



UStudy Requirements Specifications

Version 1.0

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Project Overview

Purpose and Scope of this Specification

The aim of this student app is to unify students all over the country, and world. Communication, and rivalry is the key to development and success, so unifying all students in a common platform, helping them with group work, studying and exchanging materials, would help them reaching high levels.

Product/Service Description

UStudy, is a mobile application which includes a very large range of features and data useful for students and also teachers all over the country. Materials, notes, exercises, contests and groups can be created and added in this mobile application.

Accounts (of different type and advantages) can upload materials on the database of the app, filtered by the type of it.

Contests can be created and students can take part in them, based on the field and requirements.

Teachers can have a privileged account, where if they want, they can even open classes inside the application, invite the students respectively and manage the class (quizzes, exams and materials).

Students have some special points, based on their results on different contests, exams, etc.

Each range of points have their bonus advantages. Skilled students with many points can have access to the uploading of materials, creation of groups and even contests at some point.

USER CHARACTERISTICS

UStudy will include the interaction between three main users: the administrator, student and teachers. Administrator (admin): The administrator will have access to anything, he can add new materials or delete materials, edit, delete/register and manage every user. Teacher needs to login in and only then can add new materials, evaluate them, create classes and contents, view and read data and communicate. Student can view or write materials, take part in classes and contests, communicate with other users and manage profile information.

ASSUMPTIONS

- It is assumed that each user will be able to access the UStudy mobile application through a simple Internet connection via mobile device.
- It is assumed that the mobile devices used to access the system will have either iOS or Android operating systems.
- It is assumed that the data available on the UStudy application will be entirely confidential and available only for the admin.
- It is assumed that the UStudy will have access rights to all the data entered by the users as stated in the related Albanian law on data protection.

CONSTRAINTS

The system will potentially have the following constraints:

- Every user must log in and/or register with their email or username.

- The system requires internet connection in order to display and load the application sections and materials properly (with some offline exceptions like downloaded materials).
- Every user of the UStudy application must have basic knowledge on the usage of the mobile application.

DEPENDENCIES

- Every account registered on the UStudy should be linked to an existing email.
- The admin account cannot display a fully detailed list of the teachers, if there are no registered teacher via the email.
- The admin account cannot generate monthly and/or daily statistics based on user activity, pie charts on subjects and materials etc., if the users accounts and materials are not updated to provide the necessary data.
- The admin cannot view statistics on the user data if there are no registered users with fully updated profile details.
- This information system is strongly dependent on effective and efficient communication of the UStudy and the users.

Requirements

Functional Requirements

Req#	Requirement	Comments	Priority	Date	SME Reviewed/Approved
FR_1	The system is implemented as a mobile application used by three functional user modules: students, teachers, and administrators.	This will be the main platform of operation for all users.	High	23/04/2022	
FR_2	The administrator account must have all the privileges of the system. He will be able to generate real-time	The admin account has full access to all functionalities and can access them at any time.	High	23/04/2022	

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	details on the users and statistics provided by the data available on the system.				
FR_3	The system must provide the administrator the application users, with the right to register new ones.	This will help to add users manually if they struggle to register on their own.	Medium	23/04/2022	
FR_4	The system must provide the user with the option to write and upload materials on the application.	This will help other users to get more information regarding a subject.	High	23/04/2022	
FR_5	The system must provide the user the option to enter his personal details including any information.	This will help the users to be more recognizable.	High	23/04/2022	
FR_6	The user can register into the system with emails or their phone number.	This will help users that don't have an email the opportunity to register.	Medium	23/04/2022	
FR_7	The administrator, the teacher, and the student can log in to the system with a	This will make easier the process of logging in.	Medium	23/04/2022	

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	username and a password.				
FR_8	The administrator can register new teachers by providing important information such as Name Surname, Date of Birth, etc.	Admin can register manually a Teacher.	High	23/04/2022	
FR_9	The administrator has the right to delete the teacher account.	Admin can delete manually a teacher.	High	23/04/2022	
FR_10	The administrator has the right to delete the student account.	Admin can delete manually a student account.	High	23/04/2022	
FR_11	The administrator can view private messages and feedbacks sent from users.	Admin can see private messages that the users have written.	High	23/04/2022	
FR_12	The administrator can view the list of materials.	This will help the admin to get the needed materials for their needs.	High	23/04/2022	
FR_13	The administrator can generate statistics on a certain field/subject.	This will help the admin to make better decisions in the future regarding the subject.	High	23/04/2022	
FR_14	The administrator can generate statistics on	This will help the admin to make decisions	High	23/04/2022	

	the most wanted materials.	regarding that material.			
FR_15	The administrator can generate statistics on the number of user registrations on a weekly/monthly/yearly basis.	This will help the admin to see the progress of the application.	Medium	23/04/2022	
FR_16	The administrator can generate statistics on the most used materials the users have.	This will be helpful so the admin can choose different materials in the future.	High	23/04/2022	
FR_17	The administrator reports will have the option to export the data via an Excel file into the personal computer/	Will help the admin account to access the data of the system at any time, even when offline.	Low	23/04/2022	
FR_18	The administrator can change only his own password in the Settings tab.	Admin will have the option to change their password.	High	23/04/2022	
FR_19	The administrator can send and receive a personal message to every user of the system.	This will help in the relationship between the user – and admin.	High	23/04/2022	

FR_20	The administrator can generate statistics on the daily/weekly/monthly usage.	This will help the admin to see the app usage.	High	23/04/2022	
FR_21	The administrator has the right to see only the user personal details.	This will help the admin when business law is involved.	High	23/04/2022	
FR_22	The administrator can see the description and the information for every material that is registered.	This will help the admin during conversations with the user to recommend subjects and materials.	High	23/04/2022	
FR_23	The administrator can receive a notification when a material is not appropriate.	This will help the admin to decide if he/she wants to delete or edit the material.	High	23/04/2022	
FR_24	The teacher can view his/her own profile and make necessary edits and/or updates on the personal information he/she provides for the system	The teacher is responsible for updating his/her own profile information with correct data.	Medium	23/04/2022	
FR_25	The teacher can send and receive personal messages to the other teacher or the students.	This will help in the relationship between the student – and consultant or teacher -teacher.	Medium	23/04/2022	

FR_26	The teacher can see materials and their information.	This will help the teacher to give recommendations.	High	23/04/2022	
FR_27	The teacher can see student reviews for a material.	This will help the teacher to give proper recommendations.	High	23/04/2022	
FR_28	The teacher can change only his password in the Settings section.	Teachers will have the option to change their passwords.	High	23/04/2022	
FR_29	The teacher can see materials fields, subjects and list of all of them.	This will help the teacher to know more about the data in the application.	Medium	23/04/2022	
FR_30	The students can communicate with each other too (GroupChats can be created).	This will help the students to get in touch with each other easily.	High	23/04/2022	
FR_31	The teacher/student can deactivate his/her account.	If for any reason a teacher or student is not working or doesn't want her profile anymore, he/she should delete his account.	High	23/04/2022	

Non – Functional Requirements

Product Requirements

Usability Requirements

Efficiency

- ❖ The mobile application would be very efficient, meaning that the user will get what they want quickly and with few or no user errors.
- ❖ Every element on the application would be understandable and clearly labelled.

Effectiveness

- ❖ The application would be effective, meaning that it will be simple, easy to learn and understand.
- ❖ Every option that is on the application will be explained in an instruction file to eliminate ambiguities.
- ❖ Every error message would be clear and understandable for each user.
- ❖ The language of use would be simple.

Error Tolerance

- ❖ The application would have a low error rate, meaning that the user can easily recover from an error.
- ❖ The application will have the option "redo" so the users can have the opportunity to reset what they might have done.
- ❖ Every option would be clear and distinct.

Memorability

- ❖ The application would be memorable, meaning that the user will not have difficulties using it after returning after a period of time.
- ❖ Every icon will be labelled which means the user will not be confused.

Efficiency Requirements

Performance Requirements

UStudy is a mobile application that works only with an internet connection (some offline features included), which means that having a stable internet connection is one of the main points to getting all the desired facilities that the user might want.

The number of users that have opened the application at the same time, the server hardware, and the storage space determine the system performance.

The user's performance requirement is that the mobile application should be created as lightweight software that can run on nearly any platform.

Space Requirements

Using Firebase as our database we will not worry too much about the space. The Firebase Realtime Database can be accessed directly from a mobile device; there's no need for an application server. Security and data validation are available through the Firebase Realtime Database Security Rules, expression-based rules that are executed when data is read or written. We can handle 100 products and millions of materials and users without having any problem.

Dependability Requirements

Monitoring

Firebase Performance Monitoring, a real time app performance monitoring tool, helps you keep a close eye on your app as you roll out new features or make configuration changes. Performance Monitoring also gives you control over your performance data with a customizable dashboard that makes it easy to focus on your most important metrics.

Gain insight into how your app performs from your users' point of view with a breakdown of trace and network data into dimensions like app version, country, device, and network type.

Understand the context in which performance issues take place and more easily address them using custom traces. You can also make use of automated traces, such as app startup time.

Maintenance

- The mobile application will be updated on a regular basis to ensure that all requests are processed in real time.
- The server should alarm users in the event of a system crash.
- During a crash, the system should be restarted by re-configuring the server as soon as possible.

Integrity

All of the information is kept private. The mobile application must provide its users with an open and secure communication platform that allows them to communicate with different modules. The administrator account is in charge of keeping the database up to date.

Security

Since the system is connected to the internet it has a higher risk of being attacked. That means that the access is granted to authorized users. Teachers will have more access than the students but less than the main admin who has the right to access the database.

The system will auto-generate a strong password for the user before registering.

Availability

The application would be available 24/7, meanwhile communicating directly with the manager or the employee would be available from 9 AM till 10 PM.

The application can be accessed in different platforms from any country in the world.

The application is available, only if the users have internet access.

Reliability

The application is expected to have a storage of at least 300GB SSD which will support the growing number of the users since the number of clients in the store is about 3300.

Organizational Requirements

Environmental Requirements

Since we are using Firebase services we won't have a physic server. We don't need to worry about maintaining the server or sending enough electrical energy to the server or making sure that server is operating at optimal temperature.

Operational Requirements

UStudy is a mobile-based platform that eases the communication between users (Student – Teacher, Student- Student, Teacher – Teacher). The main operations that will be available to the user accounts are as follows:

- ❖ User Personal information
- ❖ View Materials uploaded
- ❖ Upload Materials
- ❖ Manipulate Data (depending on many factors)
- ❖ Communicate

Administrators will have full access on every possible data registered in the application database. Their operations are as follows:

- ❖ Replying to the user questions.
- ❖ Generating statistics.

- ❖ Deleting and creating accounts.
- ❖ Change Data.

Development Requirements

a. Client- Side Programming

Client Side Programming includes everything that the user will see on the screen. Technologies that are going to be used are :

- Android Studio – Java (Android App Developing)
- Xapp – Swift (IOS App Developing)

b. Server-Side Programming

- To store the data : Firebase Database

External Requirements

Regulatory Requirements

"On Personal Data Protection" and associated sub-legal acts. The Privacy Policy explains the sorts of information that will be gathered and how it will be used. IP addresses of users to this mobile application, like those of other organizations and entities on the Internet, are used to diagnose problems and learn how the app is being used. IP addresses are not connected to any information that may be used to identify a person. Users' sessions will be logged, but their identities will remain anonymous.

Ethical Requirements

Users' personally identifiable information, such as an email address, name, surname, phone number, and other information, will never be sold or exchanged to other corporations or non-profit organizations. At the same time, if one or more of the following circumstances are met, our mobile application will send personally identifiable information about users to third parties if those conditions are applicable:

- Users have given their permission for the administrator to disseminate the information.
- By current legislation, court orders, or an act of a public or regulatory body, the administrator is asked or permitted to provide the information above mentioned.
- The administrator discloses the information to safeguard property rights, the security of our apps, its users, and other individuals.

Legislative Requirements

Accounting Requirements

For the time being, no accounting requirements will be implemented due to the nature of the UStudy. If such changes occur in the future, the criteria will be updated.

Security Requirements

The personal information of every user of this system will be protected by the relevant legislation and legislative standards that are currently in place on Albanian soil. The Commission for Personal Data Protection, which is based in Albania, issues licenses to institutions, organizations, and/or corporations that allow them to manage personal and sensitive data about information system users. Personal information of each user shall be private and accessible only by the specified actors.

DOMAIN REQUIREMENTS

The UStudy application management system is designed to ensure that data is saved and manipulated in an efficient and clear manner, as well as that work on the management of materials, subjects, classes and any other data is completed neatly. This is a proposal for a student/class management system that saves time and resources by allowing you to search for any material and subject data in the shortest time possible. And, because the majority of activities are performed in the student system, practically all of the resources are widely used. Paper, personnel, and other resources are among the resources that have been reduced. The other aspect is for protecting information storage.

USER SCENARIOS

1. Opening Application – Successful Login

- 1.1. The user is shown the login view.
- 1.2. The user enters the username and the password.
- 1.3 The user clicks the login button.
- 1.4. If the credentials are correct the user is logged in.
- 1.5. He is redirected to the default view based on the account type.

2. Opening Application – Failed Login

- 2.1. The user is shown the login view.
- 2.2. The user enters the username and the password.
- 2.3. The user clicks the login button.
- 2.4. The credentials are not correct/there is a connection issue/or any other issue with the login process.
- 2.5 The user is not logged in.
- 2.6. The user is shown the reason for login failure.

3. Opening Application – Saved Credentials Successful Login

- 3.1. The user opens the application on a device.
- 3.2. There are saved credentials on the device.
- 3.3. The system auto logs in to the account.

4. Subject/Fields – Add Material Successful

- 4.1. The user is logged in.

4.2. The user clicks on "Materials/Subject" section.

4.3. The user clicks on "Add New Material".

4.4. The user is shown the form-based view of creating a new material.

4.5. The user fills the formular details.

4.6. The user clicks on "Add Material".

4.7. The system adds the material which is now available to all users.

4.8. A successful message is displayed.

5. Subject/Fields – Add Material Canceled.

5.1. The user clicks "Cancel"

5.2. The changes do not take effect.

5.3. The user goes back to the previous view.

6. Subject/Fields – Add Material Failed

6.1 If there is any error in form requirements/a connection issue/or any other exception the user is shown a detailed message.

