Student Information Management System for Baghdad College of Economic Sciences University (SIMS-BC) as: A Case Study

Rusul Muthanna Kanona

rusulmkanona@baghdadcollege.edu.iq

م.م. رسل مثنى كنونة كلية بغداد للعلوم الاقتصادية الجامعة

الخلاصة

تعتبر أنظمة إدارة المعلومات اليوم, مسألة مهمة واساسية لأي منظمة ؛ ولايمكن استثناء الجامعات والكليات من هذا الشي.حيث تعتمد كلية بغداد للعلوم الاقتصادية الجامعة (BCOESU) في إدارة معظم الشؤون الخاصة بطلبتها على الاستخدامات والانشطة الورقية .في هذه الورقة البحثية ،تم اقتراح نظام خاص بإدارة معلومات الطلاب لكلية بغداد للعلوم الاقتصادية الجامعة (SIMS–BC) يعمل على ادارة وتدفق معلومات الطلاب والتحكم في الانشطة الطلابية وكذلك الحفاظ على سجلاتهم الأكاديمية . تم تطوير النظام وتطبيقه كخطوة اولى في قسم علوم الحاسبات وتمت الموافقة على فعاليته. قد تكون هذه التجربة مفيدة ولها تأثيرات إيجابية إذا تم تعميمها في الأقسام العلمية الأخرى بالمستقبل وكذلك الوحدات التي لها صلة و تفاعل مباشر مع الطلبة ، مثل وحدة التسجيل ووحدة الحسابات الخاصة بالطلبة ،حيث يعتبر النظام المقترح مفيدًا للغاية من ناحية تزود الطلبة بالعديد من المعلومات والتسهيلات المطلوبة.

Abstract

Information Management Systems are now regarded necessary and important to any firm, including institutions and colleges. The majority of Baghdad College of Economic Science University's (BCOESU) students' affairs are managed through paper-based activities. We propose a Student Information Management System for Baghdad College of Economic Sciences University (SIMS-BC) to manage students' information flow, supervise their activities, and keep their academic records in this study. As a first phase, the system was constructed and tested in the computer science department, and its usefulness was confirmed. If this experience could be replicated in other scientific departments as well as allied divisions that interface directly with students, such as student registration and financial affairs, it could be beneficial and beneficial. From the perspective of students, the suggested system is a very useful tool that provides them with a wealth of information.

Keywords

Student Information Management System, Database, C Sharp, SQL

1. Introduction

Information regarding students' academic affairs is critically important in any university, college, or department. As a result of recent progress and the introduction of information technology, many information systems have been developed to help in dealing with accessing, storing and managing records for all students. Thus, it can be easily applied to the educational systems of College, including the BCOESU. Where by the computerized method, files can be stored in an easier way to use as well as faster access and retrieval, and most importantly, to provide more security, as it is possible to create a user name, password and email for each student by recording all the details of

the students where they can have a safe access to system and a simulate media of communication. It could help to reduce dependence on physical work and waiting time for students' details [1]. SIMS-BC is a type of Information System (IS) and is also known as Student Management Systems, Administrative Software [2]. SIMS-BC has a lot of functionality that can be used and benefited from such as providing records management for current graduated and future students covering all aspects of inquiry, application, registration, academic performance and history, allowing management of information and fees, handling of important events such as graduation, exams and programming classes, reporting of operational and administrative issues and data feed In many other specialized systems [3]. As mentioned earlier, In BCOESU, the Information technology has been used in all fields, especially educational and academic fields. SIMS-BC for student information in the academic environment, such as the registration of new students, the college file or the grading system, has been able to change and improve the quality of academic work in college.

2. Objectives

The objective of SIMS-BC is to allow the Student Registration unit of the BCOESU to edit and find out the personal details of a student and allows the student to keep up to date his profile [4]. It'll also facilitate keeping all the records of students, such as their Id, name, mailing address, phone number, DOB etc. So, all the information about a student will be available in a few seconds. The main purpose of this research is intended to help any college to maintain and manage its student's information. Here, the work has been transferred from the old manual system to a computer-based system in order to provide effort, safety and efficiency in work, because the traditional file system for storage is stressful, since records retrieval is slow (it may take hours or even days), and unauthorized users can easily access records to which they do not have the right [5].

