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Contents

Phase 1: Project Description

1.1 Introduction

Over the years, hobbies have become one of the most significant activities performed by individuals all around the world. Regardless of your sex or age, these are simple actions, but have a great effect on a person's mind, body, and soul.

The importance of hobbies comes from experiencing new things, and sharing it with others to bring joy, and relieve stress. The majority of people that understand the importance of hobbies find it difficult to notice and socialize with people who share the same interest with them. Therefore, we wanted to help such individuals, and improve the quality of their life by introducing them to their ideal groups. HOBi is a platform that brings people who are passionate about a particular topic in one community together, so they can interact and learn effective ways to use their talents. As passion drives this platform and makes it more creative and flexible, we provide an attractive and easy-to-use environment by categorizing each community as different entities, so that each space enjoys a high rate of freedom of expression for every individual. On the other hand, it increases the opportunity to build knowledge and contacts with various people with different experiences, and this is what HOBi seeks to refine for everyone in several aspects.

1.2 Project Description

Our project aims to develop an app that connects individuals with similar interests and hobbies. The primary objective is to help individual in forming teams and engaging in their hobbies more with others, which will help them develop their skills and provide them with the opportunity to find new hobbies. The app will have communities for various hobbies, and users can join any community that appeals to them. In every community, there will be both beginners and experts. Before joining any community, the user must decide whether they are a beginner or an expert in order for that community to have a chance to improve with their hobby using the help of the experts in the community.

1.3 Project Objectives

- To motivate users to talk to people who have similar interests regarding their hobbies.
- To help users in developing their hobbies through community involvement and consultation with experts in different fields.
- To make it possible for users to discover new and unique interests.
- To host numerous contests and activities in the application to attract users.

1.4 Project Team

Team Members	Name	ID	Work Distribution
Leader	Raghad	2105119	Work has been distributed equally between the team members, to save our time and effort, and to achieve the best results possible.
Member	Huda	2105773	
Member	Arwa	2105953	
Member	Leen	2114069	

Goals and Scope

1.5 Project Goals

Our major objective in developing "HOBi" application, is to make it easier for people to connect with others who share their interests and hobbies. This will motivate and encourage people to engage in their hobbies more frequently and provide them with an opportunity to get better at them, in addition to reducing leisure time for both individuals and society.

1.6 Sources of Domain Analysis Information

Our source of information includes all people in society who have a hobby or multiple hobbies, as an amateur or an expert, who want to share their experience with the community and benefit from others.

1.6.1 Scope of the system

An application that aims to help users develop their various skills. By allowing them to join courses or consult experts from all fields, learn about new hobbies, and give users all the knowledge about different types of hobbies and ways to develop them. Moreover, it helps the experts by allowing them to share their experiences and expertise with novice users. Finally, it allows users to check out events and competitions within their hobby field.

1.6.2 Included Features

- Sign up/ Login page.
- Profile page within user details.
- Joining any selected community.
- Description of each community
- Pick numbers of topics.
- Create your own topic.
- Creating your own community.
- Searching for a specific community.
- Increasing or decreasing in the user's progress score.
- Purchase some features.

1.6.3 Excluded

- The system is limited to 2 languages only, Arabic, English.
- The system does not allow children under the age of 12.
- Only online payment.
- The system does not focus on other topics besides interests and hobbies.

1.7 System Stakeholders

The stakeholders in the system are the people interested in developing their skills in a particular hobby, or in discovering new hobbies.

Phase 2: Business Requirements Specifications

2.1 Domain Analysis

Hobbies may be wasted if they are not used and developed appropriately. The majority of people in our time are aware of the most important concerns, but they lack the information or tools they need to develop their talents. Nowadays, communities for people with similar interests can be easily found on many social media sites, but what about uncommon hobbies? We decided to establish our application "HOBi" as a safe space for people to learn, engage, and find their core skills, since it may be difficult to meet others who share the same uncommon hobbies.

2.2 Requirements and Its Types
2.2.1 Functional Requirements

R1. The system shall allow users to register and authenticate using their email address, or social media accounts. and provide appropriate authentication mechanisms to protect user privacy and data.

R2. The system shall allow users to create and manage their profiles, including adding personal information, uploading profile pictures, and managing privacy settings.

   R2.1 The system shall prompt the user to provide personal information, including their name, age, email, phone number, and country.

   R2.2 The system shall prompt regular users to provide information about their hobbies and interests.

   R2.3 The system shall prompt expert users to add their relevant certificates.

R4. The system shall allow the user to browse and join groups and communities related to their hobbies and interests and provide a variety of interests categories to choose from.

   R4.1. The system shall display a brief explanation of each community to aid user selection.

   R4.2. The system shall permit users to write a review of selected communities.

R5. The system shall allow the user to post and share text, photos, videos, and other content related to their hobbies and interests, and provide features such as tagging, commenting, and liking to encourage interaction and engagement.

R6. System shall allow the user to search and filter content by keyword, interest, location, and other criteria to help them find relevant content and communities.

2.2.2 Non-Functional Requirements

R1. The system must be capable of handling 1500 users at the same time.

R2. The system should send/upload posts(picture/video) within 3 to 10 seconds based on network speed.

R3. The system should send messages (text) within 1 to 3 seconds.

R4. The system response time to user must not exceed 3 seconds under the usual workload.

R5. The system shall store and protect users' personal information.

R6. The system should lock an account after 5 failed login attempts.

R7. The system is available for IOS mobile operating system.

    R7.1 The system includes running on IOS 12 and higher.

R8. The system shall be available 24/7 for all users.

R9. The system supports Arabic and English language.

R10. The system supports the currency of Saudi Arabia.

    R10.1 The system follows Saudi Arabia time zone.

R11. The system must provide a user-friendly, and clear interface.

2.3 Techniques for Gathering Data

Data were collected by a survey that was aimed at those who were interested in improving their skills in their hobbies. It included 12 multiple choice questions, and we received a total of 75 responses from different people. We discovered that people enjoy engaging in their activities with others who have similar interests. More details will be provided in *Appendix 1.*

2.4 Use Case Description
2.4.1 Use Case No.1

Create Account

Brief Description: The actor creates an account.

Actors: Experts and Regular users.

Basic Flow:
1. The actor opens the application and clicks on "sign up" button.
2. The system asks the user to choose between expert or regular user.
3. The system asks the user to enter their personal information (name, email, phone number, city, age, etc.)
4. The system prompts the user to enter username and password.
5. The system displays a message stating that the account was created successfully.

Alternative Flow:
1. The system fails to create an account due to internet disconnection.
   - The system displays a message stating that an error occurred due to internet disconnection.
2. The user has an existing account.
   - The system displays a message stating that the account already exists.
3. The user fills the required fields with incorrect information.
   - The system displays a message alerting the user about the wrong information.
4. The user does not fill all the required fields.
   - The system displays a message alerting the user to complete the messing fields.

Special Requirements: To create the account, the user's device must be connected to the internet.

Pre-conditions: There are no pre-conditions associated with this use case.

Post-conditions: The account is created.

Extensions Points: There are no extension points associated with this use case.

2.4.2 Use Case No.2

Create Community

Brief Description: User can create a new community with a unique name and description to gather people around a specific topic or interest

Actors: Experts and regular users.

Basic Flow:
1. The user logs into the system by entering the username and password.
2. The user clicks on the "Create community" button from the homepage to create a new community.
3. The user chooses a name and a topic for the created community.
4. The user provides information about the created community such as description, privacy settings, etc.
5. The User enters rules for the community.
6. System creates the community and assigns the user as the community owner.
7. The user clicks on the "submit" button.
8. The system receives the creation order.
9. The system checks and verifies the creation order.
10. The system displays a message stating that the community was created successfully.

