

Subject & Lecture Online Appointment System For Academic Institutions

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Abstract— This paper presents a web-based appointment system through the web or mobile devices that assist lecturers, coordinators, and admins to be acquainted with the time of appointment wherever they are. Further, the current procedure is consuming time in complex steps to apply subjects for teaching next semester. Hence, a web-based subject & lecturer appointment system for academics aims at bridging the gap by designing and developing a more efficient system for all lecturers to apply for the preferred courses and classes to teach next semester. The system allows lecturers access to the system by connecting to the Internet. The system was developed using Hypertext Pre-processor (PHP) and My Structured Query Language (MySQL) as a database management system. This will enable the web application to be robust, cheap, and capable of operating on various platforms. This system is suitable for higher education Institutions and has a user-friendly interface as it can record all previous assignments and timetables for the current teaching semester.

Keywords—Web-Based Application, Appointment management system, Academic Institutions

I. INTRODUCTION

The web-based systems have helped in restructuring most of the tasks performed every day, which make lives simple and less complicated. The web-based subject & lecture appointment system can help to easily manage and coordinate the academic courses with less time spent to assign subjects to each lecturer for the next semester. Appointments that are done manually can be tedious and time-consuming as seen by experience [1][2]. One extremely important aspect of the subject & lecture appointment process is the clashing in time for a lecturer's classes which may need considerable time to discover. Therefore, there is a need for fast checking of all conditions in a secure system that protects the information of the coordinator as well as lecturers. Previously, these appointment schedules were carried out manually thus, there were Subject & Lecturer online appointment systems for academic institutions.

A web-based subject & lecture appointment system within a university is an important idea, as it minimizes time used not only for the lecturers and coordinator but the university administration staff [3]. Subject & Lecturer Online Appointment System for Academic is an online webpage system that provides online form service to all lecturers and coordinators. This system will help lecturers and coordinator save their time because they can access the system using the

Internet at any time. They do not need to get the form from the coordinator and pass back the form to the coordinator after they fill it up. Other than that, this is a secure system which let all users enter their identification numbers, names, and their own unique passwords in order to log in to the system. All the personal information will be shown on the main page after lecturers log in to their own accounts. Besides, the system will allow lecturers to change their passwords in the setting part. Web applications have a user interface based on the browser that interacts with the user and can manage large amounts of data [4]. Subject & Lecturer online appointment system is also a user friendly and a useful remainder system for the lecturers as the current teaching class timetable appeared on the main page. Various aspects of appointment processes, such as confirmations, reservations, and cancellations are controlled automatically [5]. In the Subject & Lecturer online appointment system, lecturers can check the time and place for the current semester teaching classes by login into the system. At the end of the semester, all lecturers just have to log in to their own accounts and add their favourite subjects for teaching in the coming semester. After that, lecturers just need to click the submit button and the coordinator will receive the form. The system will show the status of the approval of the Subject & Lecturer appointment online form. This web application programmed with Hypertext Pre-processor (PHP) and JavaScript allows lecturers and students to relate with each other in real-time [6]. The application set up on multiple platforms from laptops to mobile devices enables the lecturers, coordinator, and admin to interact with the system wherever they are [7]. The objective was to design lecturers-coordinator web-based Subject & Lecturer appointment systems in tertiary institutions with the aim of to model the user requirements of the Subject & Lecturer appointment system, to develop this system based on web-based application and to efficiency the system by just click on the mouse instead of fill in and submit the form. Apart from that, as a database server, it is a software product with the primary function of storing and retrieving data as requested by other software applications—which may run either on the same computer or on another computer across a network.

Currently, before every semester starts the lecturer needs to get the Subject Teaching Appointment Form from the coordinator. After lecturer's fill-up the form, they need to pass it back to the coordinator and the coordinator will decide which subject is more suitable for each lecturer who teaches in the coming semester based on the lecturer's experience and

qualification. However, there are some rules and conditions that need to be applied when the coordinator assigns a suitable subject and class for a lecturer. For the lecturer, there are only 3 subjects that can be applied for teaching in the coming next semester. After that, the coordinator needs to check all the rules and conditions before assigning the approval or assign a subject to the lecturer. The rules and conditions are the experiences of the lecturer towards the subject, is there any subject that time collision with this subject, if this occurs, then the coordinator need to choose another class and compare the time one by one, there will use up a lot of time. Other than that, the coordinator needs to check the university's rules as well, which is if any of the lecturer's relatives in that class, then the lecturer cannot assign to that class.

