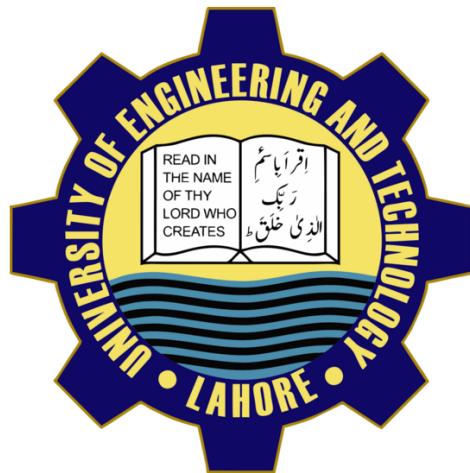


## **Pathly – Career Guide**



### **Submitted By:**

Saman Naz 2024-CS-714  
Rida Shahzad 2024-CS-730  
Syed Ali Hamad 2024-CS-738

### **Submitted To:**

**Dr Zeeshan Ramzan**

**Department of Computer Science  
University of Engineering and Technology, New Campus**

## Contents

1.	Software Development Life Cycle .....	3
2.	Class Diagram.....	6
3.	Use Diagram.....	8
4.	Object Diagram .....	9
5.	Package Diagram.....	10
6.	Sequence Diagrams.....	11
7.	Collaboration Diagrams .....	30
8.	Component Diagram.....	52
9.	Activity Diagram.....	53
10.	State Chart Diagrams .....	73

## 1. Software Development Life Cycle

The development of the **Pathly Web Application** followed a structured **Software Development Life Cycle (SDLC)** to ensure systematic planning, development, testing, and deployment of the system. The SDLC provides a clear framework that helps in managing project complexity, improving software quality, and ensuring that user requirements are met effectively.

For this project, a **Modified Waterfall Model** was adopted, allowing sequential development with limited flexibility for refinement based on feedback.

### 1. Requirement Analysis

In this phase, the functional and non-functional requirements of the Pathly system were identified and documented.

#### Activities performed:

- Identification of system users (Students, Counselors, Admin, University Ambassadors)
- Analysis of user needs and system objectives
- Definition of core functionalities such as:
  - Viewing merit lists of previous years
  - Aggregate calculation
  - Counselor approval and management
  - Institute addition and verification
  - Public announcements
- Identification of system constraints and assumptions

#### Deliverables:

- Software Requirements Specification (SRS)
- Functional requirement list
- Use case descriptions

## 2. System Design

The system design phase translated the gathered requirements into a detailed technical blueprint.

**Design activities included:**

- Architectural design of the web application
- Database structure planning
- Interaction modeling using UML diagrams:
  - Sequence Diagrams
  - Activity Diagrams
  - State Machine Diagrams
  - Collaboration Diagrams
  - Deployment Diagram

**Design decisions:**

- Adoption of a client-server architecture
- Use of Flask as the web application framework
- SQLite as the database system
- Deployment on a cloud platform (Heroku)

**Deliverables:**

- System architecture design
- UML diagrams
- Database design

### **3. Implementation**

During this phase, the actual development of the system was carried out based on the approved design.

**Implementation details:**

- Backend development using **Python (Flask)**
- Frontend development using **HTML, CSS, and Jinja2 templates**
- Database integration using **SQLite**
- Implementation of authentication and authorization mechanisms
- Development of admin and counselor management modules

**Deliverables:**

- Source code
- Configured database
- Functional web application modules

### **4. Testing**

The testing phase ensured that the system functions correctly and meets the specified requirements.

**Testing approaches used:**

- Unit testing of individual modules
- Integration testing between system components
- Functional testing of user workflows
- Validation of input handling and error scenarios

**Testing objectives:**

- Ensure accuracy of aggregate calculation
- Verify data retrieval for merit lists
- Validate approval and rejection workflows
- Ensure system stability and reliability

**Deliverables:**

- Test cases
- Test results
- Bug fixes and refinements

## 5. Deployment

After successful testing, the application was deployed to a cloud environment.

**Deployment details:**

- Hosting on **Heroku cloud platform**
- Use of a WSGI server (Gunicorn) for request handling
- Database deployed alongside the application
- Application accessed via standard web browsers using HTTP/HTTPS

**Deliverables:**

- Live deployed application
- Deployment configuration

## 6. Maintenance

The maintenance phase focuses on post-deployment support and improvements.

**Maintenance activities include:**

- Bug fixing and performance optimization
- Database updates and content management
- Feature enhancements based on user feedback

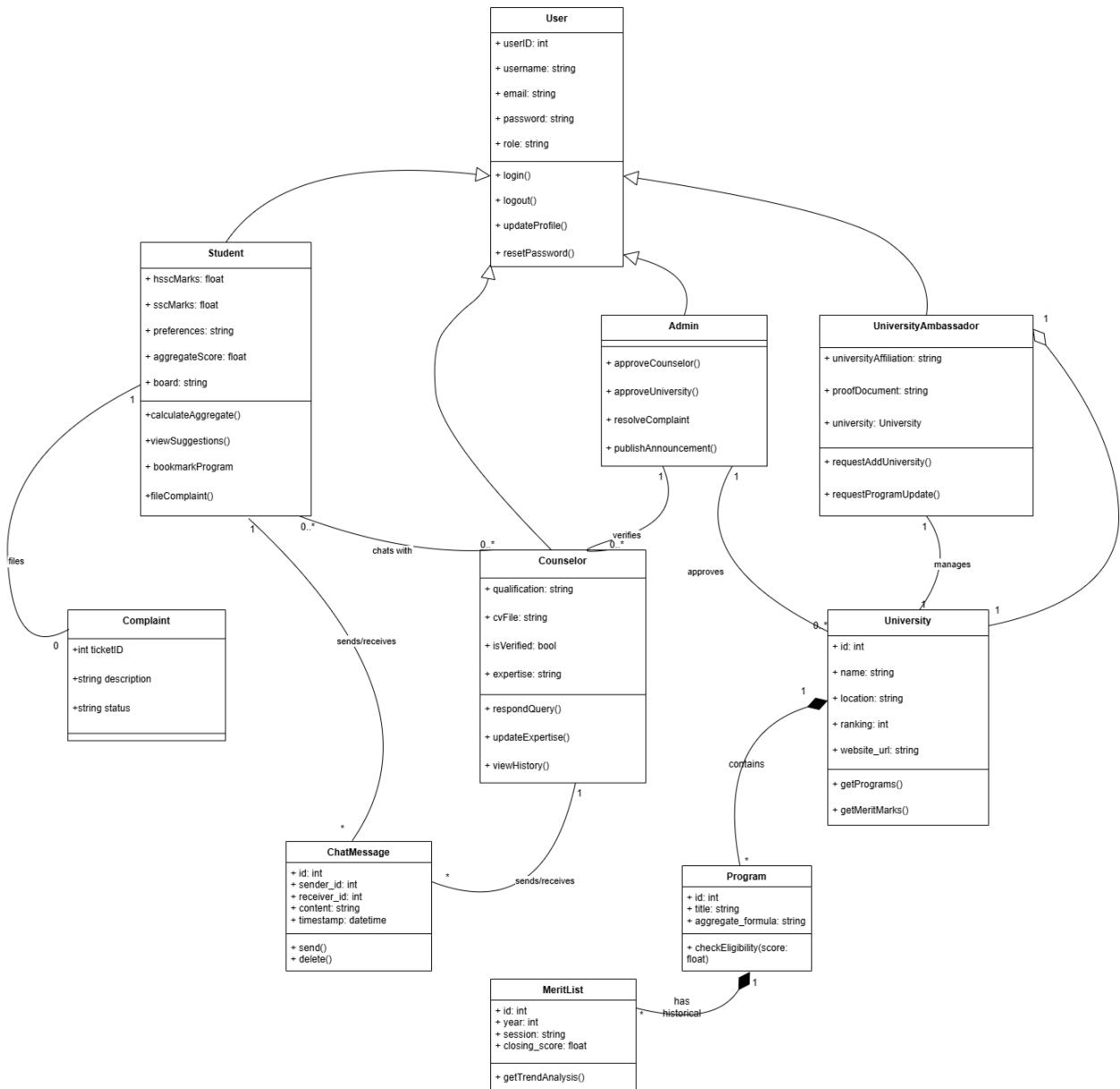
- Security updates and system monitoring

This phase ensures the long-term reliability and usability of the Pathly system.

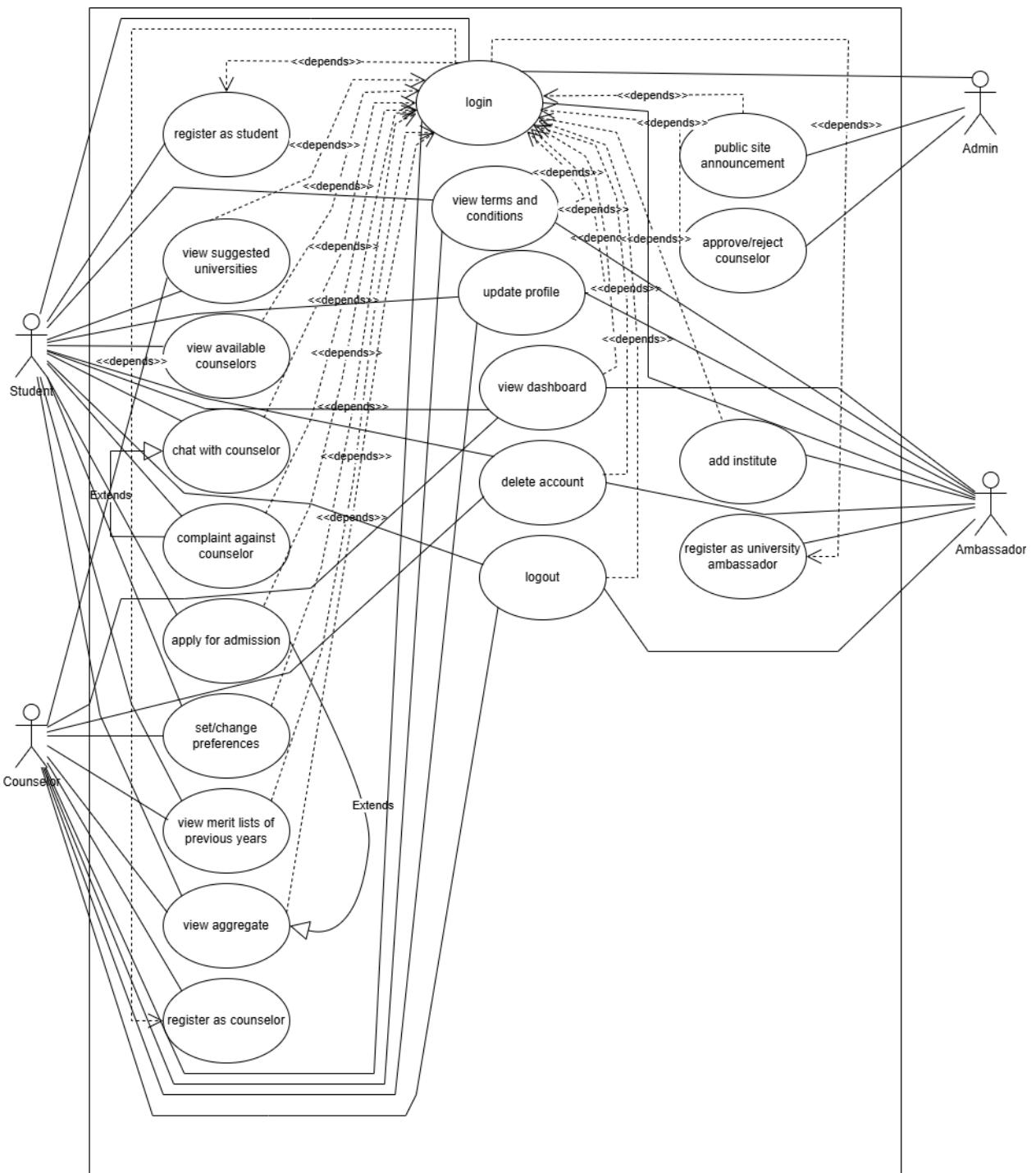
## **Conclusion**

The SDLC approach adopted for the Pathly Web Application ensured a disciplined and systematic development process. By following each phase carefully, the system was developed to meet user requirements, maintain quality standards, and provide a scalable and maintainable solution.