Alternative Flow:
1. The user submits the creation order without filling out all the necessary fields.
   - The system displays a message alerting the user to complete the missing fields.
2. The user enters an existing name for the community.
   - The system displays a message alerting the user to change the name.
3. User enters a description that exceeds the character limit.
   - The system displays an error message and prompts the user to enter a shorter description.
4. User enters rules that exceed the character limit.
   - The system displays an error message and prompts the user to enter shorter rules.
5. User cancels the creation process.
   - System cancels the creation process and returns the user to the previous page.

Special Requirement: User must have an active account and be logged in. Community name must be unique

Pre-conditions:
1. The user must have an existing account.
2. The user must log into their account.

Post-conditions: The user has created the community successfully and can edit/manage the community they have created.

Extension Points:
Edit community: The user should be able to edit the community details (name, description, category, rules, etc.).
Delete community: The user should be able to delete the community.

2.4.3 Use Case No.3

Search for Community

Brief Description: Search for an existing community to view the description, members, and posts by a keyword.

Actors: Experts and regular users.

Basic Flow:

1. The user logs into the system by entering the username and password.
2. The user clicks on the search bar from the homepage and enters keywords related to their hobby / interest.
3. The system provides the user with a list of available communities.
4. The user views a brief explanation of each provided community.
5. The user finds the required community from the provided communities list.

Alternative Flow:

1. The user cannot find a community using the specified keywords.
   - The system displays a message stating that the community doesn't exist.
2. The user enters the keywords incorrectly.
   - The system displays a message stating that the keywords are written incorrectly.

Special Requirement: To search for a community, the user must be logged into the system.

Pre-conditions:

1. The user must have an existing account.
2. The user must log into their account.

Post-conditions: The user views all provided communities based on the inputted keywords.

Extension Points: There are no extension points associated with this use case.

2.4.4 Use Case No.4

Join Community

Brief Description: User joins a community to participate in discussions and access community content.

Actors: Experts and regular users.

Basic Flow:
1. The user logs into the system by entering the username and password.
2. The user explores different communities from the groups and communities' section or using search.
3. The user clicks on the "Join community" button to join a new community.
4. The user chooses to join as an expert or a regular user.
5. The system displays a message stating that the user joined successfully.

Alternative Flow:
1. The user tries to join a community they're already in.
   - The system displays a message alerting the user that they joined the community before.
2. The user is not allowed to join the community due to community settings or admin approval requirements

Special Requirement: To join the community, the user's device must be connected to the internet.

Pre-conditions:
1. The user must have an existing account.
2. The user must log into their account.

Post-conditions: The user has joined the community successfully, and can view community content, share content, and interact with the community members.

Extension Points: The user can send private messages to members and write a review.

2.4.5 Use Case No.5

Create post

Brief Description: Allows user to create post.

Actors: Experts and regular users.

Basic Flow:
1. The user logs in to the system.
2. The user selects "Create Post".
3. The system presents a form for the user to enter post details.
4. The user enters post details and clicks "Submit".
5. The system saves the post and displays it on the user's profile.

Alternative Flow:
1. The user attempts to create a post without entering any content.
- The system displays an error message indicating that content is required.
2. The user exceeds 260 words, or the uploaded video exceeds 1 minute.
- The system displays an error message indicating that the post content or video is too long.

Special Requirement: User must be logged in to access creating post features.

Pre-conditions:
1. The user must have an existing account.
2. The user must log into their account.

Post-conditions:
1. New posts are created and visible to other users.
2. Edited posts are updated and visible to other users.
3. Deleted post is no longer visible to other users.

Extensions Points:
1. Report Post: User can report a post for violating community guidelines.
2. Tag Post: User can tag a post with keywords to aid in searchability.
3. Share Post: User can share a post with other users or on social media.

2.5 Use Case Diagram for Given Problems
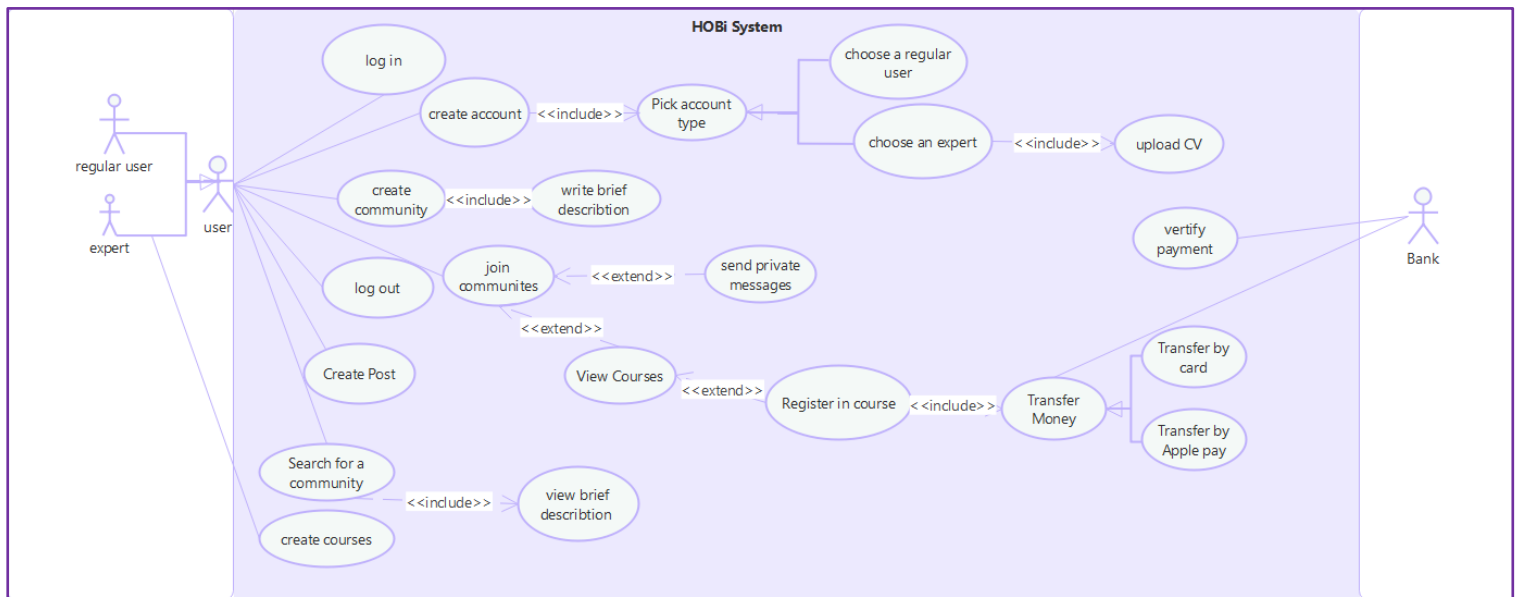
2.6 Difficulties and Risk Analysis in The Domain

- Requirements may change through the development process.
- The process of gathering data from stakeholders was time consuming.
- Lack of sources related to the hobbies field.
- Complications with understanding stakeholder requirements.