3. Related work

Jin, Anjiang et. al, 2015 Claimed that the existing information systems which are used for maintaining student information are fragmented, insufficient, and have different standards from a developer's perspective. Authors suggested improving student information system to improve universities' management systems and administration [6].

Chaudhari et. al, 2020 Choose to propose a mobile student information system (MSIS) so as to deliver a more user-centric information services for students. The system offers applicable information for students using mobile platform [7].

FU Yue et. al, 2016 Designed a modern systems designed by educational institutes or colleges can be used to facilitate the maintenance of student records. Establishment and accurate and modern management of student information. This system provides details for the implementation of functions related to performance, management and decision-making for universities. The explosive growth of students has led to the expansion of jobs in the particular instructive education. Since the understudy will be added to the instructive system, it is hard to oversee and monitor understudy subtleties and data. To defeat the challenges we have thought of this new way to deal with Student Information Management System with extra highlights. So this new approach will give quick handling, productive following of understudies and the ideal outcome. This system will permit understudies to save their own information. It is more secure, more dependable and simpler to utilize [8].

Freya. et. al, 2016 Designed attendance system that helps keep track of a particular student. It can be considered a mandatory process in the academic and educational system that directly reflects the progress of the student. Attendance management at academic universities is usually a manual process. Although there is tremendous growth in the software industry where colleges are privileged to maintain attendance system using tools which are considered the best method. Although we use smartphones, we do not ask to keep a record of attendance. This can be done easily in mobile

applications. Where the faculty members take attendance at the start of the class. They also initially log into the system through the mobile application. Colleges can likewise fill important roles, for example, enrolling new understudies, erasing data about a specific understudy, changing data about an understudy, etc. The principle objective of this interaction is to decrease the danger of manual endeavors. It additionally decreases time utilization. We additionally need to connect significance to lessening paper squander that happens day by day [9].

AL Mahdi et. al, 2015 Constructed system to give the end user smooth route to the system and simple admittance to it. The system gives data the board and capacity of thorough scholastic reports for understudies. This system comprises of different capacities, for example, data about the subjects accessible in the college from 1st grade to graduation. It additionally empowers understudies to enroll for a specific subject through the web, pay expenses on the web, test results and furthermore get advised when significant occasions occur. All information put away and recovered through the application is secure. To accomplish this, we have fostered a strong secure point of interaction that upholds a wide range of solicitations that come from understudies and that gathers and revises all understudy data. To accomplish this we utilized the likeness calculation (Euclidean distance). The outcomes showed that the new data gathered by the SDS can fill in the necessities and right the blunder in the conventional model [10].

4. Student Information Management System (SIMS)

SMIS-BC, which is designed to handle student information, is an important and fundamental aspect of the academic education unit's daily management, and its content is critical for college managers [11]. Currently, many units are still using the manual management of student information. This administrative system has a number of flaws, including low efficiency, poor security, inconvenient search and update. As a result, the conventional student information management method has not been able to keep up with the times; information management in this case should be replaced by the computer as the main tool. [12]. Expanding at a breakneck pace in tandem with the college's overall scale, the number of students has soared, and the volume of data from these two sections has more than doubled. Managing student information is becoming increasingly complex, with challenges such as integrity, security, and other aspects of student information becoming increasingly relevant. In the face of large amounts of data, we must use computer technology to improve the efficiency of work students in information management. The goal of the SMIS-BC is to achieve student information management using new technology such as SQL and ASP. SMIS-major BC's goal is to give them with the knowledge they need to make decisions and solve problems. [13].

