

# Elearning

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# Requirement Gathering

## Inception

### Stakeholders

We have two kinds of stakeholders for this project. They are:

1. Instructors
2. Students

Instructors: Instructors will sell their courses, tutorials or specialization in our site. Instructors can be an organisation, a team or any individual person who has the capability to deliver quality contents. They will sell their courses, tutorials or specialization to their customers which in case are referred to as students. There will be a rating and review system for the courses.

Viewpoints of Instructors:

- User friendly UI.
- Authentication for the user account.
- Easy to add course to the certain section.
- Easy to tag the subject with the course.
- The amount division of the selling course will automatically be shown in percentage and amount.
- Convenient ways to get the payment.
- Easy to add the contents of the course.
- Data about the taken courses and all courses (like enrolment, total amount earned, total amount taken by site etc.) will be presented in a hassle free way and can be accessed easily.

Students: Students will buy a course or tutorial or specialization in our website provided by the instructors. Potential student candidates will be primary, high school, college and varsity level students and anyone who has interest in learning about topics of these levels.

Viewpoints of students:

- User friendly UI.
- Authentication for the user account.
- Easy to find or search the expected course.
- Convenient ways of payment.
- Data about the course.
- Ratings and reviews about the course.
- Preview and see the syllabus or Table of contents that the course will contain.
- Level of the course (Entry, medium or advanced etc.).
- Certificate of Completion.

## **Business Value**

A certain percentage from the selling amount of the contents, which will be uploaded in our website for sale, will be deducted for providing the platform.

As a country, which is densely populated, we have many potential candidates to reach for. Keeping the context of the education system of our country in mind, a platform which is providing the access to quality contents has huge potential.

## **Existing Solutions**

There are some existing web sites which are providing services or contents like we will provide:

1. Couseira
2. Udemy
3. edX etc.

We will provide the platform like they do. The contents will be uploaded for sale by the instructor and will be bought by the students as per their needs. There will be a secure payment system for this process.

The contents will be organized by categories and subcategories. The categories and subcategories can be classes, subjects, specific specializations, career path etc.

The site will provide the students and instructors to upload or access the contents as conveniently, easily and quickly as possible both online and offline.

## Problems or challenges

The problems and challenges those we have to overcome in this SPL-2 course are:

1. Web Development
2. Database Design
3. Payment System
4. Authentication and Authorization
5. Integration and others

Web development: The development of the site is a challenge for us as we have to gain all the related web development knowledge as we know very few of this.

Database: Database creation, Data consistency, access control and other functions related to database has to be created and developed in this project which is also the first time for us.

Payment System: A secure payment system has to be developed and ensured the functionality. As this thing is new for us, it is going to be a challenge to develop this system.

Authentication and Authorization : Proper authentication and authentication for all users is a challenge for us.

Integration and others: The integration of these three main systems and the development and integration of other ones with these will also cause a problem for us as it is our first time to develop this kind of large project.

## Feasibility

As it is a project to develop our skills to work in a team, to give an experience of developing a large project and to learn new things, it is our first time to develop such a large project together. So, as for the challenges and problems, we can say the whole project is a big problem and challenge for us that has to be finished within the time limit.

Even though, we think the project is feasible enough for us to develop, a chance to learn a lot of things and a chance to experience something special.

# Elicitation

## Needs & Feasibility

We are now going through a pandemic situation. Physical attendance in schools, colleges and universities are not possible for both instructors & students. That's why people are now moving towards the online platforms. Moreover we all use smartphones and the internet. We think Online learning platforms can fill the gap of the discontinuation of the academic process. It will also help the self taught learners and those who are passionate about learning certain things. People of all ages can learn anything they want. At the end, our country needs skilled people.

It will also help the instructors as they can monetize their courses. They can get feedback from the enrolled students of their students. It will help them to improve their courses. Overall, we can say that this project is feasible.

## Participants in the Requirement Gathering Phase

We have two stakeholders.

1. Students and
2. Instructors.

Common requirements:

1. Authentication and authorization system with email address.
2. Simple user friendly UI
3. Course search option
4. Rating and review section for the course

Requirement gathered from instructors:

1. Update and remove access in their courses
2. Course content in audio, video or pdf format
3. Proper categories and subcategories for the courses to define their course domain
4. Proper payment system for paid courses
5. Chat system to interact with the enrolled students anytime

Requirement gathered from students:

1. Access the enrolled courses both online and online
2. Course progress tracking system

No conflicting requirements are found. Both students and teachers will collaborate with us and help us throughout the development of this application.

## Scope for the project

We will implement the following functionalities based on the requirement we gathered:

- User friendly UI
- Authentication and authorization for users
- Search option for courses and instructors based on category or subcategory
- Rating and reviews system for the courses
- transaction system.
- Course completion tracker

These above requirements are listed according to their priority order.

## Technical Environment

1. Frontend languages : HTML5, CSS, Javascript, Adobe Xd(For mockup)
2. Backend languages: django
3. Database : MySQL, Firebase

We choose HTML as almost all the websites use HTML. CSS will help us to make good looking UI and with javaScript will help us to handle user interaction efficiently. Django is a well known and most popular backend framework which includes almost all the things we need to build our project.

MySQL and Firebase are free online databases. MySQL will give us the opportunity to store our relational database. Firebase is a noSQL database which will help us to store light weight data. We are also planning to use the authentication API of the firebase.

## Domain Constraints / Limitations

Our project will be complete and user friendly. So we don't think there will be many constraints . But there may be some limitations depending on some scenarios.

There won't be enough given practices or scenarios to evaluate one participant. Also as it is our first initiative for a project like this , this may not be as fancy or user friendly as existing systems like Udemy or Coursera. But we will try to mitigate these problems or limitations by proper division and implementation.



## Usage Scenarios

Each user has to create an account by providing a mail address and password. They will be authorized based on the **mail** and **password** they have provided during registration. Password field will have some constraints. Only the authorized users can access the web application.

We will have two types of users. Teachers and students. A user account can be both teacher and student. By default, every account is a student account. But if anyone wishes to be an instructor then he/she has to provide some extra information like:

1. Qualification
2. Experience
3. additional information
4. bkash/rocket/visa/mastercard details for transaction

Only the 1st three fields will be public. Bank account details info will be private. Only the instructor can view them. All this information will be stored in our database. He can add his additional information if he/she wants in the additional information field. Students do not have to provide any extra info after registration. If anyone forgets this account login info he can get a new password. In this case, we will send a link to his/her email address. The link will take him/her to a new page where he/she can reset his/her password.

If an instructor creates a course then the course will be shown in his profile. The courses given in our system by instructors will be well defined and categorized. And for this we have plans. We will have a sophisticated sorting system for every scenario. There will be multiple categories such as computer science, medical science in which instructors will conclude their courses. Each section is divided into subsections. In the computer science section there will be subsections like programming, graphic designing, environment setup, cyber security, CTF, android development, version control system, web development or different subcategories on different platforms. So the participants won't need to struggle to find any particular course.

To upload a course an instructor has to provide the informations in the course upload section:

1. course name
2. category of that course
3. course description
4. Course price
5. Course contents (audio, video and pdf format) (optional field)

Instructor can upload/modify/delete the contents whenever he wants to do so. He can also edit the course name, course description and price fields. But the enrolled students can only view contents and rate the course.

Users can search by a course name or by a category or subcategory. The results will be filtered and displayed according to the search.

Every course will have these data that will be shown to anyone :

1. Course name
2. Instructor name
3. Course description
4. Course contents
5. Course price
6. Course category & subcategory
7. Course rating
8. Number of Enrolled students in the course

So anyone can judge a course based on the rating and enrolled students it has. As a student, anyone can search courses and get the filtered results and choose the desired course. He/she has to enroll in the course in order to get access to the contents of the course. To get the course, a student has to purchase it if it is not free.

Students can see their enrolled courses in the 'my courses' tab. Students who are enrolled to a course can rate the course. The rating will be added to the course rating. Once a student gets enrolled in a course, he can access the contents uploaded by the instructor. Contents will be in mp3, mp4 or pdf format. They can access them both online and offline. For offline, they have to download the contents from our databases.

They can also refund for an enrolled course if they don't like it. In that case, they will get 60%/70% of the money.