II. METHODOLOGY

The web-based application utilized 2-tier techniques of server/client architecture software. The client is described as the network application which applied the services of the server. The server proffers services to another host upon a network. In web system technology, the web interface will be demanded by the client before necessary interaction can occur. The web server offers services such as authentications, web pages generation on request, and database operations. The server/client interaction occurs through Hyper-text-transfer protocol (HTTP), a protocol on the Transmission Control Protocol/Internet Protocol (IP/TCP) suite. The programming language employed was the Hypertext Mark-up Language (HTML), Javascript, and Bootstrap Cascading Style Sheet (CSS) with Hypertext Pre-processor (PHP). While the database used is MySQL.

Subject & Lecturer Appointment System development involves 7 processes which are:

- Planning phase
- System requirements & analysis
- System design
- System development
- Integration & testing
- Implementation
- And maintenance

First, survey the current situation and construct a title and some problems for the title. Analyze all problems faced by the current procedure. After that, list all methods to solve these problems efficiently and get solutions for these problems. Then, define the project goal by analyzing all the systems and users' requirements. Later, identify the inputs and outputs and define the functions of the system which are in the System Requirements & Analysis phase. After defining the system and users' requirements, begin the design phase of the system. The system design is based on define modules, architecture, components, and interfaces of the system. Then, draw various Unified Modelling Language (UML) diagrams such as use case diagram, activity diagram, sequence diagram, and so on to specify the system more clearly. After that, the system development phase is developing the whole system by coding. The code is written code in the design phase. This stage develops the software by generating all the actual code. The PHP language is used for developing the Subject & Lecturer Appointment System. In the Integration and Testing phase,

after receiving system design documents, the work is divided into modules or units and actual coding started. All components will function after complete code is written. A real system was completed during this phase.

During the implementation phase, the actual product is created. System implementation can be an exciting phase for the users because their idea for the project becomes something tangible. Project developers begin building and coding the software and make sure to fulfill all user requirements and their expected results. Last, The Maintenance Phase occurs once the system is operational. It includes implementation of changes that software might undergo over a period, or implementation of new requirements after the software is deployed at the customer location. The maintenance phase also includes handling the residual errors that may exist in the software even after the testing phase. This phase also monitors system performance, rectifies bugs, and requested changes are made to keep the system live, maintain code, and update the software when required. Fig. 1 below shows the methodology that has been used for this system.

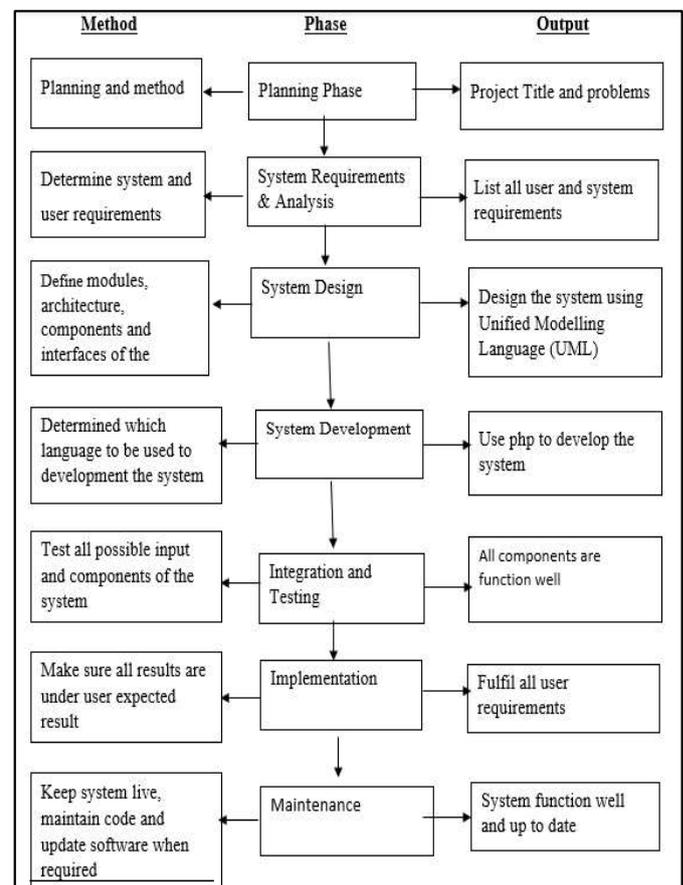


Fig. 1: Methodology of subject & lecture online appointment system

III. DEVELOPMENT AND RESULTS

This section describes the design and development of the subject & lecture online appointment system. The requirement for this web-based system divided into two which are a functional requirement and a non-functional

