



Development of a Web-Based Student Internship Portal for Students of Health Colleges

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Abstract

Introduction: Information technology is used as a communication tool in colleges of applied medical sciences, but its optimal use in internship program is still low.

Aim and objectives: This study aims to develop a web-based information system for student internships and to provide students with nursing information, skills and experience necessary to qualify them as highly competent nurses.

Methods: The system is built using interactive website technology based on four main components, namely students, supervisors, industry and coordinators. The web-based student placement system includes information functions, schedules, enrolments, portfolio reports, completion reports, database backup and guidance systems. PHP, Bootstrap, CSS, HTML, JavaScript, MySQL database and Apache web server are the technologies used to develop the web-based internship information system.

Results: The results show that the resulting system can be used to support the student internship program for all parties involved.

Conclusion: This system can help students, supervisors and coordinators in running internship program.

Keywords: Web-based, Student Internship Portal, College, University, Process and Methods, Students, Health

Introduction

The Internet era has profoundly altered how people operate and accomplish their goals. Everyone's lives have been changed dramatically by the rapid growth of the computer industry. Prestigious educational institutions have saved both money and time by using computer-based applications. Facilitators are emphasized in learning activities at work to better support and empower students during the internship program, which differs from the higher education institution atmosphere (Messmann and Mulder, 2015). Student internship programs have improved the university-hospital relationship and the workplace's ability to be a collaborative environment (Conway and Foskey, 2015). Students face frequent issues during their internships, such as trouble finding a job, lack of knowledge, and students working outside of their field of study (Polat et al., 2010). Programming languages, binary arithmetic, databases and computer programs are all used in the development of the student internship portal (Eroshkin et al., 2017). Email services are also used, as well as global web communication (Iskandar et al., 2015). It is possible to create new and superior educational experiences using information

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technologies. Web-based applications' security, accuracy, and quality depend on frequency and reliability (ChanLin and Hung, 2015). Testing is used to verify the functionality of web-based applications (Li et al., 2014). A computer programming language such as HTML, JavaScript, or PHP is used to create web applications, which are then accessed via a web browser over a network (Al-Fedaghi, 2011). Therefore, this study aims to design and implement the web-based 'Student Internship Portal' (SIP).

Objectives of the Study

The specific objectives of this project are to design the following:

1. Create a web system, which is included in admin, students, training, and internship unit's rights.
2. Determine the use cases and test whether the SIP meets the requirements set by the admin and health or medical students.

Methodology

The SIP design database is based on the user's and the page's attributes. Including hardware and software needs is necessary to develop and maintain a user-friendly information system. Utilize Activity Diagrams, Case Diagrams (UCD), Class Diagrams, and Sequence Diagrams are four diagrams used to explain the software development process in Unified Modeling Language (UML). It also provides an overview of the research dictionary and user interface design, which will be utilized to generate system display designs for the database design. The program must be translated into programming language code and set up on a computer system for the program to work correctly. A web-based system was developed. The system was built using the PHP Native programming language, and the user interface was built using Bootstrap and CSS templates (Olszak and Ziembra, 2007, Spurlock, 2013, Tatroe and MacIntyre, 2020, Yannuar et al., 2018). Finally, testing aims to minimize errors and ensure that the information systems generated are of high quality. Making sure the system works as it should be a part of system testing. System functionalities are tested using a Blackbox technique.

Design of Database

The SIP page data required for the web-based SIP portal includes the title, header, border, and multi-tabs to select different options on the web pages. The user data tracked by the portal system is the user's student identity (ID), username, first name; last name, password and email address (**Figure 1**).

Once the login authentication is done, the system automatically redirects the user to the appropriate page. The lecturer and the administrator check all user data on the portal server page when the user creates their ID. The information

entered by a user is rechecked by the system, as shown in Figure 2. In case of incorrect entries, the system issues an appropriate error message. The two main error messages are "the ID and password do not match" and "the required fields are missing". The record stored in the database is identified by a unique number that serves as a parameter for checking integrity constraints and maintaining accurate data in the database, as seen in Figure 3.

