



## Functional Requirements

### User Requirements

1. Users sign up for the system using their SSN and academic email address. The system validates their information.
  2. Users sign into the system using the email and password. Users also have the ability to link their google accounts and sign in using OAuth.
  3. Users are able to view their profile's information stored in the database such as:
    - a. Biography
    - b. Profile picture
    - c. Major and Minor
    - d. Contact Data
  4. Students are able to register for their desired courses available in the following semester. They can search for the courses they need. A brief description of the course is shown including a list of prerequisite courses that the student hasn't passed yet.
  5. Students can automatically view the course announcements and assignments in a timeline like fashion after registering successfully for the course. They can also send feedback to the teaching staff on this course page.
  6. At the midterms and finals, students can view their exam schedule based on the courses they've taken in the semester. Information about the exam shown include the location, the student's seat, and the time.
  7. Students and teaching staff can view their timetable for the current semester showing the location of the lecture/section/lab and the time. They can use Google Calendar integration for the timetable.
  8. During the semester, students can view their grades for different assignments, quizzes and exams for their courses.
  9. Teaching staff can upload course material and assignments for the students on the course page. Students can submit their finished assignments for the teaching staff to review and give grades.
  10. Certain information about each user is available to view for other users. The teaching staff must show their office hours and office locations.
  11. The system shows students the number of warnings they've received as well as their reasons.
  12. The system shows students the fees required in this semester as well as the deadline for each payment as well as the penalty for exceeding the deadline.
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### System Requirements

1. The sign-up form asks for the type of user, SSN, email address and a password with a button labeled "submit" to confirm submission. The entered information is sent to the backend server where the system administrator then reviews the entered information and compares it to the data in database to validate authenticity. Upon successful signing up, the user is assigned to the correct table in the database and their information is stored there, then the user is asked to sign into the system.
2. The sign-in form asks for email address and password with a button labeled "sign in" to confirm. The entered password is encrypted for security and sent to the backend server. The backend server decrypts the password, hashes it and compares to the stored password in the database. If the password matches, the user is entered into the system, else, an error message is shown to the user saying, "Wrong email or password". Another button allows the user to sign-in using Gmail by OAuth.
3. The user's profile includes a short biography of 256 character, a profile picture which the user can upload from the computer, a major and a minor which are chosen at the first year, and contact data including phone numbers, email addresses, and several social media account links. The profile also includes a "Link with Gmail" button.

4. The registration page includes a search bar which the students can use to search for a certain course using the name, description or course code. A list below the search bar shows the filtered courses with the courses not available for next semester or with prerequisites not satisfied by the user being greyed out. The user can select to add the available courses, or request that an unavailable course be available next semester. The number of students requesting a certain unavailable course is displayed to the teaching staff on their timeline. After selecting a course to be added, the user selects times for lectures and sections for this course, the system verifies that there is no collision between times that the student has already registered for and that the lectures/sections have enough seats available. At the end of registration, the student is shown the total prices for the courses chosen, as well as the deadline for the payment and the penalty for the late payment.
  5. Users each have a timeline based on user type. Teaching staff's timelines include students' feedback which will be anonymous and students requesting a certain course be available next semester. Students' timelines will include all course announcements and assignments, as well as university announcements. Timelines will be sorted according to the last published date and will work with pagination.
  6. The exams page will be unavailable most of the semester but will be activated by the system administrator before the midterm and final exams. When activated, the page includes a table of the student's registered courses with a date, time and location of the exam.
  7. The schedule page includes a table with the user's schedule for the semester. Teaching staff will see the time, and location of the lectures/sections they are teaching. Students will see the time, and location of the lectures/sections they are taking. Both can choose to integrate their schedule with Google Calendar.
  8. The grades page includes a table with the selected courses' grades for assignments, quizzes and exams. The table is updated once the teaching staff uploads a grade. Each assignments/quiz will include optionally include a note from the teaching staff to the student.
  9. Each course page includes the uploaded course material such as lectures, labs, sections, assignments and announcements. Students will find a "Due assignments" section which they can use to view the assignment material and the due date, and later submit their finished assignments. Each finished assignment will be sent to the teaching staff's "Ungraded assignments" section where they can grade each assignment and add an optional note for the student.
  10. Each user can or must choose some information to share with other users. This information can be controlled from the user's profile. Teaching staff must share their office hours, setting a from and to time as well as a location.
  11. The warnings page shows students a list of the warnings they've received with information about them including date and reason. This information is retrieved automatically after a warning has been issues by the teaching staff.
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## Non-functional Requirements