requirement. Table 1 shown the functional requirement of the subject & lecture online appointment system where table 2 shown the non-functional requirement of this web-based system. Three priorities are specified for the requirements that are Mandatory (M), Optional (O), Desirable (D). Listed below describe the functional requirements of the app:

- M – mandatory requirements (something the system must do)
- D – desirable requirements (something the system preferably should do)
- O – optional requirements (something the system may do)

TABLE: FUNCTIONAL REQUIREMENT OF SUBJECT & LECTURE ONLINE APPOINTMENT SYSTEM

No.	Requirement ID	Requirement Description	Priority
	SLOAS01	LOGIN	
1	SLOAS01_01	Lecturer shall choose id type on the dropdown button before login	M
2	SLOAS01_02	Lecturer shall login on the system by username and password	M
3	SLOAS01_03	Lecturer shall click "Logout" button to logout	M
4	SLOAS01_04	Coordinator shall choose id type on the dropdown button before login	M
5	SLOAS01_05	Coordinator shall login on the system by username and password	M
6	SLOAS01_06	Coordinator shall click "Logout" button to logout	M
7	SLOAS01_07	Admin shall choose id type on the dropdown button before login	M
8	SLOAS01_08	Admin shall login on the system by username and password	M
9	SLOAS01_09	Admin shall click "Logout" button to logout	M
10	SLOAS01_10	Admin can have privilege to login for management	D
	SLOAS02	MANAGE COORDINATOR	
11	SLOAS02_01	Admin shall click "Manage Coordinator" button in main menu page.	M
12	SLOAS02_02	Admin shall input coordinator name in search box and click "Search" button in manage coordinator page	O
13	SLOAS02_03	Admin shall click coordinator name to open a new page of coordinator information (View coordinator information)	O
14	SLOAS02_04	Admin shall click "Edit" button to edit coordinator information in coordinator information page.	D
15	SLOAS02_05	Admin shall click "Delete" button to delete coordinator in coordinator information page.	D
16	SLOAS02_06	Admin shall click "Add" button to add coordinator in manage coordinator page	D
17	SLOAS02_07	Admin shall click "Home" button to go to main menu page	O
	SLOAS03	MANAGE LECTURER	

18	SLOAS03_01	Admin shall click “Manage Lecturer” button in main menu page.	M
19	SLOAS03_02	Admin shall input lecturer name in search box and click “Search” button in manage lecturer page	O
20	SLOAS03_03	Admin shall click lecturer name to open a new page of lecturer information.	O
21	SLOAS03_04	Admin shall click “Edit” button to edit lecturer information in lecturer information page.	D
22	SLOAS03_05	Admin shall click “Delete” button to delete lecturer in lecturer information page.	D
23	SLOAS03_06	Admin shall click “Add” button to add lecturer in manage lecturer page	D
24	SLOAS03_07	Coordinator shall click “Manage Lecturer” button in main menu page	M
25	SLOAS03_08	Coordinator shall input lecturer name in search box and click “Search” button in manage lecturer page	O
26	SLOAS03_09	Coordinator shall click lecturer name to open a new page of lecturer information.	O
27	SLOAS03_10	Coordinator shall click “Add” button to add lecturer to the specific course on the page of lecturer information.	D
28	SLOAS03_11	Coordinator shall click “Delete” button to delete lecturer to the specific course on the page of lecturer information.	D
29	SLOAS03_12	Coordinator shall click “Edit” button to edit lecturer to the specific course on the page of lecturer information.	D
30	SLOAS03_13	Coordinator shall click “View Teaching History” button to view the lecturer experience on the page of lecturer information.	D
	SLOAS04	MANAGE SUBJECT	
31	SLOAS04_01	Admin shall click “Manage Subject” button in main menu page.	M
32	SLOAS04_02	Admin shall input subject name in search box and click “Search” button in manage course page	O
33	SLOAS04_03	Admin shall click subject name to open a new page of subject information.	O
34	SLOAS04_04	Admin shall click “Edit” button to edit subject information in subject information page.	D
35	SLOAS04_05	Admin shall click “Delete” button to delete subject in course subject page.	D
36	SLOAS04_06	Admin shall click “Add” button to add subject in manage subject page	D
37	SLOAS04_07	Coordinator shall click “Manage Subject” button in main menu page.	M
38	SLOAS04_08	Coordinator shall input subject name in search box and click “Search” button in manage subject page	O
39	SLOAS04_09	Coordinator shall click subject name to open a new page of subject’s lecturer information page.	O