The functions administrators can manage the website content, hospital data, student personal data, participant data, user data, competencies, identities, viewing charts, and database backups by logging in. University faculties, called supervisors in this system, have functions to manage and monitor placements, manage instructions and values, and view information about placements after logging in. Students or participants doing placements can enter daily or weekly activities into the portal, view guidance, view placement status, view information and view placement scores by logging in first (Yannuar et al., 2018).

Implementation on System

The web-based internship information system consists of an interface implementation using a bootstrap template and Jumbotron-narrow for student pages. For admin, training, and internship, the unit coordinators' pages use as Admin templates. The performance of the web-based internship information system can be seen at <http://www.shaqrasip.com>. Below is the result of a system interface implementation.

Results

The SIP is a comprehensive toolkit for managing and coordinating internship programs in an educational institution with students and administration. SIP provides three modules for admin (Faculty Members or Training and Internship Unit Coordinators) and student users loaded with features declared in the requirements specification. All medical students should undergo an internship year after completing all college study plan requirements. When the medical or health students complete the full 4th year, the coordinator will upload their training and internship program (e.g., Nursing or Clinical Laboratory Science & Others medical subspecialty) into the SIP. Hence, they will be authorized to access the system (binti Jaafar et al., 2017). The SIP is designed to perform several different functions for two different users (admin and students).

Home Page of SIP

This page will be the first page that all the users will see when they enter the SIP website (www.shaqrasip.com). The Administrator of SIP will own the home pages and contain login username followed by password icons. The page highlights the contact details of any inquiry to use this portal and information about the developer of the system and its usability (See Figure 4).



Figure 1: Interaction among the components used in SIP

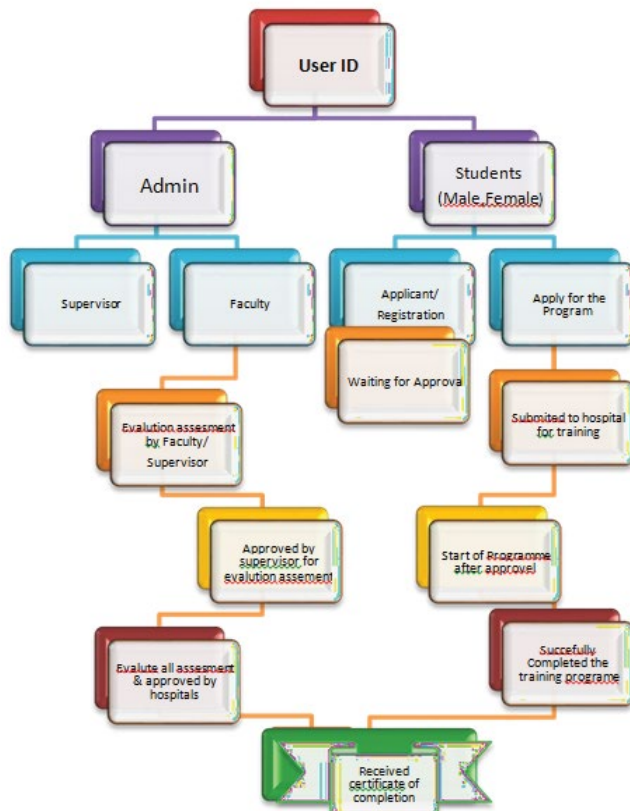


Figure 2: Students Internship Portal Relationship Diagram

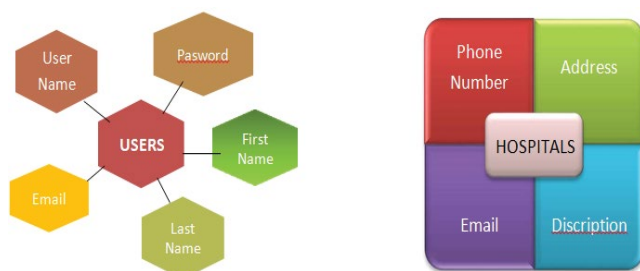


Figure 3: Entities and Attributes

The Admin Log-in Interface

The user can access the login page via the login menu in the middle of the system's main page. After correctly entering the user identity (ID) and password, users must enter their login account and press the login button. Students can use



Figure 4: Home Page Login Interface

their university number ID to enter SIP. The system user will be redirected to the dashboard if the account is valid after opening the main page. Furthermore, the admin is responsible for registering qualified students in any colleges as well as managing the following records such as training sectors (Tertiary Hospital, Secondary Hospital, General Hospitals, Private Clinics), training programs (Nursing and Clinical Laboratory Sciences), training plan for students and response to any notifications reported by training and internship units and students for any choices health organization, such as requesting annual leave and training evaluations.

