

nEdCom

(Web-based Educational Networking Platform for University Students)

Course: CSCI441_VA_F2018: 2018F_CSCI441_VA_Software Engineering

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GitHub Link: <https://github.com/heanh sok/hkms-fhsu-se-project>

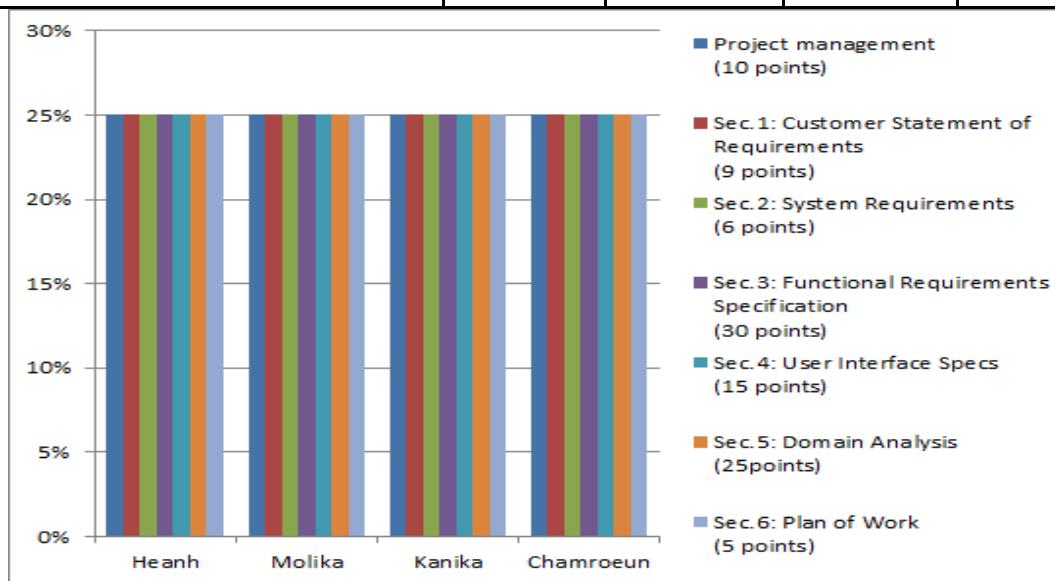
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Team member contribution

All team members contributed equally to this project.

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Project management (10 points)	25%	25%	25%	25%
Sec.1: Customer Statement of Requirements (9 points)	25%	25%	25%	25%
Sec.2: System Requirements (6 points)	25%	25%	25%	25%
Sec.3: Functional Requirements Specification (30 points)	25%	25%	25%	25%
Sec.4: User Interface Specs (15 points)	25%	25%	25%	25%
Sec.5: Domain Analysis (25points)	25%	25%	25%	25%
Sec.6: Plan of Work (5 points)	25%	25%	25%	25%



1. Customer Statement of Requirement (CSR)

1.1. Problem Statement

Even though there are a lot of platforms for chatting, networking, sharing of information, but there is no clear way for students in Cambodia to network academically and professionally. Students often follow pages on social media platform such as Facebook to get scholarships or school information. But they may get distracted by contents of other posts that appear in the newsfeed or chat notifications from friends. Students may need to ask information regarding a school program that they're interested in but not know any other students who are willing to provide the assistance or they might find it difficult to reach out to others to ask questions about careers or educational plans. Apparently, those who are experienced in professional development have the capability to help addressing the questions and concerns of their peers regarding career development, school programs, and other opportunities or might as well be able to provide mentorship. A new implementation is needed in order to bridge this networking gap and gather all professional development areas in one place.

A platform which enables the enhancement of higher education is highly in need while Cambodia consists of thousands young people which shares more half of the total population. This is the key issue that developing countries like Cambodia need to focus on. Higher education plays an important role to bring up more competitive workforce in the future especially those with ready-skill for the real workplace.

Although strengthening curriculum is not enough, we need more modernising infrastructure with tech-integrated solution. Youths require more skill to remain employed in this competitive and rigorous labor market. According to East Asia Forum, "Cambodia should enact policies to stimulate technological development and promote collaboration in research and development activities." (East Asia Forum, 2014)

"Growing labor force alone is not sufficient to attract and create jobs. Here, employers particularly face significant skill shortages, so education system and the increase of investment in education has a role to play in filling those gaps. But if some part of the challenges can be addressed, looking at the alternative resources, modernizing education and vocational training, stepping in skill developments provided by the firms are main direction for labor forces to create future jobs," Inguna Dobraja, the World Bank's country manager in Cambodia, said at the launching of the report. (World Bank in Cambodia)

Insufficient skilled labors creates skill gap which is caused by the shortages of informed information, advice and clear guidances. However, about 45 percent of the population have access to the internet. This means internet infrastructure is available for more digital platform to operate and more students will be able to access more information online.

With a vision to solve employment issue by establishing an encouraging platform, our proposed solution is to create a educational networking platform to help and prepare

Cambodian students in the job market, find mentorship, explore many opportunities, possible career paths, and move ahead in their educational pathway such as getting scholarships, building professional skills, etc.

What Students in Higher Education in Cambodia Need.

- a. More information about educational curriculum and other academic topics
- b. Mentorship for advice and guidance.
- c. A well-rounded and trustworthy information about different opportunities in society
- d. Career matching and professional training to be ready for workplaces after graduation

The purpose of our application is to serve as a sharing platform that connect students from all educational and professional background to contribute information about schools, university majors, admission application processes, job skills, etc. On top of that, event organizers, employers, recruiters, or even faculties can contribute to sharing information, assisting, and mentoring other students and can post information about jobs, scholarship opportunities or course related information in their programs. Companies can post job announcement and search for potential employees through our platform, which will make the searching process easier.

There are pages like [Wedushare](#) where students can look for scholarship programs and job opportunities, [LinkedIn](#) where users build their network and professional portfolio that ease with job search and recruitment process, and [Barcamp](#) events in Cambodia that gathers innovators, professionals, enterprises from big to small, educators, and students from diverse background to come together and share their knowledge, present their product or idea to the public, and exchange experience and skills. However, they're not a zone that focuses on bringing student on a complete educational and professional development experience through digital networking.

To address the issue mentioned above, we will create a web-based application with the following functionalities:

- **Forum** where users can ask questions, exchange ideas, initiate discussion topics related to the fields they're interested in. They can tag the question in the appropriate categories so that other users can easily look for the posts through the filter tag. Other users can participate in the forum post by making comments, upvote, or downvote the post to verify whether the post is relevant, useful or helpful.
- **Opportunity Page** where companies can post job or internship announcements, event organizers can post about their events or event volunteer opportunity, and universities can post about their university programs, scholarships, seminars and other information useful for prospective students. Many educational, inspirational events and activities are

being conducted in many different places regarding to many interesting topics. With this platform, students will be more aware and more informed of nearby events and other interesting events conducted by other universities. Students can network and address date to join those interesting events. Students will also be notified with other opportunities such as scholarships, internship, training and exchange program.

- **User profile page** where users can upload their profile picture, write information about themselves such as education background, work experience and expertise and more elaborate description. They can modify the setting to hide or display certain information from their profile page. The profile page also shows user post histories in forums and their rating in the system. Users can also follow others in order to get notifications related to posts, news, etc.
- **Rating system** which is displayed in the form of points. Users who contribute a lot in forums and get a lot of upvotes will gain high points. Users who achieve certain point threshold will receive a certain status name.
- **User roles** which determines accessibility of the system to different user roles. Thus, on the user sign up page, the system will enable user to register themselves as standard user or premium user. Standard user can be students or anyone. Premium users are important contributors such as faculties, event organizer, recruiter, etc. The registration of premium user is to be approved by the system administrator in order for the account to be created.
- **Private chat and email** function where users can reach out to others. It's important for system to have chat templates for users such as "Hello, I would like to pair up with you on nEdCom." By having system-generated casual phrases as chat templates, users shall be able to break the ice with other users easier, therefore it increases the amount of interaction between users.
- **Mentorship** a function for student to be matched with academic mentor who can be professor or senior students from different university. In this section students can interact with professional and seek for advice or guidance regarding to their university life. More importantly, this function also serves as a platform for career mentorship.

1.2. Glossary of Terms

- **nEdCom:** Short for Networking, Education, and Communication. It's a web-based application which serves as a platform to help prepare students for higher education and career development while expanding the network.
- **Points (Rating):** A feature which allows students to rate other people's answers in the forum. The system will average the points the person has accumulated and it will be displayed publicly.
- **Admin Users:** nEdCom team responsible for maintaining the system, moderating posts, and providing support.
- **Standard Users:** Student users, who are non-premium users.
- **Premium User:** Advisors, event organizers, employers, recruiters, or faculties who can contribute to sharing information, assisting, and mentoring other students. To be a premium user, they have to self-register as a premium user and wait for confirmation from administrator.
- **Forum:** A page where users can contribute through posting and sharing information, ask questions, and rate the answers.
- **Discussion Group:** group created specially to for user to discuss about certain topic based on their interest
- **Upvote:** vote for users' posts, questions, or answers to indicate to that they are good, correct, useful, or relevant
- **Downvote:** vote against, users' posts, questions, or answers to indicate that they are inappropriate, false, incorrect, or irrelevant
- **User Profile:** A page for displaying user information.
- **Opportunity Pages:** a special page of the system that displays posts related to events, competitions, scholarships, internships, career, or volunteering opportunities.
- **UX/UI:** Front-end interface design.
- **Top Achiever Page:** the top users with the highest points will be also appear in "Top Achievers" list for public showcase in the platform
- **Central Database:** Remote electronic file system used for storing and retrieving of all nEdCom data
- **Credential:** Authentication of user identity in order to login to use the system.
- **Notification:** Message delivered to user regarding announcement, important updates, and activities related to user account.
- **CAPTCHA:** Computer program used to tell human and machine apart and to prevent malicious activities on the website.

2. System Requirements / User's story

2.1. Enumerated Functional Requirement

The following table lists down the requirements of that system-to-be. Each row contains a unique identifier, Priority weight, and the detail of the requirement. The priority weight ranges from 1 to 5 in which 5 is the most essential to the success of the project. The key word “shall” is used to identify the requirement that are essential to implement whereas the key word “should” is used to identify the requirements that are desirable but not mandatory.

Identifier	Priority	Requirement
REQ-1	5	The system shall support registering new standard user with standard permission level (see REQ-6 and REQ-7). The registration for this type of user can be done automatically without waiting for approval from admin. Required information shall include a unique username and a password that conforms to guideline as well as the users' email address, first and last name.
REQ-2	5	The system shall support registering new premium user (specially designed for Advisors, Event Organizers, Employers, Recruiters, Faculties) with special permission level (see REQ-6, REQ-7, and REQ-8). The registration needs verification from admin. Required information shall include a unique username and a password that conforms to guideline as well as the users' email address, first and last name, phone number, and photo of national ID. The system shall alert admin to verify the user while the user waits confirmation.
REQ-3	4	Upon successful registration, the system shall alert the user to add additional information to the profile including: personal information, education background, careers, interests, and projects.
REQ-4	3	The system shall allow users to edit their profile information as needed.
REQ-5	5	The system shall award points to user if any posts/questions/answers of that user get upvoted by other users. In contrast, the system shall deduct points from user if any posts/questions/answers of that user get downvoted by other users.
REQ-6	5	The system shall enable any type of user (standard and premium) to join general forums or discussion groups, ask and answer question, downvote or upvote questions or answers.
REQ-7	5	The system shall enable any type of user (standard or premium) to browse any general opportunity pages such as Events, Competitions, Scholarships, Internships, Career, or Volunteer.
REQ-8	3	The system shall enable any type of user (standard or premium) to bookmark any posts in any opportunity pages.

REQ-9	4	The system shall allow premium user to create forums or discussion group, and post about events, competitions, scholarship, internship, or careers in opportunity page.
REQ-10	4	The system shall allow the user to manage the forums, groups, or posts on any opportunity pages that they have created.
REQ-11	3	The system shall enable user with certain number points to access certain exclusive forums, groups, and opportunity pages.
REQ-12	3	The system shall display the name and the link to profile of user with the highest points to the monthly "Top Achievers" page.
REQ-13	1	The system should disconnect the user session if the user is inactive for a predetermined period.
REQ-14	5	The system shall store and retrieve all the data from a central database.
REQ-15	2	The system should enable user to send private message to one another.
REQ-16	2	The system should allow one user to follow other users on the platform to get notification of their activities.
REQ-17	2	The system should allow mistakes while entering login credential. Nevertheless, to avoid individual with bad intention to brute force the password, the number of failed attempted should be limited to 5. If the number of fail attempt reaches its limit, the system will lock the account and notify the user of this suspicious activity through email.
REQ-18	3	The system shall allow user to reset password by sending a reset password link to the user email. Once the user has opened the link from their email, the system shall ask the user to input a new password.
REQ-19	5	The system shall allow admin with special privilege to oversee and manage all the users, forums, groups, or opportunity pages.
REQ-20	4	The system shall allow the users to search for relevant informations on the platform with certain keywords.

2.2. Enumerated Non-functional Requirement

The nonfunctional requirements are based on FURPS+ – Functionality, Usability, Reliability, Performance, Supportability, and other various attributes.

Identifier	Priority	Requirement
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REQ-21	4	The system shall have a clean and simple interface that enable the user to quickly and easily navigate to different pages across the platform.
REQ-22	3	The interface should include different color combinations, icons, and shapes to attract the user attention and help them understand the feature of each page.
REQ-23	4	The system shall have the capacity to handle the incoming traffic when large number of users access the website at the same time.
REQ-24	2	The system should use CAPTCHA to block spammers or bots
REQ-25	3	The system should quickly return search result that relevantly matches the user's specified key words.
REQ-26	4	The user interface shall be responsive such that it will change dynamically with different screen size.
REQ-27	5	The system shall have 24/7 availability for user to access.
REQ-28	3	The web platform should be compatibility with different browsers such as Google Chrome, Mozilla Firefox, Safari, Microsoft Edge, or Opera.
REQ-29	4	The platform shall support different types of devices such Laptop computer, Desktop computer, Smartphone, Tablet that run internet browser.
REQ-30	4	The web platforms shall load or load any pages quickly when the user hits enter or refresh.
REQ-31	4	The system shall have a backup of the central database in case the system crashes or get hacked.

2.3. On-Screen Appearance Requirement

In order to help nEdCom users to fully and visually understand how the website works, wireframes are provided in this section. The arrangement of each features or elements as well as the display are not yet finalized and is subject to change. nEdCom website will be responsive in which it can adapt to the size of the screen a user is viewing the site on. Do note that everything that is provided here is just to give the user the essential information they need in order to understand the necessary features that are available on the website.

