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ELEC 3225: Applied Programming Concepts

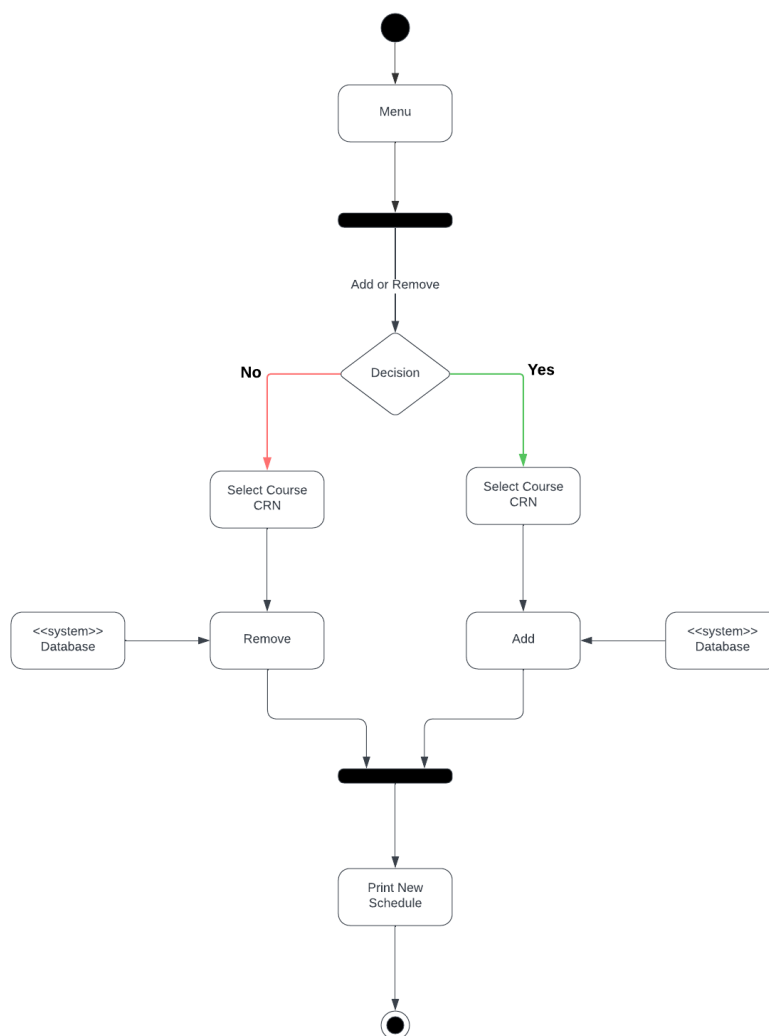
Leopard Web Project

June 6, 2024

### **Assignment 4:**

#### **Activity Model Diagrams for the following functions:**

- **Add/remove course from semester schedule (based on course ID number)**  
**(NASEEM)**