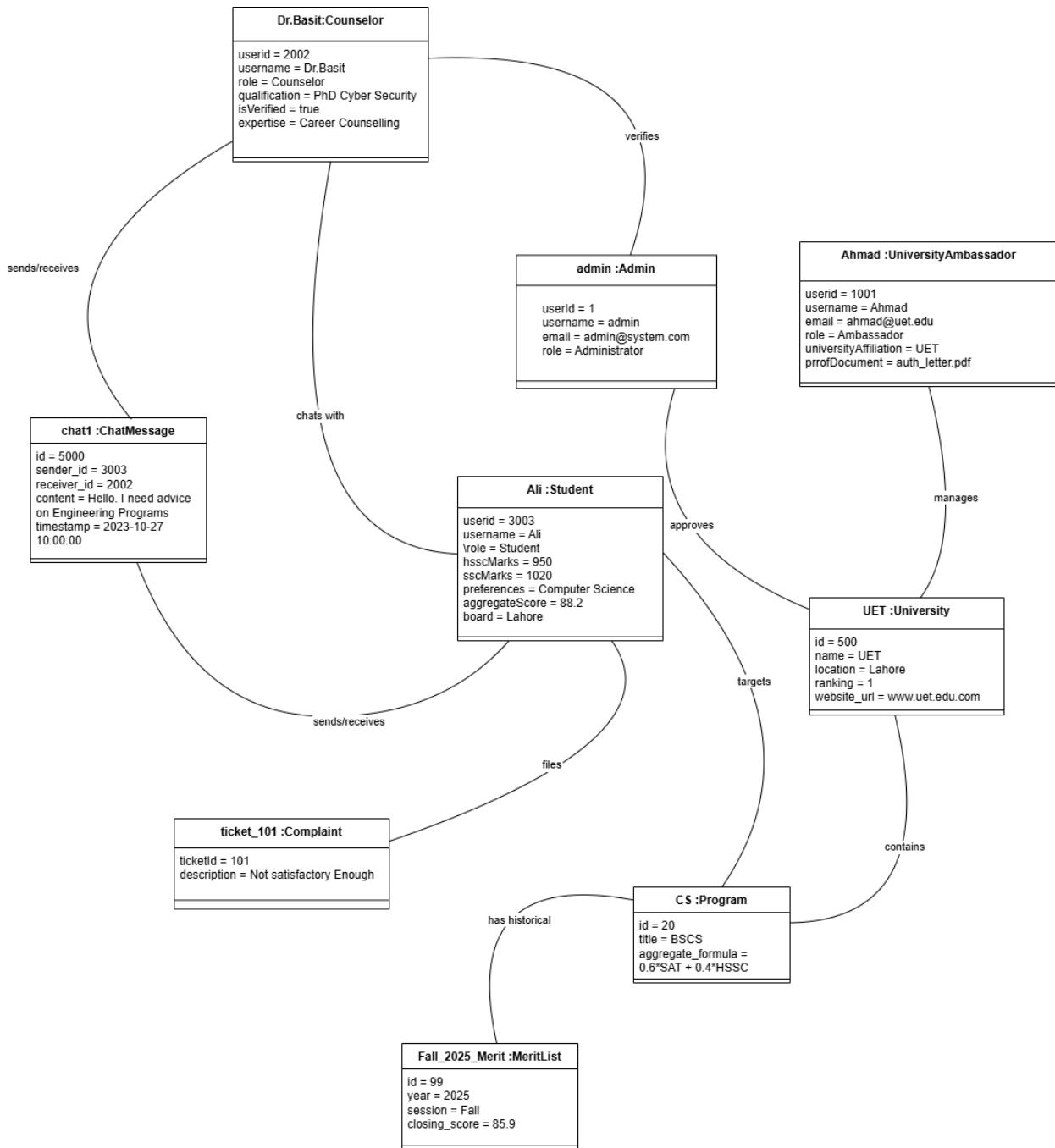
## **2. Class Diagram**



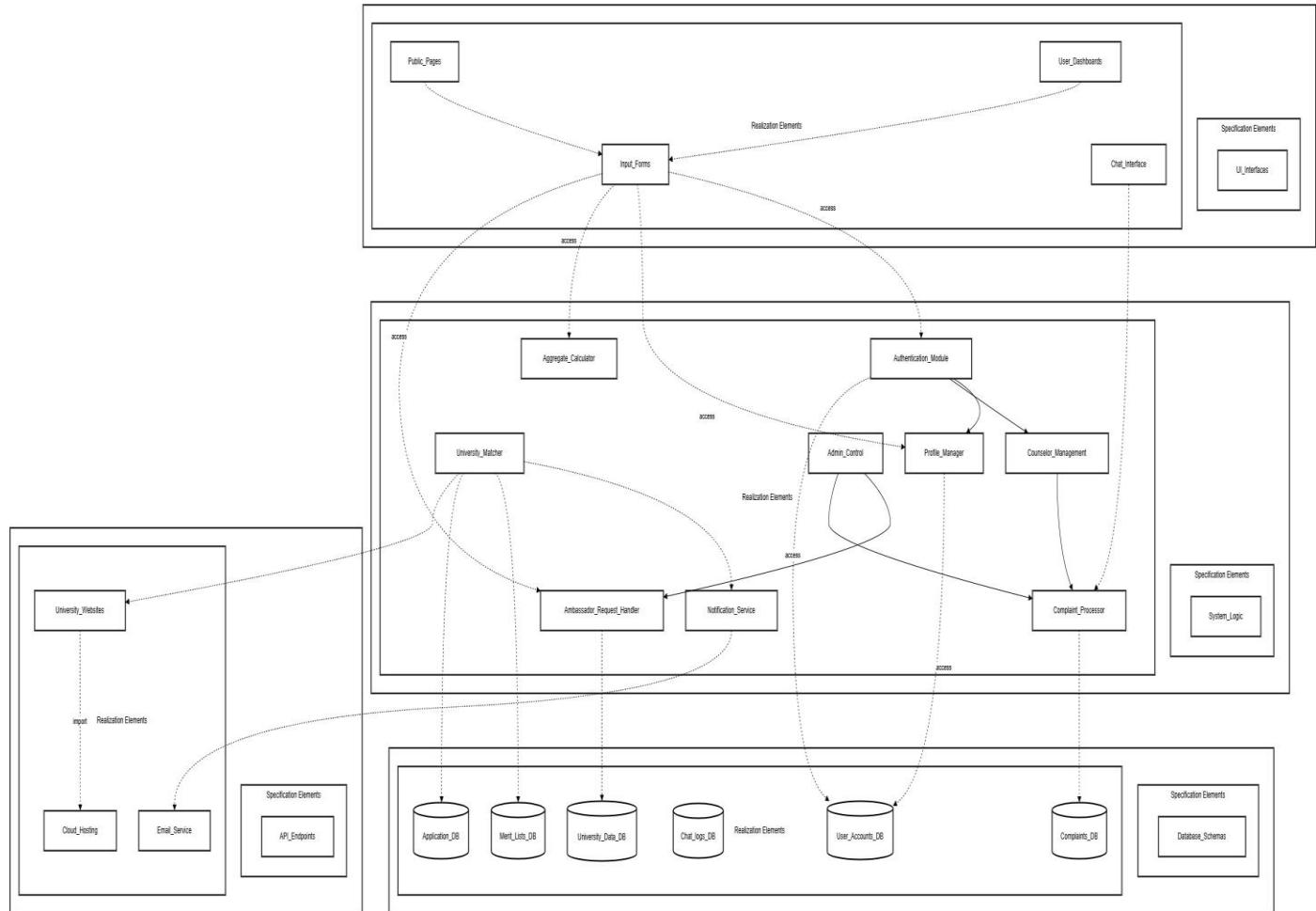
### 3. Use Diagram



## 4. Object Diagram

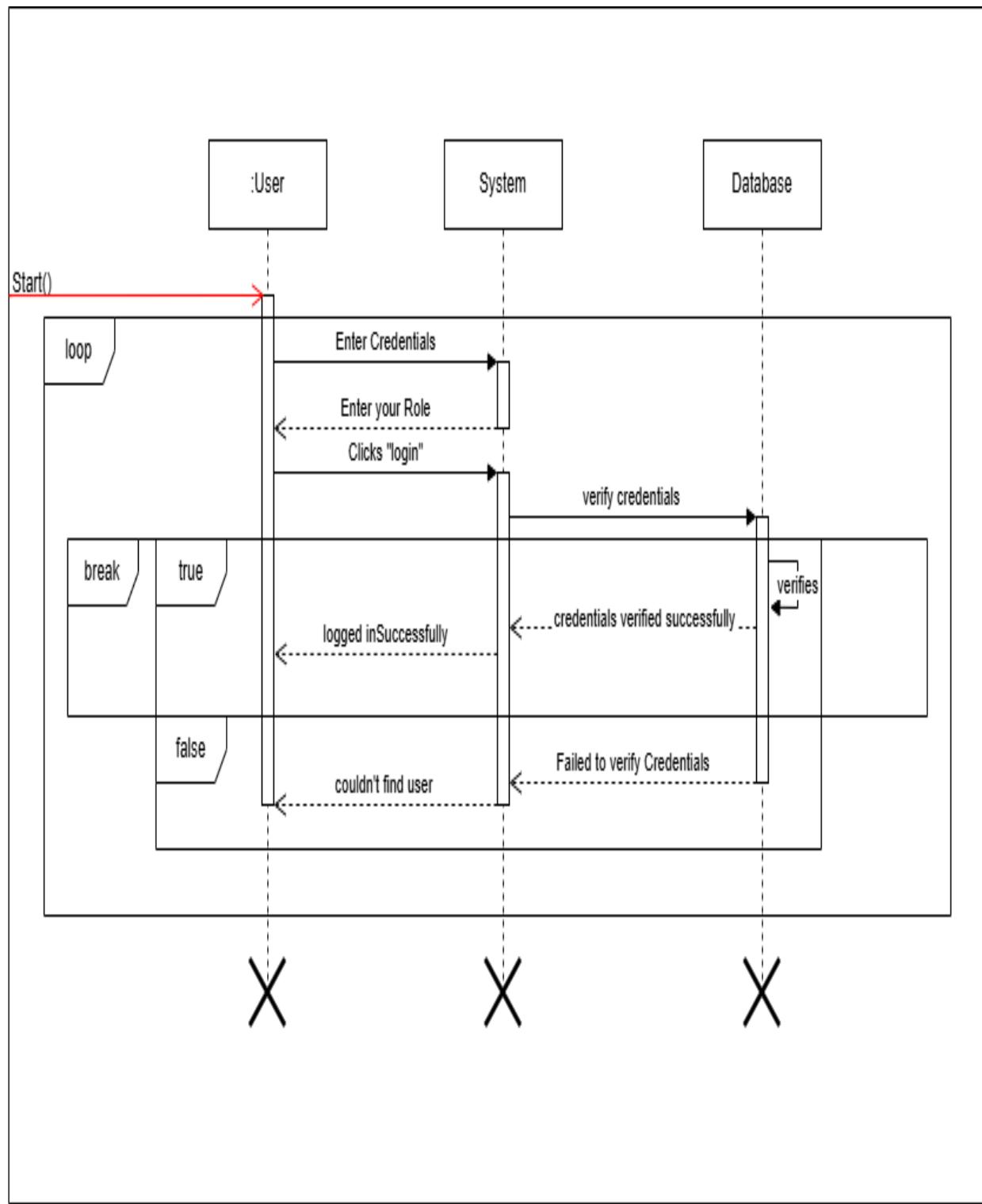


## 5. Package Diagram

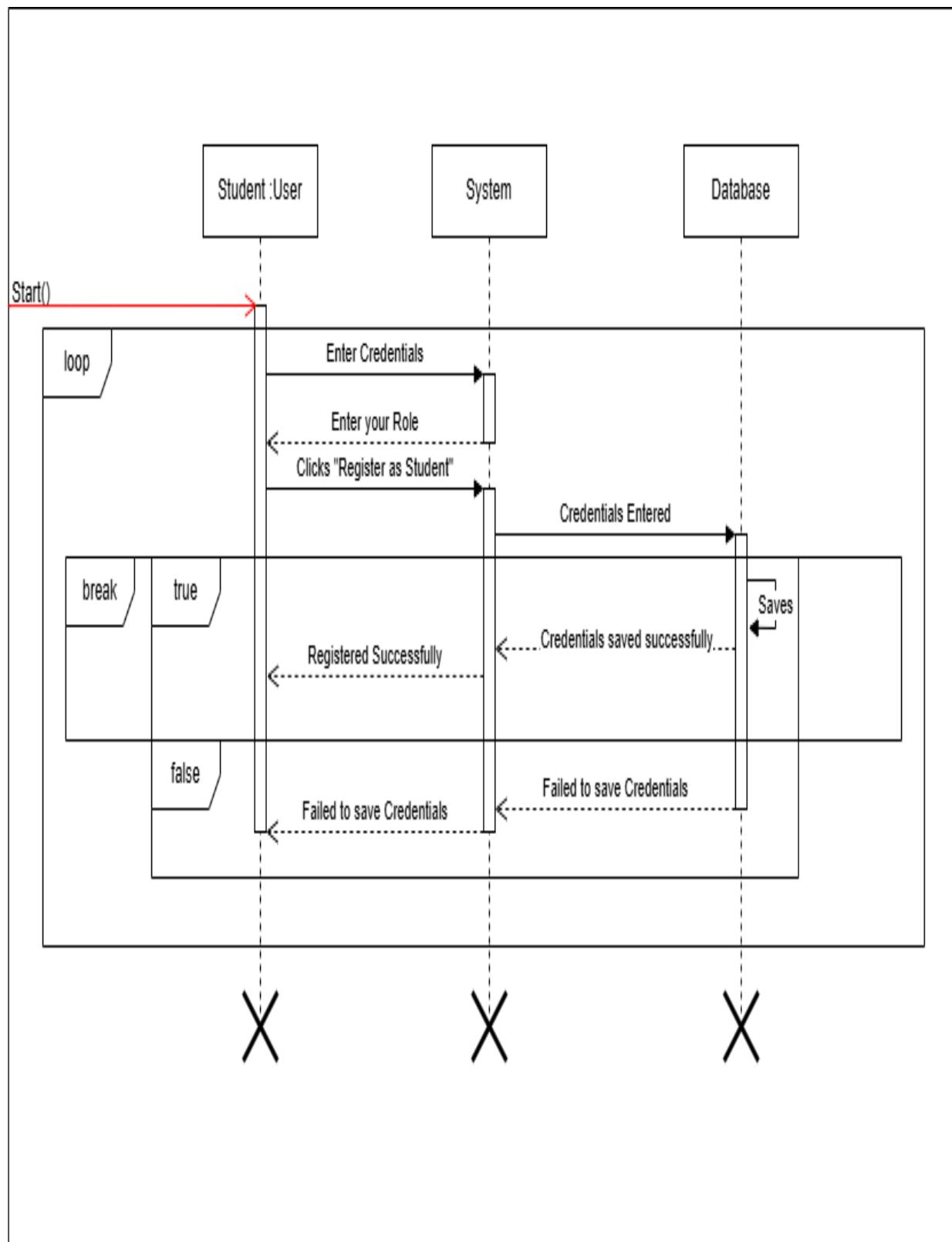


## **6. Sequence Diagrams**

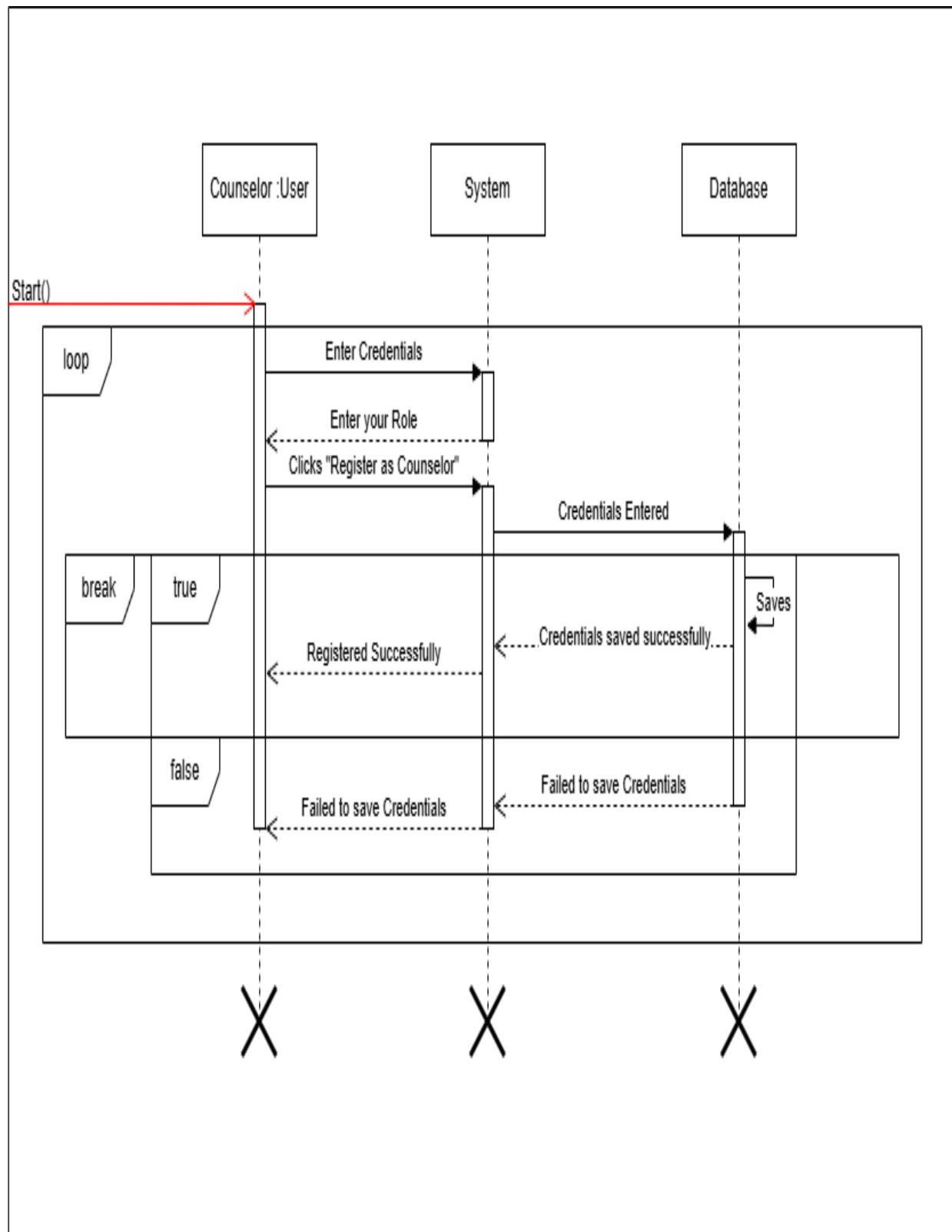
### **1. Login**



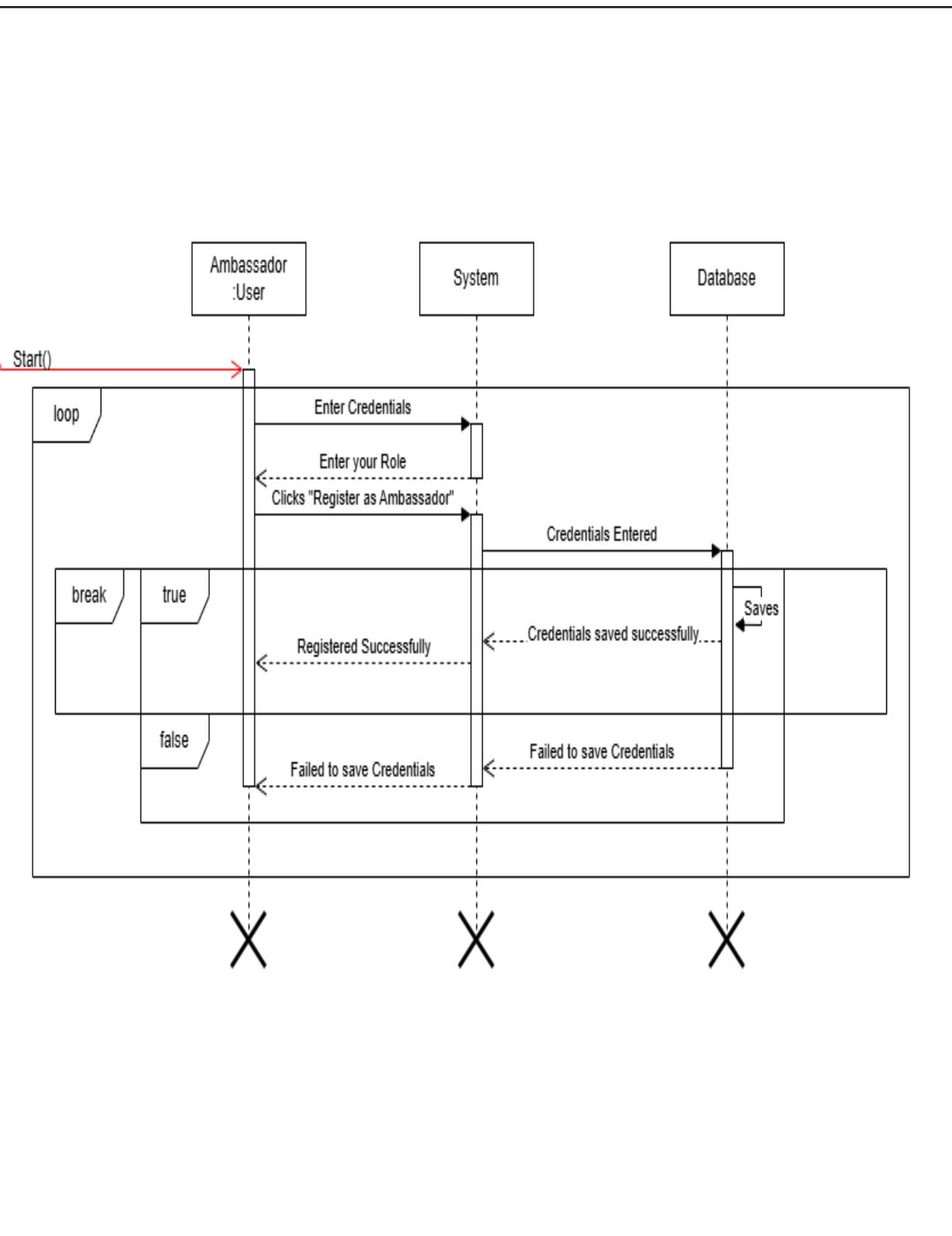
## 2. Register as Student



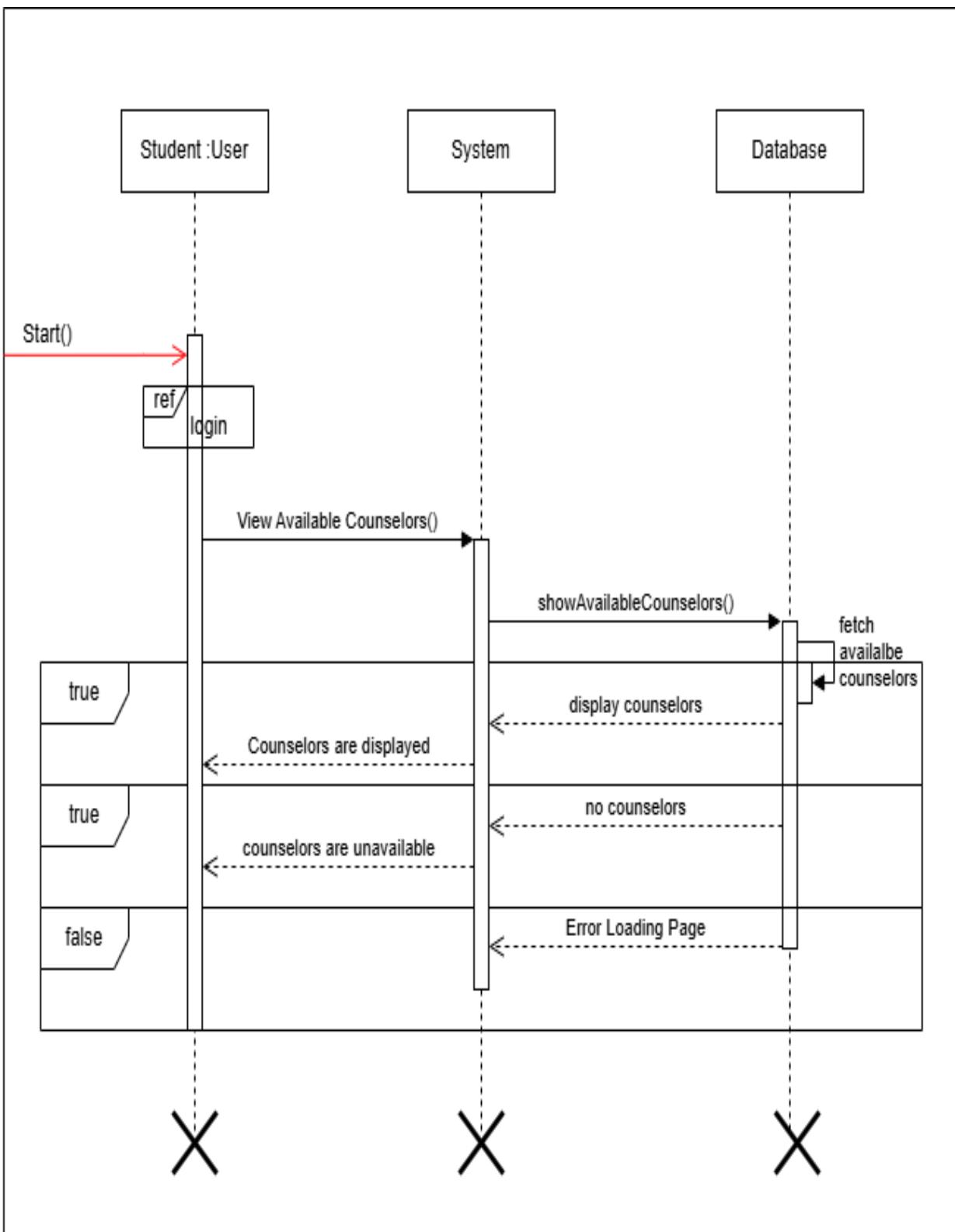
### 3. Register as Counselor



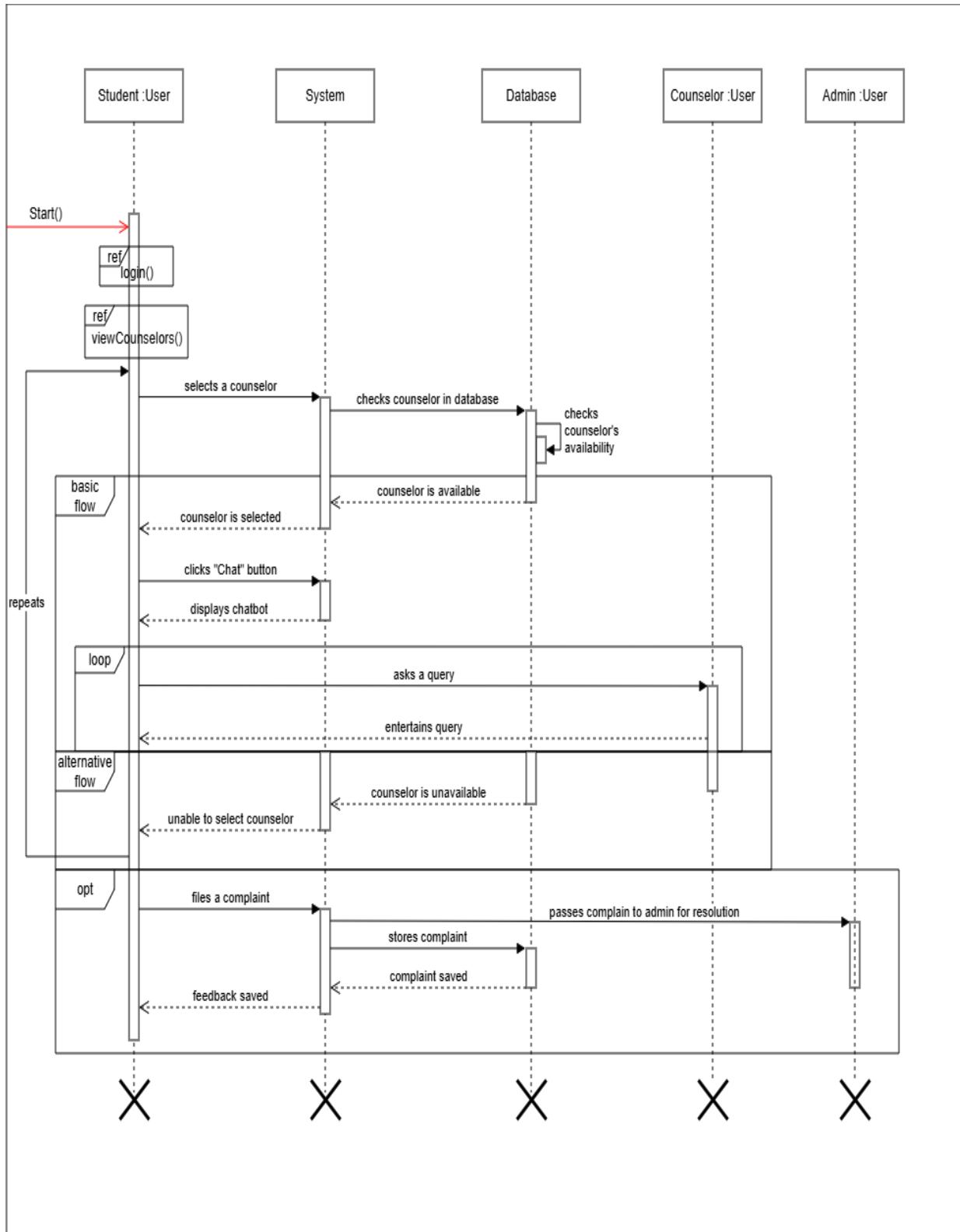
#### 4. Register as University Ambassador