Users can perform transactions by bkaash, rocket, visa and mastercard. In case of bkaash and rocket, they will provide the transaction ID and the number from the money was sent in two fields and it will be evaluated in a database and the transaction will be confirmed. The right amount of money will be transferred to the instructor account.

## **Timeline**

- Login and Registration System : 5/11/2020
- Home page and Course Page Design : 14/11/2020
- Implement Search Option : 25/11/2020
- Course Upload and Access System: 15/12/2020
- Course Access System: 30/12/2020
- Payment System : 15/1/2020

## **Use Case Diagram**

### **Primary Actors:**

1. Student
2. Instructor

### **Secondary Actors:**

1. Database
2. Payment System

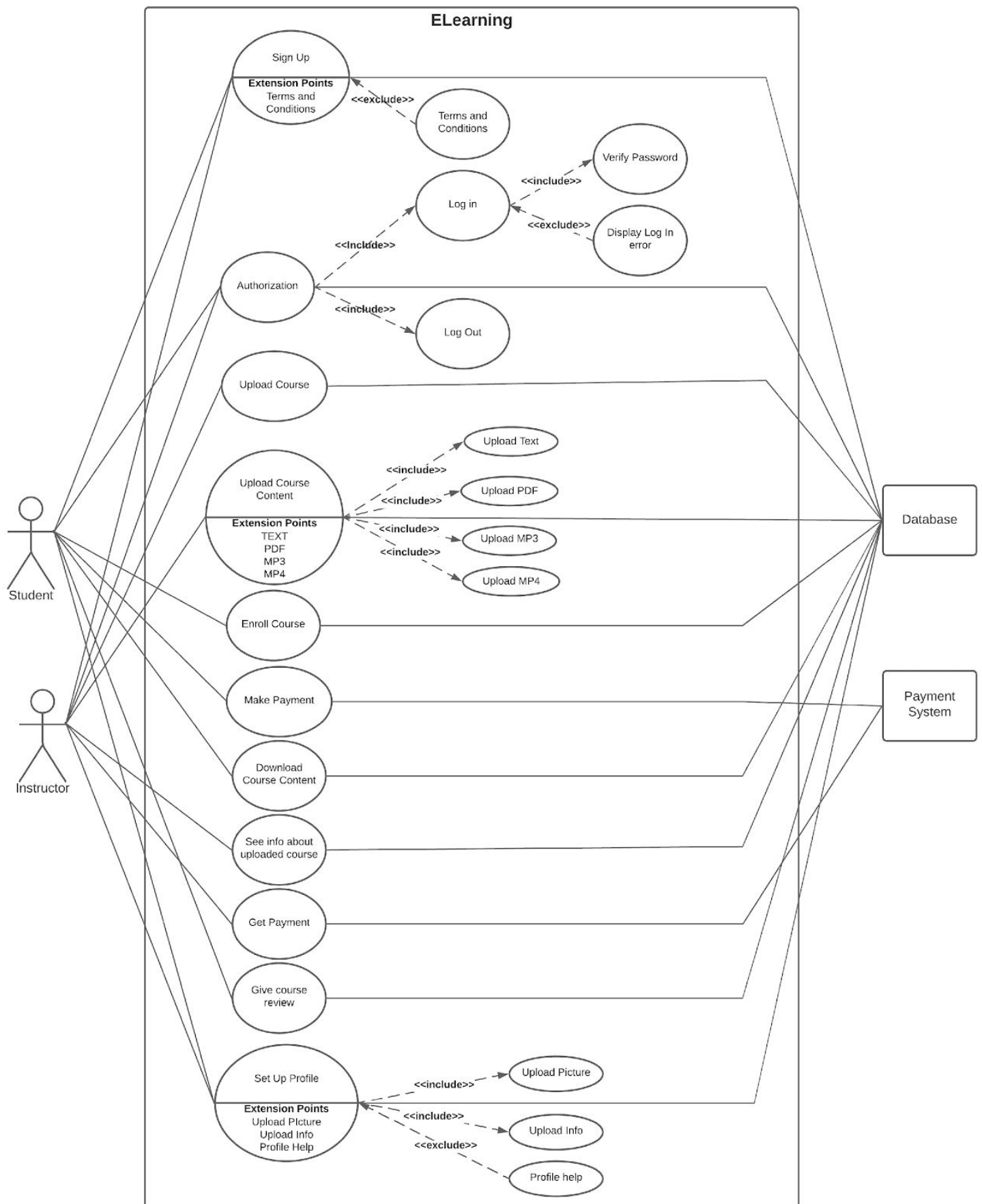


Fig: Use Case Diagram

## Action and Response:

### Sign Up:

Action:

1. Click Sign Up button
2. Write or insert information
3. Click Sign Up

Response:

1. For action 1: Show sign up page.
2. For action 3: Save the content in the database and go to login page.

### Authorization:

Log In:

Action:

1. Click Sign Up button
2. Write or insert information
3. Click Log In

Response:

1. For action 1: Show login page.
2. For action 3: Match the info, show the home page if info is correct or show error.

Log Out:

Action:

1. Click Log Out

Response:

1. For action 1: End the session for the user and show the default homepage.

### Upload Course:

Action:

1. Click Upload Course
2. Write or insert information
3. Click Upload Course

Response:

1. For action 1: Show upload course page.
2. For action 3: Save the info in the database and go to that course page.

### Upload Course contents:

Action:

1. Click the upload contents button.
2. Insert contents
3. Click Upload Course Contents

Response:

1. For action 1: Show upload contents page.
2. For action 3: Save the content in the database and show that course page with contents.

### Enroll Course:

Action:

1. Click Enroll Course

Response:

1. For action 1: Go to the payment page.

#### Make Payment:

Action:

1. Click Make payment button

Response:

1. For action 1: If the payment is made successfully then go to the course page and make contents available for the user or show an error message and ask him to try again.

#### Download Contents:

Action:

1. Click the download button

Response:

1. For action 1: The content will be sent for the user for downloading purpose.

#### See info about Uploaded Course:

Action:

1. Click the dedicated button.

Response:

1. For action 1: The course statistics page will be shown.

#### Get Payment:

Action: 1

1. Click the transfer balance button
2. Give credit card information
3. Give amount
4. Click Receive Payment

Response:

1. For action 1: The form for credit card info will be shown
2. For action 2: validate credit card information
3. For action 3: transfer the money

#### Give Course Review:

Action:

1. Give rating.
2. Click the give review button.

Response:

1. For action 2: The rating point will be added to the database.

#### Set Up Profile:

Action:

1. Click the set up profile button.
2. Choose picture and click upload.
3. Write info and click the write button.

Response:

1. For action 1: Show set up profile page.
2. For action 2: Image will be added to the profile or database.
3. For action 3: The info will be added to the profile or database.