5-Design And Implementation Section

5.1. System Design:

A data flow diagram is shown in this section. SMIS-BC was created with the demands of the end user in mind, as well as a thorough analysis of the system. We have proposed a solution that meets the needs of the users. The system's main administrator has access to that though. He will be able to upload the student's information as well as the information of the relevant faculty once he has completed the process successfully. A portion of the administrative work may be assigned to the department head. He will have access to the college and students, as well as additional privileges like as seeing and modifying student and department information.. He can also send this circular or notice to all other related units, such as the unit of Information Technology, Secretarial and Registration, and even to students, if it is about financial matters and the payment of student installments and students can view student and college reports. Faculty members will use the system to log in. He can also keep track of the student's attendance and internal evaluation scores and display them. The average of the internal evaluations is automatically determined. Members of the department can generate a comprehensive report based on student records such as attendance and internal assessments, as well as send a notification to the student via his official email, which was delivered to

him by the Information Technology Department, allowing him to access the electronic classes and system in an authorized manner. [14].

The registration system and the student management system are the two core subsystems of SMIS-BC. The authorized student uses the registration system to track the movement of students around the campus area. The system administrator must register or modify the student profile on the student management system for the new student. The new student must be registered by the system administrator in the registration department in order to be a part of these entities. The right password for the system administrator must be entered to ensure permitted personal login to the system. Any failed login attempts will be saved in a private database, with a maximum of three attempts allowed before the alarm system is activated. Where this part of the system has been implemented to provide protection for the data available within the database, and the successful login continues to the next level, where the student can enter the system and view his information, check the tables for each department, and even display his absences, by entering the correct word and the academic email assigned to him. In the event of an alarm, the system sends a notification to the student. As shown in **Figure 1** [15].