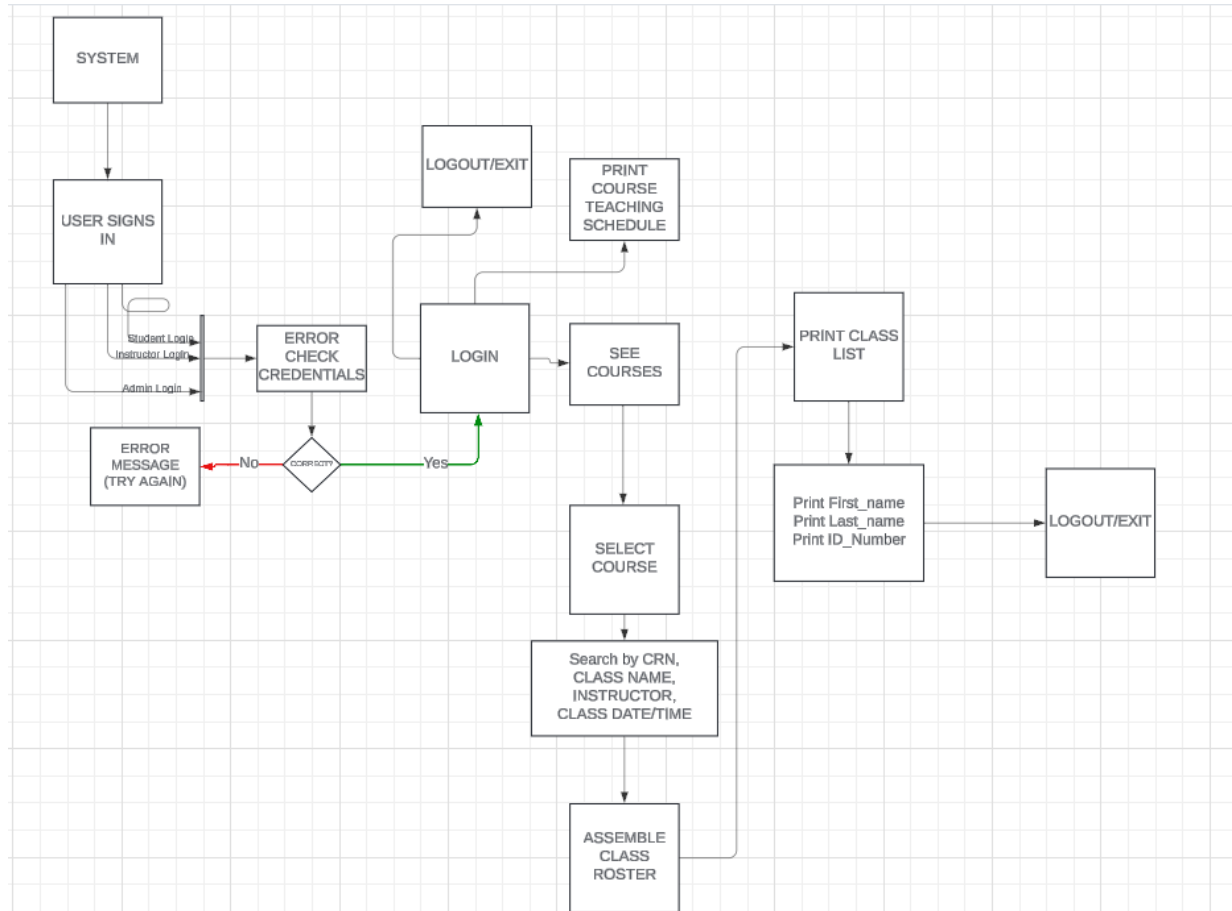


**Figure 1:** This diagram depicts the process for adding or removing courses in a course management system. The user starts at the menu and decides whether to add or remove a course. If adding a course, the user selects the course CRN, and the system updates the database to add the course to the user's schedule. If removing a course, the user selects the course CRN, and the system updates the

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database to remove the course from the user's schedule. After completing the add or remove action, the system prints the updated schedule for the user. This diagram outlines the key decisions and interactions required to manage course schedules effectively within the system.