	Priority Weight	Description
OSA-1	5	Standard Default: Users can find elements like menu, logo, search bar, account

		icon, notification icon in the header of the website. nEdCom logo will locate on the left and will be on display on every webpage. The global search bar will be placed in the center of the header, next to the logo. Navigation menu will be responsive, which means users can choose to fully show or hide, and will locate on the left of the logo. At the bottom of the website, users can find useful links such as About, Contact Us, Privacy Policy and Terms of Service.
OSA-2	5	Homepage: Homepage will be linked with nEdCom logo. It will divided into 4 sections. The first section, on top of the page, will display featured announcements that nEdCom wants to notify users. New career opportunities and other announcements will be available in section 2. Section 3 displays all available forum topics as well as the new added forums. Testimonials from students, faculty, and recruiters will be added to section 4. This is subject to change for non-login users and login users.
OSA-3	4	Student Dashboard: Profile customization will be available. Students can build their cv/resume for employment opportunities. They can see all of their posts with total views, votes (up or down), and comments/replies.
OSA-4	4	Faculty Dashboard: Profile customization will be available. Faculty can see all of their posts with total views, votes (up or down), and comments/replies. They can make a direct post from their account.
OSA-5	4	Recruiter Dashboard: Profile customization will be available. Recruiters can see all of their posts with total views, votes (up or down), and comments/replies. They can make a direct post from their account.
OSA-6	5	Forum: Displays the categories of the forums by subject and topics. New forums will be displayed with date, number of views, number of comments.
OSA-7	3	Career Page: Career and internship availabilities will be posted here. Students can search for jobs based on its categories and types (full time, part time or internship).
OSA-9	2	Announcement Page: Events, Scholarships, Competitions, Workshops that open for students regardless of their universities will be available here. Each types of announcement will be categorized in different

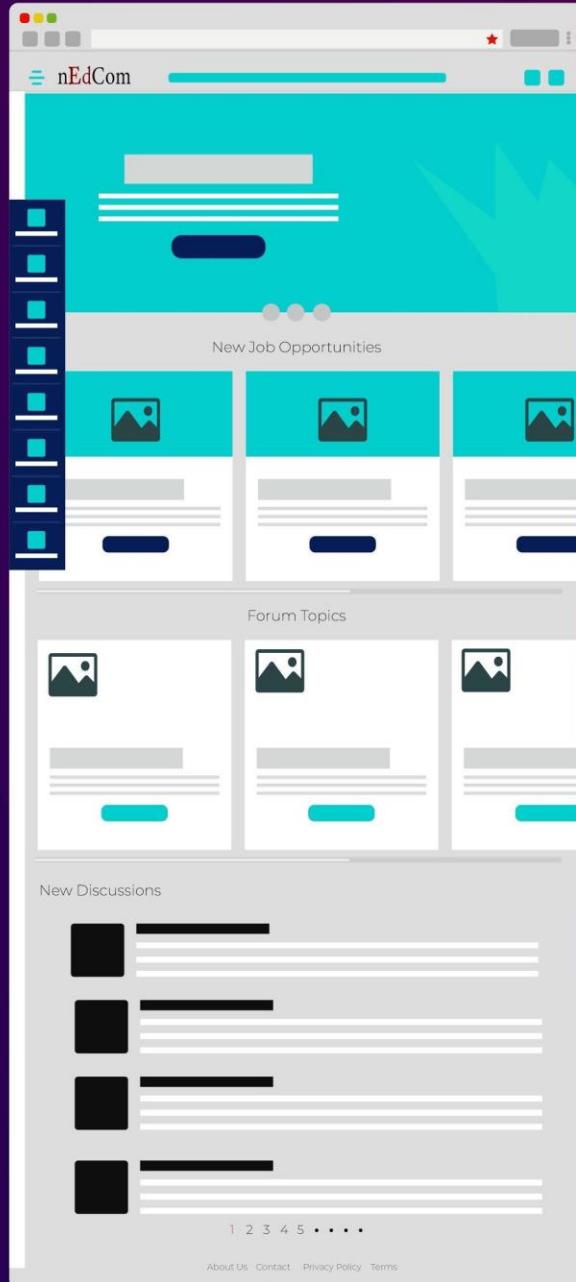
		sections.
OSA-10	1	Notification: This will be accessible on every webpage. Users can see notifications at the top right of the website, next to user account icon.

nEdCom

Homepage Wireframe

Menu

New Added
Forums



Header

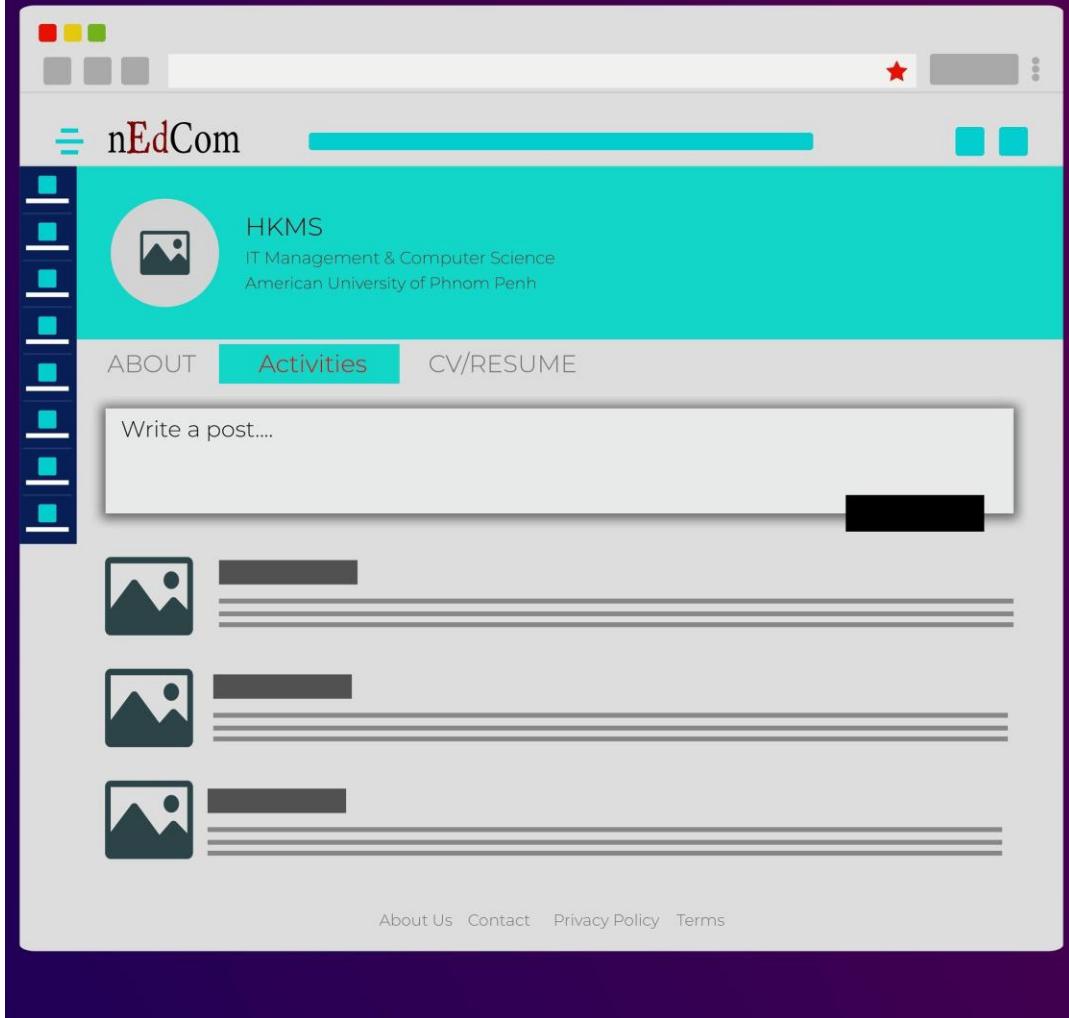
Selected
Announcement

New Added
Job Opportunity

Forum Topics

nEdCom

Student Account Wireframe



nEdCom

Faculty Account Wireframe

The wireframe depicts a desktop application window titled "nEdCom". The title bar includes standard window controls (minimize, maximize, close) and a red star icon. The main content area features a sidebar on the left with a vertical list of icons. The central area displays a user profile for "Dr. Hong Zeng" from "Computer Science, Fort Hay State University", represented by a placeholder image. Below the profile are three navigation tabs: "ABOUT", "Activities" (which is highlighted in red), and "Inbox". A large input field labeled "Write a post...." is positioned below the tabs. Three sample posts are shown, each consisting of a thumbnail image of a mountain landscape, a dark progress bar, and a series of horizontal lines for text content. At the bottom of the window, there is a footer bar with links to "About Us", "Contact", "Privacy Policy", and "Terms".

3. Functional Requirements Specification

3.1. Stakeholders

Our system is a platform for networking, academic and professional development, therefore it may be of interest to:

- Standard Users: (those who make use of the system for personal and professional growth.)
 - + Students (highschool, university, ...)
 - + Job Seekers
- Premium Users (those who can contribute to sharing and providing information and are able to offer mentorship to other users)
 - + Teachers
 - + Tutors
 - + Recruiters
 - + Administrator
- Companies (Seeking to advertise job announcement and looking for potential employees)
- Universities (Seeking to attract potential students)

3.2. Actors and Goals

Actor	Goal
Administrator	To maintain the system, facilitate posts, forum, and ensure smooth operation of application
Standard User (Students / Job Seekers)	To search for career/academic opportunities, seek mentorship, upscale their portfolio, and expand their network.
Premium User (Teachers / Advisors / Tutors / Recruiters)	To post information related to job announcement, scholarships, internship, networking events, and other opportunities, as well as to provide mentorship, help answer questions related to their field, and provide useful information
Web Page	To display application functions and interact with users
Database	To store and enable retrieval of data
Email System	To send notification to users regarding account activities

3.3. Use Cases

3.3.a. Casual Description

Use Case	Action	Description
UC-1	Register Standard User	Upon new account registration, user can choose to sign up as standard user. User will be asked to fill in credential informations such as first name, last name, email address, username, and password.
UC-2	Register Premium User	Faculties, recruiters, event organizers, employers sign up for a premium account. To do so users are required to provide their first name, last name, email address, phone number, photo of national ID and proof of employment. The registration requires administrator approval.
UC-3	Account Login	Users fill in their username and password to login, and it will direct them to their profile page.
UC-4	Edit Profile	Users edit their profile information.
UC-5	Post In Forum	Users post any topic/questions to forum.
UC-6	View Forum	Users view forum questions, comments, and number of up/downvotes.
UC-7	Create Discussion Group	Users create discussion group in order to post information/questions specific to that topic. When creating the group, they have to select its category and make it either public or private. After it's created, it will generate a link that directs you to the discussion page which the admin of the group can share with others. If it's a private discussion, it will require permission from the admin before other user can access it.
UC-8	Join Forum Discussion	Users make comments, answer questions, post a question/topic, upvote/downvote other's comments/post.
UC-9	Moderate Posts	Administrator needs to maintain control of the system. Therefore, if any post or comment is reported as inappropriate or irrelevant, administrator has privilege to remove that post and if a user's post/comment is reported more than 3 times, system administrator will have to block that account temporarily to avoid any more suspicious activities.

UC-10	Upvote/Downvote	User presses the triangle or inverse triangle next to the post or comments in order to upvote/downvote it. System automatically adds points to the user rating if their post/comments get upvoted and subtract the point if otherwise.
UC-11	Post in Opportunity Pages	Only premium users can create post in this page. User will be asked to provide a heading, a short description a long description, category tags, and optionally an image describing the opportunity. Then it will wait for the administrator/moderator to approve of the post before it's accessible to the public.
UC-12	View Opportunity Page	Opportunity page includes posts about scholarships, university programs, job announcements, internships, competitions, workshops, courses, fairs, and volunteer opportunities. Users can view posts in the page, and they can filter it by tags or category.
UC-13	Bookmark Posts	Once they see any post they're interested in, users can bookmark it for later view. To access the bookmarked posts, user clicks on the bookmark icon.
UC-14	Follow Other Users	Users click on subscribe/follow other users to get notification about their posts. And they click on unfollow to stop getting the notification.
UC-15	Create Private Chat	Users reach out and connect to others through chat function, thus it increases the amount of interaction between users. They will first need to go to the other user's profile page and click on the message icon in order to start chat. Alternatively, user can go to their contact book in order to search for the person they want to start chat with.
UC-16	Search	Users search for existing posts, topics, questions through the search bar by inputting keywords.
UC-17	Filter	Each post, forum question, and topic has tags associated to them to identify the category. Users select categories of their interest in order to filter posts.
UC-18	Access Email System	System enables users to connect with each other through other communication channels such as email as well.
UC-19	Access Exclusive Pages	Only users with predetermined ratings will have access to exclusive pages.
UC-20	Get Notification	Users get notifications for any account related activities or messages.

