Student Management System
Emmanuel Mendoza
11/2/2024
Jafrina Jabin
INFO-C 450: System Design

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Problem Statement

With the rise in internet connectivity, more educational institutions are adopting online focused learning models. Students tend to face growing challenges with navigating these online platforms partially due to the unfamiliarity, but also in part because of the complexity of the different portals used to section off online resources. As a result, this may lead to frustration and possibly a decrease in academic performance. This proposal aims to outline solutions through the development of a Student Management System directed at streamlining the overall experience in a user-friendly format.

Objectives of the System

The Student Management System (SMS) is designed with the goal of improving the academic experience both for students and administrators by presenting a uniform platform for managing student related data and key processes.

Simplification of Student Enrollment: Provides a user-friendly platform with simplified navigation in mind to aid new and returning students to manage course registrations.

Monitoring Performance: Enabling students to track their past and current academic progress in real-time via detailed grade reports, assessments, assignments and due dates, and feedback.

Efficient Communications: Creating direct messaging channels between students, instructors, and administrative staff in order to facilitate a seamless line of communication.

Administrative Automation: Reducing tasks such as attendance tracking, scheduling, and course planning to reduce the overall workload of educators and administrators.

Online Guidance: Offer guidance and tutorials coupled with a simplified dashboard to aid students unfamiliar with the online platform to adapt quickly using navigation aid.

Customers of the System

Students: Undergraduate and graduate students enrolled in online or hybrid learning courses

Instructors: Faculty members which manage course content, grading, and communication.

Administrators: Acedemic and Administrative staff involved in course scheduling, enrollment, scheduling, attendance tracking, and reporting.

System Requirements

The Student Management System must be secure, accessible, and user-friendly to aid in ease of navigation. The following are key requirements that must be met:

User Authentication: Secure login with role-based access given to students, teachers and administrators.

Course Registration Module: Allow students to search for and enroll in courses that apply to their degree map.

Academic Monitoring: Tracking grades, assignments, and attendance in real-time.

Communications: Tools to enable direct messaging between students and faculty.

Content Management: Allow teachers and Administrators to upload resources and course materials.

Reporting Systems: Providing analytical tools to generate progress reports, attendance records, course grading, and other relevant information.

Project Planning

Software Requirements:

- Operating systems: Windows, macOS, and Linux.
- Browser Compatibility: Chrome, Firefox, Safari, Edge
- Backend Technologies: Node.js
- Frontend Technologies: HTML5, CSS3, JavaScript, React.js
- APIs

Hardware Requirements:

- Servers to host the platform, scalable according to the number of users.
- Cloud storage for managing course materials and data backing.

Network Requirements:

- High-speed access for users to ensure the system functions optimally for low and high bandwidth connections.
- Secure Hosting environments with SSL encryption to protect data

Development Approach

- Programming Language: JavaScript (Node.js for backend to help with running a JavaScript, React.js for frontend) (Softude, 2024)
- Database: postgreSQL for handling student data via structured data relationships. (PostgreSQL was chosen because it handles data more efficiently and has better performance.) (AWS, n.d.)
- Framework: Express.js for building the backend API (This framework tends to work well with APIs) and React.js for frontend interface (helps build interactive elements on websites). (Softude, 2024) (James, 2023)
- Cloud Infrastructure: Amazon Web Services for hosting the platform and managing backup data.
- Security: Implement Google Authenticator for secure user authentication, and SSL encryption for data protection.

Development Plan

Week 1 – 2: Identify user needs through targeted surveys and interviews with students, faculty, and administrators. Finalize system requirements and data sources.

Week 3 – 6: Design a UI mockup and system architecture. Create a database schema for storing student, course, and grading data.

Week 7 – 12: Develop backend API with Node.js and postgreSQL. Create a responsive front end with React.js. Implement Authentication and user role management.

Week 13 – 16: Conduct unit and system integration tests. Beta test and gather feedback.

Week 17 – 19: Deploy the system with AWS and Provide session training for faculty and students.

Post Support: Provide maintenance, updates, and support.

Customer Problem Statement

"As the number of students increase and rely on online platforms for their education. Often times they will face challenges in navigating multiple systems for tasks such as enrolling in courses, tracking academic performance, and accessing essential resources. Many students can find these systems overwhelming, particularly those unfamiliar with technology, leading to missed deadlines, confusion, and gaps in communication. Students need a centralized, user-friendly platform that simplifies course registration, grade monitoring, and communication with instructors, enabling them to focus on learning without unnecessary technical obstacles."

Glossary of Terms

Student profile: A collection of personal and academic information specific to each student, including their enrolled courses, grades, attendance records, and contact information.

Course Registration: The process in which students enroll in specific courses for a given academic term, selected from available classes.