My Program Page

This page will demonstrate the internship program that can be applied. The admin (Training and internship unit coordinators) gets an alert whenever a new student submits any proposal for review, such as (registering in the program and apply a letter of training in the hospital). The training and internship unit coordinator can accept or reject the proposal with given reasons for rejection. Depending on the decision, when the proposal is accepted, the workflow status will be automatically displayed from *register* to *show* in the student system. In addition, the system will automatically email the student with the necessary information if needed (See Figure 5).

Approval Page

This page is visible only to the coordinators and provides an easy interface to accept and reject any new request from interns. This page consists of four visible fields and one invisible, as shown in Figure (6). These fields have different approval stages. For example, register approval will display a list of students who request to register and a letter of the training program. For the next step, when the official registration and training letter is ready, students will print it out from the system and then submit the letter to the organization for the internship application process.

So, if the organization agrees to accept the students for the internship program, students should submit acceptance or rejection letters based on their preference. In the second file, the coordinators will review and accept it by filling in the start date of the training and internship program, and the workflow status will be changed from **show** to **plan** on the students' system. Next, the third field is concerned with approving the attached training evaluation form when the students are consequently completed one of the assignment areas based on their training and internship plan. The fourth field is responsible for showing any request for leave sent by a student who started their training and internship program. The training and internship unit coordinator has the option of either accepting or rejecting this request. Depending on the decision, if the requested leave is approved, the training and internship period will automatically change on the **Plan page** on the students' system. The fifth field will not appear on the approval page until interns or students have completed all the training and internship plan assignment areas. Once approved by the director of the training center at the assignment hospital, they will be given temporary access to review all training evaluation forms. The concerned site supervisor will evaluate the intern based on their performance throughout the internship. General considerations regarding the evaluations, the evaluation form of the intern will not be accepted unless it is sealed in the organization's signature by the concerned authorities, including the on-site supervisor and the administrative head of the respective organization. The internship coordinator of the faculty will cosign when they receive the evaluations and put the internship letter into the system. Then the training and internship certificate will be attached to the system.

Program Page

This page provides the available internship program that students can apply for from my **program** page in the student system. Each units' coordinators in medical college can create any suitable training and internship program for their students by using "create" on the program page. The details in this unique feature include the college's name, gender, and the number of weeks, as shown in **Figures 7 and 8**.

Plan Page

This single-page process records and displays all the training and internship plans per the role and regulation of internship for each subspecialty in the college (**See Figure 9**). Once the students accept the internship offer, the information of practical and training departments regarding the host health organization will be displayed in the 'Internship Plan' field. Later, this information will be used by the coordinator to assign visiting internship plan during the evaluation process. The coordinators are responsible for recording all necessary information for the internship plan by using "create" such as the type of program, departments, section, description,

number of weeks, attaching the evaluation for each assigned area, and others, as shown in **figure (10)**.

Colleges Page

Another additional page to be considered is providing an option for the main admin to add or change the details of participating colleges into the system. For example, if the coordinators would like to change the name of the dean with signature, phone of college or units and email which appear in the training and internship letter so, they must use "create" or "edit" on the college page as in Figures 11 and 12. All university colleges have the right to use this system with their own training and internship program.

Organizations Page

The last administrator page will show all information that has been filled in for eligible hospitals or health organizations. These eligible hospitals will appear once the students apply for training and internship letter. The faculty coordinators can create and edit any host organizations such as hospitals, primary health care and schools (**See Figure 13**).