6.2 The view does not change and the form details remain unchanged.

7. Subject/Fields – Delete Material Successful

7.1. The user is logged in.

7.2. The user clicks on the "Materials/MyMaterials" section.

- 7.3. The user chooses 1 or many materials.
- 7.4. The user clicks delete.
- 7.5. The materials are removed from the system.
- 7.6. A successful message is displayed.

8. Subject/Fields – Delete Material Failed

- 8.1. If there is any error/a connection issue/or any other exception the user is shown a detailed message.
- 8.2. The view and the selection does not change.

9. Subject/Fields – Edit Material Successful

- 9.1. The teacher/admin is logged in.
- 9.2. The teacher/admin clicks on the "Subject/Fields" section.
- 9.3. The teacher/admin clicks on a material.
- 9.4. The teacher/admin clicks on "Edit Details".
- 9.5. The teacher/admin is shown the form-based view of editing the material.
- 9.6. The teacher/admin edits the formular details.
- 9.7. The teacher/admin clicks "Save Changes".
- 9.8. The system edits the material and reflects the changes.
- 9.9. A successful message is displayed.

10. Subject/Fields – Edit Material Canceled.

10.1. The teacher/admin clicks "Cancel"

10.2. The changes do not take effect.

10.3. The teacher/admin goes back to the previous view.

11. Subject/Fields – Edit Material Failed

11.1 If there is any error in form requirements/a connection issue/or any other exception the user is shown a detailed message.

11.2 The view does not change and the form details remain unchanged.

12. Classes – Create Class Successful

12.1. The teacher is logged in.

12.2. The teacher clicks on the "Classes" section.

12.3. The teacher clicks on "Create New Class".

12.4. The teacher is shown the form-based view of creating a new class.

12.5. The teacher fills the formular details.

12.6. The teacher clicks on "Create Class"

12.7. The system adds the class.

12.8. A successful message is displayed.

13. Classes – Create Class Cancelled

13.1. The teacher clicks "Cancel"

13.2. The changes do not take effect.

13.3. The teacher goes back to the previous view.

14. Classes – Create Class Failed

14.1 If there is any error in form requirements/a connection issue/or any other exception the user is shown a detailed message.

14.2 The view does not change and the form details remain unchanged.

15. Classes – Delete Class Successful

15.1. The teacher/admin is logged in.

15.2. The teacher/admin clicks on the “Classes” section.

15.3. The teacher/admin chooses 1 or many classes.

15.4. The teacher/admin clicks delete.

15.5. The class is removed.

15.6. A successful message is displayed.

16. Classes – Delete Class Failed

16.1 If there is any error/a connection issue/or any other exception the user is shown a detailed message.

16.2 The view and the selection does not change.

17. Classes – Edit Class Successful

- 17.1. The teacher/admin is logged in.
- 17.2. The teacher/admin clicks on the “Classes” section.
- 17.3. The teacher/admin clicks on a class.
- 17.4. The teacher/admin clicks on “Edit Class”.
- 17.5. The teacher/admin is shown the form-based view of editing the class.
- 17.6. The teacher/admin edits the formular details.
- 17.7. The teacher/admin clicks “Save Changes”.
- 17.8. The system edits the class and reflects the changes.
- 17.9. A successful message is displayed.

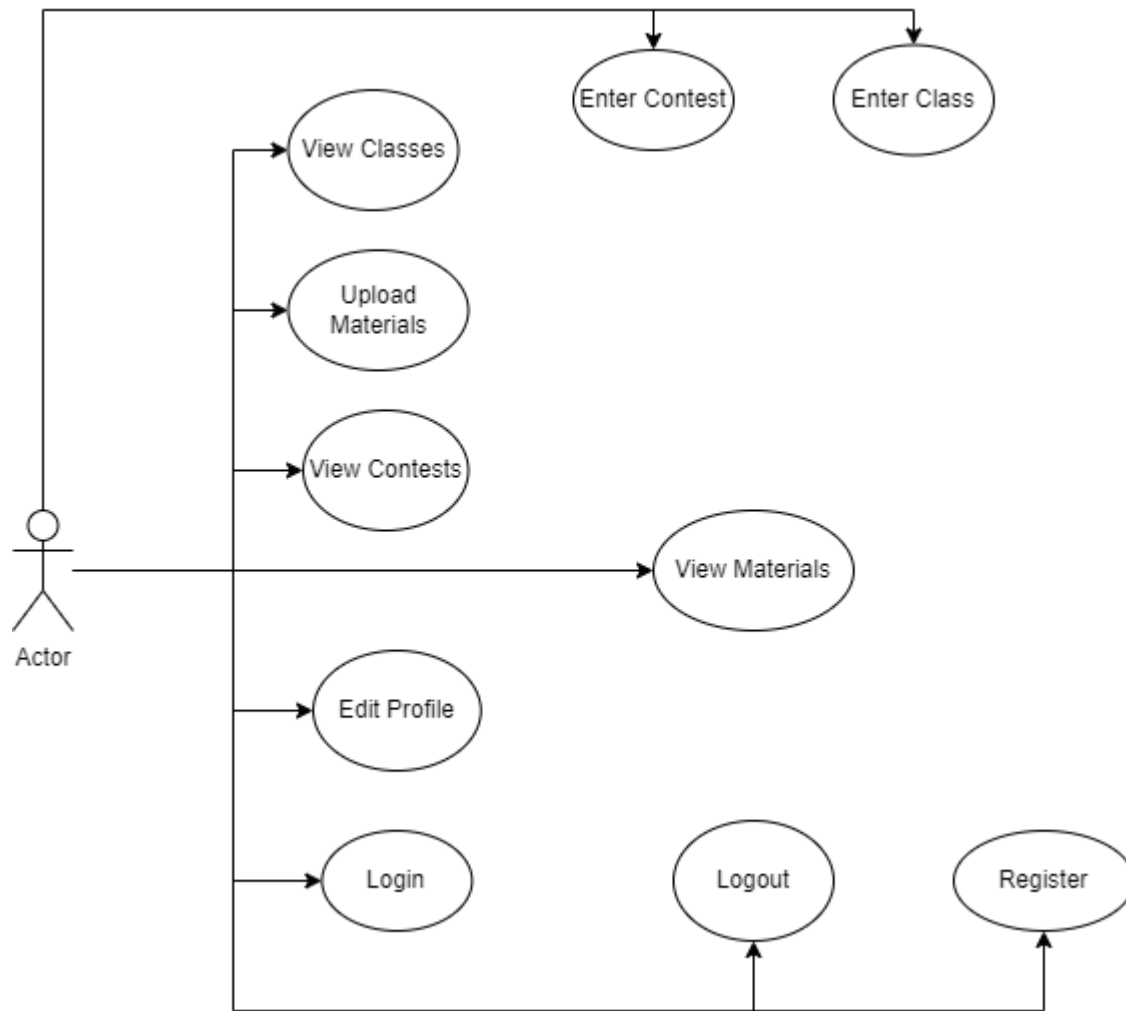
18. Classes – Edit Class Cancelled

- 18.1. The teacher/admin clicks “Cancel”
- 18.2. The changes do not take effect.
- 18.3. The teacher/admin goes back to the previous view.

USE CASE

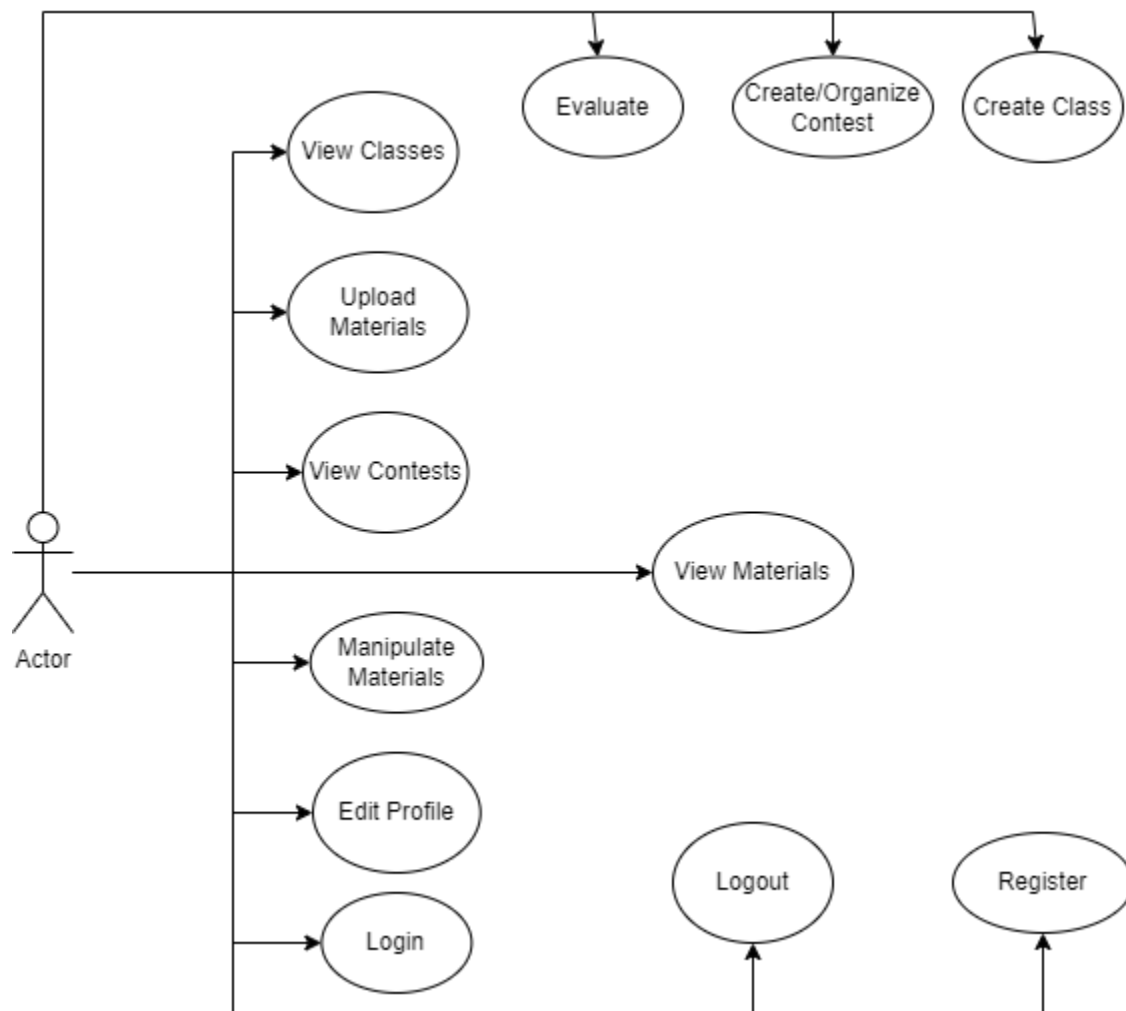
Use Case 1 : User (Student)

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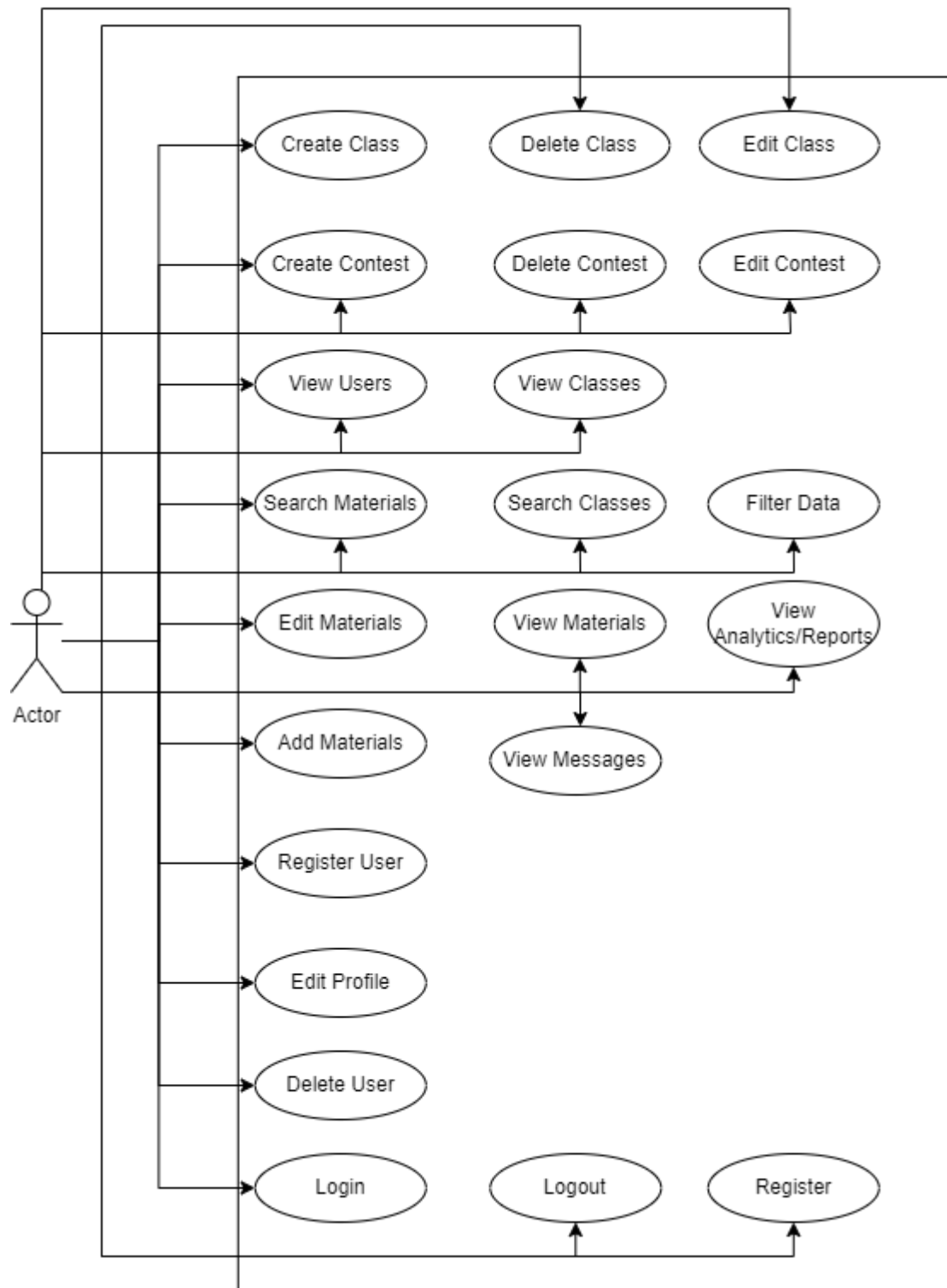
Use Case 2: User (Teacher)

