



CONFERENCE PROGRAMS AND ABSTRACT

**The 3rd FIRST 2019 INTERNATIONAL CONFERENCE
FORUM IN RESEARCH, SCIENCE, AND TECHNOLOGY
OCTOBER 09-10, 2019
*Palembang, Province of South Sumatera
Indonesia***

Organized by :



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PREFACE

The 3rd FIRST 2019 (Forum in Research, Science, and Technology) International Conference was initiated and organized by State Polytechnic of Sriwijaya in collaboration with Management and Science, University (MSU), Malaysia and National Chin-Yi University of Technology, Taiwan. The theme of the conference was “Integration of Advanced Technology to Enhance Social Welfare”. The 3rd FIRST 2019 International Conference facilitated the participants from all over the world to meet face to face to open chances in establishing connection and collaboration among them. It was not only for the researchers in academics, but also in industries and governments. This conference became an effective media to link the researchers from many parts of the world conference, for exchanging, sharing, following up and discussing the results of the latest research, industry’s needs, and government regulatory policies. The 3rd FIRST 2019 International Conference became worthwhile platform for researchers to present their finding in the areas on multidisciplinary of Engineering and Science (Track 1), Computer Science and ICT (Track 2), and Social Science (Track 3). It has also provided an opportunity for the professionals and researchers to learn and share about the latest development and research in those 3 tracks.

The 3rd FIRST 2019 International Conference attracted so many authors not only from Indonesia but also from other countries, such as Japan, Taiwan, and Malaysia. There were 180 papers were accepted in the 3rd FIRST 2019 International Conference, including 89 papers for Track 1 (Engineering and Science), 46 papers for Track 2 (Computer Science and ICT), and 45 papers for Track 3 (Social Science). In The 3rd FIRST 2019 International Conference, there were 4 keynote speakers and 2 invited speakers. As the keynote speakers, there were Prof. Yasushi Kiyoki, Ph. D from KEIO University, Japan, Prof. Nurul Taufiqu Rochman, M. Eng, Ph. D, From LIPI, Indonesia, Prof. Tjiptohadi Sawarjuwono, M. Ec., Ph. D., Ak, from Universitas Airlangga, Indonesia, and Prof. Win-Jet Luo, from National Chin-Yi University of Technology, Taiwan. As the invited speakers, there were Dr. R. Wisnu Nurcahyo, DVM from Universitas Gadjah Mada, Indonesia, and Assoc. Prof. Dr. Intan Zaurah binti Mat Darus from Universiti Teknologi, Malaysia. The 3rd FIRST 2019 International Conference committee would like to say thank you very much for all the participants and their respected institutions that have supported for the success of the 3rd FIRST 2019 International Conference, and also for all of the guess and sponsors of the 3rd FIRST 2019 International Conference.

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State Polytechnic of Sriwijaya, Indonesia
Dr. Ade Silvia Handayani
State Polytechnic of Sriwijaya, Indonesia
Dr. Marieska Lupikawati
State Polytechnic of Sriwijaya, Indonesia

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The Design Of The Semester Exam Scheduling Application At The State Polytechnic Of Sriwijaya

Nita Novita¹, M Aris Ganiardi², Indri Ariyanti³, and Delta Khairunnisa⁴

^{1,2,3,4}Informatics Management Department, Politeknik Negeri Sriwijaya, Srijaya Negara Street, Palembang, 30139, Indonesia

email:

¹nita_novita_mi@polsri.ac.id, ²marisg2010@gmail.com, ³indri@polsri.ac.id, ⁴delta.khairunnisa@gmail.com

Abstract. Scheduling a semester exam at Sriwijaya State Polytechnic is an activity that is always done at the end of each semester. To meet the needs of preparing for the semester exam schedule requires special time and attention so that the exam schedule can be arranged properly. Preparing the semester exam scheduling will be better by using a computer application, so that the leadership and administration can more easily arrange the semester exam scheduling. In addition students and examiners can find out the exam schedule that must be done through the application. But the semester exam scheduling application is not yet available at educational institutions. Before building a good semester exam scheduling application requires a semester exam scheduling application design, so this design can meet all the needs needed when building an application. For this reason, this study aims to build the design of semester exam scheduling applications that can be used by admins, leaders, students and supervisors.