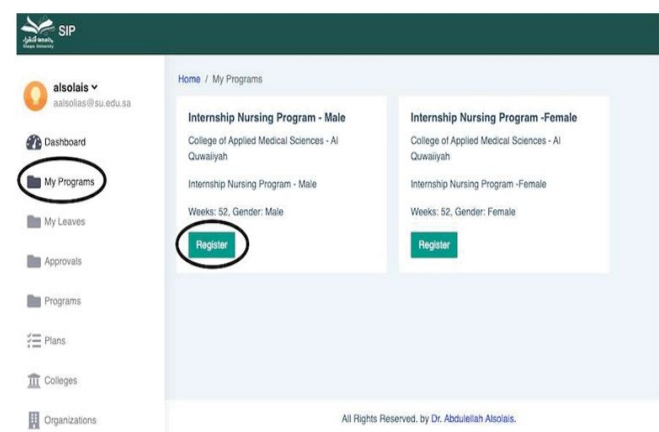


Figure 5: My Program Page Interface

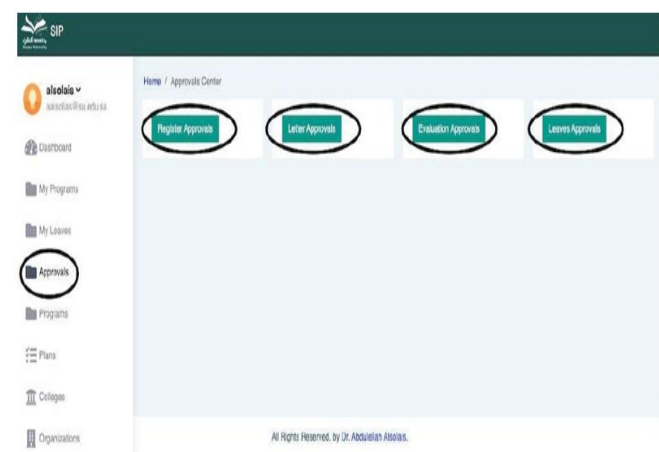


Figure 6: Approval Page Interface

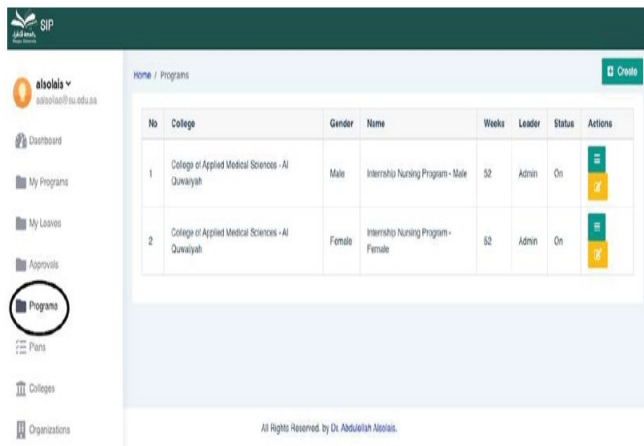


Figure 7: Program Page Interface

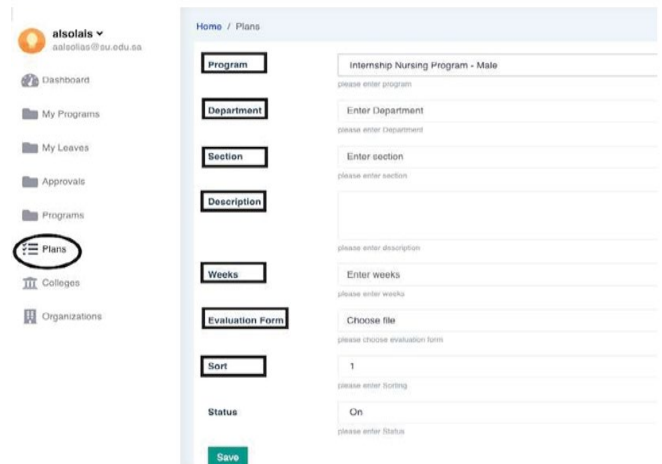


Figure 10: Create New Plan

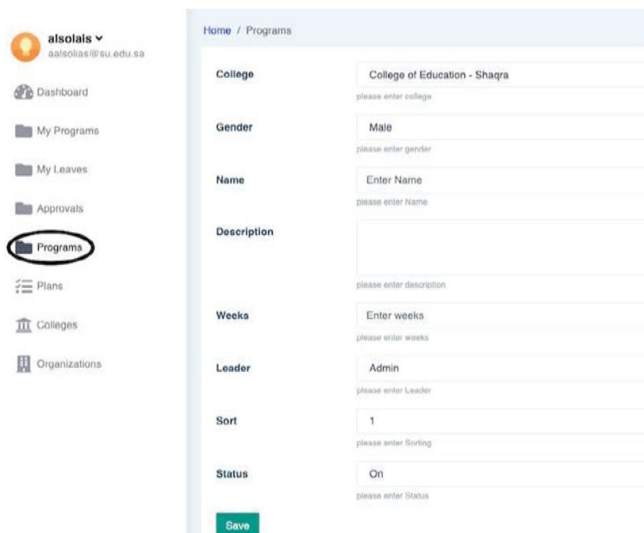


Figure 8: Create New Program

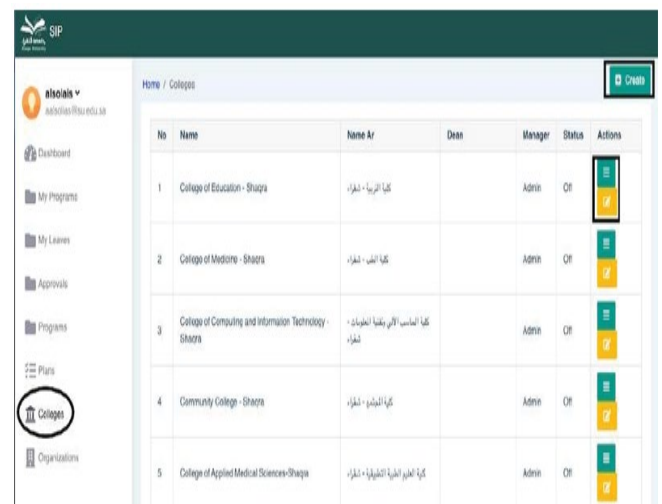


Figure 11: Colleges Page Interface

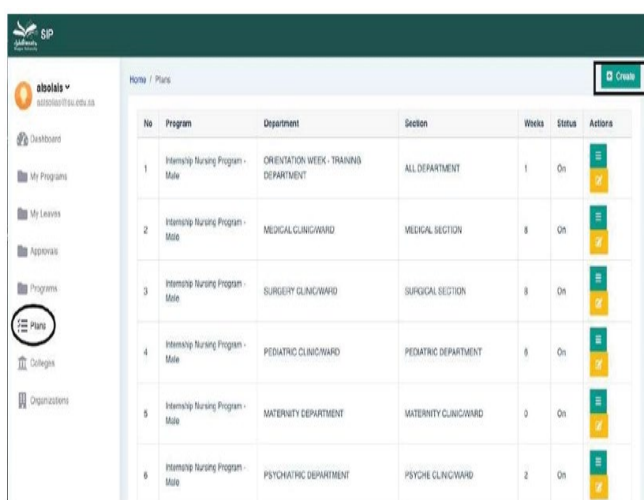


Figure 9: Plan Page Interface

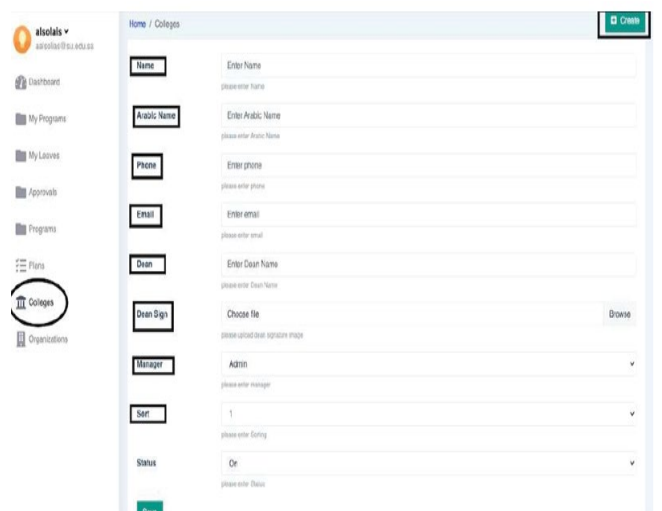


Figure 12: Create or Edit Colleges Information

Students Log-in Interface

On the student interface, they have to log into the system using their university number as their username with a private password. When students enter the correct user, the system will transfer it to the terms and conditions page of the Internship Program, and they must agree to move to its main page. The main page will consist of three home pages on the right side that can be accessed by students eligible for the Internship Program. Each page has different functions to fulfil the mandatory training requirements for excellence, as shown in **Figure 14**.

