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ABSTRACT

Appointments are made manually by students to see lecturers. There are various ways students make appointment with lecturers in UMP such as going to see the lecturer, make phone call or message on social network. However, there is no proper information linkage of lecturer's availability that allows lecturer to update their availability regularly. Therefore, Online Appointment System for FSKKP is developed to reduce the difficulties in meeting lecturers among FSKKP students. Lecturers can update their schedule not just based on class but they can update with other activities such as university activities and events. This system is a web-based platform and is created using server side scripting PHP and Apache Web Server, user side scripting such HTML and CSS also MYSQL as a database for the system. This system is a web based application that allows user to access the system anywhere with an internet connection. This system will be developed using Rapid Application Development (RAD) model. This system gives benefits to both lecturers and students.
Perlantikan dibuat secara manual oleh pelajar untuk bertemu pensyarah. Terdapat pelbagai cara bagi pelajar-pelajar membuat temujanji dengan pensyarah di UMP seperti bertemu pensyarah secara peribadi, membuat panggilan telefon atau mesej melalui rangkaian sosial. Walau bagaimanapun, tiada rangkaian maklumat betul ketersediaan pensyarah yang membolehkan pensyarah untuk mengemaskini ketersediaan mereka dengan kerap. Oleh itu, sistem perlantikan dalam talian bagi FSKKP dibangunkan untuk mengurangkan kesukaran pelajar FSKKP bertemu pensyarah. Pensyarah boleh mengemaskini jadual mereka yang tidak hanya berdasarkan kelas tetapi mereka boleh mengemaskini dengan aktiviti lain seperti aktiviti-aktiviti universiti dan program.

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CHAPTER 1

INTRODUCTION

1.0 Overview

At the present time, everything in this world is depending on Information Communication Technology (ICT). With the rapid usage of computers and gadgets, everything is computerized and it gives an enormous impact on our lives.

Nowadays, most organizations such as schools, hospitals, universities, and the government have started to do everything in a computerized way as it is painless and faster. In order to meet important people, an appointment should be made. Nevertheless, manual appointment system is not very efficient as it does not save time and money.

In Faculty of Computer Systems and Software Engineering (FSKKP), students still make appointment with lecturers manually. Therefore, the Online Appointment System for FSKKP Lecturers and Students (OASF) is developed to reduce the difficulties in meeting lecturers among FSKKP students.

This system is a web-based platform and will be created using server side scripting such as PHP with Apache Web Server, user side scripting such as
HTML and CSS also MYSQL as a database for the system. This shows that it is mobile as users can access to the system anywhere as long as there is an internet connection.

Appointments are made based on the time slots of the lecturer which can be updated by lecturer and also administrator. Lecturer will have to update their availability because in case they are on leave or have meetings. The students will check the lecturer’s availability and pick the time slot they would like to meet the lecturer. Then, a request will be submitted and lecturers will be notified via email. If the lecturer is not available, the system will suggest other time slot that the student can pick.

In FSKKP, the online appointment system between lecturers and lecturers has already been developed. However, there is no similar system built to make an appointment between student and lecturer. The existing system is built in IMS (Information Management System) but this system is a standalone system.

1.1. Problem Statement

1.1.1. Unable to reach lecturer

Some lecturers can be very busy or have other duties and responsibilities other than teaching. This makes it hard for the students to meet them in their office room. In UMP, students will directly go to the lecturer’s room or call to make confirmation. The lecturers often take an extended period of time to reply to students’ calls or SMS (Short Messaging System). Waiting for a long reply from the lecturers who are busy or unavailable is considered time consuming to some students. This system will help to reduce students’ waiting time for the lecturers as they may know the status of the lecturer before going to meet them.
Apart from that, students do not have the lecturer's phone number to contact. When they try to reach them at the faculty, the lecturer is not in the room either because of having class, meetings or on leave. On UMP's E-comm website, lecturers contact information can be found in user directory. The drawback is some lecturers only put office room's extension phone number. This is making it hard for students to contact lecturers after office hour to make an appointment on the next day especially for urgent matters such as discussing for Undergraduate Research Project.

1.1.2. No records of availability

Moreover, instructors tend not to abide by appointments that they assign to the students. Although they put notes at their doors or updates their availability on Facebook accounts, this is not practical or professional. With this system, lecturers are able to manage their appointments with students and can also check the approved appointments whenever they are logged in into the system.

1.2 Motivation

Conventionally, before students would meet up with the lecturers for discussions, they would have to go all the way to the faculty. Otherwise, they have to contact the lecturers via phone or through sending messages. However, this is costly for some students. Consequently, developing a system or program that is free and easier to use by students and lecturers was a considered thought to facilitate communication among them.

Constructing this system looks challenging and intriguing since it needs independent thinking and intuition. Also, it helps in building up social and life skills and in incorporating previous knowledge with recent ones.
1.3 Objective

1. To study the lecturer-student appointment system that enables lecturer manages their time slot so that students can view to choose the suitable time slot to make an appointment with the lecturer.