Academic Progress: A summary of a student's performance in their enrolled courses, typically including grades, completed assignments, and attendance.

Dashboard: The main page where students, faculty, and administrators access relevant information such as courses, schedules, dates, grades, and notifications.

Role-Based Access Control (RBAC): A system feature that assigns different levels of access and permissions to users based on their roles such as student, teacher, or administrator.

Communication Module: A feature that allows direct messaging between students, teachers, and administrative staff to open a line of communication regarding academic matters.

Assignment Submission: The process in which students submit their coursework online through the system for teacher grading and feedback.

Notification System: Automated alerts sent to users about important events such as upcoming deadlines, new grades, or course announcements.

Grading System: A module where teachers input grades for assignments and exams, which then become visible to students in their academic progress section.

Attendance Tracker: A tool that records students' attendance in both in-person and online classes, making the data available to teachers and students.

Student Feedback: The feature that allows students to provide feedback on courses, instructors, or the system itself, aimed at improving the educational experience.

Course Materials Repository: A centralized location where teachers upload resources such as lecture slides, readings, lecture recording, and assignments for students to access.

Administrator Panel: The interface used by administrative staff to manage student records, course schedules, and other academic-related tasks.

Grade Report: A detailed summary of a student's academic performance for a given term or course, often provided as a transcript.

Learning Pathway: A personalized academic plan that guides a student through course selections and academic goals based on their chosen major or program.

Enrollment Status: The current standing of a student in relation to their academic courses (i.e. enrolled, waitlisted, withdrawn).

Functional Requirements

No.	Priority Weight	Description
REQ-1	High	The system should allow students to securely log in using their credentials (Username, Password, Two-Factor Authentication).
REQ-2	High	Students should be able to search for courses, view available classes, and enroll online.
REQ-3	High	The system should track and display students' grades, assignments, and academic progress in real-time.
REQ-4	High	Teachers should be able to input, update, and manage grades for assignments and exams.
REQ-5	Medium	They system should provide a communication feature to allow students, teachers, and administrators to message one another.
REQ-6	Medium	Students should be able to submit assignments directly through the system.
REQ-7	Medium	The system should provide automated notifications for upcoming deadlines, graded assignments, and important events.
REQ-8	High	Teachers Should be able to upload course materials such as lecture slides and video, assignments, and reading material that the student can access.
REQ-9	Low	The system should automatically generate student progress reports at the end of each term
REQ-10	Medium	Administrators should be able to generate reports on student enrollment, academic performance, and course completion.

Nonfunctional Requirements

No.	Category	Priority Weight	Description
NFR-1	Functionality	High	The system should provide secure access control, allowing different roles (student, teacher, administrator) with specific permissions.
NFR-2	Usability	High	The system interface should be intuitive and promote ease of use via a clear dashboard for students and staff to navigate effortlessly.
NFR-3	Usability	Medium	The system should be accessible on mobile devices to allow students the ability to interact with the system from any location.
NFR-4	Reliability	High	The system should have constant uptime to ensure students and staff can access it without disruption.
NFR-5	Reliability	High	Data backups should regularly occur automatically to prevent data loss in the event of failure.
NFR-6	Performance	High	The system should load student records and course information within minimal time to maintain a smooth user experience.
NFR-7	Performance	Medium	The system should be able to support concurrent usage of up to 750 users without performance degradation to maintain a smooth user experience.
NFR-8	Supportability	Medium	The system should provide detailed error logs for administrators to record, diagnose, and fix issues.
NFR-9	Supportability	Medium	The system should support scalability to handle an increasing number of students, teachers, and administrators.
NFR-10	Supportability	Low	The system should be compatible with future updates to academic management tools and third-party integration.

User Interface Requirements

No.	Priority Weight	Description
UI-1	High	The system should have a clear and intuitive dashboard that displays essential information such as enrolled courses, grades, messages, due dates.
UI-2	High	The login page should be simple with clear instructions for account recovery, login, and authentication.
UI-3	High	The system should have a responsive design that ensures functionality across different screen sizes such as desktops, tablets, and mobile devices.
UI-4	High	Navigation menus should be clear and consistent across all pages to create a uniform experience across all pages, allowing users to easily navigate to courses, grades, and communication tools.
UI-5	Medium	The course registration interface should have a user-friendly search and filter feature to allow students to find and enroll in courses effortlessly.
UI-6	Medium	Notifications icons and alerts should be visible on the dashboard to inform users of new messages, deadlines, or announcements from instructors and administrators.
UI-7	Medium	The grade and progress view should display academic performance in a readable format.
UI-8	Low	The color scheme and typography should be clean and minimal to provide accessibility for all users, especially those with visual impairment.
UI-9	Low	The system should have customizable settings that allow users to modify preferences such as colors, notifications, text size, and dashboard layout.
UI-10	Low	The help section or Frequently Asked Questions should be easily accessible on any page, providing quick guidance on common tasks or aid with system navigation for returning and new students.