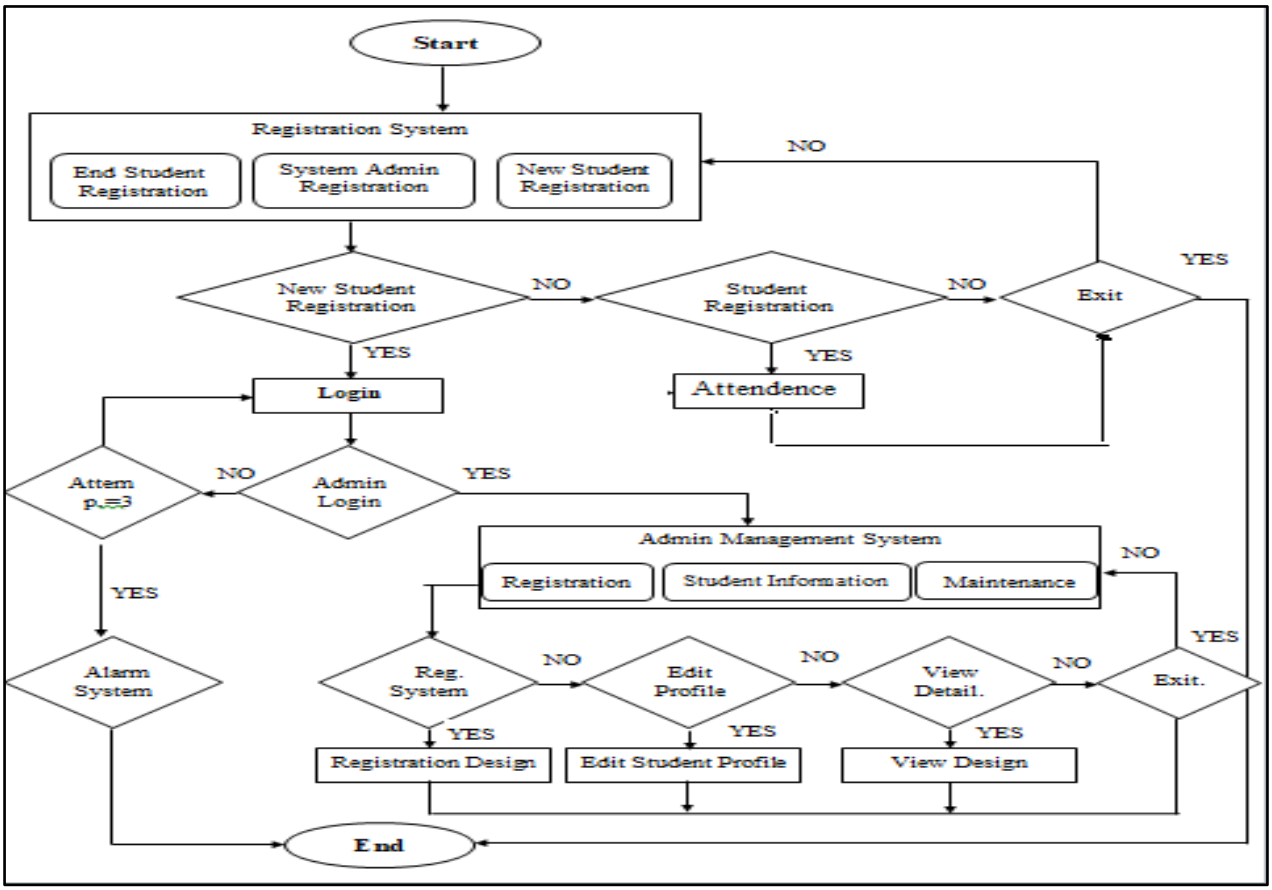

Figure 1: Design of a flowchart for a SIMS-BC

-**Figure 2** Represent the SIMS-BC conceptual design, including the first stages in creating a database for a college registration system that tracks students, colleges, teachers, and registration. This is our data requirements list; we need to know each student's name, national number, birth date, and address. Each course has a unique number, course name, course hour, and prerequisite course or courses, and the student must select the courses based on some considerations such as the department plan and his year level. Each course has a unique number, course name, course hour, and prerequisite course or courses [16].Each course has several sections, each with a number, the year and course in

which the portion was presented, as well as the day, hour, and room number. We maintain track of each instructor's name, credentials, and a unique number. Each instructor is assigned to a specific department and may teach more than one session of the course. **[17].**

