

The Development of Online-Class Scheduling Management System Conducted by the Case Study of Department of Social Science: Faculty of Humanities and Social Sciences Suan Sunandha Rajabhat University

Wipada Chaiwchan, Patcharee Klinhom

Abstract—This research is aimed to develop the online-class scheduling management system and improve as a complex problem solution, this must take into consideration in various conditions and factors. In addition to the number of courses, the number of students and a timetable to study, the physical characteristics of each class room and regulations used in the class scheduling must also be taken into consideration. This system is developed to assist management in the class scheduling for convenience and efficiency. It can provide several instructors to schedule simultaneously. Both lecturers and students can check and publish a timetable and other documents associated with the system online immediately. It is developed in a web-based application. PHP is used as a developing tool. The database management system was MySQL. The tool that is used for efficiency testing of the system is questionnaire. The system was evaluated by using a Black-Box testing. The sample was composed of 2 groups: 5 experts and 100 general users. The average and the standard deviation of results from the experts were 3.50 and 0.67. The average and the standard deviation of results from the general users were 3.54 and 0.54. In summary, the results from the research indicated that the satisfaction of users were in a good level. Therefore, this system could be implemented in an actual workplace and satisfy the users' requirement effectively.

Keywords—Timetable, schedule, management system, online.

I. INTRODUCTION

NOW a days, communication is beyond frontiers and human connect to the world easily and more than the past. Technology plays more important role and so does communication. Communication through information technology is, in fact, advancing rapidly. It is hard to deny the fact that with powerful of computers and telephones have become main communication for all of us. These popularize so widely that we can catch it almost everywhere. Technologies, in fact, are always updated and upgraded such as Japan where gives a birth over one hundred technology produces each day. It is with no doubt that communication technology has created progress rapidly. Even they are a part

of the reason, which makes a change in our behavior. This is hard to imagine how our one-day going is without talking to our family, friends by cell phone or face book, line and so on. In connection with education, technology influences to faculty and staff in term of classroom management and teaching aids. Also this benefits students to study more conveniently. For Department of Social Sciences, lecturers have used this concept to develop a timetable online as it benefits students and lecturers to schedule and to learn easily and quickly including the use of information technology. Generally, users can access information rapidly. Educational agencies have tried to develop information technology into teaching more relentless. Suan Sunandha Rajabhat University is one of the agencies in Thailand that has taken information technology to improve learning and management, including the timetable. Owing to the increasing number of students, the class size becomes small and current scheduling class time table information is in the form of all documents. This makes it difficult to improve, edit, and search. If an error occurs in the course schedule and timetable, this will be subject to the academic affairs department. As a result, the schedule is delayed and affects to increase workload for staff and academic staff at the landmark building. Of such problems, this study has the idea to change the timetable from manual to online timetable to develop a system and assist in working to a high standard. Users can check the timetable and reduce errors, and save time to update. Also this enables quick work and, students can check at any time.

II. OBJECTIVE OF THE STUDY

- 1) To develop online class scheduling management system
- 2) To support instructors and students based on online class scheduling management systems
- 3) To improve efficiency of scheduling management system

III. RESEARCH METHODOLOGY

A. Theories

The appropriate timetable to make the teaching process more efficient for both the instructor and the students which in this study was based on the principle of the timetable: 1)

Wipada Chaiwchan is with Faculty of Humanities and Social Sciences, Suan Sunandha Rajabhat University, Bangkok Thailand.(phone: +6689-891-8703; e-mail: wipada.ch@ssru.ac.th, wipada_ch@outlook.com).

Patcharee Klinhom is with Faculty of Humanities and Social Sciences, Suan Sunandha Rajabhat University, Bangkok Thailand.(phone:+6684-711-6591; e-mail: Patchareeklinhom@hotmail.com).