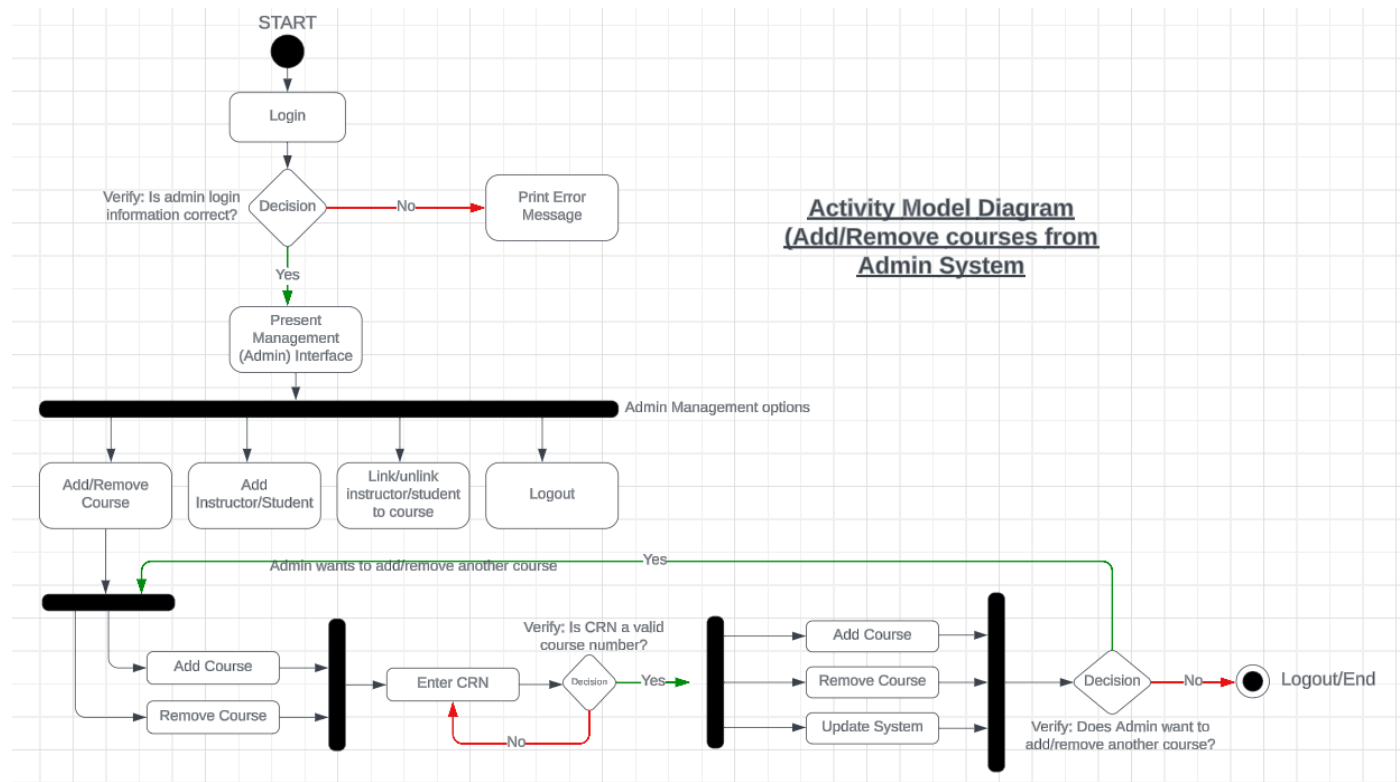
- **Assemble and print course roster (instructor)** (NADIA)



**Figure 2:** Activity diagram for the "Assemble and Print Course Roster" function for an instructor. The diagram outlines the process flow starting from the system login. The user logs in by providing credentials, which the system checks for correctness. If the credentials are incorrect, an error message prompts the user to try again. Once logged in, the instructor can see their courses, select a specific course, and search by CRN, class name, instructor, or class date/time to assemble the class roster. The assembled roster is then printed, showing the students' first names, last names, and ID numbers. The process concludes with the instructor logging out of the system.

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- **Add/remove courses from the system (admin) (PERSIA)**