Phase3: Design and Structuring

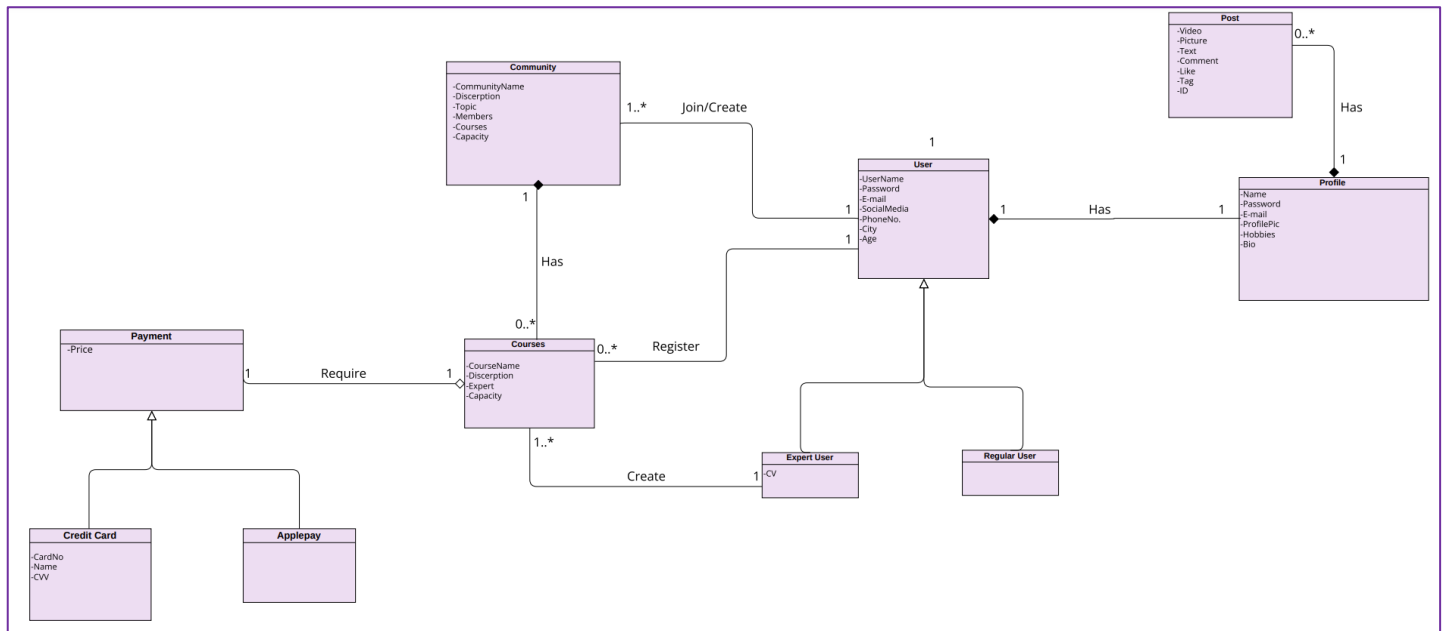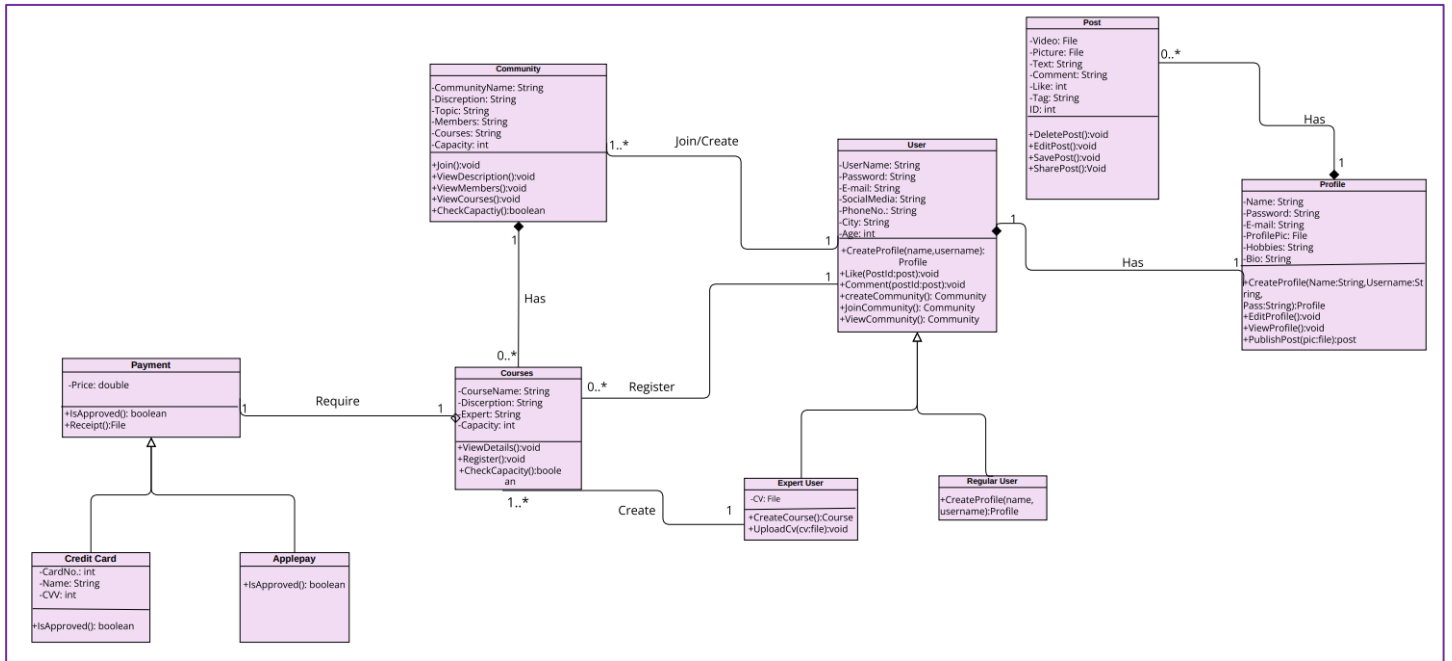## *3.1 Domain Diagram*

3.1 UML Class Diagram

Community
- CommunityName: String
- Discrption: String
- Topic: String
- Members: String
- Courses: String
- Capacity: int

- +Join():void
- +ViewDescription():void
- +ViewMembers():void
- +ViewCourses():void
- +CheckCapactiy():boolean

1..* Join/Create

Post
- -Video: File
- -Picture: File
- -Text: String
- -Comment: String
- -Like: int
- -Tag: String
- ID: int

- +DeletePost():void
- +EditPost():void
- +SavePost():void
- +SharePost():Void

0..* Has 1

User
- -UserName: String
- -Password: String
- -E-mail: String
- -SocialMedia: String
- -PhoneNo.: String
- -City: String
- -Age: int

- +CreateProfile(name,username): Profile
- +Like(PostId:post):void
- +Comment(postId:post):void
- +createCommunity(): Community
- +JoinCommunity(): Community
- +ViewCommunity(): Community

1 Has

Profile
- -Name: String
- -Password: String
- -E-mail: String
- -ProfilePic: File
- -Hobbies: String
- -Bio: String

- +CreateProfile(Name:String,Username:String,Pass:String):Profile
- +EditProfile():void
- +ViewProfile():void
- +PublishPost(pic:file):post

Has 1

Payment
- -Price: double

- +IsApproved(): boolean
- +Receipt():File

1 Require 1

Courses
- -CourseName: String
- -Discerption: String
- -Expert: String
- -Capacity: int

- +ViewDetails():void
- +Register():void
- +CheckCapacity():boolean

0..* Register

1..* Create 1

Expert User
- -CV: File

- +CreateCourse():Course
- +UploadCv(cv:file):void

Regular User
- +CreateProfile(name, username):Profile

Credit Card
- -CardNo.: int
- -Name: String
- -CVV: int

- +IsApproved(): boolean

Applepay
- +IsApproved(): boolean

3.2.1 Association and their Multiplicity

- Between User class and Courses class.
- ✓ A User can register in zero or more courses.
- ✓ One course can be registered by zero or more Users.

- Between User class and Community class.
- ✓ A User can create one or more communities.
- ✓ A User can join one or more communities.
- ✓ A community is created by one user.
- ✓ One community can be joined by one or more users.

- Between Expert class and Courses class.
- ✓ An Expert can create one or more courses.
- ✓ One course can be created by one Expert.

3.2.2 Composition Relationships and their Multiplicity

- Between User class and Profile class
- ✓ If there is no User, there is no profile.
- ✓ A User has one profile.
- ✓ One profile for one User.

- Between Profile class and Post class
- ✓ If there is no profile, there are no posts.
- ✓ A profile has zero or more posts.
- ✓ A post belongs to one profile.

- Between Community class and Courses class
- ✓ If there is no community, there are no courses.
- ✓ A community has zero or more courses.
- ✓ A course belongs to one community.