System Sequence Diagram

Use Case 1: Student submitting assignment

Actors: Student, System

Objects: Assignment Submission Portal

Steps:

1. Student logs in to the system.

2. Student navigates to the assignment submission portal.

3. Student selects the assignment to submit.

4. Student uploads the assignment file.

5. System verifies file format and size.

6. If verification is successful, the system saves the assignment and sends a confirmation

message.

7. If unsuccessful, the system displays an error message for the student to correct the issue.

Use Case Diagram:

Student

System — selectCourse() → Course

login()

displayAssignments()

Assignments Tab

selectAssignment()

verifyFile(fileFormat, fileSize)

File verification ← Assignment Portal

uploadFile()

Successful?

Alt: Unsuccessful

System

System

Resubmit

saveAssignment()

Output

assignmentErrorMessage

assignmentConfirmationMessage

Use Case 2: Teacher grading an assignment

Actors: Teacher, System

Objects: Gradebook

Steps:

1. Teacher logs in to the system.

2. Teacher navigates to the assignment grading section.

3. System retrieves submitted assignments...

4. Teacher selects an assignment to grade.

5. Teacher inputs the grade and feedback for the assignment.

6. System updates the gradebook with the provided grade and feedback.

7. System sends a notification to the student regarding the graded assignment.

Use Case Diagram:

Activity Diagrams

Use Case 1: Student signing up for a course

Initial State: Student logs in and navigates to the course enrollment section.

Actions: The activity begins with the student logging into the system and navigating to the

course enrollment section. Upon arrival, the system displays a list of available courses. The

Students can either search for a specific course or browse through the list. If the desired course is

found, the system presents detailed information about the course, such as its description,

schedule, and prerequisites. The student then selects the course they wish to enroll in. The

system checks whether the student meets the required prerequisites: if the prerequisites are

satisfied, the student can proceed to enroll; if not, the system notifies the student about the unmet

requirements (through an error message). The student then confirms their intention to enroll in

the course. The system updates the student's enrolled courses list and sends a confirmation

message, which the student receives, marking the successful completion of the enrollment

process.

Final State: Student successfully enrolled in the course or receives a message about unmet

prerequisites.

Use Case Diagram:

Student arrives at the course enrollment page.

System displays the list of available courses.

Student searches for a specific course or browses the list.

If the course is found, the system displays course details (e.g., description, schedule, prerequisites)

Student selects the course.

System checks if prerequisites are met:

Attempt to enroll once prereqs are met

If conditions met

If conditions not met

Student proceeds to enroll.

System displays an error message regarding prerequisites.

Student confirms the course enrollment.

System updates the student's enrolled courses and sends a confirmation message.

Student receives confirmation of successful enrollment.

Use Case 2: Teacher uploading course material

Initial State: Teacher logs in and navigates to the course management section.

Actions: The activity starts with the teacher logging into the system and navigating to the course

management section. Upon reaching the page, the system displays a list of courses managed by

the teacher. The teacher selects the relevant course from the list, after which the system presents

various course management options, such as viewing existing materials or uploading new ones.

The teacher opts to upload new course material and proceeds to select the file (e.g., PDF, Word

document, or video). The system then verifies the file's format and size: if the verification is

successful, the system saves the material; if unsuccessful, the system displays an error message,

indicating the issue to the teacher. Upon successful upload, the system confirms the addition of

the new material, making it accessible to students. The teacher receives this confirmation,

completing the process of uploading course material.

Final State: Course material successfully uploaded and accessible to students, or error message

received regarding the upload.

Use Case Diagram:

User Interface Specification

Preliminary Design

Student Uploading assignments:

From the dashboard, click on the assignment due soon widget to be taken directly to the assignment to upload a submission.

Once taken to the desired assignment, the bottom of the page will host the buttons used to upload or link the document to be graded. The button will notify students of the file types accepted as designated by the instructor.

Student

< Back to assignments

Purpose

This document communicates your design solutions and implementation approaches to other stakeholders. In this assignment, you should submit a document to communicate with the instructor. The novelty of the project has higher priorities in grading than the number of use cases.

Content

Functional Requirement Specification:

Generate the use cases from Customer Problem Statements & System Requirements

-Stakeholders (5 points)

Identify people who are interested in the project, such as users, managers, sponsors, etc.

-Actors and Goals (5 points)

Identify the roles of people or devices that will interact directly with the system and specify their types and goals.

Example:

Primary actors:
- Customer: This actor can park the vehicle in the allocated parking space according to the vehicle type and pay for the parking before exit.
- Parking agent: The parking agent will assist the customer and perform all the tasks that a customer can do, such as paying the parking ticket on behalf of the customer.