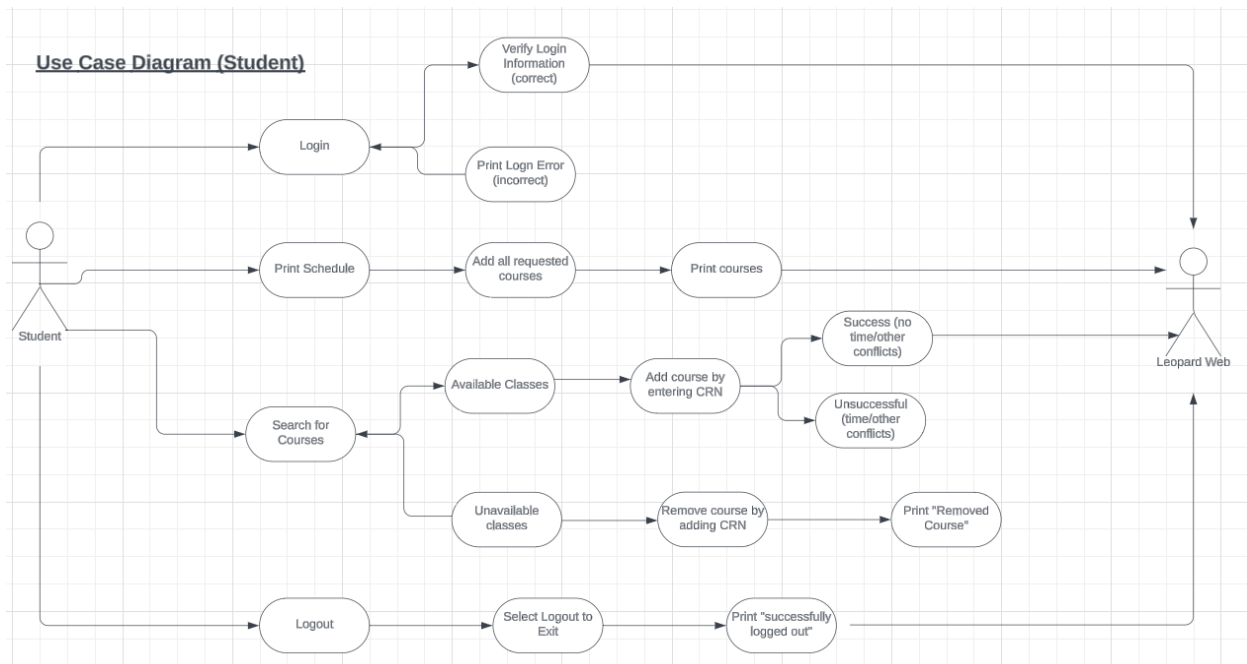


**Figure 3:** This diagram represents the flow of actions for adding or removing courses from an admin system. The process starts with a login, where the admin's credentials are verified. If the login information is incorrect, an error message is printed. If the login is successful, the admin is presented with a management interface that offers several options: adding/removing courses, adding instructors/students, linking/unlinking instructors/students to courses, and logging out. If the admin chooses to add or remove a course, they must enter the Course Registration Number (CRN) which is then verified. If the CRN is valid, the system updates accordingly. The admin can continue to add or remove more courses or choose to log out, ending the session.

### Use-Case Diagrams (PERSIA)

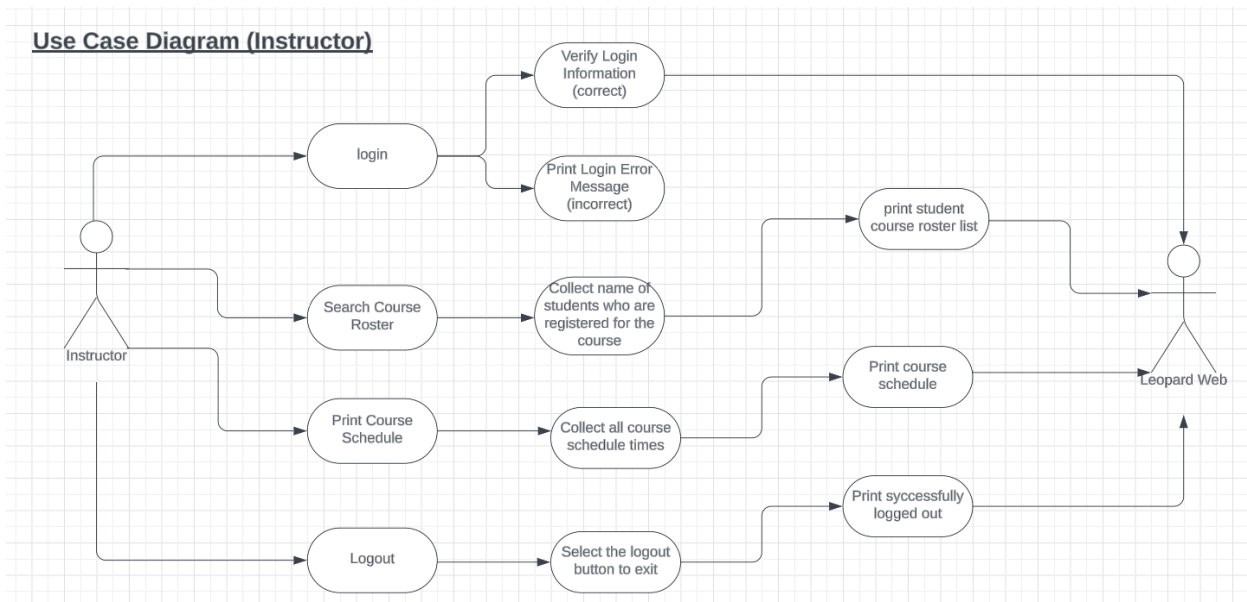
- **Students**

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**Figure 4:** This diagram outlines the use cases for a student using the course management system. The student logs in, and their credentials are verified. If the login is successful, the student can print their schedule, search for available courses, add courses by entering the CRN, and remove courses similarly. The system checks for schedule conflicts when adding or removing courses. The student can also log out, ending the session. The interaction with available and unavailable classes, and the subsequent success or failure messages, are depicted.

