Design Document

for
NITC E-MAGAZINE

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Course: **CS3007D Object Oriented Systems**

Date: **06/11/2021**

Glossary

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Admin	A person who manages all the database, maintains and upgrades the server and review the works by all moderators.
Moderator	A person who reviews and edits all the articles, manages user accounts (confirms memberships and updates info).
Registered member	The end users, who have registered and can submit/view/comment on an article.
Alumni	Pass out students, who can view and comment on the articles.
Guests	The users who don't have an account, but can only view the articles.
HTML	Hypertext Markup Language
UML	Unified Modelling Language
MEAN	(Mongo db., Express, Angular, Node js)
GUI	Graphical User Interface
CSS	Cascading Style Sheets

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1. Detailed Design through UML diagrams

1.1 System model using Class Diagram

Class Diagram in the Unified Modelling Language is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods) and the relationships among classes.
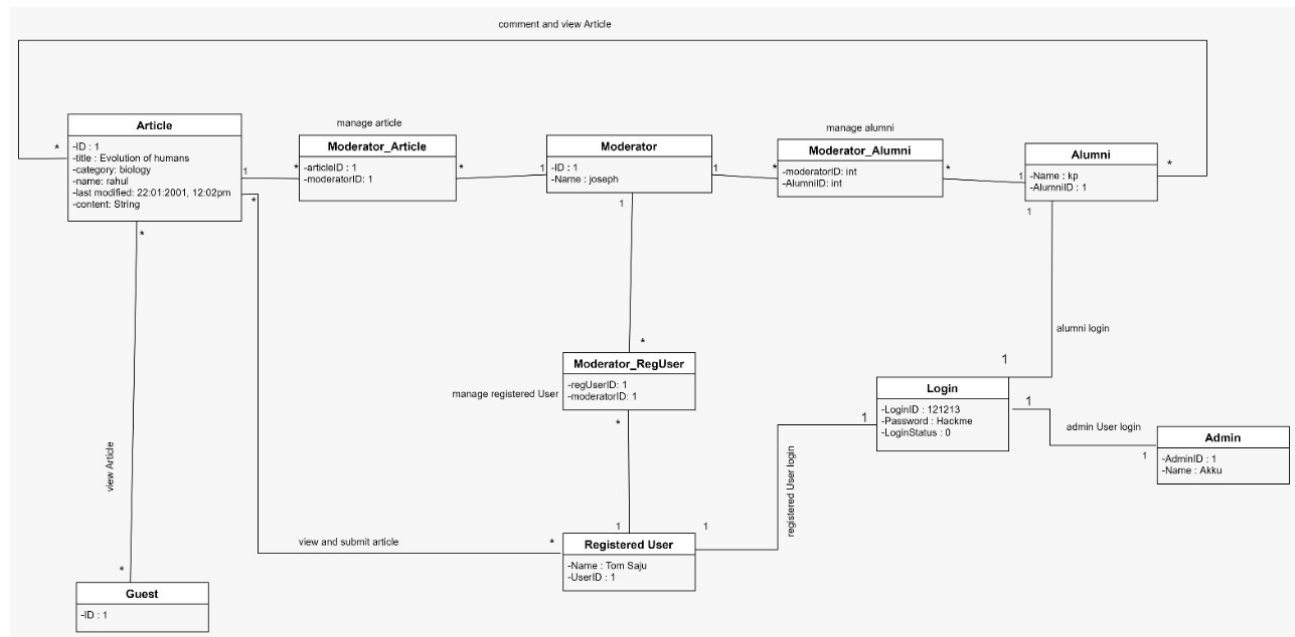
1.1.1 Class Diagram
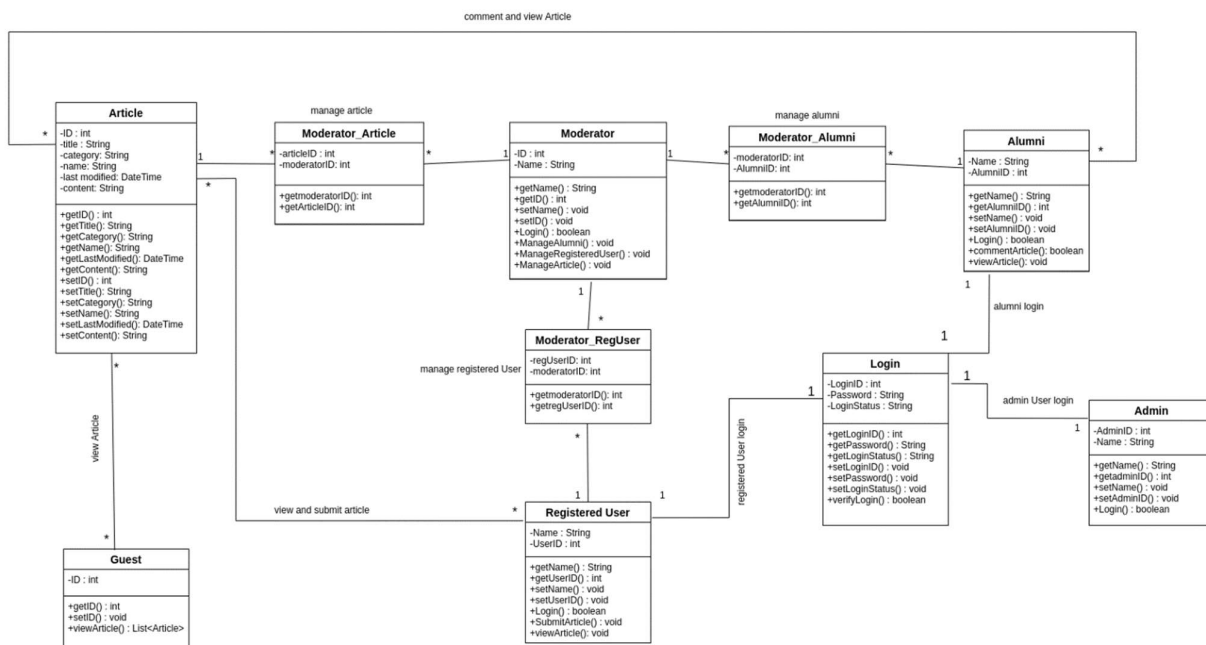
1.2 Responsibilities - Use case Diagram
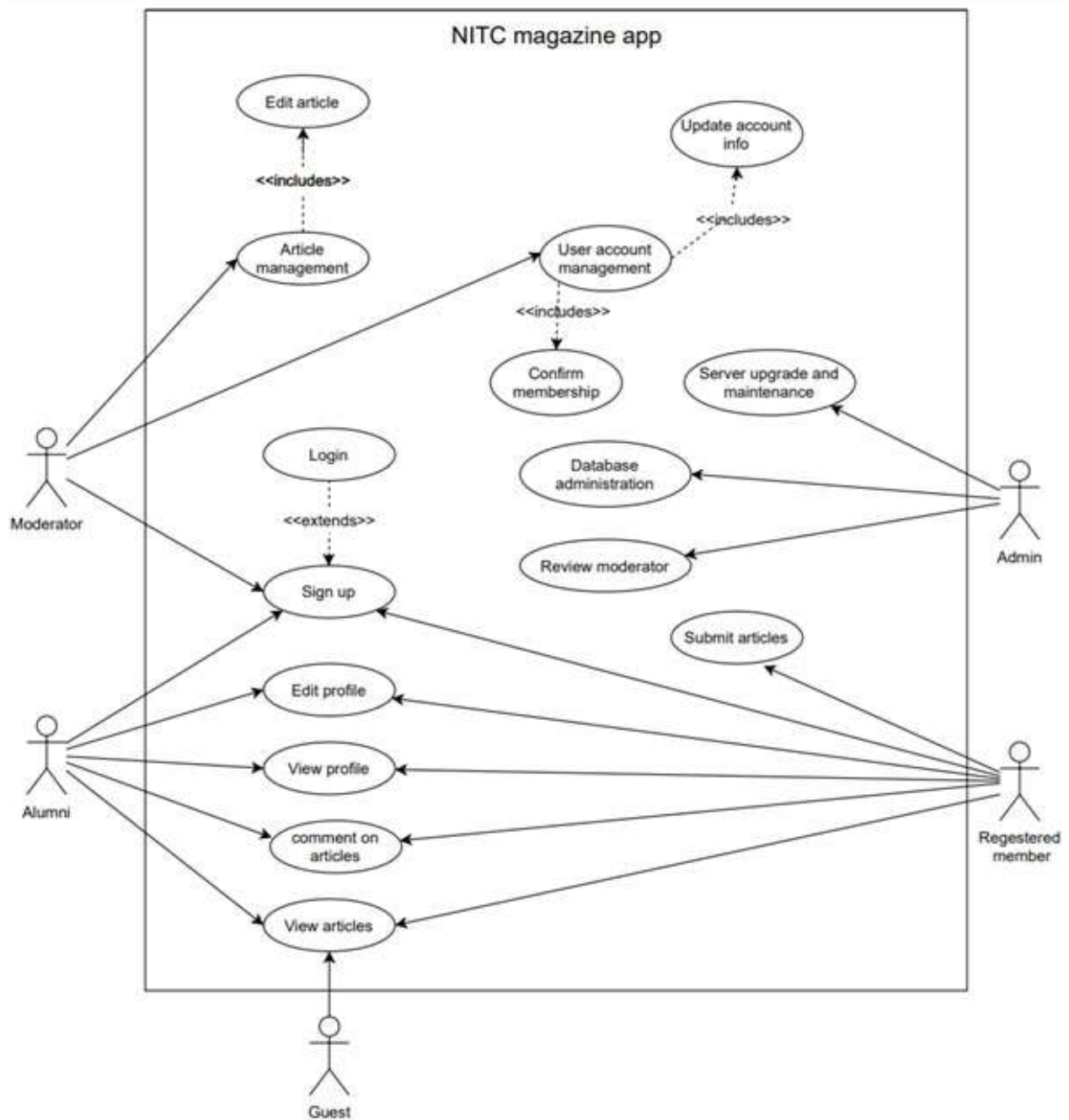
1.3 Static snapshot of the system - Object Diagram