3.2.3 Generalization Relationships and their Multiplicity

- User class is inherited by Expert and Normal user class.
- Payment class is inherited by Apple pay and Card class.

### 3.2.4 Aggregation Relationships and their Multiplicity

- Between Courses class and Payment class
- ✓ A course requires one payment method.
- ✓ A payment is made by one or more courses.

3.3 System Architecture

3.3.1 Type of the system

 HOBI application uses an interactive system, because it allows regular users and experts perform different actions and respond to them. It allows regular users to search for different communities, join more than one community, share photos, comment, or like them. With permission for experts to add their CV and experience and create paid courses.

3.3.2 Architectural Design
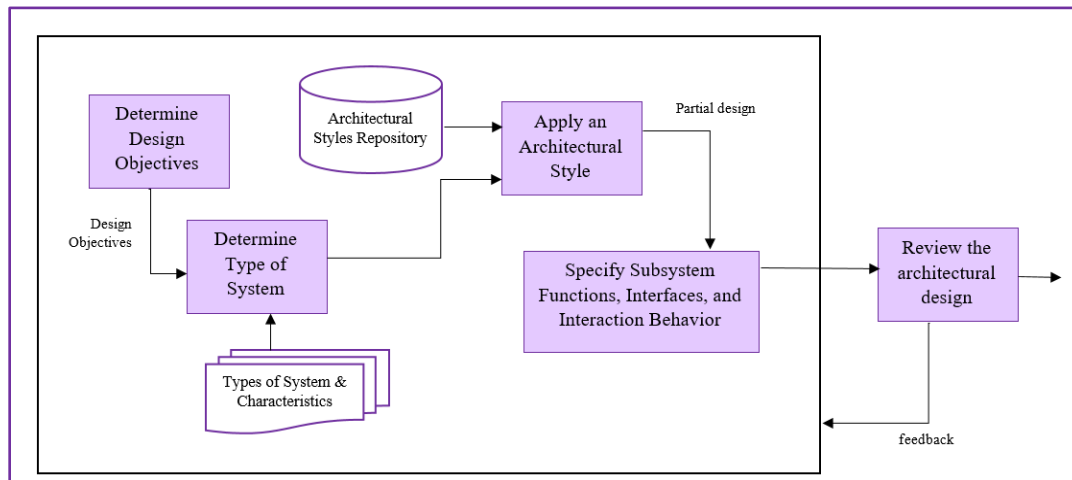
- ❖ **Determine design objectives:** The system aims to provide a fast and easy environment for interaction between users and to provide services to experts and ordinary users.
- ❖ **Determine type of the system:** HOBI is an interactive system because it has an interactive nature.
- ❖ **Apply an architectural style:** HOBI uses an N-Tier architectural style.
- ❖ **Specify Subsystem Functions, Interfaces, and Interaction Behavior:** In the functional requirements, we described all functions of the subsystems, and the UML model described all interactions between these subsystems.
- ❖ **Review the architectural design:** HOBI architectural design achieved all requirements and design goals. Also, it meets the principles of software design.
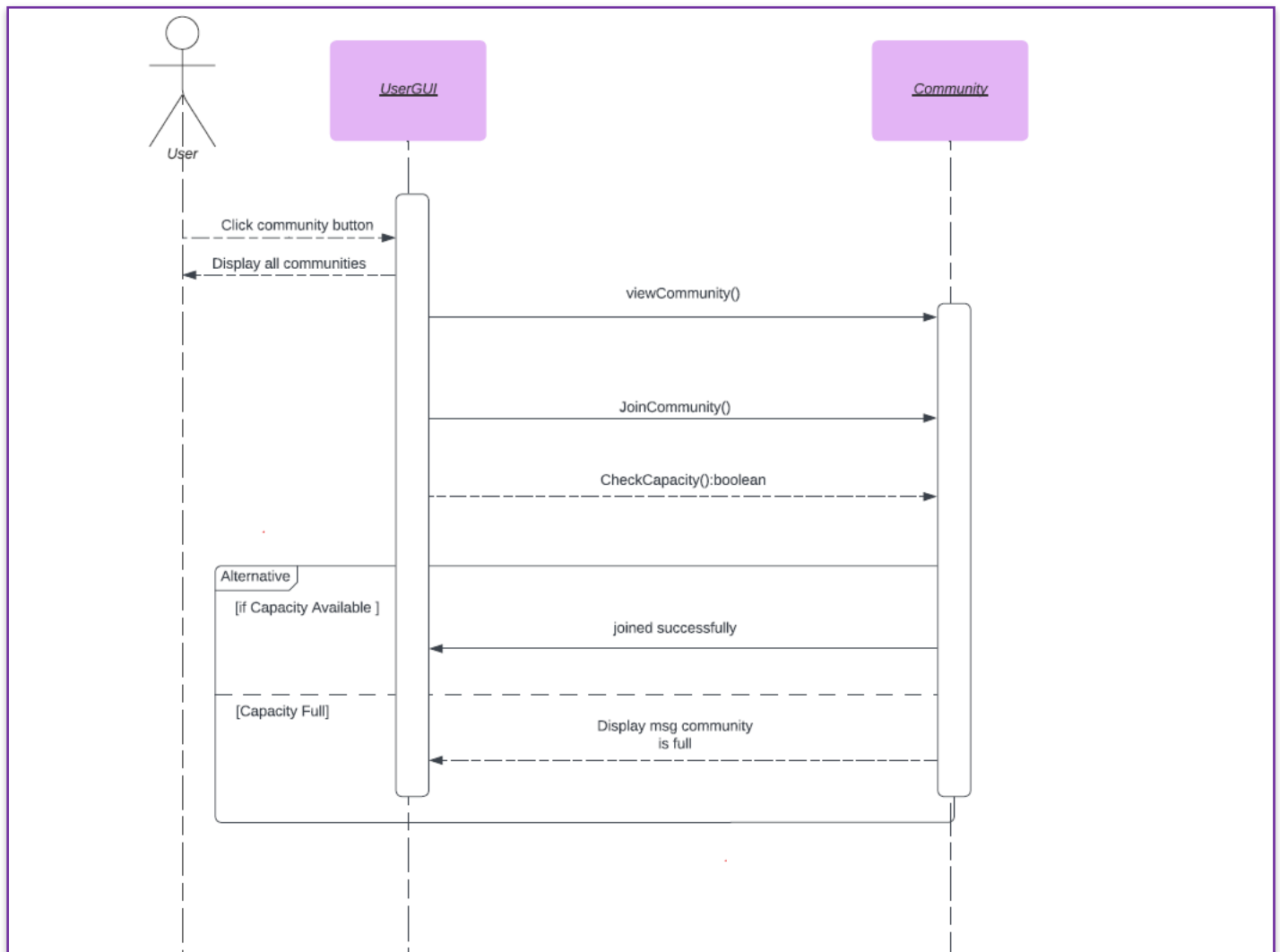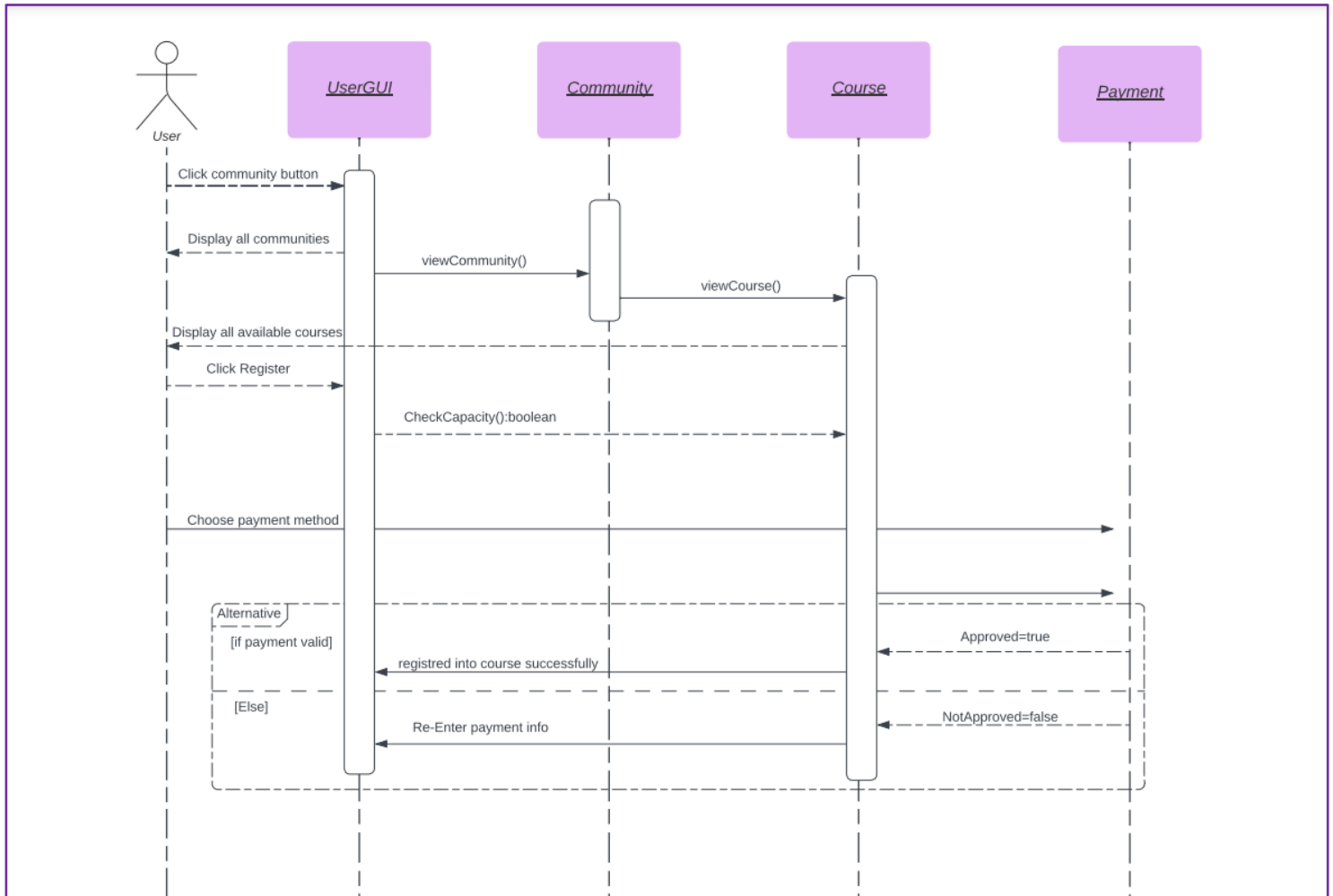- ❖ **N-Tier design:**
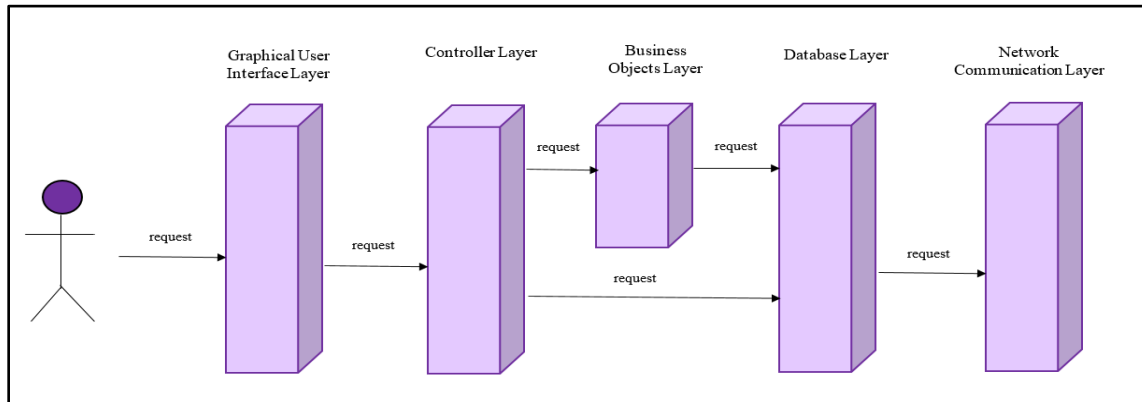
Phase4: Modelling, Interaction, and Behavior