- Instructor

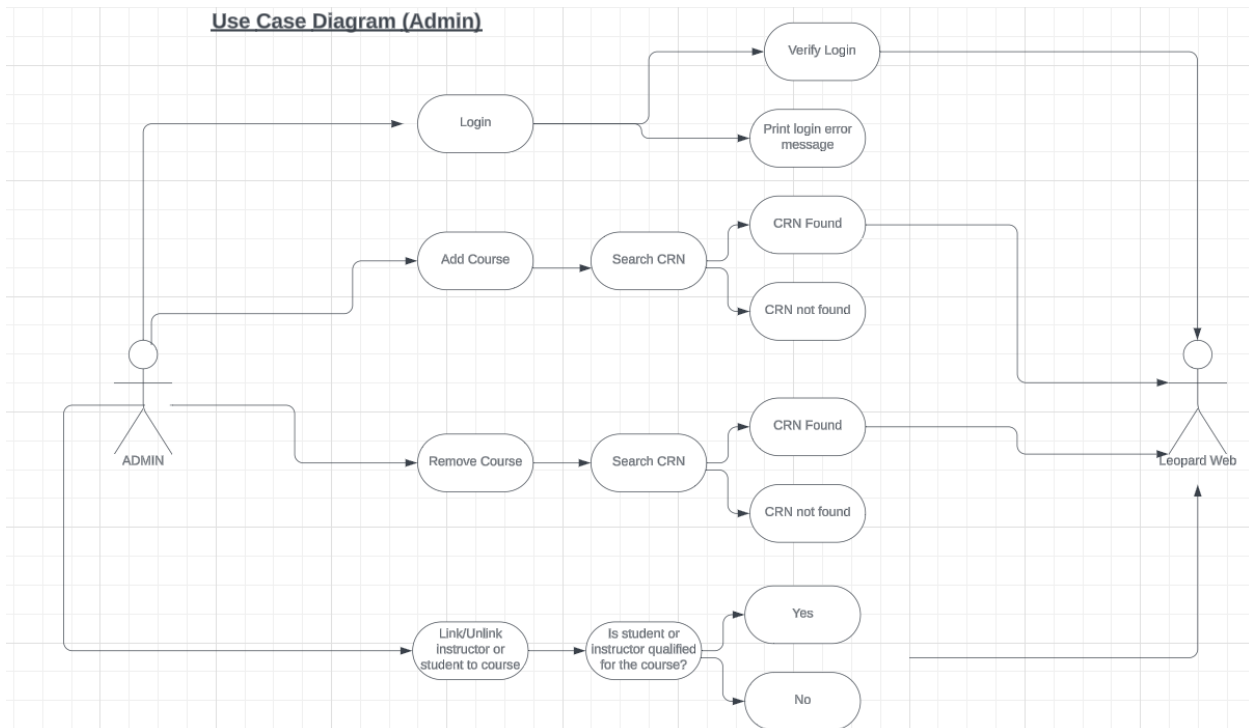


**Figure 5:** This diagram depicts the use cases for an instructor using the course management system. The instructor logs in, and their credentials are verified. If the login is successful, the

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instructor can search the course roster to see which students are registered for a course and print the student course roster list. They can also print their course schedule, which includes all course times. Finally, the instructor can log out, ending the session. The interactions with the system are shown with processes for collecting student names, course schedules, and verifying login credentials.