3.3.b. Use Case Diagram

1. Define Actors explained in diagram:

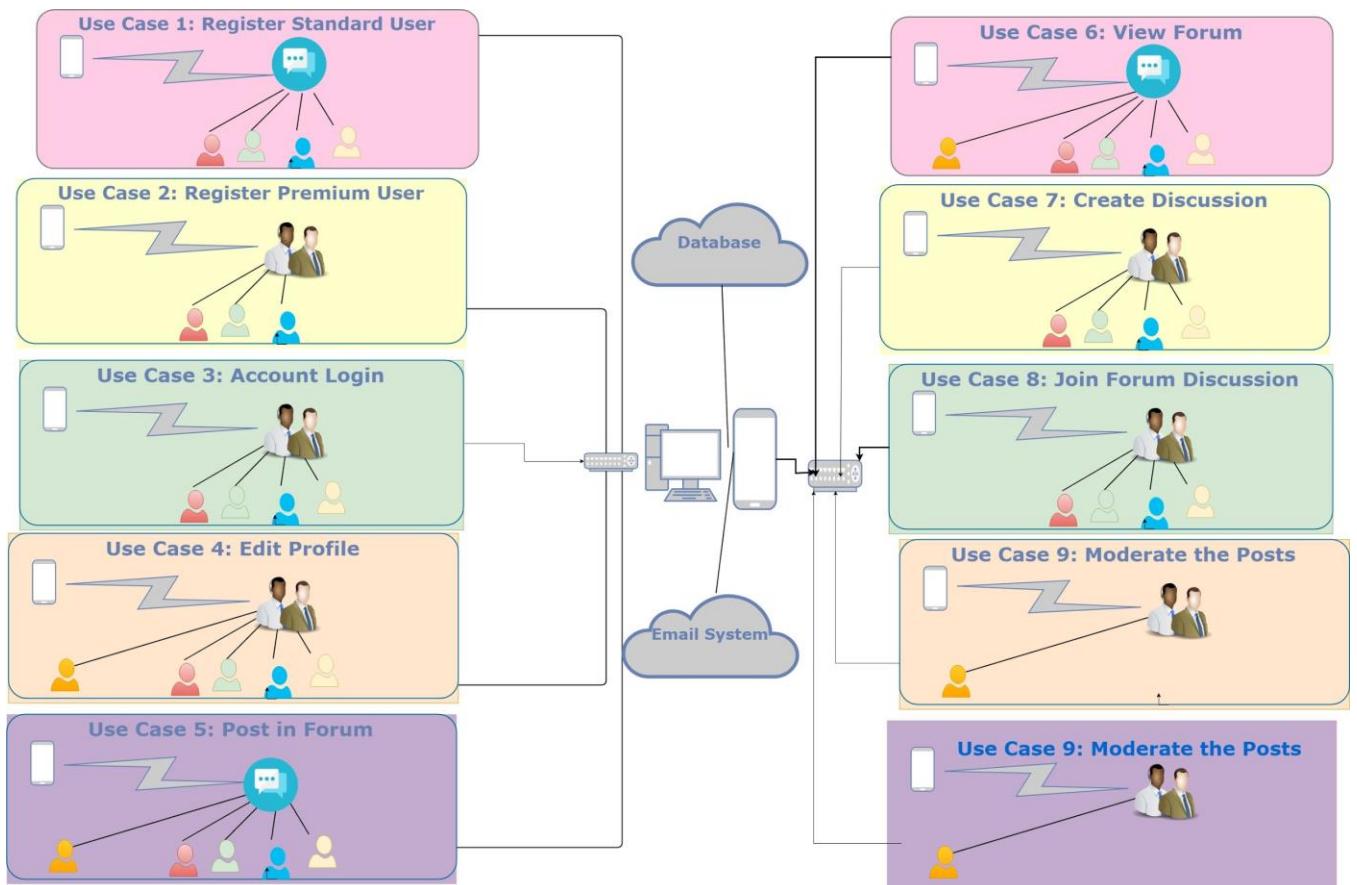
- **Student:** target user
- **Job seeker:** target user
- **Recruiter:** career vacancy open and recruiter
- **Admin:** system administrator
- **Database:** store input data
- **Email System:** communication and network tool
- **Teacher:** school representative, scholars, professors
- **Tutor:** mentors for the mentorship program

1) Diagram to show interactions between the actors and use cases 1-10

a) Explain diagram in plain table

UC-1	Register Standard User	Students, job seekers, tutor, teacher, recruiter
UC-2	Register Premium User	Teacher, tutor, recruiter
UC-3	Account Login	Students, job seekers, tutor, teacher, recruiter
UC-4	Edit Profile	Students, job seekers, tutor, teacher, recruiter
UC-5	Post in Forum	Students, job seekers, tutor, teacher, recruiter, administrator
UC-6	View Forum	Students, job seekers, tutor, teacher, recruiter, administrator
UC-7	Create Discussion	Students, job seekers, tutor, teacher, recruiter
UC-8	Join Forum Discussion	Students, job seekers, tutor, teacher, recruiter
UC-9	Moderate the Post	Administrator
UC-10	Upvote/Downvote	Administrator

b. Diagram: Actor and Use Cases Interaction



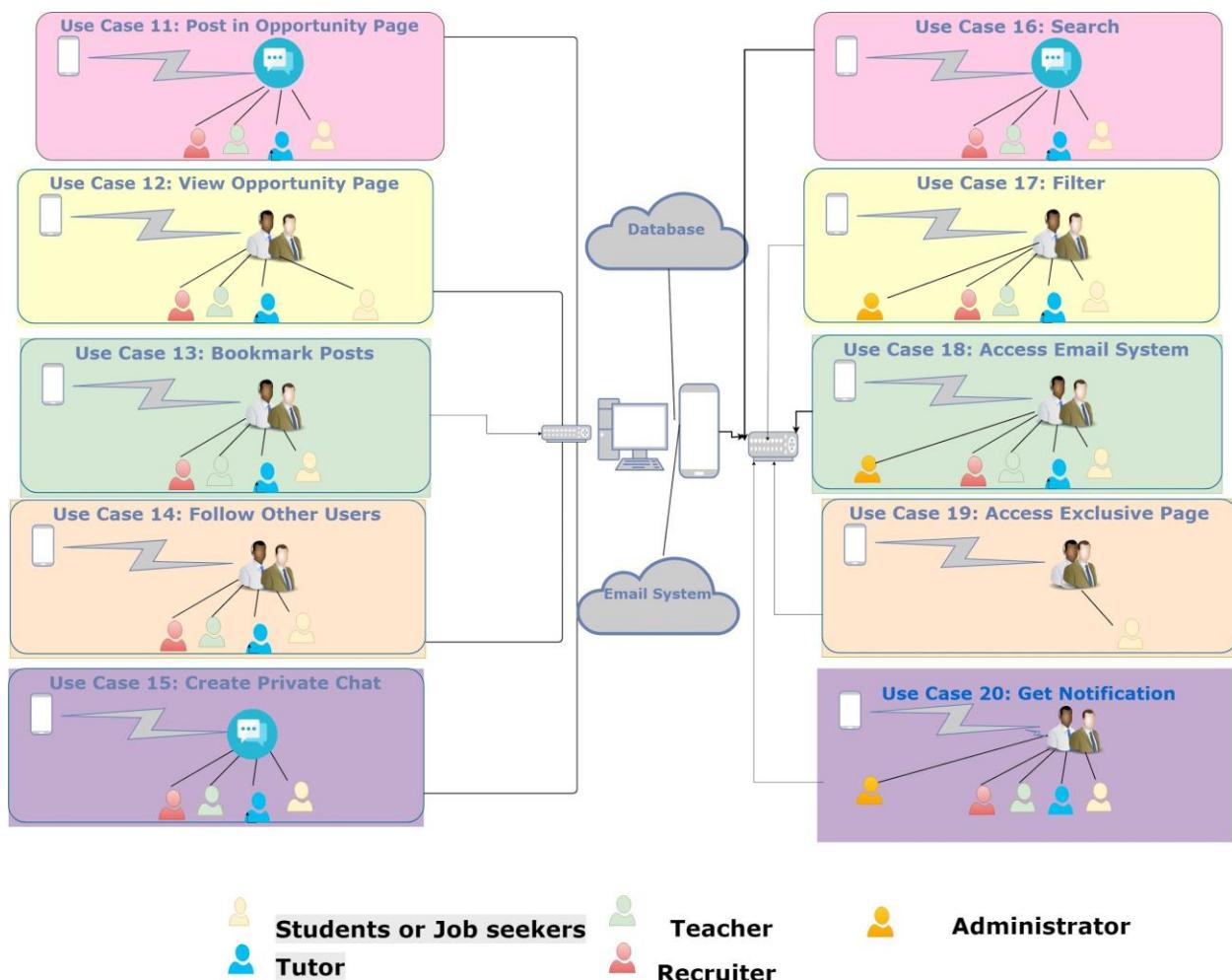
2) Diagram to show interactions between the actors and use cases 10-20

a) Explain diagram in plain table

UC-11	Post in opportunity page	tutor, teacher, recruiter
UC-12	View opportunity page	Students, job seekers, tutor, teacher, recruiter
UC-13	Bookmark Posts	Students, job seekers, tutor, teacher, recruiter
UC-14	Follow other users	Students, job seekers, tutor, teacher, recruiter
UC-15	Create Private Chat	Students, job seekers, tutor, teacher, recruiter
UC-16	Search	Students, job seekers, tutor, teacher, recruiter

UC-17	Filter	Students, job seekers, tutor, teacher, recruiter
UC-18	Access Email System	Students, job seekers, tutor, teacher, recruiter
UC-19	Access Exclusive Page	Students, job seekers
UC-20	Get Notification	Students, job seekers, tutor, teacher, recruiter

b. Diagram: Actors and Use cases Interaction



3.3.c. Traceability Matrix

	Priority Weight	UC-1	UC-2	UC-3	UC-4	UC-5	UC-6	UC-7	UC-8	UC-9	UC-10
REQ-1	5	X									
REQ-2	5			X							

REQ-31	4	X	X	X	X	X	X	X	X	X	X
Total PW		59	59	52	41	54	55	49	45	45	47

REQ-23	4	X	X	X	X	X	X	X	X	X	X
REQ-24	2										
REQ-25	3						X	X			
REQ-26	4	X	X	X	X	X	X	X	X	X	X
REQ-27	5	X	X	X	X	X	X	X	X	X	X
REQ-28	3	X	X	X	X	X	X	X	X	X	X
REQ-29	4	X	X	X	X	X	X	X	X	X	X
REQ-30	4	X	X	X	X	X	X	X	X	X	X
REQ-31	4	X	X	X	X	X	X	X	X	X	X
Total PW		52	53	44	42	42	42	42	39	41	33

3.3.d. Fully-Dressed Description

The following use cases are important to the user requirement specification, therefore they're selected for a fully-dressed description:

- Register Standard User
- Register Premium User
- Account Login
- Post In Forum
- View Forum
- Post in Opportunity Pages

UC-1 : Register Standard User
Related Requirements: REQ-1, 3,4,13,14,21,22,23,24,26,27,28,29,30,31
Initiating Actor: Standard User (Student, Job Seeker)
Actor's Goal: To create a standard account with nEdCom.
Participating Actor: Database, Email System
Preconditions: User's email is not associated with any nEdCom account yet. User need to provide first name, last name, valid email address, username, and password.
Postconditions: Upon registration, a verification email has been sent to user notifying of account confirmation. User has clicked on the confirmation link in the email, user account is successfully created, and the system has notified user to add additional information to the profile including: personal information, education background, careers, interests, and projects.
Main Success Scenario: → 1. User select on "Register As Standard User"

- ← 2. **System** prompts student/job seeker to enter credentials
- 3. **User** enter their credentials
- 4. **System** verifies that username and password meet requirement
- 5. **System** checks from the **database** if email and username is already in use
- ← 6. **System** verifies email and username
- 7. **System** sends confirmation code to user's email using the **email system**.
- ← 8. **System** notifies **user** to check email and prompt user to enter the confirmation code
- 9. **User** enters confirmation code
- 10. **System** checks if confirmation code is correct
- ← 11. **System** verifies confirmation code
- 12. **System** activates user account
- ← 13. **System** notifies **user** of successful registration
- ← 14. **System** asks **user** to enter profile information
- 15. **User** enters profile information
- 16. **Database** stores user's profile information

Extensions (Alternative Scenarios):

- 3a. **User** enters invalid password
 - ← 1. **System** prompts user to enter another password
- 3b. **User** enter email or username that has already been used.
 - ← 1. **System** prompts user to enter another email or username
- 9a. **User** enters incorrect confirmation code
 - ← 1. **System** prompts user to re-enter confirmation code

UC-2 : Register Premium User

Related Requirements: REQ-2, 3,4,13,14,21,22,23,24,26,27,28,29,30,31

Initiating Actor: User (Faculty, Recruiter, Advisor, Event Organizer)

Actor's Goal: To create a premium account with nEdCom

Participating Actor: Administrator, Database, Email System

Preconditions: User doesn't have a nEdCom account yet. They are required to provide first name, last name, valid company or university email address, phone number, photo of national ID, and proof of employment.

Postconditions: Administrator has verified all the above information and approved of creation of the account. User has clicked on the confirmation link in the email, user account is successfully created with premium type, and the system has notified user to add additional information to the profile including: personal information, education background, careers, interests, and projects.

- 1. **User** select on "Register As Premium User"
- ← 2. **System** prompts student/job seeker to enter credentials
- 3. **User** enter their credentials

- 4. **System** verifies that username and password meet requirement
- 5. **System** checks from the **database** if email and username is already in use
- ← 6. **System** verifies email and username
- 7. **System** sends confirmation code to user's email using the **email system**.
- ← 8. **System** notifies **user** to check email and prompt user to enter the confirmation code
- 9. **User** enters confirmation code
- 10. **System** checks if confirmation code is correct
- ← 11. **System** verifies confirmation code
- 12. **System** alerts administrators to review user's registration request
- ← 13. **System** notifies user to wait for administrator approval
- ← 14. **Administrator** approves of user's registration request
- 15. **System** activates user account
- ← 16. **System** notifies **user** of successful registration
- ← 17. **System** asks **user** to enter profile information
- 18. **User** enters profile information
- 19. **Database** stores user's profile information

Extensions (Alternative Scenarios):

- 3a. **User** enters invalid password
 - ← 1. **System** prompts user to enter another password
- 3b. **User** enter email or username that has already been used.
 - ← 1. **System** prompts user to enter another email or username
- 9a. **User** enters incorrect confirmation code
 - ← 1. **System** prompts user to re-enter confirmation code

UC-3 : Account Login

Related Requirements: REQ-4,13,14,17,18, 21,22,23,24,26,27,28,29,30,31

Initiating Actor: Administrator, Student, Job Seeker, Faculty, Recruiter, Advisor, Event Organizer

Actor's Goal: To login to access features of the system.

Participating Actor: Database

Preconditions: User already has an account. The login page requires user email and password.

Postconditions: The credentials match. User is logged in.

Main Success Scenario:

- 1. **User** select on Login
- ← 2. **System** prompts **user** to enter credentials
- 3. **User** enter credentials
- 4. **System** checks user's credentials
- ← 5. **System** verifies user's credentials

← 6. **System** grants user access

Extensions (Alternative Scenarios):

3a. User enter wrong credentials

← 1. System prompts user to re-enter credentials

UC-5 : Post In Forum

Related Requirements: REQ-6,9,10,13,14, 21,22,23,26,27,28,29,30,31

Initiating Actor: Student, Job Seeker, Administrator, Faculty, Recruiter, Advisor, Event Organizer

Actor's Goal: To post questions or start discussion topics.

Participating Actor: Database

Preconditions: User of any account type can create a post in forum.

Postconditions: The forum is saved to the system database

Main Success Scenario:

- 1. **User** enter the forum page
- ←2. **User** select function “create post”
- 3. **System** checks if user is eligible to post
- ←4. **System** verifies user’s eligibility
- 5. **System** prompts user to fill in information about the post
- 6. **User** submit information
- ←7. **System** verifies if information meets the requirement
- 8. **System** add the post to the database

Extensions (Alternative Scenarios):

6a. **User** submit information that don’t meet requirement

←1. **System** prompts user to edit and resubmit the post.