## 1.4 System Interactions through Sequence Diagrams

Sequence diagrams are interaction diagrams that show the sequence of messages exchanged by the set of objects performing a certain task. A sequence diagram shows, as parallel vertical lines (lifeline), different processes or objects that live simultaneously, and as horizontal arrows, the messages exchanged between them, in the order in which they occur.
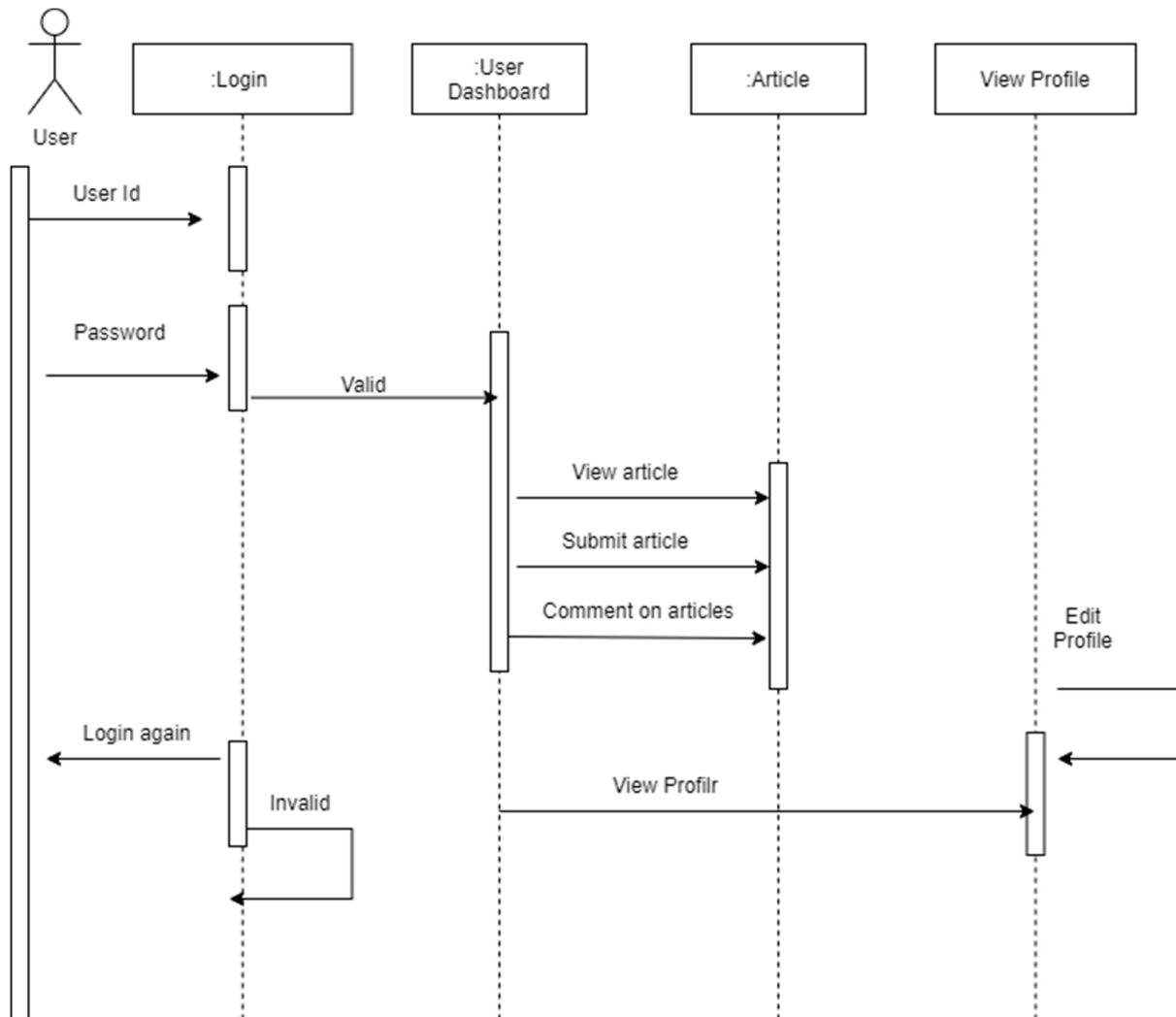
1.4.1 Sign up sequence: Abhiram KP