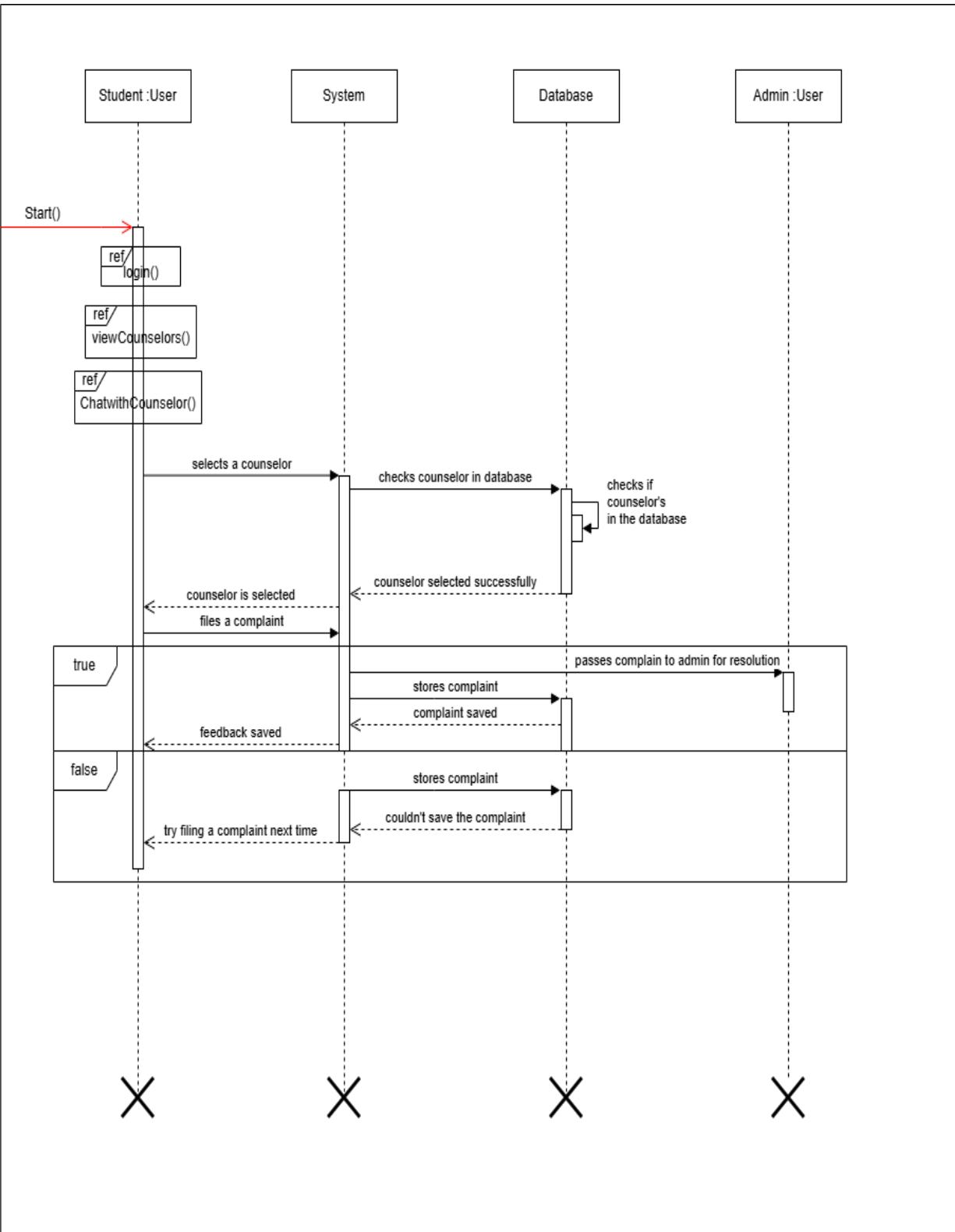
## 5. View Counselors



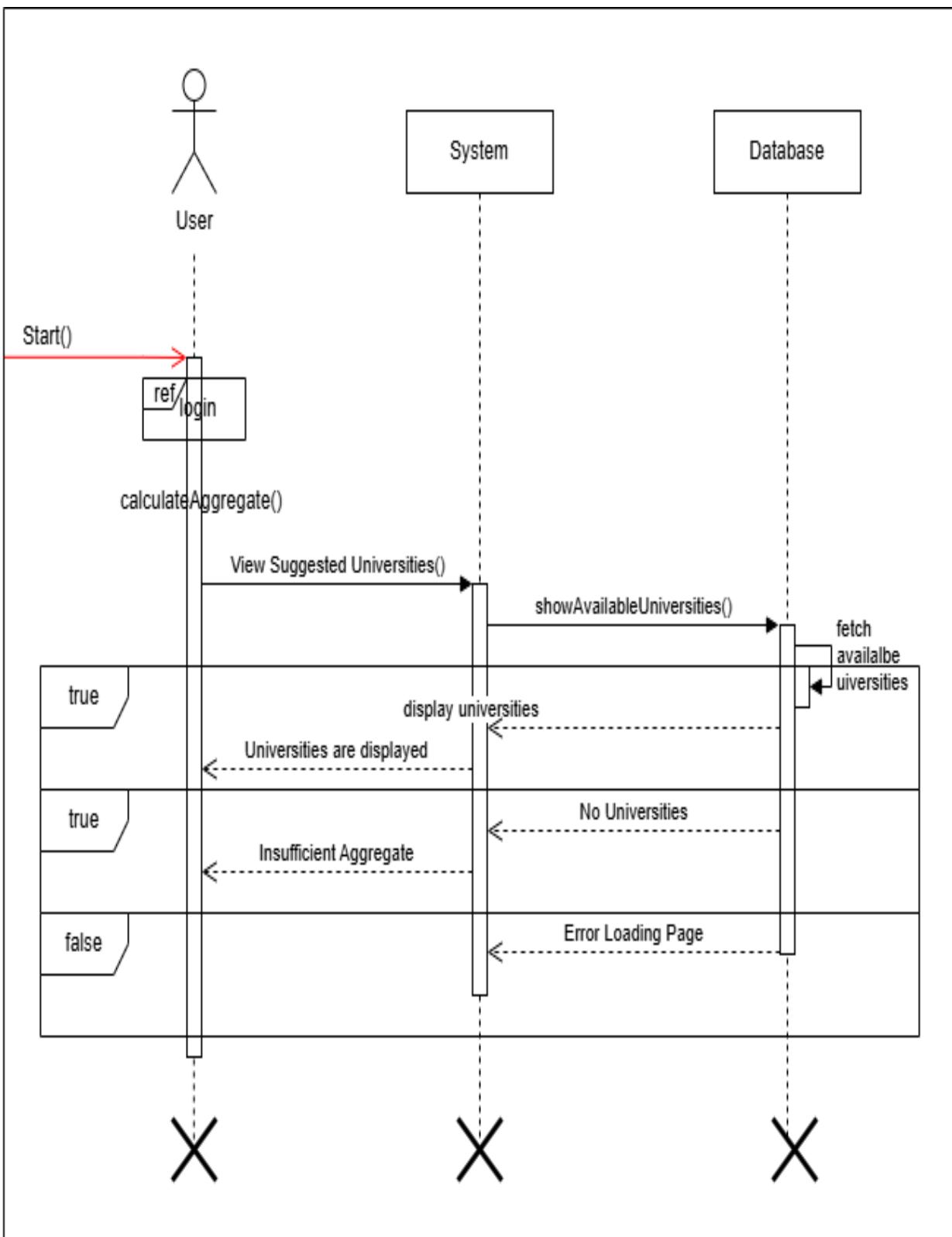
## 6. Chat with Counselors



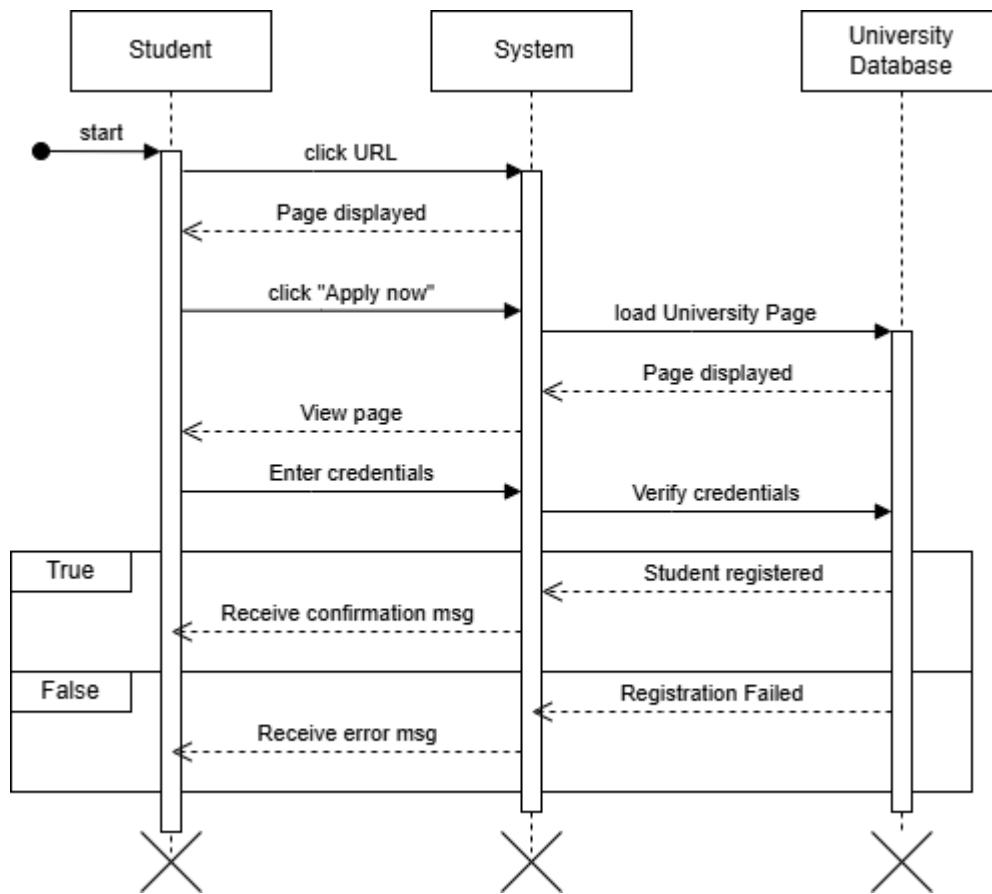
## 7. Complaint about a Counselor



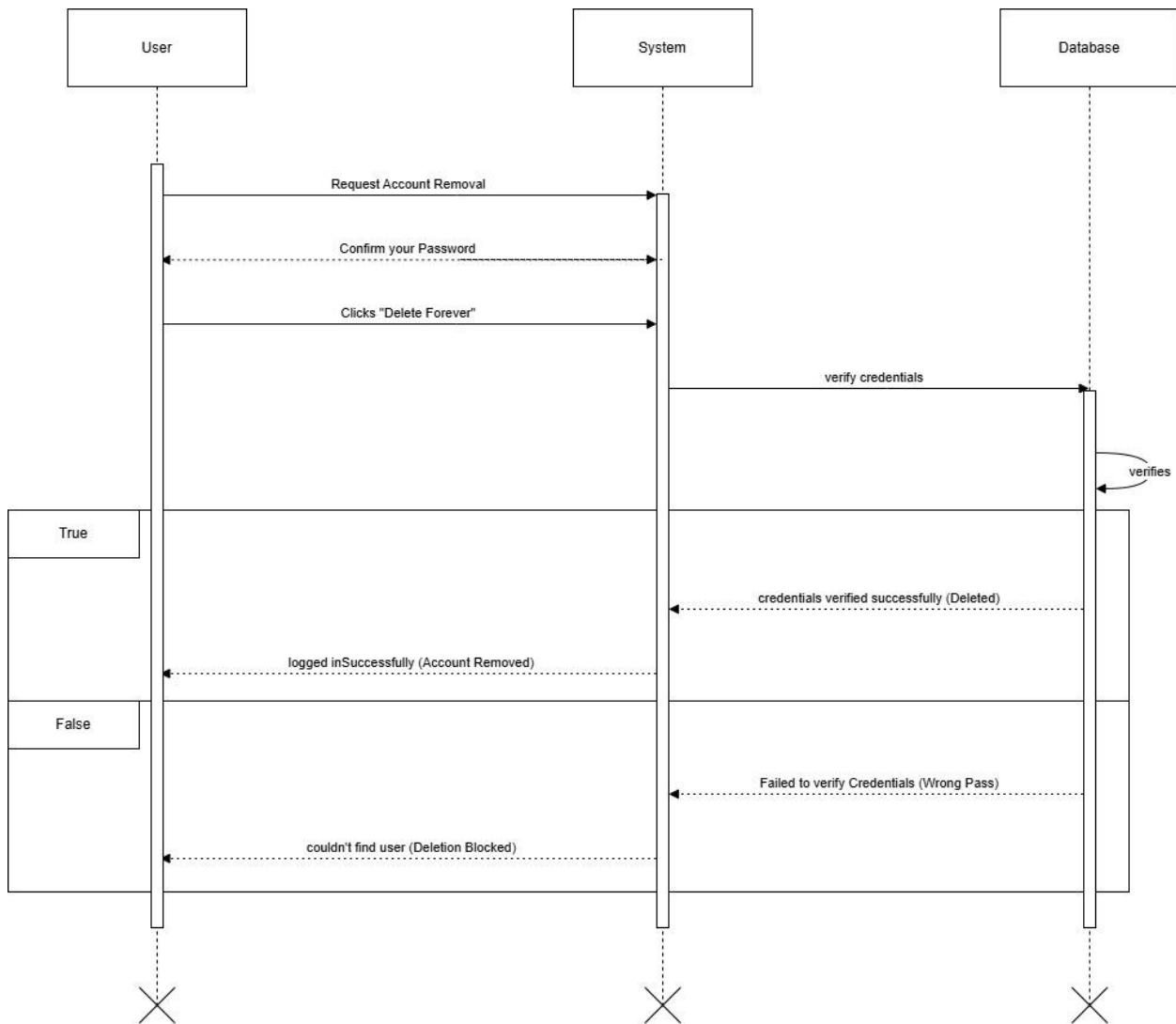
## 8. View Suggested Universities



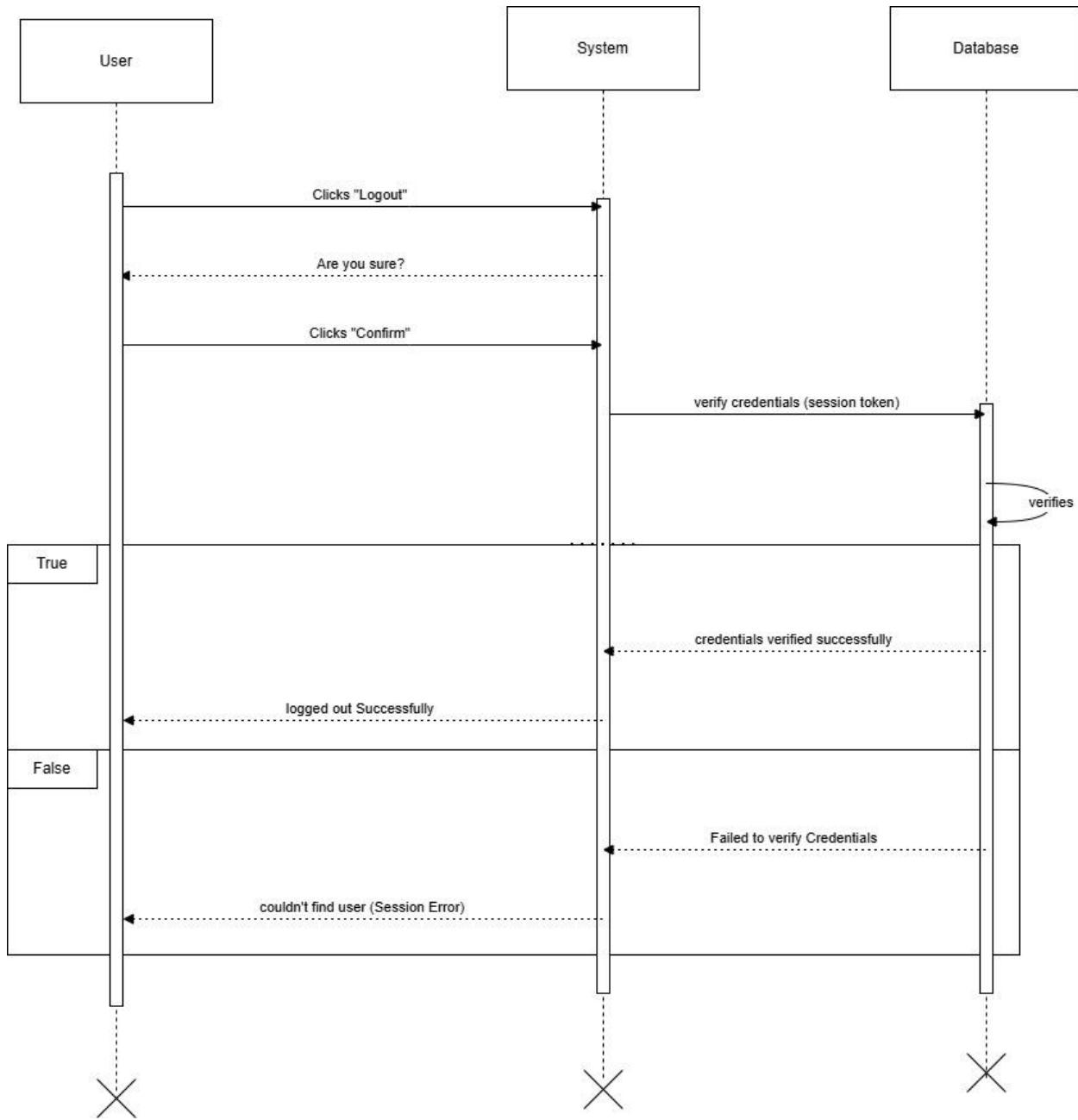
## 9. Apply for Admission



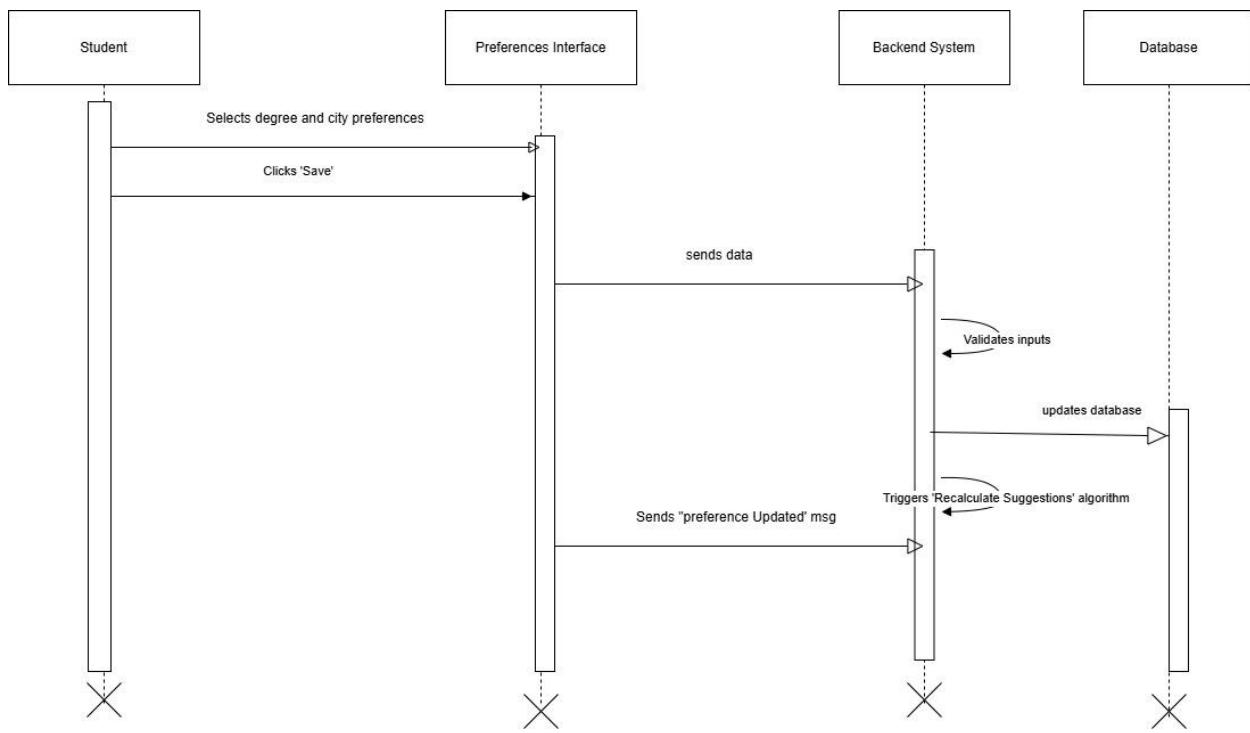
## 10. Delete Account



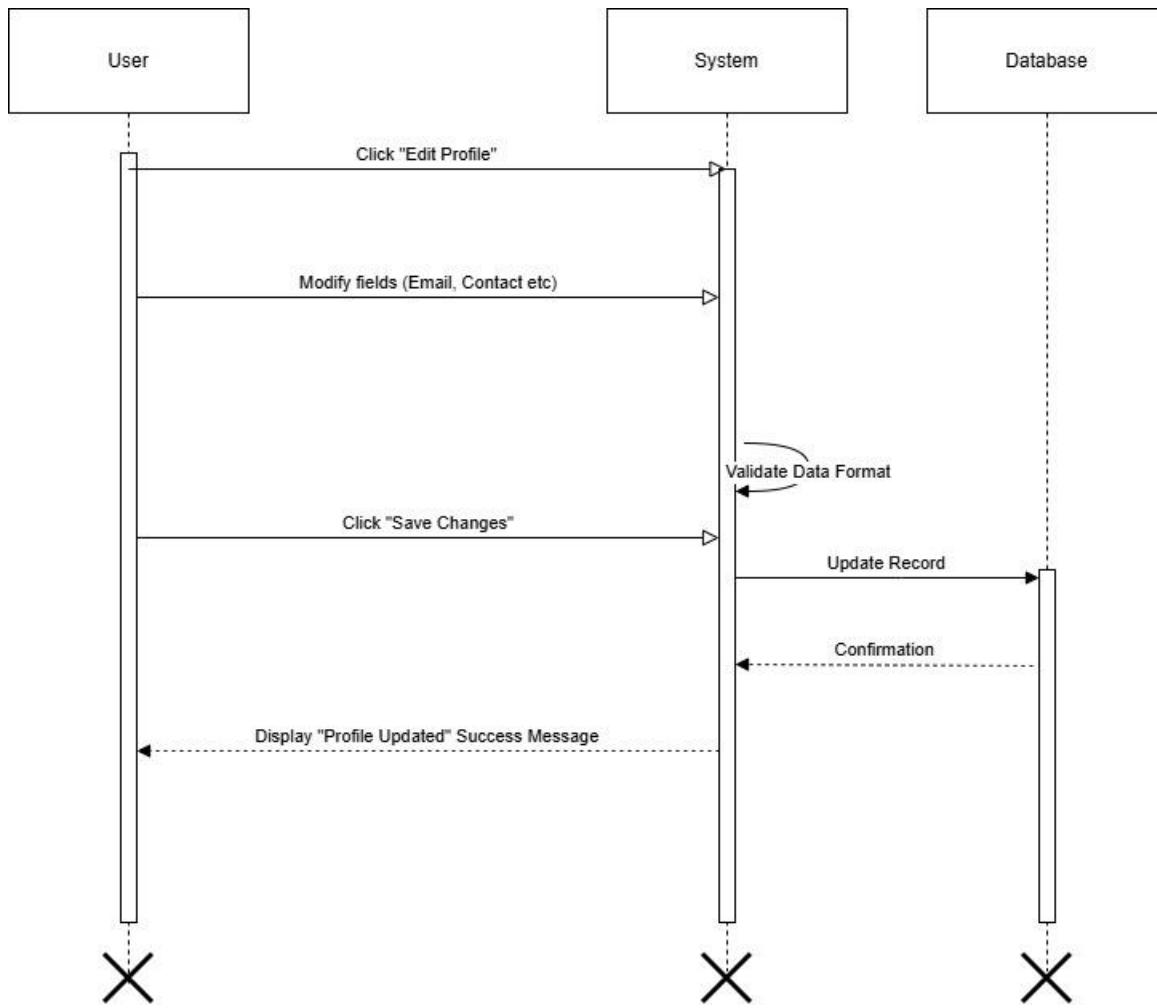
## 11. Logout



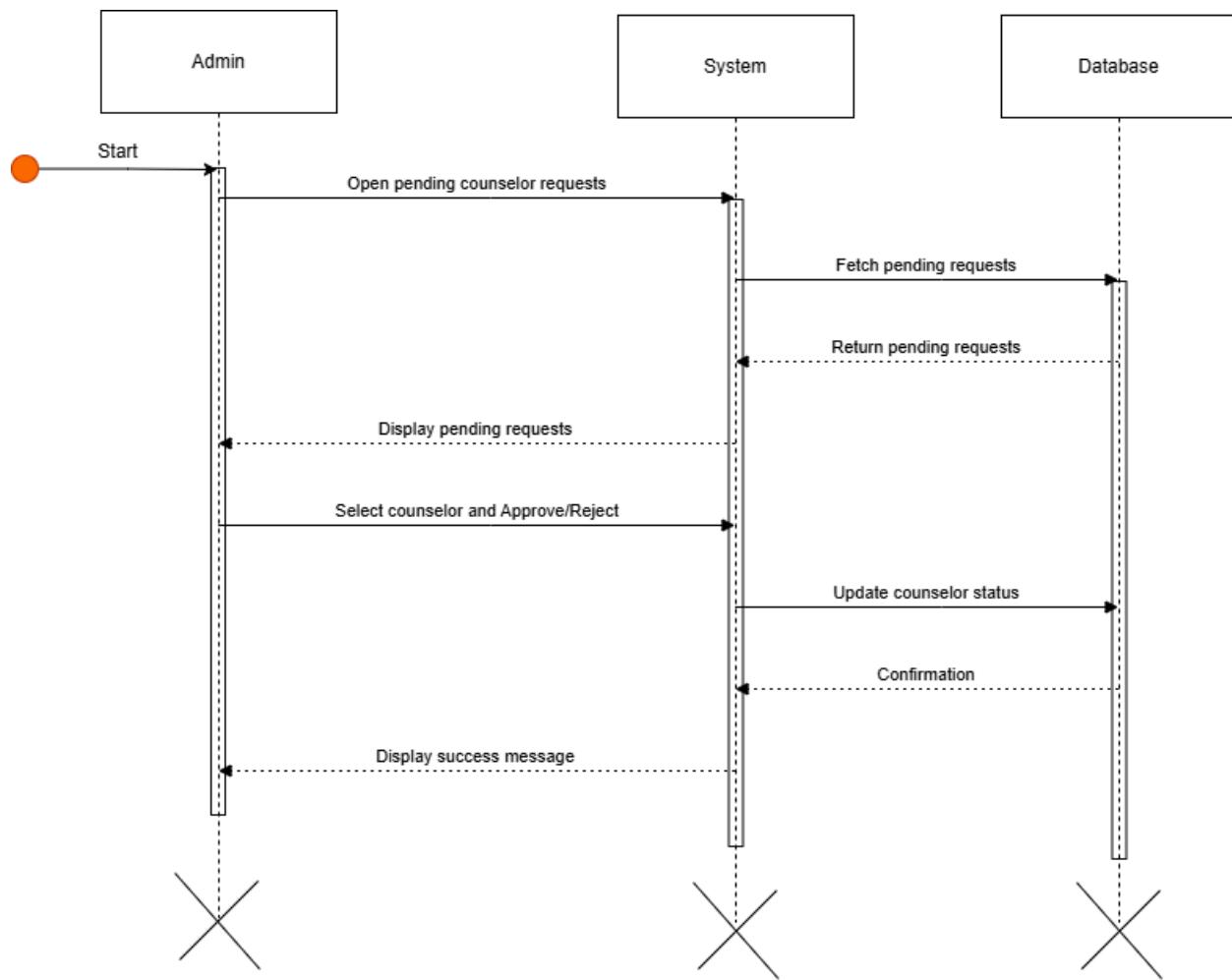
## 12. Set Preference



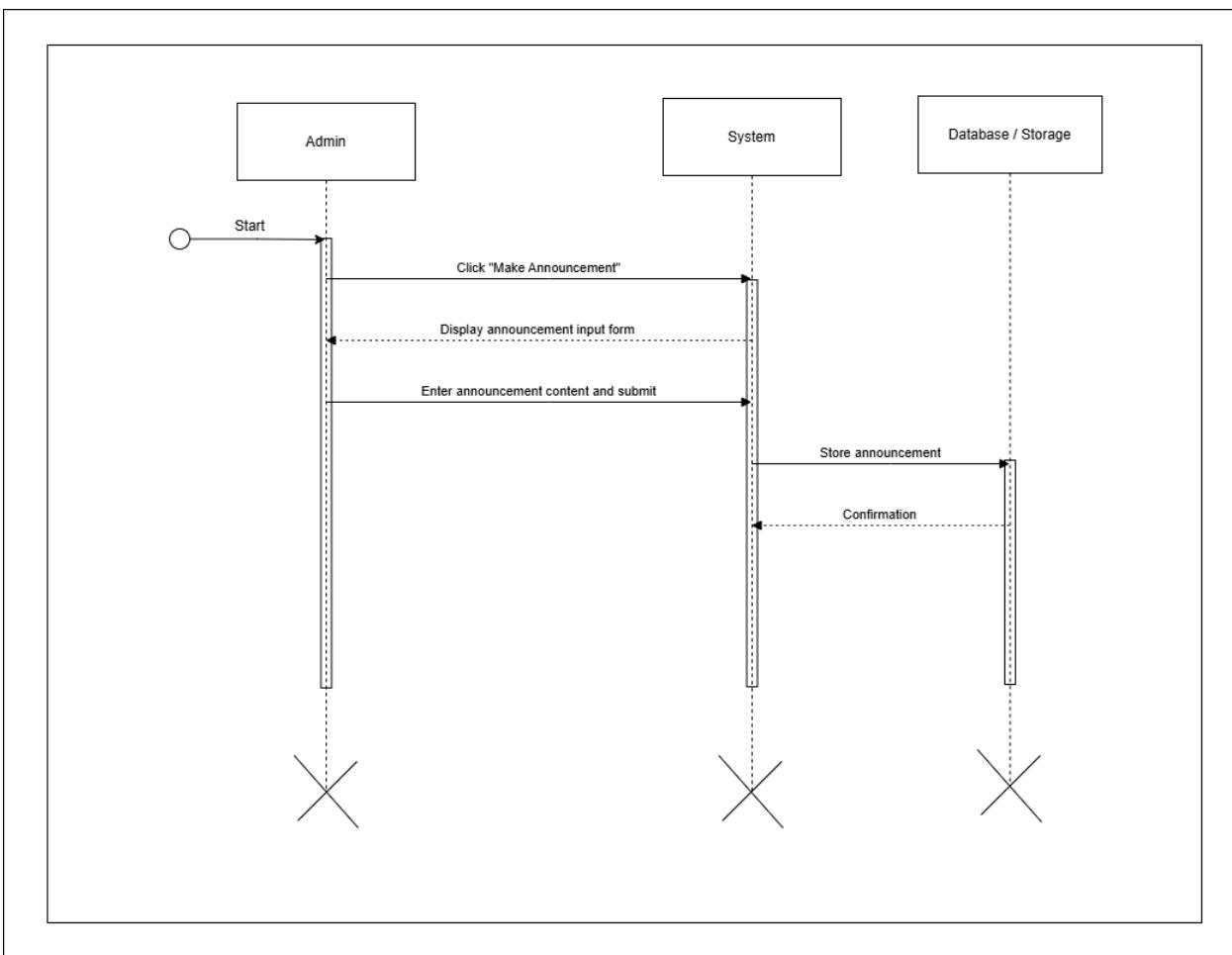
### 13. Update Profile



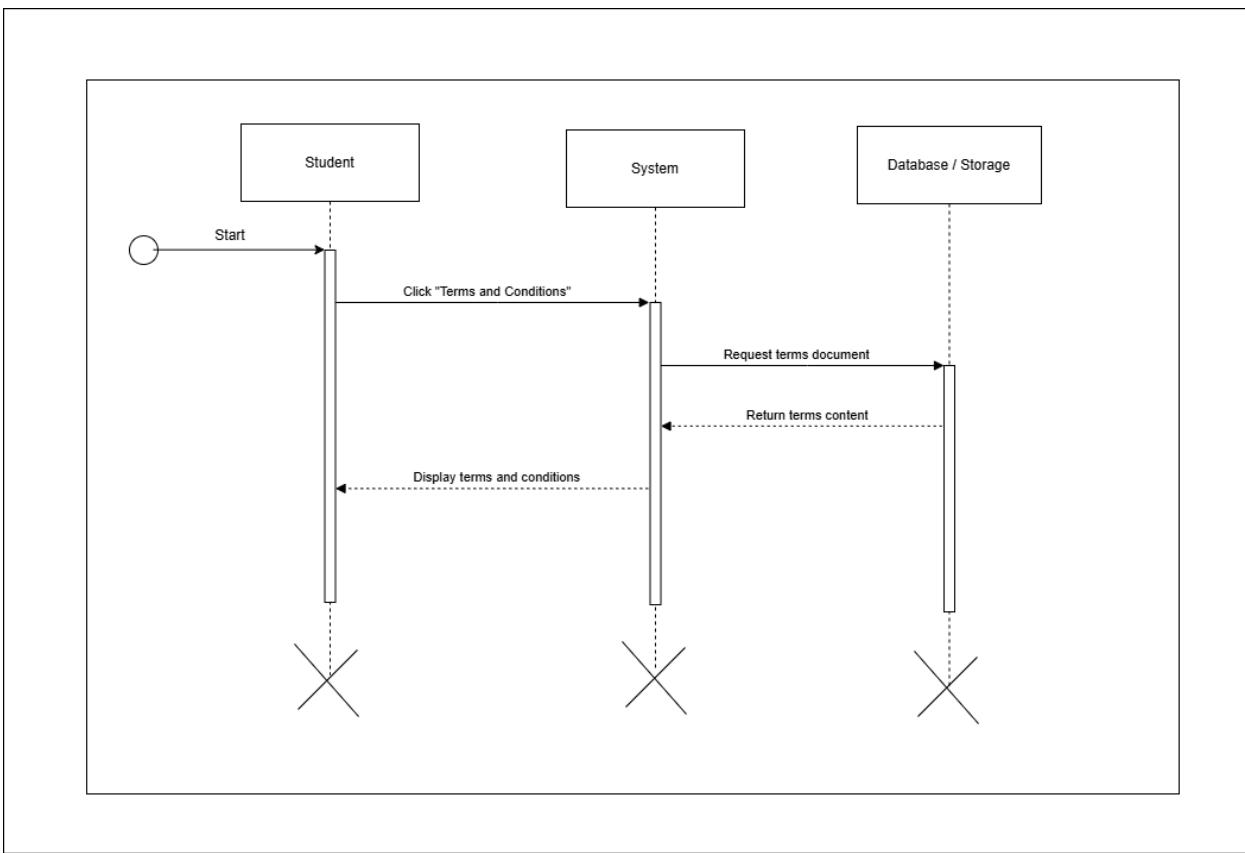
### 14. Approve/Reject Counselors



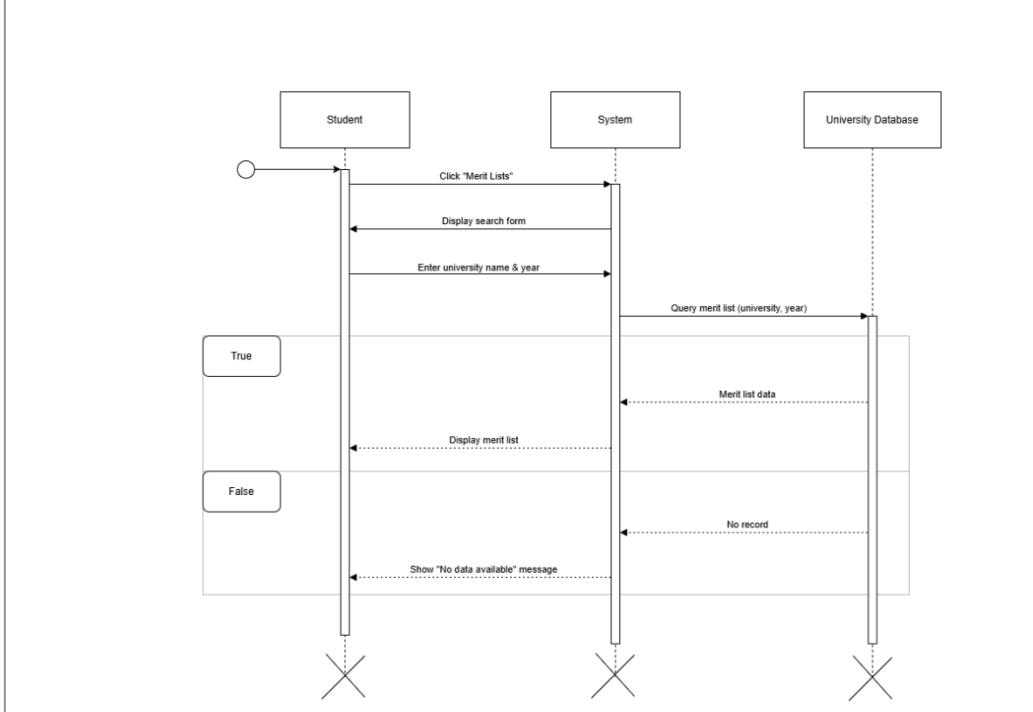
## 15. Public Site Announcement



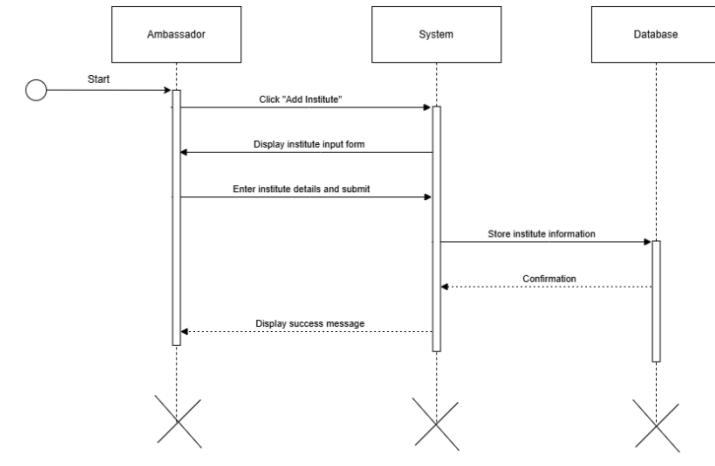
## 16. View Terms And Conditions



## 17. View Merit List

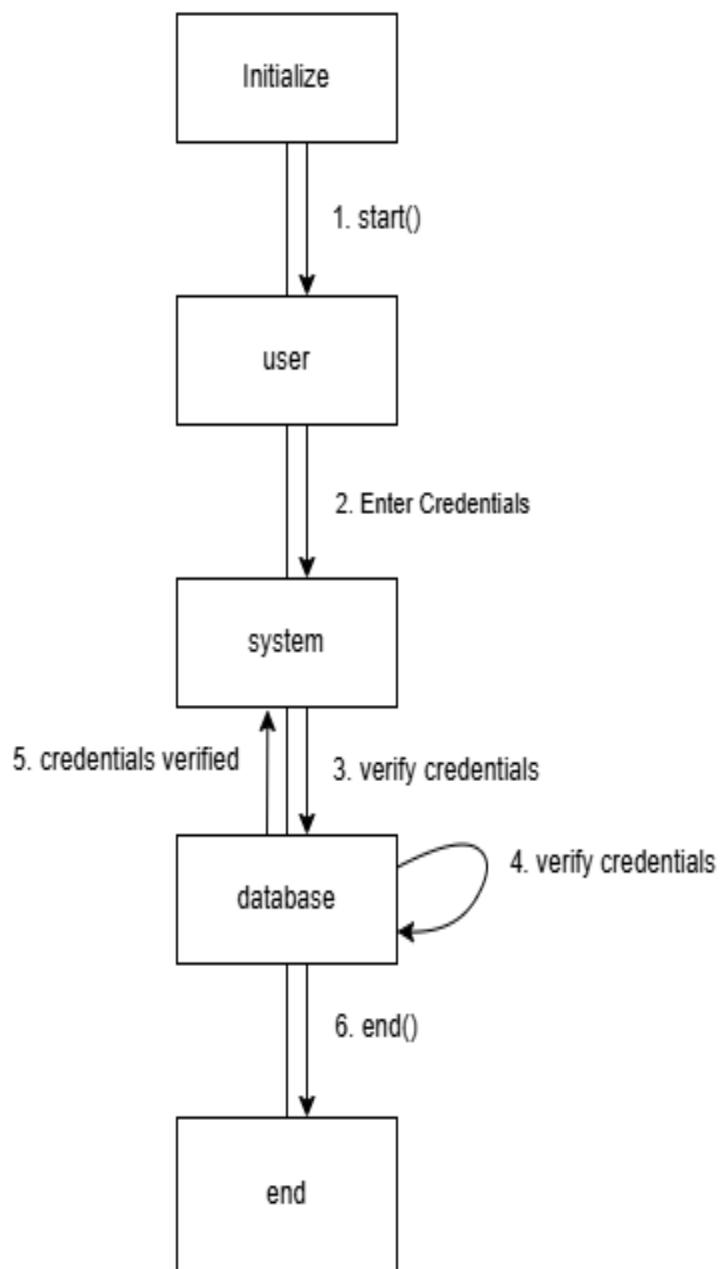


## 18.Add Institute

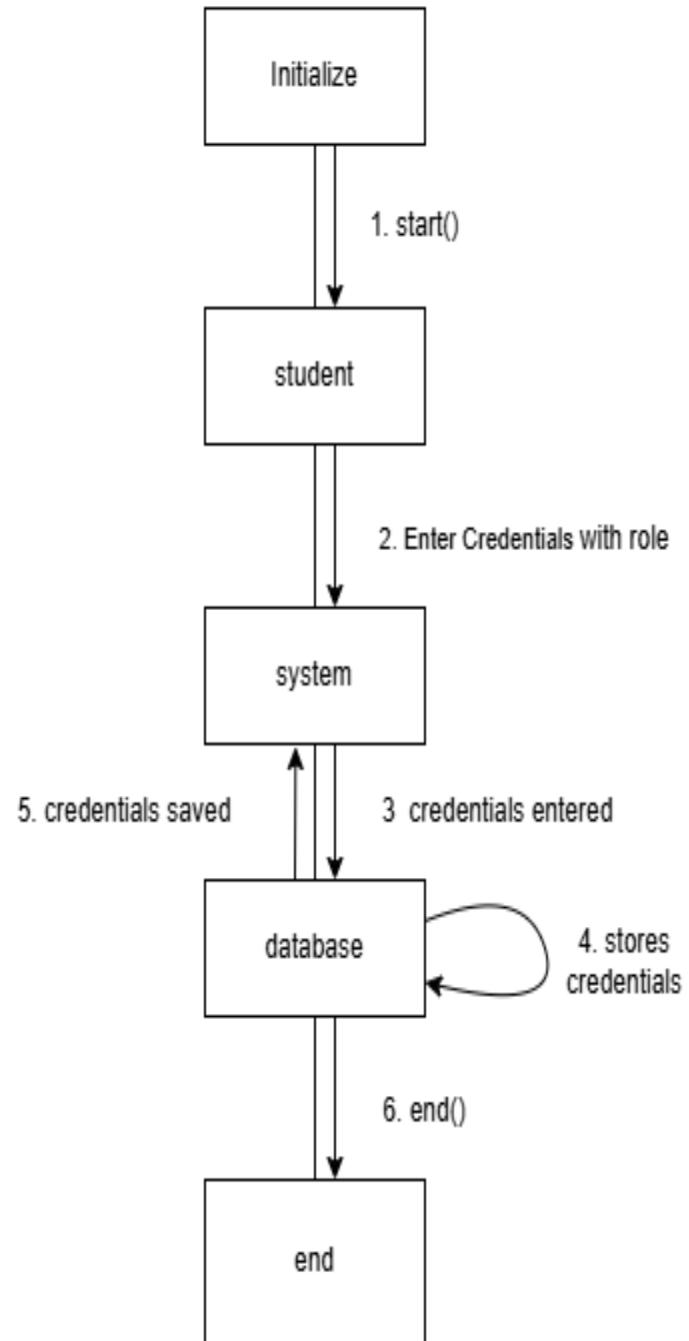


## 7. Collaboration Diagrams

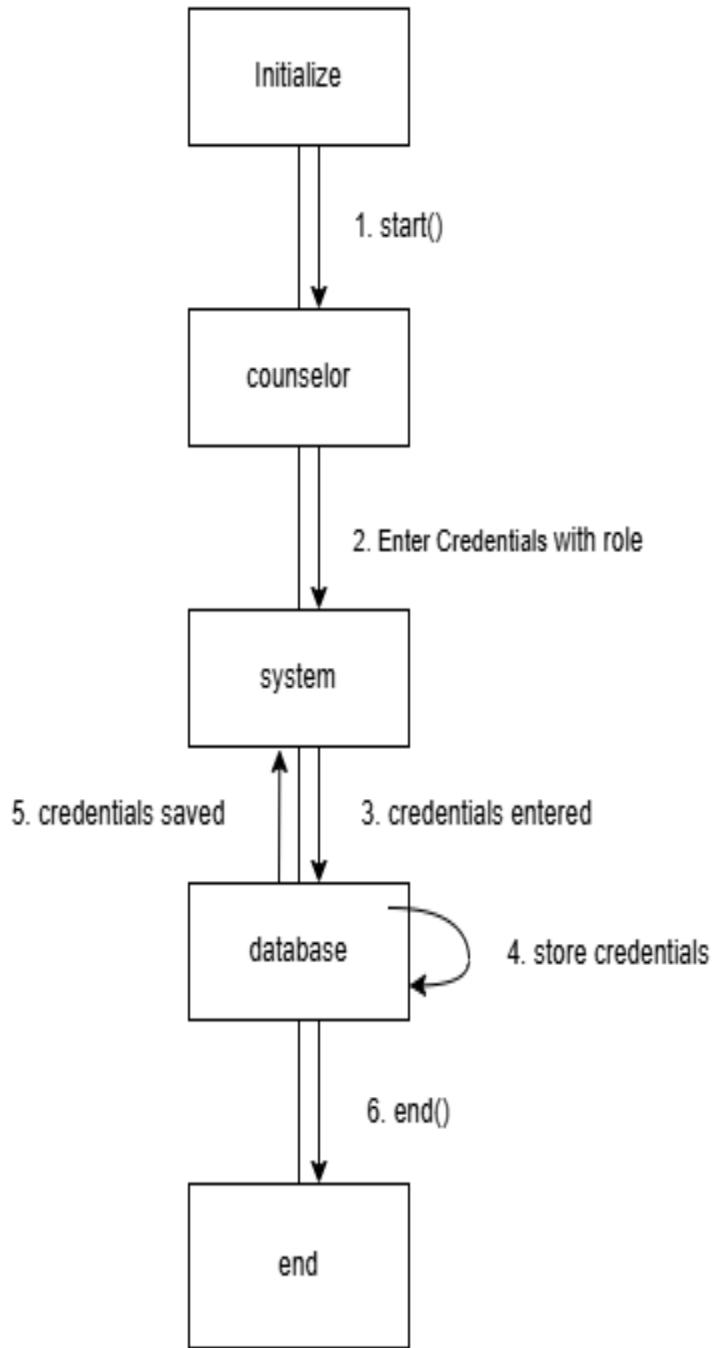
### 1. Login



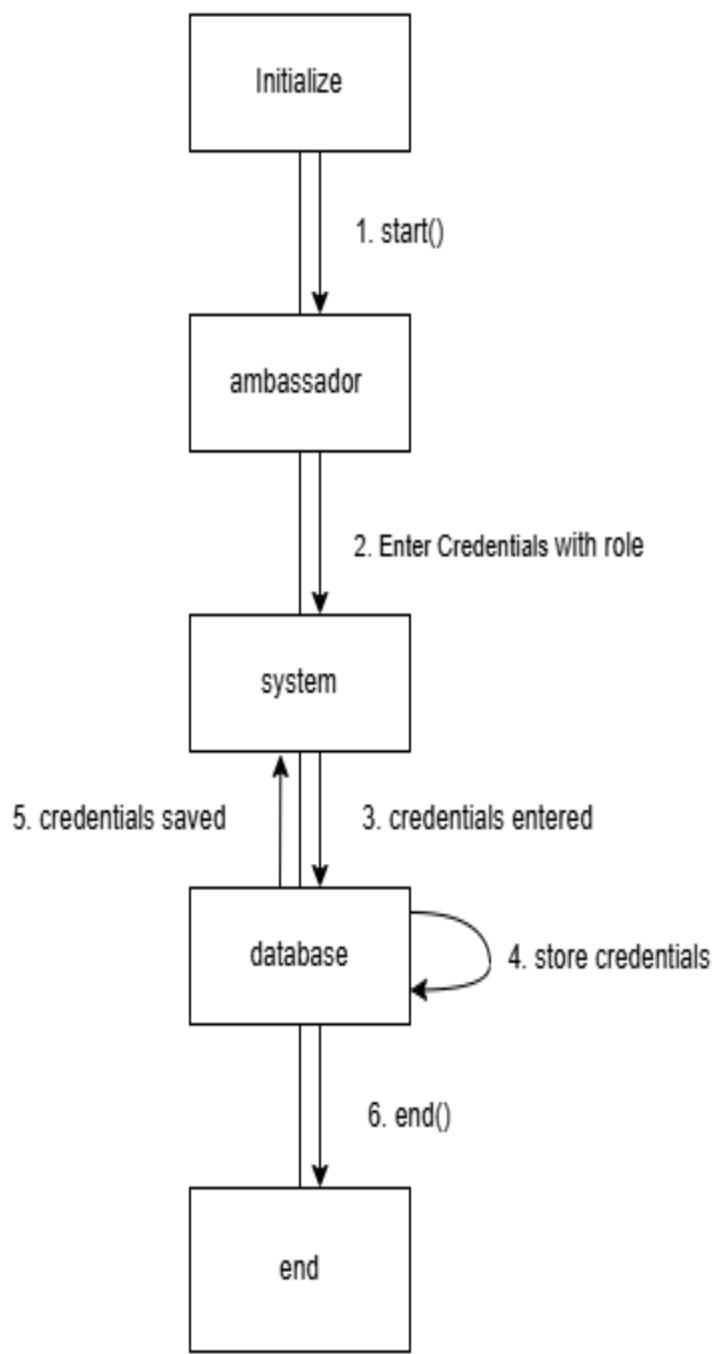
## 2. Register as Student



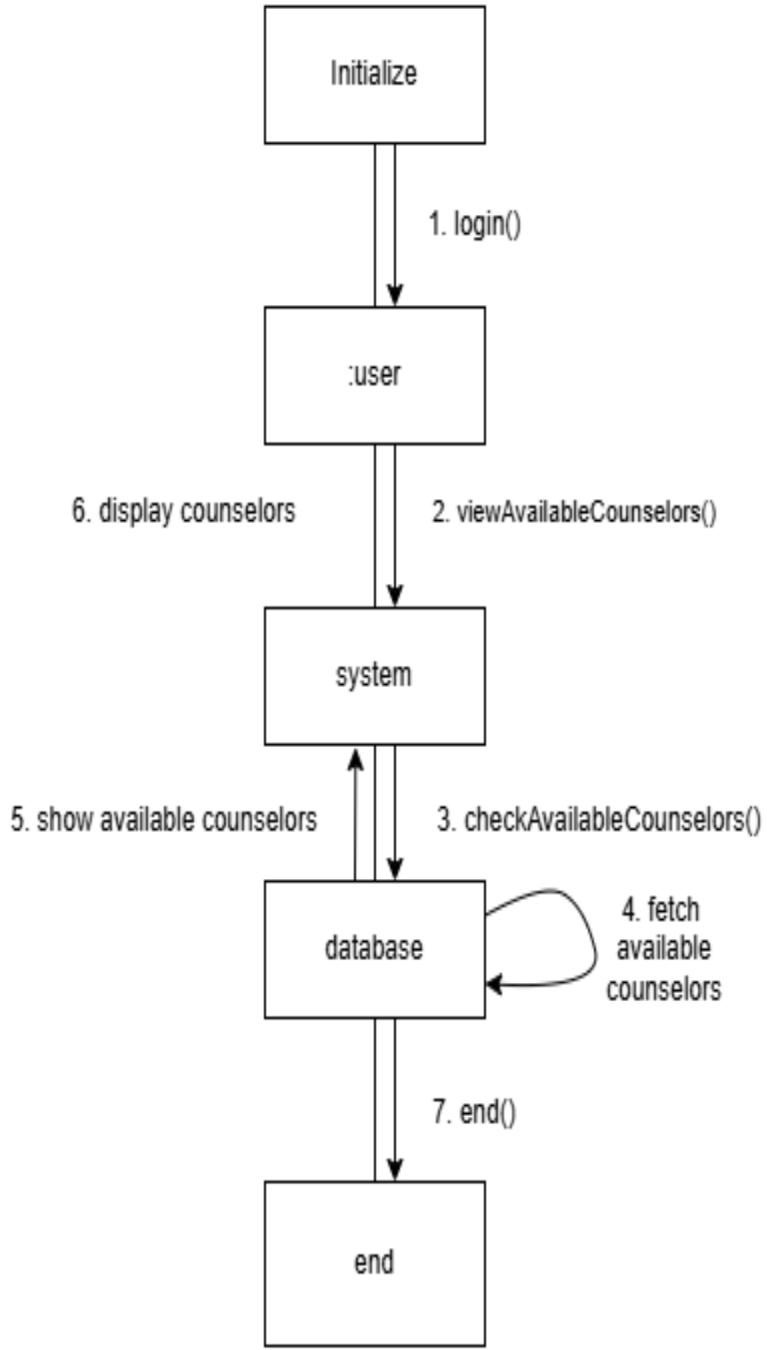
### 3. Register as Counselor



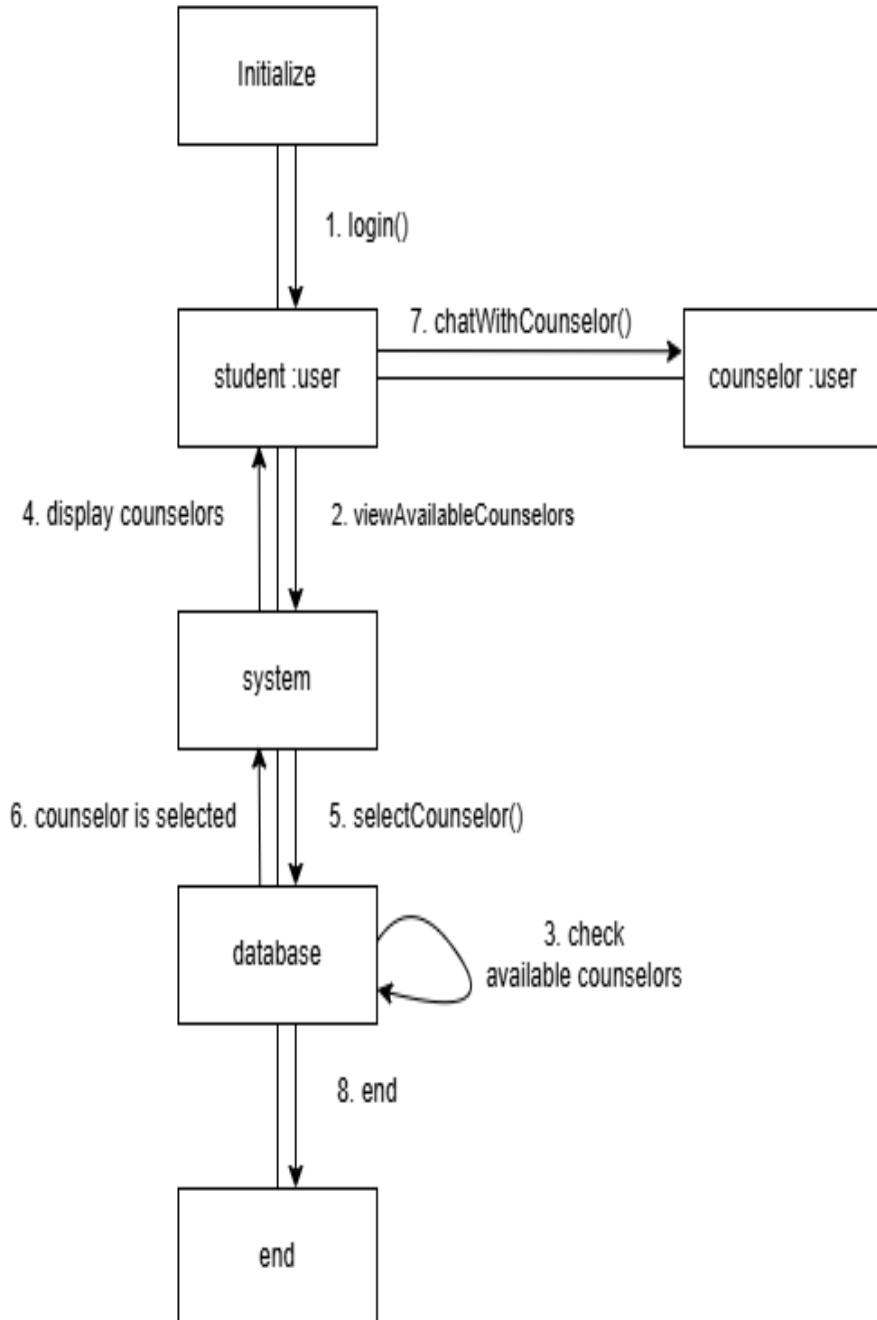
#### 4. Register as University Ambassador