Keywords: Design, Scheduling, Semester Exams

1. Introduction

Technology is a necessity in this information age, Technology is a very important requirement today. To use technology properly requires understanding and skills in the use of machine tools, the use of information equipment, the use of technical processes that can transform raw materials into finished goods and convert data into information. Thus technology actually converts inputs into outputs that are beneficial to institutional management.

Sriwijaya State Polytechnic (Polsri) as an educational institution faces the challenges of the industrial revolution 4.0, with the rapid development of information and communication technology. This development has caused changes in various sectors of life, from changes in activities carried out manually to an automated system. This change is a challenge for the Sriwijaya State Polytechnic to be able to make valuable changes in facing the challenges of information technology.

Innovation and application of academic management and non-academic management using information technology are needed by the Sriwijaya State Polytechnic in order to compete in the era of globalization. As a vocational education, Sriwijaya State Polytechnic applies learning in theory and practicum. Implementation of learning in theory by 40% and learning in practice by 60%. Assessment



of learning outcomes is obtained from the completion of the exercise, independent assignments and group assignments, and completion of semester exams.

At the end of each semester, students will take the semester exams specified by the Sriwijaya State Polytechnic according to the applicable academic calendar. The implementation of semester exams must be scheduled and arranged properly from the number of examinees in the room, from the division of supervisor exam schedules, and in terms of the space that will be used for semester exams. The design of the exam scheduling application to be made is expected to be able to help and facilitate the Sriwijaya State Polytechnic in conducting semester exam activities ranging from scheduling, monitoring and implementation of the semester exam.

2. Literature Review

There are several previous studies, which the author can make as a reference in the implementation of the research design of this semester exam scheduling application, among others: Researchers [1] help solve problems regarding exam schedules using different exam scheduling techniques in the same room, so that space efficiency can be completed, Researchers [2] who make test schedules use genetic algorithms to make exam schedules. The researcher [3] uses graph coloring techniques in preparing the exam schedule. Researchers [4] who produce exam scheduling use two genetic algorithm techniques, Researchers [5] create test applications to avoid clashes, Researchers [6] develop graphical coloring techniques and genetic algorithms to search for exam schedules and Researchers [7] do optimizations to arrange exam schedules.

The literature used about making system design and application design provided: analysis, design, coding, testing and maintenance. Library related to the PHP programming language and MySQL database, relationship diagrams and data dictionaries. Design a web-based semester exam scheduling application that can be accessed using a computer and cell phone.

Based on the various literatures, this Semester Examination Design Scheduling research at the Sriwijaya State Polytechnic makes a design for applications that can be used by users on computer and cell phone-based websites and the admin can still manage the database to avoid errors in scheduling and making an examination plan to avoid student cheating.

3. Research Methodology

3.1. Problem Formulation Stage

Formulate problems regarding the need for and unavailability of semester exam scheduling applications at Sriwijaya State Polytechnic. Creating this application first requires application design, which then includes the use of applications that can be used by admins, leaders, students and exam supervisors.

3.2. Data Collection and Needs Phase

Making the design of this semester exam scheduling requires data, and need to know the features needed by the party preparing the semester exam schedule and those who can see the information on the semester exam schedule.

For the software development model using a spiral model which has five stages or phases; 1. *Analysis*; a. Needs collection: data which collected is primary and secondary needs. Primary needs come from data taken directly from users and stakeholders of PUS-Polsri software users such as administrative staff, lecturers, students, leaders and experts in the field of science and secondary needs come from data books and the internet. This stage is often referred to as the software requirements acquisition stage. Techniques used to gather needs are interviews, observation, questionnaires, and documentation. The activity of collecting documents in the form of a printout of the semester exam schedule, the list of supervisors, the list of students, the floor plan of the exam and the presence of the semester exam supervisor. Some secondary needs such as research journal references, articles, textbooks that can be a reference in this research. b. Analysis of needs: Needs that have been collected interpret the purpose of the needs obtained. The needs that come from users and stakeholders are

analyzed to determine the priority of their implementation. Interpretation of a need can be in the form of data, boundaries, rules, scenarios, and software functionality. c. Database analysis: cases that have been collected are then formed in accordance with the database format so that they can be entered into a database such as creating case tables, making keys, relations between tables and forming queries. d. Application model analysis: application models that will be used web and mobile based which can later be distributed via the internet. e. Software analysis: the software used is the PHP programming language, MySQL DBMS on the Windows 10 (ten) Operating System. f. Hardware analysis: Analyze hardware requirements for the system such as processor speed, main memory capacity and secondary memory; 2. *Design*; a. Database design: Database design is a continuation of database analysis. Database design is done using MySQL DBMS and making queries that will be used by the system. b. Interface design: Design a GUI (Graphical User Interface) based input and output display using the Eclipse IDE. d. Object Design: Designing program modules in the form of objects that will be used when coding the system. Module design can be in the form of context diagram; 3. *Coding*; 4. *Testing*; 5. *Inspection / Maintenance*.