1. Ensure that user data is protected using encryption controlling their access.
  2. Data is backed up regularly to avoid loss.
  3. Multiple users can access the system at the same time without performance degradation.
  4. Protection against SQL injections to ensure data integrity.
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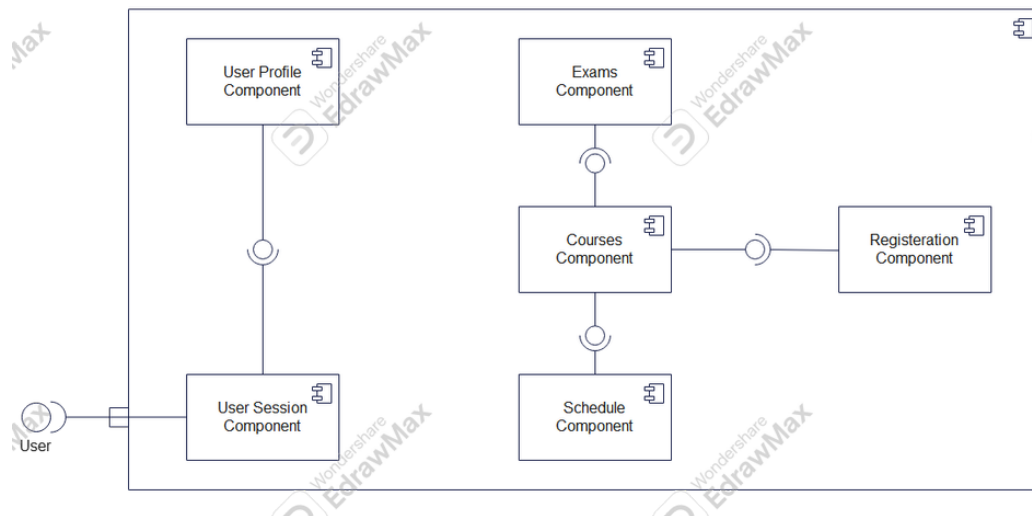
## System Main Components

The system will be divided into 6 main components including:

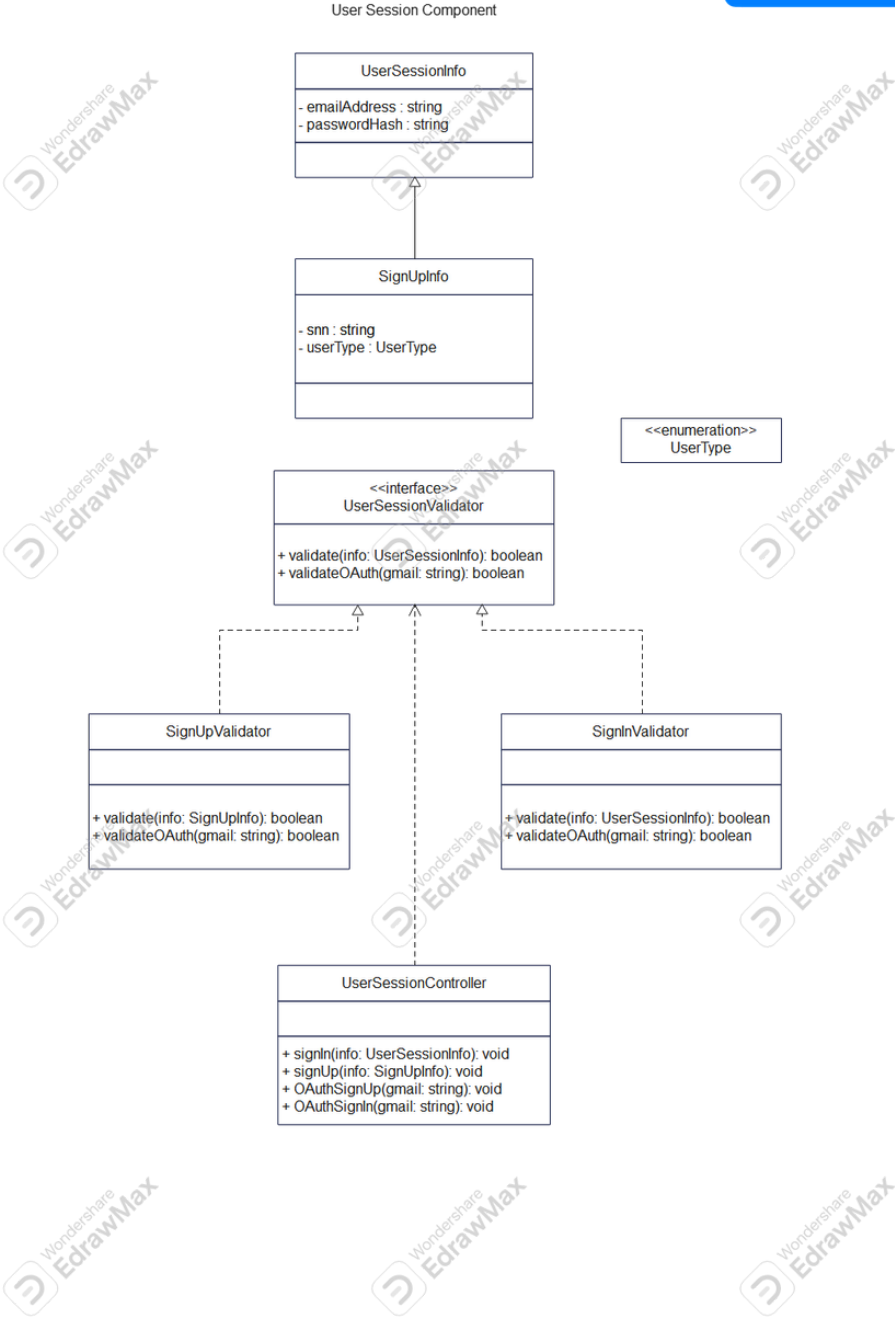
1. User session component
  2. User profile component
  3. Courses component
  4. Registration component
  5. Schedule component
  6. Exams component
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## Class Diagrams