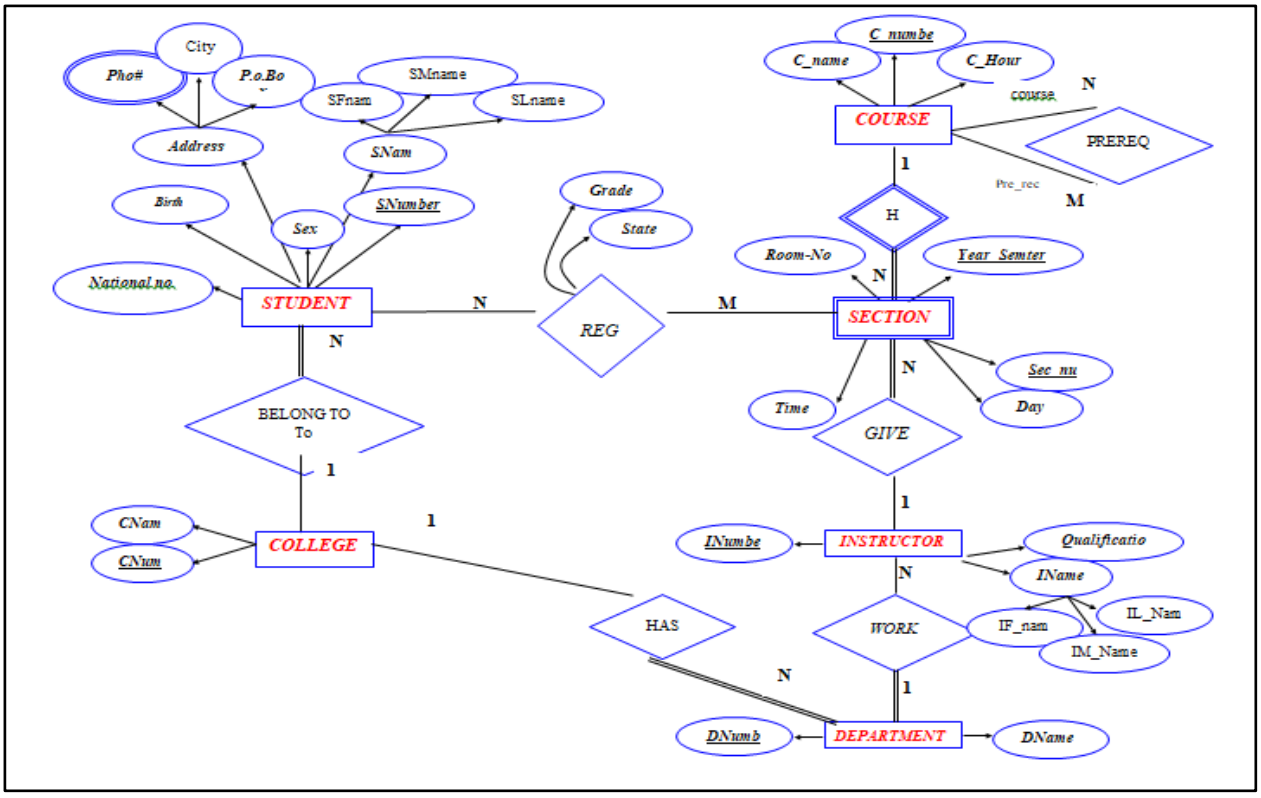

Figure 2: ER Diagram/ College management SYSTEM student information

5.2. System Implementation

5.2.1- Main Graphical User Interface:

A graphical user interface (GUI) is the simplest way to communicate with a computer application (or operating system) by using specialized graphic symbols instead of writing commands. These graphical user interfaces (GUIs) allow you to work with image-like elements (icons and arrows, for example) to communicate with the computer. We can use the mouse instead of the keyboard to rotate the arrows and icons on the screen much more easily.

Figure 3: The main interface

All of the system's basic and sub-interfaces are represented by the main interface, and the sub-interfaces are represented by the sub-interfaces (home page, teacher, login, administrator, and student). The main interface of the student information management system, as shown in Figure 3, comprises of modules such as.

A-The login Form:

After inputting their e-mail and password, students, teachers, and administrators can access the sub-interfaces through this interface. If there is a problem in the email or password, you will receive a message that was made by the admin through the page Add User, which was handled earlier in Admin Form (error in login) as shown in **Figure 4.**

Figure 4: Login interface Form

B- Admin Form:

The "Admin Form" sub-interface has six tabs, the first of which is Add User, the second is Attendance, and the third is Student Information. The admin is responsible for entering all of the information in the SQL program to show all of the information in the sub-interfaces that belong to the teacher and the student in the fourth Upload File, fifth courses degree, and sixth Add courses. as shown in **Figure 5.**

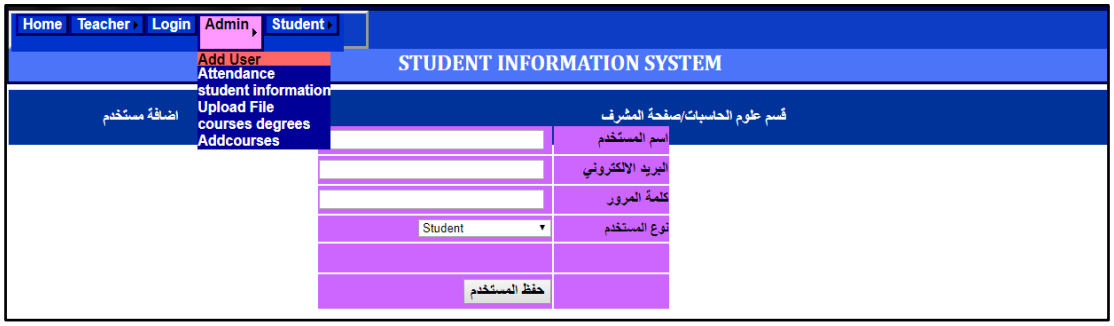

Figure 5: Admin interface Form

C- Add User:

The administrator can enter the user's name, e-mail address, and the password-generating application in this sub-interface. This includes the student, the teacher, and the administrative personnel. The student's, teacher's, and administrators' e-mail addresses and passwords will be saved in the SQL program's Add User table, as shown in **Figure 6,** and the details will be displayed in **Figure 7**.