3.3. *Process of ongoing activities*

The database used in the semester exam scheduling system includes student databases, subject databases, database rooms and database supervisors. The current scheduling system for scheduling semester exams is explained as follows

The leader makes a draft semester exam schedule, then the admin completes the preparation of the schedule in more detail. Admin enters data into the computer in the form of student data, course data, room data, supervisor data and attendance data. After the data is entered into the computer, then it is processed to set the exam schedule. Furthermore, after the admin manages the data and forms the exam schedule and prints the schedule, floor plan, attendance and question labels, students can see the exam schedule and floor plan, supervisors can see the exam schedule and the leader can see the exam schedule.

4. **Result and Discussion**

The system design in this semester exam scheduling uses context diagrams and data dictionaries that describe all entity relationships and tables in the database

4.1. *Context Diagram*

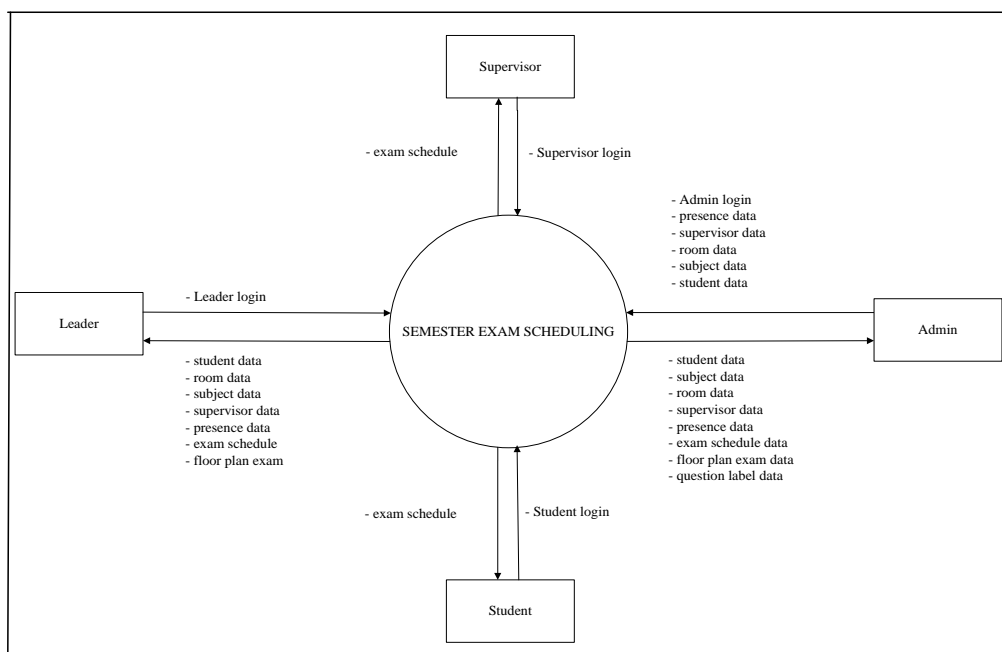


Figure 1. Context Diagram

The picture above shows that the Semester Exam Scheduling system has 4 (four) actors, namely Admin, Students, Supervisors and Leaders. 1. Admin enters the system using a username and password, can input student data, course data, room data, supervisor data, attendance data and can process exam schedules, exam plans and question labels; 2. Students log in using the Student Identification Number (NIM), can see information on the exam schedule and the layout of the examination room; 3. Supervisors log in using the Employee Identification Number (NIP), can see the exam schedule information; 4. Leaders log in using Employee Identification Number (NIP), can see student data, room data, course data, supervisor data, attendance data and exam schedules.