### Component Diagram

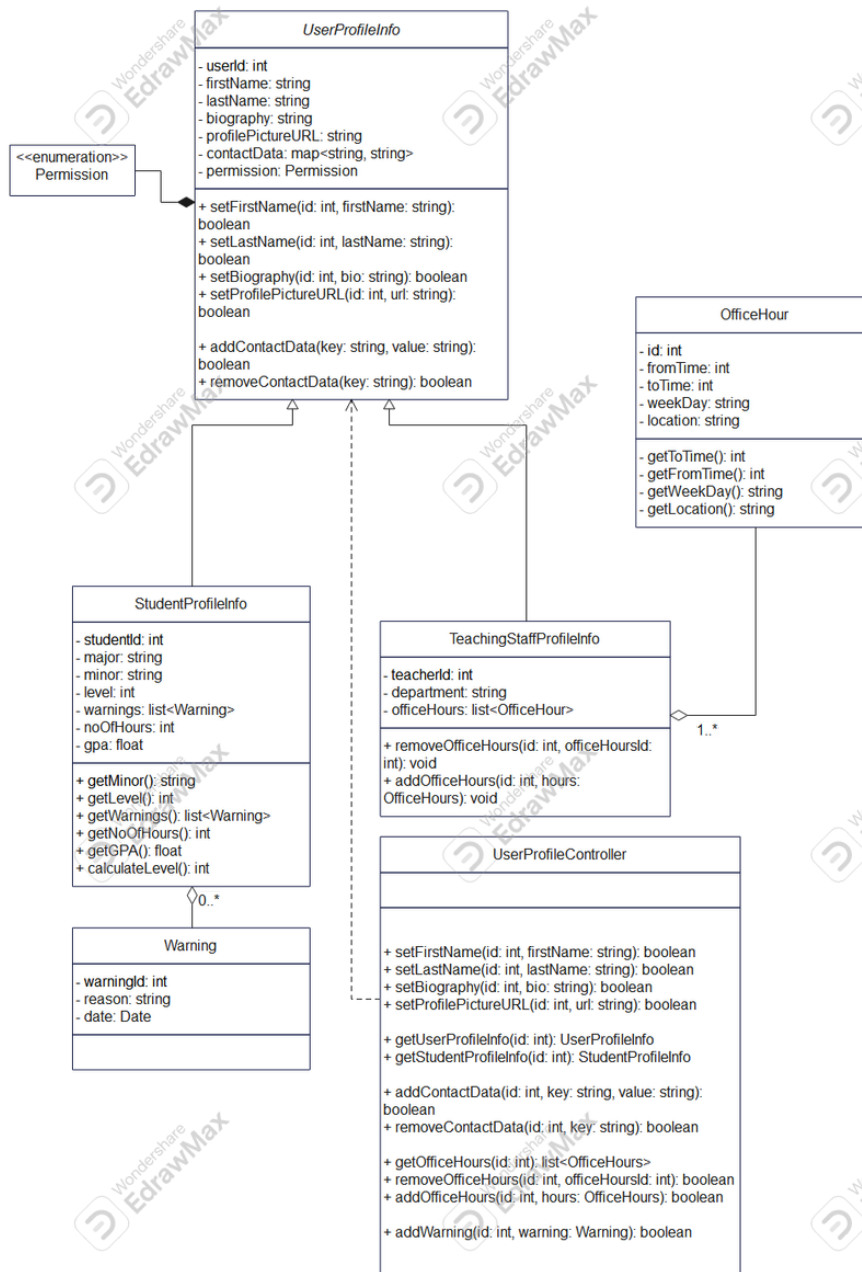


User Session Component

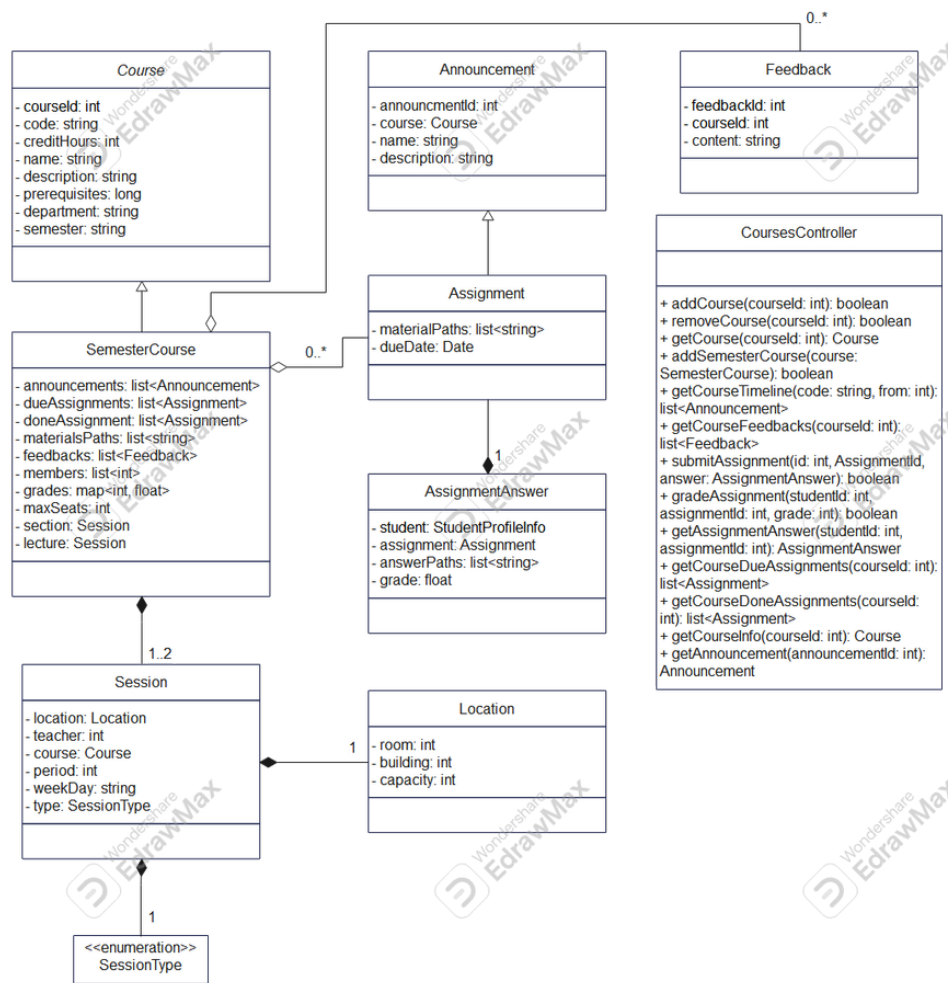


# User Profile Component

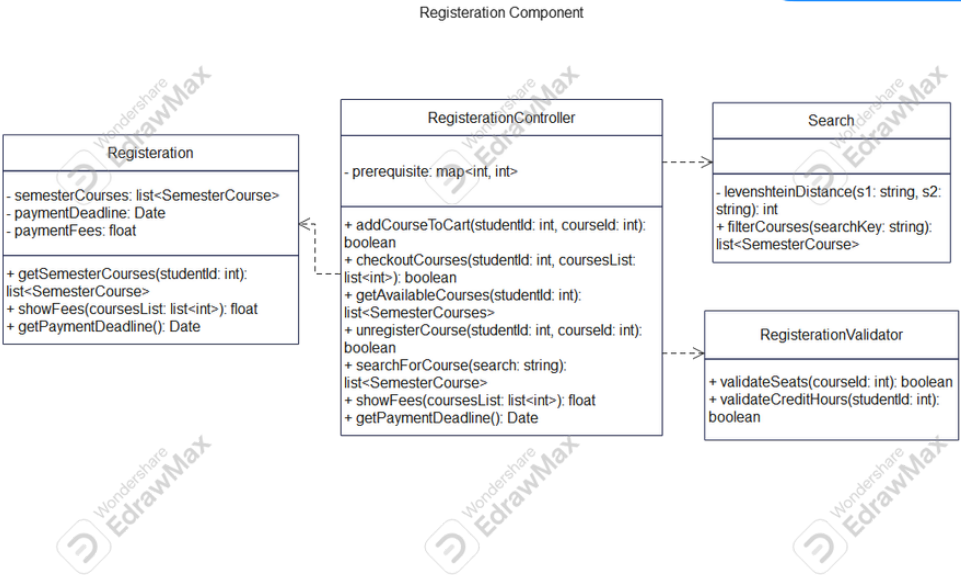
User Profile Component



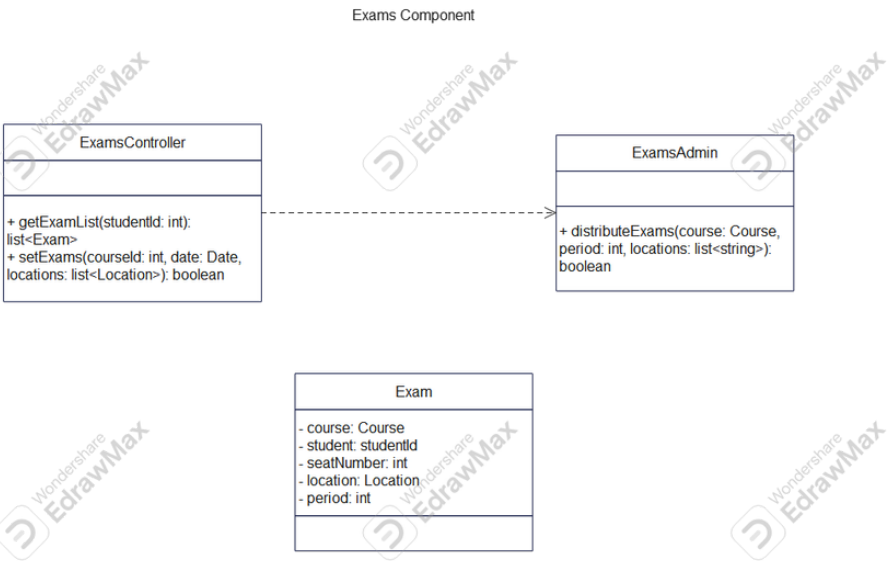
## Courses Component



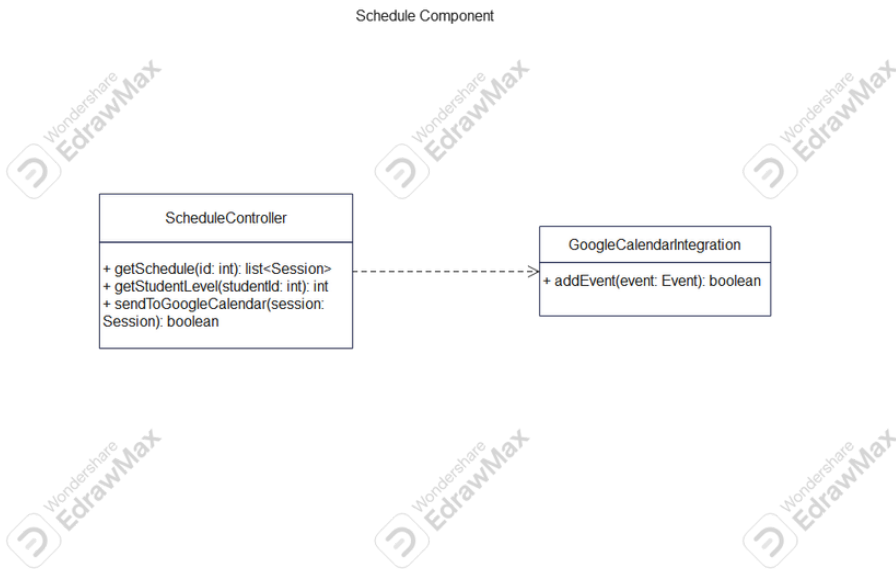
# Registration Component



# Exams Component

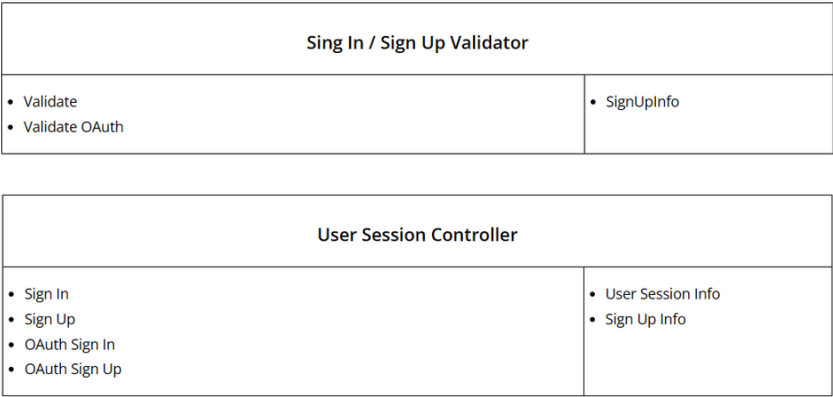


Schedule Component

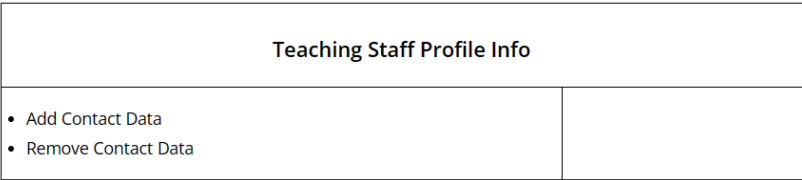


CRC Diagrams

User Session Component



User Profile Component





User Profile Controller	
<ul style="list-style-type: none"> <li>• Add Contact Data</li> <li>• Remove Contact Data</li> <li>• Add Office Hours</li> <li>• Remove Office Hours</li> <li>• Add Warning</li> </ul>	<ul style="list-style-type: none"> <li>• Office Hours</li> <li>• Warning</li> </ul>