Dashboard

This page contains essential information for a student. For example, it includes the college information to which the student belongs, the university number, civil registry number, scientific department, and the feature of adding a mobile number and university email (See **Figure 15**).

Program Page

On the student interface, they must log in to the system using the ID number as username and private password.

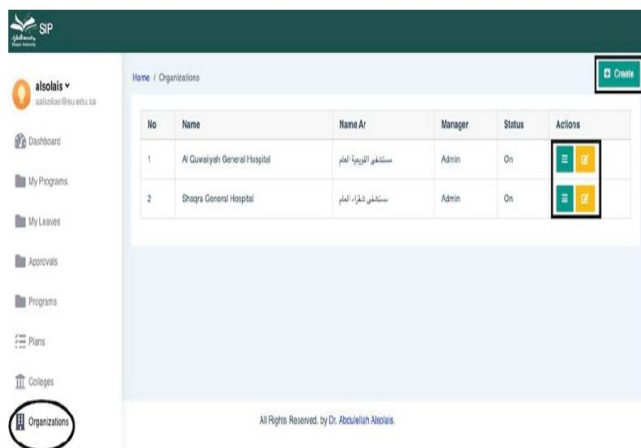


Figure 13: Create or Edit new organization host

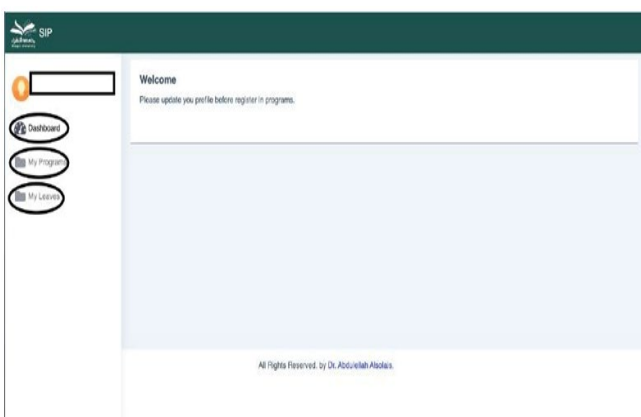


Figure 14: The main interface of student

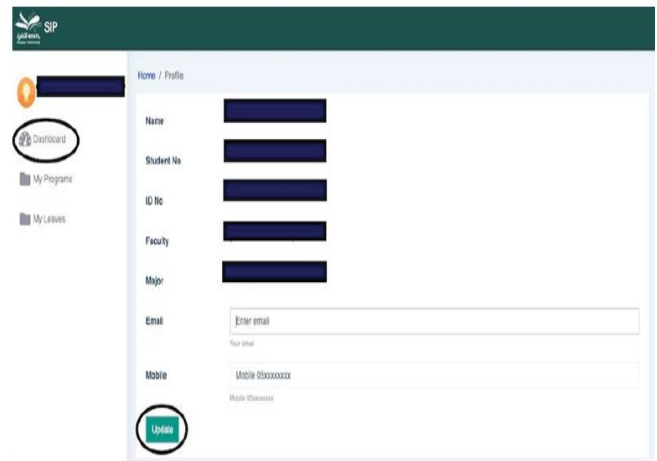


Figure 15: Dashboard Page for students

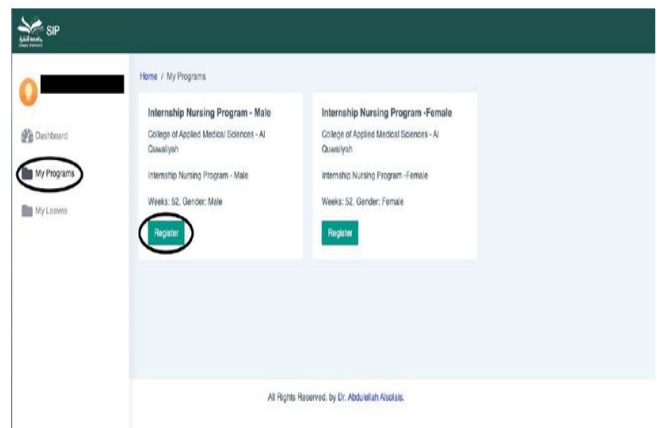


Figure 16: My Program into Student Page

At this stage, when students enter the correct username and passport, the system will transfer them the terms and conditions of the internship program. Then, they must accept them before passing the other feature into the system. At this point, the student will register and request the training letter for the host organization from this page (see **figure 16**). This action will prompt notification to the coordinator's email so that the coordinator will prepare the application letter with internship plan letterhead based on information retrieved from the student's database. When the registration and letter are approved, students will click the **show icon**; then, they can print out the letter and submit it to the organization for the internship application process, as shown in **figures 17 and 18**. Students who are accepted into an internship program by an organization should follow the steps in **figures 16 to 18** to submit an acceptance letter. A fifty-two-week internship program and communication about training progress in real-time are both made possible by this SIP program. Results from the Trainer User Interface are shown in Table 3. As shown in Figures 16-18, if the mentor approves of

| Department | Section | Weeks |
|--|------------------------------|-------|
| ORIENTATION WEEK - TRAINING DEPARTMENT | ALL DEPARTMENT | 1 |
| MEDICAL | MEDICAL SECTION | 8 |
| CRITICAL CARE DEPARTMENT | OPERATING ROOM/RECOVERY ROOM | 6 |
| CRITICAL CARE DEPARTMENT | DIALYSIS UNIT | 4 |