3a. **User** doesn’t have eligibility to post

←1. **System** alert to user of the ineligibility

UC-6 : View Forum

Related Requirements: REQ-6,7,10,13,14, 21,22,23,26,27,28,29,30,31

Initiating Actor: User (Administrator, Student, Job Seeker, Faculty, Recruiter, Advisor, Event Organizer)

Actor's Goal: To access questions / comments / discussion topics.

Participating Actor: Database

Preconditions: User of any account type can browse discussion topics in the forum.

Postconditions: System has retrieved data from the database and displayed to the

webpage.

Main Success Scenario:

- 1. **User** enter the forum page
- 2. **System** asks the database to list all the posts for user to view
- ←3. **Database** returns list of posts
- ←4. **System** displays all posts to the webpage

UC-11 : Post In Opportunity Pages

Related Requirements: REQ-9,10,11,13,14, 21,22,23,26,27,28,29,30,31

Initiating Actor: Premium User (Faculty, Recruiter, Advisor, Event Organizer)

Actor's Goal: To post information related to job announcement, scholarships, internship, networking events, and other opportunities.

Participating Actor: Standard User (Student, Job Seeker), Administrator, Database

Preconditions: User must have a premium account type in order to create post in opportunity page. User will need to provide the headline, short description, long description, category tags, and optionally an image to describe the opportunity.

Postconditions: Administrator / moderator has reviewed and approved of the post. It gets saved to system database and the post becomes accessible by public.

Main Success Scenario:

- 1. **User** enter the opportunity page
- 2. **User** select on “create post”
- 3. **System** checks in the **database** if the user is eligible to post
- ←4. **System** verifies user eligibility
- 5. **System** checks in the **database** to list all tags/categories
- ←6. **Database** return list of all tags/categories
- ←7. **System** display form for user to input post information, including the tags that user need to select to associate with the post
- 8. **User** submit the information
- ←9. **System** verifies that the information meet the requirements
- 10. **System** alerts **administrator** to review the post
- ←11. **System** notifies user to wait for administrator approval
- ←12. **Administrator** approves of the post
- 13. **System** stores the post to the **database**
- ←14. **System** notifies user of the approval.

Extensions (Alternative Scenarios):

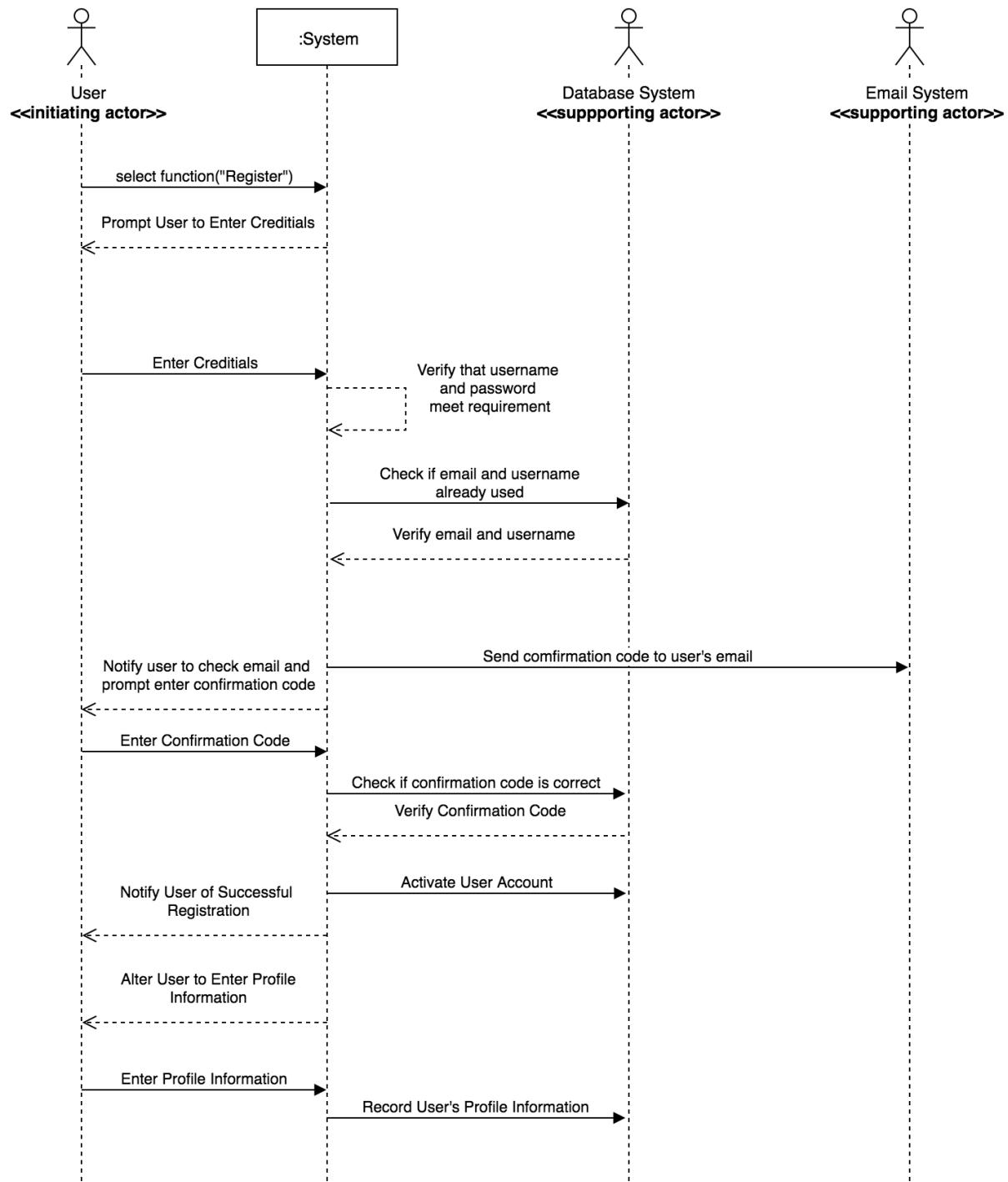
- 8a. **User** fill in information that doesn't meet requirement
- ←1. **System** prompts user to edit and resubmit the post
 - 2. **User** edits and resubmits the post

12a. **Administrator** rejects the post

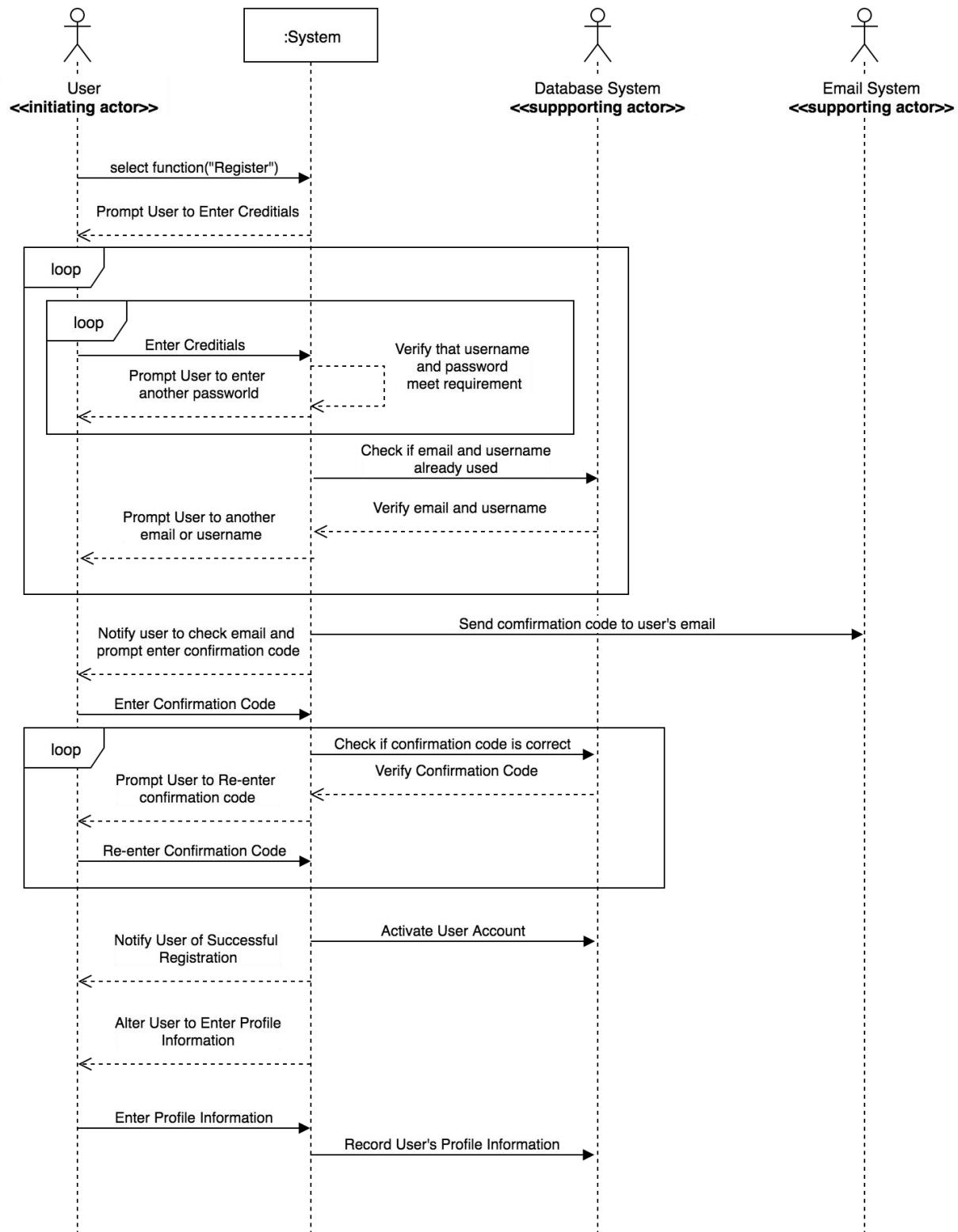
←14. **System** notifies user of the reject