Student Profile Info	
<ul style="list-style-type: none"> <li>• Calculate Level</li> </ul>	

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## Courses Component

Courses Controller	
<ul style="list-style-type: none"> <li>• Add Course</li> <li>• Remove Course</li> <li>• Add Semester Course</li> <li>• Submit Assignment</li> <li>• Grade Assignment</li> </ul>	<ul style="list-style-type: none"> <li>• Semester Course</li> <li>• Assignment Answer</li> </ul>

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## Registration Component

Search	
<ul style="list-style-type: none"> <li>• Edit Distance</li> <li>• Filter Courses</li> </ul>	

Registration Validator	
<ul style="list-style-type: none"> <li>• Validate Seats</li> </ul>	

Registration Controller	
<ul style="list-style-type: none"> <li>• Add Course to Cart</li> <li>• Checkout Courses</li> <li>• Get Available Courses</li> <li>• Unregister Course</li> <li>• Search For Course</li> </ul>	<ul style="list-style-type: none"> <li>• Semester Course</li> </ul>

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Exams Component

Exams Admin	
<ul style="list-style-type: none"><li>Distribute Exams</li></ul>	<ul style="list-style-type: none"><li>Course</li></ul>

Exams Controller	
<ul style="list-style-type: none"><li>get Exam List</li><li>Set Exams</li></ul>	<ul style="list-style-type: none"><li>Location</li><li>Exam</li></ul>