40	SLOAS04_10	Coordinator shall click “Edit” button to edit subject’s lecturer and group information in subject’s lecturer information page.	D
41	SLOAS04_11	Coordinator shall click “Delete” button to delete subject’s lecturer and group in subject’s lecturer information page.	D
42	SLOAS04_12	Coordinator shall click “Add” button to add subject’s lecturer and group in manage subject’s lecturer information page	D
43	SLOAS04_13	Coordinator shall click” Submit” button to submit the final decision.	D
44	SLOAS04_14	Lecturer shall click “Manage Subject” button in main menu page.	M
45	SLOAS04_15	Lecturer shall input subject name in search box and click “Search” button in manage subject page	O
46	SLOAS04_16	Lecturer shall click subject name to open a new page of subject information page.	O
47	SLOAS04_17	Lecturer shall click “Add” button to add subject in manage subject information page	D
48	SLOAS04_18	Lecturer shall click “Edit” button to edit subject in subject chosen page.	D
49	SLOAS04_19	Lecturer shall click “Delete” button to delete subject in subject chosen page.	D
50	SLOAS04_20	Lecturer shall click “View Teaching History” button to view teaching subject history in history page	D
51	SLOAS04_21	Lecturer shall click “Status” button to view the apply status	D

Table 2: Non-functional requirement of subject & lecture online appointment system

No.	Requirement ID	Requirement Description	Priority
	SLOAS05	Security	
52	SLOAS05_01	The private information of user will be protected	M
53	SLOAS05_02	User can log in only by enter correct username and password	M
	SLOAS06	Performance	
54	SLOAS06_01	High performance and process are always up to date	M
	SLOAS07	Operational	
55	SLOAS07_01	User can be accessible to any electronic device.	M
	SLOAS08	Usability	
54	SLOAS08_01	Easy for the user to become familiar with and competent in using the user interface during the first contact with the website.	M

55	SLOAS08_02	Show pop out message to warning user that really need to do that operation	D
56	SLOAS08_03	System will direct prompt out message to ask lecturer is that register same subject as previous and will direct go to that subject directly once the lecturer click "OK" at the pop out message during add subject.	D

- *Use Case Diagram*

Use case diagram became an important practice for capturing the functional requirements [8]. A set of possible sequences of interactions between the system and users in a

particular environment will be involved in the use case diagram for accomplishing particular goal [9]. The use case diagram has used in the proposed Subject & Lecturer online appointment system. The use case for the system consists of three sub-use case diagrams, as shown in Fig. 2.