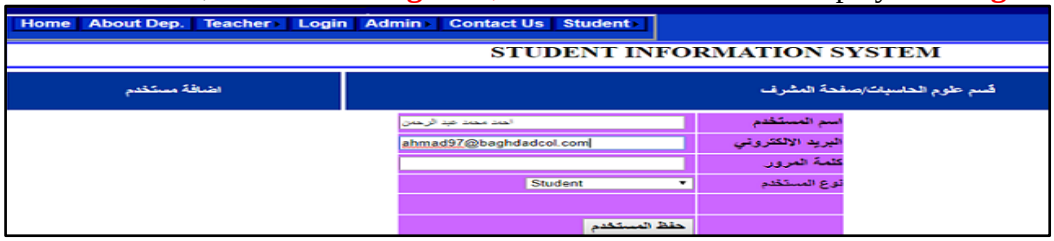

Figure 6: Add User interface

Figure 7: User information interface

D-**Courses degree:**

In this sub-interface, the administrator can change the courses degree by selecting a student and pressing the Load Button. These changes are subsequently saved to the SQL program's courses degree table. as shown in **Figure 8.**

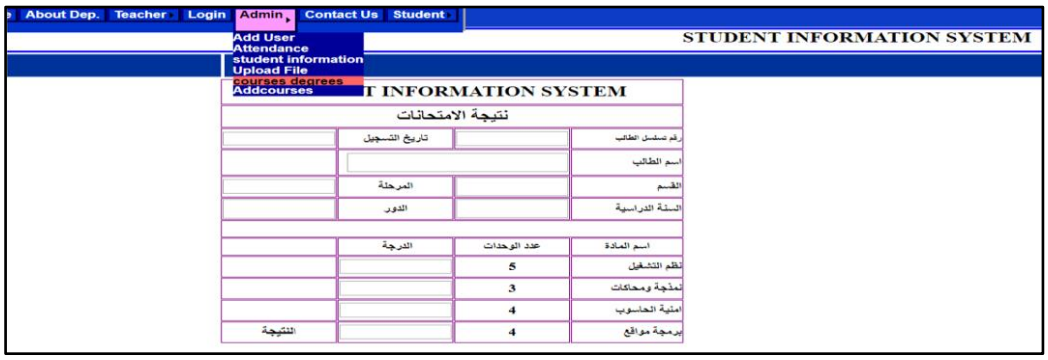

Figure 8: courses degrees interface

E- **The teacher Form:**

The "Teacher Form" sub-interface has two tabs, the first named Upload File and the second named Attendance. Upload the file that was discussed in the admin form.

F- **Attendance:**

The Admin and the Teacher can confirm the absence and attendance of students by selecting the class. After the teacher has placed the reference on the students present and absent in the classroom, the information is saved in the attendance table in the SQL program by clicking the Save button as shown in **Figure 9** and **Figure 10.**