Secondary actors:
- Admin: This can add, remove, or update a spot, agent, entry/exit panels, and view/update accounts.
- System: This is responsible for giving details of parking spot availability and assigning a parking spot to a vehicle.

Click to see more assignment details...

Rubric
(Click on the requirement to see additional details)

	Stakeholder	5
	Actors & Goals	5
	Use Cases	10
	Use Case Diagram	10
	Class Diagram	20
Total		**50**

Upload File (file type: PDF)   **More upload options**   **Preview uploaded File**

After selecting and uploading the file, it will automatically pop-up the preview screen which is also accessible after uploading. This ensures that the student is presented with the final version of the assignment that the teacher will see to ensure that the file isn't mis-formatted or uploaded incorrectly.

The assignment page will update with a timestamp of when the assignment was uploaded, the current status of the assignment, and future updates once fully graded by the teacher.

FA24 System Design - Module 5 - Funcional Requirements Specification
Due: Sat Oct 12, 2024 11:59 pm

Search

2

Student

◀ Back to assignments

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Click to see more assignment details...

Rubric   (Click on the requirement to see additional details)

	Stakeholder	5
	Actors & Goals	5
	Use Cases	10
	Use Case Diagram	10
	Class Diagram	20
Total		**50**

Submission Details:
Assignment Successfully Submitted on: Oct 12, 2024 11:05 pm
Status: **Pending Review**

Score: 0/50 (Currently under review)
Total Attempts: 1

View or Add Feedback

Upload File
(file type: PDF)

More upload options

Preview uploaded File

Student communications:

From the dashboard, there are two options for messaging fellow students, instructors, and administrators. The first option is for quick chats, this allows students to pop-up a small window on the bottom right of the screen to message users while browsing. This allows seamless messaging while looking at assignments and grades for easier communications regarding group work. This will also aid during live lectures to allow students to share notes. This option will be disabled during testing.

New Messages

2

Instructor Announcements

2

Classes

FA24 System Design

FA24 Data Rep Organization

FA24 DATABASE SYSTEMS

Assignments Due Soon

Class	Assignment	Due Date	Grade Value
FA24 System Design	Module 4 - Customer Problem Statements & System Requirements	Sat Oct 5, 2024 11:59pm	20 points
FA24 System Design	Module 5 - Functional Requirements Specification	Sat Oct 12, 2024 11:59pm	50 points
FA24 DATABASE SYSTEMS	Lab 07	Wed Oct 9, 2024 11:59pm	1 point

Urgent Messages

Scheduled Maintenance Alert 10/5/24

Busar Bill Payment due by 10/25/24

Review and Confirm Contact Details

2 Messages have not been opened in 4 days

Past Assignments

Class	Assignment	Due Date	Grade
FA24 System Design	Module 5 - Quiz	Oct 1 at 11:59pm	15/15
FA24 System Design	Module 4 - Quiz	Sep 28 at 11:59pm	15/15
FA24 System Design	Module 2 - Quiz	Sep 20 at 11:59pm	15/15
FA24 System Design	Module 1 - Quiz	Sep 10 at 11:59pm	15/15

1 2 3 4 5

Quick Chat ✕

Classmates

Sam Addams

Josh Turner

Jade Fisher

Jacob Daniels

Adam Paisley

Jennifer Smith

Michael Dawson

Darnell Weston

Hailey Thompson

Group

Team Red

Me

Hey Jade, I was wondering if you had an update for the project due this weekend. Think we can video chat after class?

Jade Fisher

Sure, I'm actually free for today and had a few issues on what I wanted to write about for my portion so I'd appreciate the help!

Darnell Weston

I actually just finished my own portion so I'd like some feedback. I can also help Jade with figuring out what to write about and finding sources!

Sounds good! Lets meet up then! ▶

The Second option is the conventional messaging which allows users to message anyone on the system and submit attachments such as documents, photos, ect.

Dashboard

Search · 🔔 2 · Student · IU

New Messages	Instructor Announcements	Classes
2	2	FA24 System Design
		FA24 Data Rep Organization
		FA24 DATABASE SYSTEMS

Assignments Due Soon

Class	Assignment	Due Date	Grade Value
FA24 System Design	Module 4 - Customer Problem Statements & System Requirements	Sat Oct 5, 2024 11:59pm	20 points
FA24 System Design	Module 5 - Functional Requirements Specification	Sat Oct 12, 2024 11:59pm	50 points
FA24 DATABASE SYSTEMS	Lab 07	Wed Oct 9, 2024 11:59pm	1 point

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Scheduled Maintanence Alert 10/5/24

Busar Bill Payment due by 10/25/24

Review and Confirm Contact Details

2 Messages have not been opened in 4 days

Past Assignments ⚙

Class	Assignment	Due Date	Grade	Feedback
FA24 System Design	Module 5 - Quiz	Oct 1 at 11:59pm	15/15	No Feedback at this time
FA24 System Design	Module 4 - Quiz	Sep 28 at 11:59pm	15/15	No Feedback at this time
FA24 System Design	Module 2 - Quiz	Sep 20 at 11:59pm	15/15	No Feedback at this time
FA24 System Design	Module 1 - Quiz	Sep 10 at 11:59pm	15/15	No Feedback at this time

1 2 3 4 5

This page allows more options such as pinning, deleting, archiving, and composing messages to specific users across the system. Additionally, students can add files to messages, check announcements, and see grade reports.