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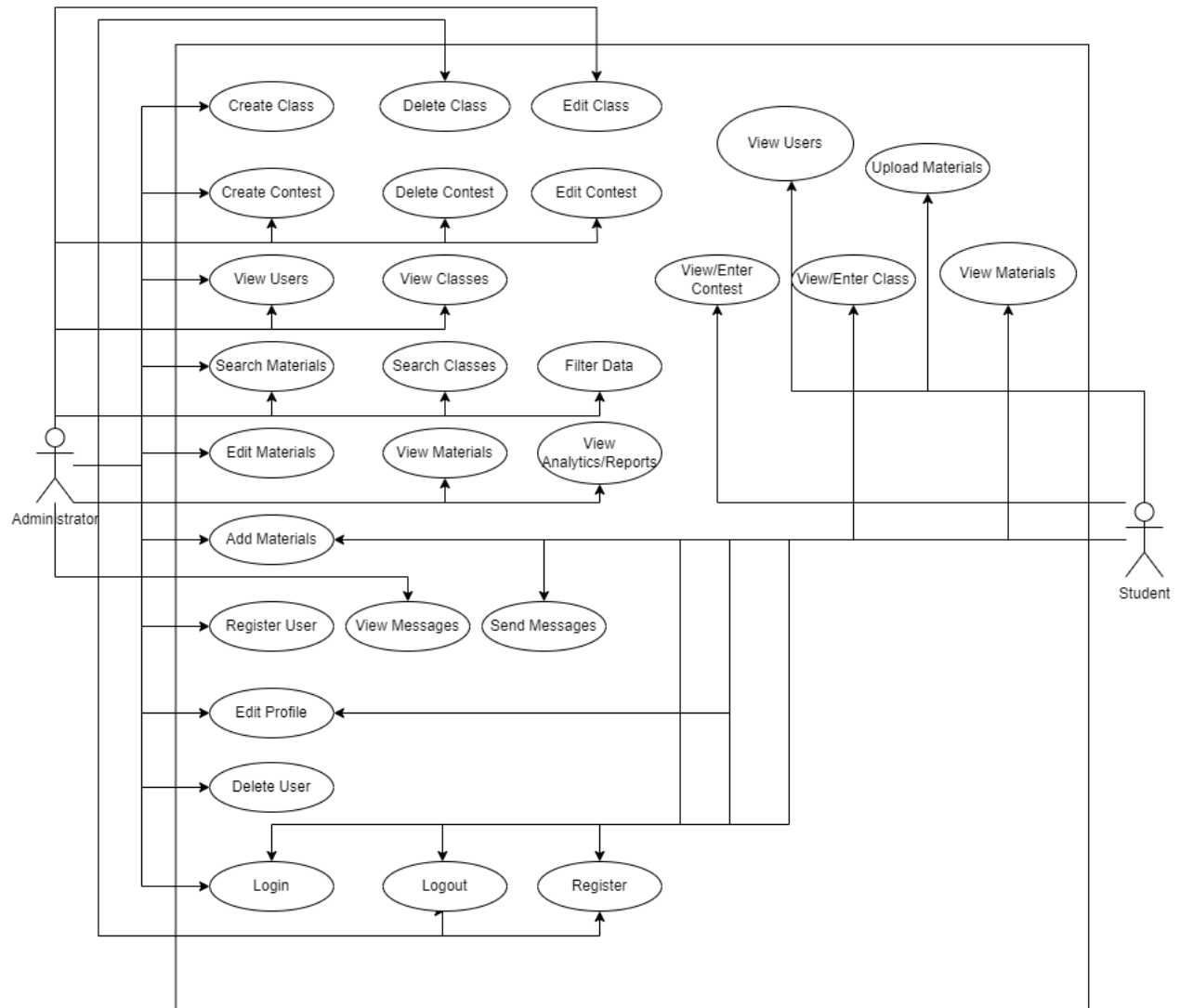


USE CASE 3: ADMINISTRATOR

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USE CASE 4: GENERAL USE CASE