The first-time users must register before logging in, where they must fill in their details. Which is then verified. If the details are valid, they are added to the database, after which they return to the log in page, otherwise they are prompted to fill in the valid details again. Existing users can Directly log in from the login page. The login credentials are then verified, if invalid, they are returned to the login page, otherwise they are directed to the NITC magazine dashboard. Later on users can log out from the application too.
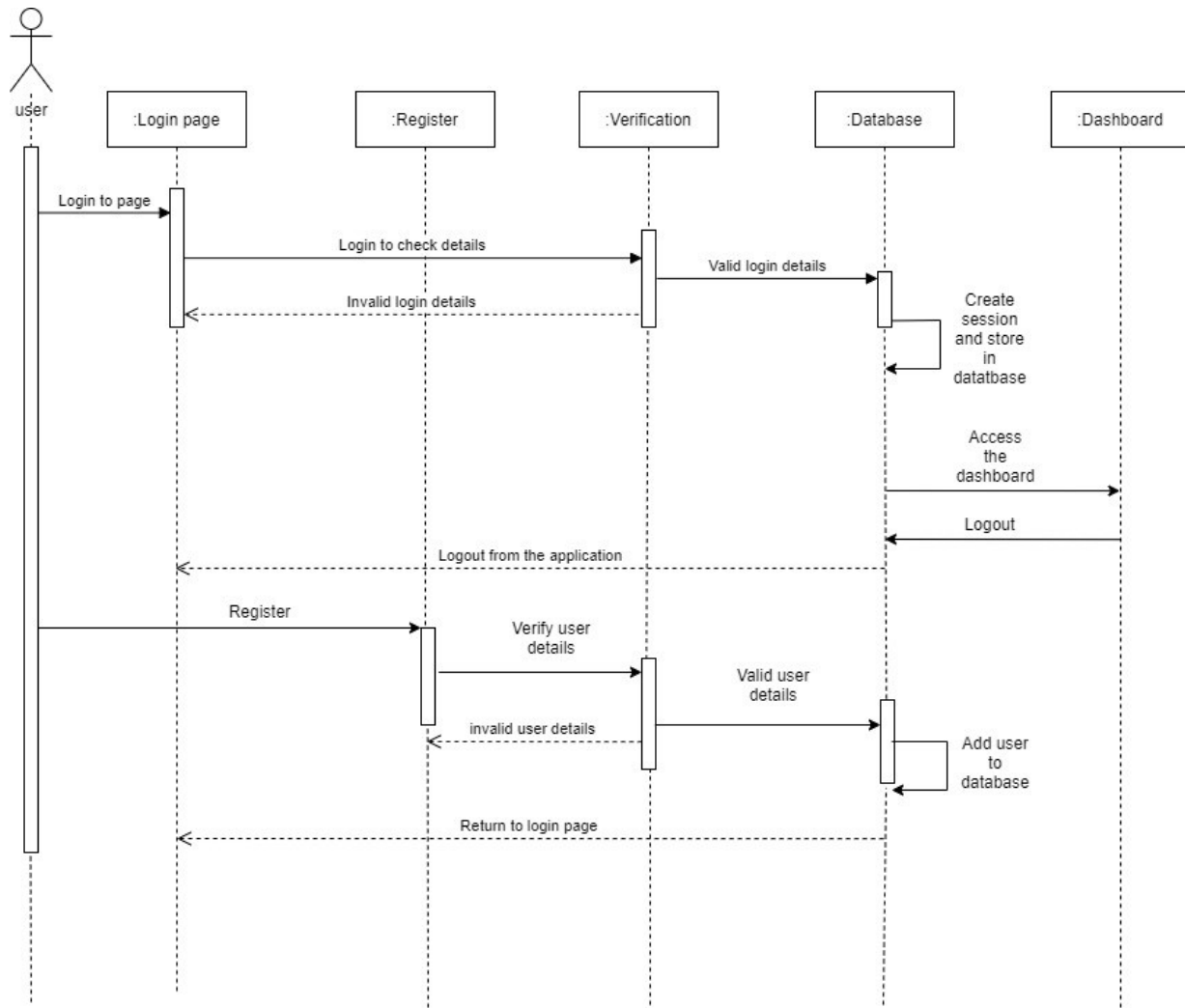
1.4.2 User Sequence: Tom Saju