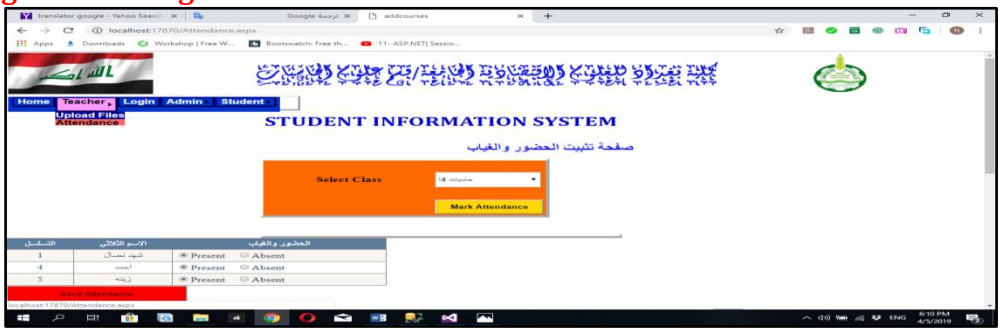

Figure 9: Absence and attendance interface

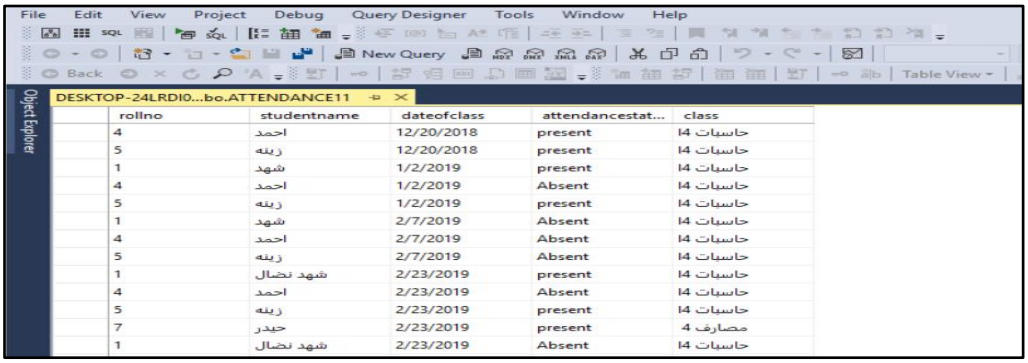

Figure 10: Absence and attendance interface review

G- **The Student Form:**

The "Student Form" sub-interface has four tabs: the first is Schedules, the second is Download Files, the third is Student Information, and the fourth is Courses Degrees. as shown in **Figure 11.**

Figure 11: Student Form sub-interface

H- **Schedule:**

College students can use this interface to find the schedule of daily lectures and make any changes to the table without having to go to the department's bulletin board. as shown in **Figure 12.**

Figure 12: Daily lectures schedule interface

I-**Student information:**

By entering his student number in the student no. field and pressing the load key, the student can see his personal information and double-check it. as shown in **Figure 13.**

Figure 13: Load Student information interface

J- **Courses degree:**

The Student Affairs Department can enter exam results in the table using the SQL application (courses degrees). Through the student ID provided to the student, the student can access the exam result as well as the exam grades through this interface. as shown in **Figure 14.**

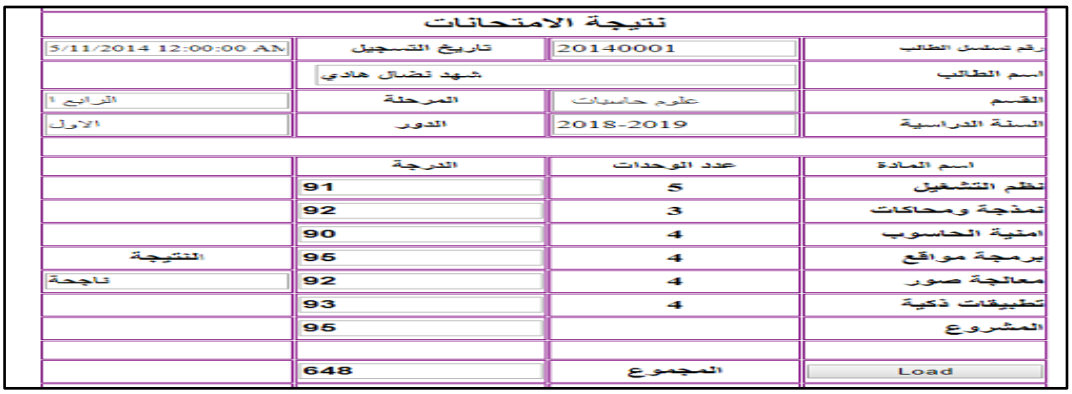

Figure 14: Courses degree interface.