DATA FLOW DIAGRAM

1. Level 0

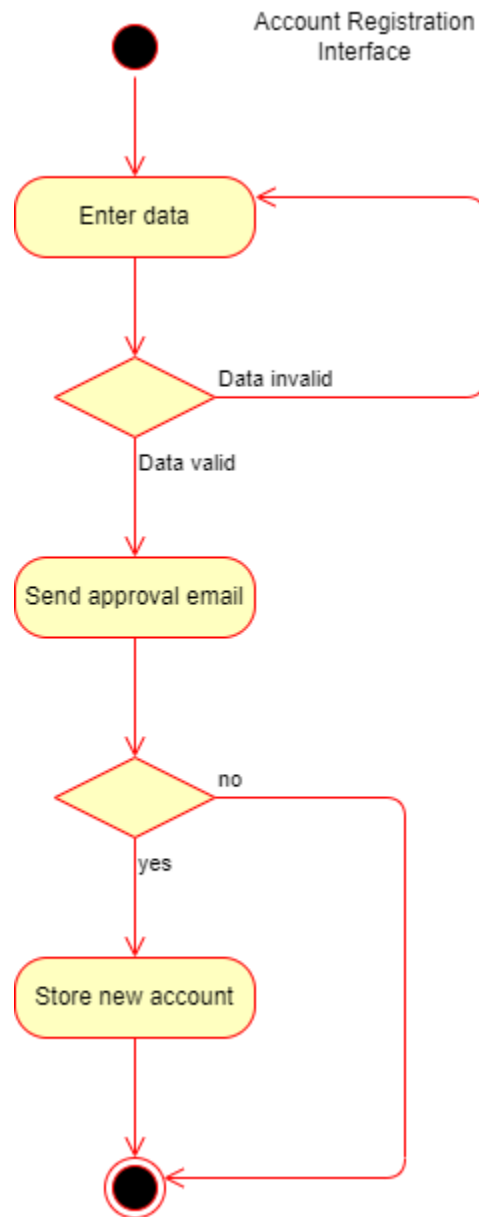


2. Level 1

ACTIVITY DIAGRAMS

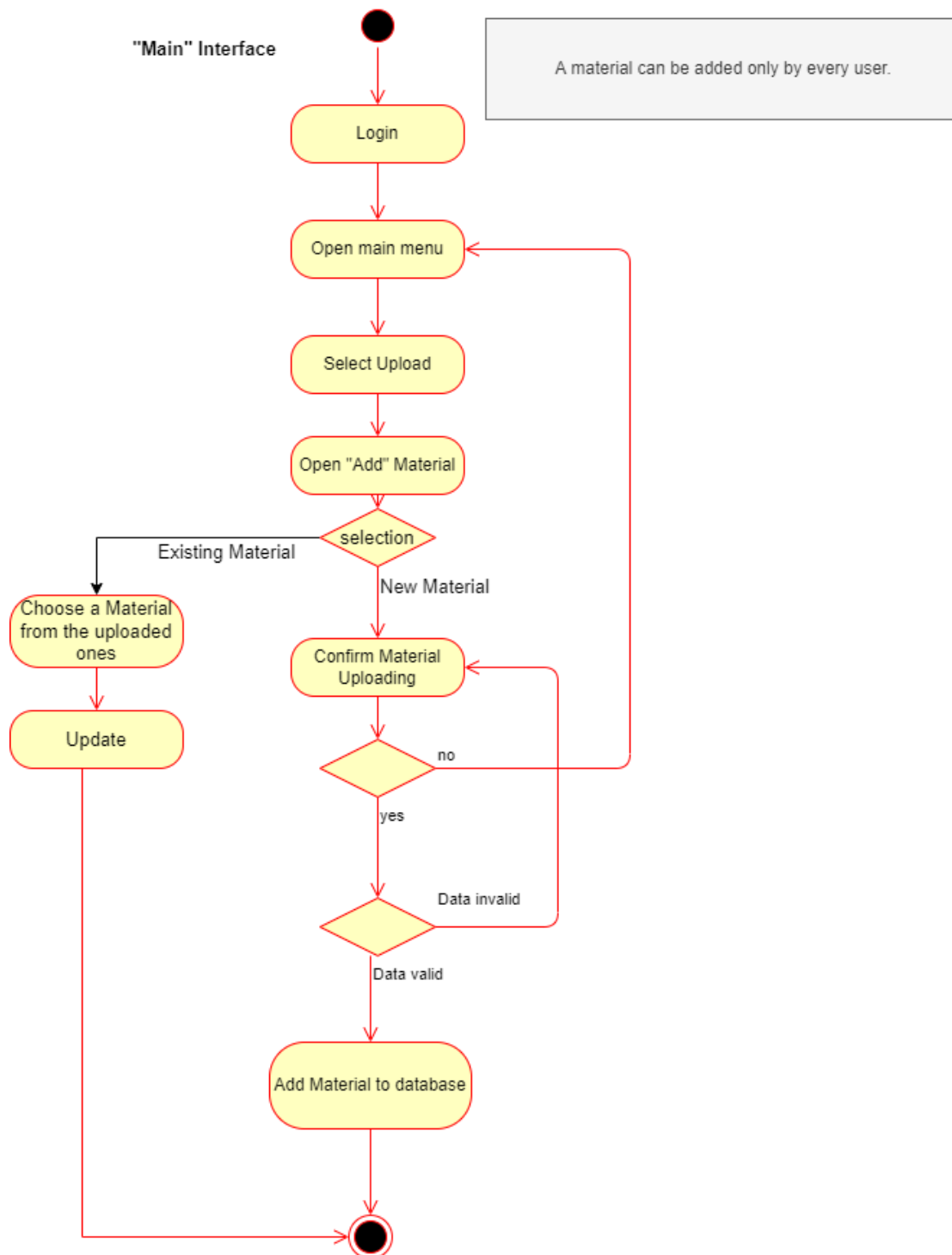
Activity Diagram 1 : User

1. AC_1.1 and AC_1.2 Register



Activity 1.2 Add Material

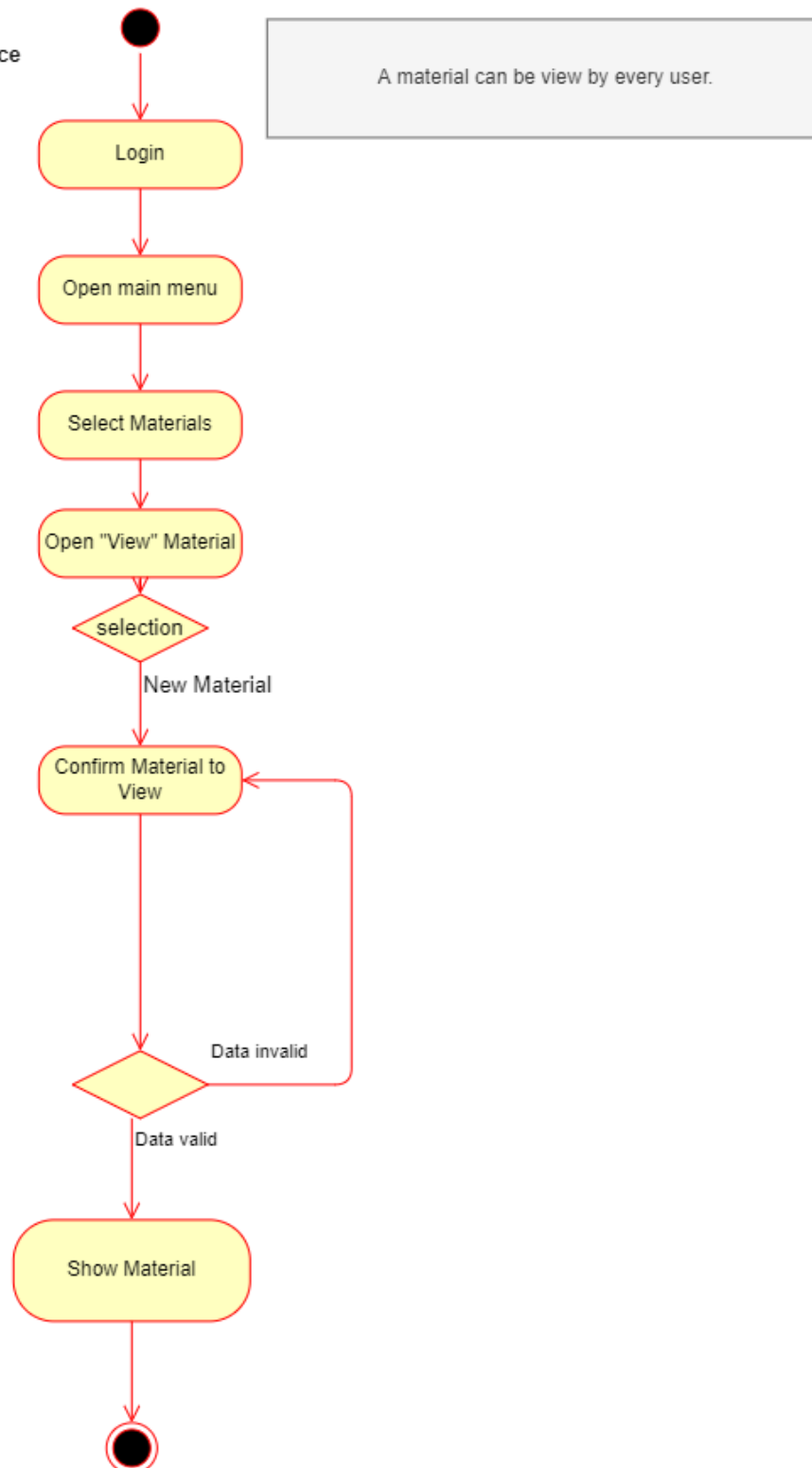
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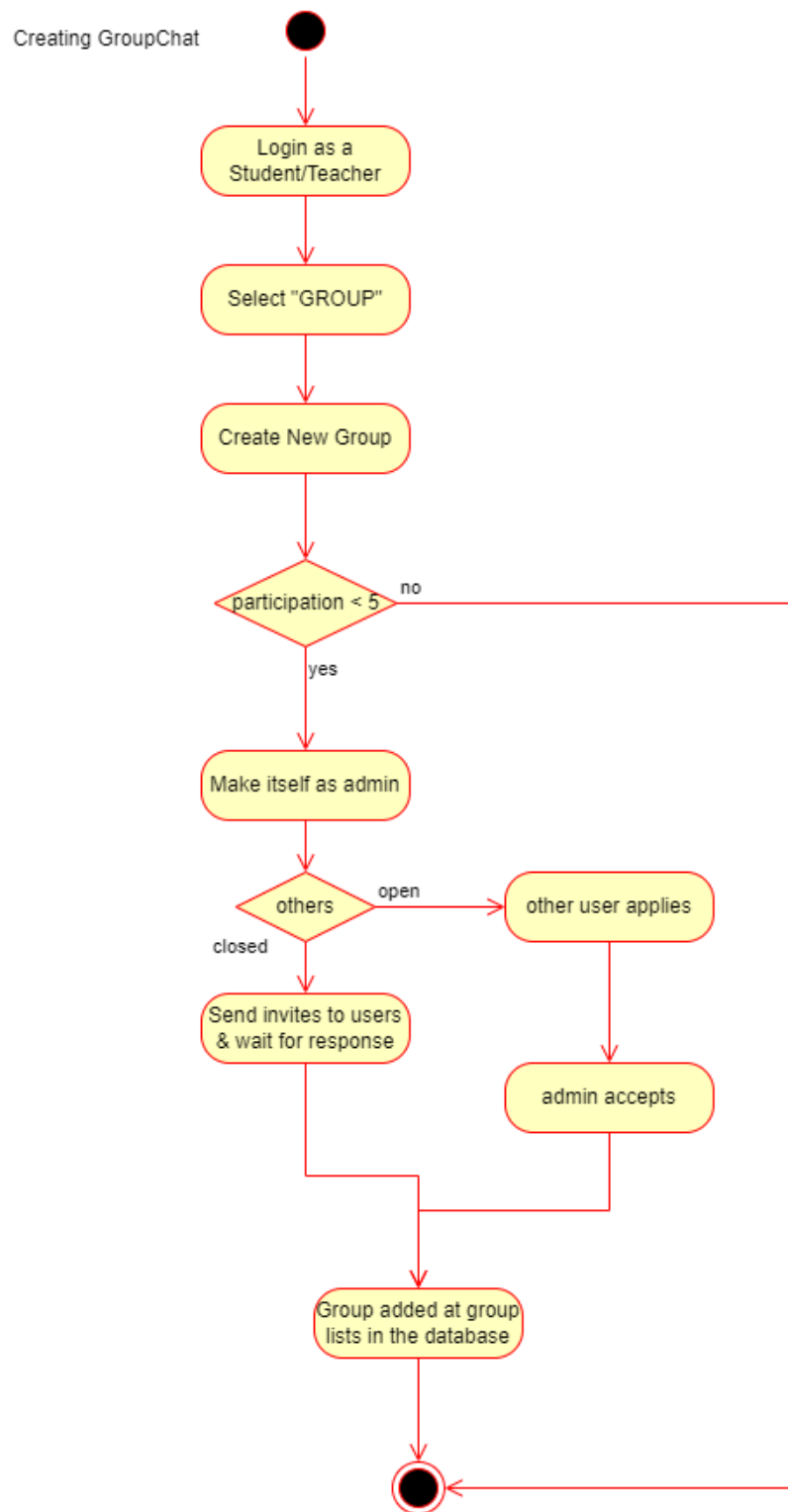
Activity 1.3 View Material