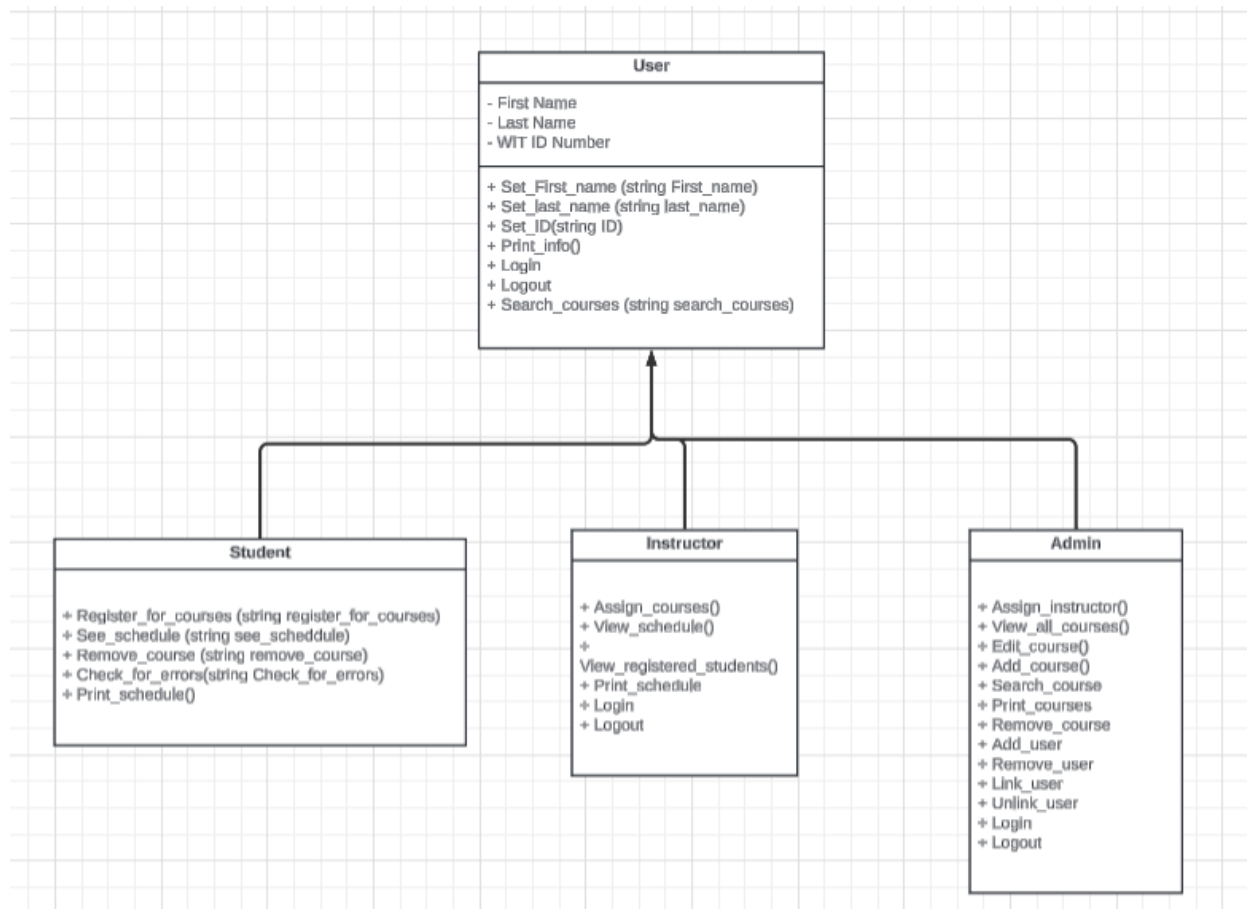
- Admin



**Figure 6:** This diagram illustrates the use cases for an admin interacting with a course management system. The admin starts by logging in, which triggers a verification process. If the credentials are incorrect, an error message is displayed. Once logged in, the admin can add or remove courses by searching for the Course Registration Number (CRN). If the CRN is found, the course can be added or removed. If the CRN is not found, the process ends. Additionally, the admin can link or unlink instructors or students to courses, verifying their qualifications for the course.

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## **Class Diagrams** (NADIA)