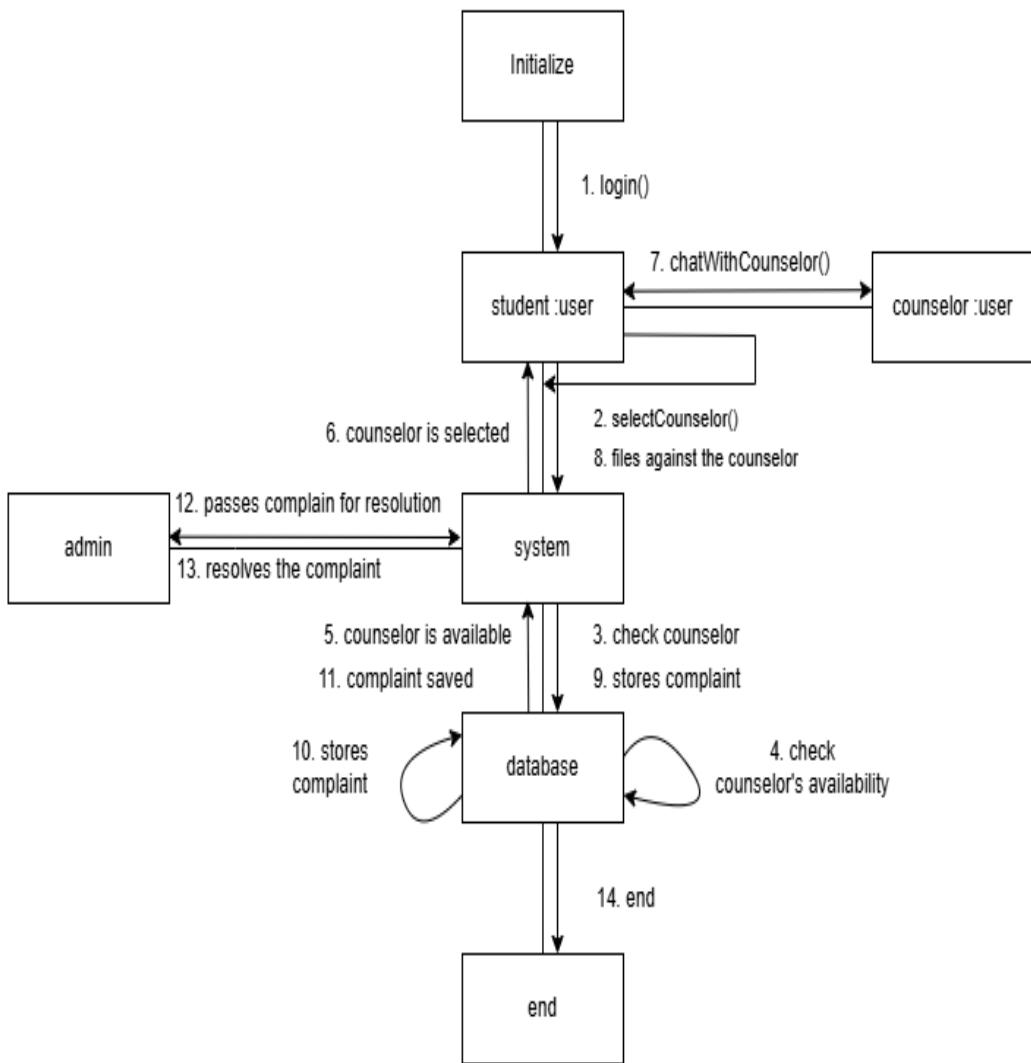
## 5. View Counselors



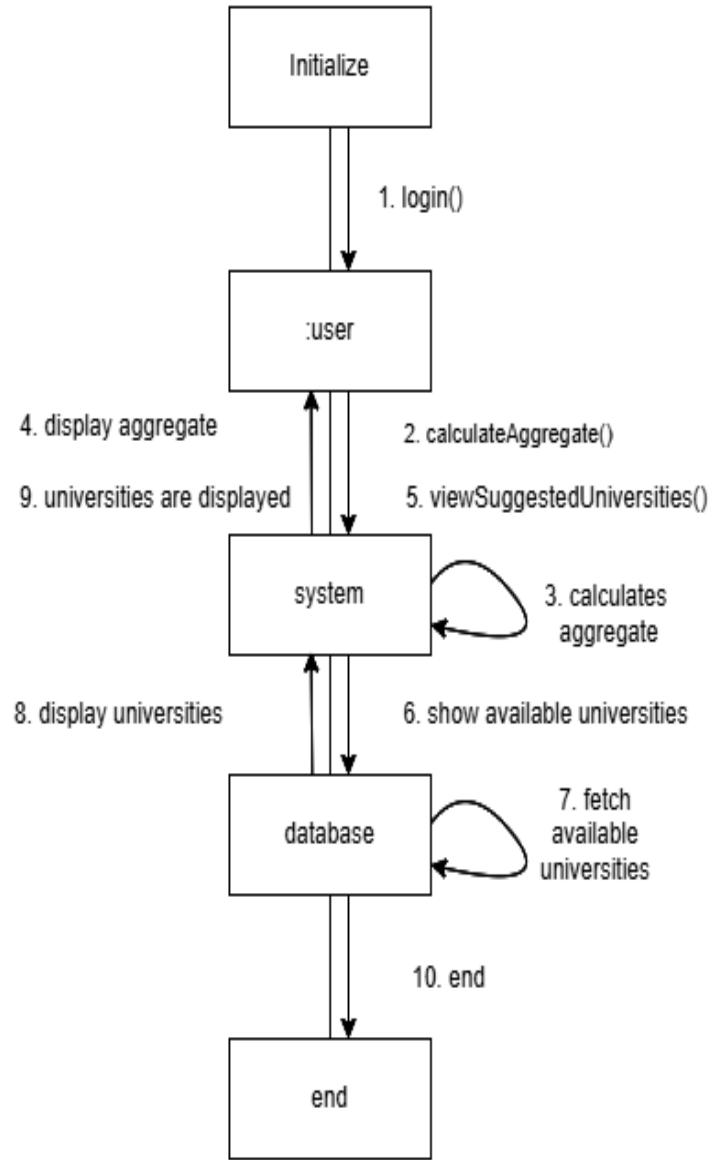
## 6. Chat with Counselors



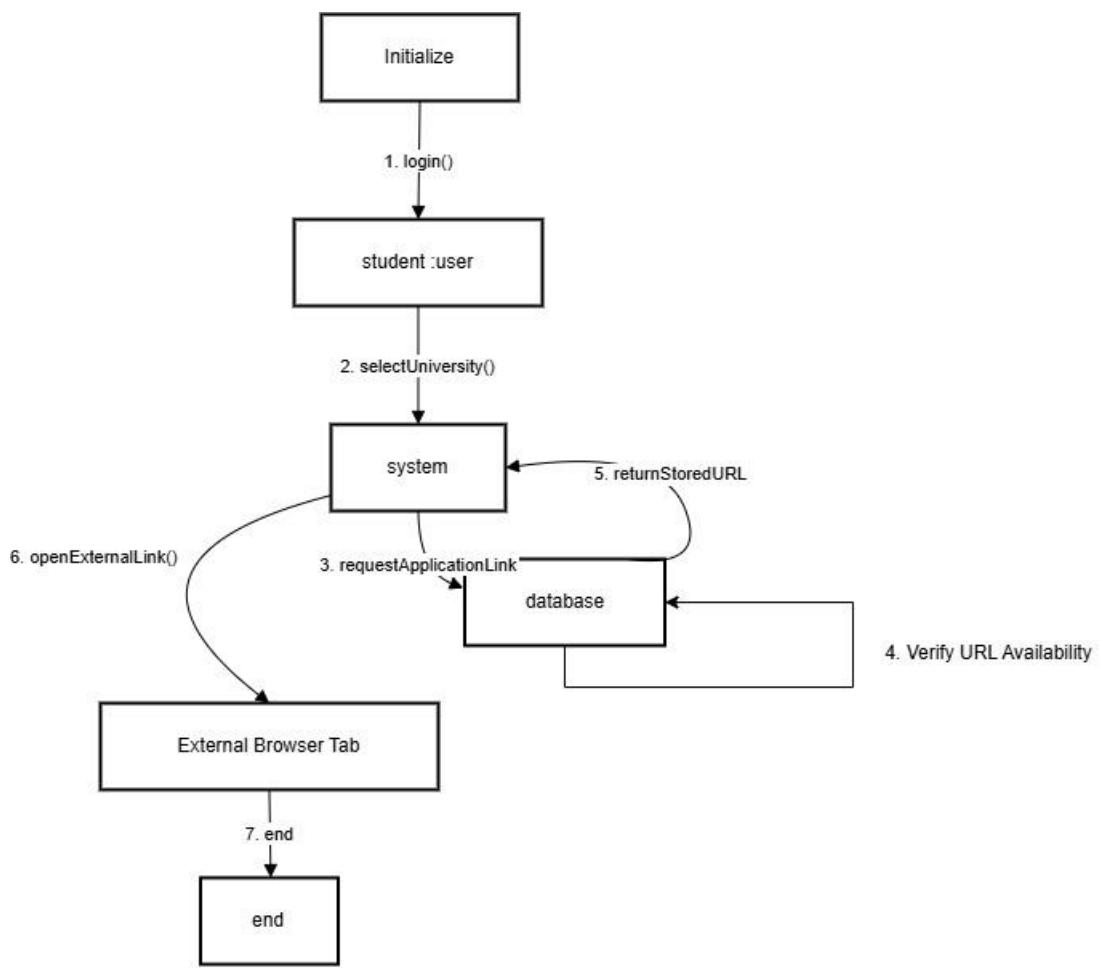
## 7. Complaint about a Counselor



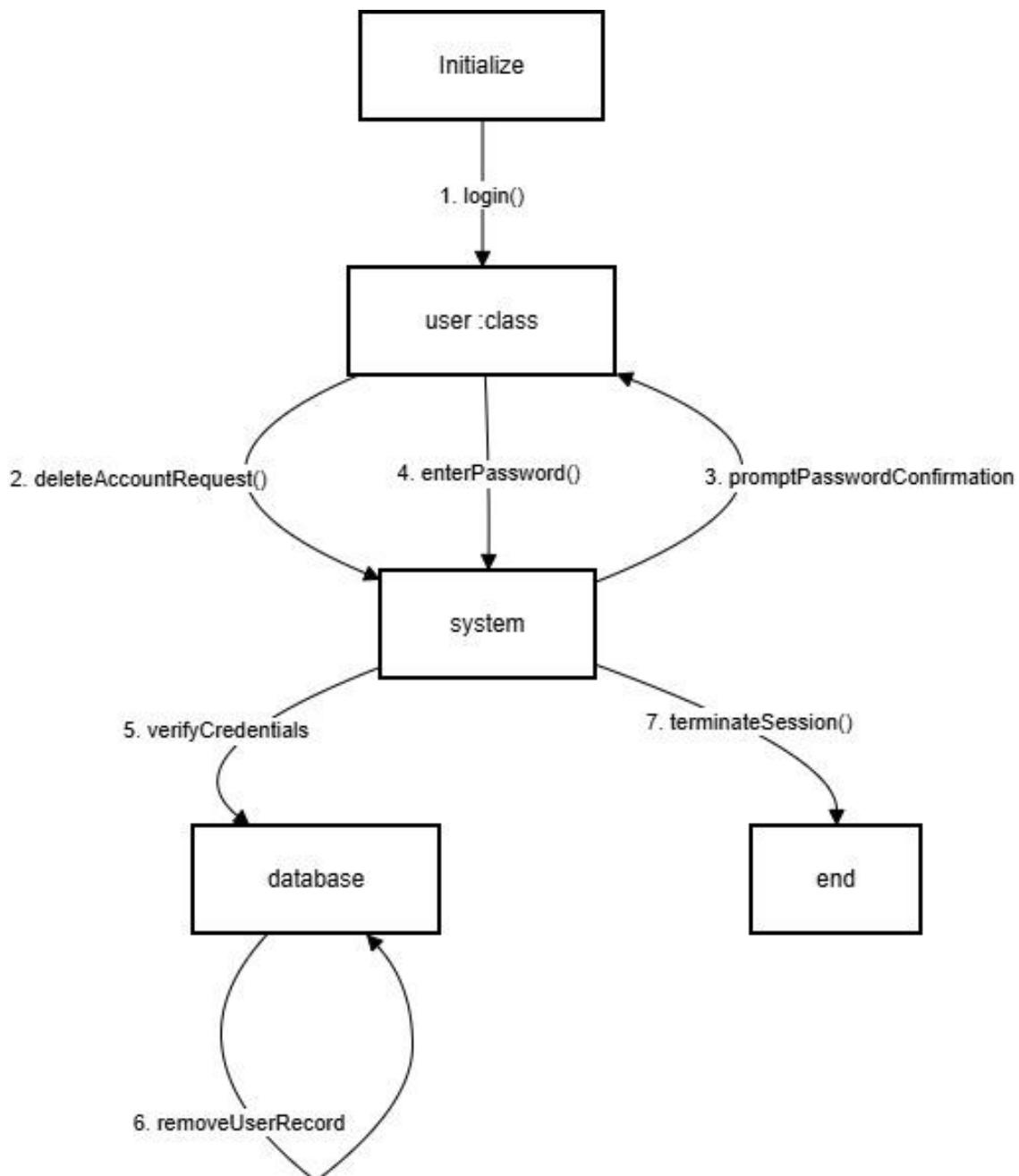
## **8. View Suggested Universities**



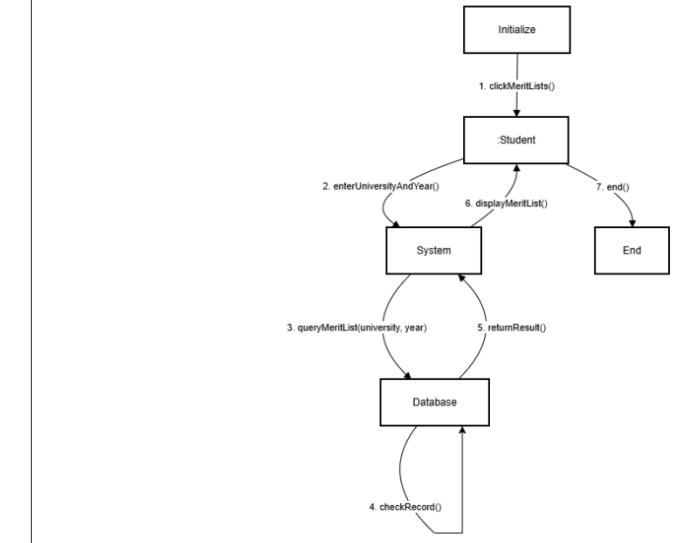
## 9. Apply for Addmission



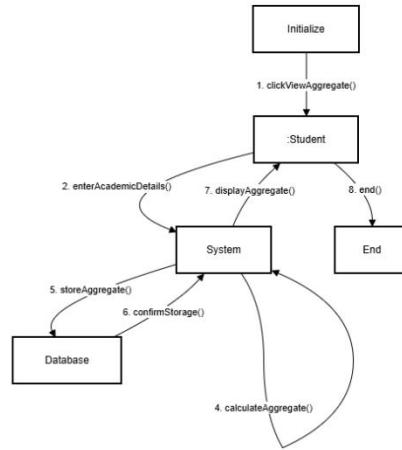
## 10. Delete Account



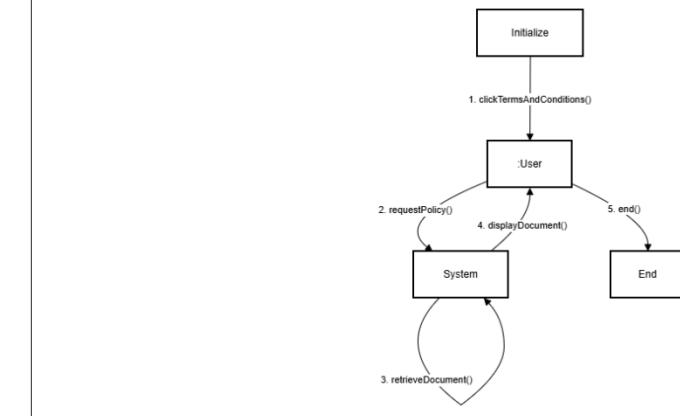
## 11. View Merit Lists



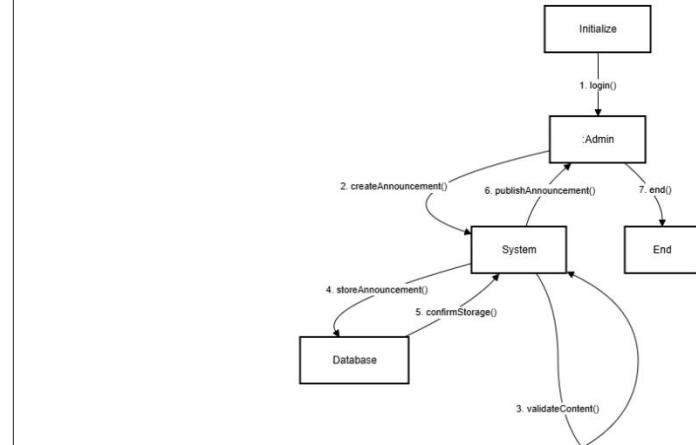
## 12. View Aggregate



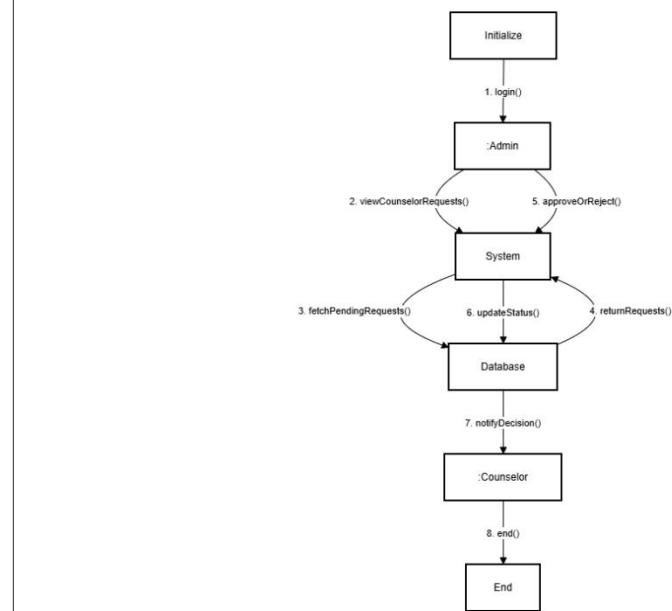
### 13. View Terms and Conditions



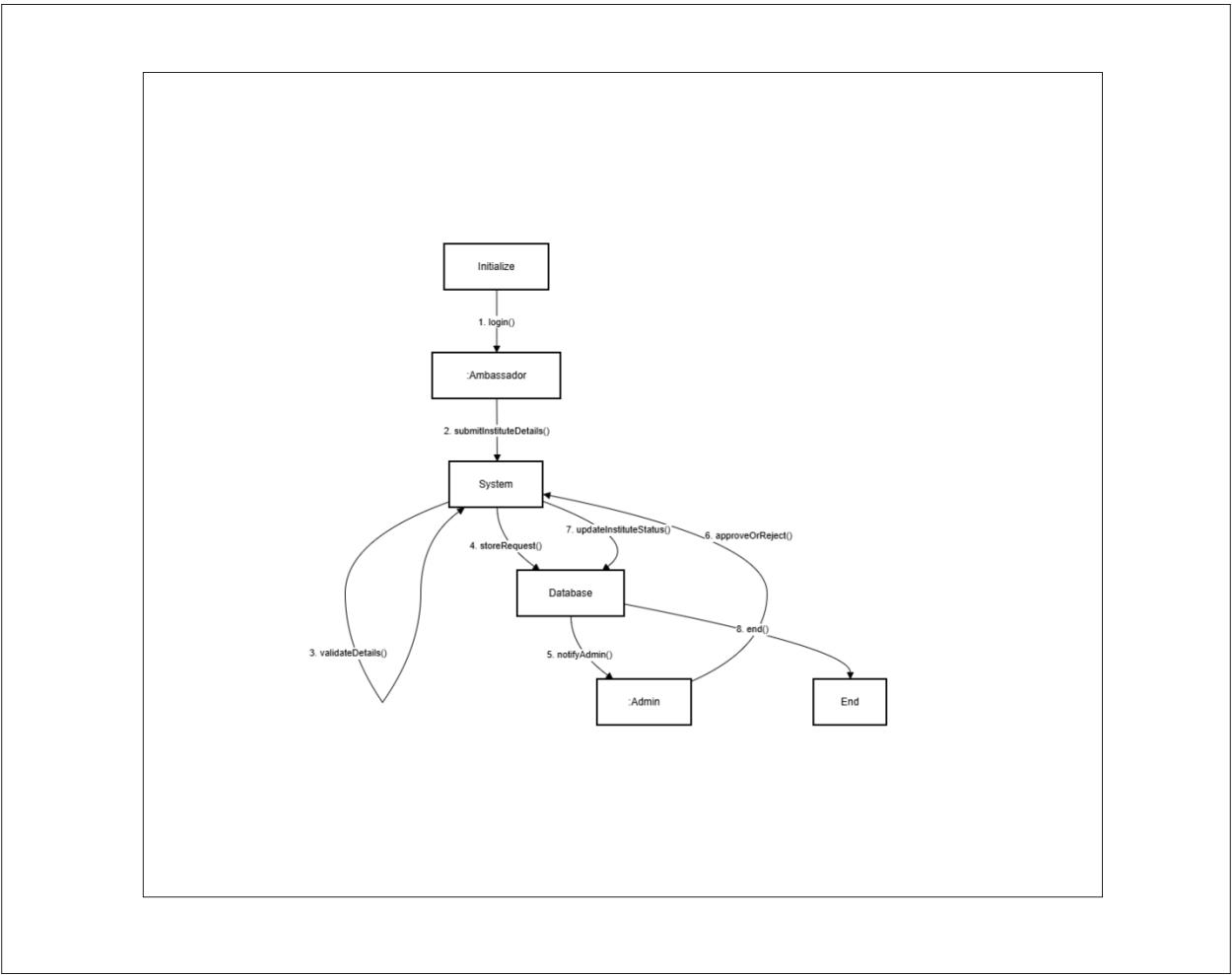
## 14. Public Site Announcement



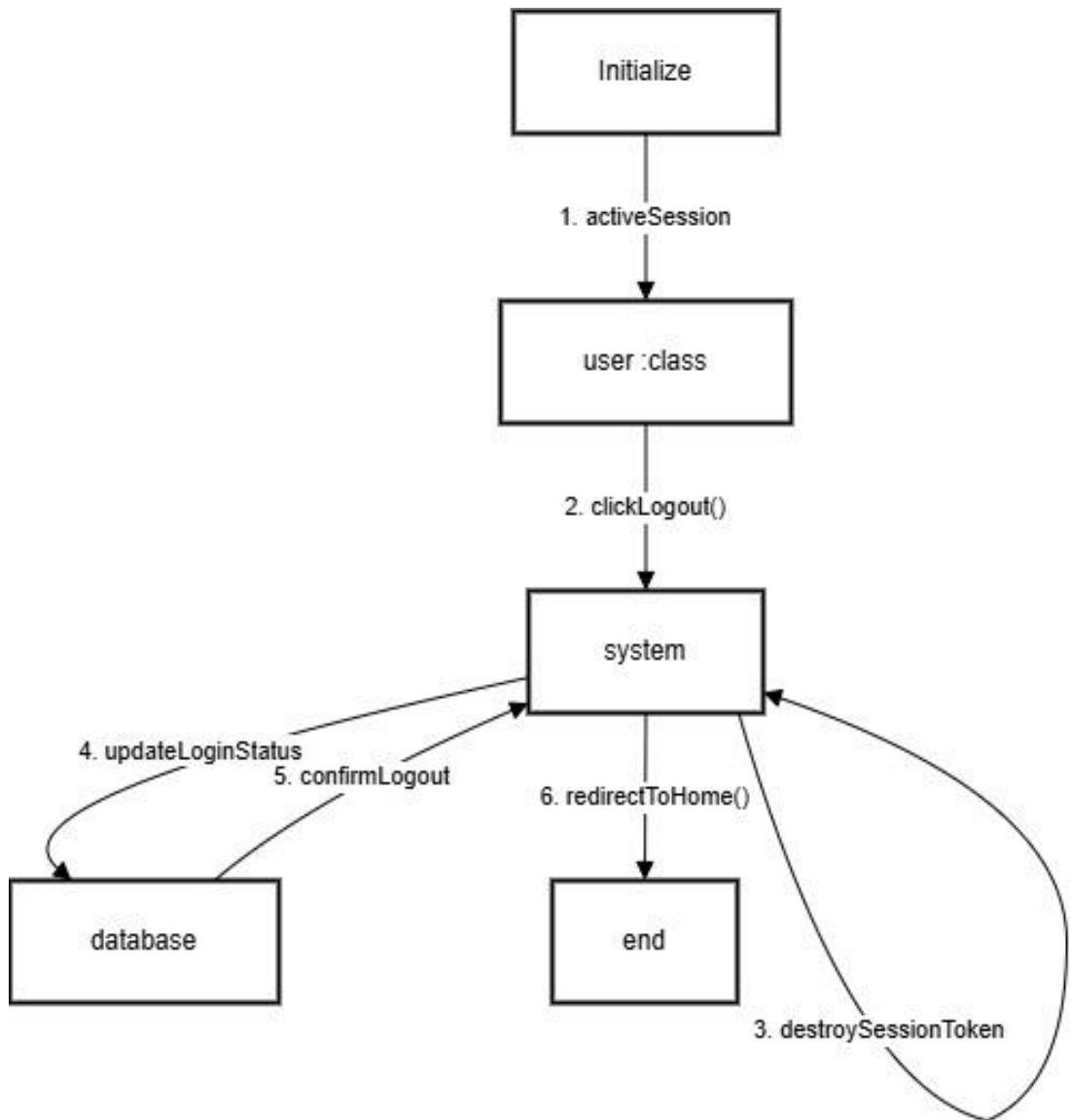
