the relative information between the students as users and the system as GUI, and showing how it can replace the old system.

Starting with usability of the system by students, the data shows that most of the design and GUI that are used in the web application are usable and easy to use. So that, it means that they do not experience with difficult option or misleading actions in the website. As they have been cleared in the charts (figure 16, 17).
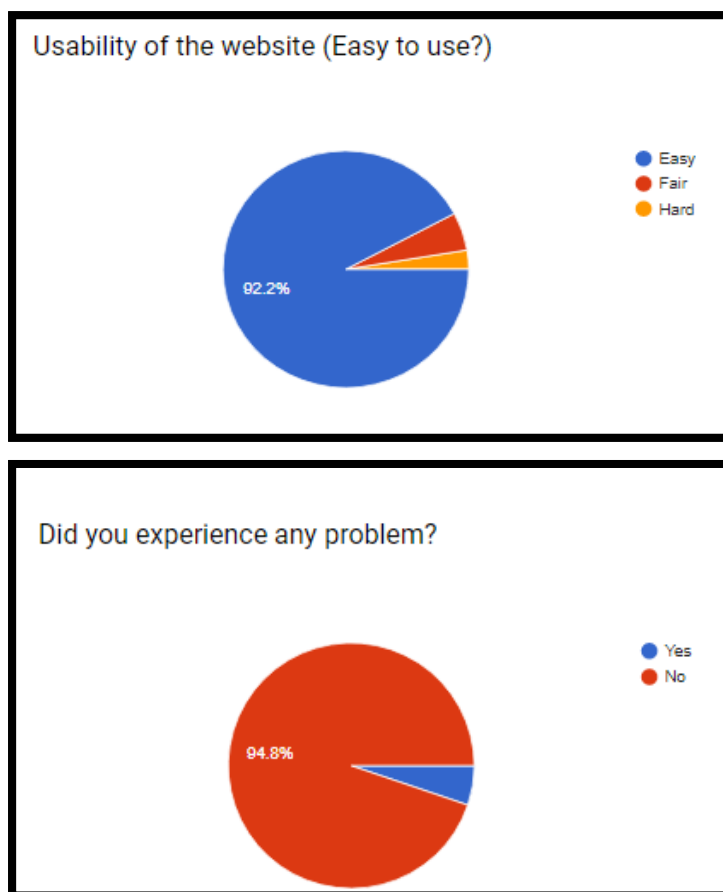

Figure 16. Experience for any problem

5. Discussion

Modern In the both papers, authors tried to mention that the web pages for online grading is essential and required option to be available in all schools and universities. Also, they showed the same idea and results of using that technique to deliver the final results to students.

Nevertheless, the idea to put all the grades in online web pages it is not a good idea for such online system, especially with participation of students in any level of privileges, because any kind of hierarchy level of security.

Conversely, the same idea has been used in our proposed system to publish grade online for university students, undergraduate for dentistry school for all stages, the only different point here is that the only final grade will be posted online in our system.

That's mean, there is not capabilities for teachers to upload their grade on each assessments to the website, because of technical problems nowadays with possibilities of

hacking by intruders and alerting the grades. So that, in this system the process will start after the final average for each course is found in total.

In addition, as this system will replace the manual and routines of examination committees works and it will replaces the using huge amount of papers and wasting long time of hours on entering the grades manually on the paper sheets, it can be said that this system is validated for the university and become a new system for online distribution grades.

Furthermore, the old system was worked on the excel sheet, and the members of exams enter the grades one by one for each student, and then print them as sheet and put it on the notification board, so that the student will not get the grade privately.

However, the proposed system shows the grades privately for each student by entering the website, and they have to enter a specific examination code that assigned to each student secretly, so the student will not be able to see the grade of another student.

On the other hand, this is system is verified by the university and it shows the acceptance to conduction it and published online for students to get their grades online. Also, the system is made the job of examination committee become stress-free, and the loads of extra working are reduced, the figure 17 shows the validation and verification of the planned system.
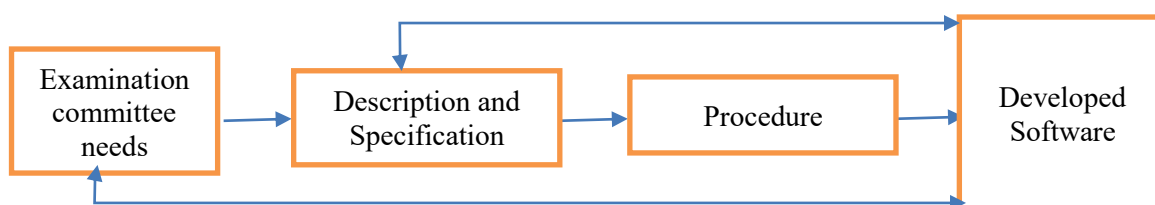

Figure 17. Verification and validation of the system

6. Conclusion and Future Work

To sum up, any system that is capable of transferring from old system to new idea is essential and mandatory to nowadays generations of technologies. Apart from that, most of ideas these days are working on reducing amount of paper work by using computerizing system.

In addition, this paper shows that, using online grade will help students that live outside the Sulaimani city not to attend at the day of publishing grade and traveling for long distance along with heavy and dangerous traffic road among the cities and borders of city.

Moreover, it has been noticed that this research will help the educational organizations in sulaimaniyah city and universities to develop a new idea for using online application to get results of final grades.

This paper will come out with another part, which will add other properties to this process, that to worked on participating the other colleges around the university, which means all the student in University of Sulaimani will work on this system to get their grades online. Also, teachers and all academic staff will work on this system especially those who will work in examination committee.

7. Acknowledgement

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