Arranging to complete a structure of the course 2) Arranging the timetable of the nature of the subject 3) Being convenient for those enrolled to attend classes by day, time or place of study 4) Being convenient for instructors to begin activities by using tools or equipment in the course. 5) Classes or subjects assigned for certain subjects with average out to diffuse or to suit by the instructors and not being adjacent to a lot in one day 6) Timing available to change classes or instructors and resting posture or personal business outside of the lunch break 7) Managing class without one instructor like in the past 8) Managing a specific class with any subjects requiring time to practice 9) The timetable available for all classes level 10) Checking and confirming the valid time and the square of students, teachers and classrooms [7]-[9].

Database Management System (DBMS) consists of software for database management, prepares for safety, and other facilities. The database system can be divided into model of supporting database, for example, XML and so on. by typing of computer and supporting such as server cluster or mobile and typing of questionnaire used to reach database in structural way or XQuery by effective of trade-offs for example, the biggest size, or fastest ones or others, in some DBMS will cover more than one category such as supporting many languages to permit database to work together with other databases. [10]

PHP language named PHP used come from PHP Hypertext Preprocessor or Personal Home Page, PHP language is in server side script by right of open source, PHP language for keeping website and revealed a result by form of HTML with base structure from C language Java and pearl which PHP is easier to learn which symbol of this was to write webpage that can respond rapidly [3], [4].

SQL is abbreviated from structured query language that means language used in writing program to keep in database specifically, and is related databases standard language and this is an opened system which means we can command SQL with any database and a command when we command by different database. The result is that we can select any database without depending on one database; besides, SQL is also database program which easily understand, and effectively. A program SQL is proper for using with related database system. [4]

The genetic algorithm for multi-purpose solution to the school timetable is discussed from the following abstract. The timetable is a problem that is very complex problem. Using people is something that takes time and effort that is very high with the evolution of information technology and computing smarter as Genetic Algorithms. This can be applied to solve the timetable for dissertation that aims to develop an application using Genetic Algorithms multi- purpose. For solving the problems of the school timetable, the result will be a trial. Genetic algorithm can find a better answer. Timetable with small can be accurate as the chromosome number and the model number is not less. The timetable will take a short time for timetable large chromosome number, and model number must be used very much. The results showed that Genetic algorithms, multi-purpose, could help reduce the complexity

of the timetable. This ensured the quality meets the conditions and saved labor time and costs. [5], [6]

Development of information systems for scheduling classes in high school timetable mentioned in the following abstract. This study aims to develop management information systems course schedule timetable for secondary level. By developing management systems, it can provide a timetable schedule grid display via web-based technology. Of education management information system development schedule timetable such a system is a system that eliminates the problem of managing schedules timetable instead of the original system. Management information systems course schedule timetable reduce duplication of data. The results from table are appropriate. Course plan that is valid instruction and facilities for instructors to complete a mission that cannot be taught and users to search results timetable through web based technologies [1],[2] are practical.

B. System Analysis and Design

Class scheduling management system, will require analysis and design system as the following steps:

Context Diagram is the process that provides an overview of the work flow of data in the highest level and indicates the path and level data from flow diagrams, and so on, and also defines the scope of the system to analyze the needs of the system as Fig. 1

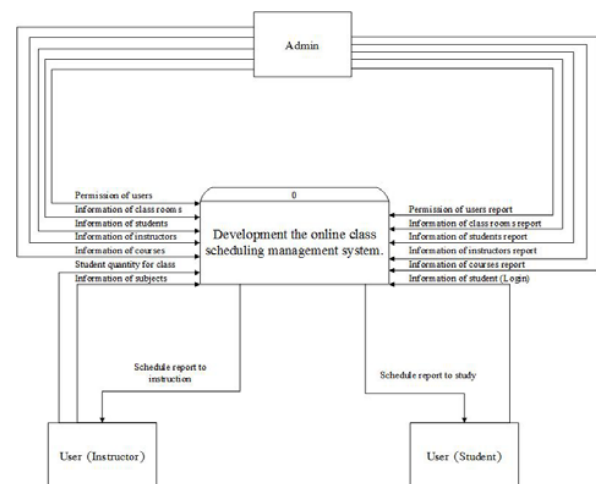


Fig. 1 Context Diagram of development the online class scheduling management system

Administrators of the system can manage all system to manage in a part of program, a user's problem, and can check details and effective of system and database.