## 15.Approve/Reject Counselors



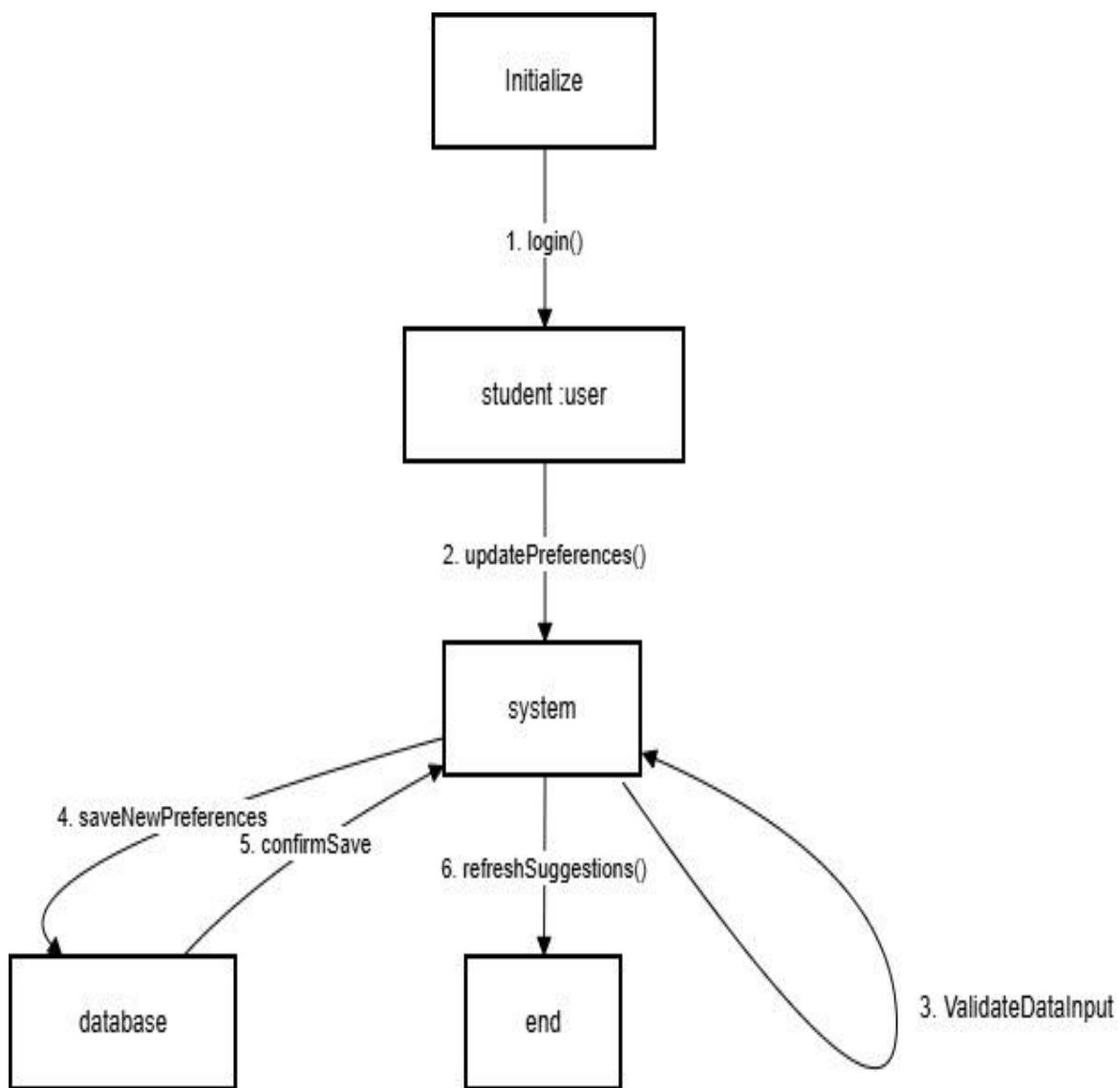
## 16.Add Istitutes



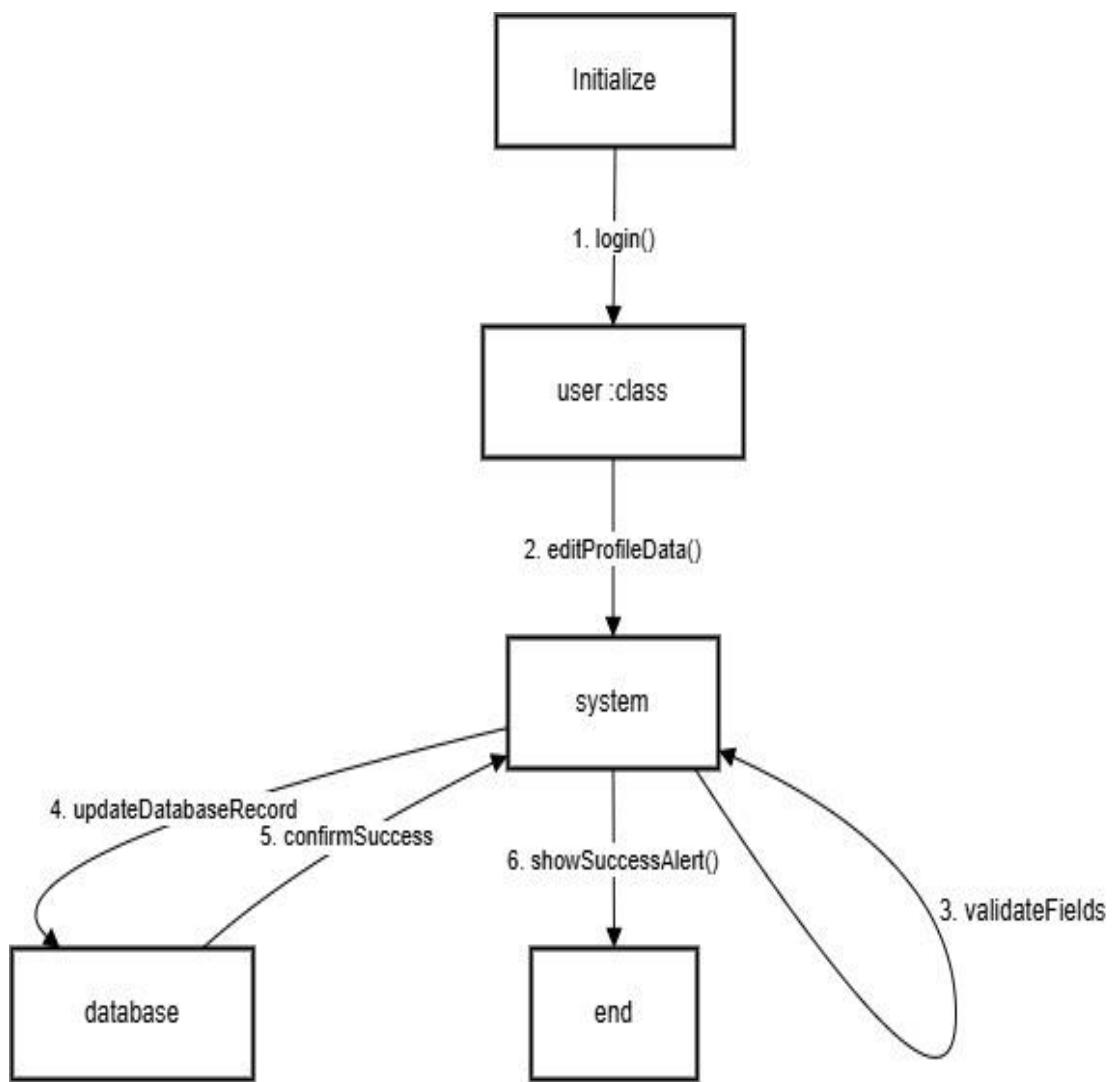
## 17.Logout



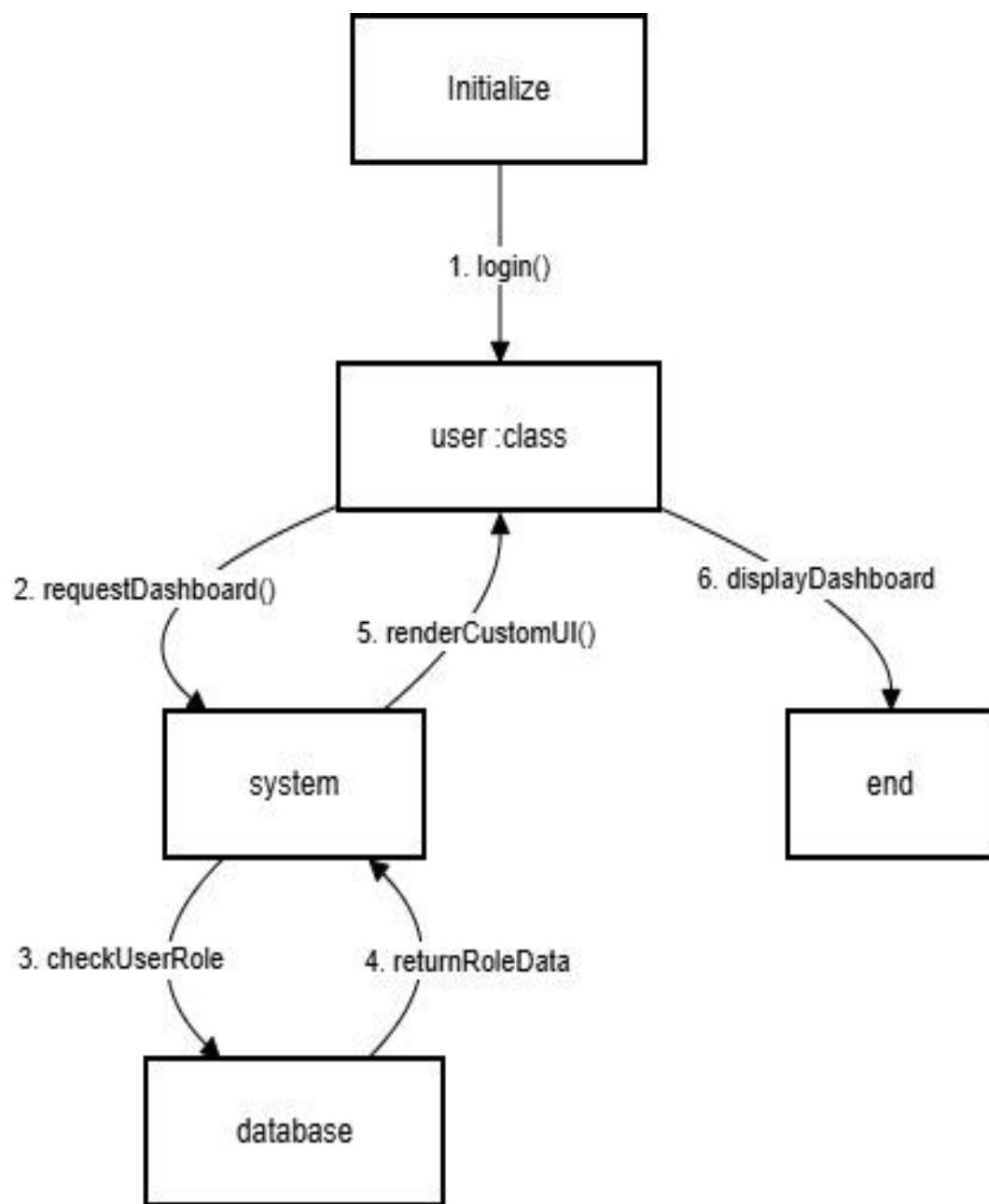
## 18. Set Change preferences



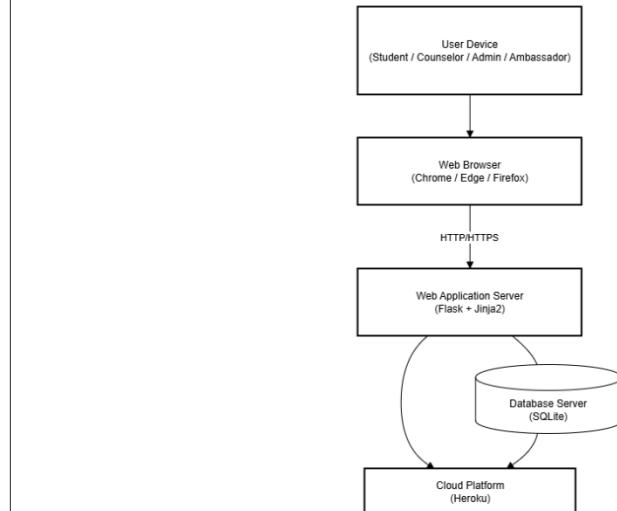
## 19. Update Profile



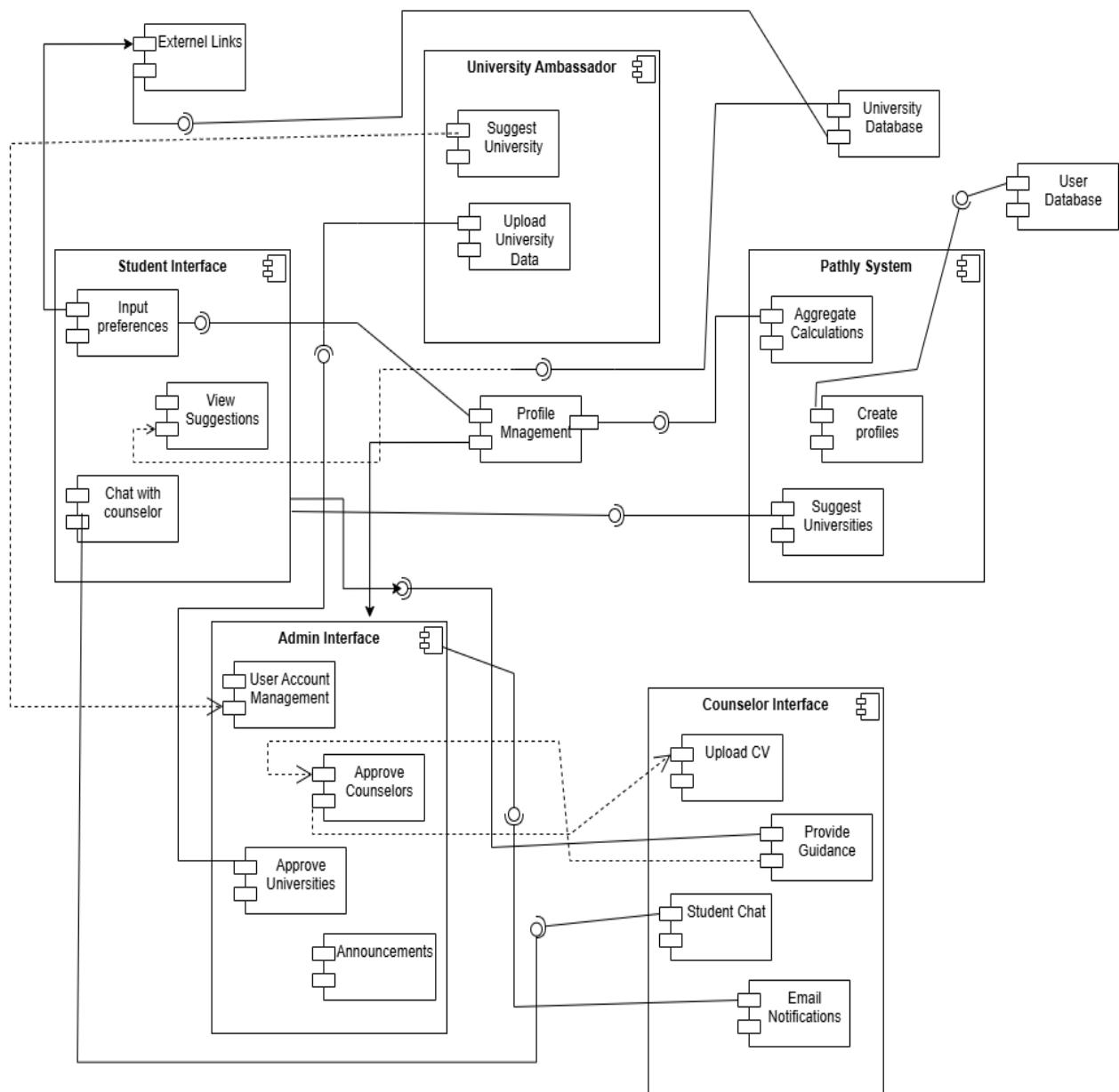
## 20. View Dashboard



## 21. Deployment Diagram

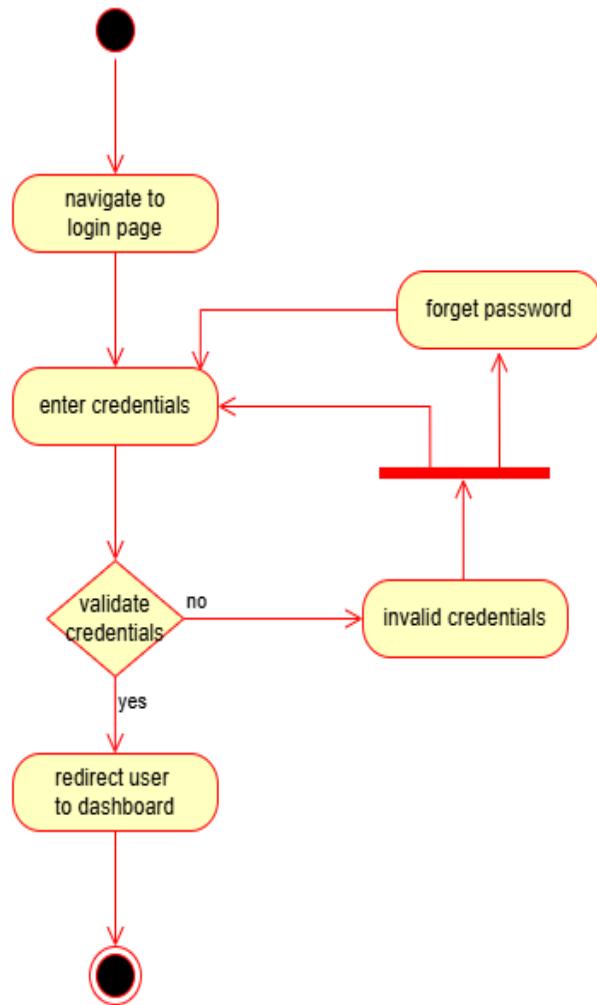


## 8. Component Diagram

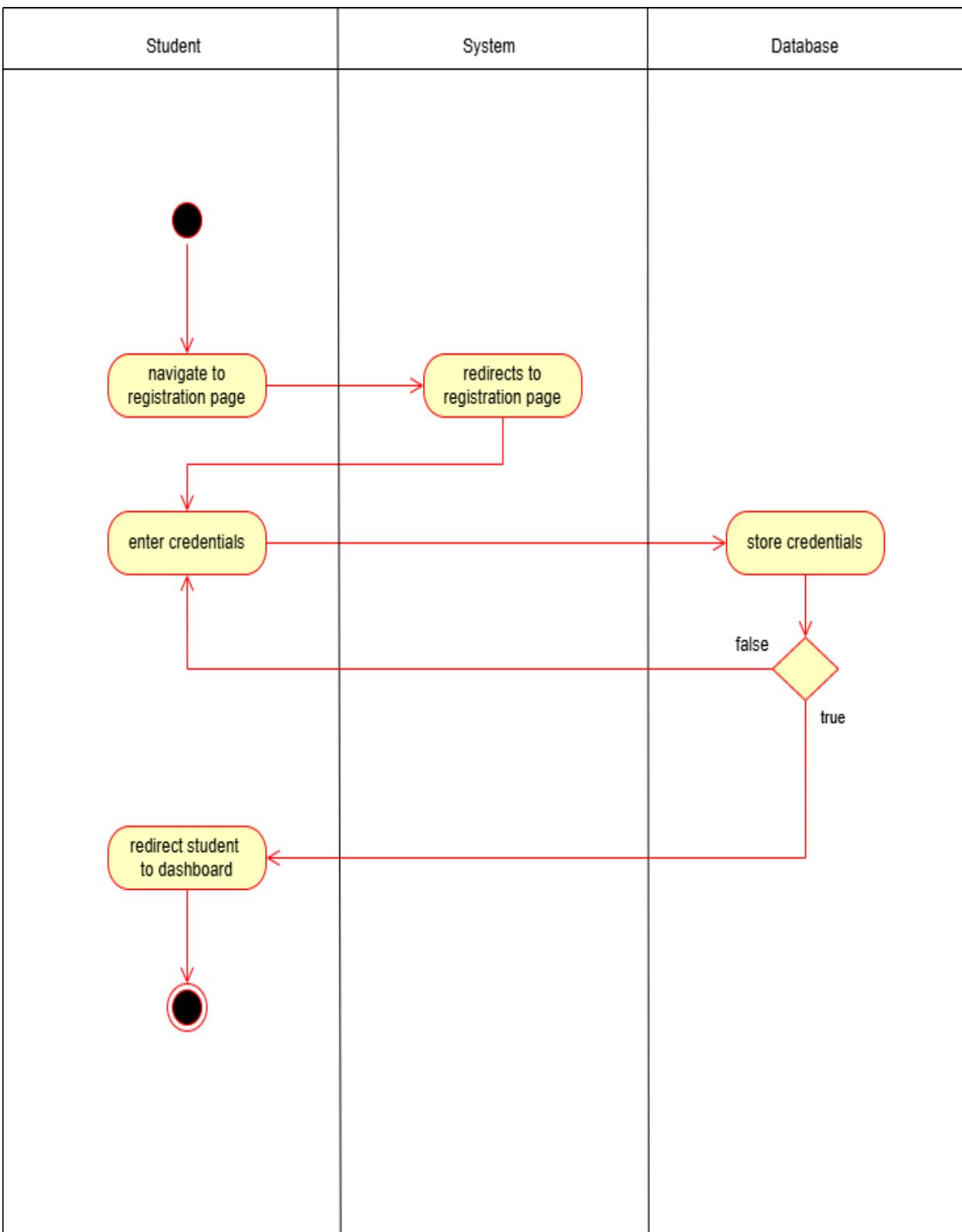


## 9. Activity Diagram

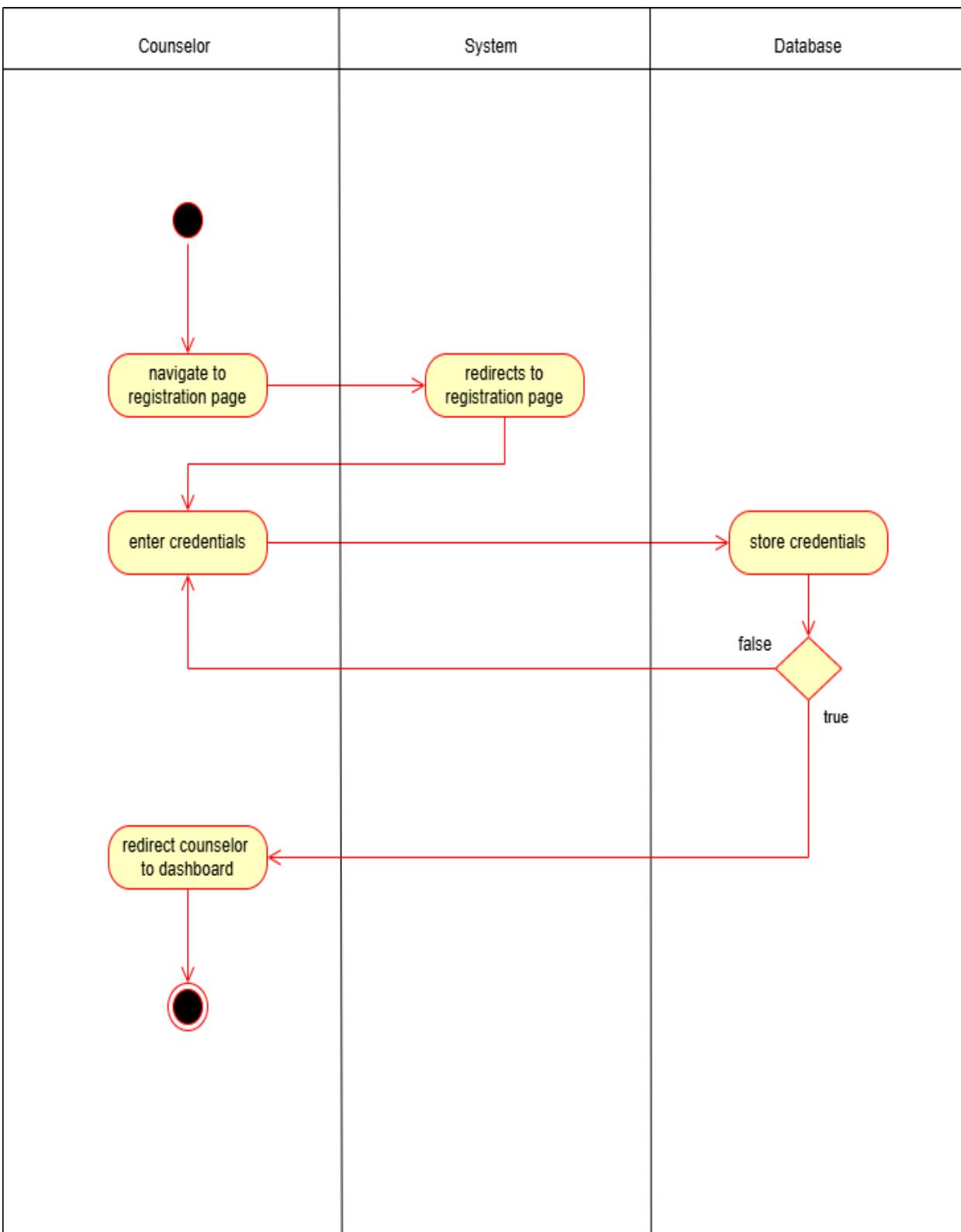
## 1. Login



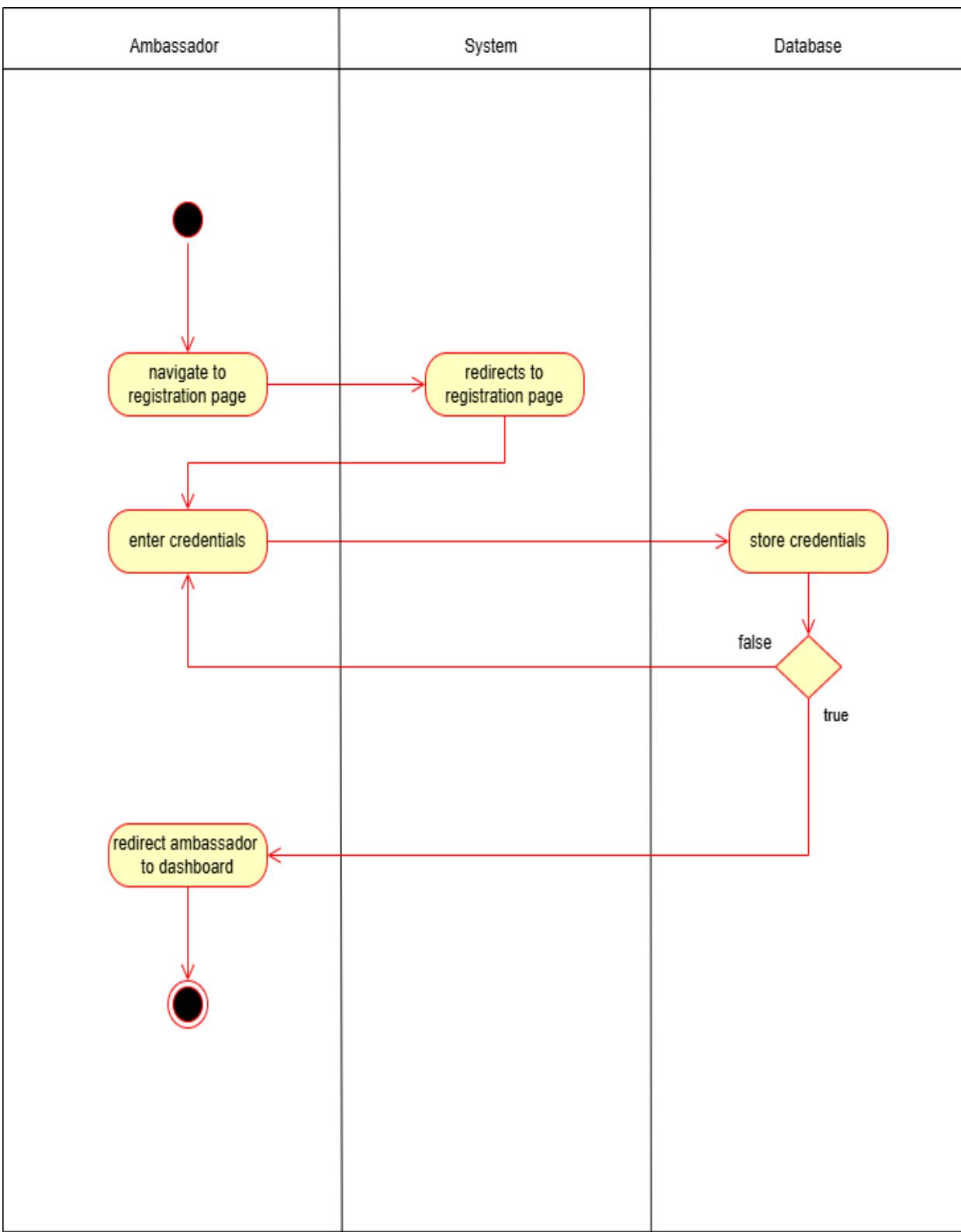
## 2. Register as Student



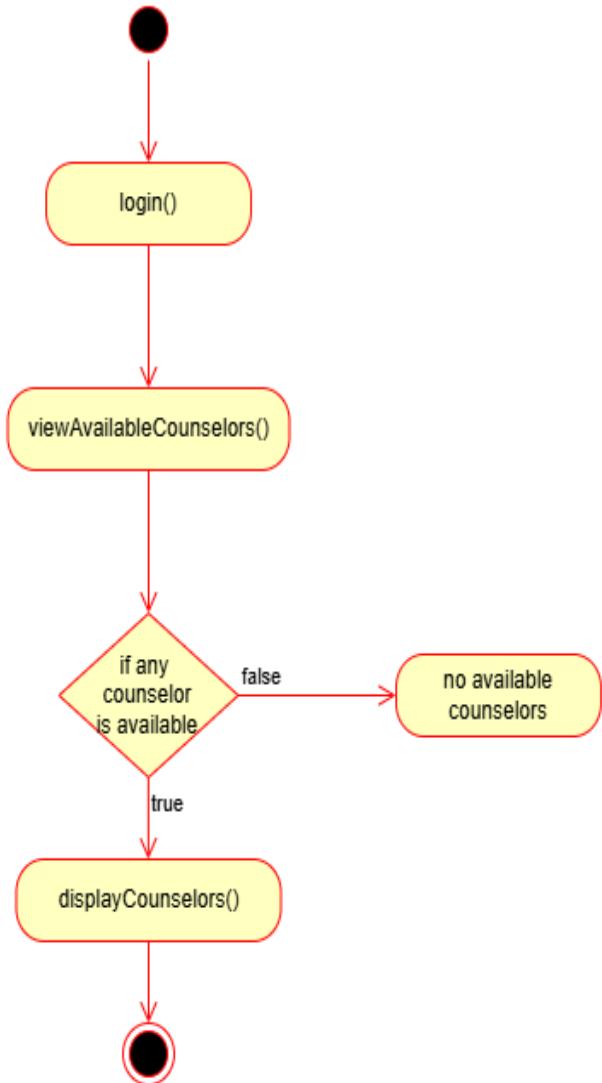
### 3. Register as Counselor



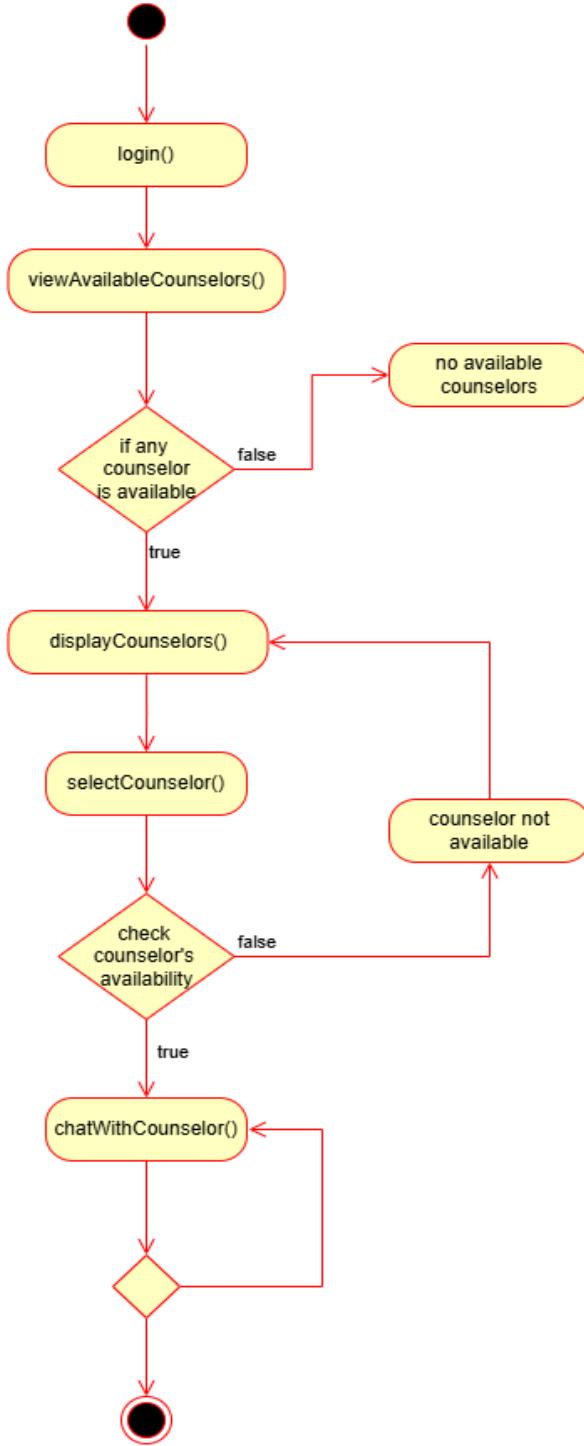
#### 4. Register as University Ambassador



