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**COLLEGE OF COMPUTER**

**Software Engineering Department**

**INFORMATION SYSTEMS MAJOR**

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Class schedulesالجداول الدراسية

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# Introduction

## 1.1 Introduction

“Class Schedules” is a system that aims to address the growing challenges facing academic institutions in managing schedules efficiently and flexibly. In today’s era, modern educational environments require precise and flexible organization that allows teachers and students to make the most of the available time. Therefore, this project comes as a response to this urgent need, as it seeks to develop an integrated system that enables teachers and professors to organize their schedules easily and conveniently. The system not only aims to improve scheduling efficiency, but also seeks to create an educational environment that supports innovation and reduces administrative burdens. Through “Class Schedules”, teachers will be able to focus on providing high-quality education, which contributes to improving the learning experience for students. In short, the project aims to facilitate the complex scheduling process and transform it into a smooth and fruitful experience for everyone.

## 1.2 Problem Domain

Educational institutions face numerous challenges when organizing and managing academic schedules. These challenges include sudden changes in course timings, teachers’ and professors’ need to adjust their schedules according to academic and personal requirements, and finding appropriate solutions for classroom allocation. Traditional scheduling methods often lead to delays and disruptions, creating frustration for educators and staff. With the advancement of technology and the need for flexibility among educators, it has become essential to develop a system that addresses these requirements and simplifies schedule management.

## 1.3 Problem Statement

The current process of adjusting academic schedules is inefficient and somewhat complex, making it difficult for teachers and administrative staff to achieve their educational goals with ease and flexibility. Traditional solutions, such as paper schedules or outdated systems, require a significant amount of time and effort to make adjustments and often cannot accommodate rapid changes in academic plans. There is a need for a system that offers flexible, user-friendly options, allowing teachers and professors to make necessary adjustments without disrupting the educational process.

## 1.4 Project Objectives:

Develop a flexible and efficient platform for creating, managing, and modifying class schedules.

Provide intelligent solutions to notify users of conflicts or schedule changes.

Offer quick and organized access for students and teachers to their schedules.

Optimize the use of resources like classrooms and lecture times to maximize efficiency.

Enable institutions to generate reports that assist in tracking resource usage and making data-driven decisions.

## 1.5 Scope of Work:

### 1.5.1 Website Development:

Design and build a website that allows users to log in, view, create and manage schedules, including user interface design and database development.

### 1.5.2 User Management:

Administrators: Have full permissions to create, download, edit and manage schedules for all students and teachers.

Teachers: Can view and edit their schedules and receive notifications of changes or conflicts.

Students: Can view their assigned schedules and receive notifications of any updates.

## 1.6 Proposed System

“Class Schedules” is an innovative system designed to address the challenges that teachers and administrators face when managing academic schedules. Through an intuitive user interface, the system enables users to select courses, organize study groups, and reserve classrooms with ease. The system is designed to be responsive to changes, empowering teachers to focus on delivering high-quality education without the complexities of coordinating schedules.

### 1.6.1 Objectives

* To provide an efficient and fast platform for managing academic schedules, reducing the time and effort required for adjustments.
* To enhance teachers’ and administrators’ productivity by providing tools to support rapid decision-making based on dynamic academic requirements.
* To optimize the use of resources, such as classrooms and facilities, contributing to an improved learning environment.

### 1.6.2 Proposed System Features

* User-Friendly Interface: A simple interface that makes it easy for teachers and administrators to understand and use without extensive training.
* Flexible scheduling options: Users can choose courses, select classrooms without overlap, organize study groups, and allocate available resources according to their needs.Real-Time Adjustments: The ability to make direct changes to schedules without needing to redo work or rely on complicated processes.
* Integrated Resource Management: The system efficiently tracks the use of classrooms and study spaces, preventing conflicts and ensuring maximum resource utilization.

## 1.7 Project Methodology

The project will follow the Agile methodology, which allows for continuous improvements and adjustments based on regular feedback from users. The project involves several core phases:

* Initial Analysis to accurately define requirements.
* Design Phase to build the system structure that provides an excellent user experience.
* Development to create the system with its core features, followed by testing to ensure efficient performance.
* Launch and Evaluation to monitor the system’s performance and update it based on user feedback.