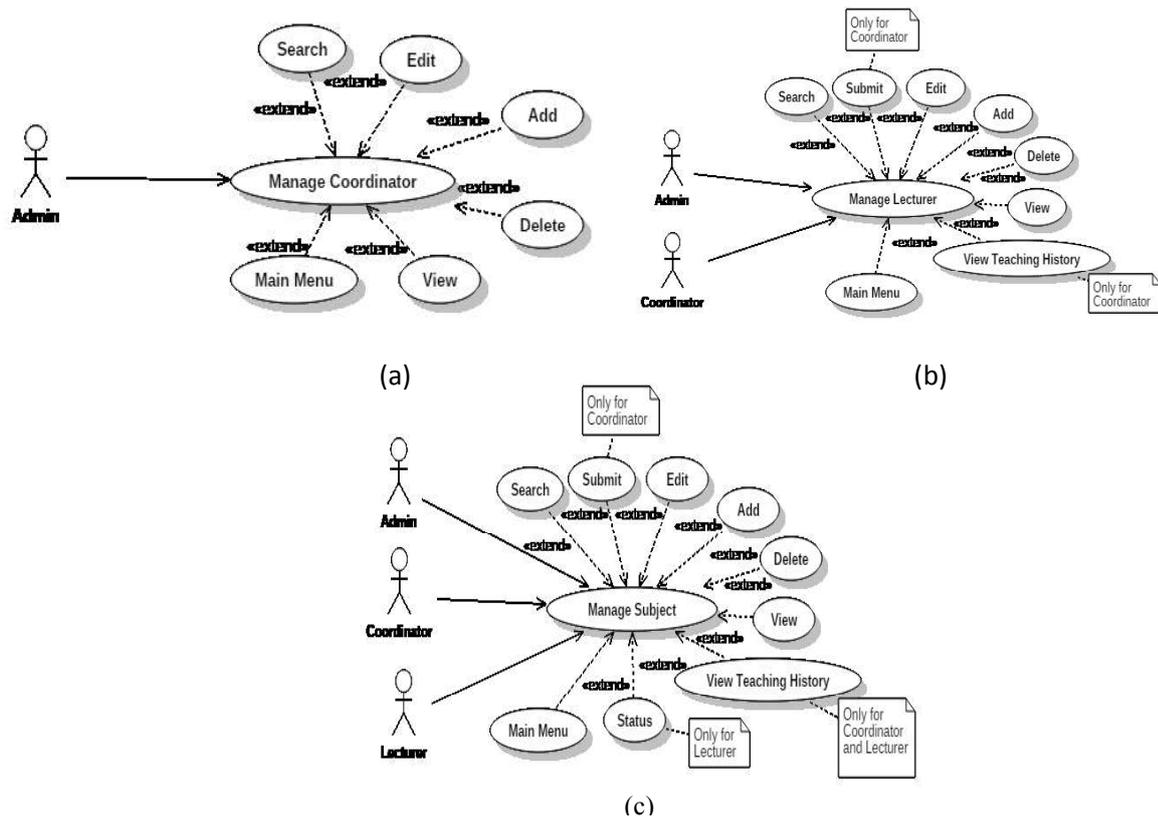


Fig. 2: Use case diagrams (a) Manage Coordinator (b) Manage Lecturer (c) Manage Subject

The functional requirements in Table 1 include login, manage coordinator for admin which includes view coordinator profile, add new coordinator, search for a coordinator, edit coordinator information, and delete coordinator. While the manage lecturer for admin role is view lecturer profile, add new lecturer, search for lecturer, edit lecturer information and delete lecturer. The manage subject for admin is view subject information, add a new subject, search for a subject, edit subject information and delete subject.

For the coordinator role, there are two categories which are managing lecturer and subject. On the first page, the coordinator received all the new requests from lecturers of their applied subject teaching in the coming next semester. Besides, it is included a search for lecturer room and teaching history, add subject to the lecturer, edit a group of the assigned subject, delete request, and submit the final decision in the final submission. Other than that, the coordinator also can manage subject which included a search for subject

information (syllabus), the teaching history for the subject, add lecturer to take subject by group by subject, edit a group of the assigned subject, delete request, and also submit the final decision in the final submission.

While the lecturer role is search for subject information and download subject syllabus, add a subject, delete request (subject), view applied subject, view applied subject status after submitting the request in the view applied subject page, and view teaching history.

The functionality of the Subject & Lecturer online appointment system not only helps the coordinator check all the rules and conditions, but it is also protecting the lecturer's personal information and keep a single credential that the only user can access the system with the correct username and password. Subject & Lecturer online appointment system is having a user-friendly interface as it records all teaching history for each lecturer. Furthermore, it is also avoiding human error that the lecturer no need to key-in anything, the

process can be done in just a few clicks. The simple steps for a lecturer to apply subject for the coming next semester are:

- Choose the subject (shown in Fig. 3)
- Submit a request for the final decision (shown in Fig. 4)
- View status (shown in Fig. 5)
- View class information like date, time, and venue after approval (shown in Fig. 6)