4.2. Data Dictionary

The data dictionary is used to show the tables that are needed and have relationships between tables to build the design of the Semester Exam Scheduling application, namely:

1. Student Data; Student = @Nim, Student_name, Class. 2. Subject Data; Subject = Subject_code, Subject_name, Program. 3. Room Data; Room = Room_code, Room_name, Building_code. 4. Supervisor Data (Lecturer, Staff); Supervisor = @Nip, Supervisor_code, Supervisor_name. 5. Exam Schedule; Exam Schedule= Day/Date, Time, Supervisor_code, Subject_code, Subject_name, Room_code, Class_code. 6. Presence; Presence= Day/Date, Time, Supervisor_code, Supervisor_name, Room, Surrogate_supervisor, Total_hours_watched, Sign.

4.3. Design Interface

Some appearance of the Semester Exam Scheduling Application Design that have been made in this study, including:

The screenshot shows a web interface for a login page. At the top, there is a header with the text 'Welcome | Today: (Day, Date)'. Below the header, the word 'WELCOME' is centered. Underneath, the title 'SEMESTER EXAM SCHEDULING APPLICATION' is displayed. The main content area is enclosed in a large rectangular frame and titled 'LOGIN'. Inside this frame, there is a smaller box containing an 'ACCESS RIGHT' dropdown menu with a downward arrow. Below the dropdown are two input fields: 'USERNAME' and 'PASSWORD'. At the bottom of this inner box is a black button with the text 'LOGIN' in white.

Figure 2. Display Log in Page

The figure 2 shows the Log in Page, which is the display after opening the Semester Exam Scheduling application. This display is for logins for admins, students, leaders and supervisors, by entering a user name and password.

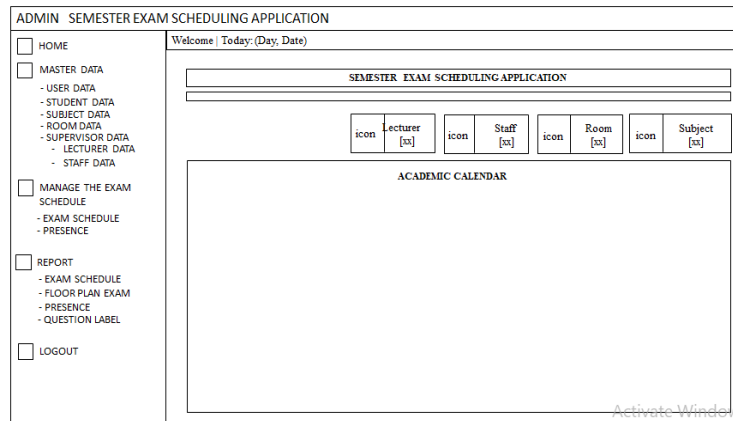


Figure 3. Admin Page

The figure 3 is Display Admin Page, which is a display for a page or work area for the admin in preparing the exam schedule.

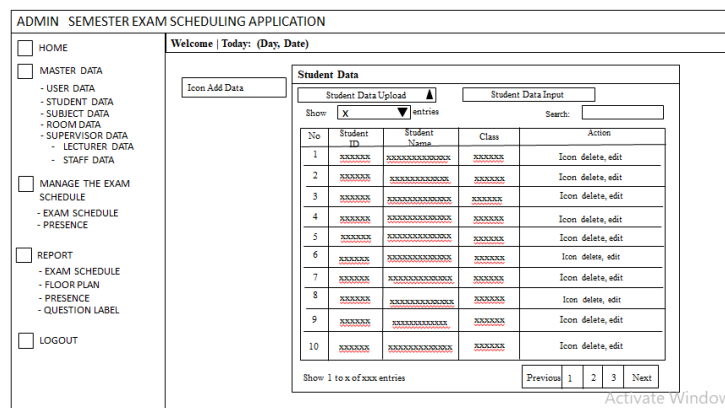


Figure 4. Student Data Page

The figure 4 shows the Student Data Page, which is the display for the page to input student data.