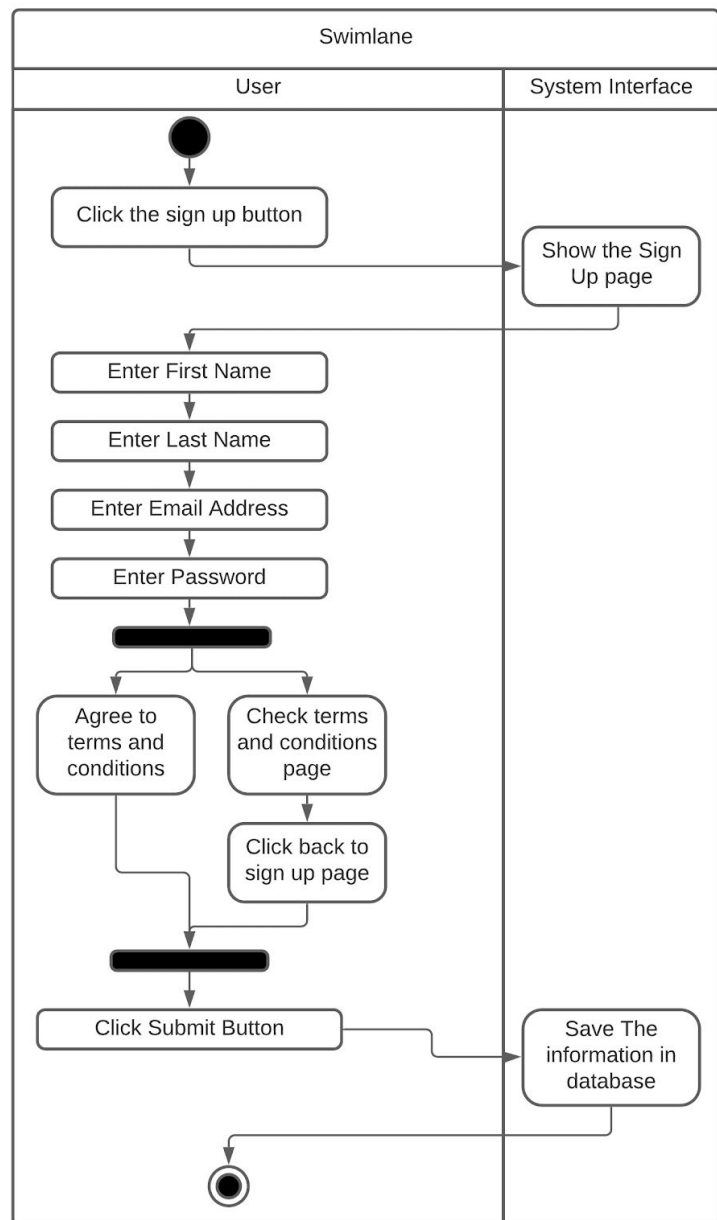
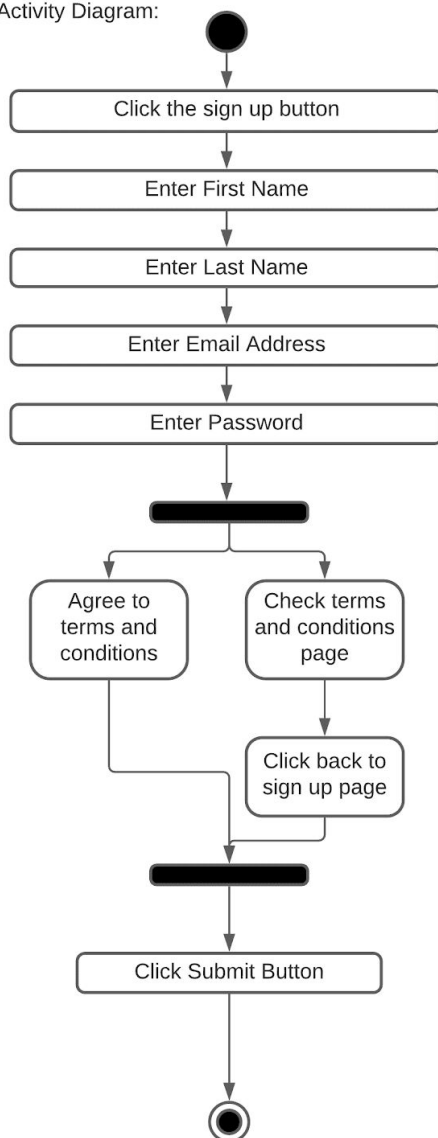
# Activity and Swimlane Diagram

## Contribution:

1. Hasnaine Ahmed Dihan, 180042109:
  - Participated in the discussion
  - Enroll course
  - Make payment
  - Download course content
  - See info about uploaded course
2. Md. Munimul Islam, 180042136:
  - Participated in the discussion
  - get payment
  - give course review
  - set profile
3. Md. Reyanus Salehin, 180042148:
  - Participated in the discussion
  - Sign Up
  - Authorization
  - Upload Course
  - Upload Course content

## 1. Sign Up:

Activity Diagram:



### Activity-Response:

Activity:

1. Click the sign up button.
2. Enter First Name.
3. Enter last Name.
4. Enter Email Address.
5. Enter Password.
6. Click Submit button

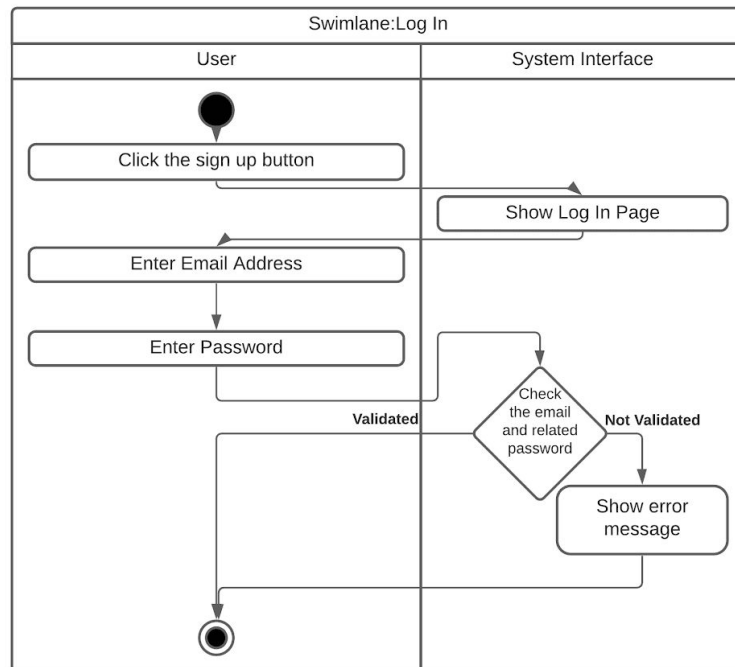
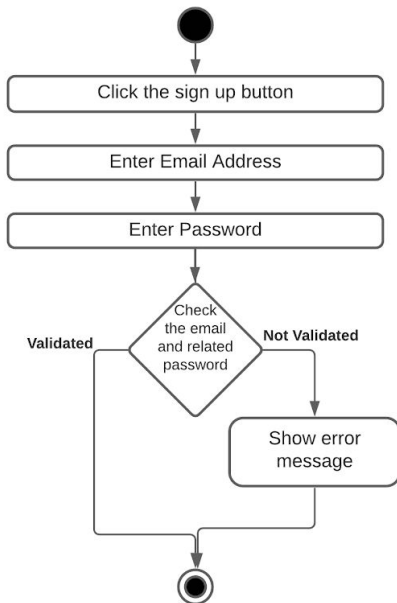
Response:

1. For activity 1: Show sign up page.
2. For activity 6: Save the information in the database and show the log in page.

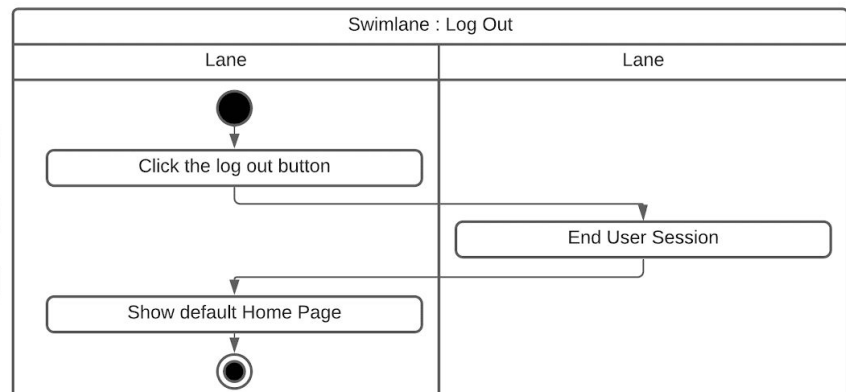
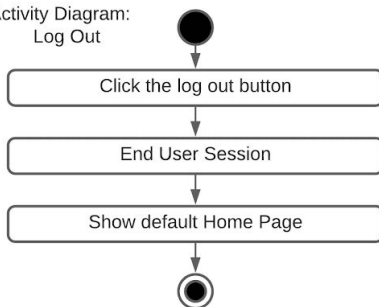


## 2. Authorization:

Activity Diagram:  
Log In



Activity Diagram:  
Log Out



### Activity and Response:

Log in:

Activity:

1. Click Login button
2. Enter Email
3. Enter Password
4. Click login button

Response:

1. For activity 1: Show the login page.
2. For activity 4: Check validation and show error or load home page.

Log Out:

Activity:

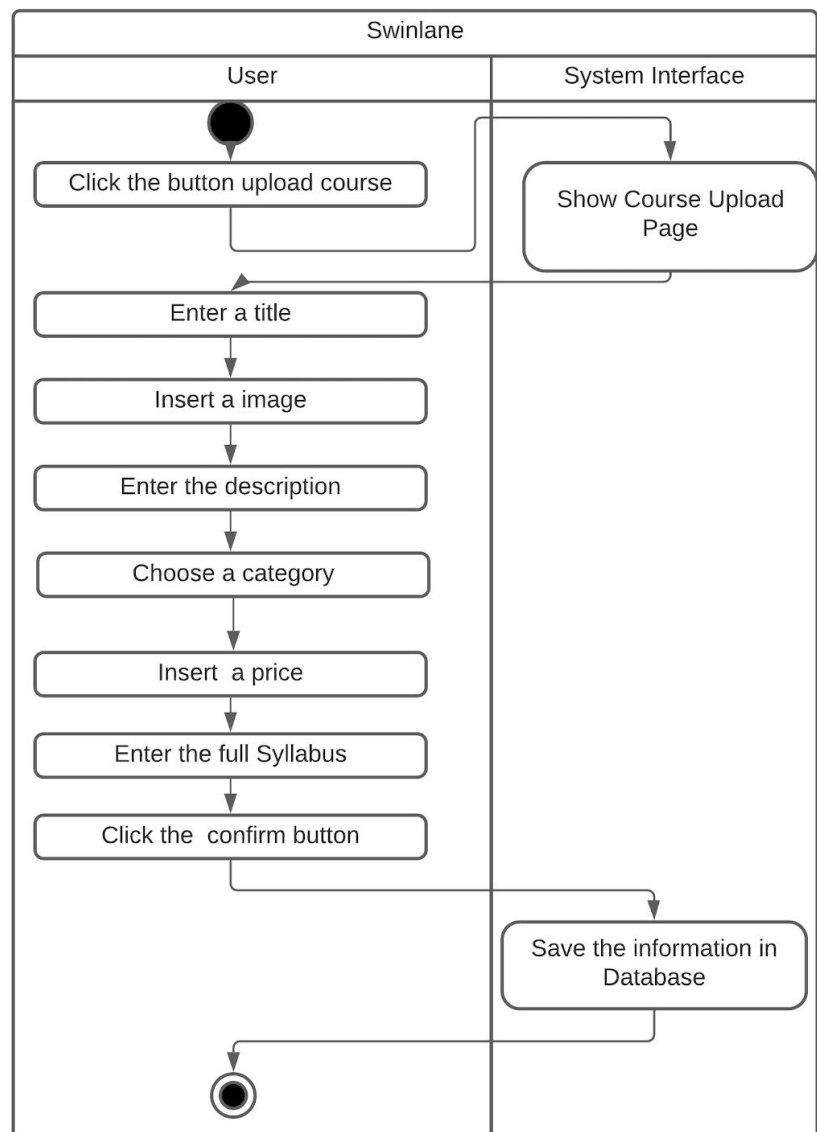
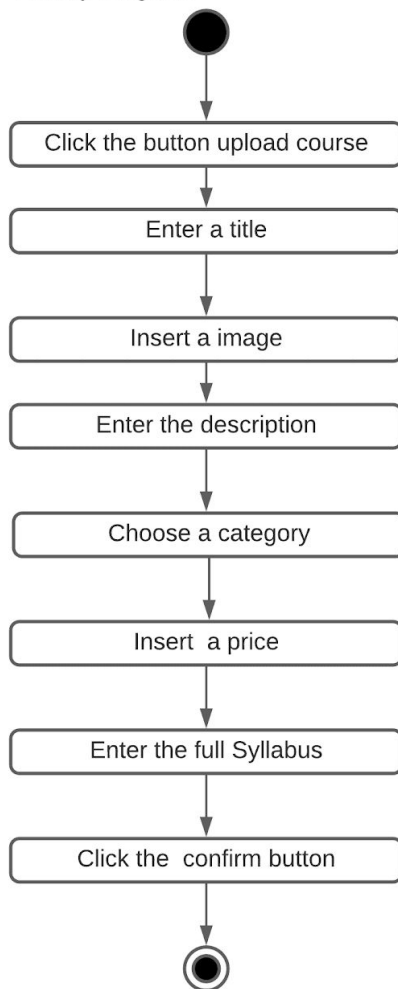
1. Click the logout button.

Response:

1. For the activity the user session is ended and default homepage is shown.

### 3. Upload Course:

Activity Diagram:



#### Activity-Response:

Activity:

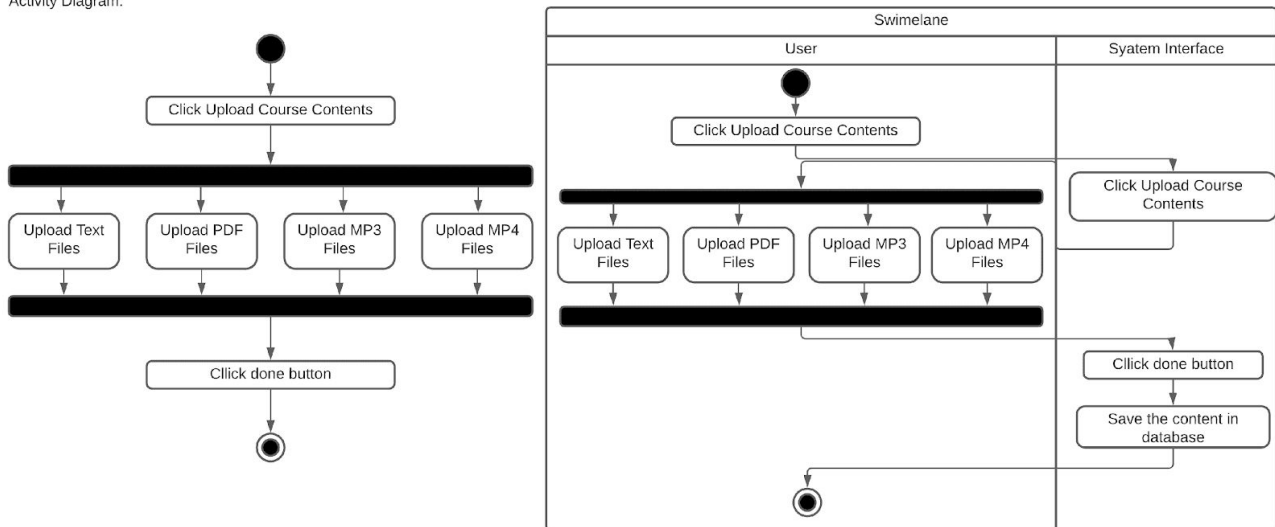
1. Click the upload course button.
2. Enter title.
3. Insert an image.
4. Enter description.
5. Choose a category.
6. Insert a price.
7. Enter the full syllabus.
8. Click the Submit button.

Response:

1. For activity 1: Show course upload page.
2. For activity 8: Save the information in the database and show the upload content page.

## 4. Upload Course Contents:

Activity Diagram:



### Activity-Response:

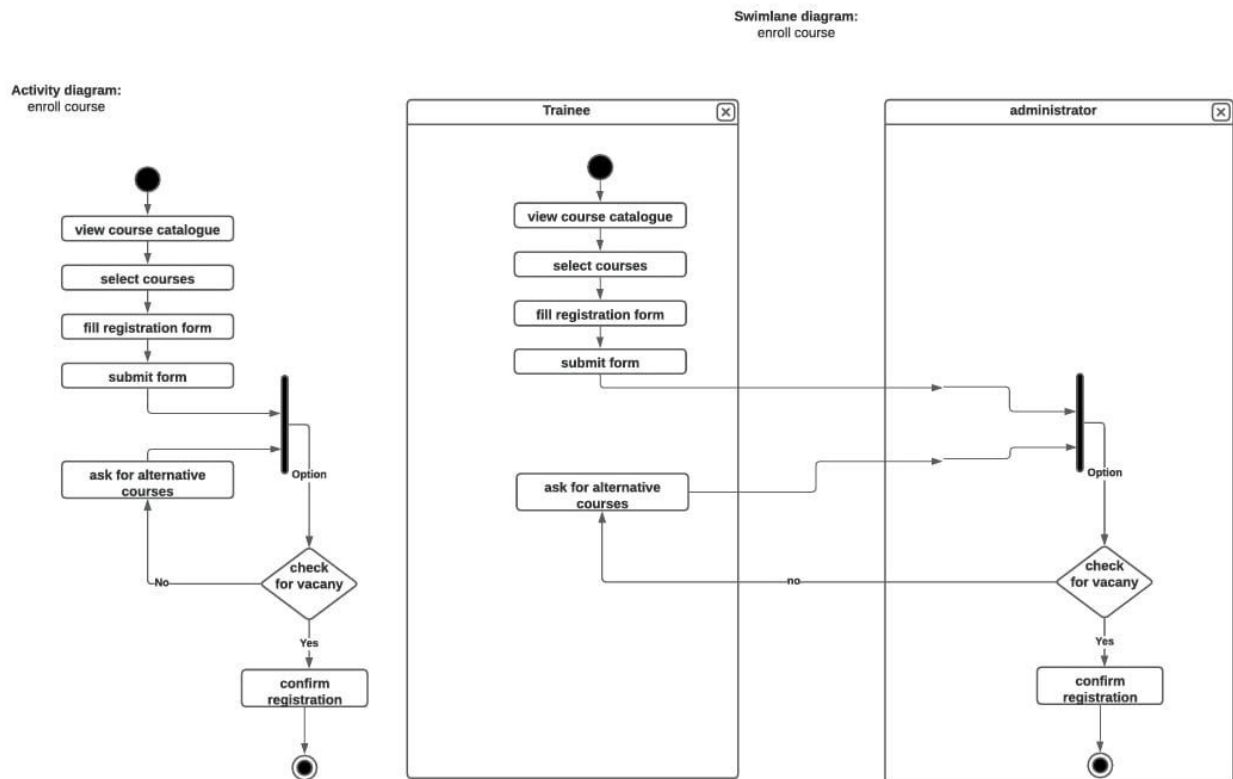
Activity:

1. Click the upload contents button.
2. Upload text. Or/And,
3. Upload PDF. Or/And,
4. Upload MP3. Or/And,
5. Upload MP4. Or/And,
6. Click Submit button

Response:

1. For activity 1: Show upload contents page.
2. For activity 6: Save the contents in the database and show the home page.

## 5. Enroll course:



### Activity-Response:

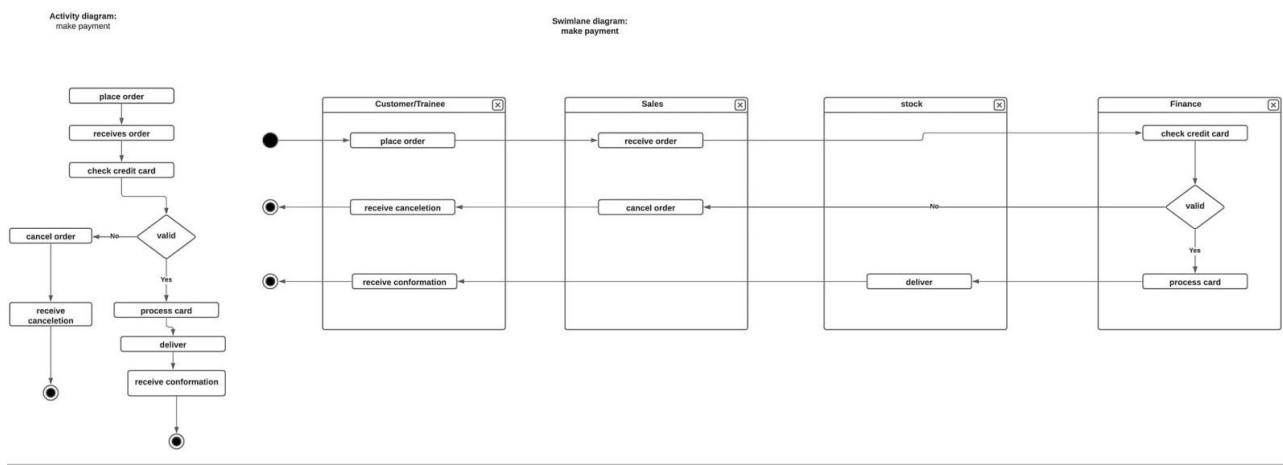
#### Activity:

1. Click the catalogue button.
2. select courses,
3. fill up the form,
4. check for vacancy,
5. if not then ask for alternative courses,
6. confirm registration
7. click submit button.

#### Response:

1. For activity 1: Show 'uploaded courses by category' page.
2. For activity 6: Save the contents in the database and show the confirmation.

## 6. Make payment:



### Activity-Response:

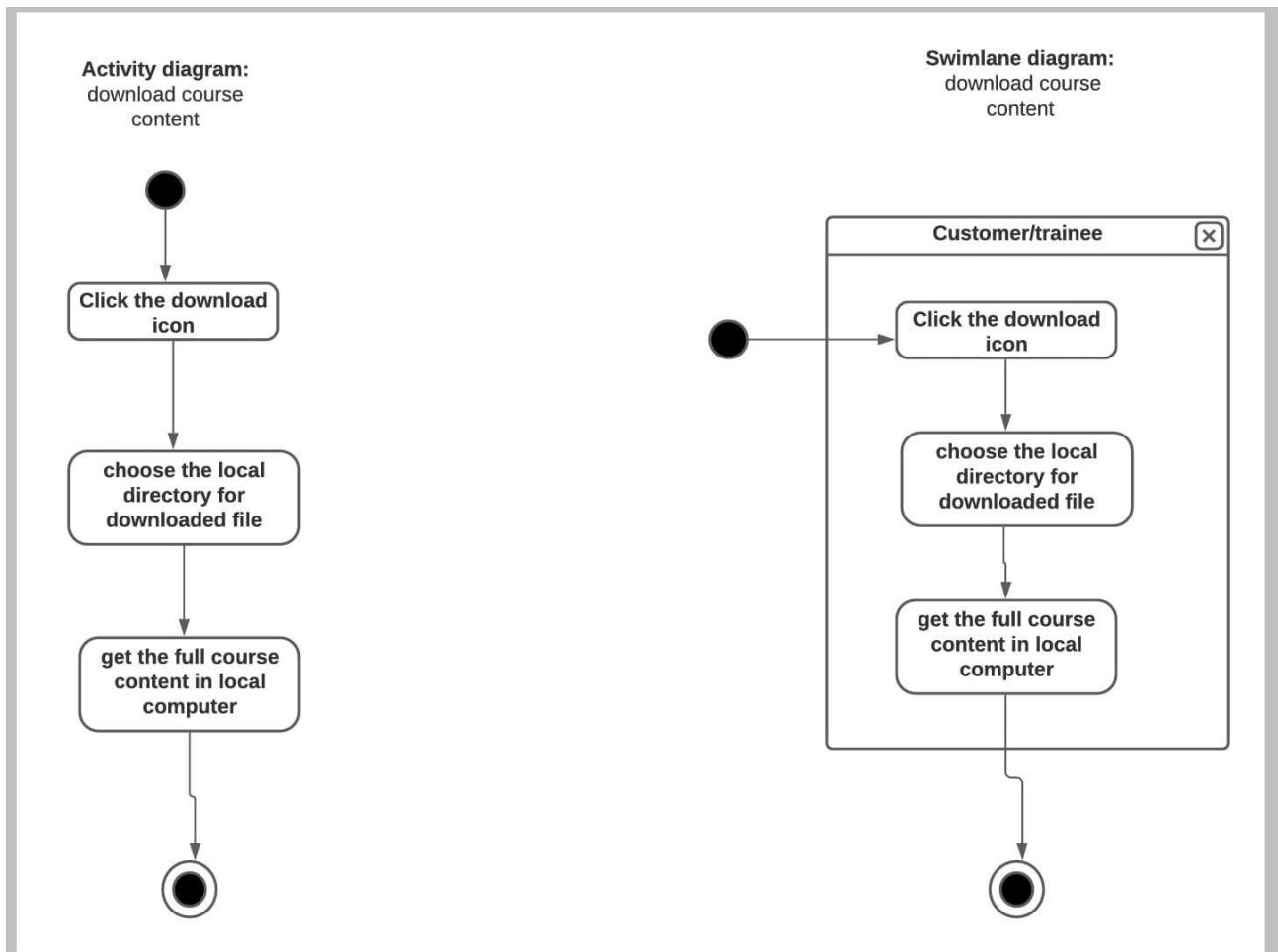
#### Activity:

1. Click the place order option.
2. Sales receives the order,
3. input credit card info,
4. if valid then process and deliver,
5. if not valid then cancel order ,
6. receives conformation.