Inbox

| Compose | Reply | Delete | Search | Archives | Pin Message |

Keyword Search | Courses

Pinned

Oct 24, 2024
Team Red
Project Progress
↩ Sounds good, Lets meet up...

Oct 20, 2024
FA24 System Design
Assignment Graded

This week

Oct 19, 2024
System Announcement
Maintenance complete

Oct 18, 2024
System Announcement
Maintenance begins at 11:59 and...

Oct 18, 2024
Admin Announcement
Have you signed up for spring...

This Month

September

Team Red   FA24 System Design: Student Lastname, Jade Fisher, Darnell Weston

Student Lastname
Hey Jade, I was wondering if you had an update for the project due this weekend. Think we can video chat after class?

Sent Oct 24, 2024 4:25 pm

Type here
Jade Fisher
Sure, I'm actually free for today and had a few issues on what I wanted to write about for my portion so I'd appreciate the help!

Sent Oct 24, 2024 4:29 pm

Darnell Weston
I actually just finished my own portion so I'd like some feedback. I can also help Jade with figuring out what to write about and finding sources!

Sent Oct 24, 2024 4:38 pm

Type here
Student Lastname
Sounds good! Lets meet up then!

Sent Oct 24, 2024 4:42 pm

Student Lastname
Zoom.link/TeamRed_PrivateRoom

Sent Oct 24, 2024 5:35 pm

I Just sent a link to the zoom meeting room. Hope to see you guys soon!

Teacher Managing Course

From the dashboard, the teacher can use the "Classes Managed" widget to quickly navigate to the class they want to edit, update, or delete materials for. Likewise, they can select the course tool on the side bar at any point to jump back to the course selection page.

Once the desired class is selected, teachers can view, edit, or create assignments, academic materials, or student grades.

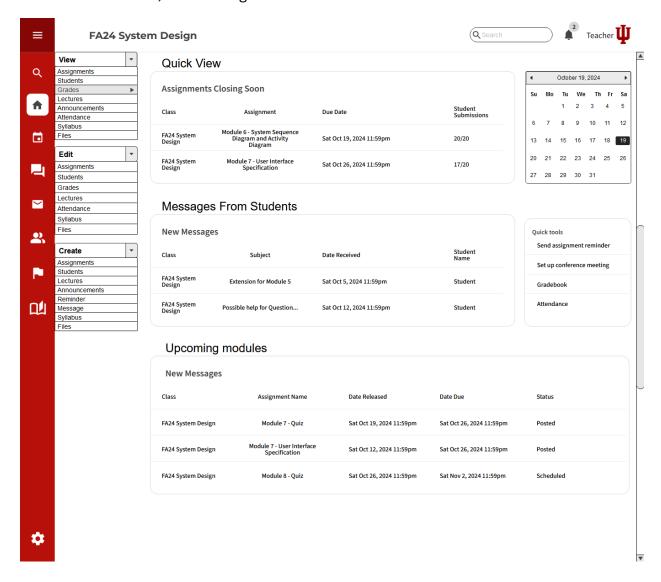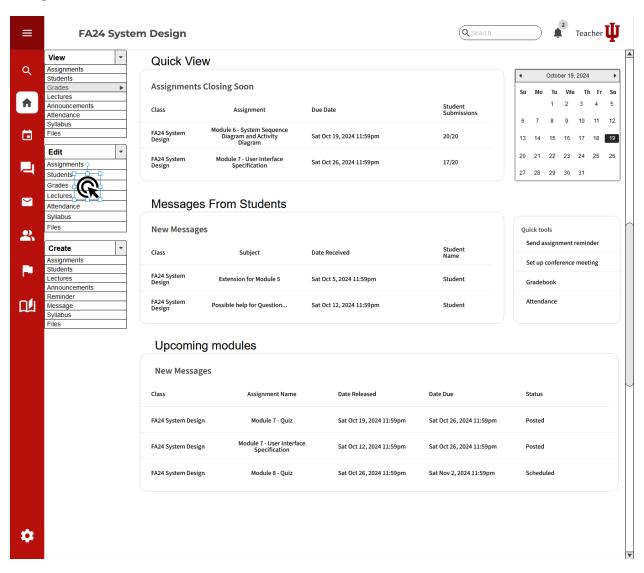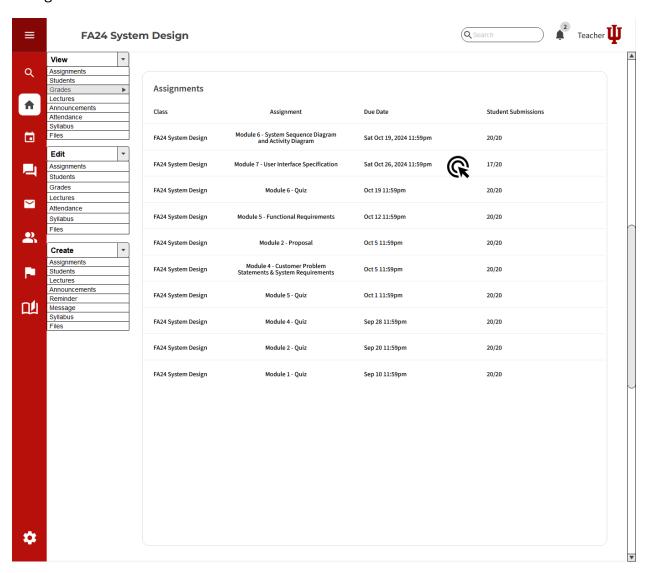**FA24 System Design**