| SPECIALIZATION | ALL DEPARTMENT | 5 |

Figure 17: Letter Request into My Program of Student Page

| Department | Section |
|-----------------|------------------------------|
| Organization | Al Qunayyah General Hospital |
| Approval Letter | Not uploaded yet |
| Status | register-approved |

Figure 18: Submit Approval Letter into My Program of Student Page

Figure 19: Leave Request Page

the student's internship development, the students should share their evaluations. They can now download and print their traineeship certificate after the college recognizes their progress.

Leave Page

This page allows the interns to request annual leave during an internship period through their page in SIP. This page contains vital information that needs to be filled in by students, such as the number of days, start and end day, reason, and support file (See Figure 19).

The Rating and Summary Report

The final grade rating and summary report of students who successfully completed the internship program is given. The evaluation of students has been successfully completed for a particular training program based on their work and will be given to students using automatically with SIP. Student can manage, download and print report directly using their portal.

Result of use testing SIP

To assess whether the SIP website meets the requirements set by the administrator, trainers and students use the Case Testing Tool. Tables 1, 2, and 3 show the respondents' answers to the administrator, trainer and student assessments. The features and functions of SIP are listed with the corresponding expected output. Respondents rated the actual output using the criteria finish/not-finish.

Discussion

This research aimed to create a web-based Student Internship Portal (SIP), a comprehensive toolbox for administering and organizing internship programs in an educational institution with students and administration. This study aimed to accomplish this goal. The SIP was developed to make converting to a more advanced model of data processing in educational settings easier. This goal was achieved through the utilization of information technology. The web-based placement information system for students is used to keep an