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"Main" Interface

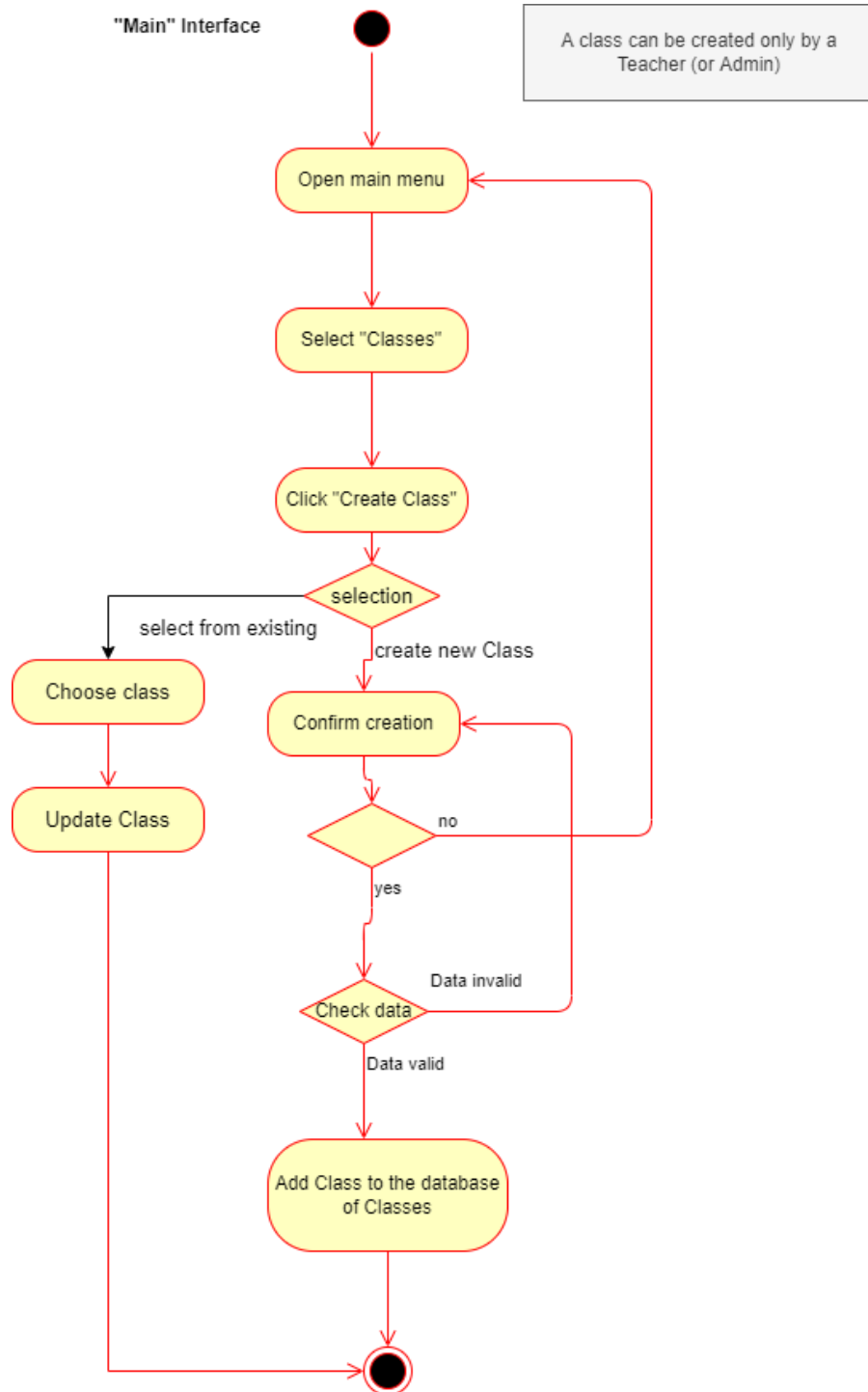


Activity 1.4 Create GroupChat

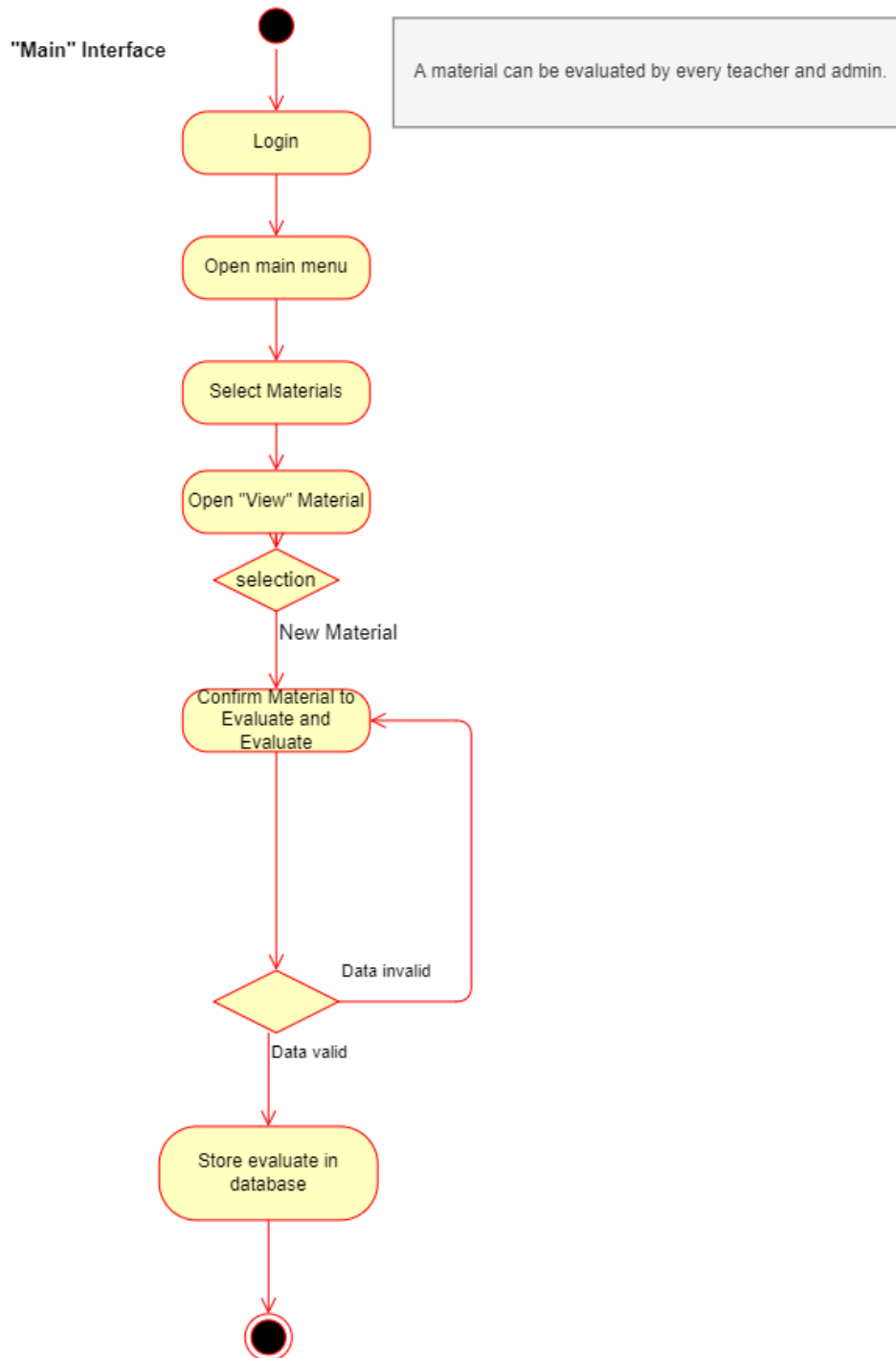


Activity Diagram 2: Teacher

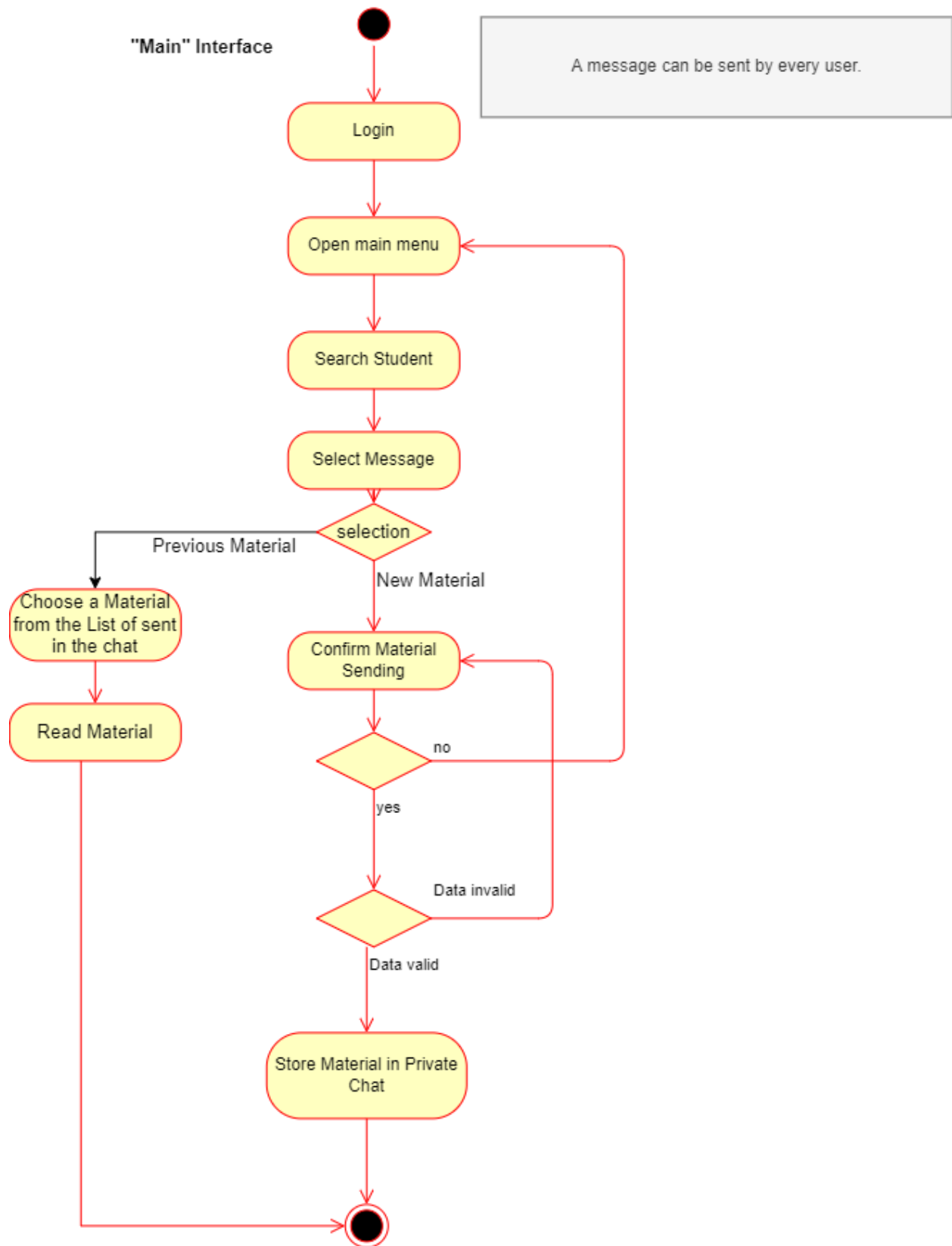
Activity 2.1 Create Class



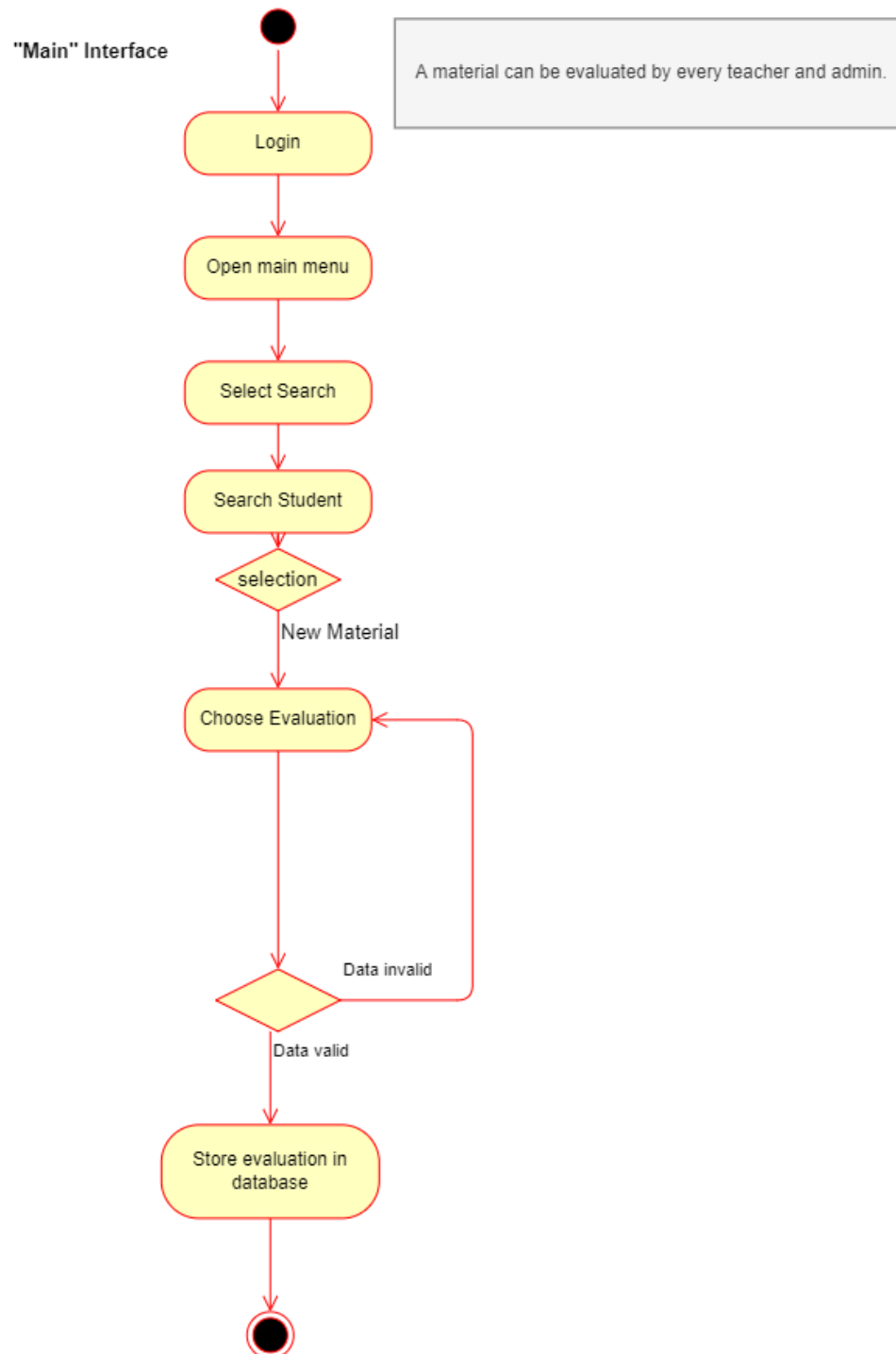
Activity 2.2 Evaluate Material



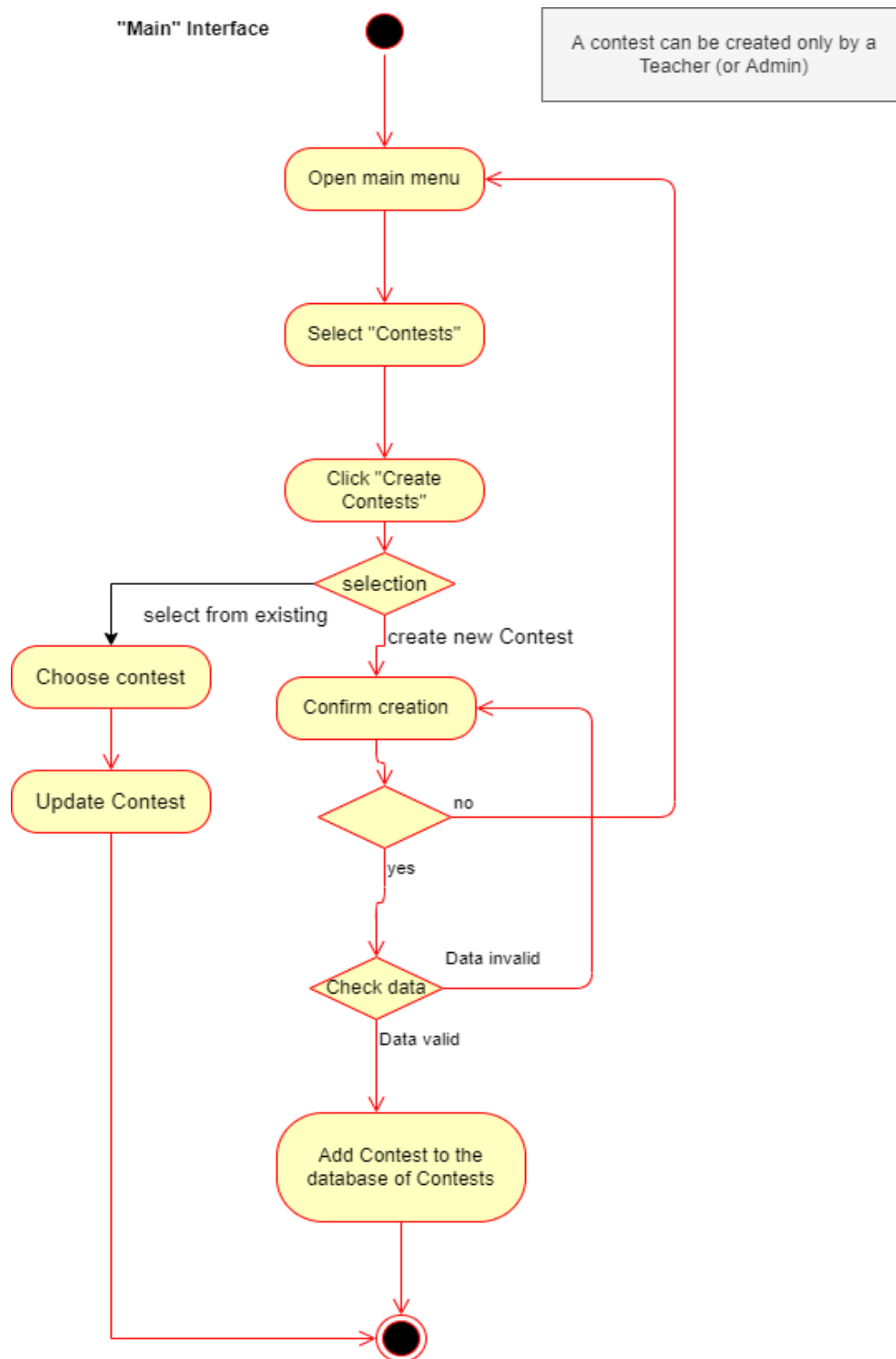
Activity 2.3 Evaluate Student



Activity 2.4 Communicate

