OOAD Assignment 1

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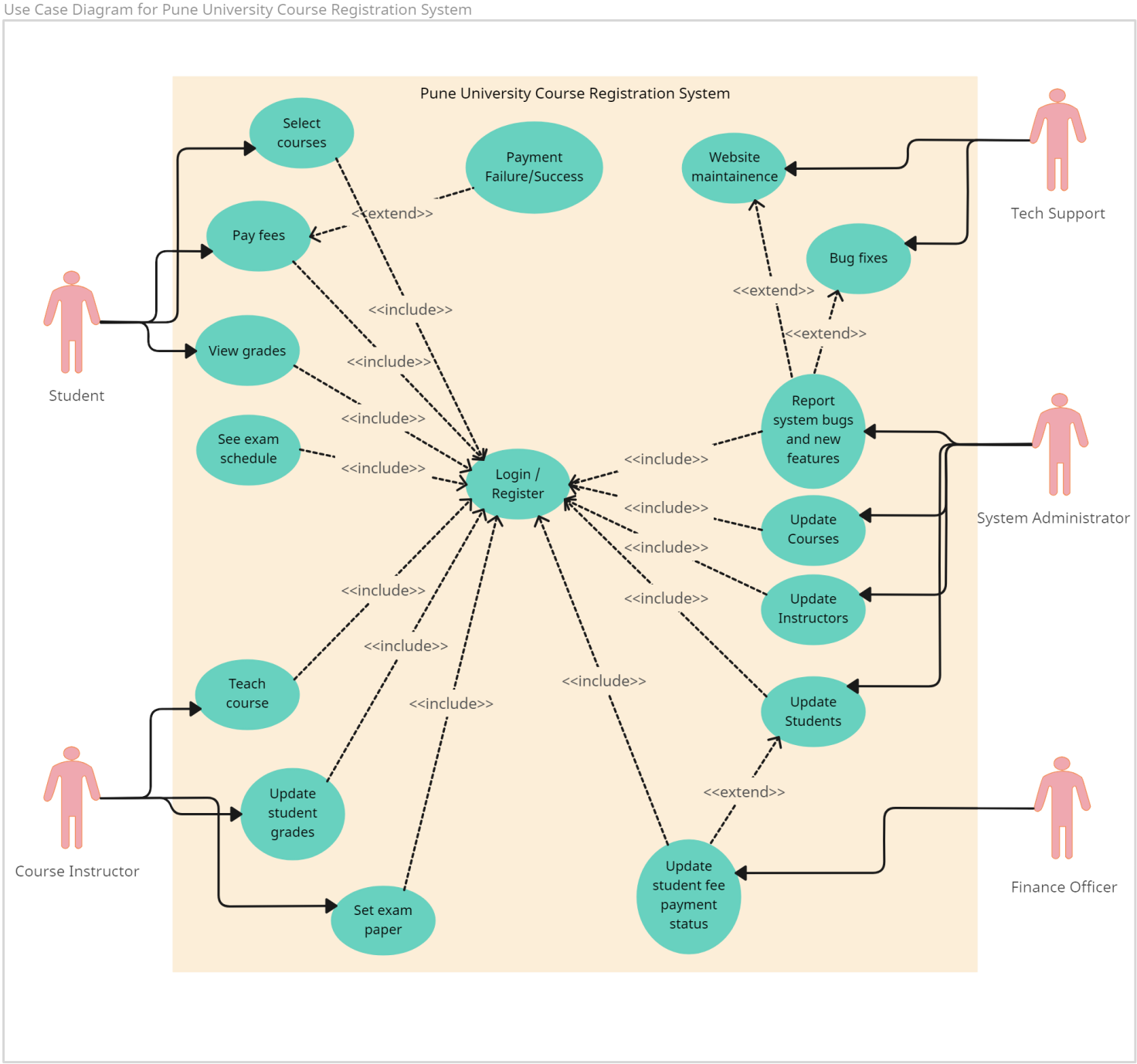
Sumeet Godse

Pune University Course Registration System

1. Use case diagram

Use Case Diagram for Pune University Course Registration System



2. Scenario statement

As the new semester begins, students at the university must register for their courses. Sumeet, a second-year student must register for the new semester. He logs in the system and pays the fees. The finance officer will receive a notification of successful payment and he will update the fee payment status.