#### Response:

1. For activity 1: Show the payment page.

## 7. Download course content:



### Activity-Response:

#### Activity:

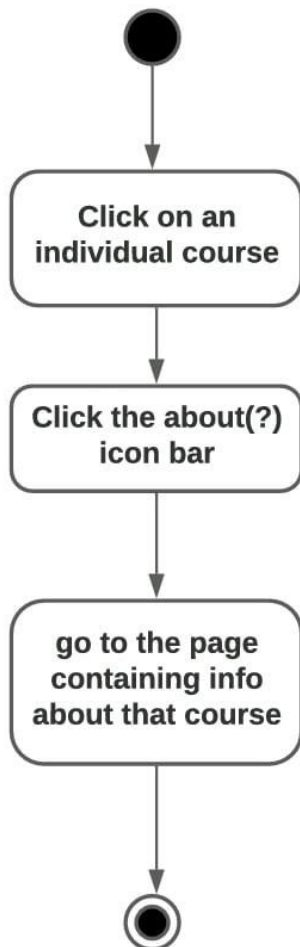
1. Click the download button.
2. then choose the file location,
3. get the course contents after download,

#### Response:

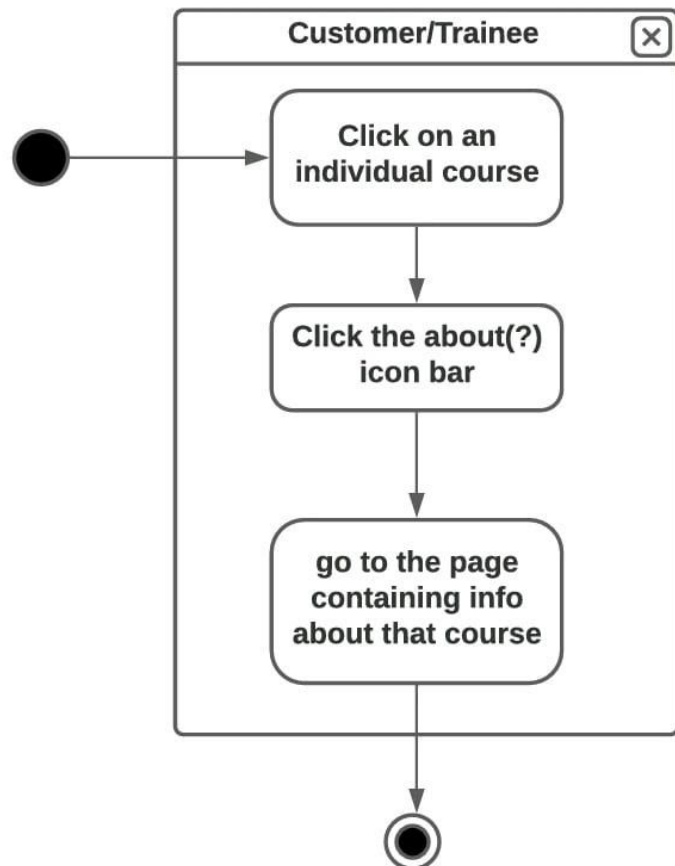
1. For activity 1: take me to the local directory to download .

## 8. See info about uploaded course:

**Activity diagram:**  
see info about uploaded  
courses



**Swimlane diagram:**  
see info about uploaded  
courses



### Activity-Response:

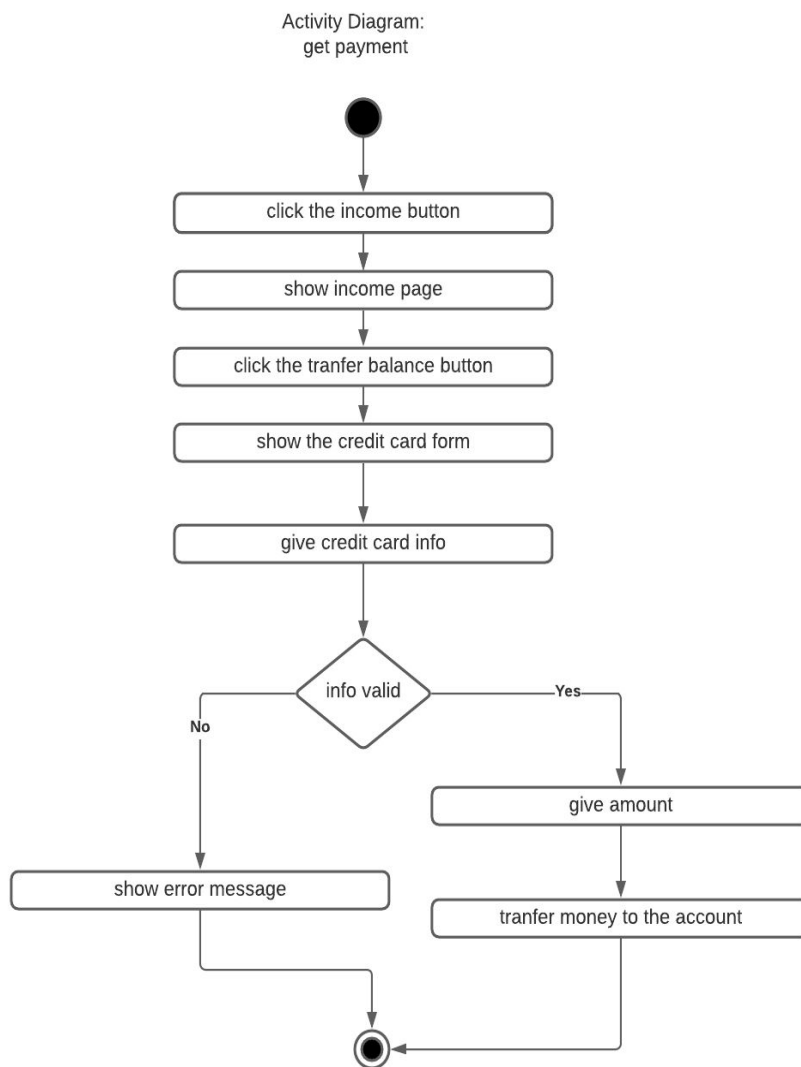
Activity:

1. Click the individual course button.
2. Click the about(?) icon bar.

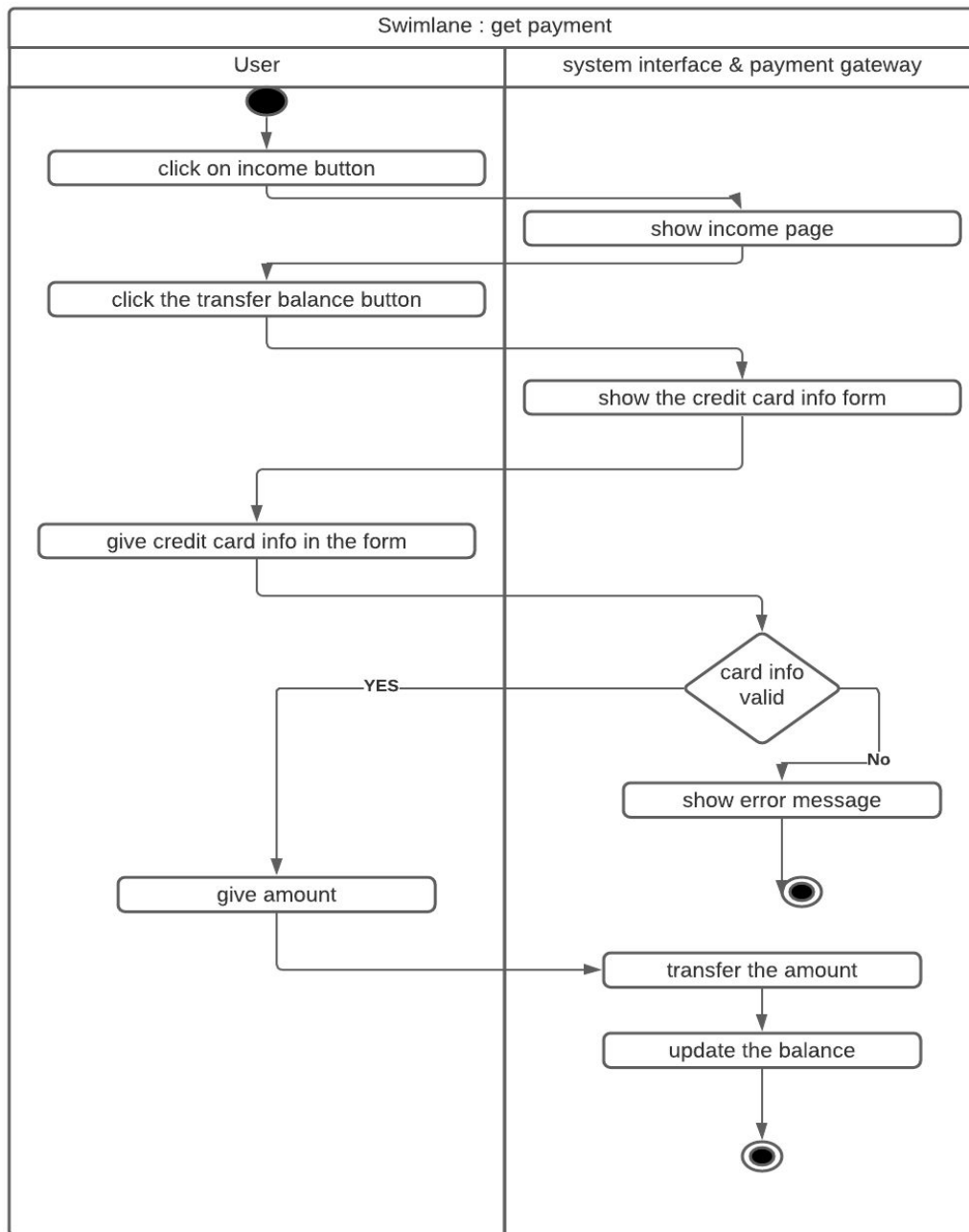
Response:

1. For activity 1: The course page is shown.
2. For activity 2: The course info page is shown.

## 9. Get Payment:







### Activity-Response:

Activity:

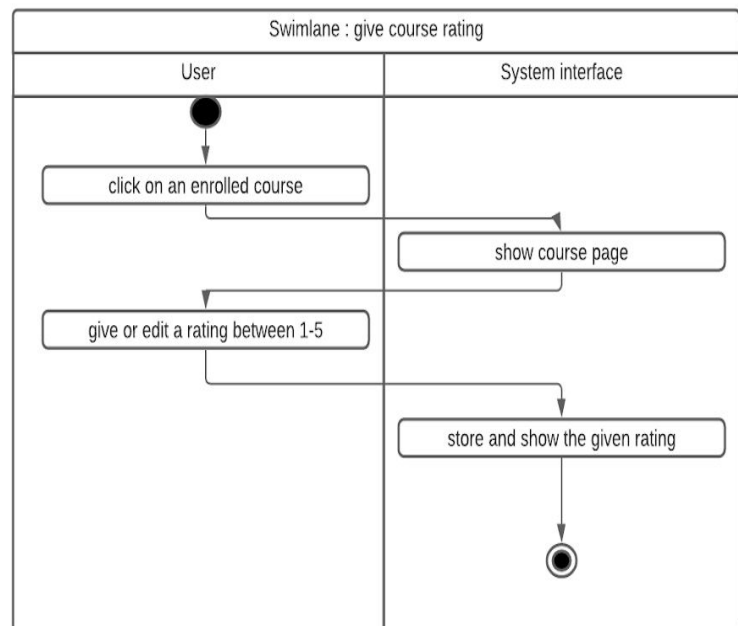
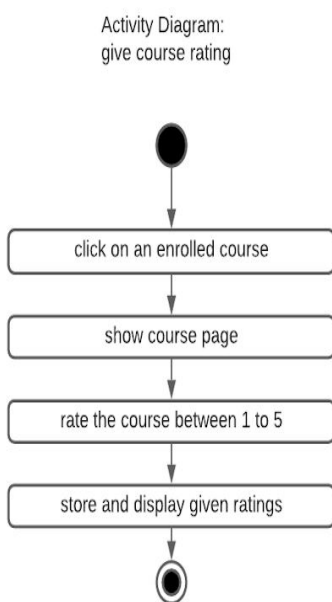
1. Click the income button.
2. click the transfer balance button,

3. give the credit card info,
4. give amount,

Response:

1. For activity 1: Show 'income' page.
2. For activity 2: Show credit card form.
3. For activity 3: validate credit card information and proceed the activity
4. For activity 4: transfer the amount to the account

## 10. Give Course Review:



### Activity-Response:

Activity:

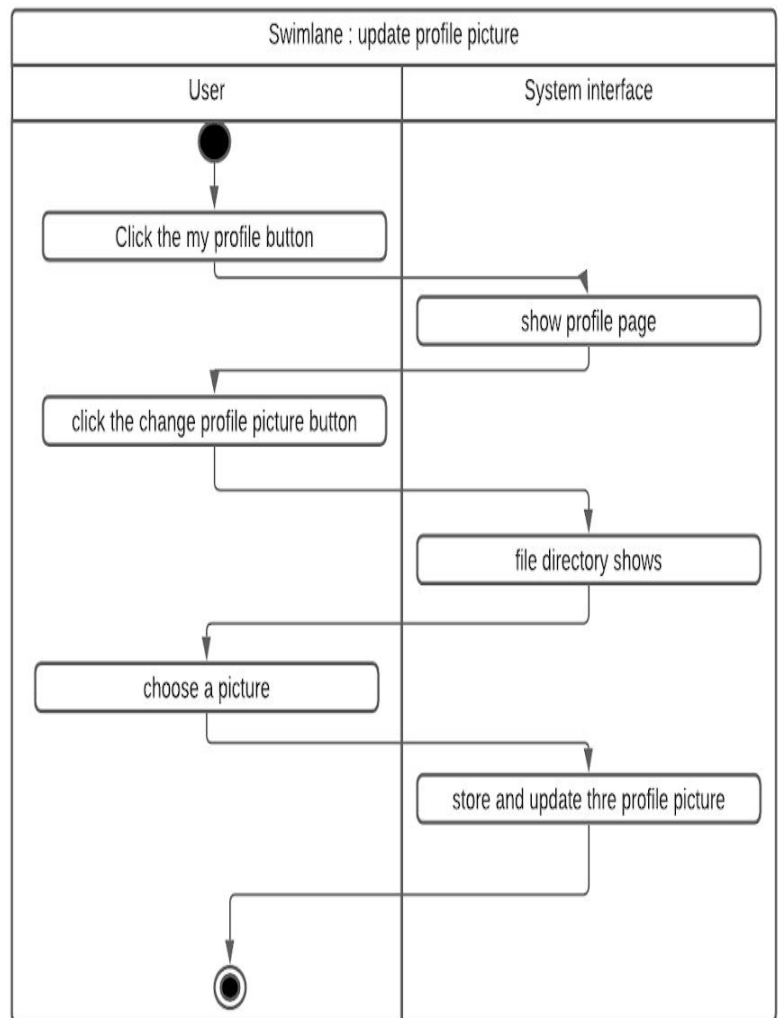
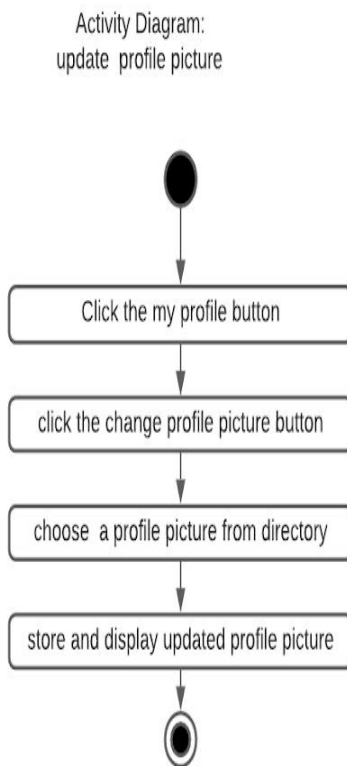
1. Click on an individual enrolled course button.
2. rate between 1 to 5,