Users are students of the system who can search information about timetable themselves each semester. Users are instructors of the system that can search information about timetable of them by date. And, can add information to management timetable themselves. User is the head of major who can check all timetable of major. In system have 4 processes can explain as following details:

Process No.1.0- Process of study plan management, a part of administrator with the purpose of filling study plan information into the system and backup to database.

Process No.2.0- Process of timetable management, process and manage information from users filling and showing results to users.

Process No.3.0- Process of users' management, which is set permission for users to use and manage system.

Process No.4.0- Process of Information backup to database system, is the effective of database system.

IV. CONCLUSION AND DISCUSSION

A. Results of Systems

The development of the online class scheduling management system by Webbased Application develops program using PHP language and database system using MySQL in the working process of the application of this system can provide several instructors to schedule simultaneously. Therefore, instructors can manage timetable by themselves, and check their timetable with searching and students can check and also publish a timetable and download other documents associated with the system immediately online. To fix the timetable, it is complicated and must be considered several factors depending on conditions and the number of courses. This also depends on the physical characteristics of each class. It will be much easier to change from manual to online one. New technology allows all users to save more time and ease their lives.

Schedule ID	Year of Edu	Year of course	Room	Building	Semester	Subject	Date	Time	Delete
049	2556	2556	3635	36	1	Customer Relationship Management	Fri	08:00 - 12:00 AM	
047	2556	2556	3644	36	1	Introduction of Information Science	Thu	01:00 - 04:00 PM	
045	2556	2556	3534	35	1	Information Library skills	Wed	02:00-05:00 PM	

Fig. 2 Timetable Management System Details of the timetable by selecting the data to match with user requirements

Schedule ID	Year of Edu	Year of course	Room	Building	Semester	Subject	Date	Time	Delete
049	2556	2556	3635	36	1	Customer Relationship Management	Fri	08:00 - 12:00 AM	
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045	2556	2556	3534	35	1	Information Library skills	Wed	02:00-05:00 PM	

Fig. 3 Timetable Management System Details of the Timetable by Selecting the Data to Match with User Requirements

Day	Subject	Lecturer
Monday	IFM1101 Introduction	Wipada Chauchan
Tuesday	IFM1203 Internet Program	Rattaporn Krasavalla
Wednesday	IFM1108 Customer Relationship Management	Jarumon Nakhong
Thursday	IFM1103 Mathematics for Information Science	Pornasarn Chaiyap
Friday	IFM1105 Information Library Skills	Wipada Chauchan
Saturday		

Fig. 4 Timetable management system Users are instructor can set and manage timetable by themselves

Schedule ID	Year of Edu	Year of course	Room	Building	Semester	Subject	Date	Time	Delete
049	2556	2556	3635	36	1	Customer Relationship Management	Fri	08:00 - 12:00 AM	
047	2556	2556	3644	36	1	Introduction of Information Science	Thu	01:00 - 04:00 PM	
045	2556	2556	3534	35	1	Information Library skills	Wed	02:00-05:00 PM	
041	2556	2556	3546	35	1	Mathematics for Information Science	Tue	02:00-05:00 PM	
038	2556	2556	3634	36	1	Introduction to Programming and Algorithms	Mon	08:00-12:00 AM	

Fig. 5 Timetable Management Result System to Process Timetable from Users (Managed and Display Results)

Figure 6 shows a screenshot of the 'Hello: Wipada Chaiwan (Lecturer)' interface. It displays a search bar with fields for 'Year of Edu' (2014), 'Semester' (semester 1), 'Year of Course' (2014), and 'Section' (sec01). Below the search bar, there is a table showing the timetable for Monday and Tuesday. The table includes columns for the day, course name, room number, and time slot. For Monday, the course is 'IPM101 Introduction to Programming and Algorithms' in Room 3535 from 08:00 - 12:00 AM. For Tuesday, there are two courses: 'IPM103 Mathematics for Information Scientists' in Room 3531 from 08:00 - 11:00 AM, and 'IPM105 Information Literacy Skills' in Room 3541 from 11:00 AM - 02:00 PM. The interface also includes a sidebar with links to various university resources and a footer with the university name and logo.