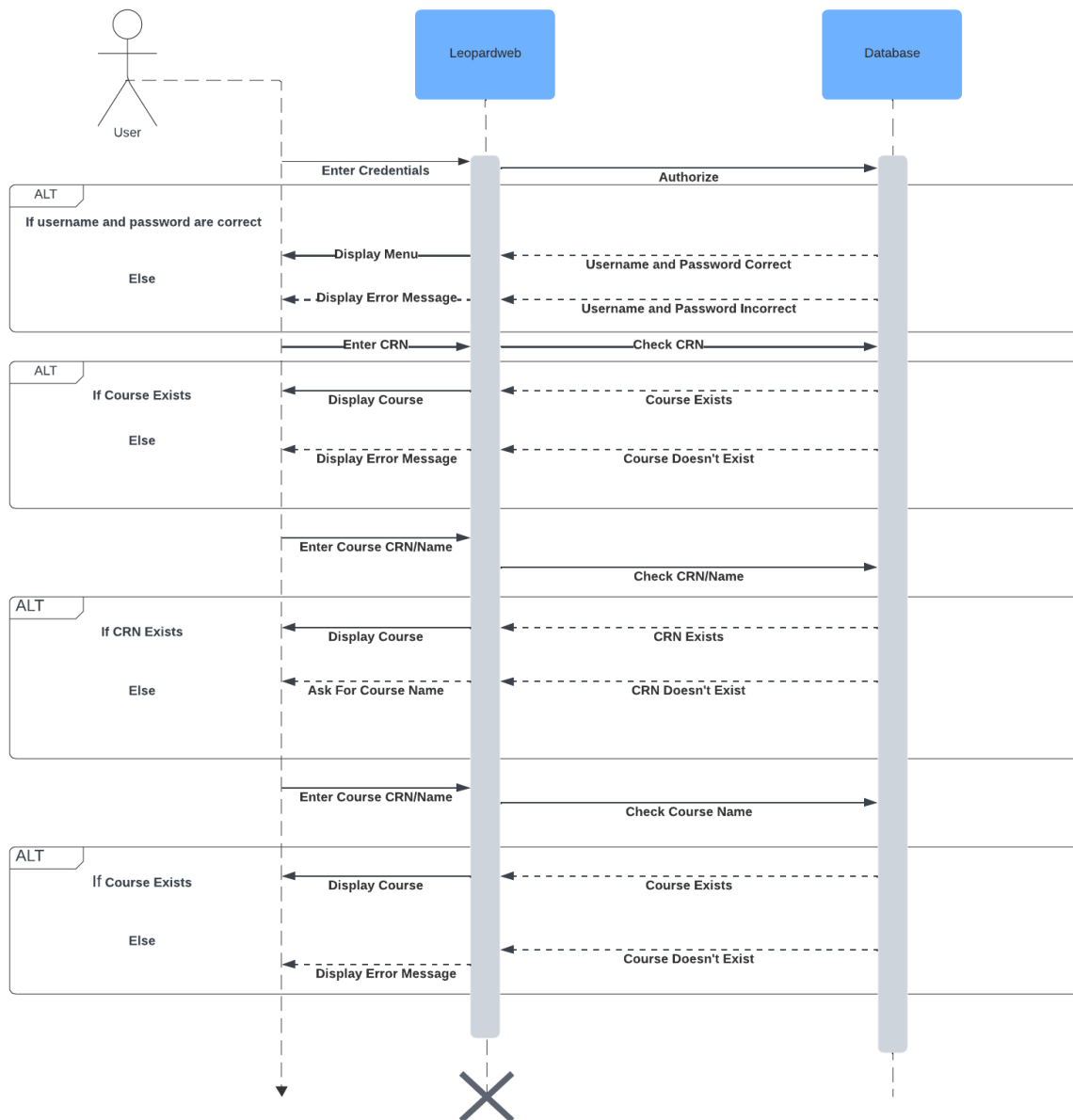


**Figure 7:** UML class diagram representing Leopard Web Scheduling System. The diagram includes four main classes: User, Student, Instructor, and Admin. The User class serves as the base class with attributes for first name, last name, and ID, and methods for setting these attributes, printing user information, logging in, logging out, and searching for courses. The student class inherits from User and includes methods for registering for courses, viewing, and editing their schedule. The instructor class inherits from User and includes methods for assigning courses, viewing their schedule and registered students. The admin class inherits from User and includes methods for managing instructors, courses, and users.

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### Sequence diagrams (NASEEM)

- Log-in, log-out (all users)
- Search all courses (all users)
- Search courses based on parameters (all users)



**Figure 8:** This diagram illustrates the interaction between a user, Leopardweb, and a database for a course management system. The user begins by entering their username and password, which the system (Leopardweb) then authorizes. If the credentials are correct, the system displays the menu; otherwise, it shows an error message. Next, the user inputs a Course Registration Number (CRN), and the system checks if the course exists in the database. If it does, the course information is displayed; if not, an error message is shown. The user can also enter either a CRN or a course

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name. The system checks the database for the CRN or course name, displaying the course if it exists or prompting the user for the course name if the CRN doesn't exist. After entering the course name, the system checks again and either displays the course or shows an error message if the course is not found.