Search   🔔 2   Teacher

View ▾
Assignments
Students
Grades ▸
Lectures
Announcements
Attendance
Syllabus
Files

Edit ▾
Assignments
Students
Grades
Lectures
Attendance
Syllabus
Files

Create ▾
Assignments
Students
Lectures
Announcements
Reminder
Message
Syllabus
Files

Quick View

Assignments Closing Soon

Class	Assignment	Due Date	Student Submissions
FA24 System Design	Module 6 - System Sequence Diagram and Activity Diagram	Sat Oct 19, 2024 11:59pm	20/20
FA24 System Design	Module 7 - User Interface Specification	Sat Oct 26, 2024 11:59pm	17/20

◄   October 19, 2024   ►

Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Messages From Students

New Messages

Class	Subject	Date Received	Student Name
FA24 System Design	Extension for Module 5	Sat Oct 5, 2024 11:59pm	Student
FA24 System Design	Possible help for Question...	Sat Oct 12, 2024 11:59pm	Student

Quick tools

Send assignment reminder

Set up conference meeting

Gradebook

Attendance

Upcoming modules

New Messages

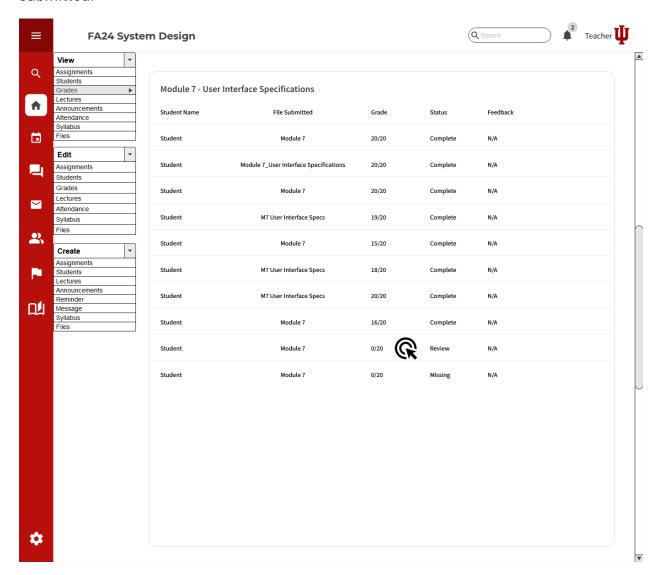| Class	Assignment Name	Date Released	Date Due	Status
FA24 System Design	Module 7 - Quiz	Sat Oct 19, 2024 11:59pm	Sat Oct 26, 2024 11:59pm	Posted
FA24 System Design	Module 7 - User Interface Specification	Sat Oct 12, 2024 11:59pm	Sat Oct 26, 2024 11:59pm	Posted
FA24 System Design	Module 8 - Quiz	Sat Oct 26, 2024 11:59pm	Sat Nov 2, 2024 11:59pm	Scheduled