Table 1: Students' response for trainer User interface

| Before the Training | | |
|---|---|--------------|
| User: ADMIN | Projected Output | Final Output |
| Adds categories and addresses for students. | It must be possible for the application to save students' categories to a database | Finished |
| Creates new categories and program for training | The database should be used to store information about training categories and programmed. | Finished |
| Registers and assigns qualified Trainers | In order for the app to function properly, trainers must be able to be saved and training programmed must be assigned to them. | Finished |
| Sets up a training plan (Sends notifications to trainers and clients) | Training schedules can be added, and the app will notify the customer as well as the trainers of the specifics of each session. | Finished |
| Creates a master list of all participants who have signed up for training. | Customers who confirmed their presence at the training should be listed in the application's master list. | Finished |
| During the Training | | |
| Prints Master List of confirmed training Participants | The application should be able to print master list of the client who confirmed the attendance of the training. | Finished |
| After the Training | | |
| The training programmed has been terminated. | Upon completion of training, the application should be able to close the session. | Finished |
| Attachments such as, training evaluation forms, attendance sheets, other things, should be uploaded. | The attachments of the training can be saved in the application. | Finished |
| the evaluation results can be seen or printed such as end up training letter and internship certificates. | The evaluation results and internship certificates of the training can be viewed and printed from the application. | Finished |

Table 2: Students Responses for the Trainer User Interface

| Before the Training | | |
|--|---|--------------|
| User: STUDENTS | Projected Output | Final Output |
| A profile is set up. | Students can create an account on the app and keep track of their progress. | Finished |
| Conveys an interest in training programs/s (submits training need) | Students can express their desire to participate in the training programmed. | Finished |
| Confirms participation in training sessions as scheduled. | Students can confirm their attendance upon the receipt of an email message from the attendance application. | Finished |
| During the Training | | |
| (Attends training) | | Finished |
| After the Training | | |
| In-depth evaluation of the training course completed. | After the training, students can assess the trainer's effectiveness, as well as the training facilities. | Finished |

eye on the institution's evaluation data regarding the students' development. Students were also willing to participate in the use of online journals as a form of assessment for their learning while they were in the placement. Students can obtain first-hand experience through the Student Internship Program (SIP), which gives them the chance to work for an organization that focuses on internship programs and other educationally pertinent themes. The location of the student's internship depends on the student's interests and the location of the student's desired place of employment once the student

has completed their educational programs and graduated. Students can monitor their own progress, comprehend what is expected of them, and interact with the coordinator in an acceptable fashion. The Student Information Portal (SIP) was designed to offer an interactive tool for students, professors, and the institution to communicate with one another whenever and wherever it is necessary. Information technology helps discover new molecular entities and encourages the use of modern molecular-modelling tools to help teach (Ragno et al., 2020, Chari et al., 2022). Many educational institutions

at the higher education level have harnessed e-learning tools to empower the application of various learning models (Al-Hawari et al., 2021) that enrich the educational process (Welling and Thomson, 2003). Many studies are converging at the moment, such as the one that found that advances in information and communication technology considerably led to the adoption of web-based Learning Management Systems (LMSs) in higher education institutions all over the world (Cavus, 2015, Moore et al., 2011); blended learning (Yeou, 2016); flipped classrooms (Harvey, 2003). The LMS systems provide potent learning tools accessible globally at any time (Al-Hawari et al., 2021). These features satisfy the various requirements of educators and learners (Mok, 2014). Currently, our undergraduates rely solely on conventional face-to-face interactions with the principal investors and the college administrations. Nevertheless, this study will leverage online training and hands-on practical training to ensure a seamless learning experience. This article presents one such application with the intention that it can be utilized by any educational institution as well as students who are already participating in an internship to further facilitate the duties they perform daily. The internship site serves as a vital contact for students' future working lives and a tool that can assist students in planning their future research and academic endeavors.

Conclusions

The SIP was established successfully and proved to be a very useful tool for students, professors, and the institution to communicate wherever necessary. The SIP is a user-friendly, web-based instrument for evaluating training, its progression, administration, and guidance programs. After completing the internship program, students strengthen their nursing abilities via hands-on experience. The practicum program trains students to make independent medical judgments within their area of expertise while retaining professional competence and adhering to the ethics of the nursing profession. In addition, they learn how to operate in healthcare teams, build their professional abilities according to the job description, and seek guidance from people with more experience.

Recommendations

The student internship portal created by Dr Abdulullah Modhi Alsolais has essential features that will help students find internships and serve as a link between students and educational institutions so that they can make improvements in the future. Also, the online portal for students to find internships saves time and money.

Conflict of interest

All rights reserved by shaqrasip, an internship portal for students with Dr Abdulullah Modhi Alsolais.

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Author Contribution Statement

The author confirms sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation

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