4.1 Interaction diagram
4.1.1 Sequence diagram
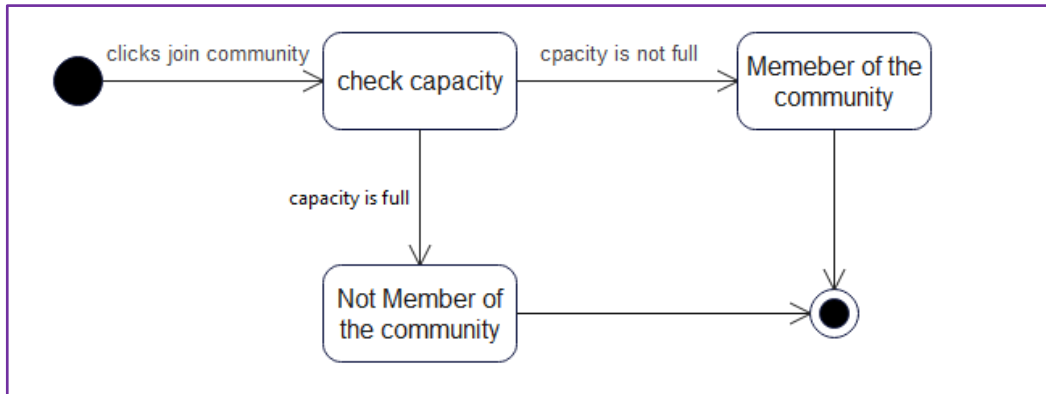
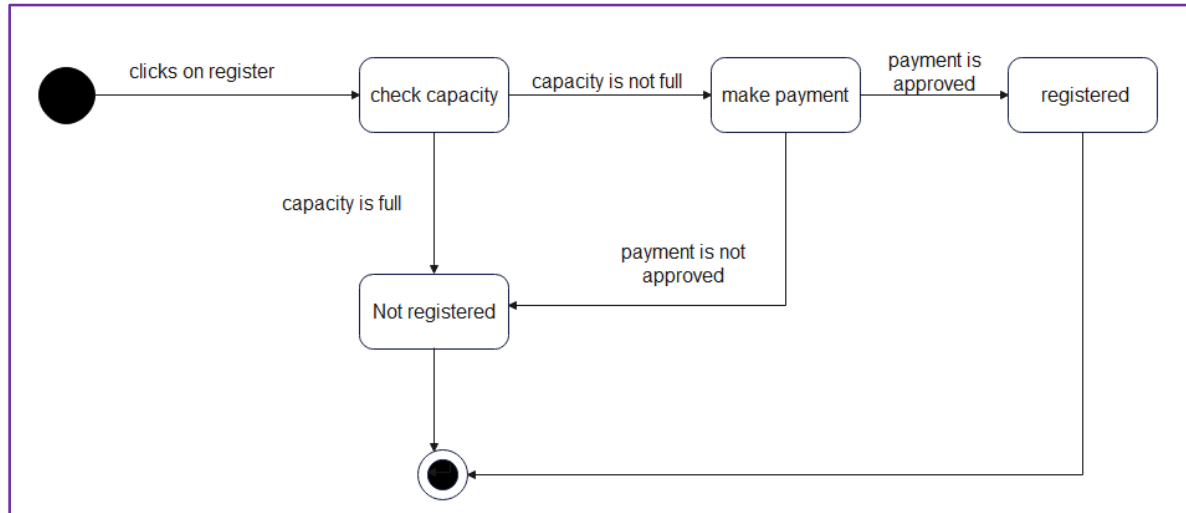## 4.1.1.1 Sequence Diagram Join Community:

4.1.1.2 Register in Course:

4.1.2 State diagram
4.1.2.1 State Diagram Join community.
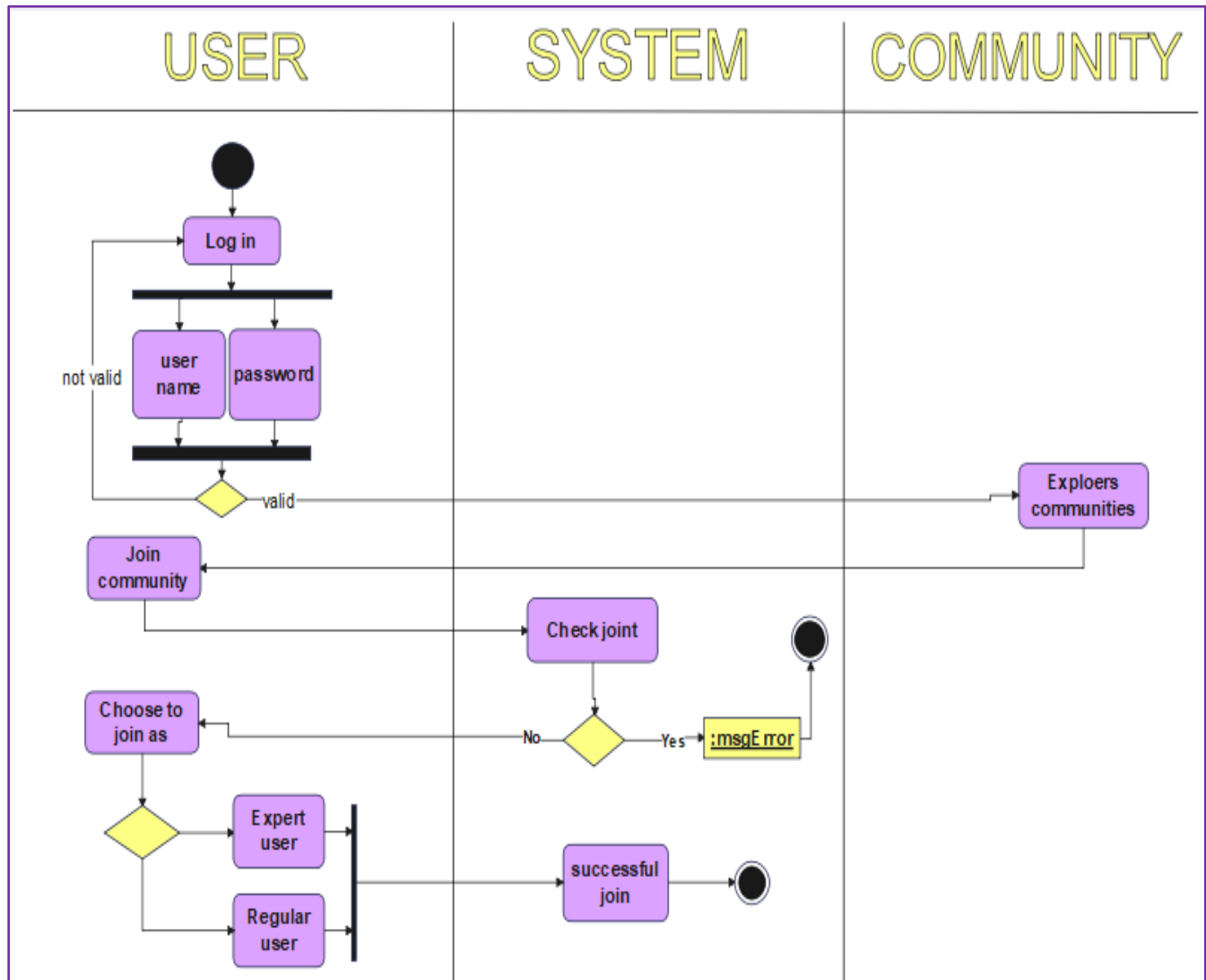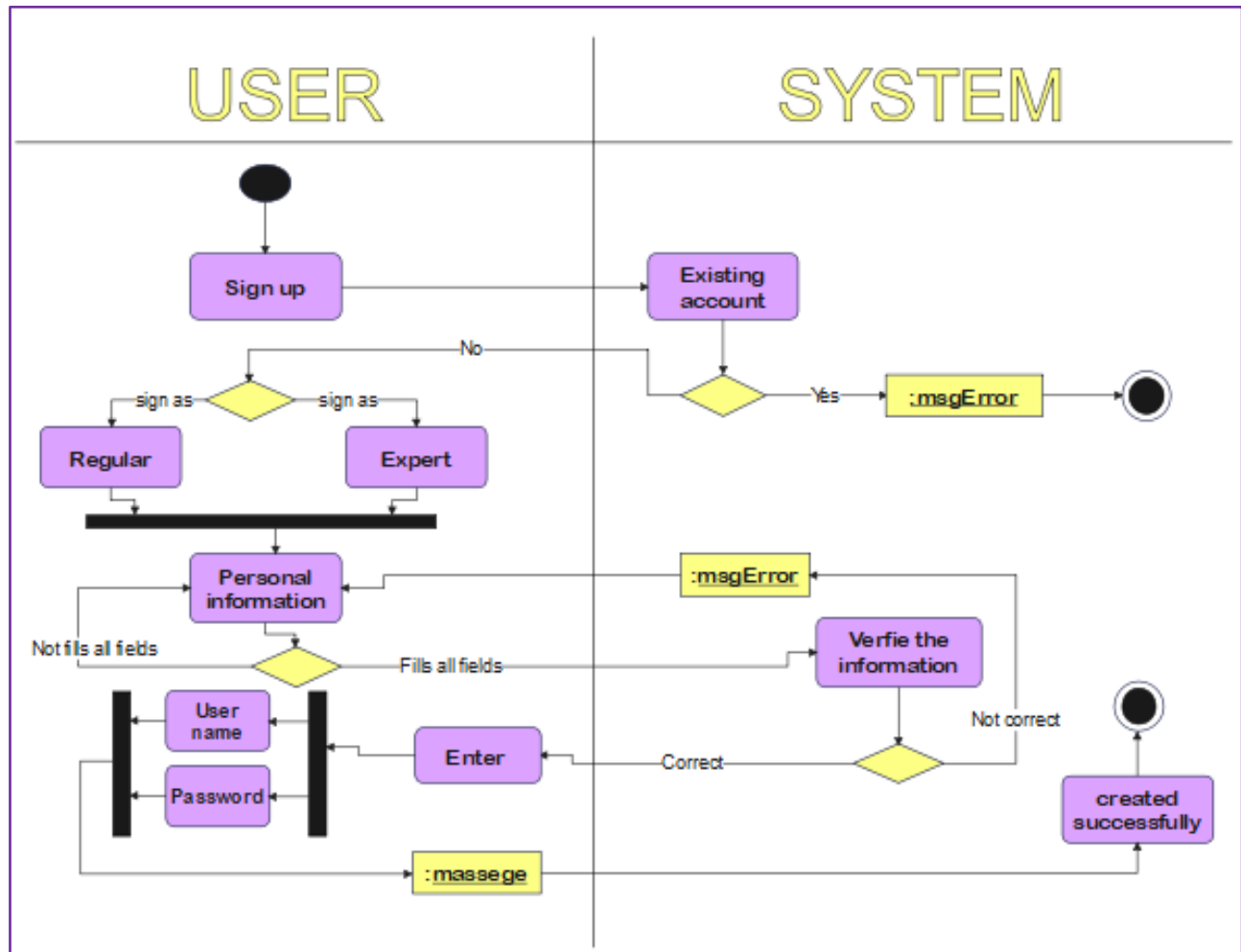

4.1.2.2 State Diagram Register in Course.

4.1.3 Activity Diagram
4.1.3.1 Activity Diagram Join Community.

4.1.3.2 Activity Diagram log in.

4.1   System Architecture (Testing)
4.1.2   Testing Objectives

- Check whether the system works as expected with high quality.
- Check whether the system meets the functional/non-functional requirements.
- Ensure that the users like the interface and the system overall.
- Detect and debug all errors if found.