Teacher Grading

Once in the dashboard for the desired class, the tool bar on the left side of the screen hosts tools the teacher can use to jump directly into managing the class. Here you click on edit grades.
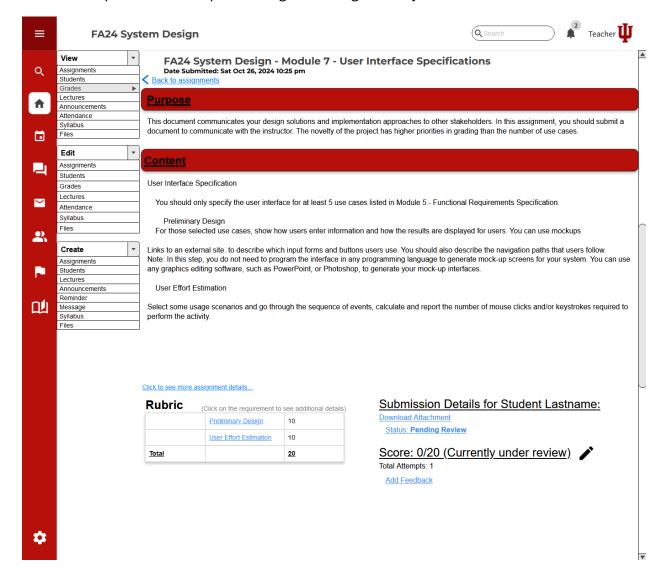
A list will be generated with the assignments that are due, select the assignment to submit new grades.

FA24 System Design

View
- Assignments
- Students
- Grades ▶
- Lectures
- Announcements
- Attendance
- Syllabus
- Files

Edit
- Assignments
- Students
- Grades
- Lectures
- Attendance
- Syllabus
- Files

Create
- Assignments
- Students
- Lectures
- Announcements
- Reminder
- Message
- Syllabus
- Files

Assignments

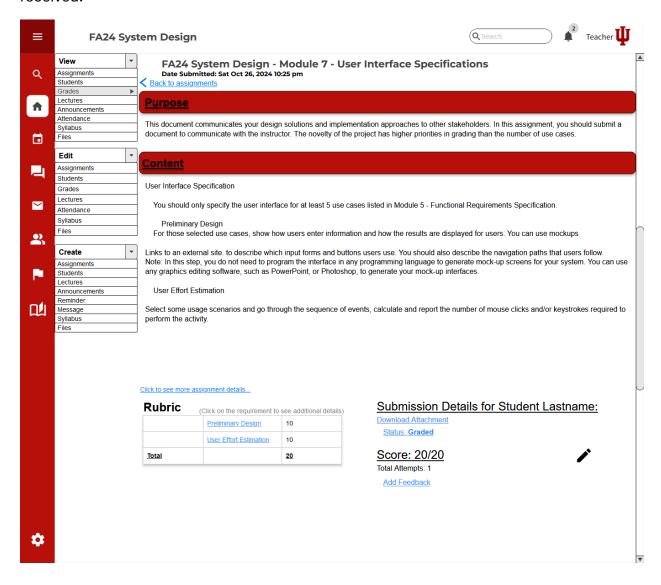| Class	Assignment	Due Date	Student Submissions
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FA24 System Design	Module 6 - Quiz	Oct 19 11:59pm	20/20
FA24 System Design	Module 5 - Functional Requirements	Oct 12 11:59pm	20/20
FA24 System Design	Module 2 - Proposal	Oct 5 11:59pm	20/20
FA24 System Design	Module 4 - Customer Problem Statements & System Requirements	Oct 5 11:59pm	20/20
FA24 System Design	Module 5 - Quiz	Oct 1 11:59pm	20/20
FA24 System Design	Module 4 - Quiz	Sep 28 11:59pm	20/20
FA24 System Design	Module 2 - Quiz	Sep 20 11:59pm	20/20
FA24 System Design	Module 1 - Quiz	Sep 10 11:59pm	20/20

Once the Assignment is selected, a list of all students will be generated. Here you can see which submissions have been graded and which require grading or have yet to be submitted.

The page will display all the details for an individual student with the option to download the file submitted by the student. After downloading and reviewing the student's work, click on the pencil icon to update the grade along with any feedback.

FA24 System Design

Teacher

View
Assignments
Students
Grades
Lectures
Announcements
Attendance
Syllabus
Files

Edit
Assignments
Students
Grades
Lectures
Attendance
Syllabus
Files

Create
Assignments
Students
Lectures
Announcements
Reminder
Message
Syllabus
Files

FA24 System Design - Module 7 - User Interface Specifications
Date Submitted: Sat Oct 26, 2024 10:25 pm
‹ Back to assignments

Purpose

This document communicates your design solutions and implementation approaches to other stakeholders. In this assignment, you should submit a document to communicate with the instructor. The novelty of the project has higher priorities in grading than the number of use cases.

Content

User Interface Specification

You should only specify the user interface for at least 5 use cases listed in Module 5 - Functional Requirements Specification.