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Schedule Component

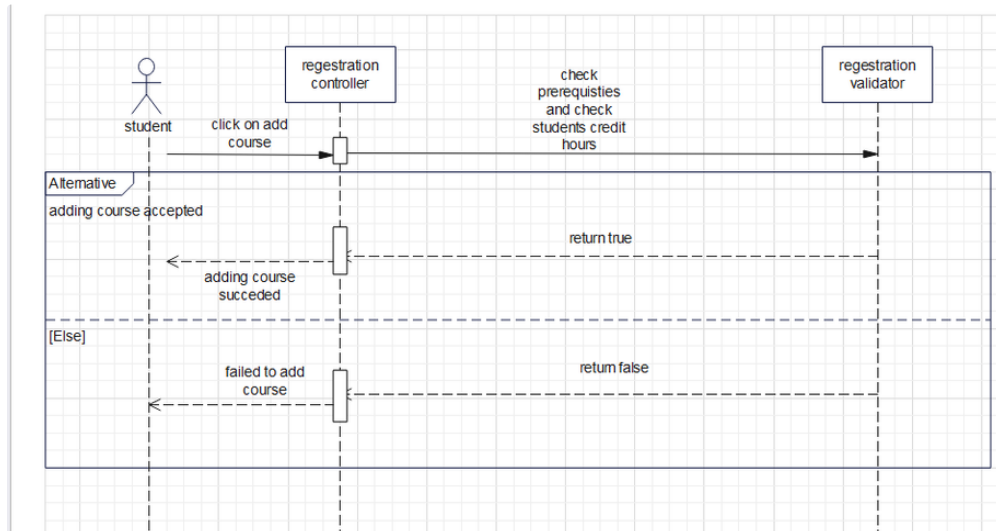
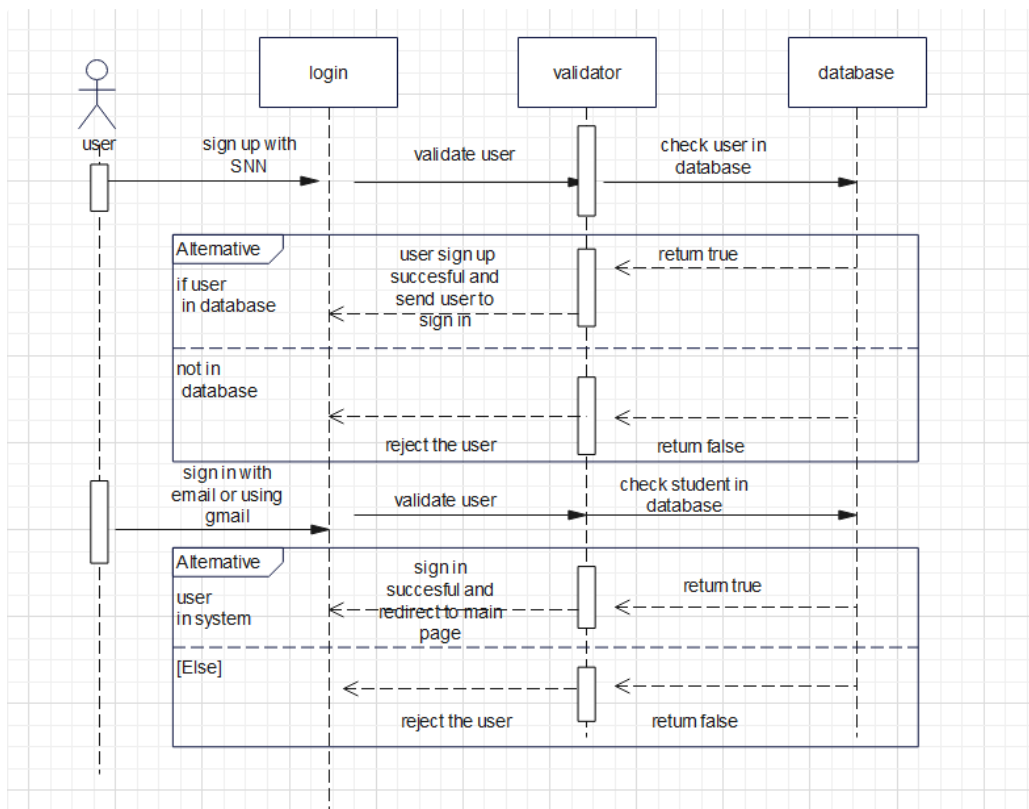
Schedule Controller	
<ul style="list-style-type: none"><li>Get Schedule</li><li>Get Student Level</li><li>Send to Google Calendar</li></ul>	<ul style="list-style-type: none"><li>Session</li></ul>