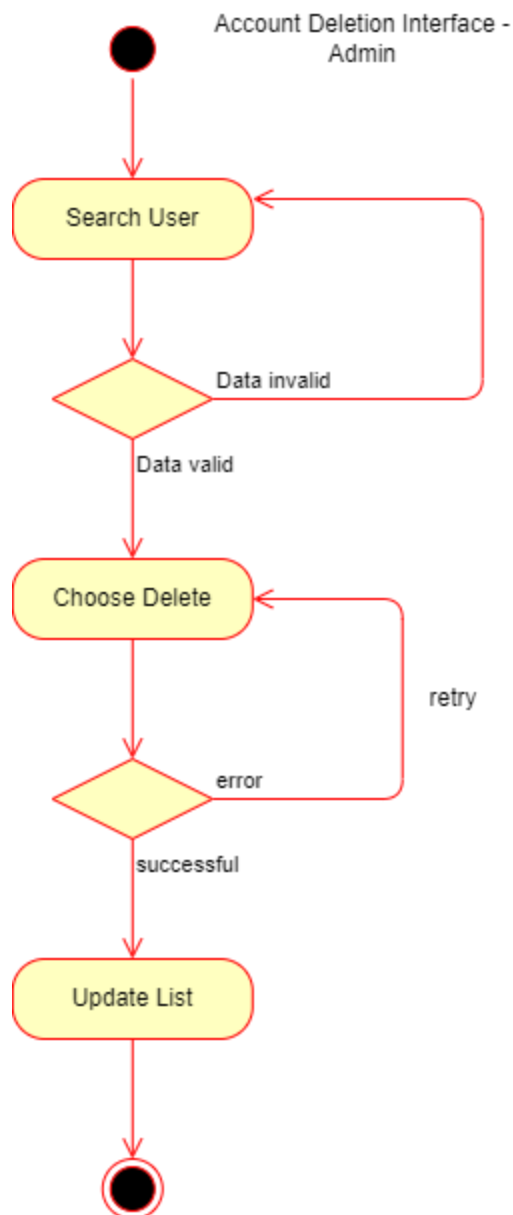


Activity 2.5 Create Contest

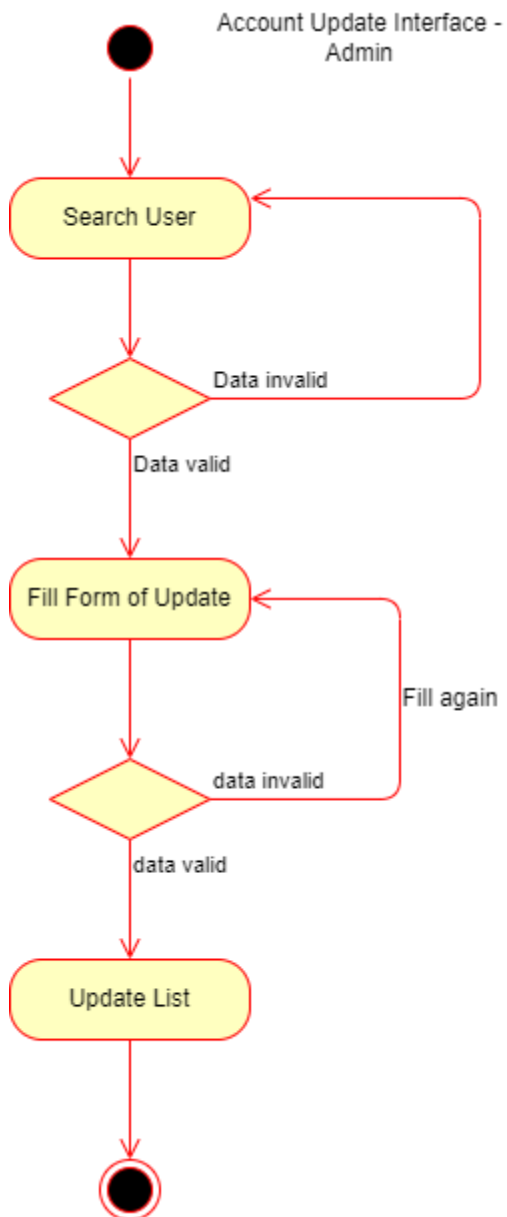


Activity Diagram 3 : Admin

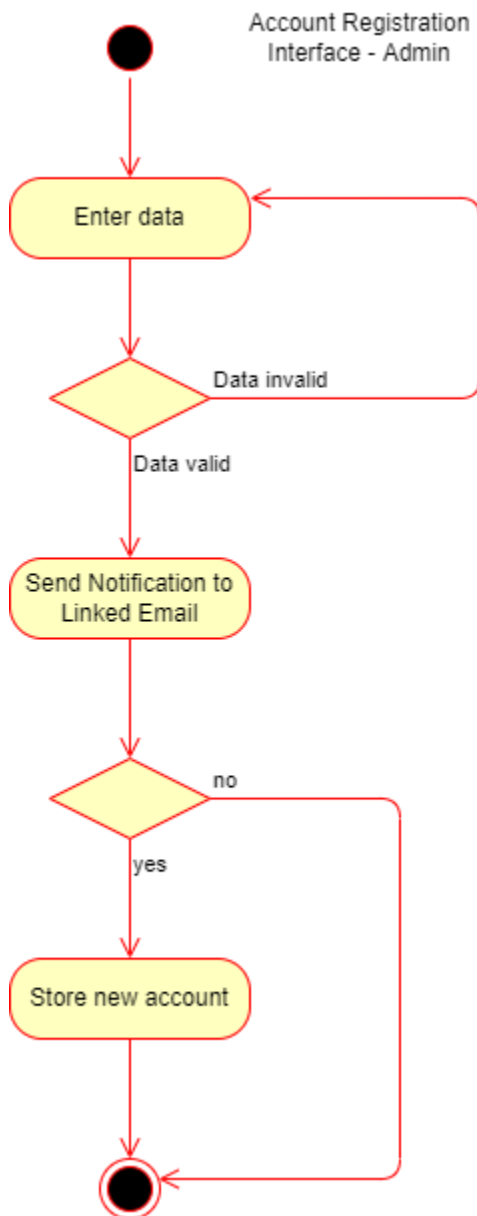
Activity 3.1 Delete User



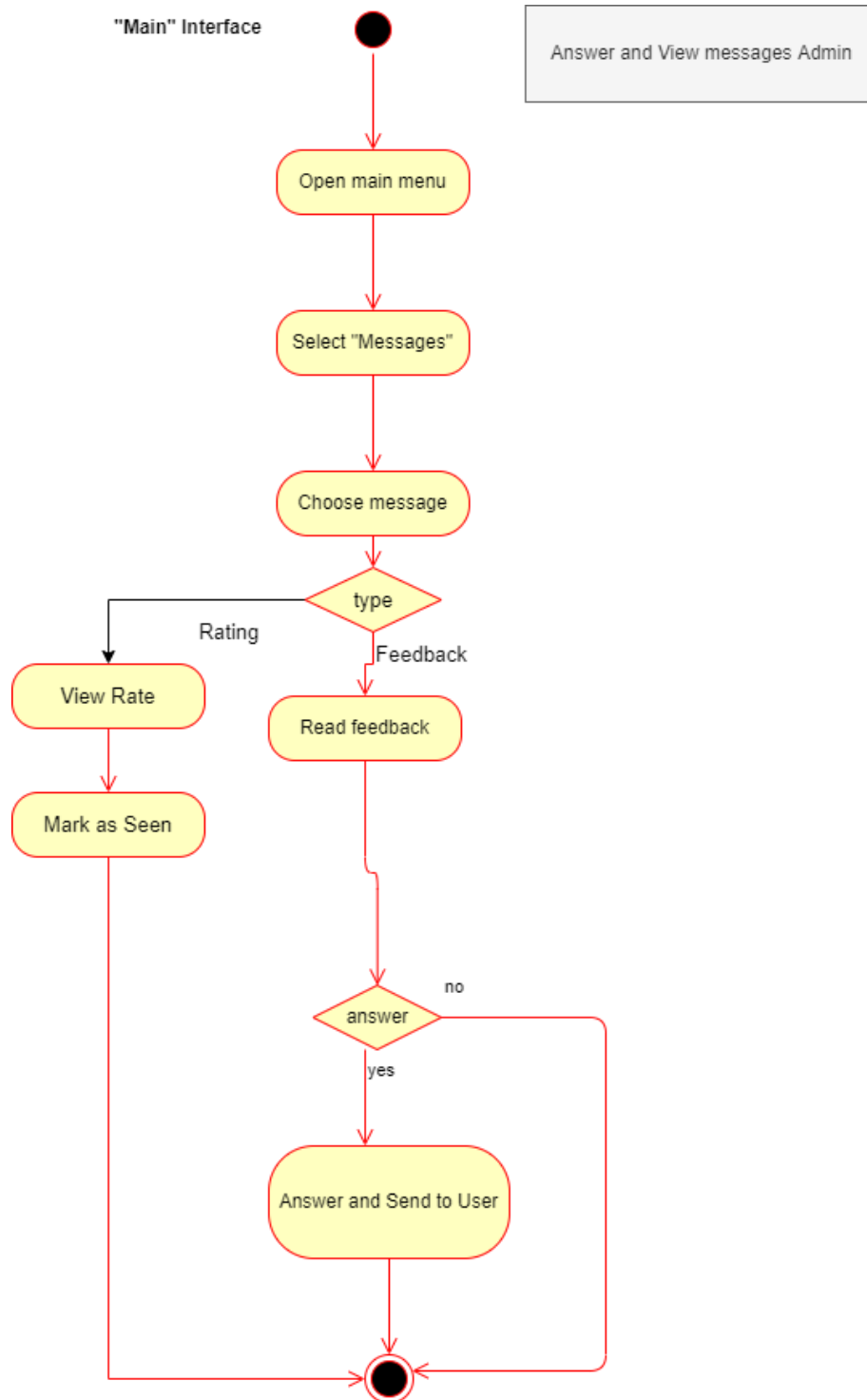
Activity 3.2 Update User



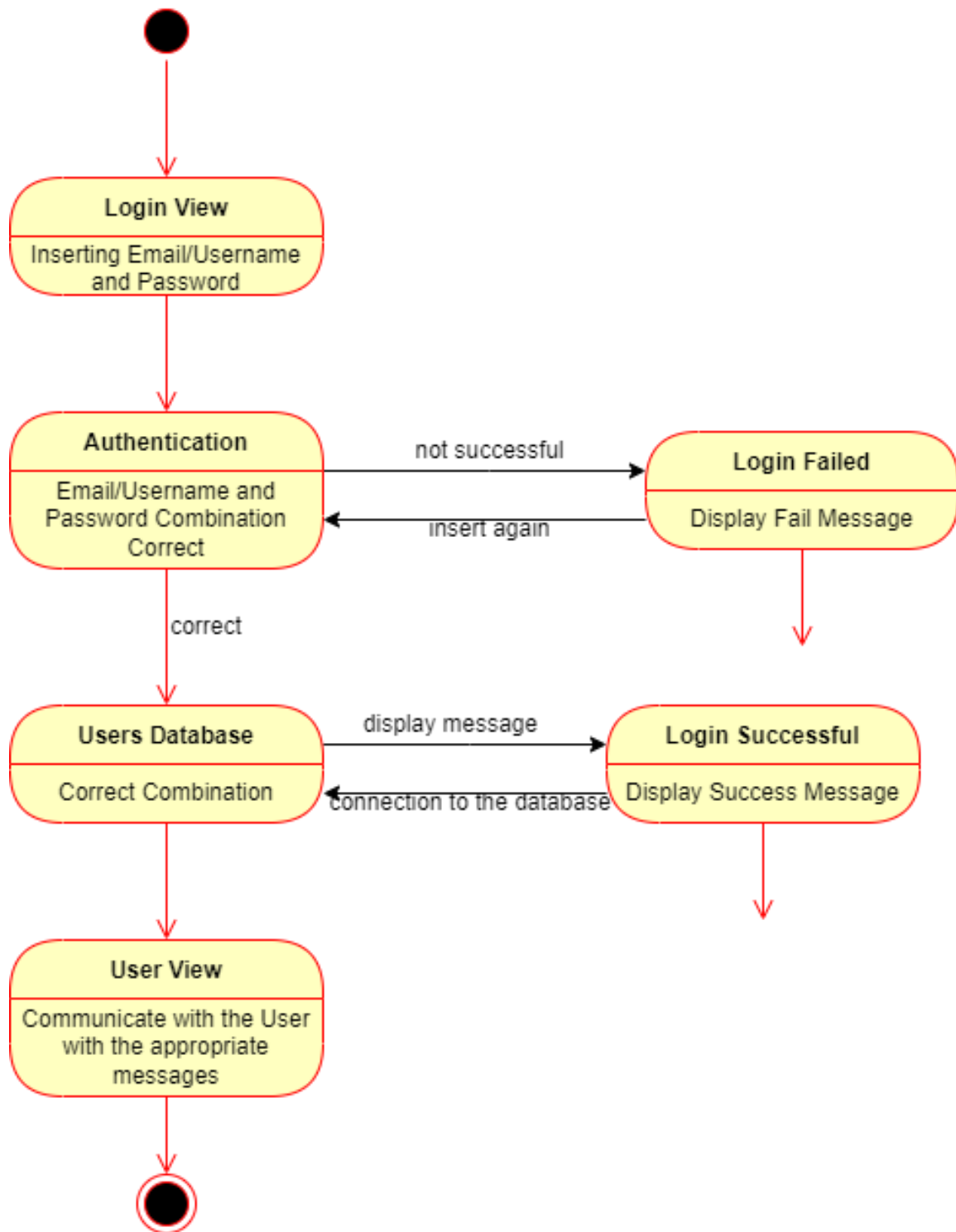
Activity 3.3 Register User



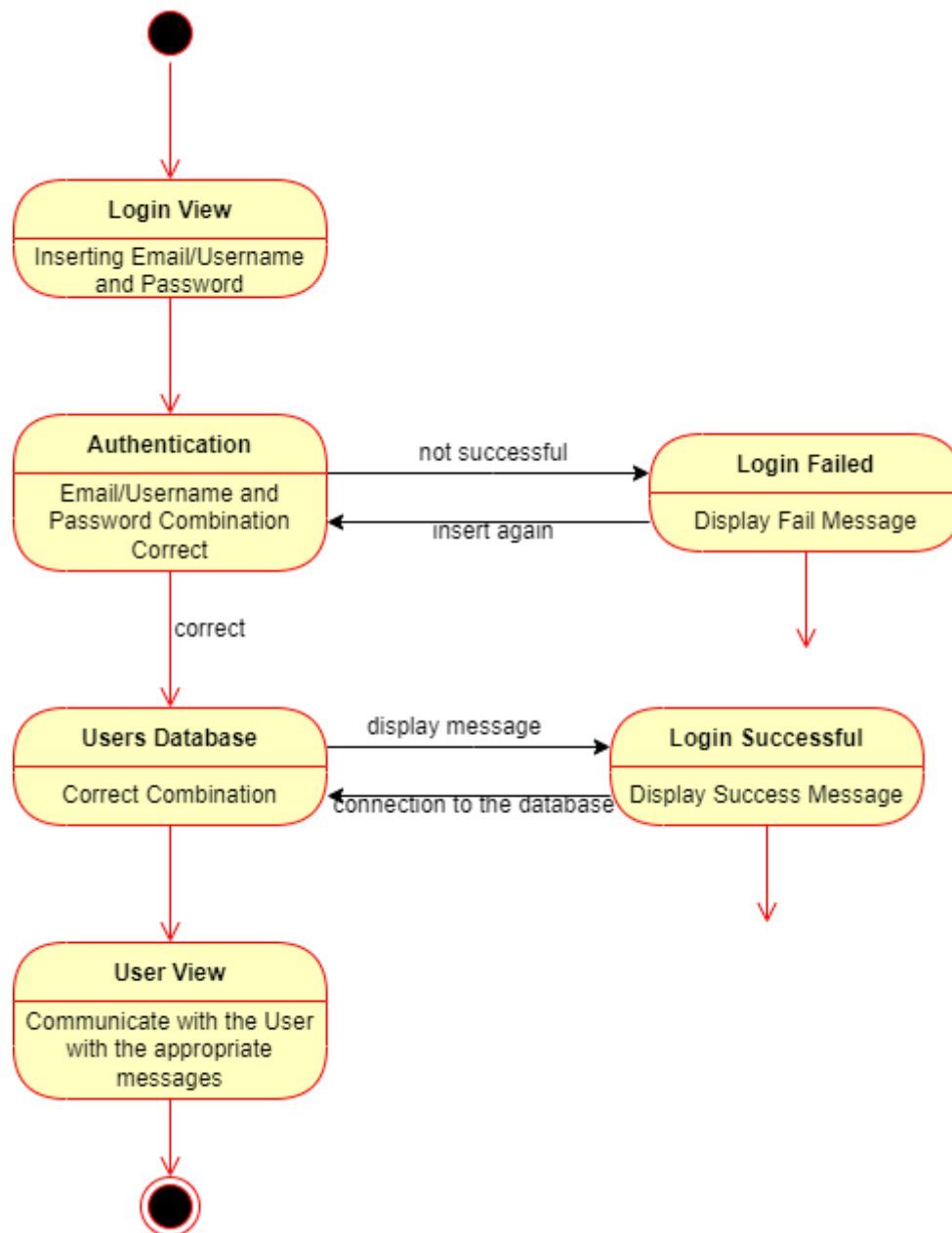
Activity 3.4 Read/Answer Messages/Feedbacks