Preliminary Design
For those selected use cases, show how users enter information and how the results are displayed for users. You can use mockups

Links to an external site. to describe which input forms and buttons users use. You should also describe the navigation paths that users follow.
Note: In this step, you do not need to program the interface in any programming language to generate mock-up screens for your system. You can use any graphics editing software, such as PowerPoint, or Photoshop, to generate your mock-up interfaces.

User Effort Estimation

Select some usage scenarios and go through the sequence of events, calculate and report the number of mouse clicks and/or keystrokes required to perform the activity.

Click to see more assignment details...

Rubric
(Click on the requirement to see additional details)

	Preliminary Design	10
	User Effort Estimation	10
Total		**20**

Submission Details for Student Lastname:
Download Attachment
Status: **Pending Review**

Score: 0/20 (Currently under review) ✎
Total Attempts: 1

Add Feedback

After grading, the page will update to reflect on the grade submitted by the teacher and the system will automatically send a message to the student, notifying them of the grade received.

User Effort Estimation

Usage Scenario	Navigation	Clicks	Keystrokes
Student submitting assignment	Click Assignment, Upload File, Select File, Exit Preview	4	0
Student using Quick Message	Select Quick Message, Select user to message	2	<50
Student using Messaging Center	Select Messages, Click message to view, Reply or compose message	3	<50
Teacher Manage Course	Click desired class from dashboard, Select from view, edit, and create menu	2	0
Teacher Grading Assignment	Click desired class from dashboard, Select grade from edit menu, Select assignment from list, Select student assignment to grade, Download or view student submission, Select edit icon next to score to update grade	6	<30

These mockups take into consideration that the user entered their email, password, used two-factor authentication, and successfully logged in to follow these steps. Depending on the role of the user (Student, Teacher, Administrator) the dashboard and options available will change, respective to their role.

Project Plan

Future plans for the Student Management System (SMS)

Implement an Admin Role:

     Introduce the admin role with elevated permissions. This user will oversee the entire system, including user management, course creation and reporting functionalities.

Planned Process

User Authentication and Role Management: Modify the authentication system to recognize the admin role and assign specific permissions. Admins should have access to all sections of the system, as well as additional management tools.

Admin Dashboard: Design a centralized admin dashboard that provides a quick overview of system metrics, such as accessing logs and system backup data, total student enrollments, course statistics, and recent activity logs.

User Management: Create a management interface where admins can add, edit, or remove users (students, teachers, and other admins). Admin's can assign roles, reset passwords, and manage permissions as necessary.

Allow the Admin to Create Student Transcripts:

This feature allows admin users to generate official student transcripts. Each transcript will display the student's historical academic record and information, including previous enrollments, grades, GPA calculations, and completed credits.

Planned Process

Transcript Data Compilation: Build a module that compiles relevant student data, such as completed courses, final grades, GPA, and academic standing; into a structured format suitable for a transcript.

Transcript Design and Formatting: Implement a standardized transcript template that includes the institution's branding, student details, and course information. Transcripts should be exportable as PDFs for easy distribution and printing.

Access and Request Mechanism: Enable students to request transcripts via their accounts, which admins can approve and process. Admins should also be able to generate transcripts manually.

View Course Homepages

Enable users (students, teachers, and admins) to access a dedicated homepage for each respective role. The homepage will serve as the central hub, displaying essential course information, announcements, tools and resources.

Planned Process

Course Homepage Layout: Design a consistent and intuitive layout for course homepages. Each homepage should include sections for the syllabus, assignments, grades, announcements, and any course-related resources.

Content Management for Teachers: Allow teachers to upload and organize materials directly to the course homepage, including lecture slides, readings, and multimedia resources such as video lectures.

Navigation and Access Control: Ensure that only enrolled students and authorized faculty can access each course's homepage. Admins can have view-only access to monitor course progress and content.

Create Side Course Views for Quick Access

Implement side navigation views within each course that allow students to quickly navigate to specific sections like Grades, Assignments, and Syllabus.

Planned Process

Side Navigation Panel Design: Integrate a collapsible side navigation panel on each course page that lists essential tabs (Grades, Assignments, Syllabus, Announcements).

Instant Tab Switching: Configure the navigation so that selecting a tab quickly loads the corresponding section without needing to refresh the entire page. This will improve the user experience by reducing page load times and simplifying navigation.

Highlighting Active Tabs: Implement a visual indicator to highlight the active tab or section, making it easier for students to understand which part of the course they're viewing.

Development Timeline Estimation

Phase 1: Implement the admin user role, including access control, admin dashboard, and user management. (2-3 weeks)

Phase 2: Develop the student transcript generation feature, focusing on data compilation, GPA calculation, and formatting. (3-4 weeks)

Phase 3: Create course homepages with modular sections for content like assignments, syllabus, and announcements. (2-3 weeks)

Phase 4: Implement side course views, allowing for quick navigation between course sections. (2-3 weeks)

References

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