3.4. System Sequence Diagrams

Use Case 1: Registering Standard User Main Success Scenario

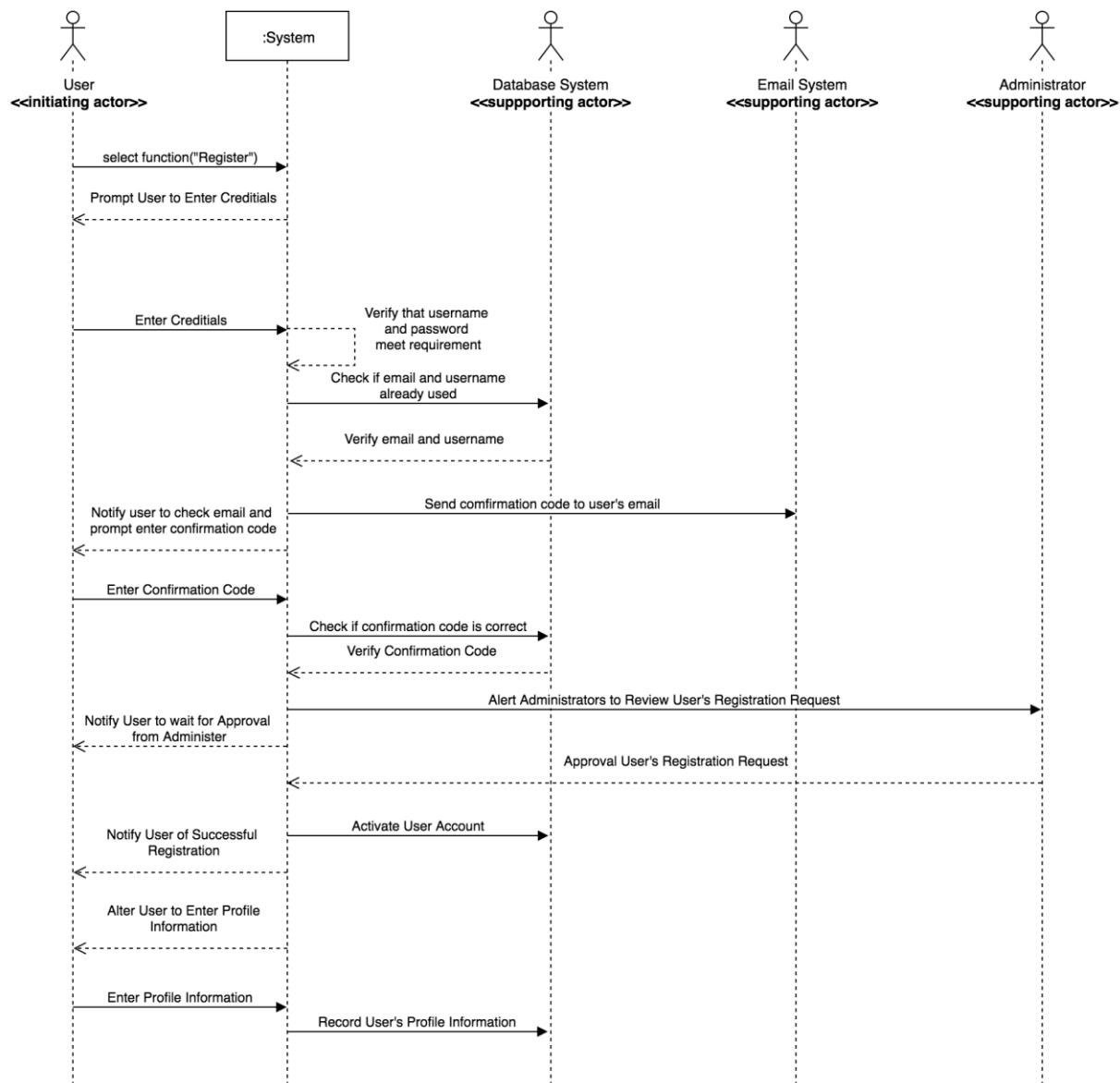


Use Case 1: Registering Standard User Alternative Scenario

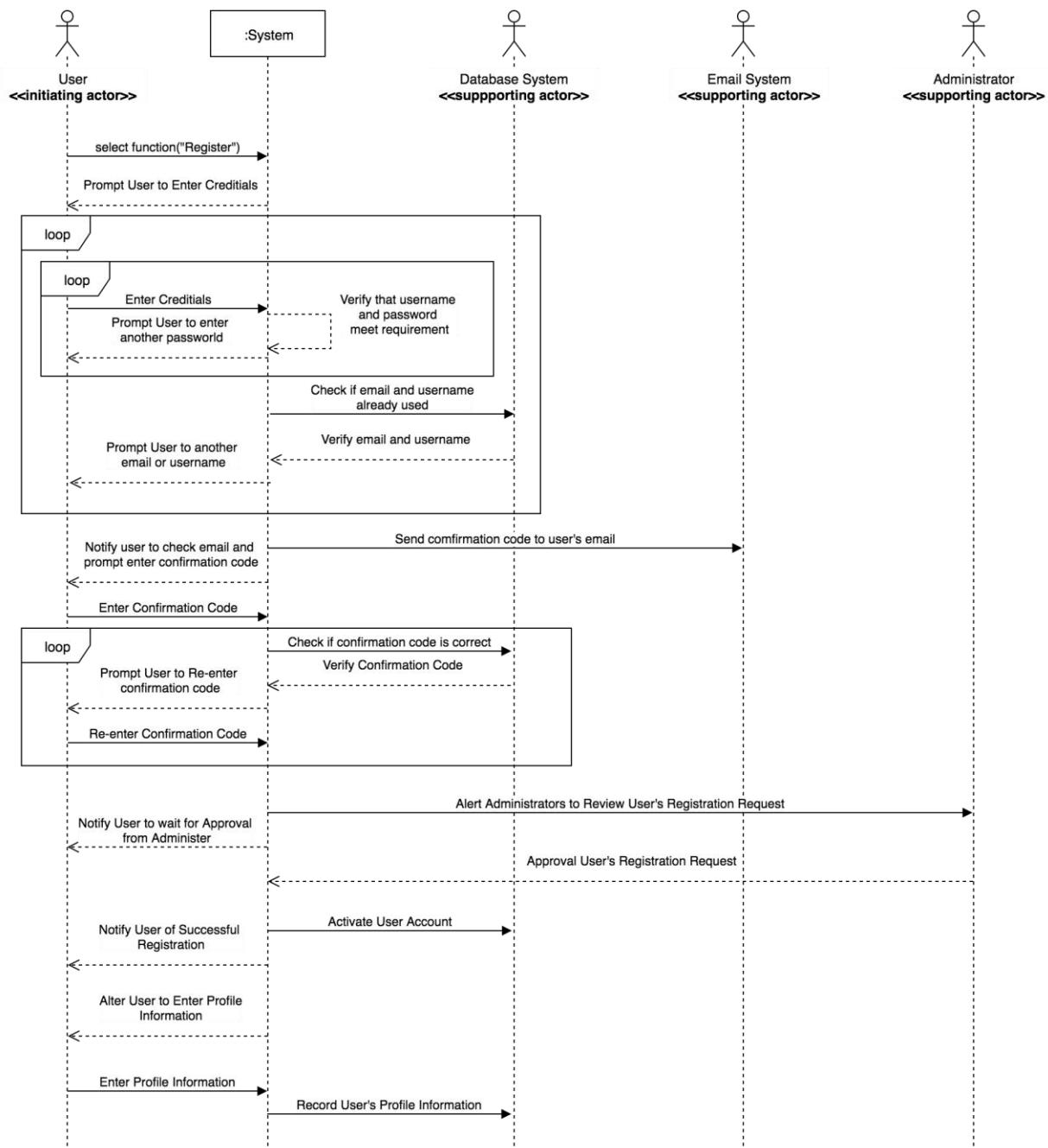


Use Case 2: Registering Premium User

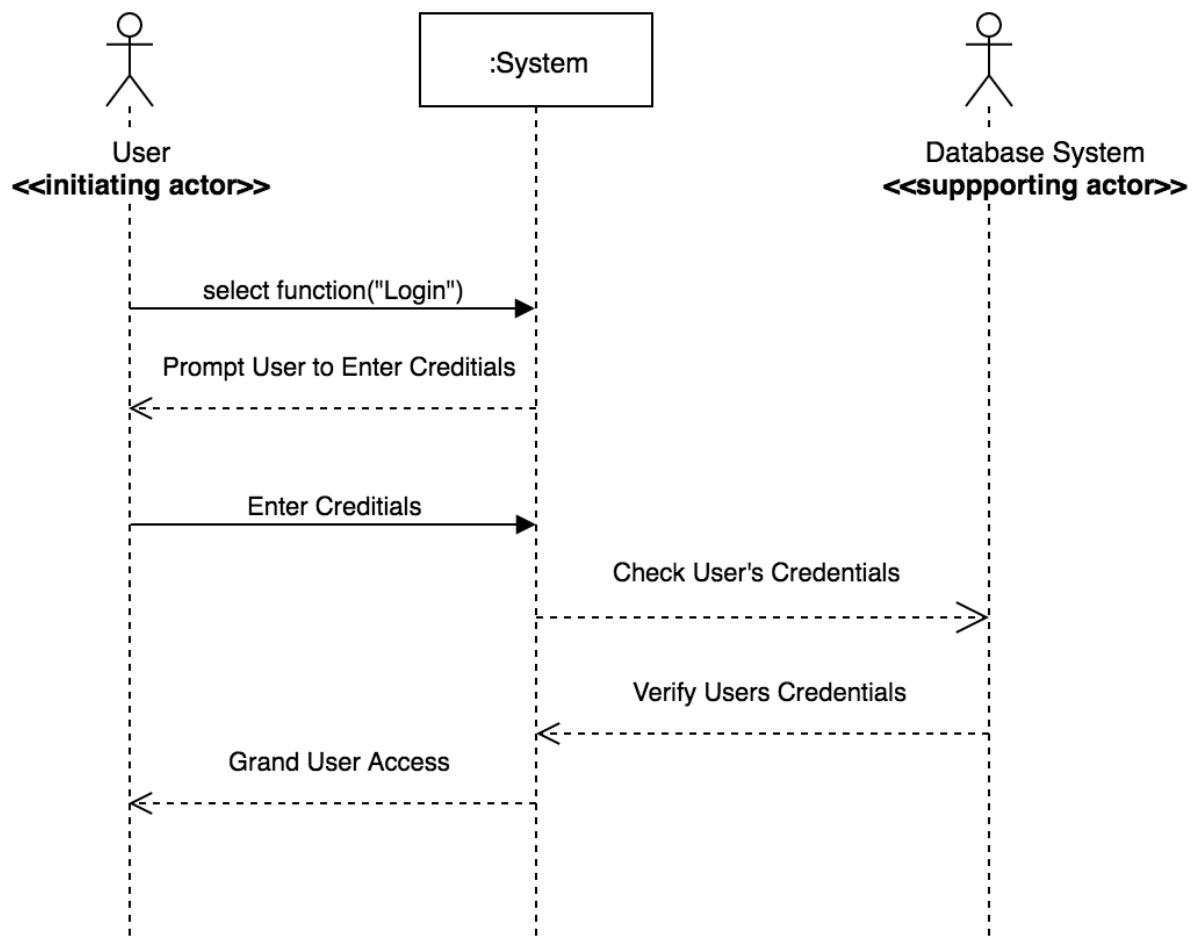
Main Success Scenario



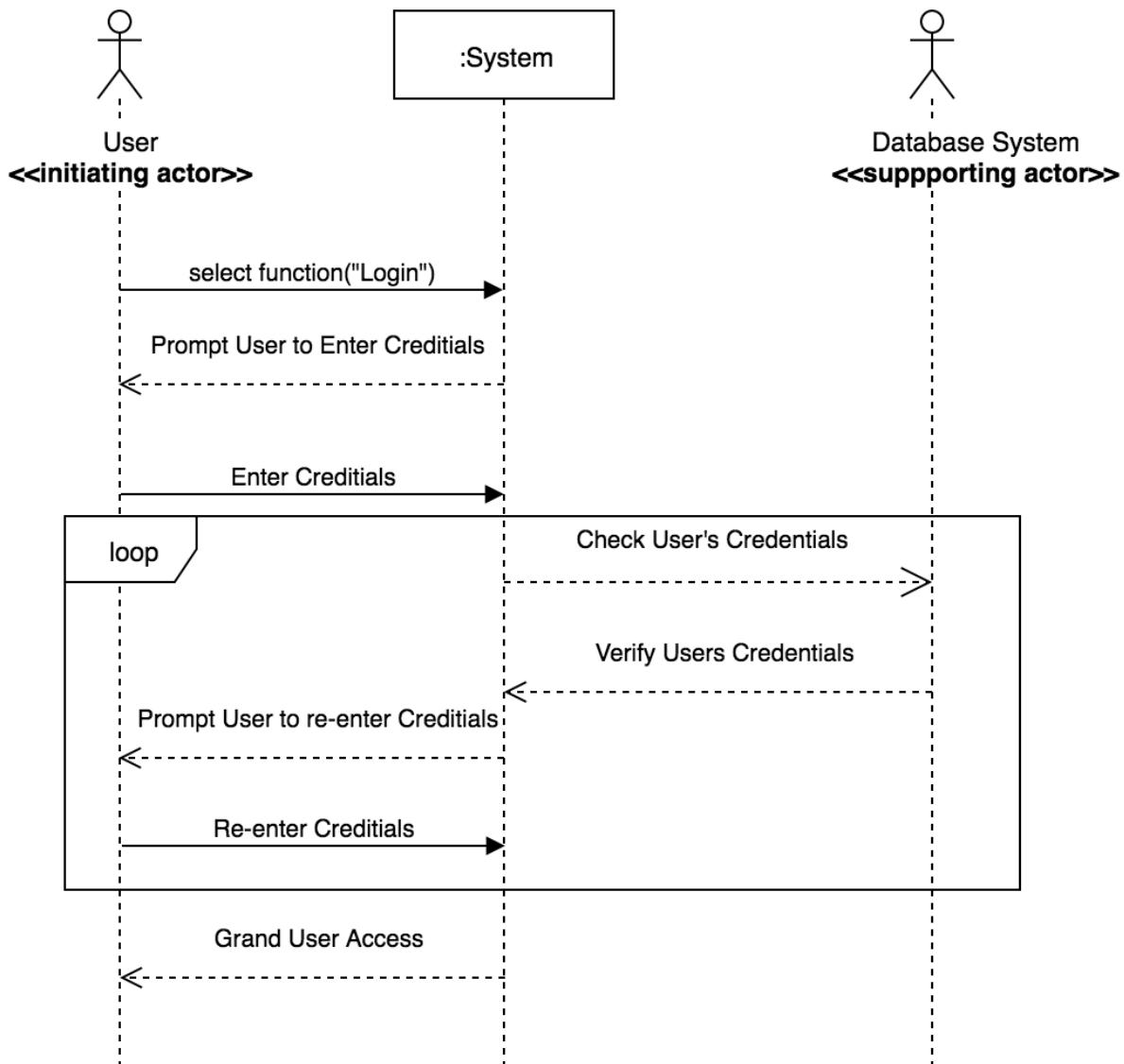
Use Case 2: Registering Premium User Alternative Scenario