The system administrator will now update the student list with Sumeet's details. Now Sumeet can log in the system and select all the relevant courses for the new semester. The system administrator updates the courses and the respective instructors into the portal. He notices a few bugs while updating the instructor details. He then raises a bug for the tech support team. A developer from the tech support team fixes the bug and the system administrator can once again continue with his work seamlessly.

The course instructor teaches the course assigned to her by the administrator. They update the exam schedule and provide updates to the students regularly.

This scenario highlights how different actors (Student, Instructor, Finance Officer, System Admin, Tech support) interact with the system to achieve their objectives within the Pune University course registration system.

3. Casual problem scenario: Challenges in course registration process

As the semester begins, Sumeet begins the process of registering for courses using the Pune University online course registration system. Sumeet has carefully planned a mix of required courses and electives however he faces a few challenges during the process.

On the first day of the registration process, Sumeet logs in early to secure a spot in the most popular elective course. However, the system is overloaded by several students trying to register to the same course simultaneously causing slow response times and failures.

There were two courses with a similar name while registration and the details for those courses were not updated by the instructor yet. This caused a slight confusion for Sumeet which resulted in a delay.

Finally Sumeet has decided which courses he is interested in and proceeds to submit the selections. However, on hitting confirm, the registration fails citing that the student has not paid the fees. But Sumeet has already paid the fees and has a receipt of the same. Sumeet must contact the system admin to resolve this problem.

The system admin talks to the finance officer, and they confirm that Sumeet has already done the payment. Both notice that there was a bug related to payments in the system which they notify to tech support. A developer works overnight to resolve the problem. But this has resulted in additional delay for the students.

This casual problem scenario outlines the typical issues that one of the many actors might face while using the Pune university course registration system.

4. Use case

a. **Use case name**

Register for course using Pune university course registration system

b. **Scenario name**

Student course registration

c. **Triggering event**

The event that triggers this use case is the start of the course registration period for the upcoming semester when students are allowed to begin selecting and enrolling their courses

d. **Brief description**

Pune university has a course management system which is used by the students to register for different courses in their semesters respectively.

e. **Actors**

1. Student: Wants to enroll in the necessary courses for the upcoming semester
2. Course instructor: Will be instructing the course to students to needs accurate details of all students and relevant courses
3. Finance officer: Checks the fee payment status of students and approves/declines for registration
4. System administrator: Updates the courses, students and instructor details and maintains the system
5. Tech support: A developer/team who deals with the technical aspects of the system and ensures it's smooth operation

f. **Use cases**

1. Register for course
Primary actor – Student
Goal – The student enrolls for one or more courses in upcoming semester
Main success scenario – The student selects and successfully registers for the desired courses updating their academic schedule

2. Assign grades
Primary actor – Course instructor
Goal – The instructor enters and submits final grades to all students

Main success scenario – The instructor assigns grades to all students and they are recorded successfully in the system

3. Update student fee status
Primary actor – Finance officer
Goal – The finance officer updates the fee payment status for students
Main success scenario – Once student pays the fees, the finance offices will approve the student and allow him to continue registration

4. Update course and instructor details
Primary actor – System administrator
Goal – The system admin updates the latest course and instructor data into the system
Main success scenario – The latest course and instructor data is recorded into the system and displayed to students successfully

5. Bug fixes
Primary actor – Tech support developer
Goal – The is reliable and available for its users
Main success scenario – The system does not go down in case of high traffic