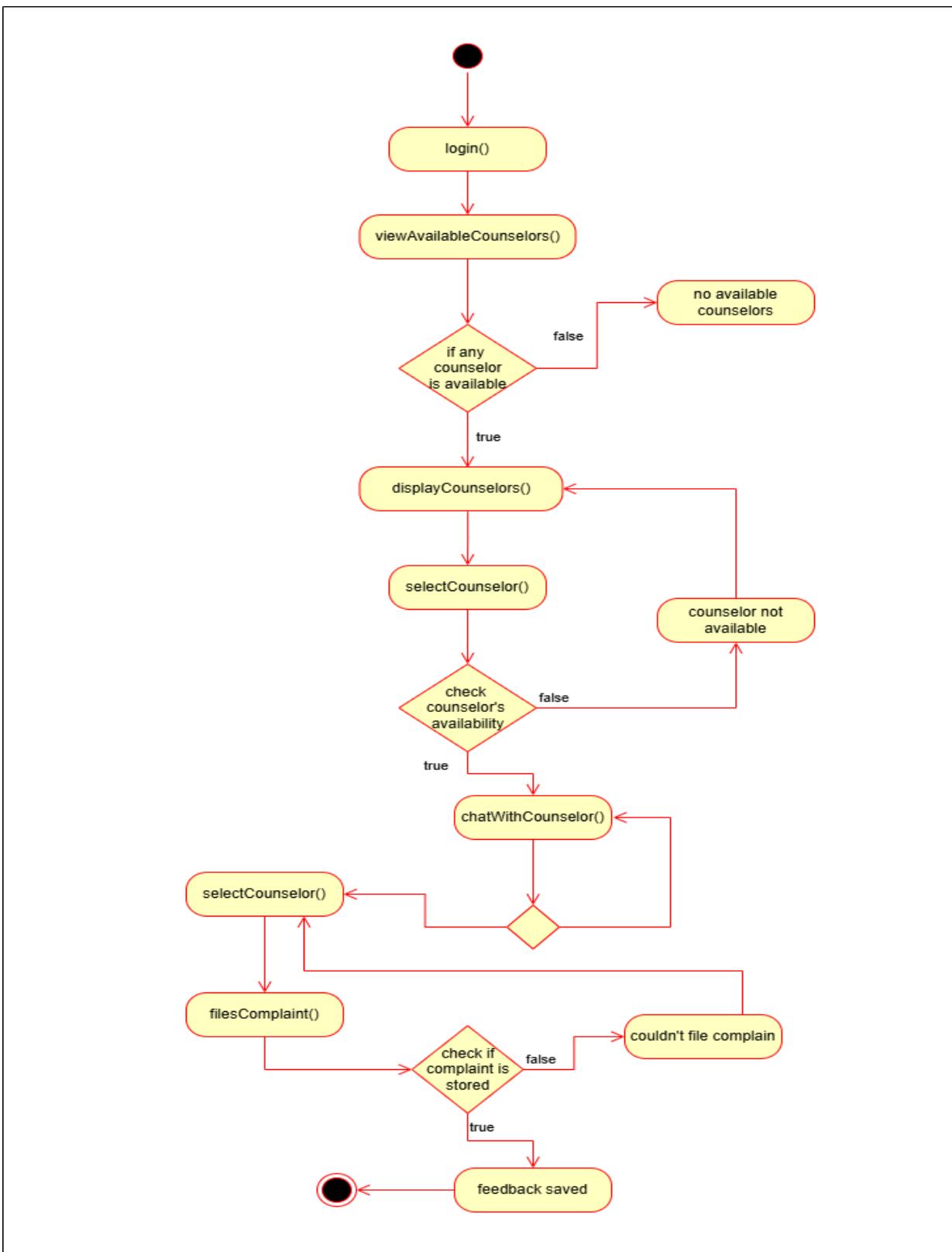
## 5. View Counselors



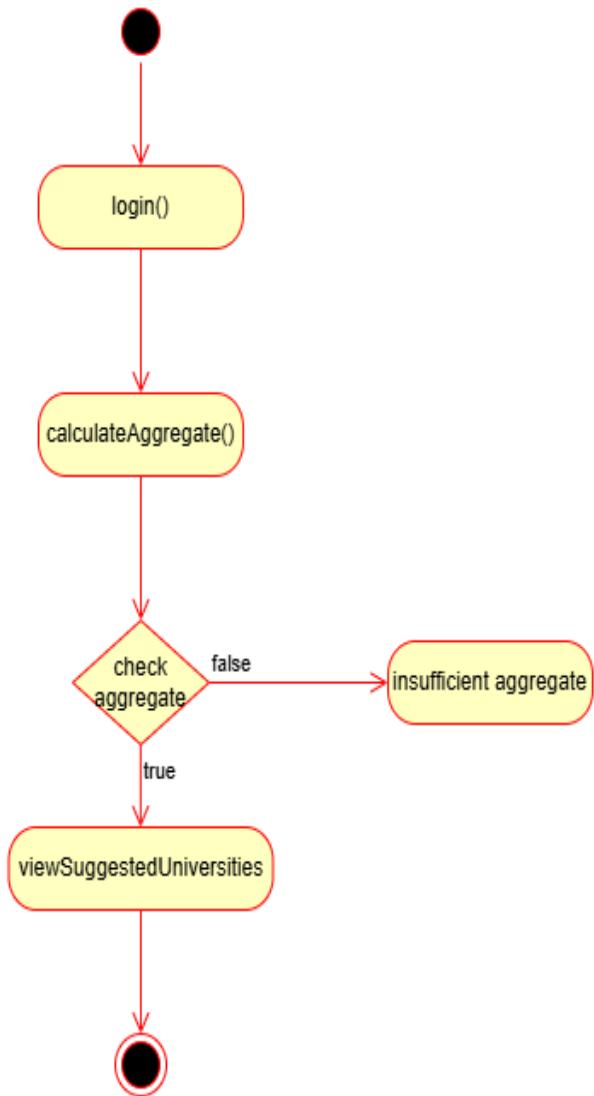
## 6. Chat with Counselors



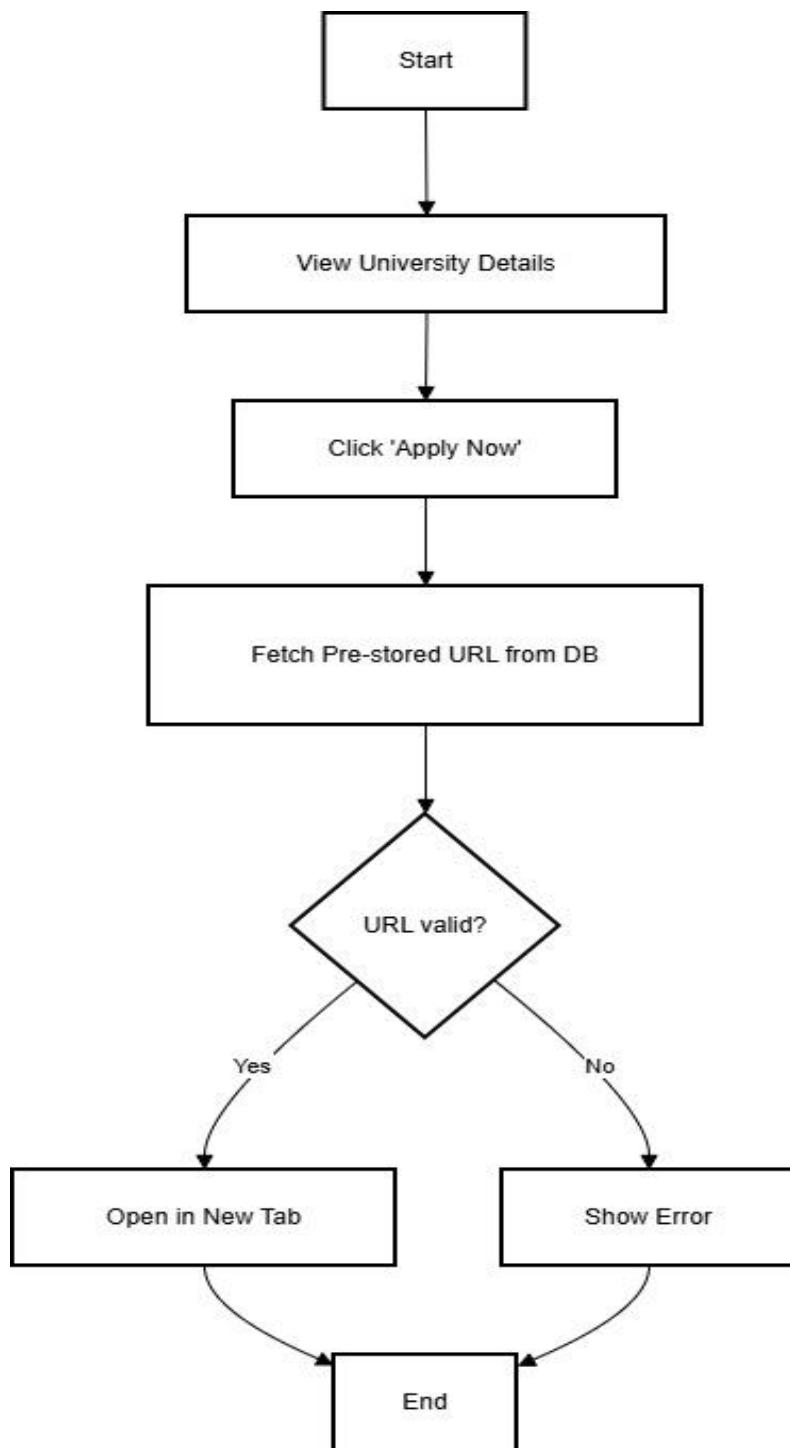
## 7. Complaint about a Counselor



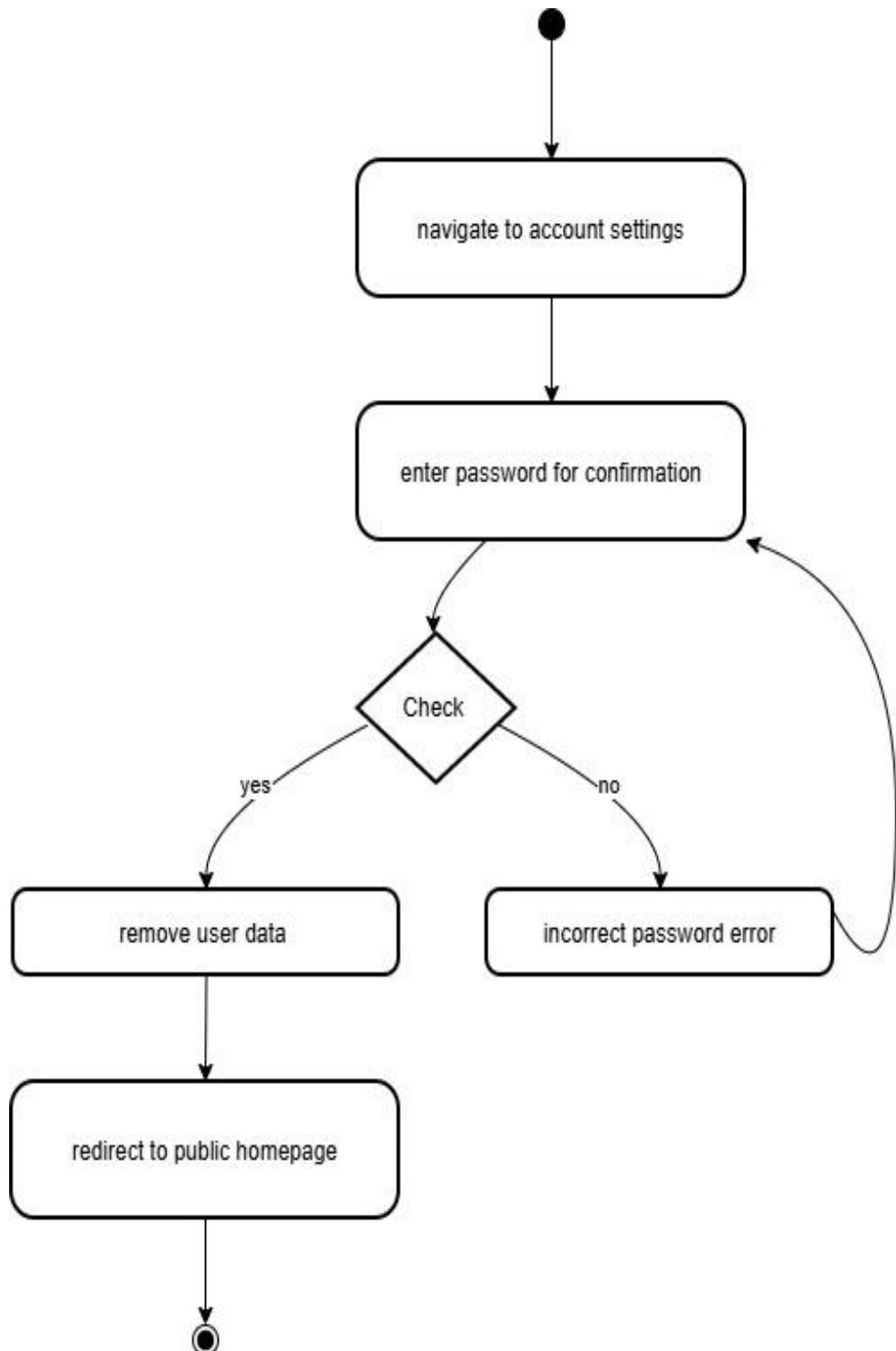
## 8. View Suggested Universities



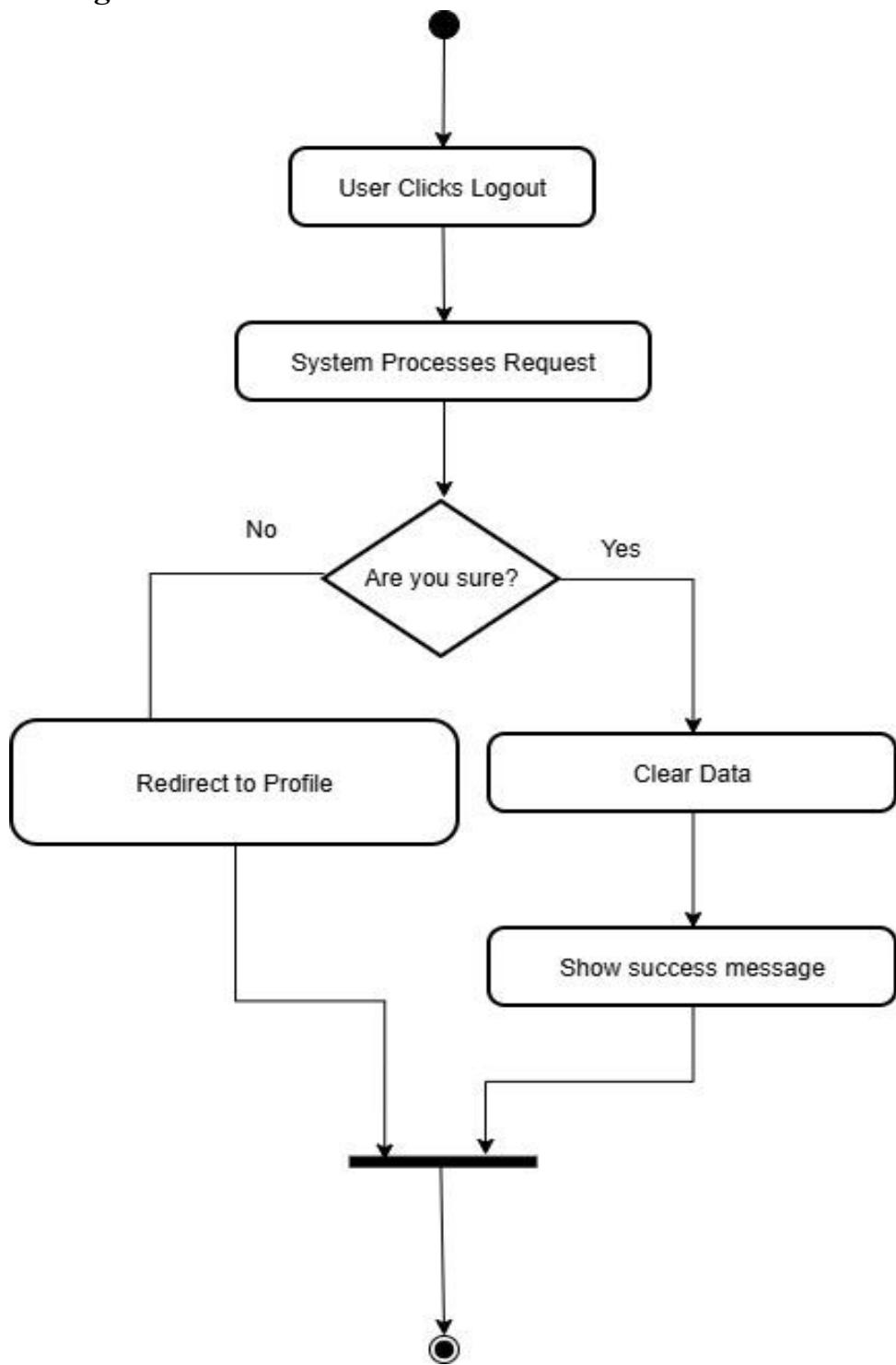
## 9. Apply for Addmission



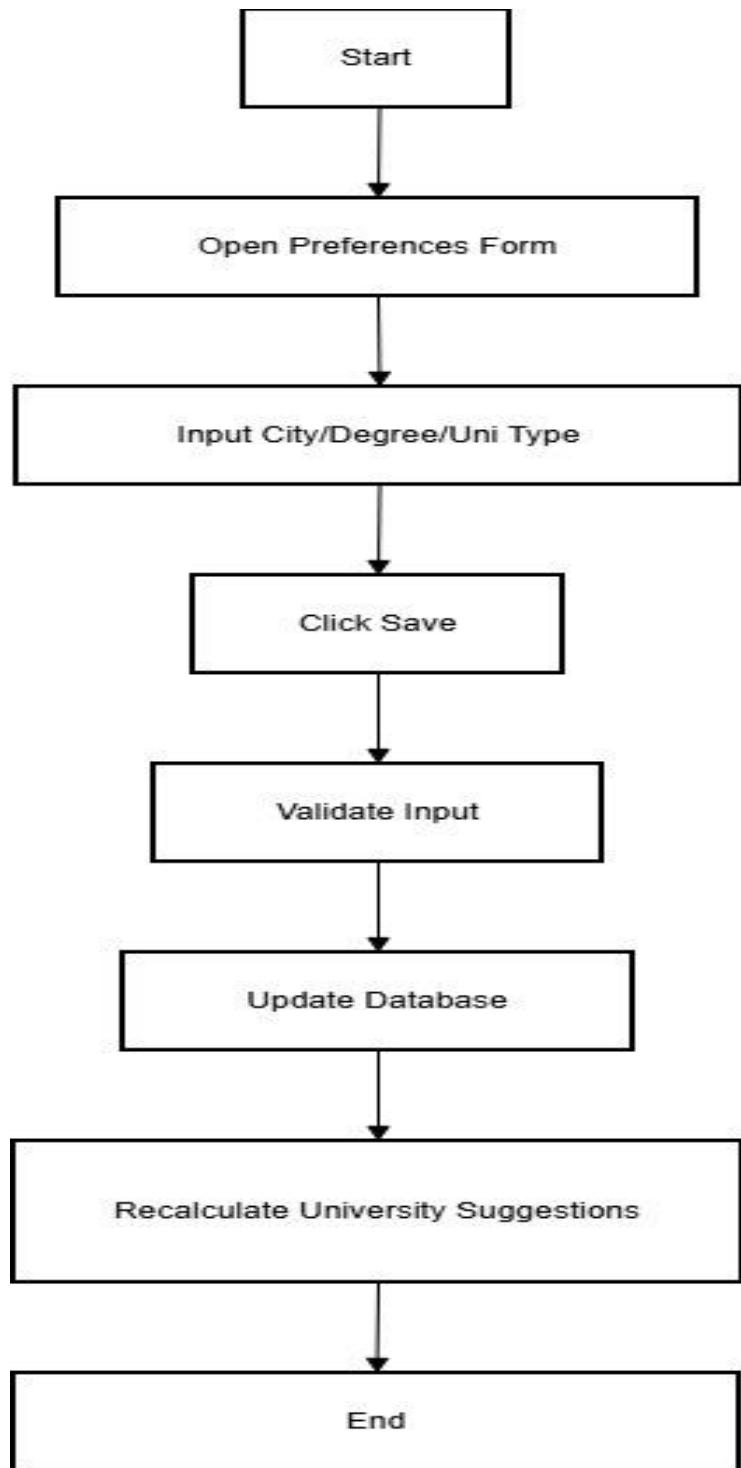
## 10. Delete Account



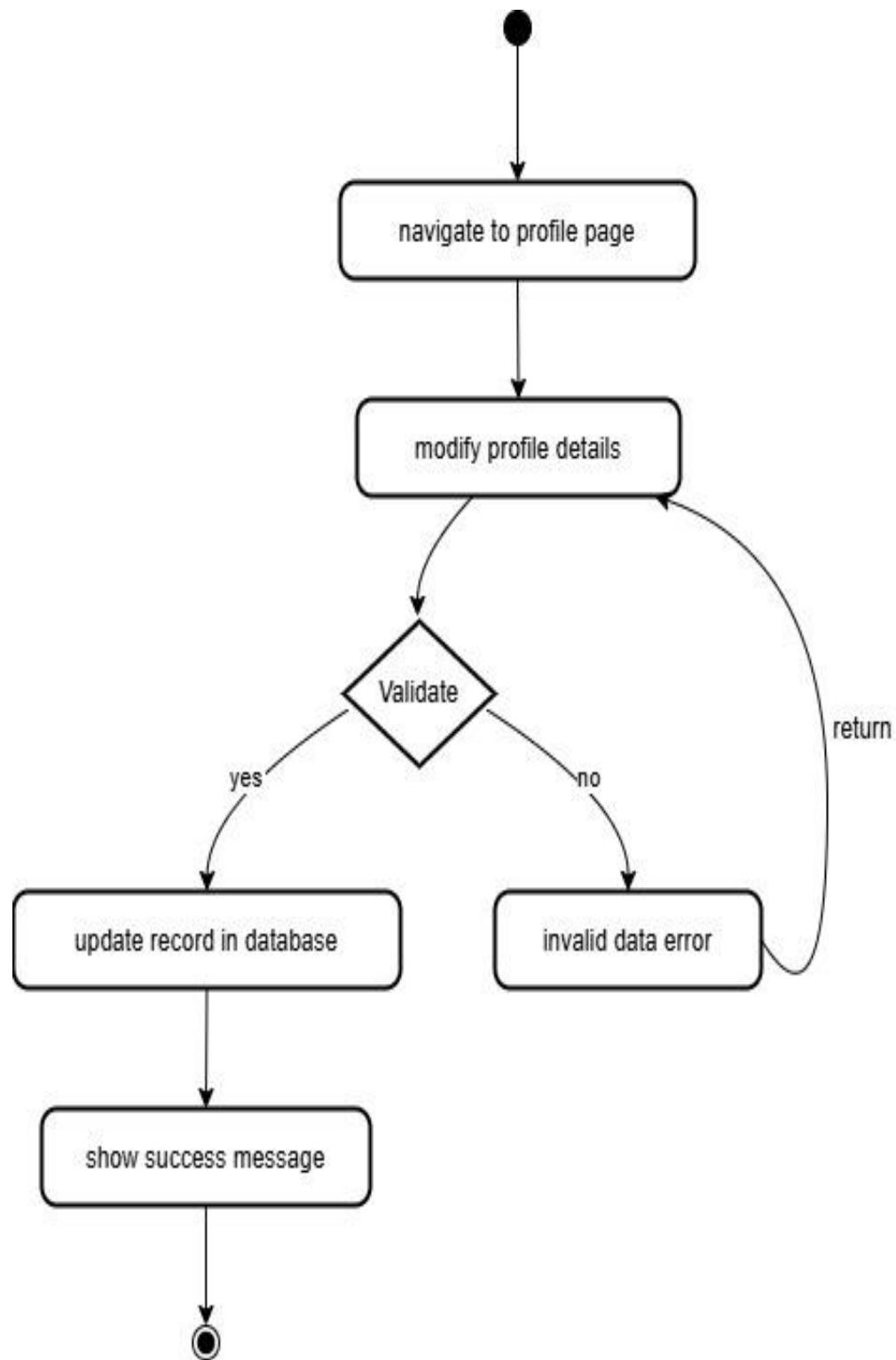
## 11.Logout



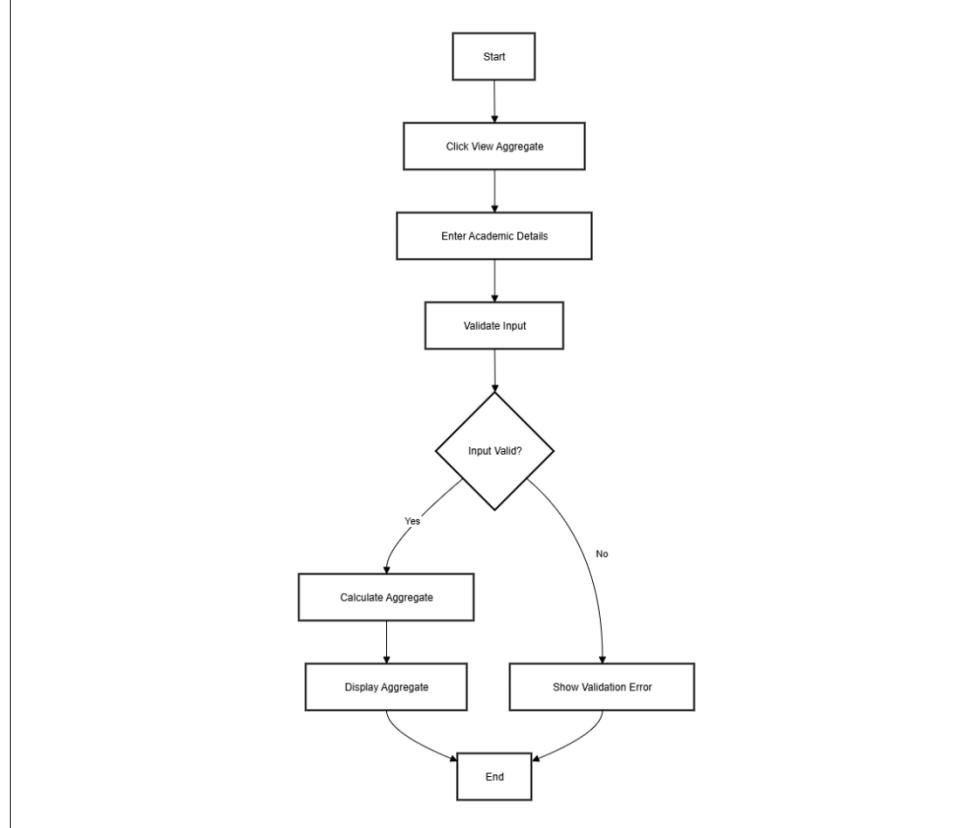
## 12.Set Change preferences



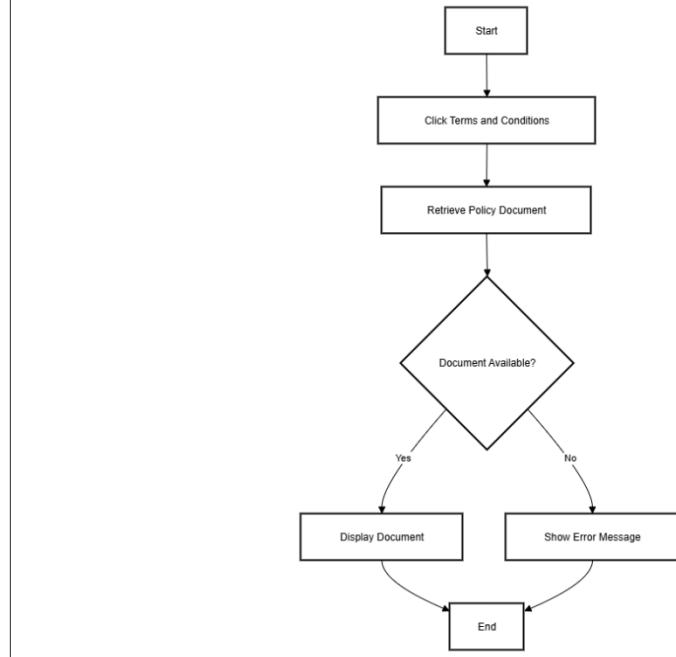
### 13. Update Profile



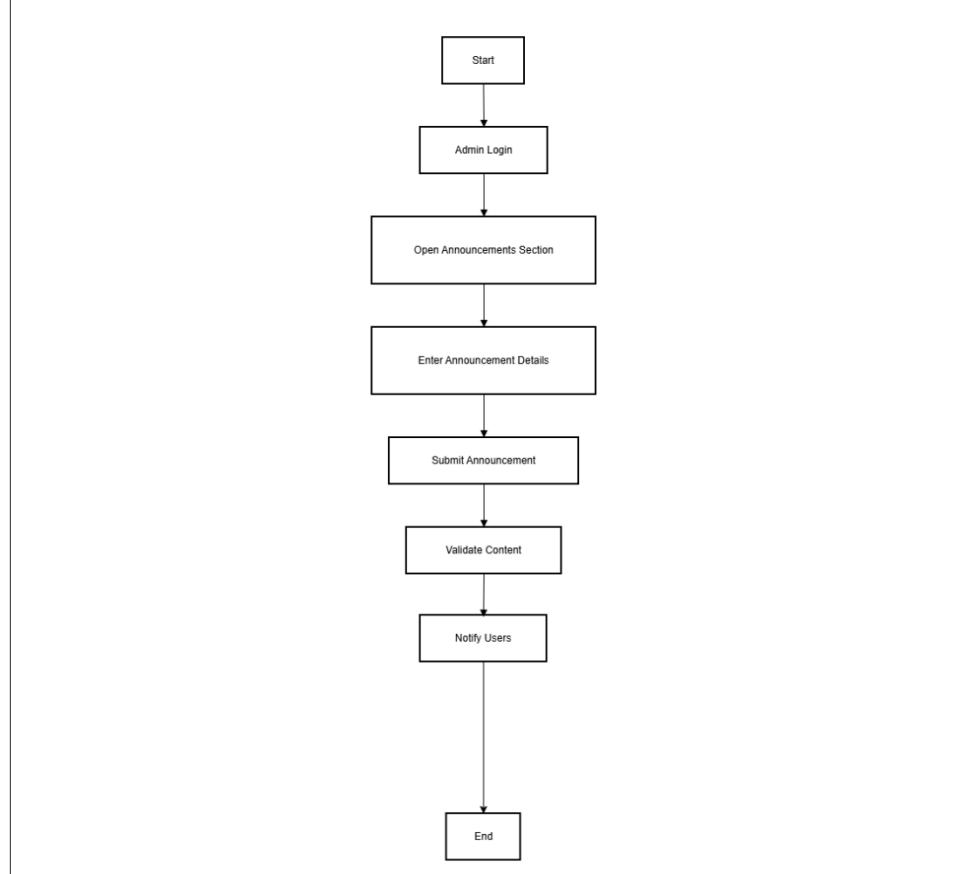