6.Conclusion

This study proposes a Student Information Management System for Baghdad College of Economic Sciences University (SIMS-BC) to manage students' information flow, supervise their activates, and maintain their academic records. When used in one college department (computer science), the system proved to be beneficial, and it might be expanded to include all involved departments and units in the college to make daily work easier for all students.

References

[1] Xin, Xiang. "Design of Information Management System Based on WEB" Applied Mechanics and Materials 539 438–42(2014).

[2] Denizhan Demirkol,Cagla Senler" Evaluation of Student Information System (SIS) In Terms of User Emotion, Performance and Perceived Usability: A Turkish University Case (An Empirical Study)",3rd World Conference on Technology, Innovation and Entrepreneurship(2019).

[3] Hendra, S.Kom., M.T. Yulyani Arifin, S.Kom., M.M." Web-based Usability Measurement for Student Grading Information System ",3rd International Conference on Computer Science and Computational Intelligence (2018).

[4] Rajmane, Sachin S., Sushil R. Mathpati, and Jairaj K. Dawle. "Digitalization of Management System for College and Student Information." Research Journal of Science and Technology 8, no. 4 (2016).

[5] Ayodele O.A. and Absalom E.E."Design and Implementation of Students' Information System for Tertiary Institutions using Neural Netwo rks: An Open Source Approach", International Journal of Green Computing Vol. 1, No. 1, pp. 1-15(2010).

[6]Jin,Anjiang. "On the Development of College Student Information Management System." SHS Web of Conferences 17 -02010(2015).

[7]Chaudhari, Pragati. "Student Information Chatbot System." International Journal for Research in Applied Science and Engineering Technology 8, no. 2 491–92(2020).

[8]Fu Yue, "A study of student information management software", Conference: IEEE International Conference of Online Analysis and Computing Science. (2016).

[9] Freya. J. Vora, Pooja. L. Yadav, Rhea. P. Rai, Nikita. M. Yadav, "Android Based Mobile Attendance System",International Journal of Advanced Research in Computer Science and Software Engineering, Volume 6, Issue 2, , pp.369-371(2016).

[10] Almahdi Alshareef, 1Ahmed Alkilany "Toward A Student Information System For Sebha University, Libya", Fifth international conference on Innovative Computing Technology, ,pp.34-39(2015).

[11] Akomolafe, Dipo, Kazeem Olanipekun, and Oniyide Bello. "A Multi-channel Cloud Based Student Information Management System." British Journal of Mathematics & Computer Science 14, no. 4 (2016).

[12] M. Asif and J. Krogstie, "Mobile student information system", Campus-Wide Information Systems, Vol. 28 Iss 1 pp. 5 -15, (2011).

[13] Kong Hao, Wang Lisha and Wan Pu, "Research on University Student Information Management System Based on U- BOSS in Poor Areas of China's Western Region", the 2nd International Conference on Computer Engineering and Technology (ICCET), vol.7, pp.655-658,(2010).

[14] Murugan, Mr G. "Student Information System." International Journal for Research in Applied Science and Engineering Technology 8, no. 4:9–11(2020).

[15] Nasrulloh, Muhammad Yasin, and Yefry Handoko Putra. "Student Data Management Information System Using the Zachman Framework." IOP Conference Series: Materials Science and Engineering 662 022101(2019).

[16] Youh D.X. "Design and Implementation of a Client Server Distributed Database for Student Results Processing", The Pacific Journal of Science and Technology, Vol. 11, No. 2, pp. 288-295. (2010).

[17]Bonig R. "Latest Trends in Student Information Systems: Driven by Competition", Educause Review, Vol. 47, No. 3, pp. 56-57(2012).