6. View course catalog
Primary actor – Student
Goal – The student browses and searches the catalog to view available online courses including details like pre-requisites, schedules and instructors
Main success scenario – The student successfully views the catalog in the system

g. **Stakeholders**

1. Student: Wants to enroll in the necessary courses for the upcoming semester
2. Course instructor: Will be instructing the course to students to needs accurate details of all students and relevant courses
3. Finance officer: Checks the fee payment status of students and approves/declines for registration
4. System administrator: Updates the courses, students and instructor details and maintains the system
5. Tech support: A developer/team who deals with the technical aspects of the system and ensures it's smooth operation

h. **Precondition and postcondition**

Preconditions:
1. Student must be authenticated and logged in to the system
2. The student must have no outstanding hold (financial, academic, etc.) that prevent registration
3. The course catalog must be updated and accurate

Postcondition:
The student is successfully enrolled in the courses and the system reflects the same

i. **Flow of events for actors, systems**

Main scenario (success)
1. Students logs into the Pune university course registration system
2. The system displays the available courses for the upcoming semester
3. Student selects a course to view details such as schedule, instructor and pre-requisites
4. The system checks for student's eligibility for selected course
5. If the student is eligible and the course is not full, the student selects 'Register'
6. The system registers the student for the course and updates the course capacity
7. The system confirms the registration and displays the updated schedule to the student
8. The student reviews and finalizes their course schedule

Alternate scenario (pre-requisite not met, success)
1. The system identifies that the student does not meet the pre-requisite for a selected course
2. The system displays the error message and suggests alternative courses
3. The student selects one of the alternative courses and proceeds with the registration
4. System successfully updates the details

j. **Exceptional scenarios**

System error during registration
1. A system error occurs during the registration process and a 500-error page is shown on the screen because of a server overload
2. The system prompts the student to try the registration again after some time
3. The student tries the registration process again after some time and contacts the tech support for quick resolution

Semester fees not paid
1. The student logs in and tries to select some courses
2. During the process the system identifies that the student has not yet completed the fees payment and prompts him/her to complete the same
3. The student pays the fees and retries the process after subsequent approvals by the finance officer

5. Functional requirements

1. Student Authentication
The system must authenticate students using a secure login process before allowing access to registration features to ensure that only authorized users can enrol in courses.

2. Course Catalog Management
The system must allow admins to add, update, or remove courses in the catalog to maintain an accurate and up-to-date list of offerings for each academic term.

3. Course Search and Filtering
The system must provide students with the ability to search for and filter courses by various criteria (e.g., subject, time, instructor) to help them find and select suitable courses.

4. Prerequisite Checking
The system must check for and enforce prerequisites when students attempt to register for courses, ensuring that only eligible students can enrol.

5. Course Registration
The system must allow students to select and register for available courses, updating their schedules and the course capacity in real-time.

6. Waitlist Management
The system must manage waitlists for courses that are full, automatically enrolling students from the waitlist as seats become available.

7. Grade Submission
The system must allow instructors to enter and submit final grades for their courses, making these grades accessible to students and the registrar.

8. Schedule Conflict Detection
The system must detect and prevent students from registering for courses with overlapping schedules, ensuring that their selected courses do not conflict.

6. Non-functional requirements

1. Performance

The system must handle high volumes of concurrent users, especially during peak registration periods, to ensure smooth operation without significant slowdowns or timeouts.

2. Security

The system must protect sensitive student data (e.g., personal information, grades) with strong encryption and access controls to prevent unauthorized access and breaches.

3. Usability

The system must have an intuitive and user-friendly interface that is easy to navigate for all users, including students, instructors, and administrators, to reduce errors and improve efficiency.

4. Scalability

The system must be able to scale to accommodate growing numbers of students and courses over time, ensuring it remains effective as the university expands.

5. Reliability

The system must provide consistent and dependable service with minimal downtime, ensuring that users can access and use the system whenever needed, particularly during critical registration periods.

7. Domain diagram