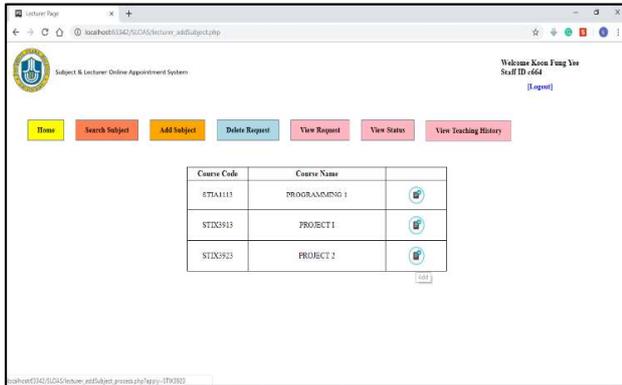


Fig. 3: The page of apply subjects for lecturers

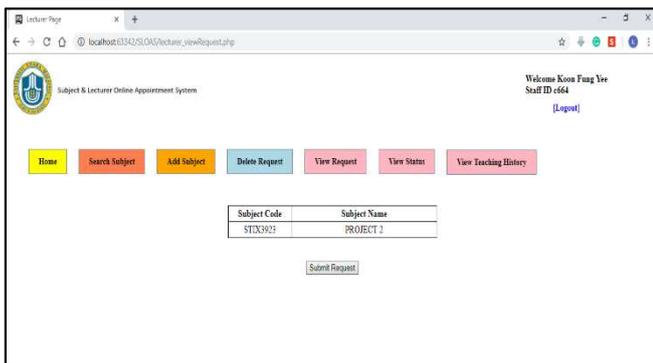


Fig. 4: The page of submit request for lecturers

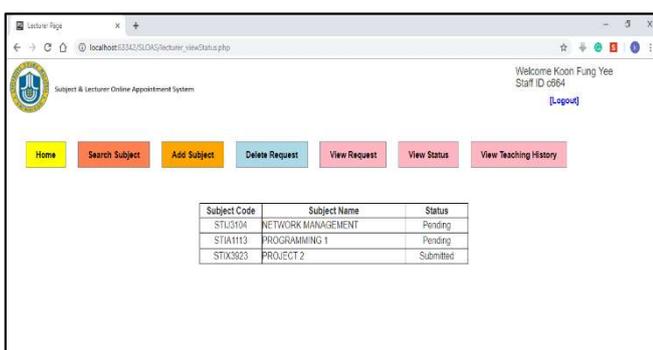


Fig. 5: The page of view status for lecturers

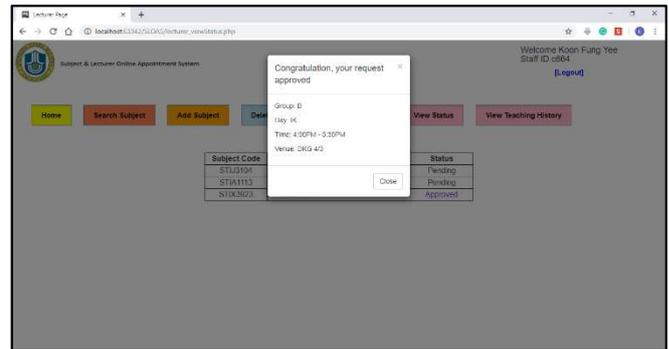


Fig. 6: The box displays all information about the subject that has been approved

IV. EVALUATION

This section presents the usability of the subject & lecture online appointment system, where the system has been tested by running the system on Google chrome (most suitable), Mozilla Firefox, and Internet Explorer with the local host server. Twenty respondents that consist of admin, coordinator, and lecturer have been involved to evaluate the system prototype from the School of Computing at University Utara Malaysia. Every respondent was given a brief description of how to use the proposed system, test the system, and answer a prepared survey questionnaire. The survey contains 28 questions measured by a 5 Likert Scale in order to prove the usability and measure the user satisfaction of the proposed system. The obtained results from the questionnaire indicate that a high percentage of the respondents agree that the subject & lecture online appointment system is easy to use, secure as protected all personal data, and achieved the key target of the project.

V. CONCLUSION

The Subject & Lecturer online appointment system was designed and developed in this research. This system could ease the process of distributing the subjects to the lecturers at the beginning of every semester avoiding the human key-in error and human checking error. This system improved the performance, efficiency, and effectiveness of applying and managing subjects for lecturers and coordinators. The Subject & Lecturer online appointment system successfully enabled performance and accuracy checking of all the rules and conditions. The Subject & Lecturer online appointment system can be also extended to other facilities of other schools in universities or other universities.

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