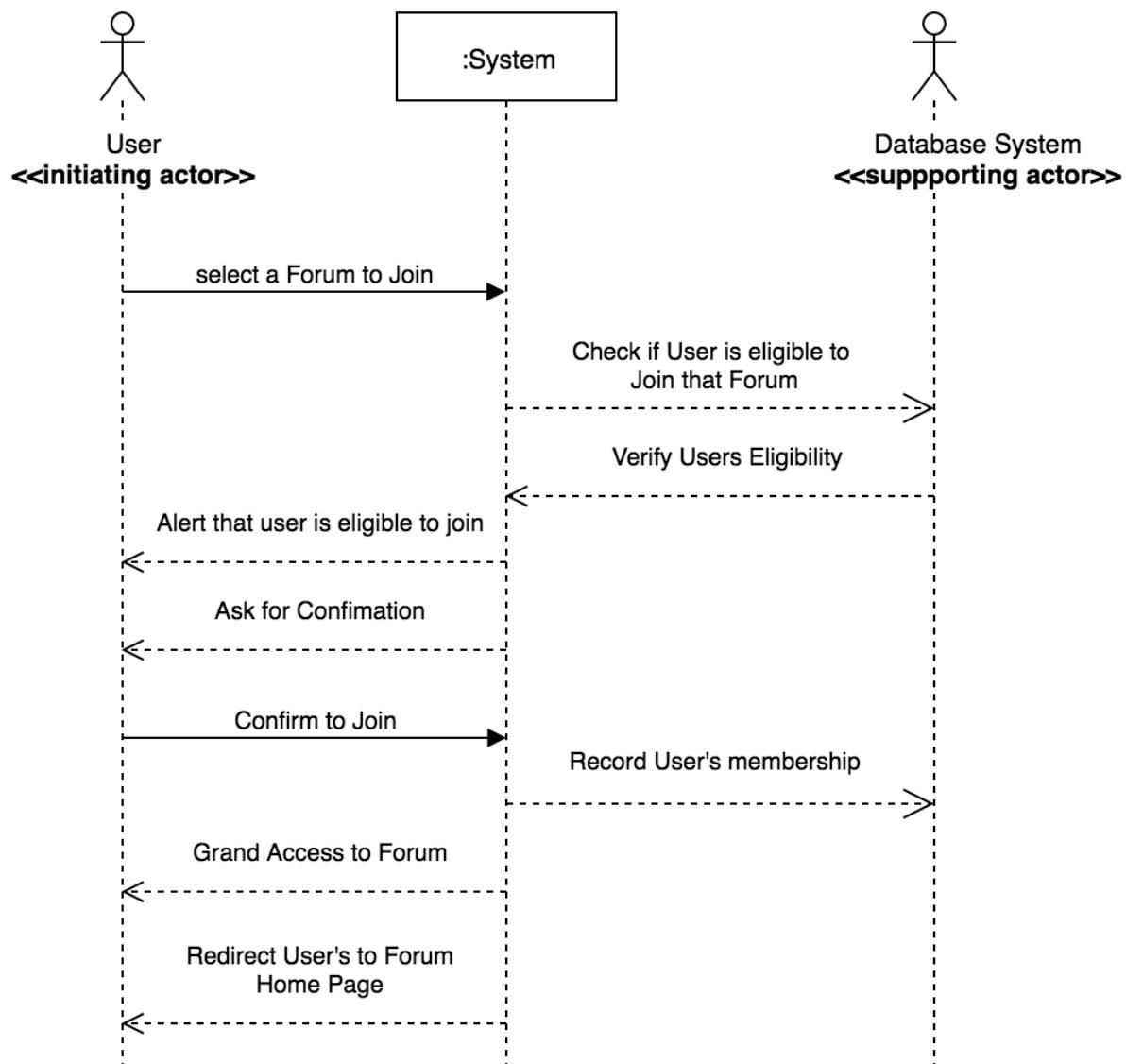
Use Case 3: Login
Main Success Scenario



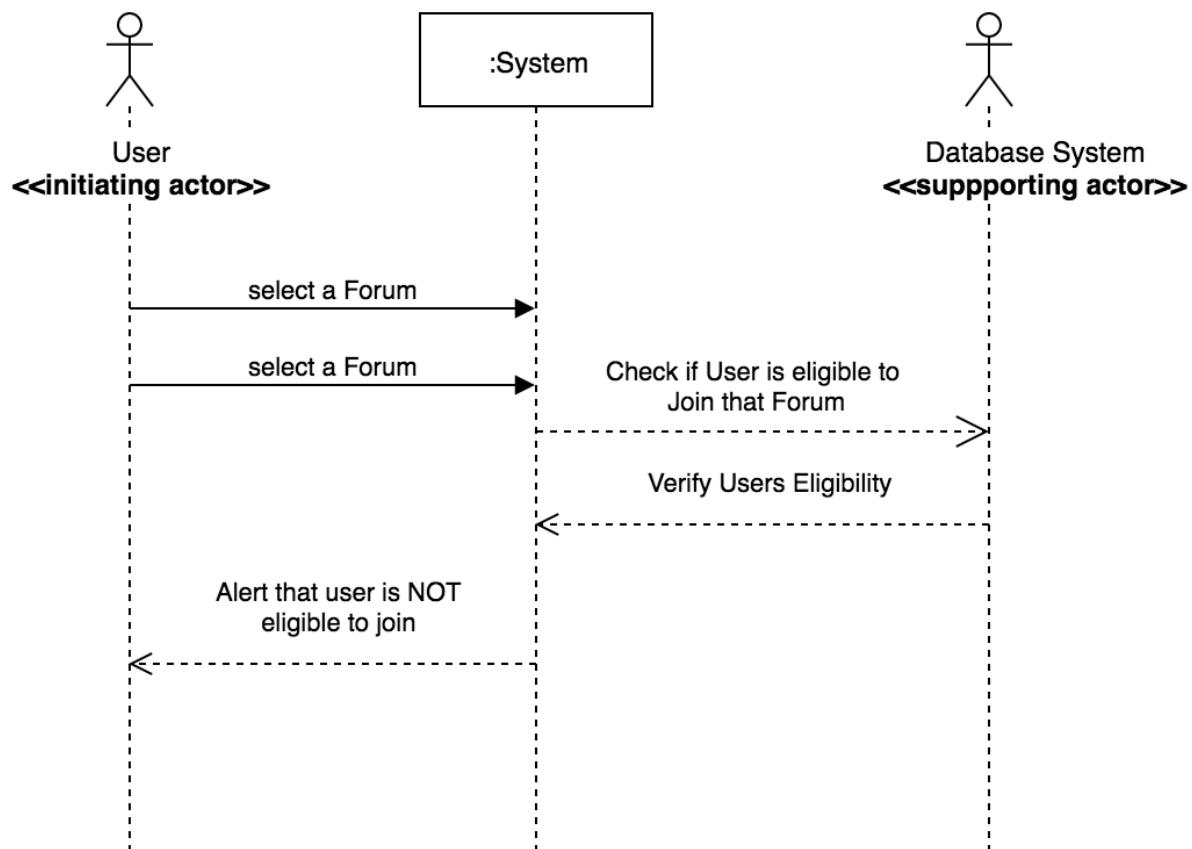
Use Case 3: Login Alternative Scenario



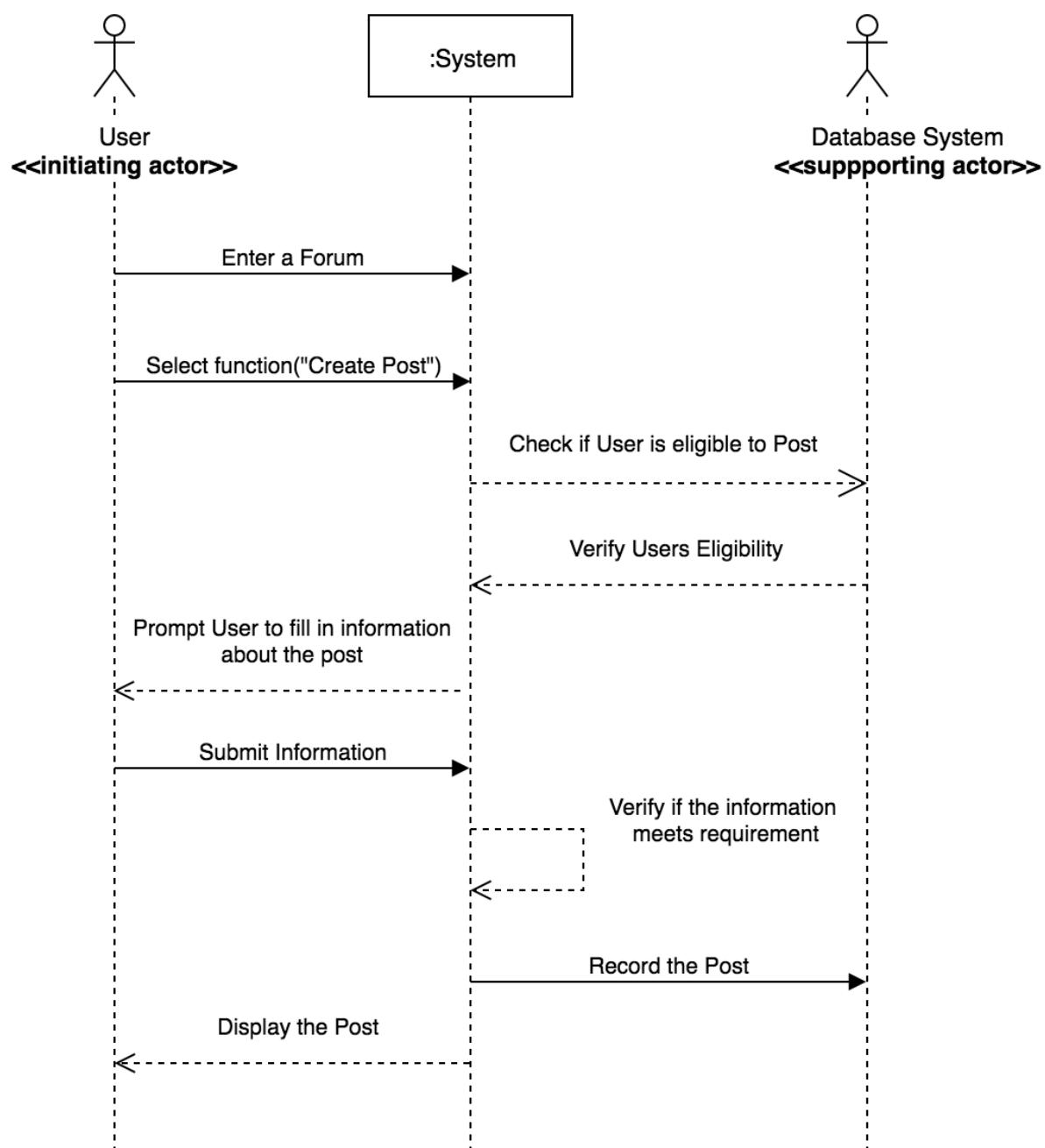
Use Case 6: Join Forum
Main Success Scenario



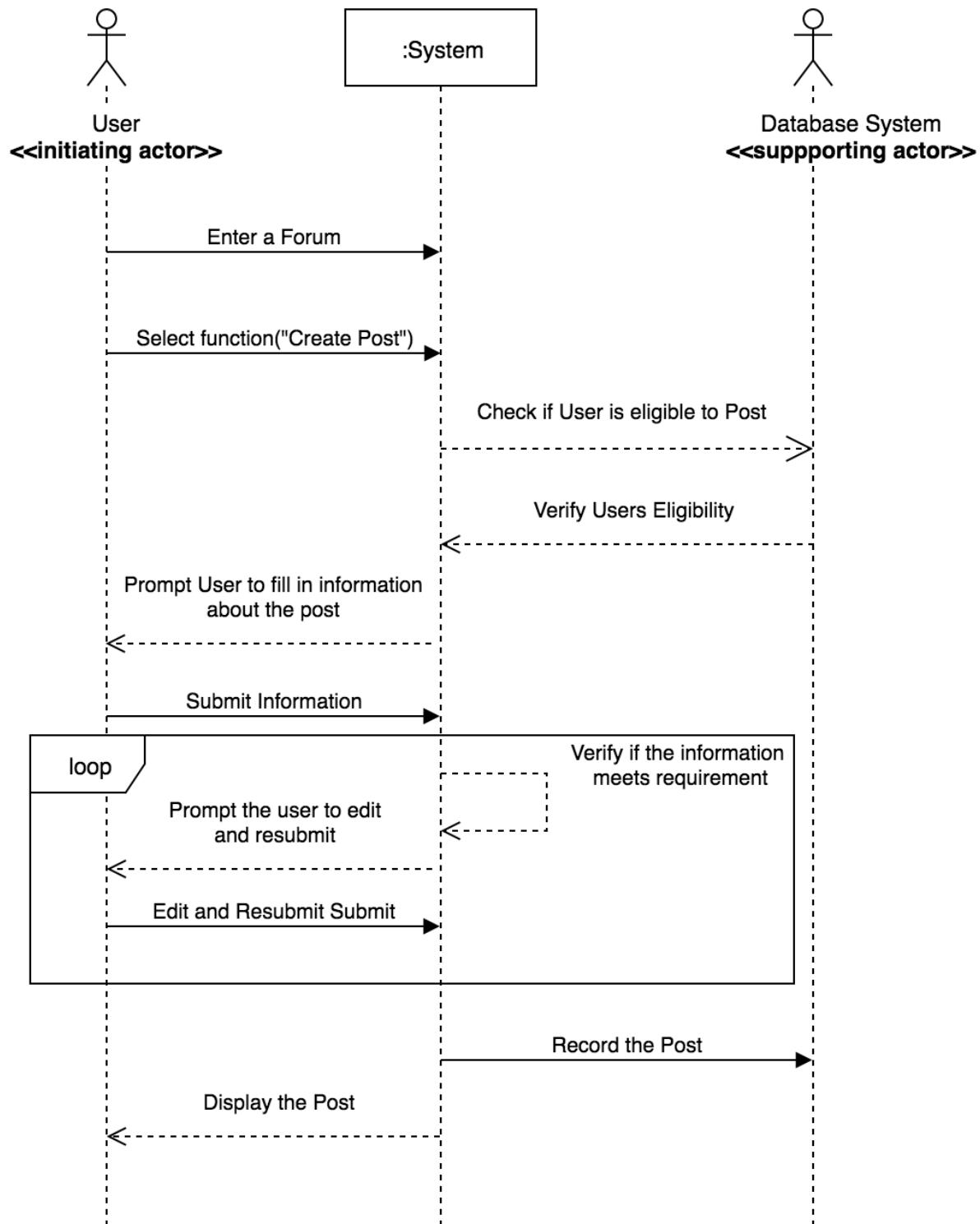
Use Case 6: Join Forum
Alternative Scenario



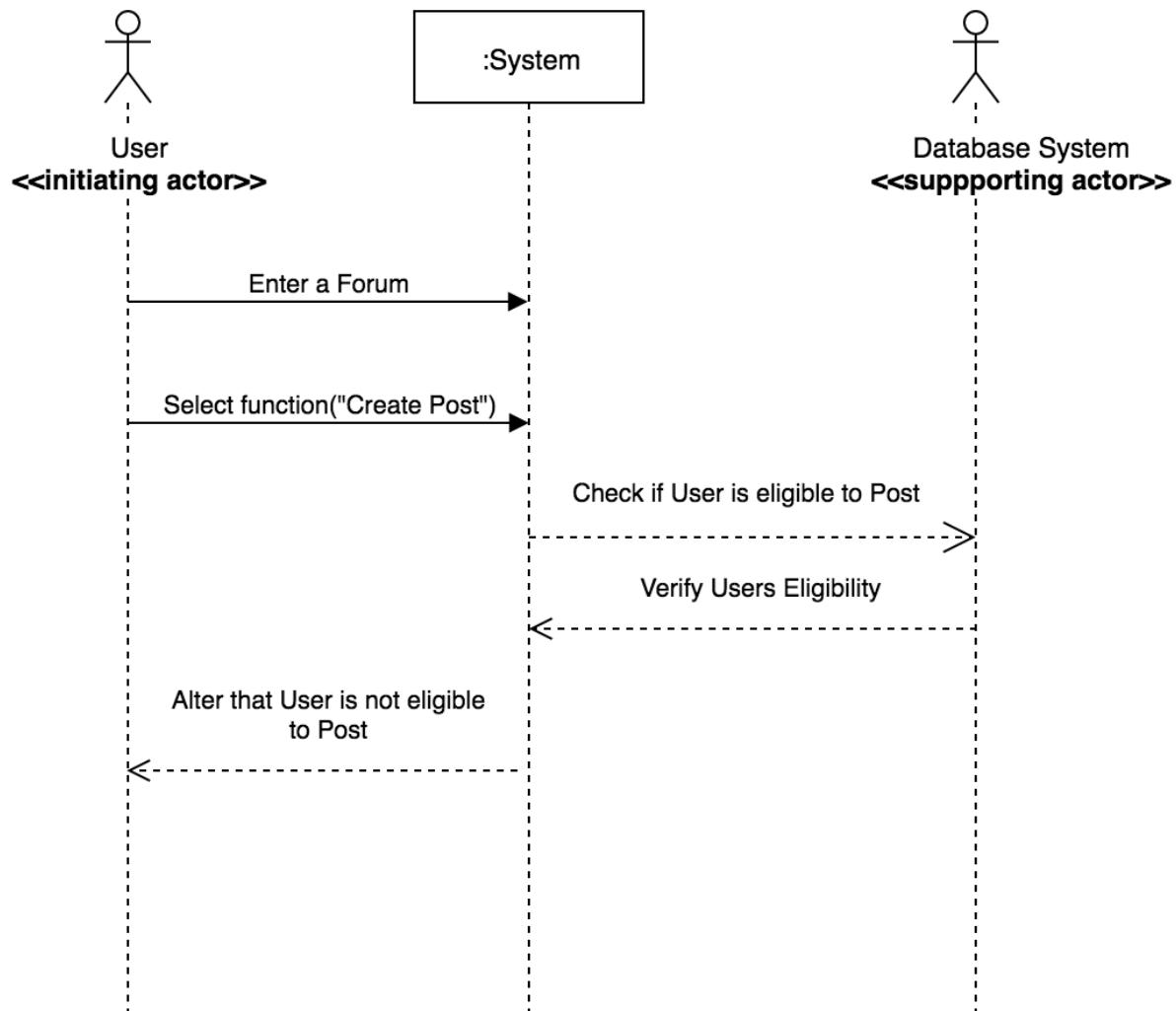
Use Case 5: Post in Forum
Main Success Scenario