The User logs in with User Id/username and password, if its valid they are directed to the User dashboard, otherwise they are prompted to log in again. The logged in users can view, submit and comment on articles. They can also view and edit profile.
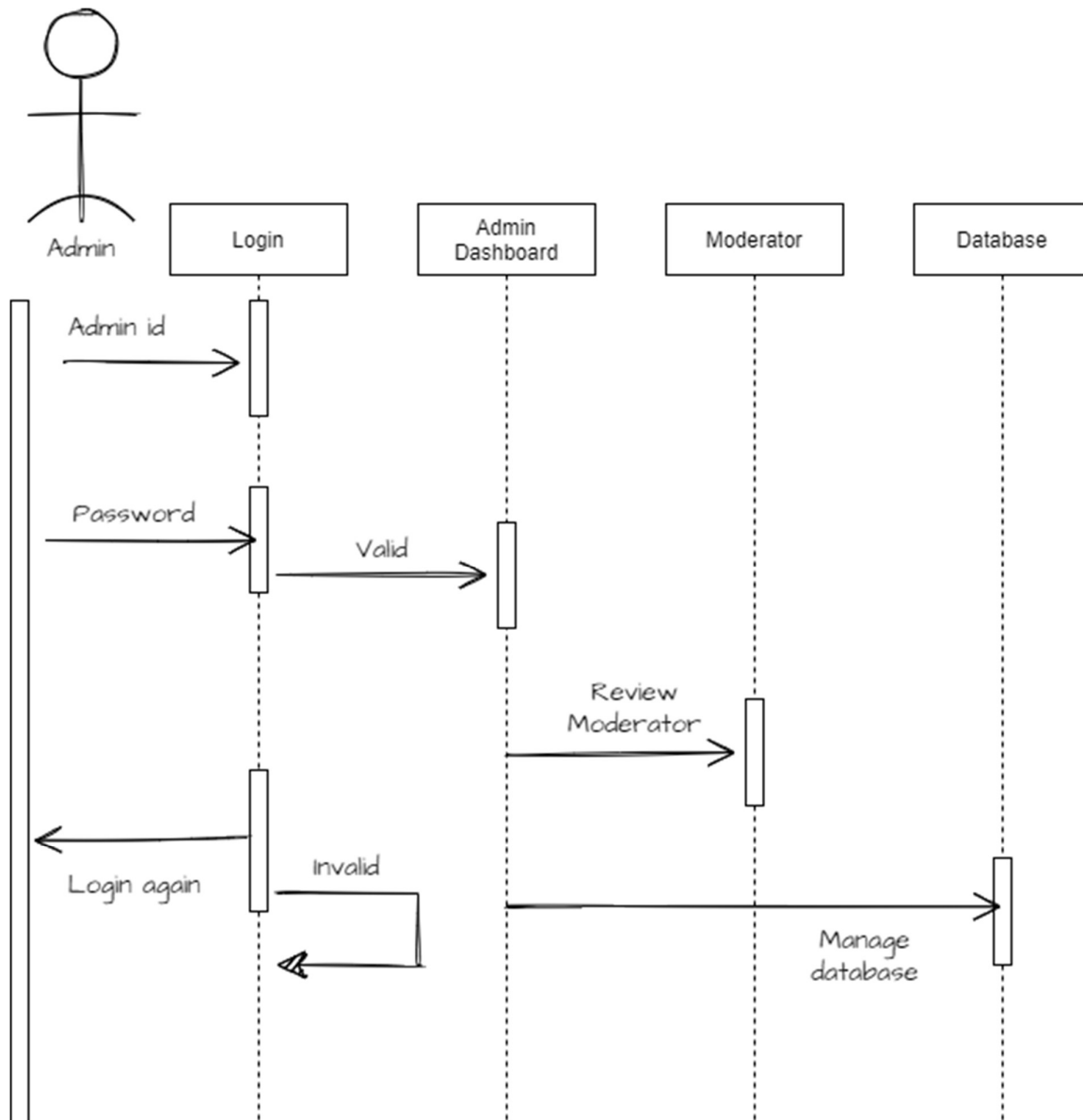
1.4.3 Moderator Sequence: Abhiram KP