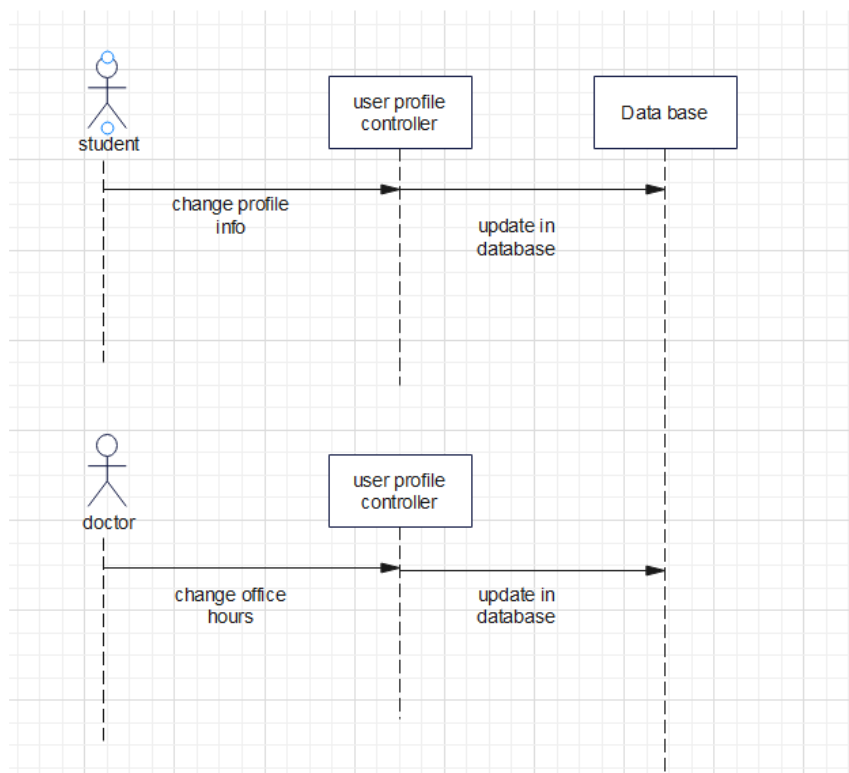
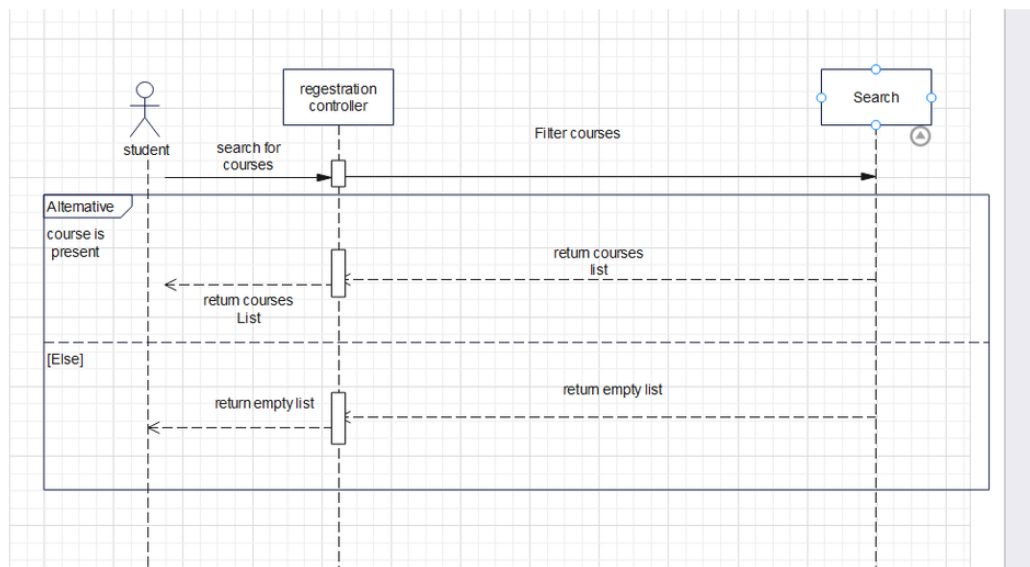
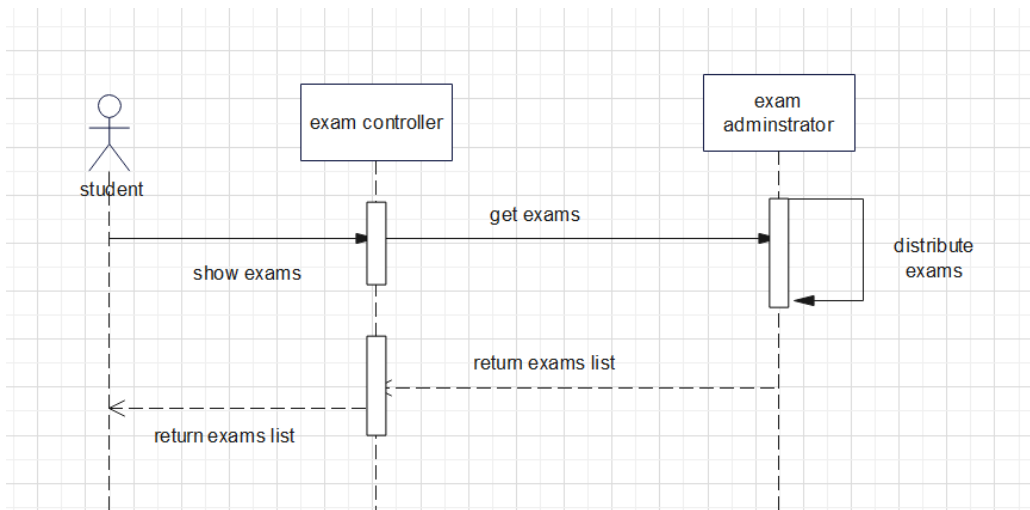
Google Calendar Integration	
<ul style="list-style-type: none"><li>Add Event</li></ul>	<ul style="list-style-type: none"><li>Event</li></ul>