Use Case 5: Post in Forum
Alternative Scenario 1

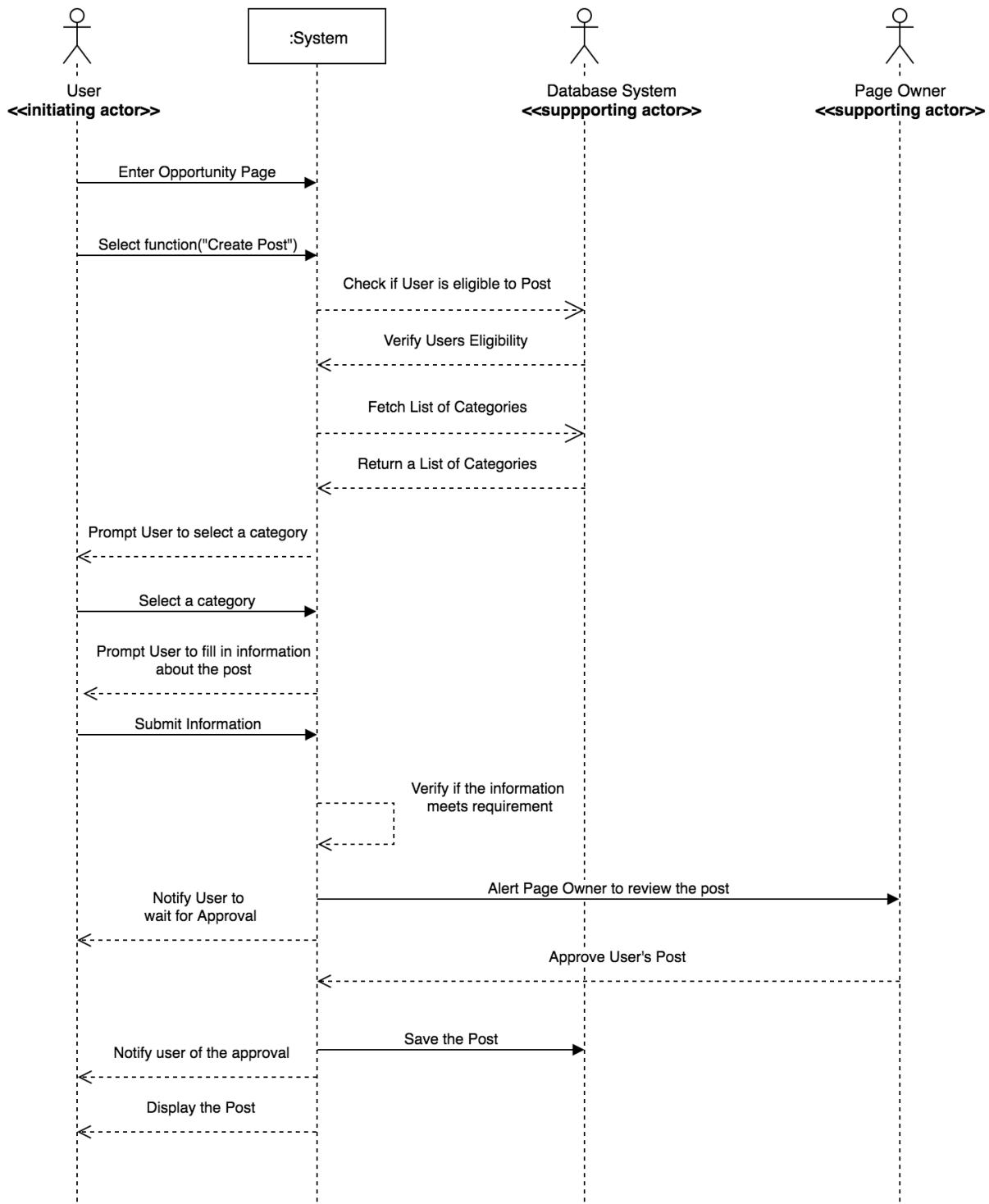


Use Case 5: Post in Forum
Alternative Scenario 2



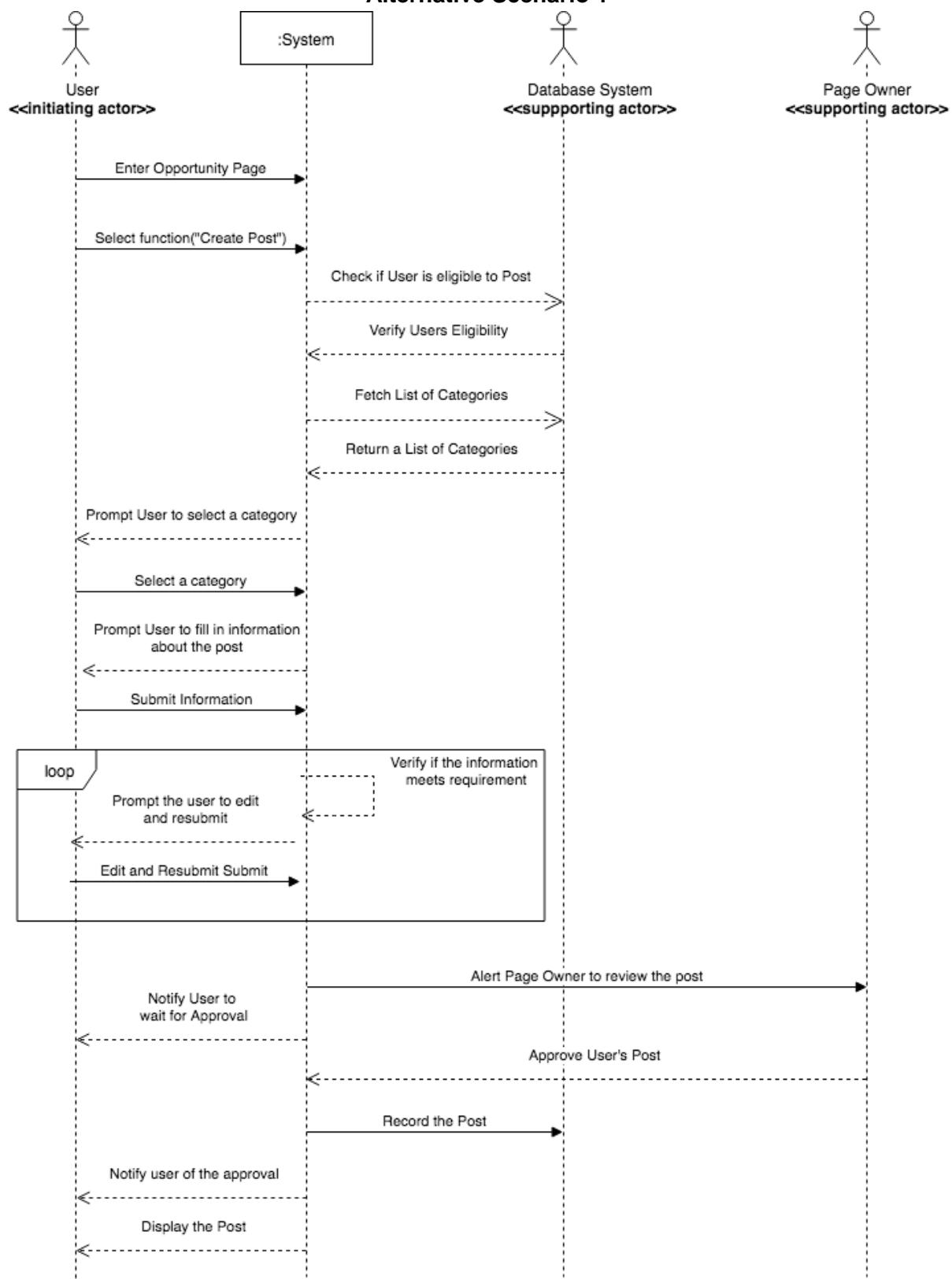
Use Case 11: Create Post in Opportunity Page

Main Success Scenario



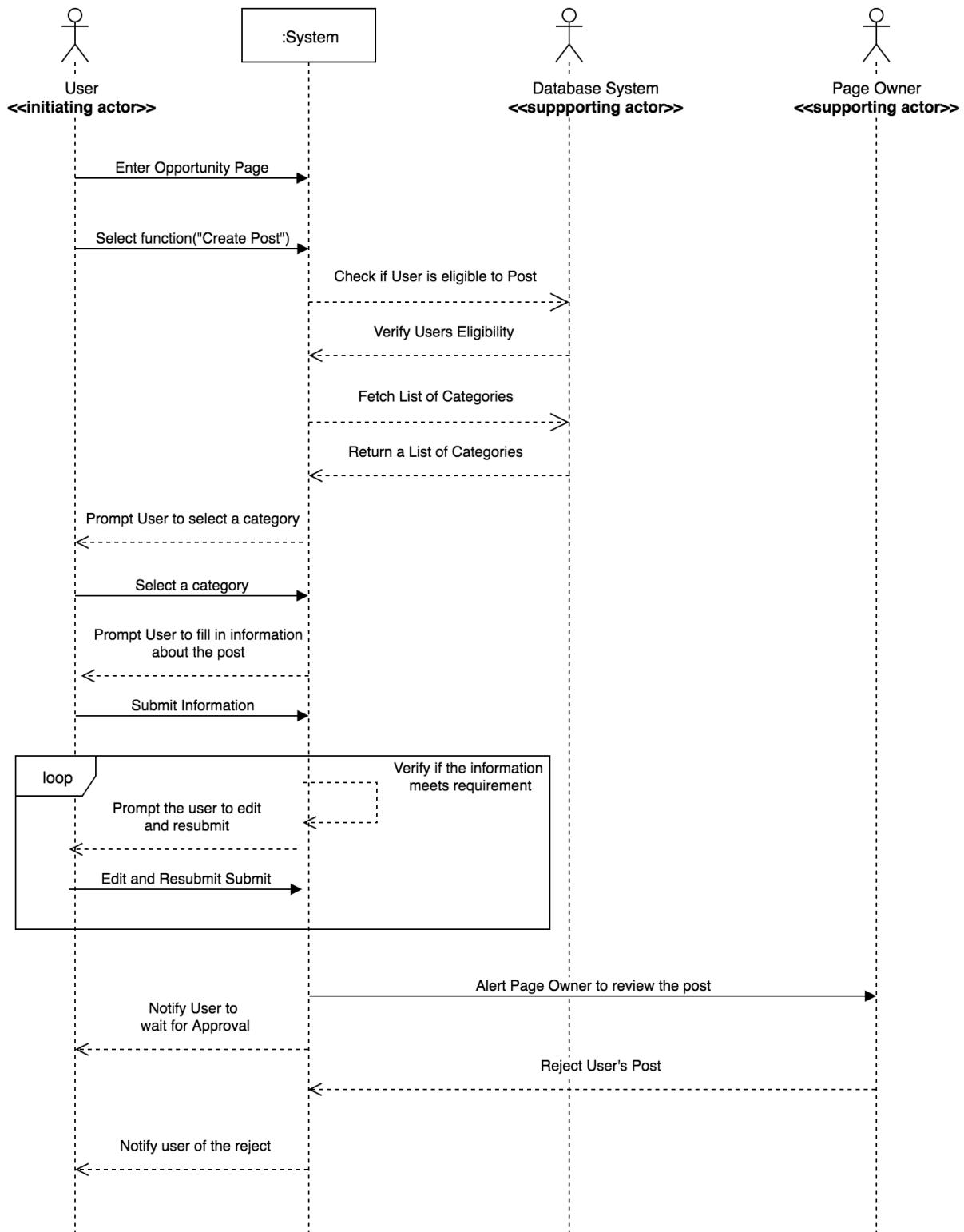
Use Case 11: Create Post in Opportunity Page

Alternative Scenario 1



Use Case 11: Create Post in Opportunity Page

Alternative Scenario 2



4. User Interface Specification

4.1. Preliminary Design

The screenshot shows the homepage of the nEDCOM platform. At the top, there is a navigation bar with the nEDCOM logo, a search bar, and three icons: a car, a bell, and a user profile. Below the navigation bar, the main header reads "Network, Education, Communication". There are social media links for Facebook, LinkedIn, and Google. A promotional message on the right says "Join The Biggest Community Built for Cambodian University Students". The login form includes fields for "Display Name", "Email Address", and "Password", with a "Sign Up" button and a note about terms and conditions. Below the login area, there is a section titled "New Opportunities" featuring three job listings: "Graphic Designer" at ABA Bank, "Various Positions" at JMC Casino, and "Various Positions" at BSLAND & HOME. Each listing includes a thumbnail image, contact information, and a timestamp. Under "All Forum Topics", there are three categories: "University Admissions", "Scholarships", and "Majors", each with a corresponding image and a brief description. The "New Discussions" section lists several forum topics with their respective statistics (votes, answers, views) and timestamps. At the bottom, there are links for "About", "Privacy Policy", "Contact", and "Terms of Use", along with a "LOAD MORE" button.

Network, Education, Communication

Join The Biggest Community
Built for
Cambodian University Students

Facebook LinkedIn Google

Display Name

Email Address

Password

Or Log In

By clicking "Sign Up", you acknowledge that you have read our updated terms of service, privacy policy and cookie policy, and that your continued use of the website is subject to these policies.

Sign Up

New Opportunities

ABA Park | ABA BANK | NATIONAL BANK OF CAMBODIA GROUP

+855 98 630 108 recruitment@ababank.com ABA | NATIONAL BANK OF CAMBODIA GROUP

Graphic Designer Internship 1 day ago

Tel: 093 682 038 / 031 455 5565 E-mail: jmcasino@recruitment@gmail.com

Part-Time 5 days ago

Various Positions

Various Positions Internship 1 week ago

Various Positions Are Available Click here for details

Borey Chaktomuk City

Tel: 093 30044 Email: selia.lun@bslandandhome.com

All Forum Topics

AMERICAN UNIVERSITY OF PHNOM PENH

Scholarship SEARCH Apply For SCHOLARSHIPS

MAJOR DECISIONS

University Admissions Scholarships Majors

New Discussions

0 0 10 Does anyone know where I can take a prep course for IELTs exam? IELTs Course Sokchamroeun RIEM 1 min ago

1 0 20 Which universities are currently providing scholarships? Kanika MONTHA 5 mins ago

0 0 8 How to get good scores on Entrance exam at IFL? IELTs Course Heanh SOK 5 min ago

0 1 30 When does FullBright scholarship application open? Scholarships Fullbright Molika MEAS 30 min ago

0 0 1 Does anyone know where I can take a prep course for IELTs exam? IELTs Course Chariya HAY 1 hr ago

2 3 40 I chose ITM as my major; but, I don't know if it is the right decision Majors Sokchamroeun RIEM 2 hrs ago

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About Privacy Policy Contact Terms of Use

Figure 4.a.1 - Homepage for non-login users

****Note**** Homepage for login users is similar to non-logins, except there might be changes in sections depending on users' behaviors/activities.