Fig. 6 Timetable Management Result System to Process Timetable from Users (Managed and Displayed Results in All of Week Date)

Figure 7 shows a screenshot of the 'Checking Class Schedule and Timetable' interface. It displays a search bar with fields for 'Semester' (semester 1) and 'Year of Course' (2014). Below the search bar, there is a table showing the timetable for Monday through Saturday. The table includes columns for the day, course name, room number, and time slot. For Monday, the course is 'IPM101 Introduction to Programming and Algorithms' in Room 3535 from 08:00 - 12:00 AM. For Tuesday, there are two courses: 'IPM103 Mathematics for Information Scientists' in Room 3531 from 08:00 - 11:00 AM, and 'IPM105 Information Literacy Skills' in Room 3541 from 11:00 AM - 02:00 PM. The interface also includes a sidebar with links to various university resources and a footer with the university name and logo.

Fig. 7 Checking Timetable System Allowing Students to Check Their Timetable in Each Semester

Figure 8 shows a screenshot of the 'Checking Class Schedule and Timetable' interface. It displays a search bar with fields for 'Semester' (semester 1) and 'Year of Course' (2014). Below the search bar, there is a table showing the timetable for Monday through Saturday. The table includes columns for the day, course name, room number, and time slot. For Monday, the course is 'IPM101 Introduction to Programming and Algorithms' in Room 3535 from 08:00 - 12:00 AM. For Tuesday, there are two courses: 'IPM103 Mathematics for Information Scientists' in Room 3531 from 08:00 - 11:00 AM, and 'IPM105 Information Literacy Skills' in Room 3541 from 11:00 AM - 02:00 PM. The interface also includes a sidebar with links to various university resources and a footer with the university name and logo.

Fig. 8 Timetable Management Result System to Process Timetable from Students (Searched and Display Results)

B. Results of Users

Conclusion of the experts' assessment found that 1) the processes and procedures of the timetabling system online found that some performance is very good and some are good.

TABLE I
SUMMARY OF EFFECTIVE EVALUATION OF 4 SIDES SYSTEM FROM EXPERTS

Evaluation descriptions	Effective levels			No.
	\bar{X}	S.D.	Qualitative Average mark	
1. User demand ability	3.63	0.79	Very Good	1
2. Correctness of system operation	3.44	0.65	Good	3
3. Convenience and easy for system use	3.35	0.66	Good	4
4. System Security	3.58	0.66	Very Good	2
total	3.50	0.67	Good	

TABLE I reveals effectiveness of 4 ways system, experts said total effective are in very good level ($\bar{X}=3.50$) in item consideration, first level is in User demand ability in very good level ($\bar{X}=3.63$)

TABLE II
SUMMARY OF EFFECTIVE EVALUATION OF 4 SIDES SYSTEM FROM USERS

Evaluation descriptions	Effective levels			No.
	\bar{X}	S.D.	Qualitative Average mark	
1. User demand ability	3.52	0.67	Very Good	3
2. Correctness of system operation	3.41	0.56	Good	4
3. Convenience and easy for system use	3.60	0.60	Very Good	2
4. System Security	3.63	0.55	Very Good	1
total	3.54	0.54	Very Good	

TABLE II reveals effectiveness of 4 ways system, users said total effective are in very good level ($\bar{X}=3.54$) in item consideration, first level is in System Security in very good level ($\bar{X}=3.63$)

In conclusion, users recommends about system were 1) System should have more functions to use, and 2) System should have Graphic User Interface that more interesting.

Research indicated that the samples were practically used in the research of experts of 5 members and users of 50 members from department of Social Science, Faculty of Humanities and Social Sciences Suan Sunandha Rajabhat University.

V. SUGGESTIONS

- 1) The improvement of the visibility of the application form to the appropriate size must be considered.
- 2) Additional system should be developed to cover all aspects of teaching.

VI. RESULT USE TO BE BENEFITS

- 1) The system support in the online timetable for the Department of Social Sciences.
- 2) The trend to support system in the online timetable for other department.

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