Moderators can log in from the login page. The login credentials are then verified, if invalid, they are returned to the login page, otherwise they are directed to the dashboard, where they can edit/delete articles, and manage users. The respective changes, if any, are made in the database. Later, moderators can log out from the application too.
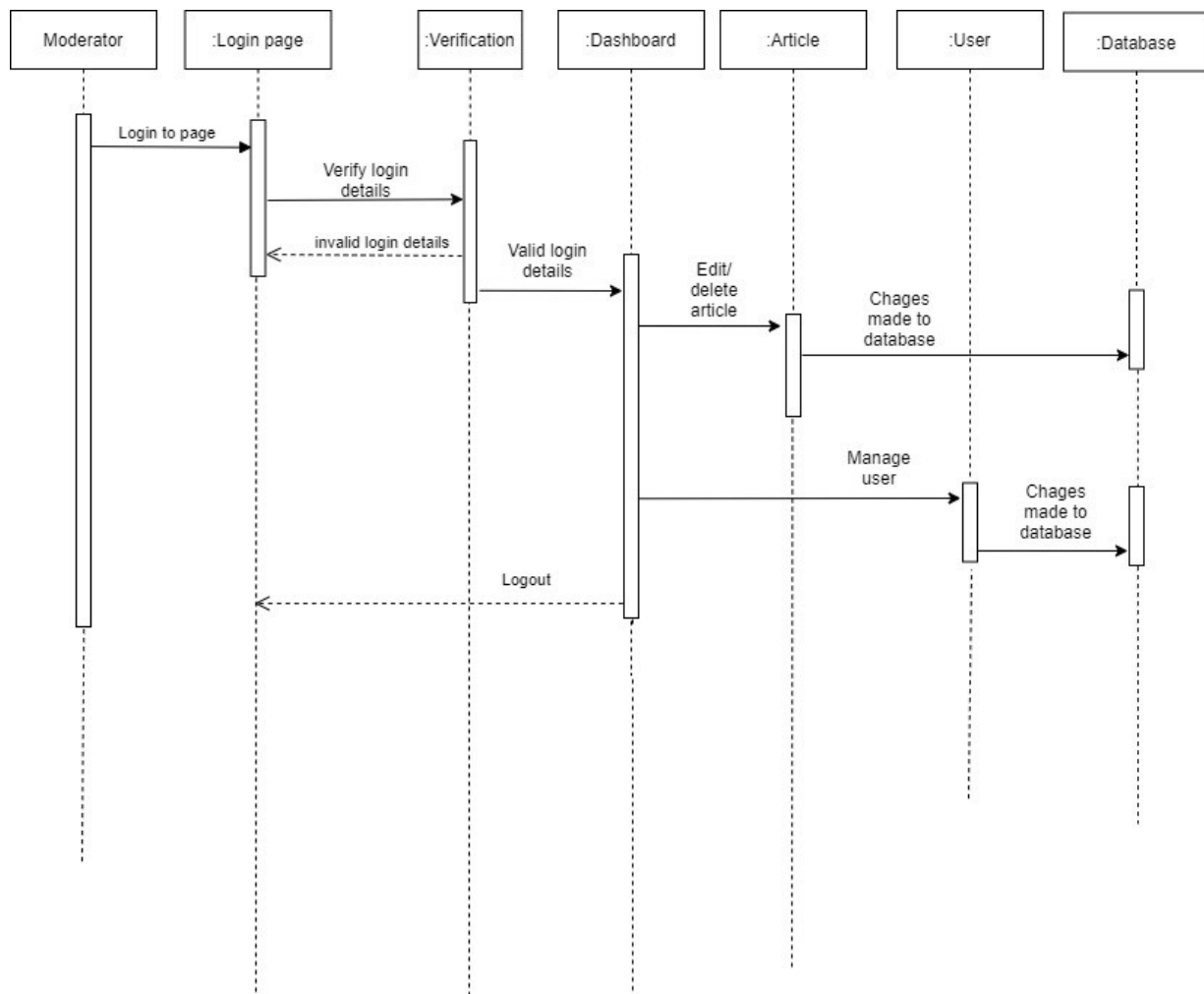
1.4.4 Admin Sequence: Bhavana Ketavath

The admin logs in with admin ID and password, if it's valid, they are directed to the Admin Dashboard. if it's invalid, they are prompted to login again. The admin can review moderators and Manage database as well.