#### 14. View Aggregate



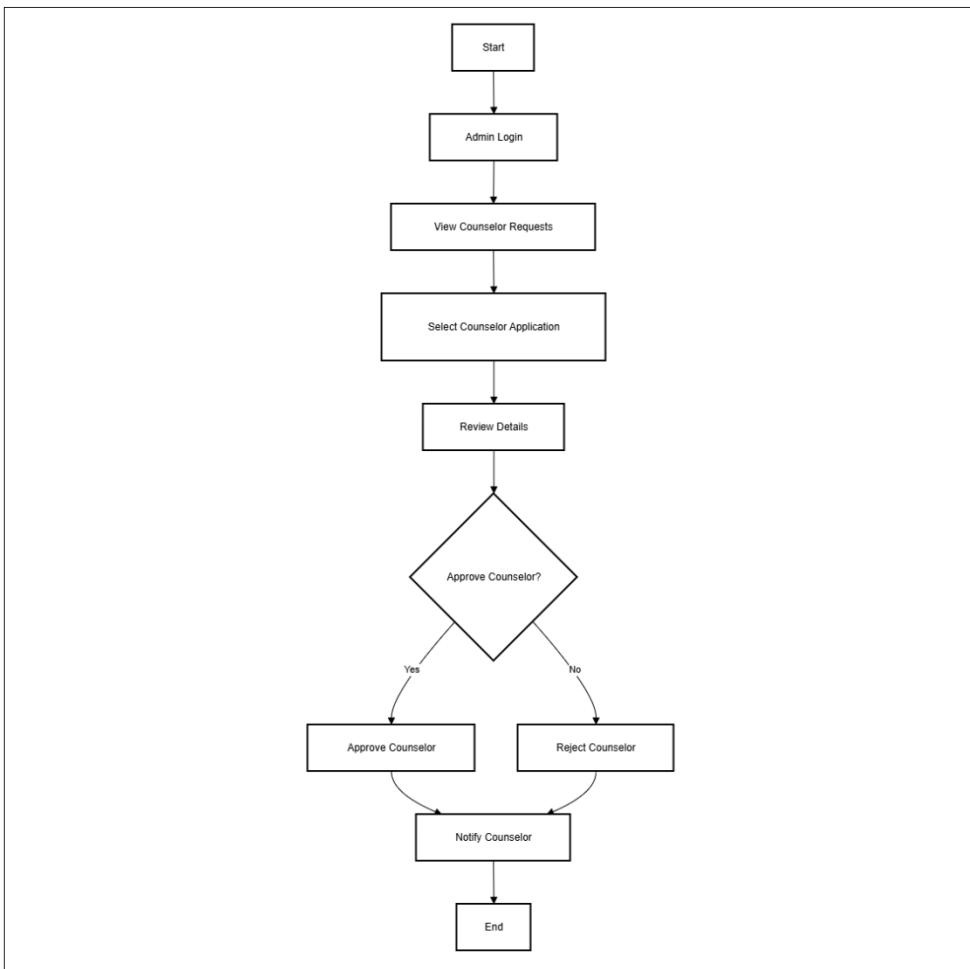
## 15. View Terms and Conditions



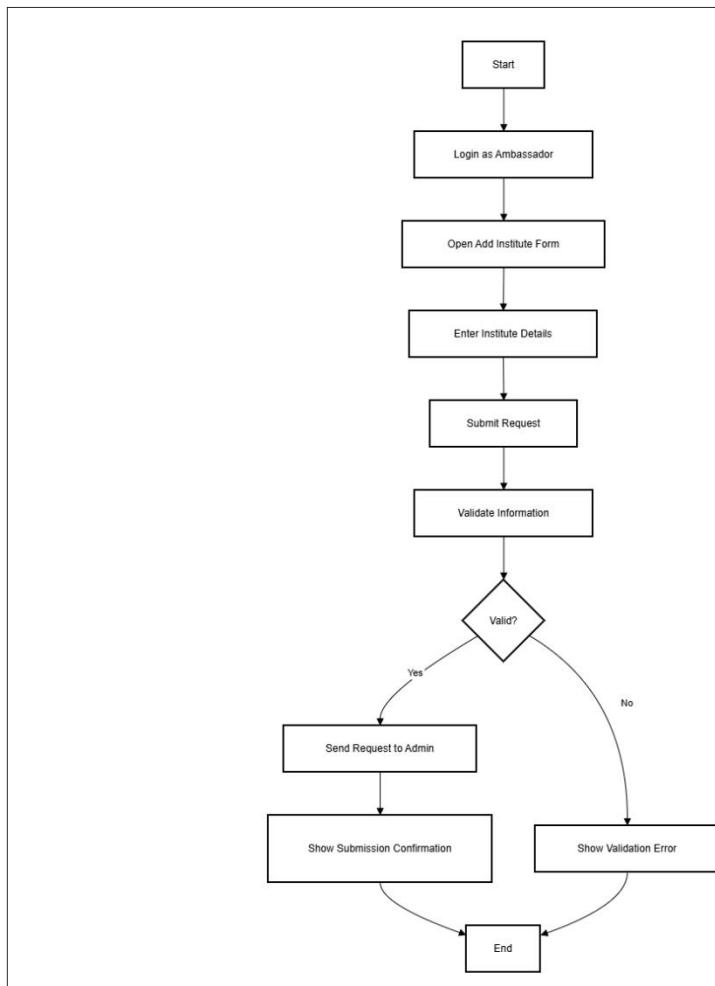
## 16. Public Site Announcement



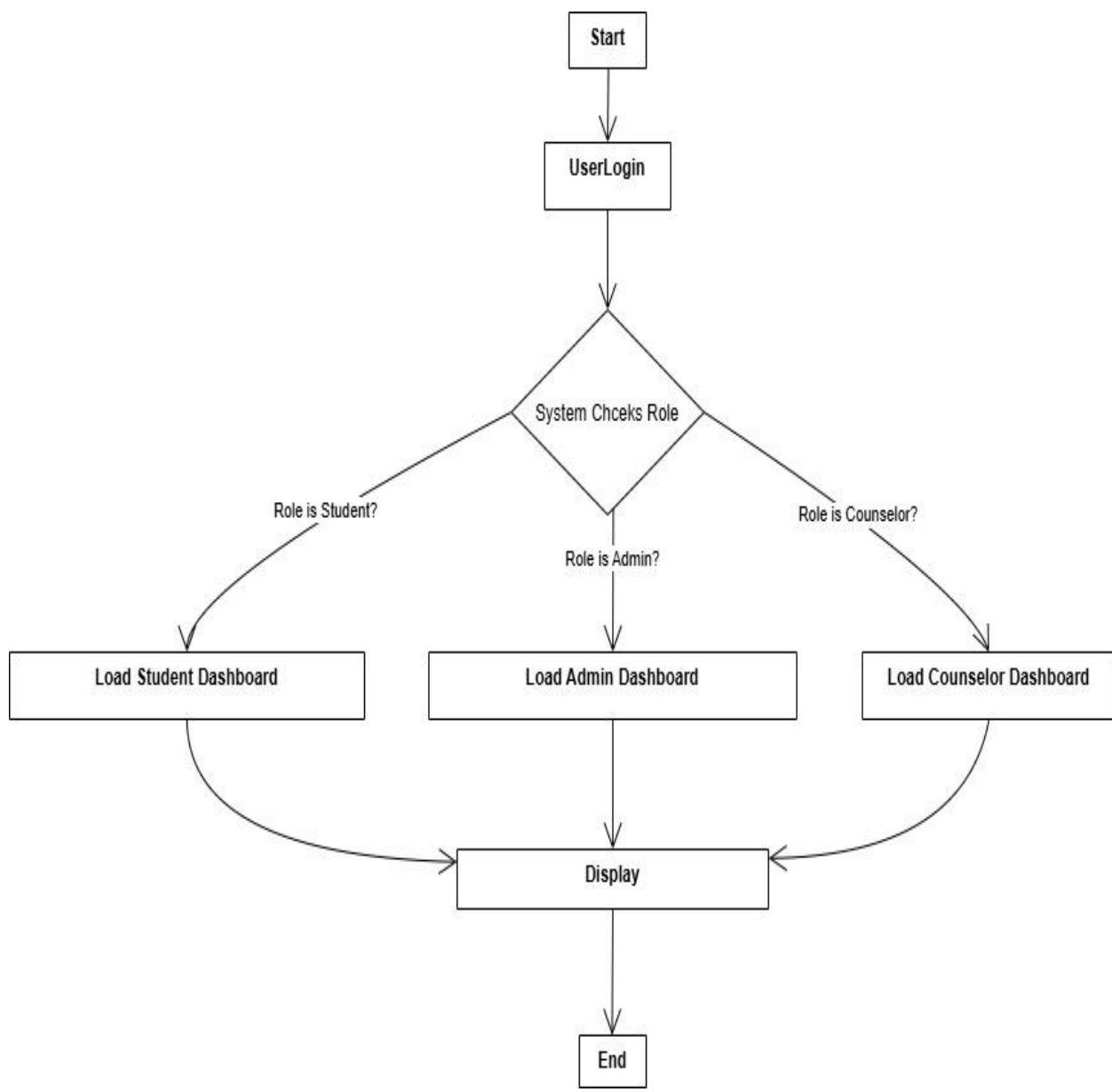
## 17.Approve/Reject Counselors



## 18.Add Institutes

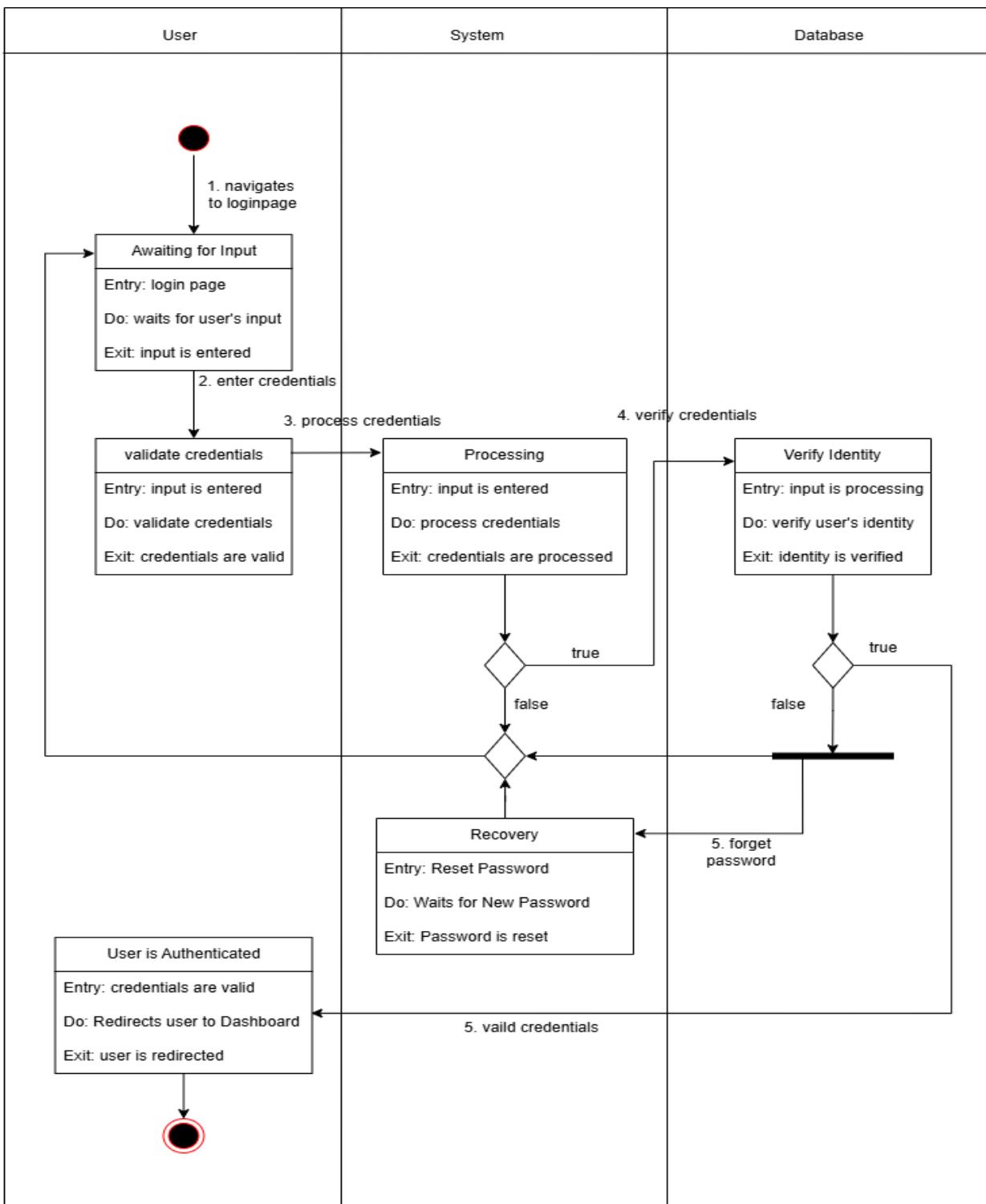


## 19. View Dashboard

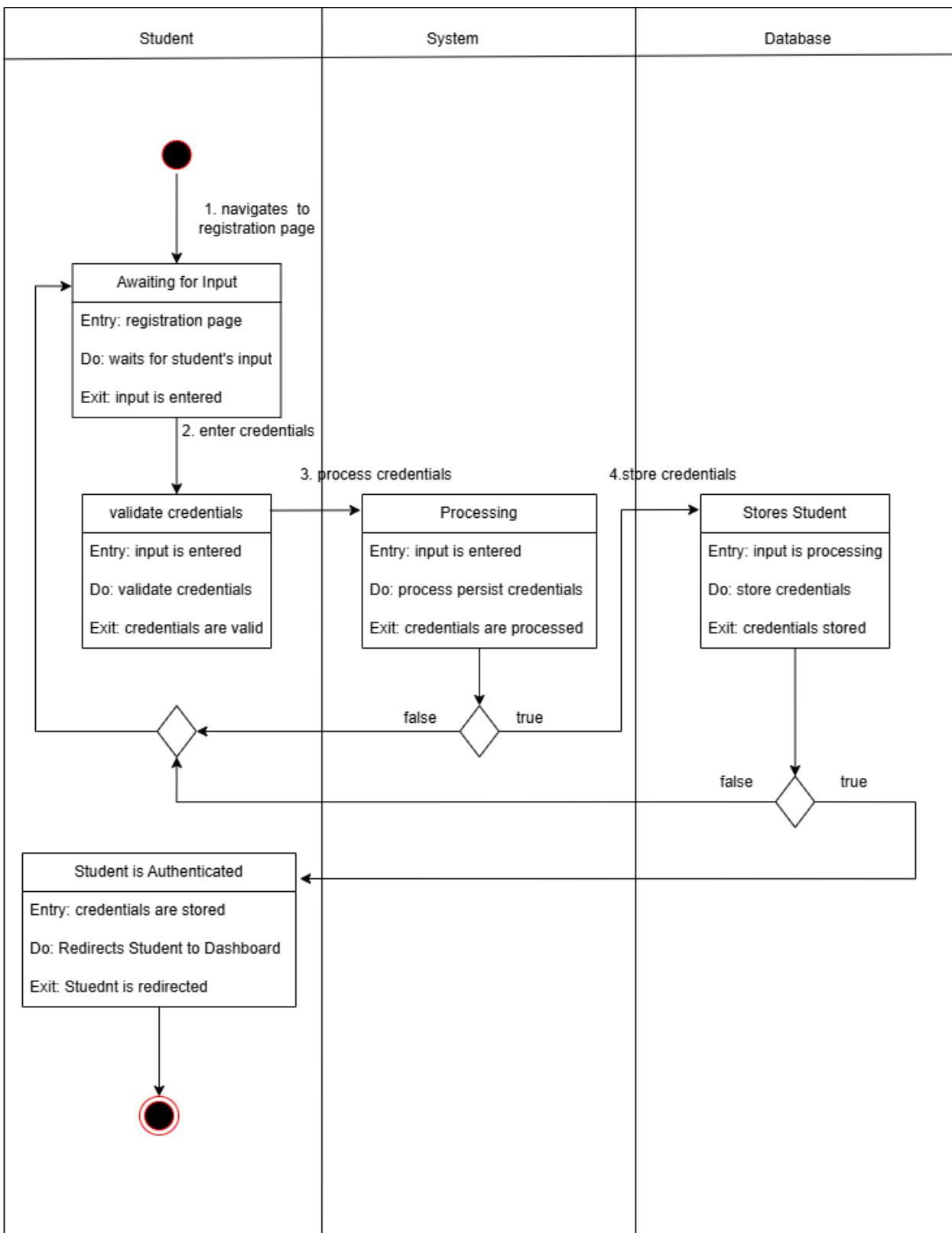


## 10. State Chart Diagrams

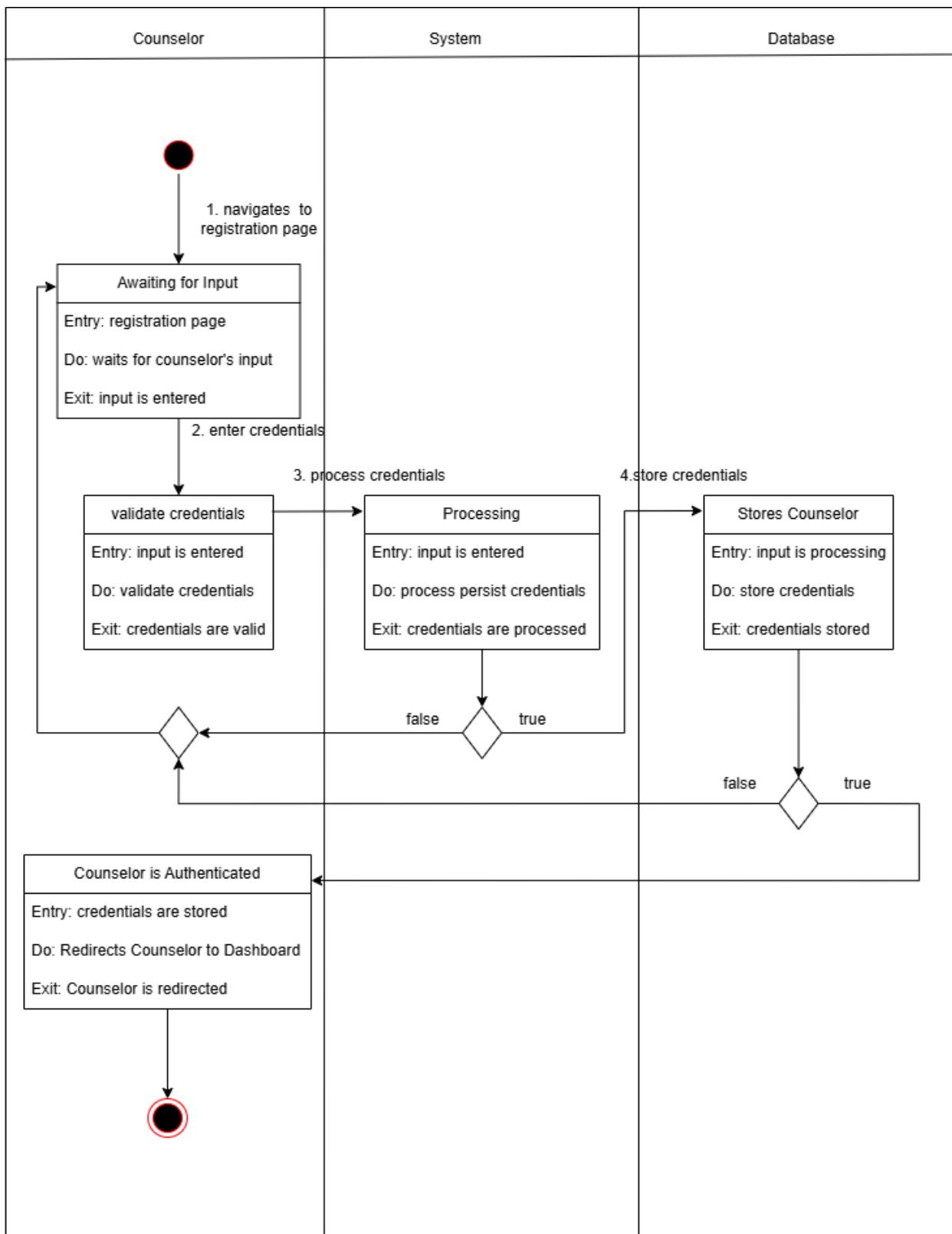
### 1. Login



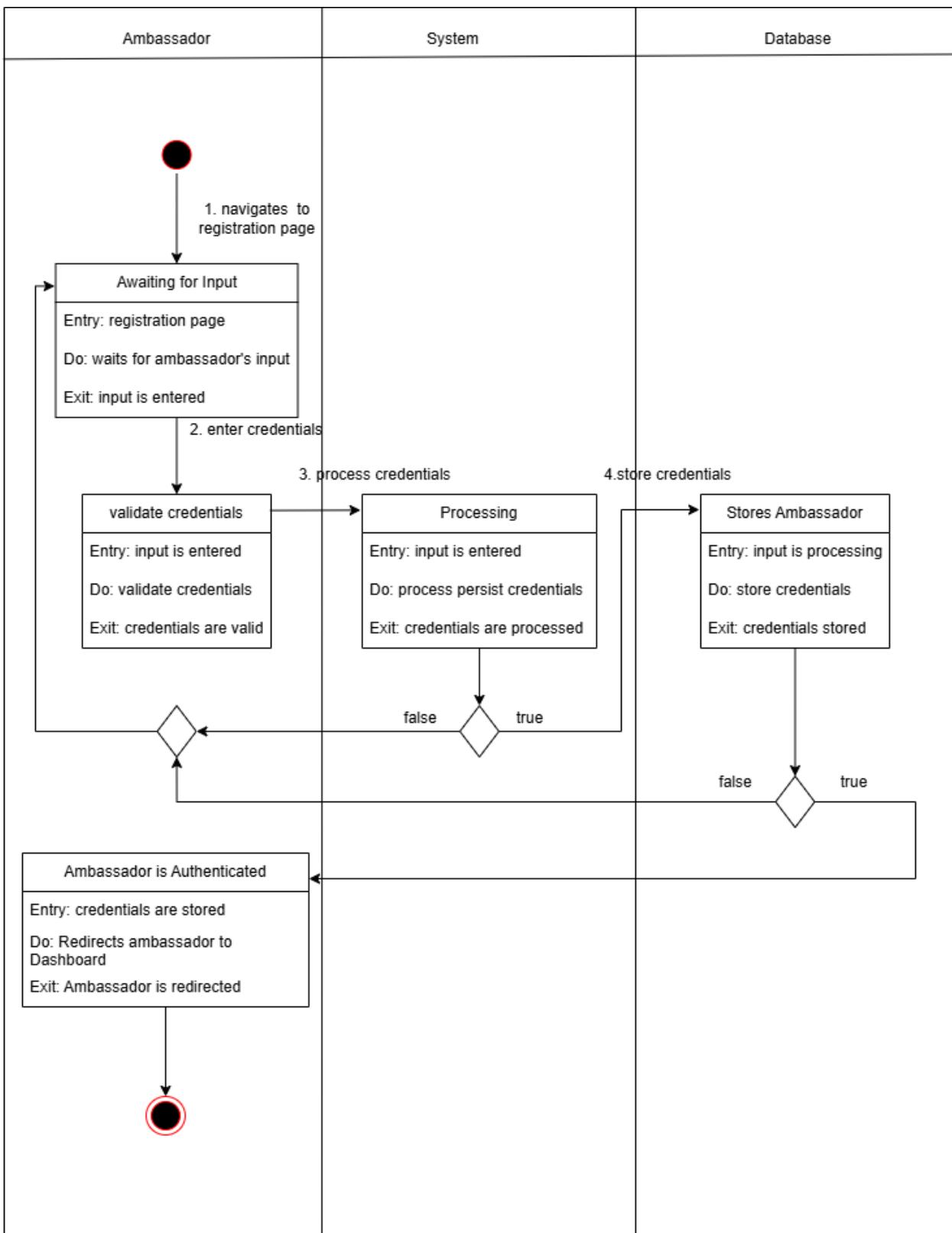
## 2. Register as Student



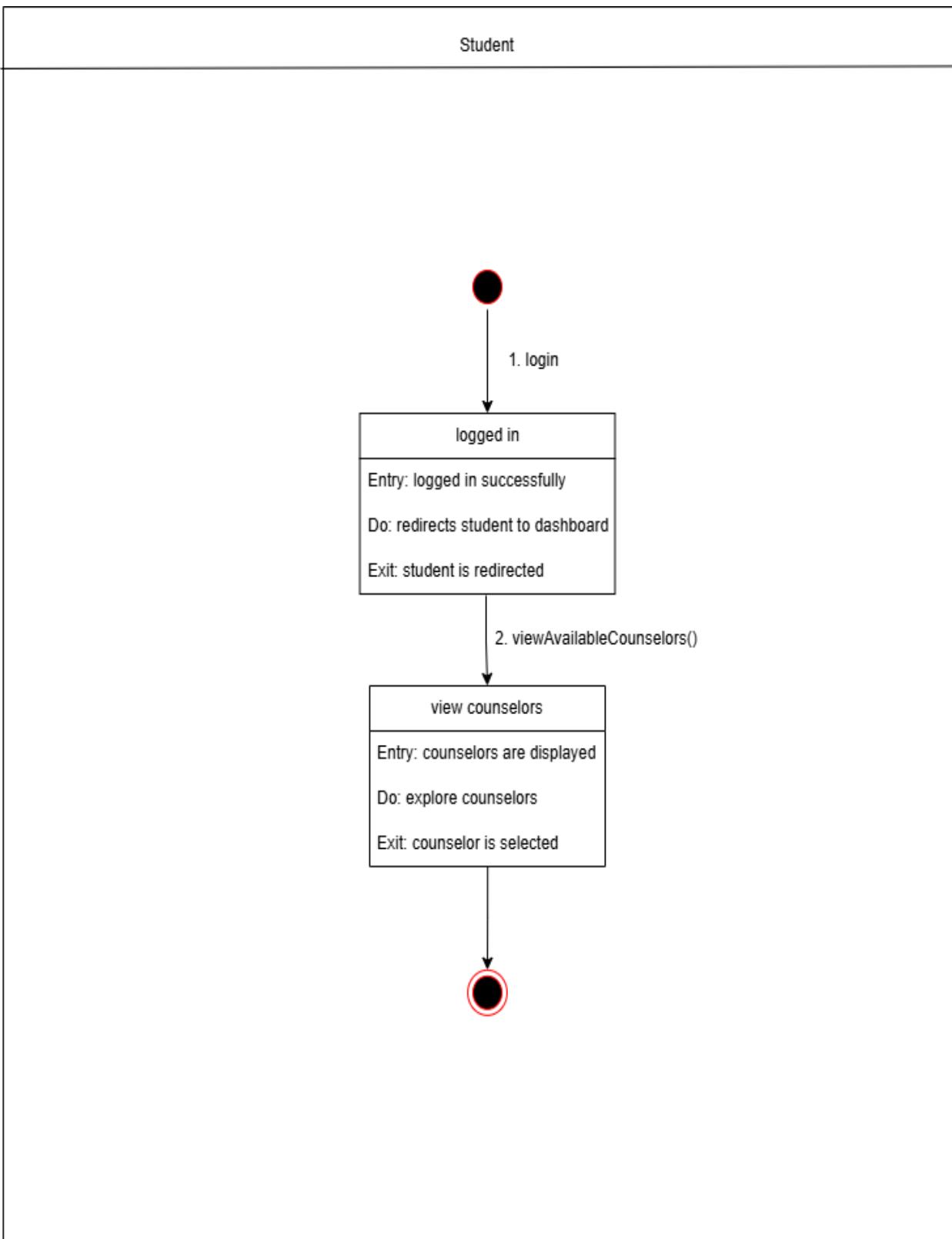
### 3. Register as Counselor



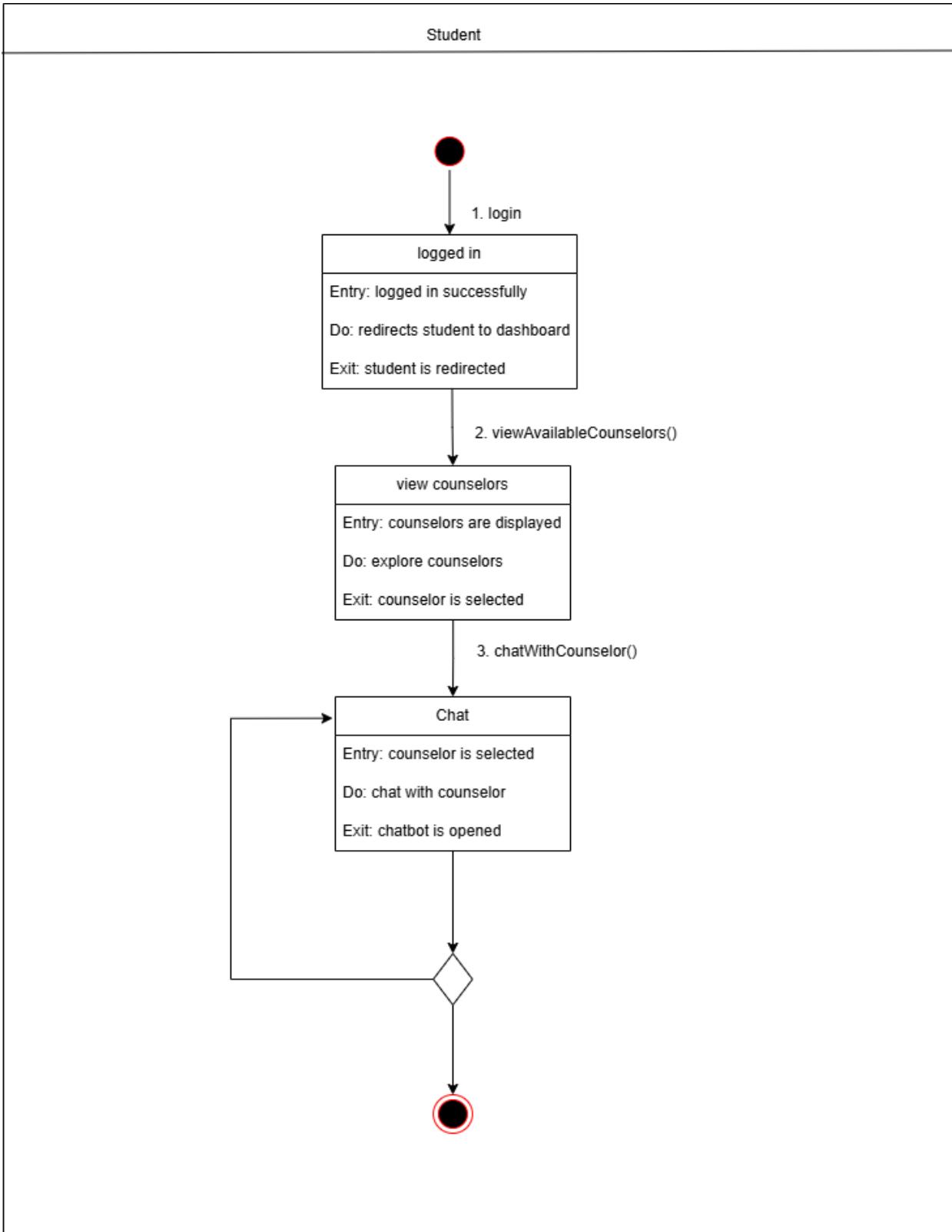
#### **4. Register as University Ambassador**