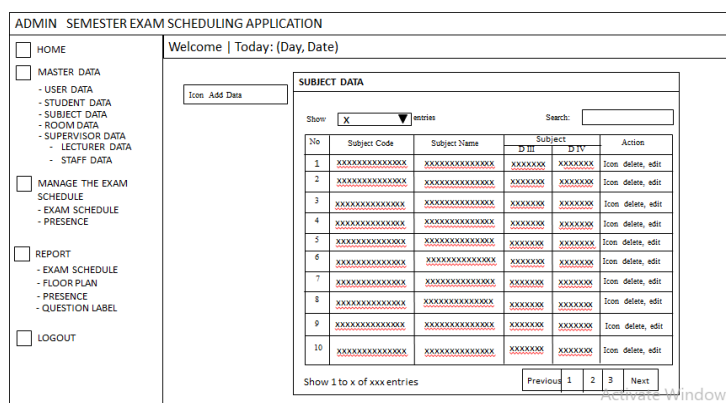


Figure 5. Subject Data Page

The figure 5 shows the Subject Data Page, which is a display to enter course data according to the curriculum.

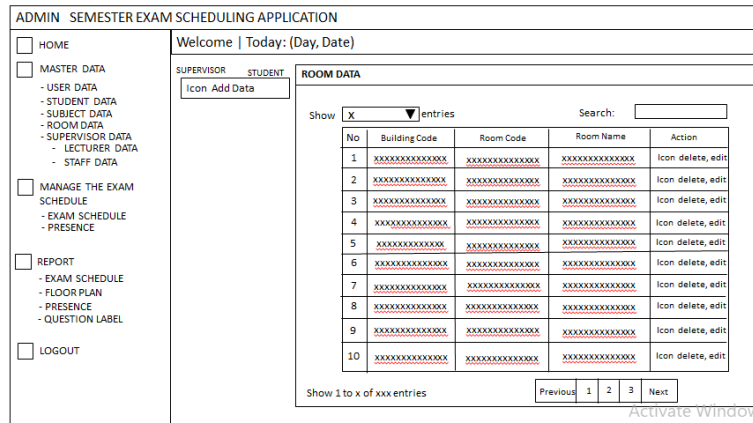


Figure 6. Room Data Page

Figure 6 is Data Display Room Page, which is a display to enter the data space provided for the semester exam.

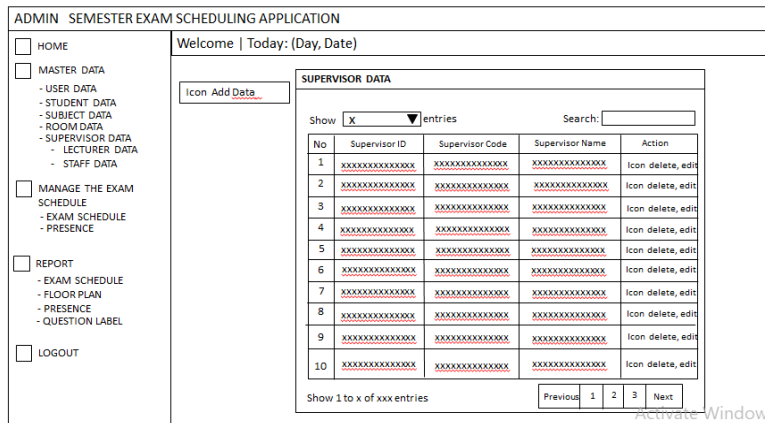


Figure 7. Supervisor Data Page

Figure 7 is the Supervisor Data Page View, which is a view to enter the exam supervisor data.

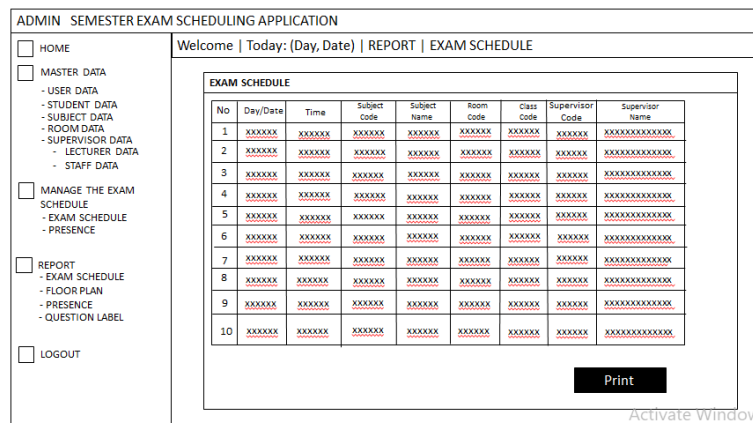


Figure 8. Exam Schedule Report

Figure 8 shows the Exam Schedule Report, which is a view to view and print the exam schedule.