STATE DIAGRAM 1

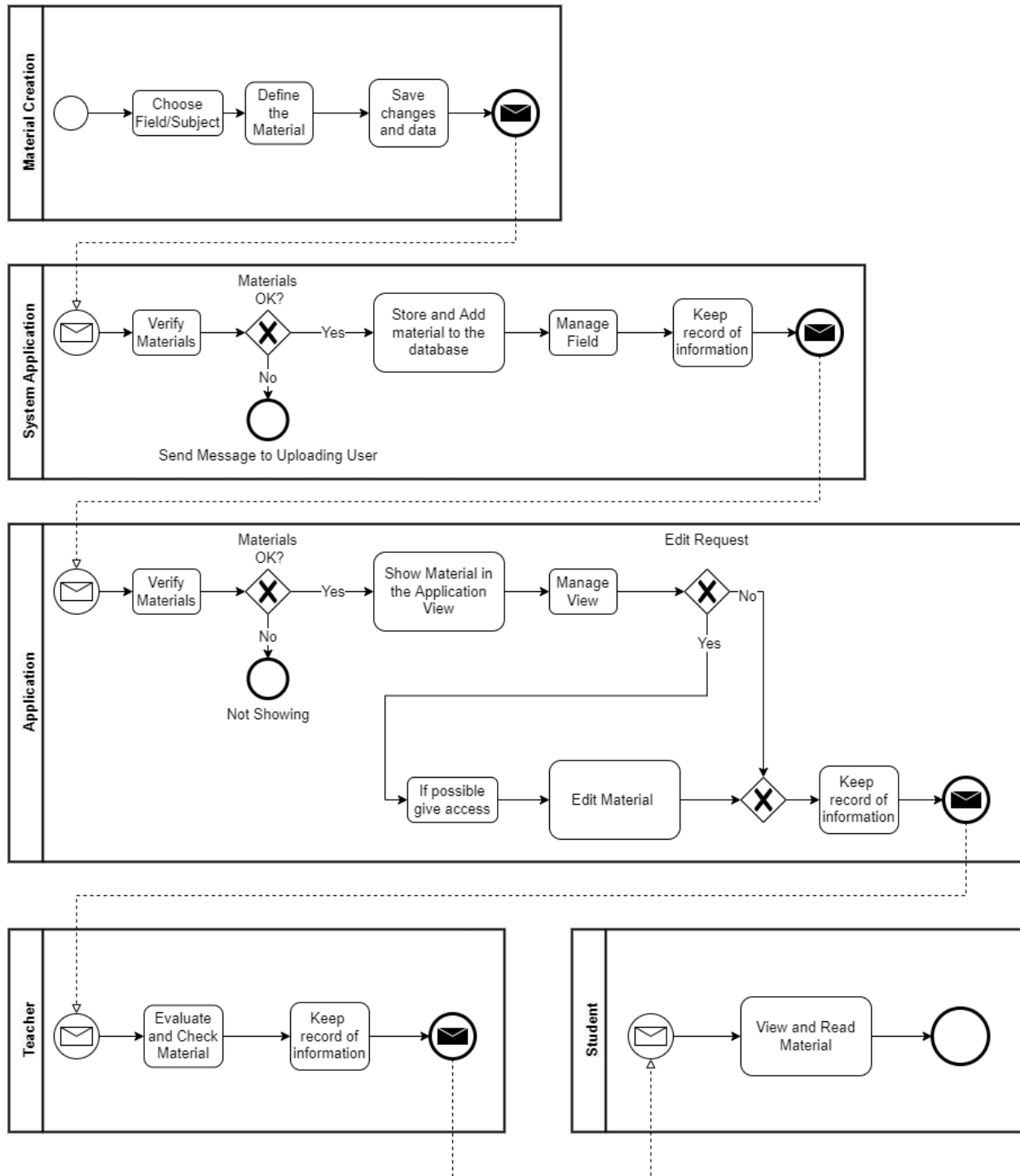


State Diagram 2



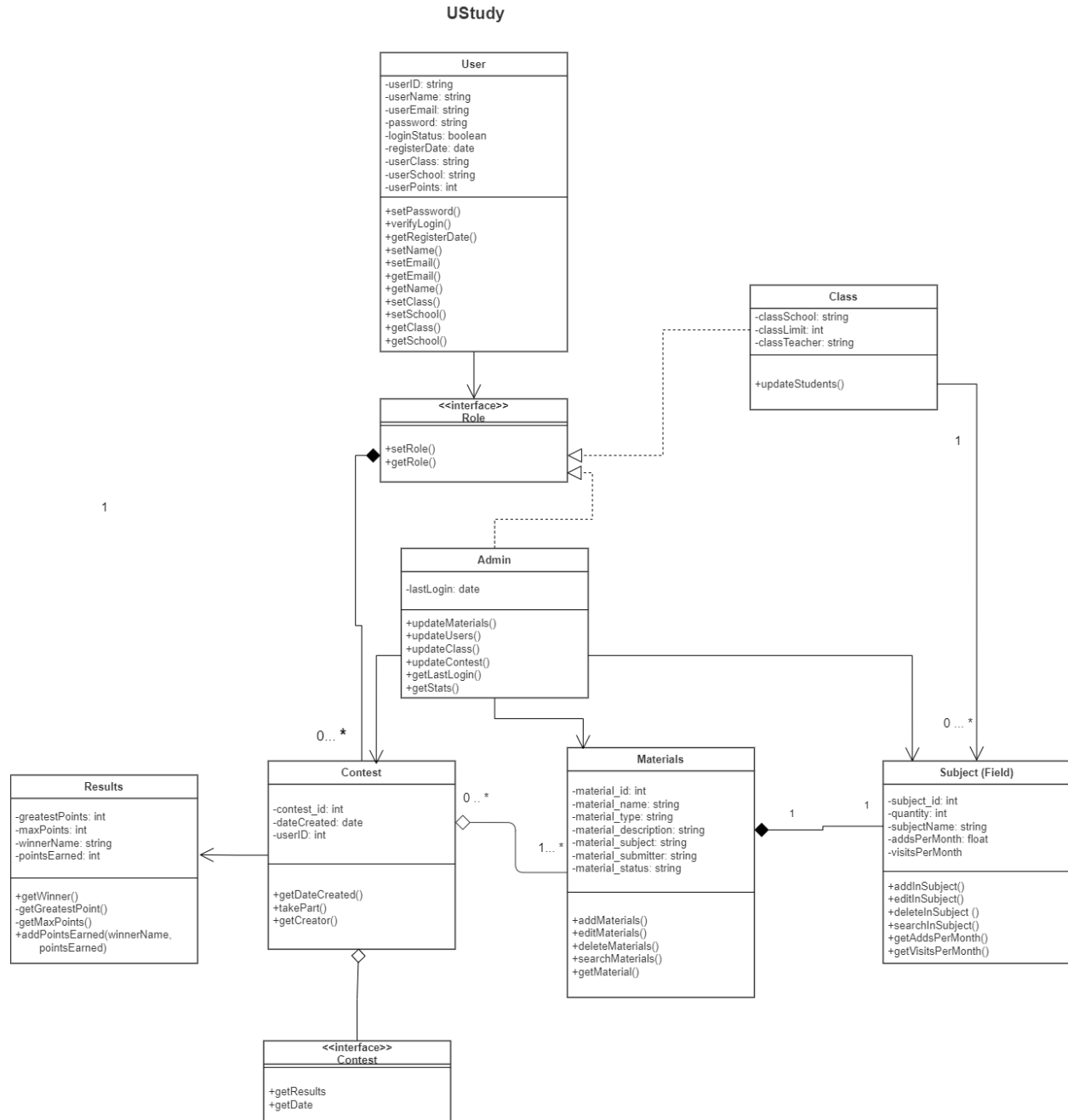
BPMN

BPMN UStudy

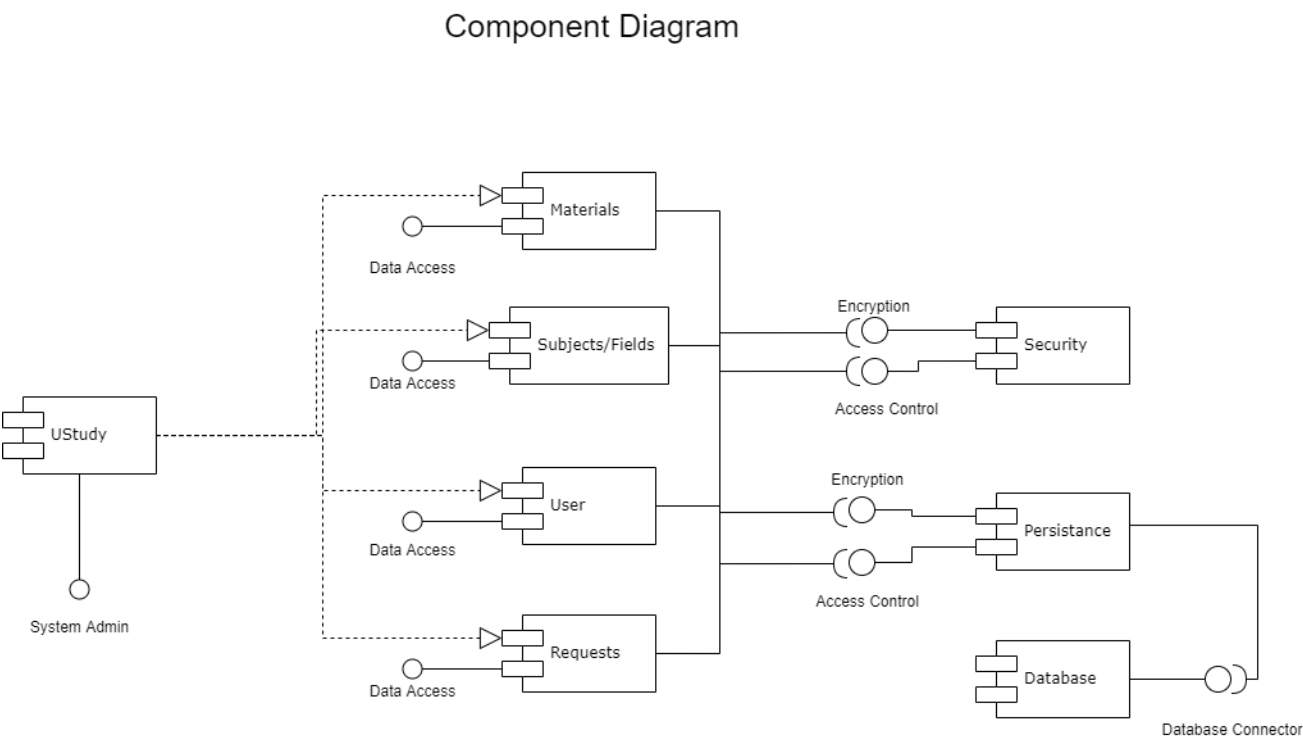


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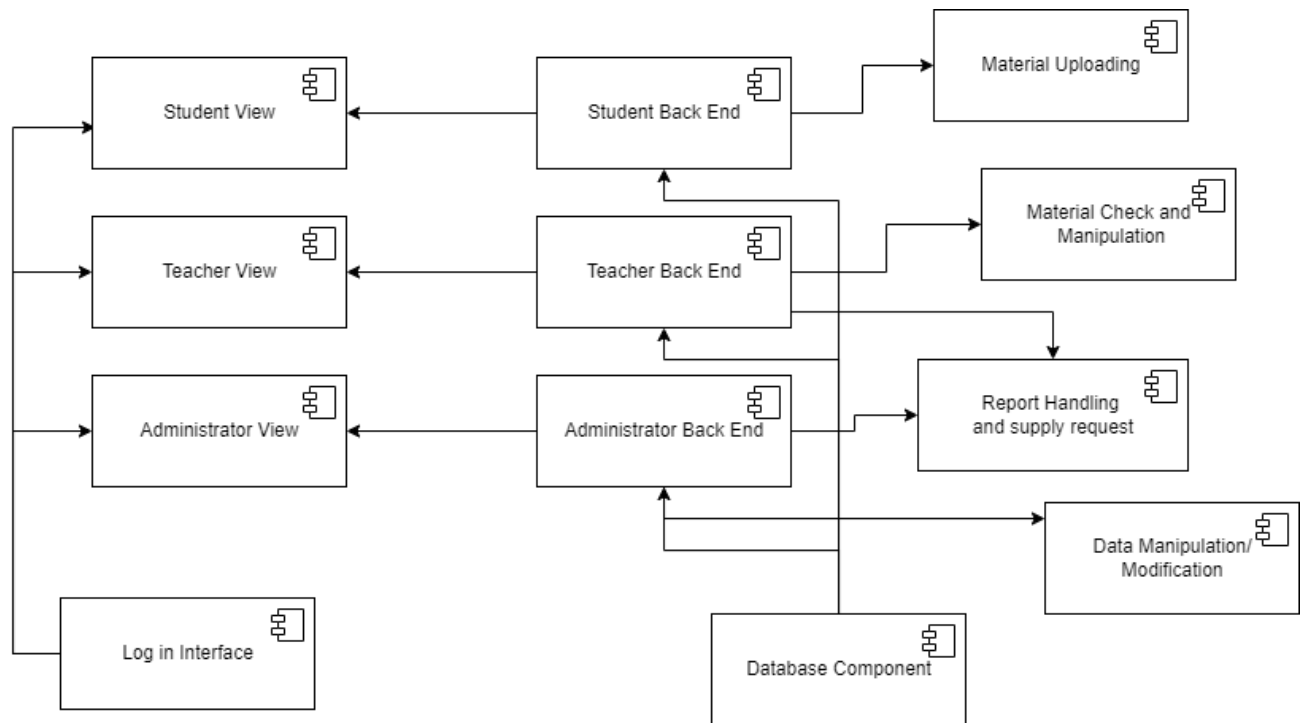
Class Diagram