Response:

1. For activity 1: Show the course page.
2. For activity 2: Store and display the given ratings.

## 11. Set Up Profile:

### set profile picture:



### Activity-Response:

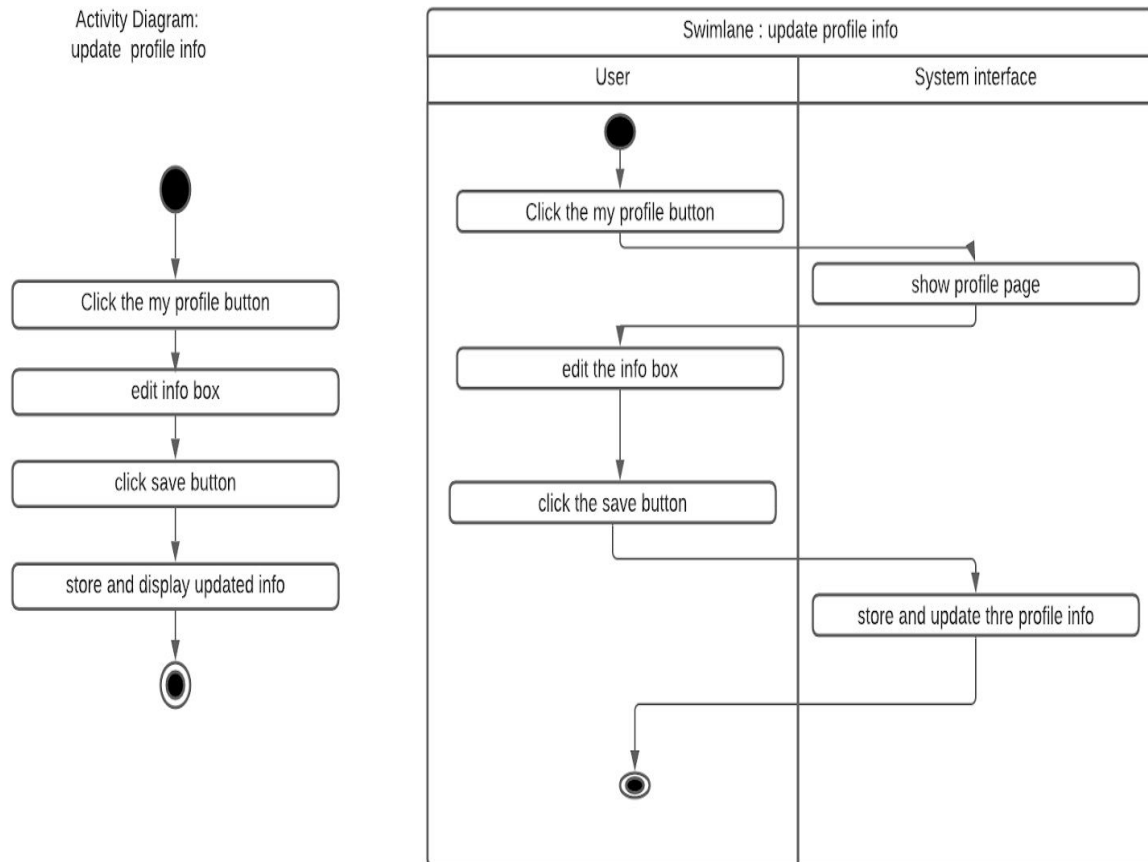
#### Activity:

1. Click the profile button.
2. click the change profile picture button,
3. choose a picture

#### Response:

1. For activity 1: Show 'profile' page.
2. For activity 2: Show local file directory.
3. For activity 3: Store and display the profile picture.

### set profile info:



### Activity-Response:

#### Activity:

1. Click the profile button.
2. edit the info box,
3. click save button,

#### Response:

1. For activity 1: Show profile page.
2. For activity 3: Show and store the updated info.

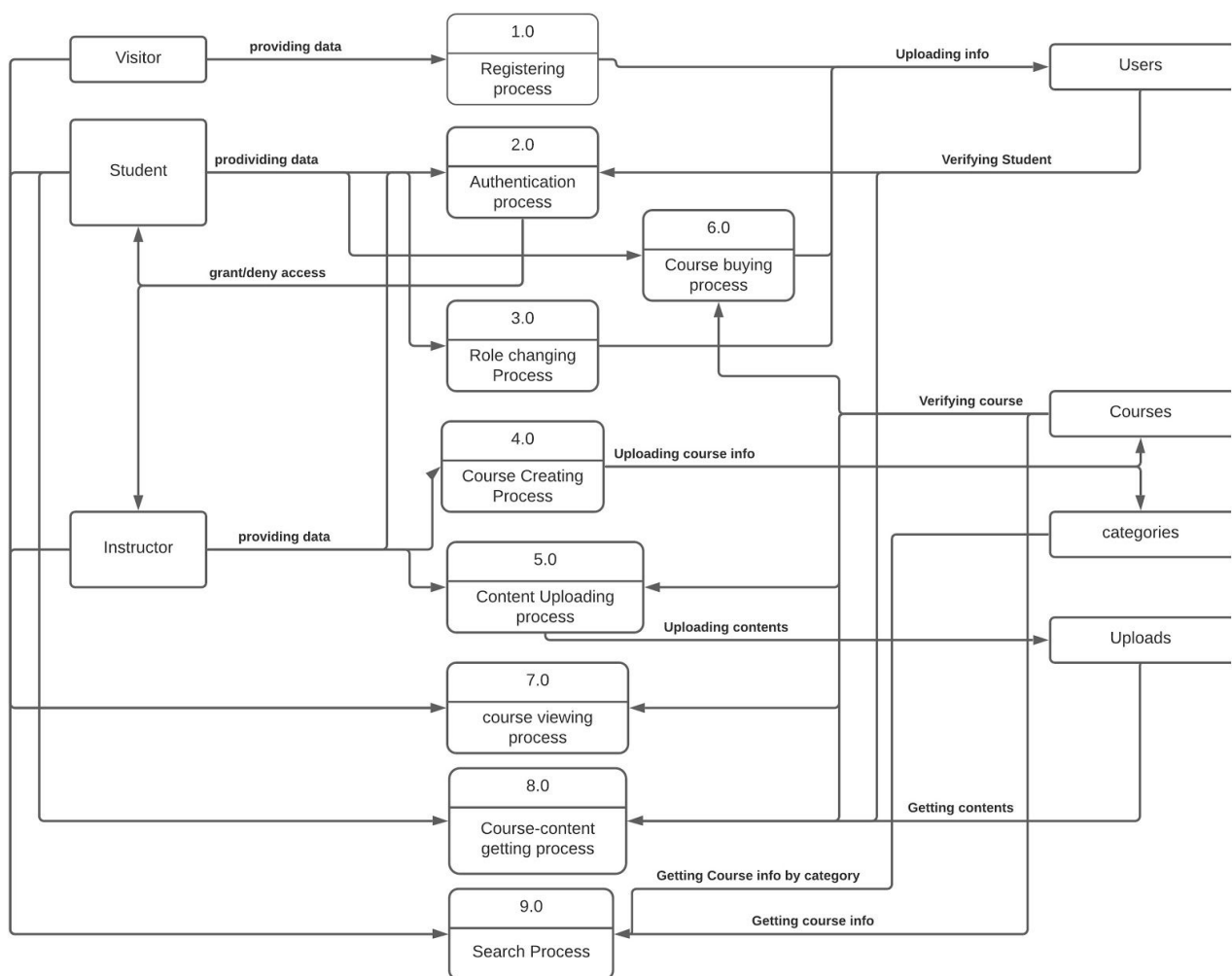
# Data Flow Diagram

## 1. External Entities

- i. Visitor
- ii. Student
- iii. Instructor

## 2. Data Stores

- i. Users
- ii. Courses
- iii. Categories
- iv. Uploads



## **Conclusion**

It was a new experience for us. As we learnt and did everything from the scratch. We learnt about the team work and how to deal with something which we don't have previous knowledge of. Hope we will be able to implement our knowledge in the upcoming projects and develop them more goodly.