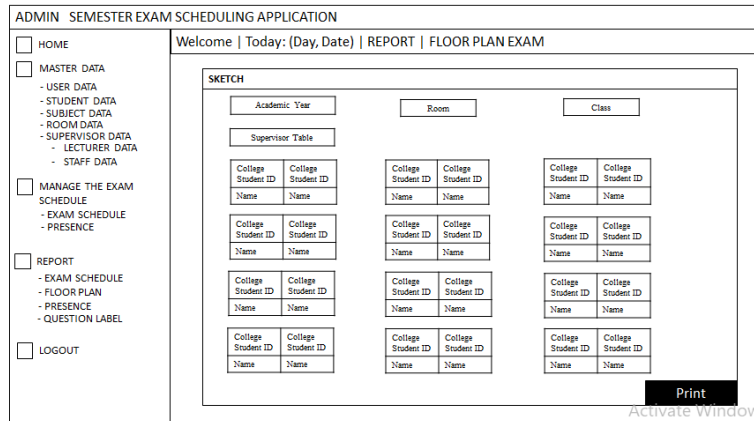


Figure 9. Floor Plan Exam Report

Figure 9 is the Floor View Plan Report, which is a view to view and print the exam plan.

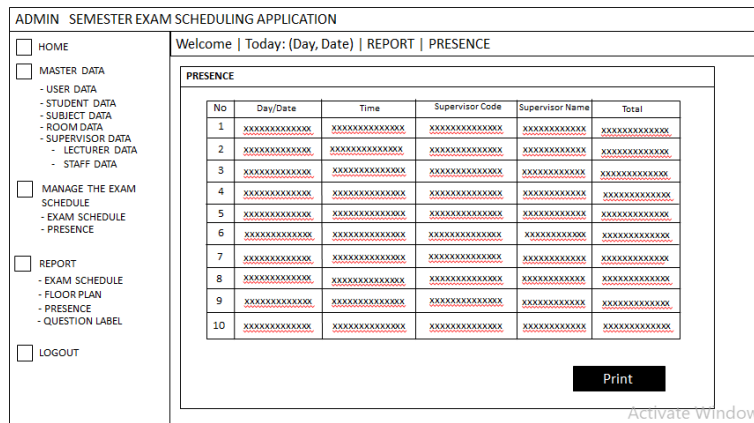


Figure 10. Presence Report

Figure 10 is the Attendance Report Display, which is a display for evaluating the election supervisor test report.

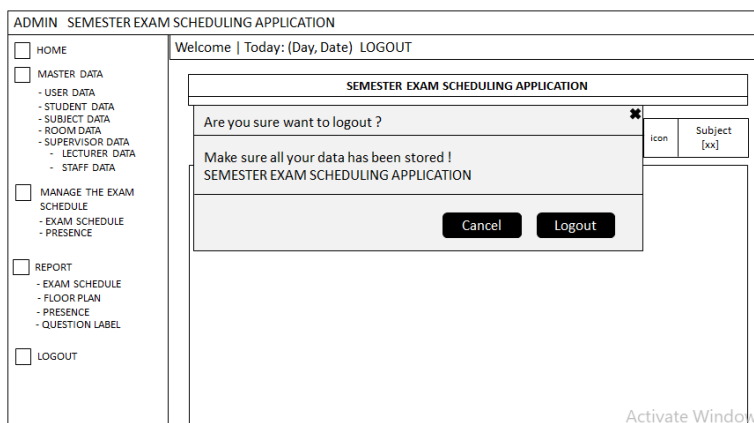


Figure 11. Log out Page

Figure 11 is the Log out Page, which is the display to exit the application system.

5. Conclusions

Based on the discussion that has been stated above, it can be concluded that the design of this semester exam scheduling application for database input, database processing, preparation of exam schedules, and exam schedule reports, room plans and examinations attendance at the Sriwijaya State Polytechnic uses system design in the form of context diagrams, data dictionaries, and use display designs for semester exam scheduling applications.

This design is designed to meet the needs of administrators, leaders, students and exam supervisors (lecturers), and simplifies the preparation of exam schedules to facilitate the implementation and monitoring of semester exams.

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