4.1.3   Testing Strategy

Testing our system Hobi helps us ensure that the system meets the defined requirements and the user's requirements and helps us to find any possible mistakes in the process of development. We chose these two functionalities to test:

1- Join a community.
2- Register a Course.

4.1.4   Testing Approach

We will be using the "Black Box" testing approach. Because of our system stakeholders who will be involved in the testing process, there will be no need for them to acknowledge the system's architecture or source code, hence this is the most appropriate method.

4.2.3.1 Test plan 1

System: Hobi System.

Test Case Name: Join community.

Description: Test if the user can join a community easily.

Test scenario: Check the system's response when the user wants to join a community.

Pre-condition:

-The user must have an account.

-The user must log in to their account.

Post-condition:

-The user joins the community successfully.

Test Case ID	Test scenario	Test Steps	Test Data	Expected Result	Actual Result	Pass/Fail
1	Check the system's behavior when a user wants to join a new community.	- User logs into account. - Go to the communities' page. - choose a community to join. - click on "Join community".	Username: Vanilla Password: V_cpcs351	The user joins the community successfully, and the system displays "you have joined (community name) successfully".	As expected.	Pass.
2	Check the system's behavior when a user wants to join a community, they are already in.	- User logs into account. - Go to the communities' page. - choose a community to join. - click on "Join community".	Username: Vanilla Password: V_cpcs351	The system displays an error message: "You have already joined (community name)".	As expected.	Pass.

4.2.3.2 Test Plan 2

System: Hobi System.

Test Case Name: Register in course.

Description: Test if the user can register a course.

Test scenario: Check the system's response when the user wants to register a course.

Pre-condition:

-The user must have an account.
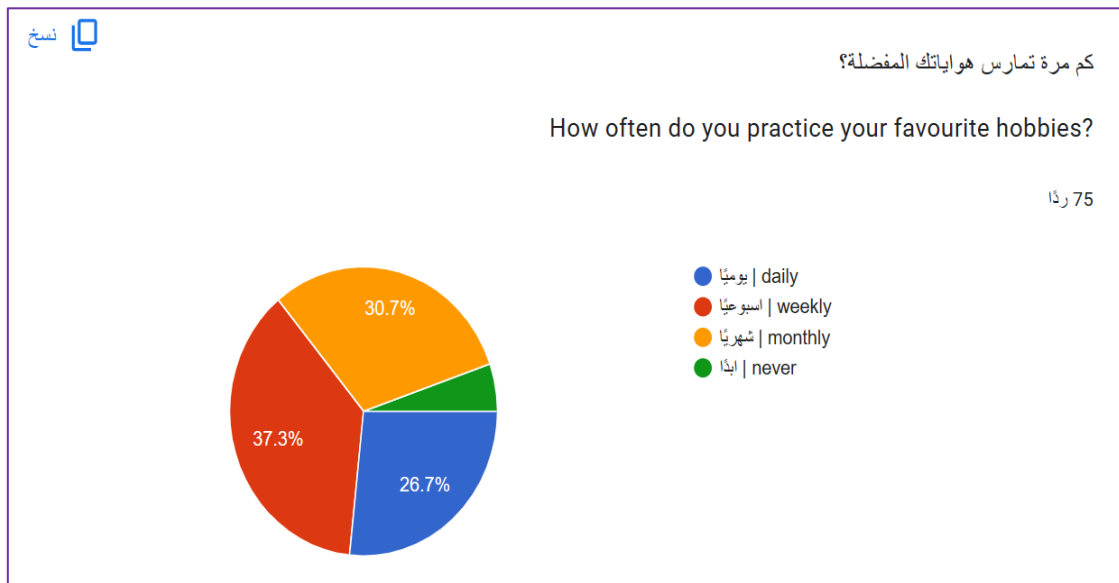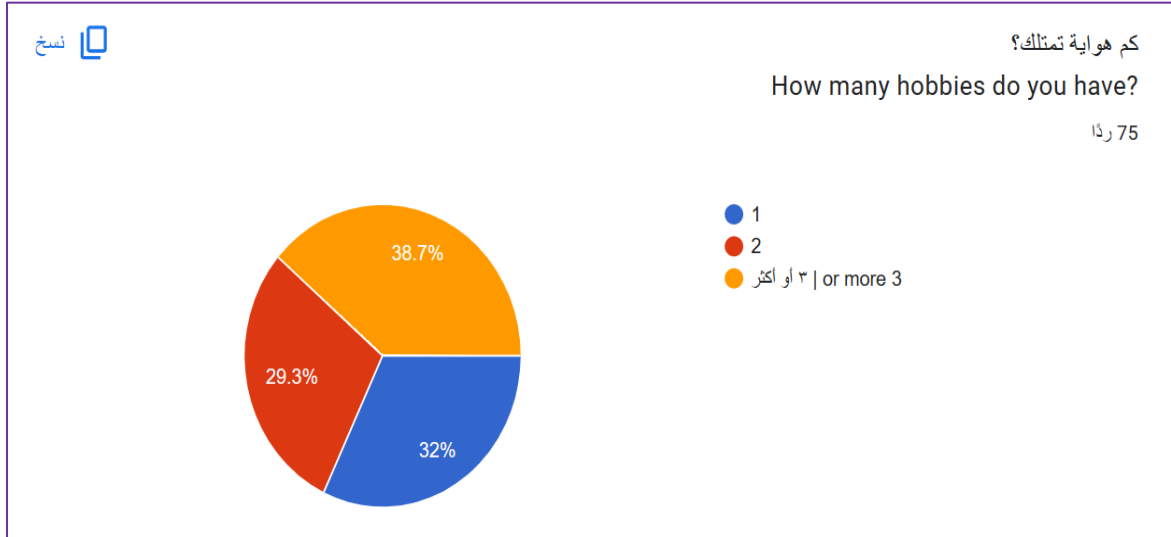
-The user must log in to their account.

Post-condition:

-The user joins the course successfully

Test Case ID	Test scenario	Test Steps	Test Data	Expected Result	Actual Result	Pass/Fail
1	Check the system's behavior when the user payment is approved.	- User logs into account. - Go to the communities from the home page. - choose a community. - click on "View courses". -click on "Register course". -click on "Make Payment".	Username: Vanilla Password: V_cpcs351 Payment info (card number, etc...)	The user registers in the course successfully, and the system displays "you have joined (course name) successfully".	As expected.	Pass.
2	Check the system's behavior when the user payment rejected.	- User logs into account. - Go to the communities from the home page. - choose a community. - click on	Username: Vanilla Password: V_cpcs351 Payment info (card	The system displays an error message: "Payment not approved".	As expected.	Pass.

		"View courses". -click on "Register course". -click on "Make Payment".	number, etc.)			