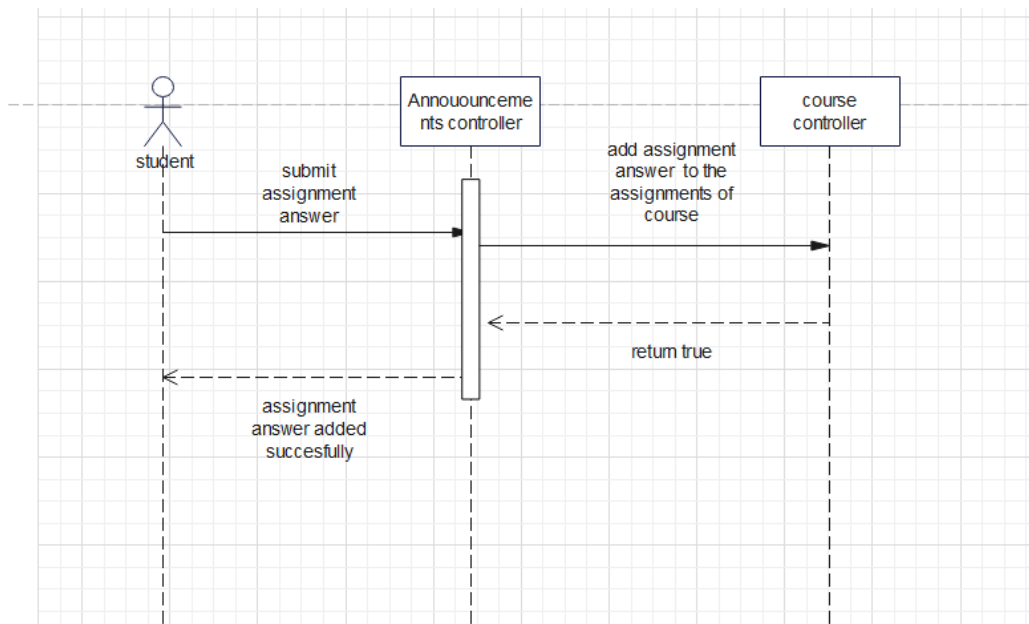
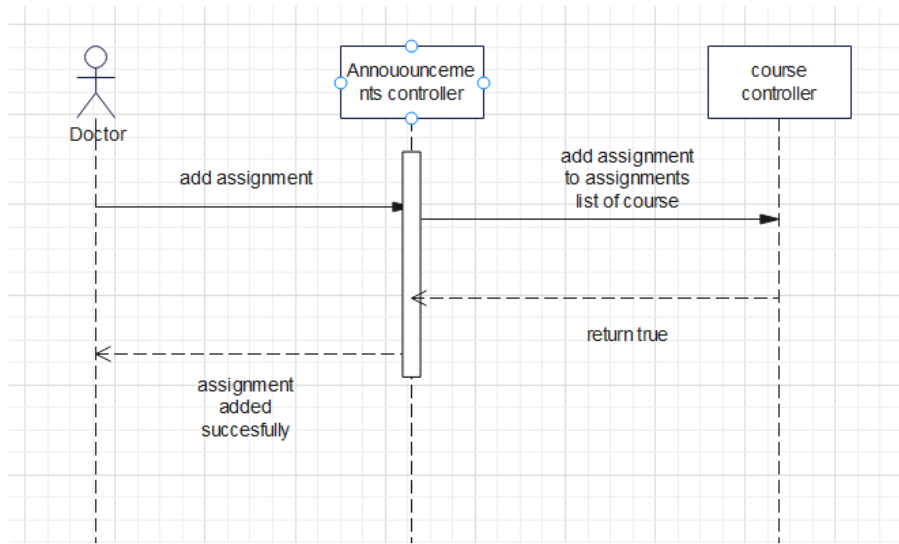
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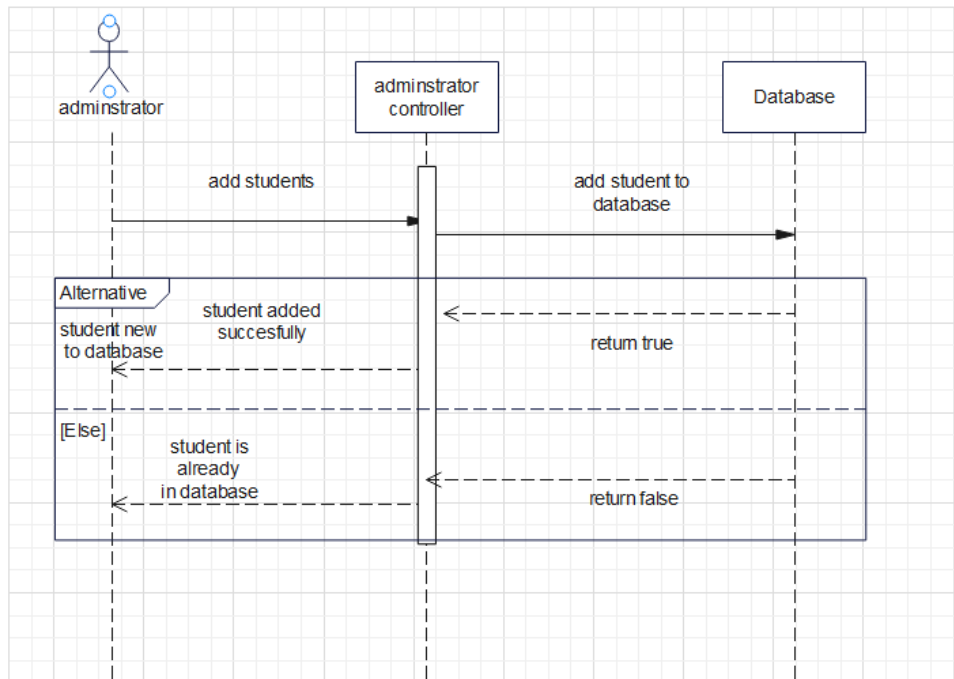
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## Interaction Diagram for Main Components









## Database ER Model

[ER Model Diagram](#)

### Assumptions:

1. Assignment could have 0 answers, also could have more than one answer.
2. The course could have 0 feedback.
3. The course could have 0 assignments.
4. Some locations could have no exams/sessions on it.
5. Teaching staff should have office Hours.

## Milestones

1. Sign-in, Sign-up and User profile component. Nov 26, 2023
2. Courses and Registration components. Dec 10, 2023
3. Exams, Schedule components and surprise requirement. Nov 24, 2023