2. To develop a system that allows students to make request to have an appointment with the lecturer after viewing the lecturer’s availability and lecturer will choose either to deny or accept the request.

3. To test the system by eliminating the possibility of reiteration of the same time slot with other students or in case lecturer is not available because of other meetings or university’s activities.

1.4 Scope

- **UMP’s Faculty Of Computer Systems And Software Engineering (FSKKP)**
  - The target users of this system are students, lecturers and administrator. Students can make appointment only if they have logged in to this system’s account. Therefore, only registered users can make appointment with the lecturers.

  1. **Administrator:**
     - Manage faculty record and lecturers that exist in the system
     - Manage public holiday records and important updates
     - Manage database

  2. **Lecturer**
     - Manage Profile and account
     - Manage table and time slot
     - View requests by students either to reject or accept
3. Student

- Check date and time slot before proceeding with the appointment process.
- Make booking and check the appointment request status.
- View the record of the sent appointment request.
CHAPTER 2

LITERATURE REVIEW

1.0 Overview

This chapter elaborates about the existing systems that are related to the Online Appointment System for FSKKP Lecturers and Students (OASF) and explains the existing technique/methods/languages used for each system.

Appointment is a time reserved for something such as a doctor visit, business deal, and much like a reservation. Recipient notification agents accept message notifications on behalf of recipients. Getting systems with many independent participants to behave is a great challenge (Mohd Helmy Abd Wahab, N. H., 2008).

Nowadays, people demand to use computerized systems in their organizations. The reason is to make the human’s workload to be minimized and at the same time this will need less workers or employees to handle various systems in an organization. An organization might need just one worker for one each system. Apart from that, technology helps people to reduce their time by using electronic systems instead of recording data manually. For that reason, online appointment systems are built in some organizations to make meetings and appointments can be made in a more appropriate way.
Online appointment system is a paperless electronic application that is designed with high flexibility and ease of usage, implemented for organizations such as faculties, administrations, hospitals, clinics and other business organizations to handle meetings with customers or clients in more efficient way. There are many kinds of online appointment system that exist nowadays. This system is generally built to avoid reiteration of the same time slot for different user.

2.1. Existing Systems on Online Appointment System

2.1.1. E-Appointment Scheduling (EAS)

E-Appointment Scheduling (EAS) has been developed to handle appointment for UMP students, lecturers in Faculty of Computer Systems & Software Engineering (FCSSE) and Student Medical Center. It is an online application for FCSSE’s student whenever applying to make appointment with lecturers or doctor. All applications have to be sent to the lecturers or doctor for approval. This system will give more interactive for student to make an appointment through an online system. By deploying this system, we can avoid wasting time and cost because this application will set an appointment by auto-generated. Therefore, this system is hopefully to solve problem for scheduling. (Noraziah Ahmad, Roslina Mohd Sidek, and Mohd Affendy Omardin, 2010).

In order to solve the scheduling drawbacks of this system, Constraints Logic Programming (CLP) has implemented in this system. by giving suggestions to the users in part of determining any available slots from the lecturers and doctors’ timetable
2.1.2. Student’s Module

From students’ page view, all students are allowed to use their student id as username and password for the first time login into the system. Before making an appointment, student can view availability of lecturers and doctors. To make an appointment with the lecturer, student must search the lecturer by lecturer’s name, date and time. System view available slots that student request, if not system suggests other slot to make an appointment. It also similar with the doctor module but the appointment only generated to doctor.

Next, the system will display for search lecturer’s schedule or doctor’s schedule by constraint inserted by student to do the appointment. Available slots that student needs will be searched by the system otherwise, gives other available slot suggestions if the constraints do not match. Students just click the result to do the appointment.

Figure 2.0 (Make an Appointment, Noraziah Ahmad, 2010)

Next, as shown Figure 2.0, student is required to insert appointment’s location and agenda and click send button or cancel or exit to abort the appointment.

2.1.3. Lecturer Module

After appointment has been made, the database is then updated and enables lecturer to view the request. Even though every appointment request
made is based on available slots, lecturer still can reject or change the time and date in case of emergency. Lecturers also can edit schedule to update the available schedule. Report button as in figure 2.1 below is for lecturer to view the appointment records.

![March Calendar](image1)

Figure 2.1 (List of Approved Appointment, Noraziah Ahmad, 2010)

Figure 2.1 shows the approved appointment that is automatically made by the system. Information about the application and also can be viewed. By clicking the image view at detail column lecturer can check the detail of the applicant.

![March Calendar](image2)

Figure 2.2 (Lecturer Setup Schedule, Noraziah Ahmad, 2010)

Figure 2.2 shows that lecturer is able to setup the schedule for the appointment.
2.1.4. Constraint of E-Appointment Scheduling (EAS)

Based on the research, EAS is in an IMS (Integrated Management System) which is a single integrated system used by an organisation to manage the fullness of its processes, in order to meet the organisation's objectives and fairly satisfy the stakeholders. Combines all related components of a business into one system for easier management and operations (Sciqual.com.au, 2015). Therefore, when there are so many things going on a website, the appointments might be missed or forgotten. Therefore Standalone system is better for an appointment because it operates independently which means there is only one system.