# System Analysis

## 2.1 Stakeholders Analysis:

The system aims to serve several key stakeholders, including:

**Teachers and Doctor**

who will benefit from tools that help them organize their schedules and adjust lesson plans as needed.

**Administrators in educational institutions**

who rely on the system to simplify resource allocation and prevent scheduling conflicts.

**Students indirectly**

as the system will provide them with well-organized schedules that minimize overlaps and improve learning efficiency.

## 2.2 Data Collection and Analysis:

This phase involves gathering information through:

### 2.2.1 Questionnaire

We conducted questionnaire to explore the needs and priorities of teachers, students, and administrators in managing schedules regarding the system, which helped us gather valuable insights into the features and functions they consider essential. Through these questionnaire, we were able to identify the important requirements from the teachers’ perspective, which will help guide the design process of the system in a way that meets their aspirations.

Here are the charts that clearly summarize the questionnaire results:

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Figure 2.1: Questionnaire

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A blue circle with red triangle and orange triangle

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Figure 2.2: Questionnaire

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A colorful pie chart with numbers and text

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Figure 2.3: Questionnaire

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Figure 2.4: Questionnaire

### 2.2.2 Analysis of Existing Practices

In our analysis of existing practices, we conducted an in-depth study of traditional scheduling systems to identify the challenges and obstacles currently faced by users. This study included a comprehensive review of conventional methods for managing class schedules and a detailed analysis of user feedback on common issues. Through this process, we identified several core obstacles, such as the difficulty of making quick adjustments, the limited flexibility in customizing schedules to meet teachers' needs, and the lack of an efficient system for booking classrooms.

This analysis played a crucial role in guiding the design of our new system to address these requirements and overcome existing obstacles. By focusing on flexibility, ease of use, and providing essential features, the proposed system is specifically designed to streamline the class scheduling process and better meet user needs.

## 2.3 Project Requirements:

### 2.3.1 Function Requirements:

**Login:**

- The teacher must be able to log in using a username and password.

- The system verifies the validity of the login credentials before granting access.

**View Available Subjects:**

- The teacher should be able to see all available subjects that can be taught.

- Details for each subject should include:

- Subject name

- Available times

- Number of enrolled students

**Manage Schedule:**

- The teacher must be able to add subjects they will teach to their schedule.

- The system should allow for modifications to the schedule by adding or removing subjects.

- The system should provide a warning if there are any time conflicts between subjects.

**View Schedule:**

- The teacher should be able to view their schedule with details of the enrolled subjects.

**Generate Reports:**

- The teacher must be able to generate reports on the subjects they have taught and the number of enrolled students in each subject.

**Notifications:**

- The teacher should receive notifications regarding any changes to the schedule or subjects.

### 2.3.2 Non-Functional Requirements

**Usability:** No usability requirements

**Performance:** The system should respond to basic operations, such as creating and modifying tables, within 2-3 seconds, and handle up to 10,000+ concurrent users while maintaining stable performance, especially during peak times such as the start of classes. To achieve this, optimization techniques such as caching and indexing should be implemented to speed up performance and increase data access efficiency.

**Reliability:** No reliability requirements

**Look and Feel Requirements:** The system should be consistent in colors and fonts in line with the identity of the academic institution, with a simple and modern design that is easy to read and reduces cognitive load. The design should also be responsive to display well on tablets and smartphones.

**Portability:** The system should be compatible with popular browsers such as Chrome and Safari, as well as being responsive and mobile-friendly, to ensure a smooth and efficient user experience across platforms.

# Design

## 3.1 System Interfaces:

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Figure 3.1: Register page

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Figure 3.2: Login In page

**A screenshot of a computer

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Figure 3.3: View Schedule page

**A screenshot of a computer

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Figure 3.4: Manage Schedule page

**A screenshot of a computer

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Figure 3.5: Select subject page

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Figure 3.6: Select group page

**A computer screen shot of a computer

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Figure 3.7: Select room page

**A screenshot of a computer

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Figure 3.8: Notifications page

**A screenshot of a computer

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Figure 3.9: Schedule view page after modification

## 3.2 Use Case Diagram:

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Figure 3.10: Use Case Diagram