Appendix 1

Survey answers went as follow:

How many hobbies do you have?
كم هواية تمتلك؟
75 ردًا

- 1
- 2
- ٣ أو أكثر | or more 3

38.7%
29.3%
32%

كم مرة تمارس هواياتك المفضلة؟
How often do you practice your favourite hobbies?
75 ردًا

- يوميًا | daily
- اسبوعيًا | weekly
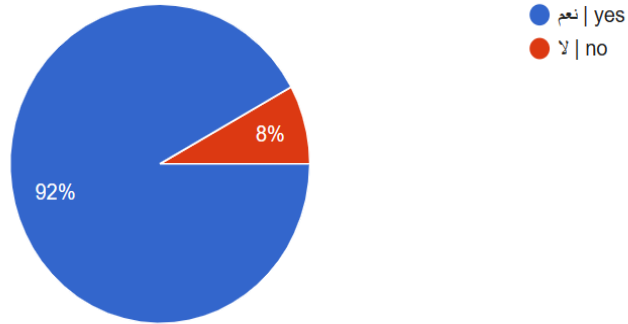- شهريًا | monthly
- ابدًا | never

30.7%
37.3%
26.7%

هل ترغب بتطوير مهاراتك في هوايتك المفضلة؟

do you wish to develop your skills in your favourite hobbies ?
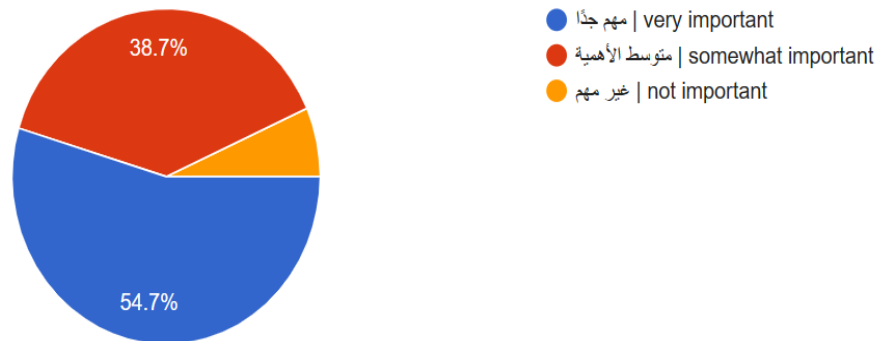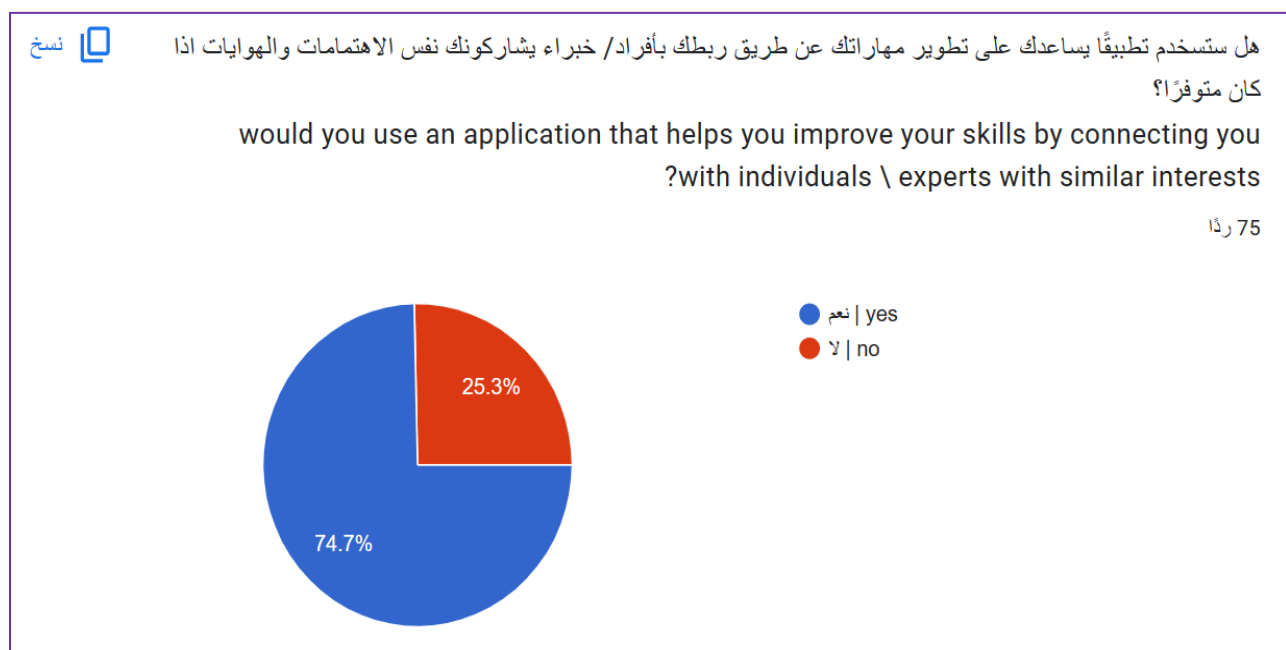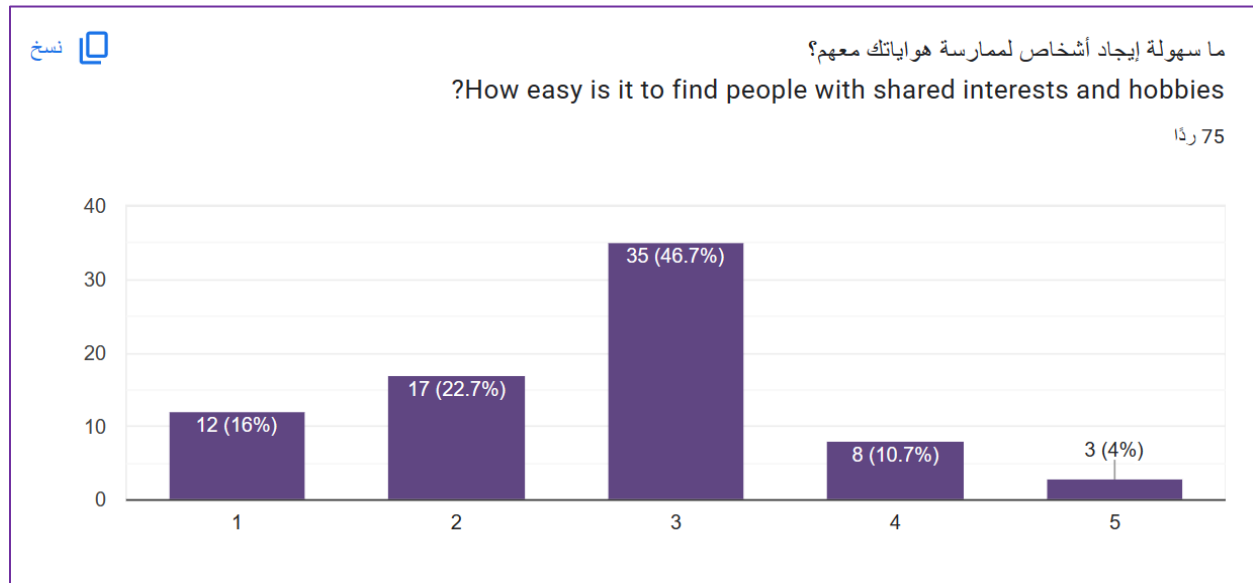
75 ردًا

- نعم | yes
- لا | no

8%

92%

ما أهمية إيجاد أشخاص لتمارس هواياتك معهم؟

?How importatn is it to you to connect with other individuals with shared interests

75 ردًا

- مهم جدًا | very important
- متوسط الأهمية | somewhat important
- غير مهم | not important

38.7%

54.7%

1 is very difficult, 5 is very easy.

ما سهولة إيجاد أشخاص لممارسة هواياتك معهم؟

?How easy is it to find people with shared interests and hobbies

75 ردًا

هل ستستخدم تطبيقًا يساعدك على تطوير مهاراتك عن طريق ربطك بأفراد/ خبراء يشاركونك نفس الاهتمامات والهوايات اذا كان متوفرًا؟

would you use an application that helps you improve your skills by connecting you with individuals \ experts with similar interests?

75 ردًا

نعم | yes
لا | no

74.7%

25.3%

5 is high, 1 is low.

كم هي احتمالية أن توصي بتطبيق يربطك بأفراد يشاركونك نفس الاهتمامات لصديق أو احد أفراد العائلة؟
How likely are you to recommend an application that connects you with individuals who share similar interests to a friend or a family?

75 ردًا

6 (8%)   7 (9.3%)   8 (10.7%)   14 (18.7%)   40 (53.3%)