Lecturers need to setup their timetable themselves. This will make it hard if lecturer does not update or forgot to setup the schedule. Administrator should be responsible to make sure the schedule is always up to date.

Besides that, the EAS does not provide a timetable that enables student to check if the lecturer is available or not but allows lecturer to change the time of the requested appointment instead. This will cause difficulties in case student has class or other university activities when the lecturer updates the time. Besides that this system is also time consuming because students have to check
one at a time for the available time by using the search of lecturer's name, date and time.

2.1.5. Web Based Intelligent Appointment System

Web Based Intelligent Appointment System is an online appointment system developed by integrating with Intelligent System techniques. The purpose of an appointment is for students to reserve time for any academic-related activities such as discussion and weekly meeting with lecturers. The main orientation of the prototype is to manage appointment and calendar updating.

2.1.5.1. Database design

Database is used as the platform for most information systems that stores data. It is the ultimate instrument for most systems.

There are several steps in database design as described by inflow schema that consists of

i) process event
ii) function links and
iii) directed communications
(King, 1985).
2.1.5.2. Interface Design

Figure 2.5 (Interface of Appointment Timetable, Mohd Helmy, 2009)

In figure 2.5, it shows that students can make an appointment by choosing the blue coloured time slots.
In figure 2.6, students can make an appointment by selecting the appointment duration, and purpose of meeting.

Figure 2.7 show that lecturer can change the time slot by clicking on the time slot that needs to be changed.
Figure 2.8 (Interface of New User Registration, Mohd Helmy, 2009)

Figure 2.8 is the interface for new user registration.

2.1.5.3. Intelligent Agents

Agent-based computing has taken place as "the next significant breakthrough software development (Jenning and Woodridge, 1998). Different types of agents have with different role. For this system, agent's role is to manage information in databases and offer a status by comparing it with inputs provided by the users and capable of autonomous action to meet its design objectives.

Agent is a computer program that assist user with a routine computer task and represents on behalf of human agents (Noraziah Ahmad, R. M. 2010). At the user interface, the user interacts with the agent while the agent senses and acts independently in a work environment such as an operating system. Using the information taken from its environment, the agent performs a given task. The role of agent is to respond the user's request in ad hoc and an Intelligent Agent is placed in the prototype. It allows both students and lecturers to easily access the system in any terminal connected to the Internet while in a time restrain.
2.1.5.3.1. Advantages of Intelligent Agents

i. Higher efficiency in work such as less time used, work autonomously, and can search huge amounts of information and filter out important things that would be impossible for humans

i. Opens new opportunities like an arrangement of appointments inclusive of searching for the available slot for an appointment and respond to

2.1.5.3.2. Constraint of Web Based Intelligent Appointment System

After understanding the research, the system does not have so many constraints but however it is still lacking in notification feature. This system does not notify lecturer on whether they have an appointment to be checked or not. The appointment will be approved automatically and lecturer does not need to approve or reject the appointment request. This will cause complications when students do not check whether the lecturer has changed the time slot for the meeting.

2.1.6. Patient Appointment Reservation System (PARS)

Based on the research on Patient Appointment Reservation System (PARS), it is a system that has been developed to use the opportunity of possibilities to reduce administration costs, provide availability and high quality service in health care and more efficient human and material resources for health care organizations that is provided by the advanced Internet and Technologies in medical.

For now PARS is one of the most modern projects in Lithuania’s medicine sphere, linking registries of 40 different health care institutions:
2.1.6.1. System operation principles

1. Specialists
   - Make a consultation time schedule.
   - Enter scheduled consultation times of physician into PARS by the reception personnel.
   - Can enter planned consultation times themselves if signed in.
   - A specialist can be chosen by health care institution, family name, specialty and consulting-room or by the set of all these criteria. When finding a proper specialist patient is able to view all available times of visits and select the most convenient one.
   - Can view a list of registered patients for a particular date and their complaints.
   - Can send SMS for a patient to bring all the necessary documents or analysis that might be useful.

2. Patients
   - Able to register for a visit by the phone or at the reception desk.
   - All patients' details are entered into PARS and can register online.
   - Can reserve consultation time by entering name, family name, mobile phone number and other contact information of patient.
   - Will receive SMS for confirmation, reminder about upcoming visit and information of the reservation cancelation if there are things that cannot be circumvented
Figure 2.9 Patients appointment reservations via Internet since 01.01.2008, Vilnius, 2008

Figure 2.9 shows that since year 2008 where this project has begun, the patient appointment reservation via internet have been increasing steadily.

2.1.6.2. Constraint of Patient Appointment Reservation System (PARS)

PARS is a huge system and it needs to work perfectly to get the users' satisfaction. However, there are problems in the system. Firstly is the system is created in Lithuanian Language. For a system like this, it is better to be implemented in English or make an option either to use English or Lithuanian language. This is because; in case a non-Lithuanian wants to use the system, it will cause difficulties and still a time consuming. Besides that it will cause false