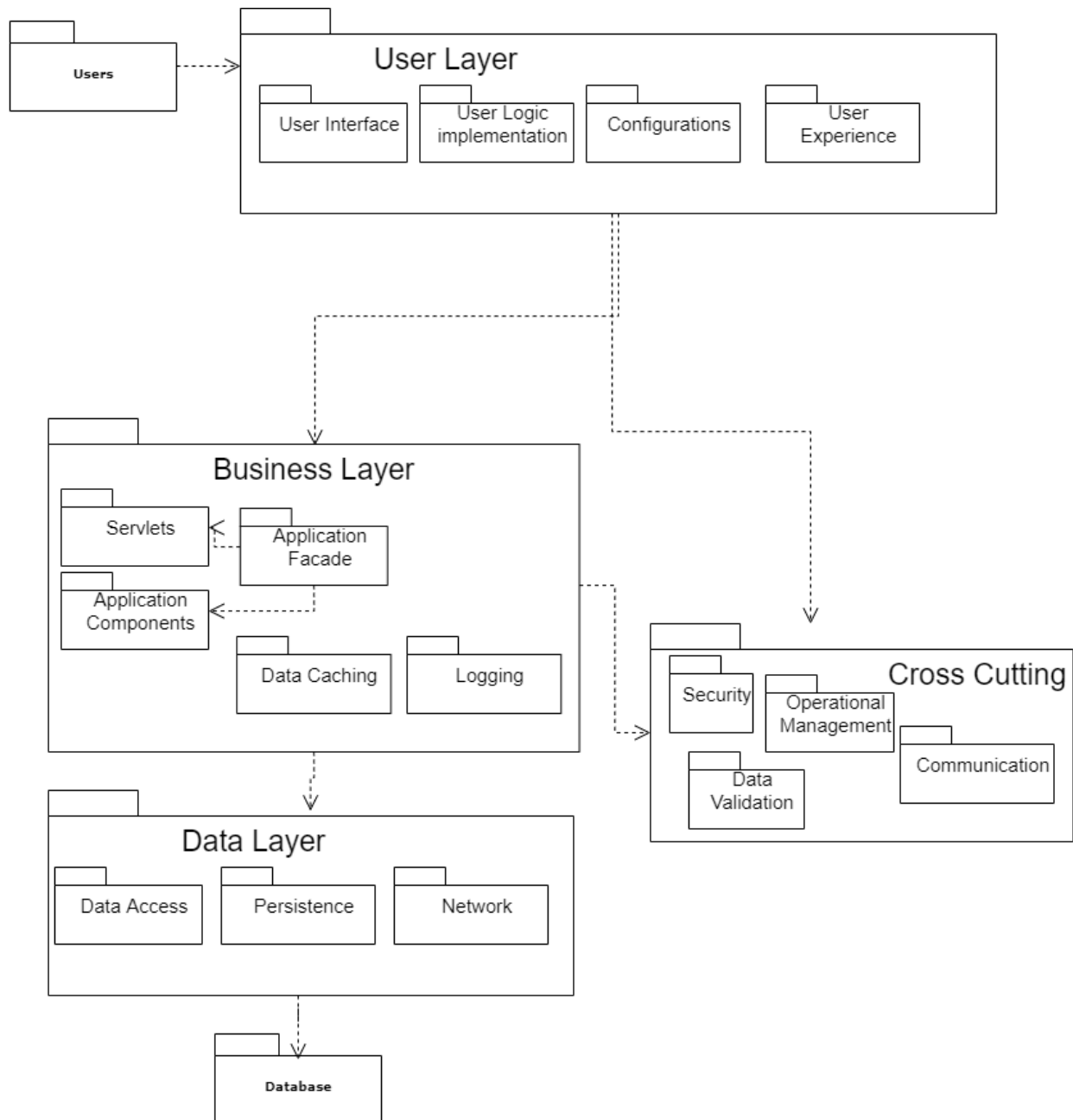
Component Diagram 1



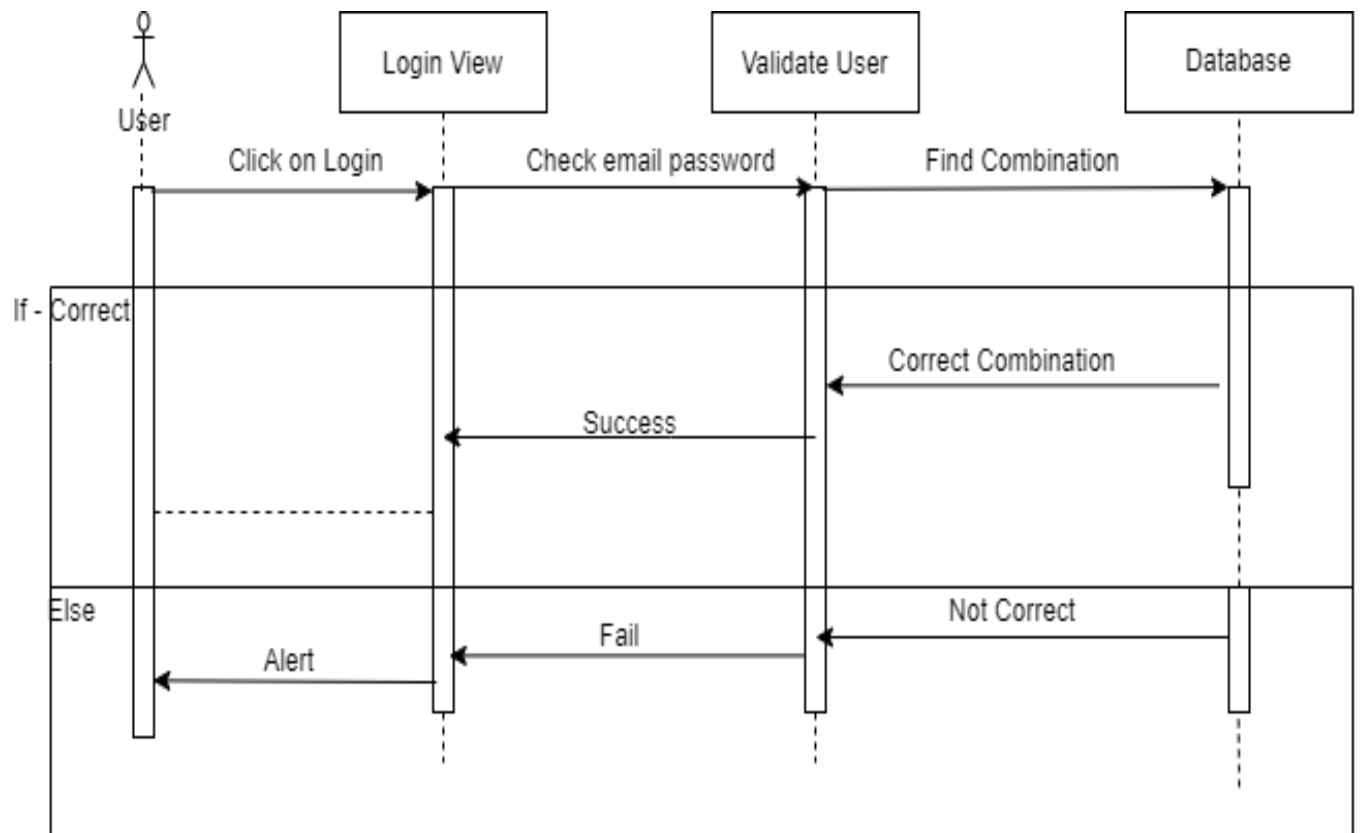
Component Diagram 2



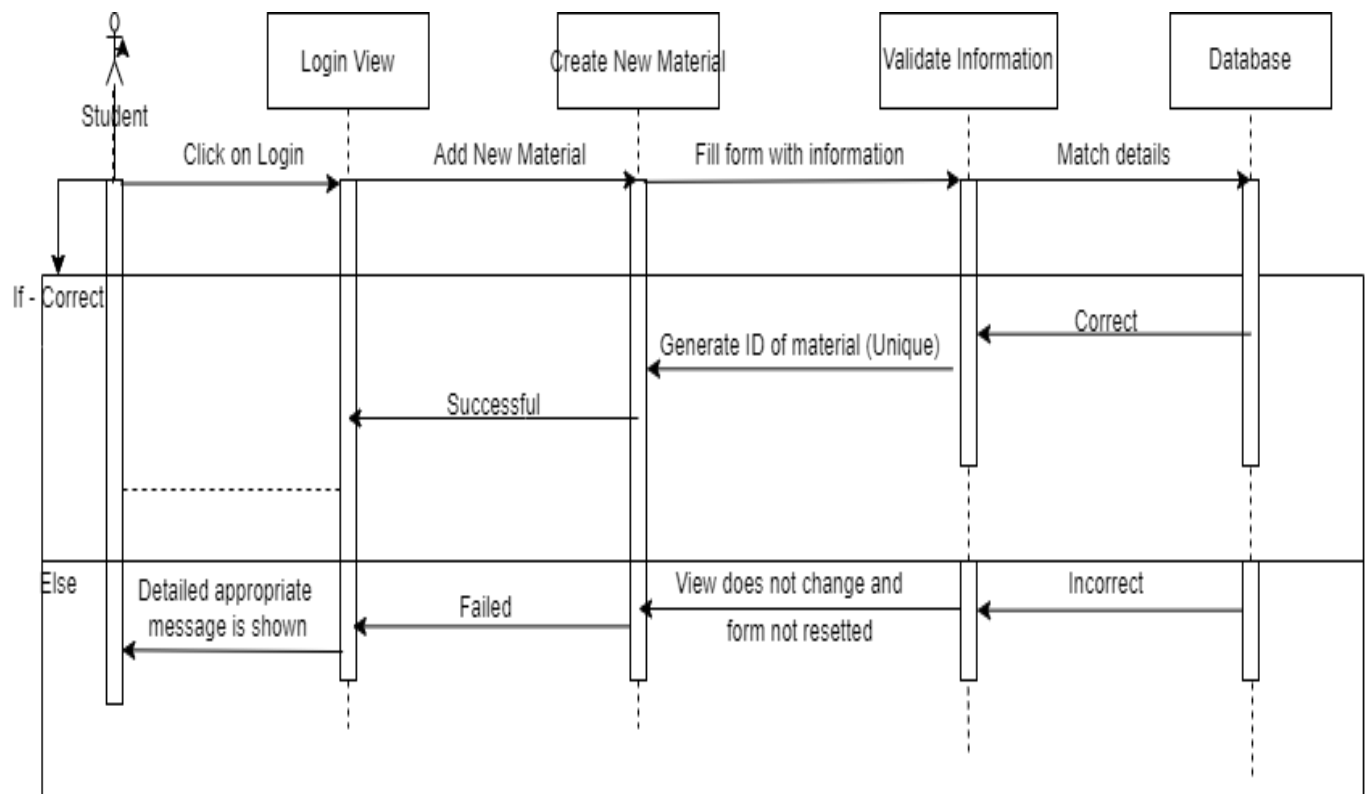
Package Diagram



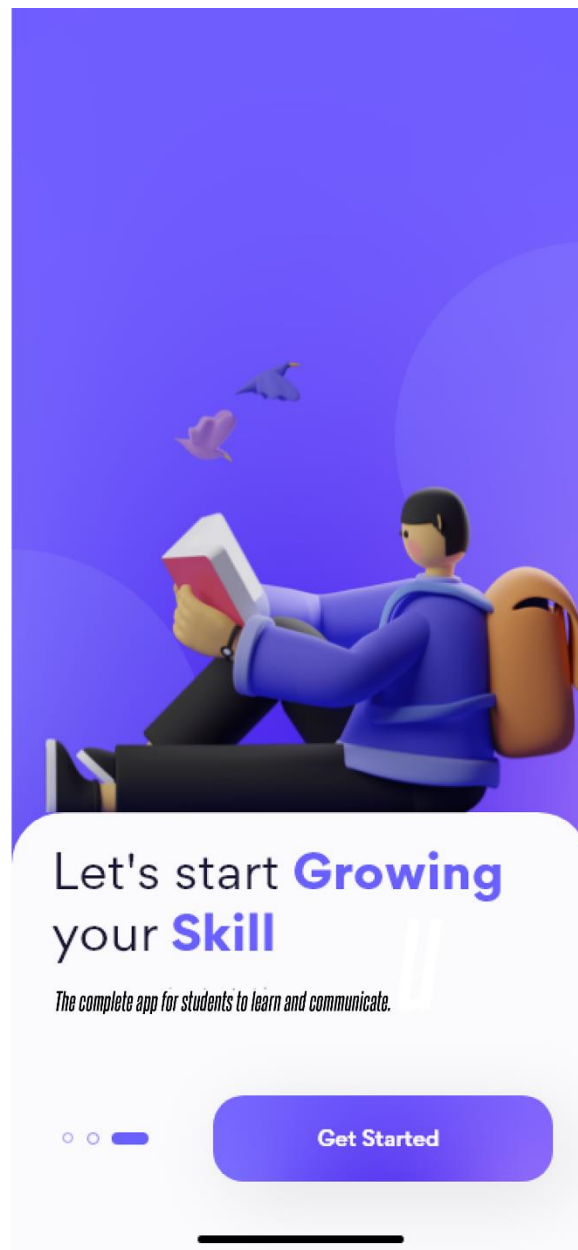
Sequence Diagram 1



Sequence Diagram 2



Design – UI

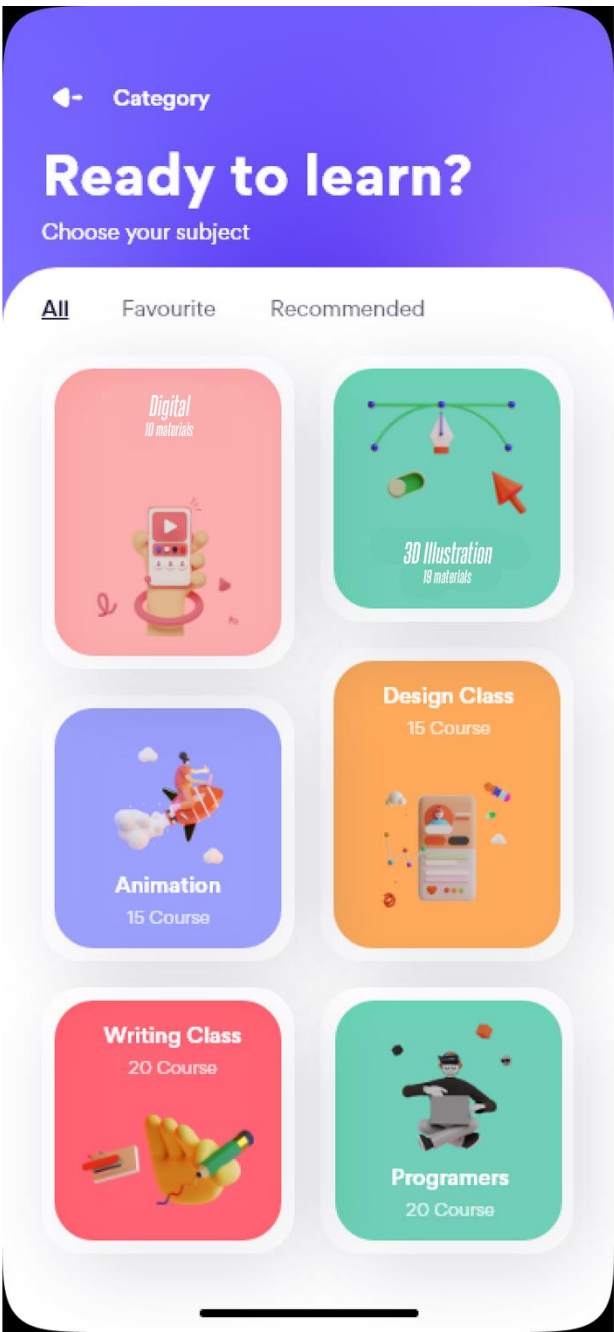


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