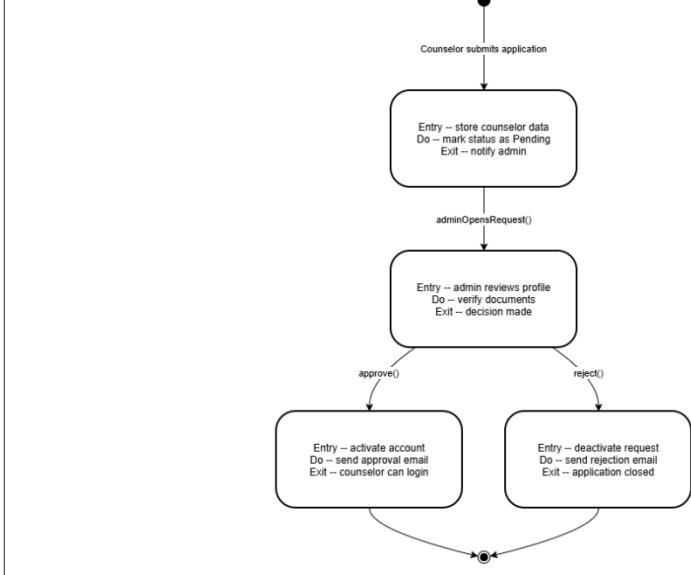
## 5. View Counselors



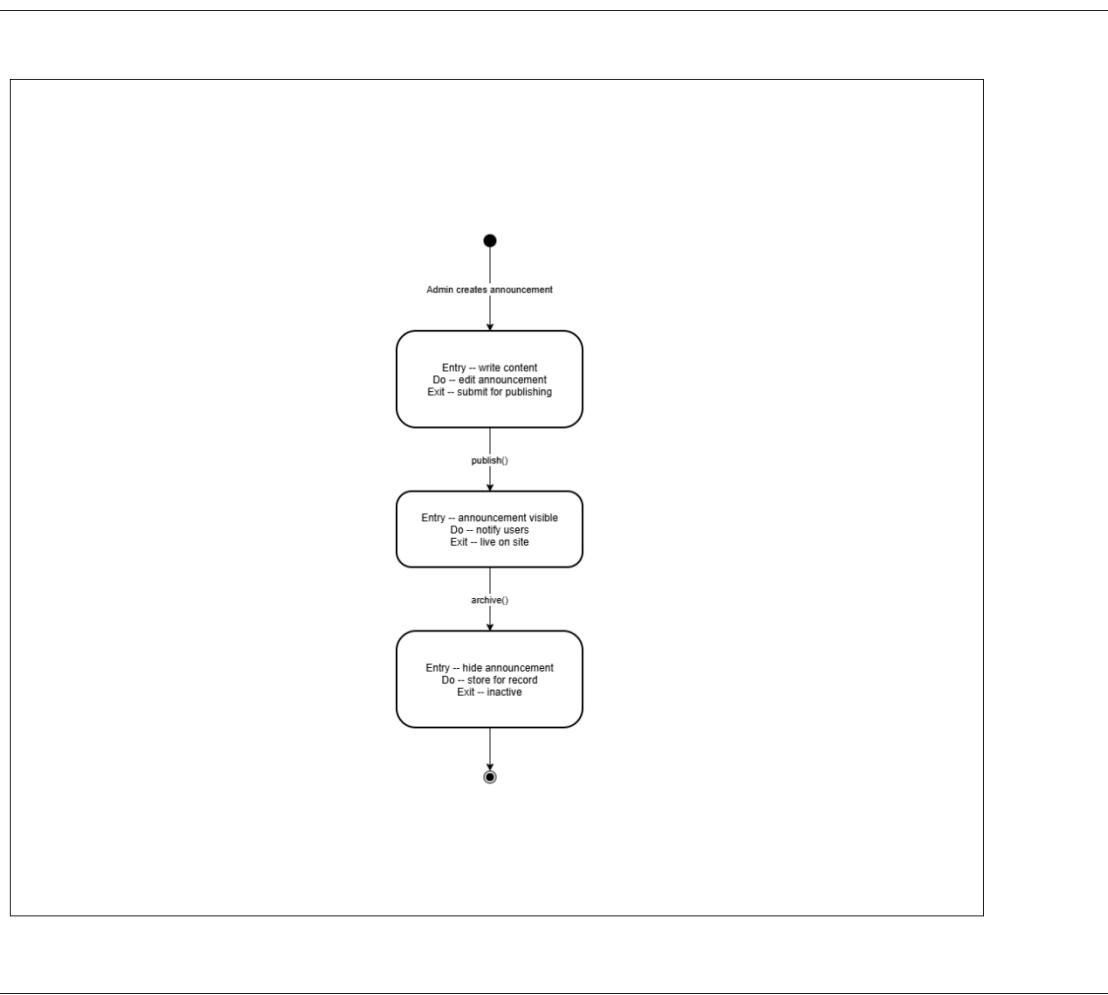
## 6. Chat with Counselors



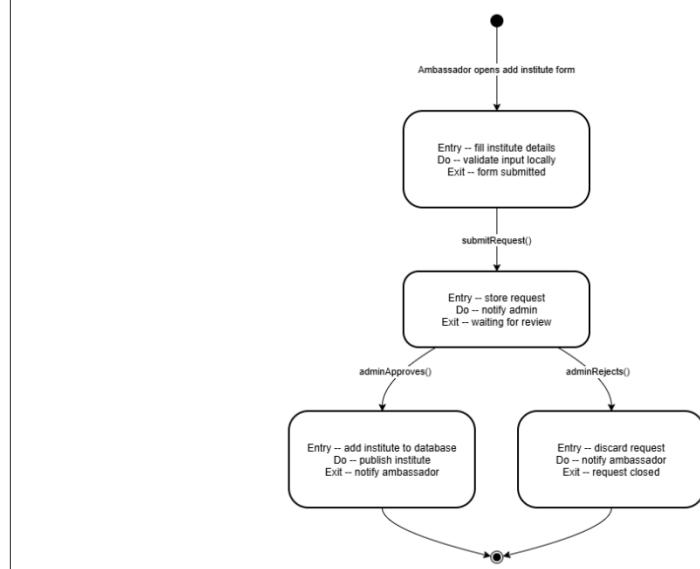
## 7. Approve/Reject Counselors



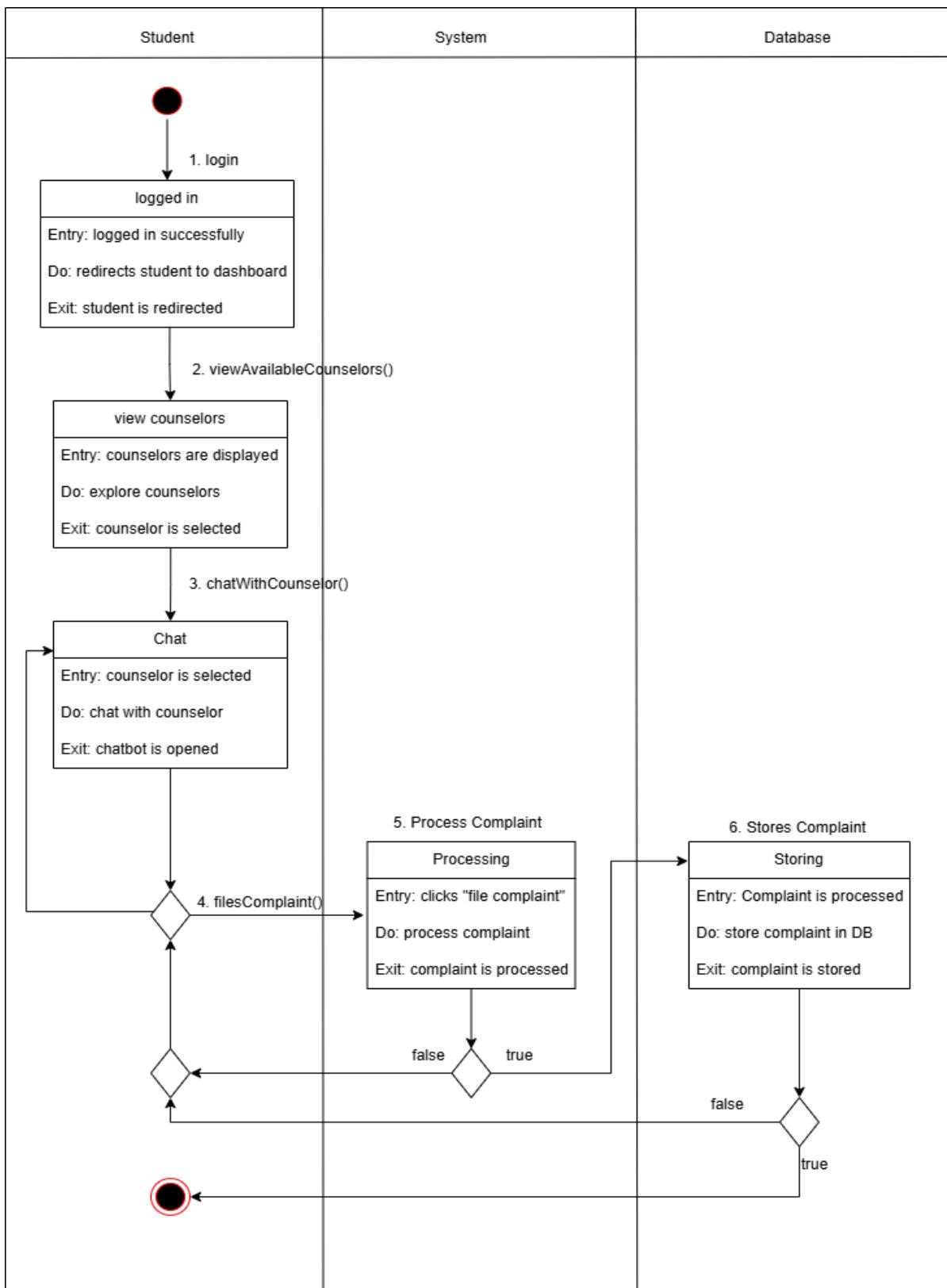
## 8. Site Announcement



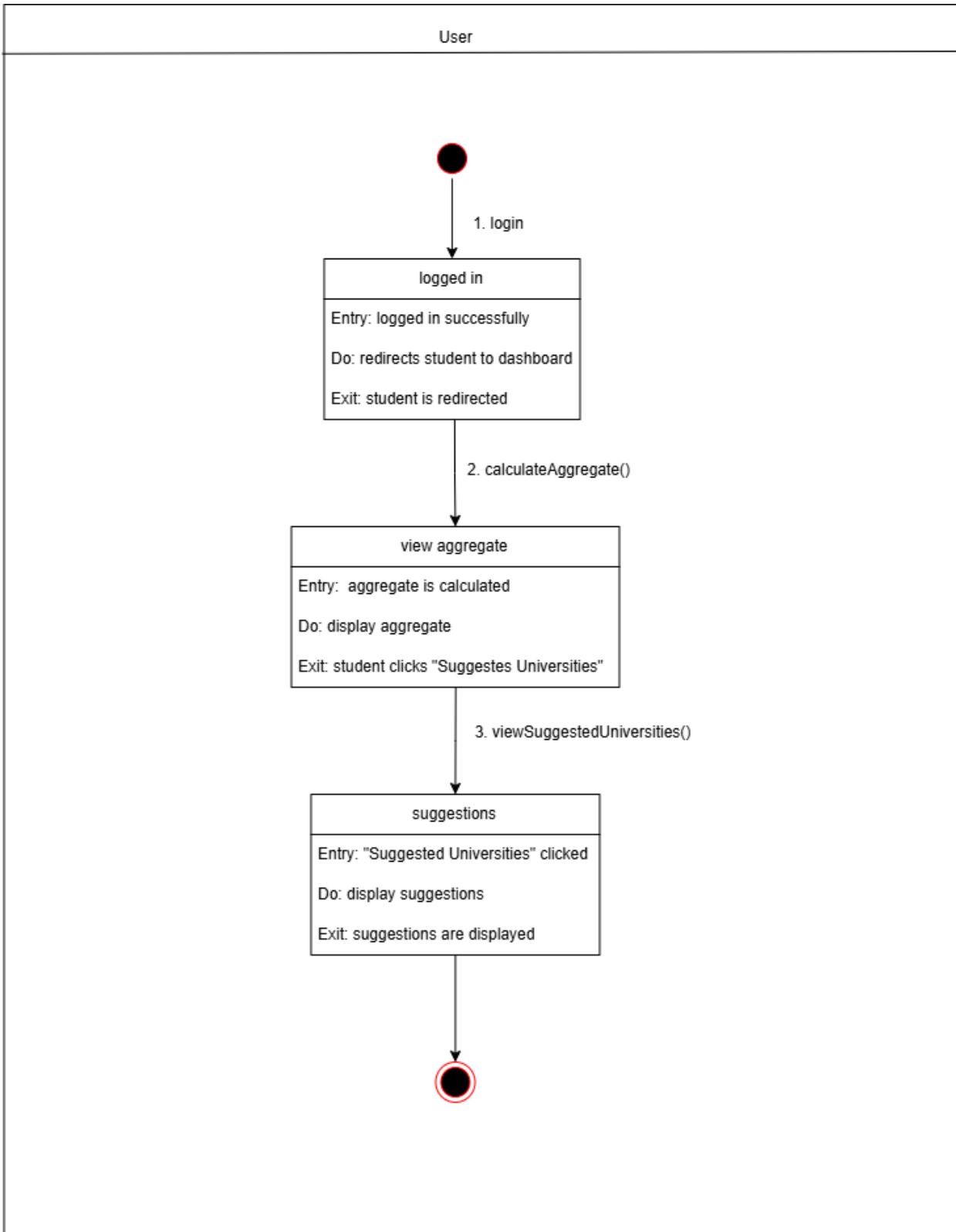
## 9. Add institute



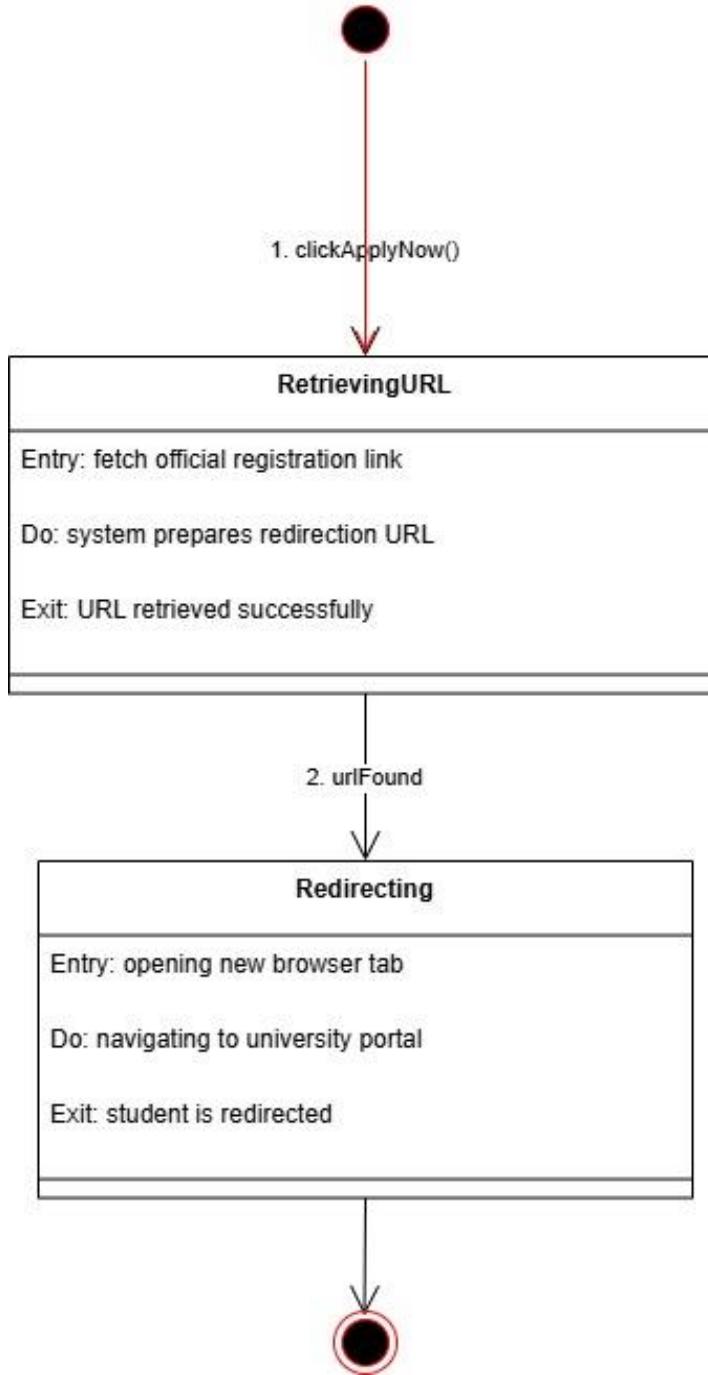
## 10.Complaint about a Counselor



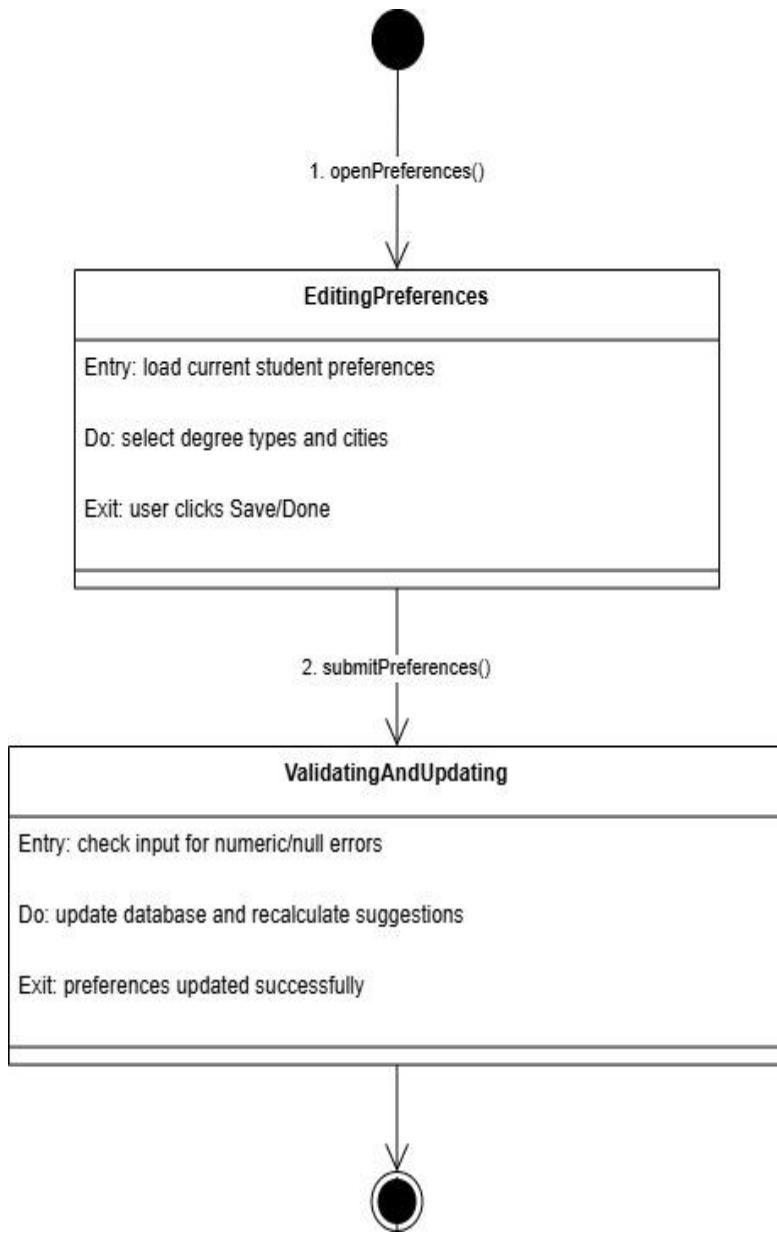
## 11. View Suggested Universities



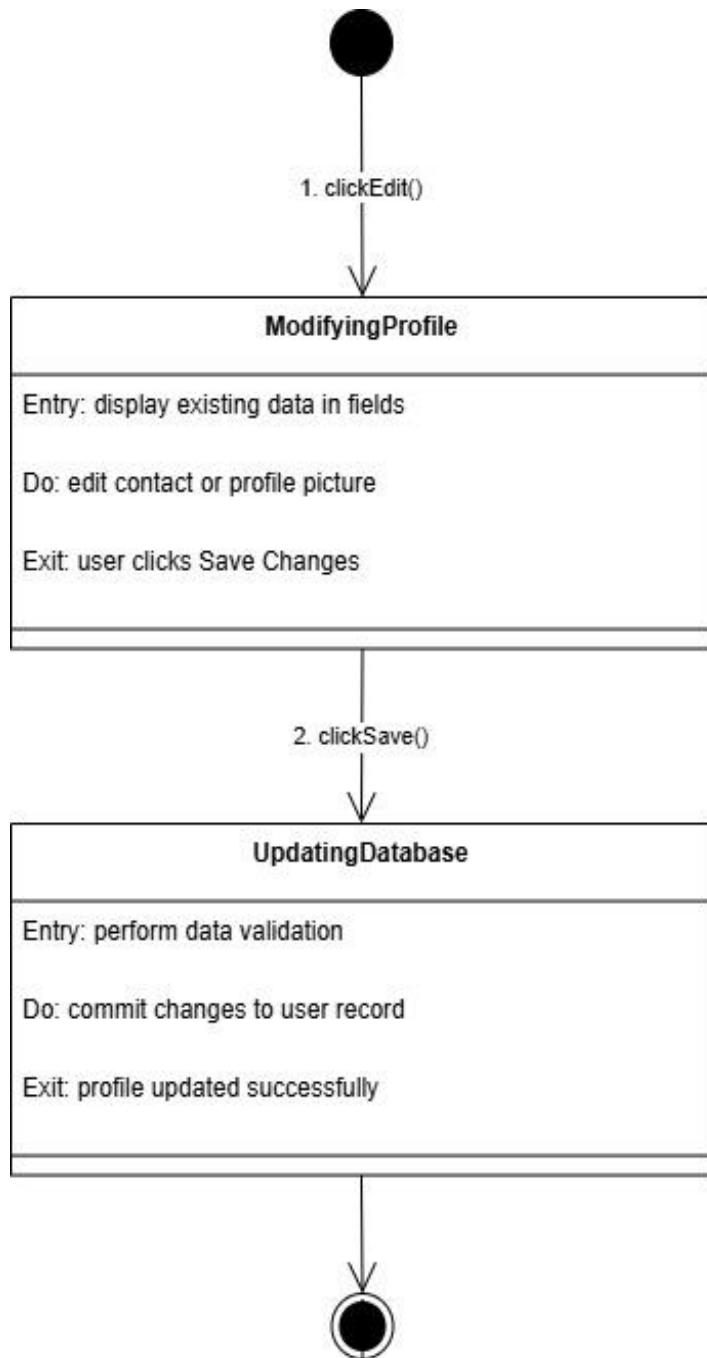
## 12.Apply for Admission



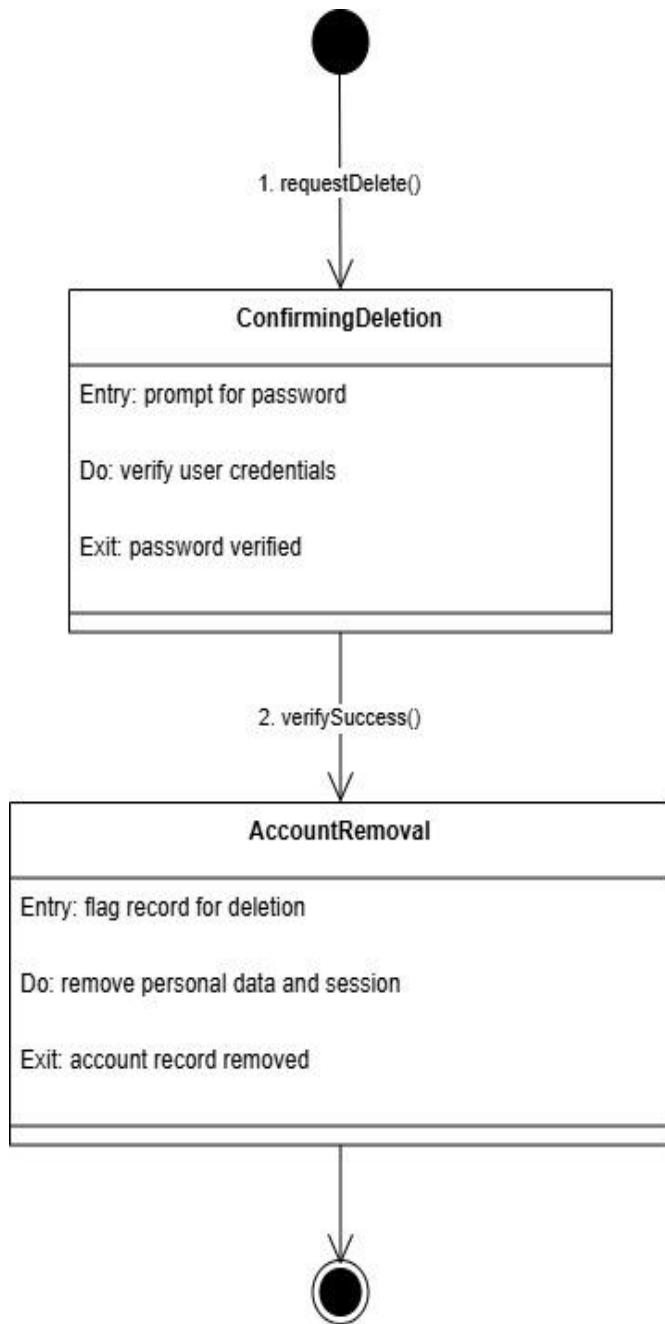
## 13.Set Change Preferences



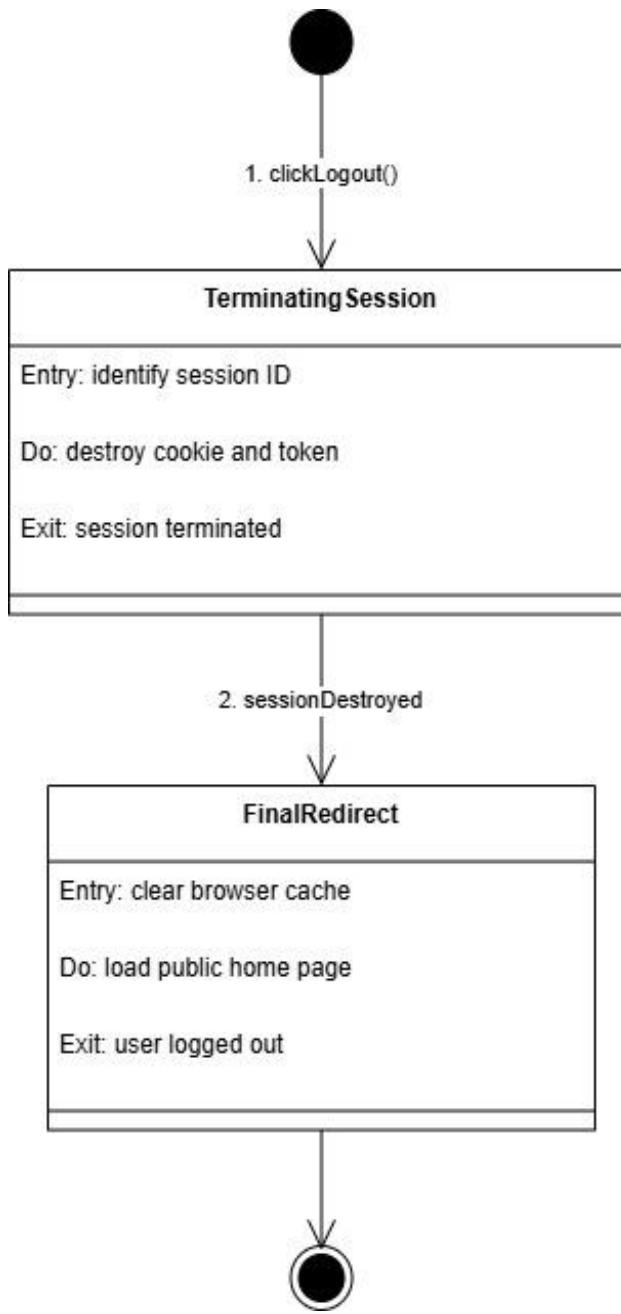
## 14. Update Profile



## 15. Delete Account



## 16.Logout



## 17. View Dashboard