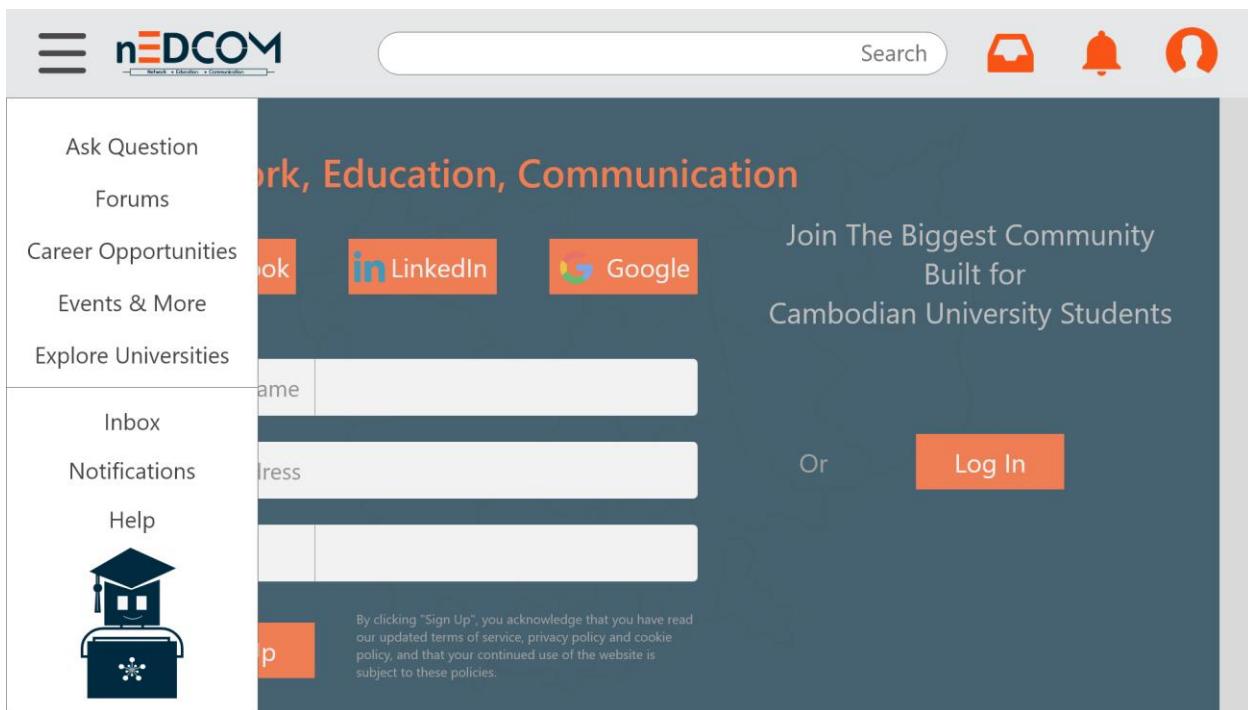


Figure 4.a.2 - nEdCom Menu

The screenshot shows the nEdCom website interface. At the top left is the nEdCom logo with the tagline "Smart • Faster • Convenient". To the right is a search bar and three orange icons: a house, a bell, and a user profile. The main content area has a dark blue overlay for a question submission. It features a placeholder "Type your question here ...", a question mark icon, and a large orange "Ask" button. Below this, there's a form for "Add tags" and "Photos/Files" with "Cancel" and "Ask" buttons. The background shows a list of questions under the heading "Ask Question Now". Each question card includes a user profile picture, the user's name (Sokchamroeun Riem), their major (IT Management & Computer Science), and a short lorem ipsum text snippet. The sidebar on the left lists "Your Feeds" with categories like "New Added", "Top Questions", "Bookmarked", "All Topics", "Universities", "Majors", and "Career". On the right side, there are several vertical banners for advertisements, including one for ABA bank, one for Jem, one for various job positions available, one for Sihahotel Group, and one for We're HIRING!

Figure 4.a.3 - nEdCom General Post



Login
Or
Sign Up

Join The Biggest Community
Built for Cambodian University Students

Already have an account?

Don't have an account?

Your Feeds

New Added

Top Questions

Bookmarked

All Topics

Universities

Majors

Career

•••

Ask Question Now

Does anyone know where I can take a prep course for IELTs exam?

Sokchamroeun Riem
IT Management & Computer Science
1 min ago

0 votes 0 answers 10 views

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Does anyone know where I can take a prep course for IELTs exam?

Sokchamroeun Riem
IT Management & Computer Science
1 min ago

0 votes 0 answers 10 views

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Does anyone know where I can take a prep course for IELTs exam?

Sokchamroeun Riem
IT Management & Computer Science
1 min ago

0 votes 0 answers 10 views

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Does anyone know where I can take a prep course for IELTs exam?

Sokchamroeun Riem
IT Management & Computer Science
1 min ago

0 votes 0 answers 10 views

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Email : long.ly.heang@gmail.com

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Figure 4.a.4 - nEdCom Forum page



Login
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Already have an account?
[Login](#) Or [Sign Up](#)

Your Feeds

[New Added](#)
[Top Questions](#)
[Bookmarked](#)

[All Topics](#)

[Universities](#)
[Majors](#)
[Career](#)
••••

Anonymous

Ask Question Now

IELTs Course

Does anyone know where I can take a prep course for IELTs exam?

Sokchamroeun Riem
IT Management & Computer Science

5

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[Report](#)

Top Answers

Mr. James
Math Teacher
12 Answers

1

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Sokchamr.
IT Management...
4 Answers

1

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E-mail: jmcasino@recruitment@gmail.com



Various Positions Are Available
Click here for details



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We're HIRING!
[Apply Now](#)
Phone: 012 11 26 31 / 069 23 36 46
Email : long.ly.heang@gmail.com

Figure 4.a.5 - Forum Detail

Join The Biggest Community Built for Cambodian University Students

Already have an account?

[Login](#)

Or

Don't have an account?

[Sign Up](#)

New Added
Urgent
Bookmarked

All Fields
Design
Sales
IT
Architecture
Marketing
Nurse
Programming
Management
Administration

• • •

<p>+855 98 630 108 recruitment@ababank.com</p> <p>ABA NATIONAL BANK OF CANADA GROUP</p> <p>Graphic Designer</p> <p>Internship 1 day ago</p>	<p>សណ្ឋាគារ ភាស់ខ្មែរប៊ូតិ៍ ត្រួតការបង្កើតនិគល់បន្ទាល់ ក្រុមហោក ស្រីអីនិងលទ្ធផល ចុចដីនេះ:</p> <p>Tel: 093 682 838 / 031 455 5565 E-mail: jwmcasinorecruitment@gmail.com</p> <p>Various Positions</p> <p>Part-Time 5 days ago</p>	<p>Various Positions Are Available</p> <p>Click here for details</p> <p>Borey Chaktomuk City</p> <p>Tel: 093 300414 Email: seila.lun@bslandandhome.com</p> <p>Various Positions</p> <p>Internship 1 week ago</p>
<p>+855 98 630 108 recruitment@ababank.com</p> <p>ABA NATIONAL BANK OF CANADA GROUP</p> <p>Graphic Designer</p> <p>Internship 1 day ago</p>	<p>សណ្ឋាគារ ភាស់ខ្មែរប៊ូតិ៍ ត្រួតការបង្កើតនិគល់បន្ទាល់ ក្រុមហោក ស្រីអីនិងលទ្ធផល ចុចដីនេះ:</p> <p>Tel: 093 682 838 / 031 455 5565 E-mail: jwmcasinorecruitment@gmail.com</p> <p>Various Positions</p> <p>Part-Time 5 days ago</p>	<p>Various Positions Are Available</p> <p>Click here for details</p> <p>Borey Chaktomuk City</p> <p>Tel: 093 300414 Email: seila.lun@bslandandhome.com</p> <p>Various Positions</p> <p>Internship 1 week ago</p>
<p>+855 98 630 108 recruitment@ababank.com</p> <p>ABA NATIONAL BANK OF CANADA GROUP</p> <p>Graphic Designer</p> <p>Internship 1 day ago</p>	<p>សណ្ឋាគារ ភាស់ខ្មែរប៊ូតិ៍ ត្រួតការបង្កើតនិគល់បន្ទាល់ ក្រុមហោក ស្រីអីនិងលទ្ធផល ចុចដីនេះ:</p> <p>Tel: 093 682 838 / 031 455 5565 E-mail: jwmcasinorecruitment@gmail.com</p> <p>Various Positions</p> <p>Part-Time 5 days ago</p>	<p>Various Positions Are Available</p> <p>Click here for details</p> <p>Borey Chaktomuk City</p> <p>Tel: 093 300414 Email: seila.lun@bslandandhome.com</p> <p>Various Positions</p> <p>Internship 1 week ago</p>

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Figure 4.a.6 - Career page

****Note**** Career page, Events and Other opportunities page are quite similar. Therefore, currently, there is only career page available for users.

The screenshot shows a user profile page on the nedCOM platform. At the top, there is a navigation bar with the nedCOM logo, a search bar, and three icons: a house, a bell, and a person. Below the navigation bar is a banner featuring a blue and white abstract design with a camera icon in the top right corner.

The user profile section for 'Sokchamroeun Riem' (IT Management & Computer Science) includes a circular profile picture of a person with long hair. Below the profile picture are several buttons: a red house icon, 'Edit CV', 'About', 'Followings', 'Followers', 'Advisers', and 'Points'.

Below the profile section, there are four identical posts, each consisting of a question, the user's name, their title, and a short description. Each post also includes a small profile picture, the user's name, their title, and a short description.

Post 1: Does anyone know where I can take a prep course for IELTs exam?
 Sokchamroeun Riem
 IT Management & Computer Science
 Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.....

Post 2: Does anyone know where I can take a prep course for IELTs exam?
 Sokchamroeun Riem
 IT Management & Computer Science
 Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.....

Post 3: Does anyone know where I can take a prep course for IELTs exam?
 Sokchamroeun Riem
 IT Management & Computer Science
 Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.....

Post 4: Does anyone know where I can take a prep course for IELTs exam?
 Sokchamroeun Riem
 IT Management & Computer Science
 Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.....

At the bottom of the page, there are links for 'About', 'Privacy Policy', 'Contact', and 'Terms of Use'.

Figure 4.a.7 - Users profile

****Note**** Due to time constraints, only student account is created. However, there is only a bit difference between student, faculty and recruiter account page.

4.2. User Effort Estimation

Use Case	Action	Description	Total Click/KeyStrokes
UC-1	Register Standard User	Click on 'Sign up' + 'First Name' + 'Last Name' + 'Major' + 'School' + 'Email' + 'Phone Number' (optional) + 'Password' + 'Confirm Password' + 'Agree to terms..' + 'Submit'	11
UC-2	Register Premium User	Click on 'Sign up' + 'First Name' + 'Last Name' + 'Position' + 'School/Company' + 'Email' + 'Phone Number' (optional) + 'Password' + 'Confirm Password' + 'Agree to terms..' + 'Submit'	11
UC-3	Account Login	Click on 'Email/Phone Number' + 'Password' + 'Captcha' + 'Remember Me' (Optional) + 'Log in'	5
UC-4	Edit Profile	Click on 'Account icon' + 'Edit' + (Depend on user's effort/preference) + 'Save'	Unclear
UC-5	Post In Forum	Click on 'Post box' + 'Enter the information' + 'Add tags' + 'Add photos/files' *Optional) + 'Post'	5
UC-6	View Forum	Click on 'Forum'	1
UC-7	Create Discussion Group	Click 'chat' + click 'search person' + enter to find person + click on correct person + add topic + add message + send	7
UC-8	Join Forum Discussion	Click on 'Add answer/comment' + 'Post'	2
UC-9	Moderate Posts	None	0
UC-10	Upvote/Downvote	Click upvote or downvote	2
UC-11	Post in Opportunity Pages	Click on 'Post box' + 'Enter the information' + 'Add tags' + 'Add photos/files' *Optional) + 'Post'	5
UC-12	View Opportunity Page	Click on 'Opportunity page'	1
UC-13	Bookmark Posts	Click on 'Bookmark icon'	1
UC-14	Follow Other Users	Click on 'Follow'	1
UC-15	Create Private Chat	Click 'chat' + click 'search person' + enter to find person + click on correct person + add	6

		message + send	
UC-16	Search	Click on search bar + click search	2
UC-17	Filter	Click on 'Filter' + choose available options + select	3
UC-18	Access Email System	Click on email + click on compose + click on receivers + click on topic + click on dialog box + click send	6
UC-19	Access Exclusive Pages	None	0
UC-20	Get Notification	None	0

5. Project Management / Plan of Work

Based on our team dynamics and skills, we set out to build a web application, which Molika and Heanh will work on implementing the back-end side, and Kanika and Chamroeun will work on the front-end side and UX/UI designs. As we build the platform, do more testing, and analyzing, we might add, remove, or change priority of some functionality, so the system will evolve overtime.

5.1. Roadmap, Milestone, and Timeline

Tasks	24-Sep	27-Sep	2-Oct	9-Oct	16-Oct	5-Nov	12-Nov	26-Nov	11-Dec
Report#1 Improvised									
Customer Statement of Requirements									
System Requirements									
Functional Requirement Specification									
User Interface Specification									
Project management									
Report#2 part 1									
Cover Page and Individual Contributions Breakdown									
Table of Contents									
Interaction Diagrams									
Project Management									
Report#2 part 2									
Report#2									
Demo #1									
Build Mockup									
· Database Design									
· User Experience and User Interface Design									
· Coding the platform									
· Testing									
· Feedback									
Final Testing and Getting Feedback									
Run a trial phase by introducing the platform to selected group of users									
Report#3 part 1									
Report#3									
Demo #2									

5.2. References

- Problem Statement:
 - Reaksmeay, Hul, and VOA Khmer. “World Bank: More Skilled Worker Training Needed to Sustain Cambodia Growth.” *VOA*, VOA, 15 May 2018, www.voacambodia.com/a/more-skilled-workers-training-needed-to-sustain-cambodia-growth-says-world-bank/4394843.html.
 - “Three Keys to Unlocking Cambodia's Growth.” *East Asia Forum*, 12 Nov. 2014, www.eastasiaforum.org/2014/11/13/three-keys-to-unlocking-cambodias-growth/.
- Report Guideline:
 - Marsic, Ivan. “Software Engineering Project Report.” *Book: Computer Networking - Textbook by Ivan Marsic*, www.ece.rutgers.edu/~marsic/Teaching/SE/report1.html.
- Course Book: Software Engineering by Ivan Marsic
http://www.ece.rutgers.edu/~marsic/books/SE/book-SE_marsic.pdf