1.4.5 Confirm membership Sequence: Abhinav P

A guest user can request the admin to be the moderator. The admin checks if the guest user qualifies to be a moderator. If the user is qualified, they are added to the database and in the moderators list.
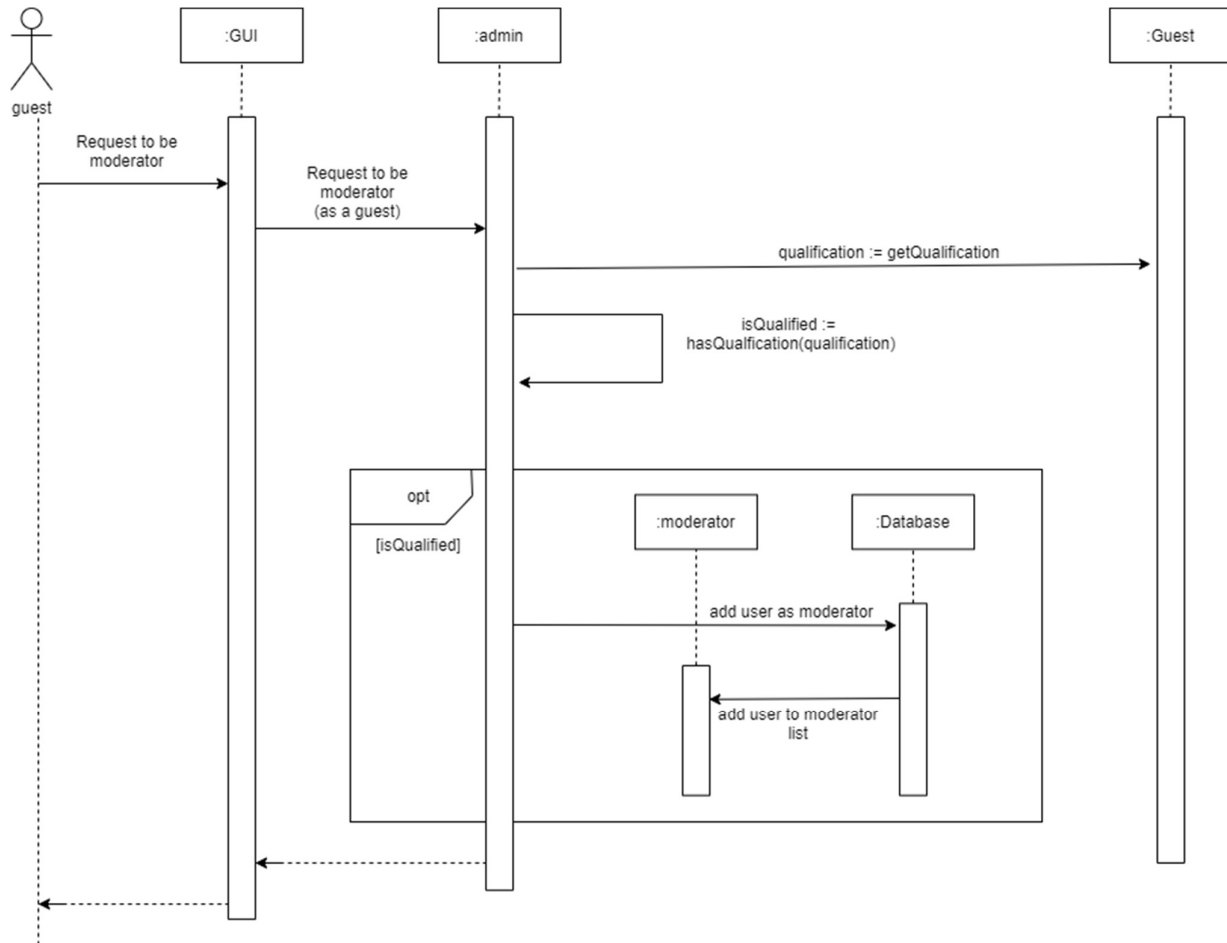
1.5 Control and Data Flows through Activity Diagrams

Activity diagrams show the interaction between the various IT systems that are involved in the message exchange. These diagrams, also known as control flow and object flow diagrams, are a type of behavioural diagram in the UML (unified modelling language). They describe the sequential, conditional, and parallel composition of lower-level behaviours using a graphical notation.
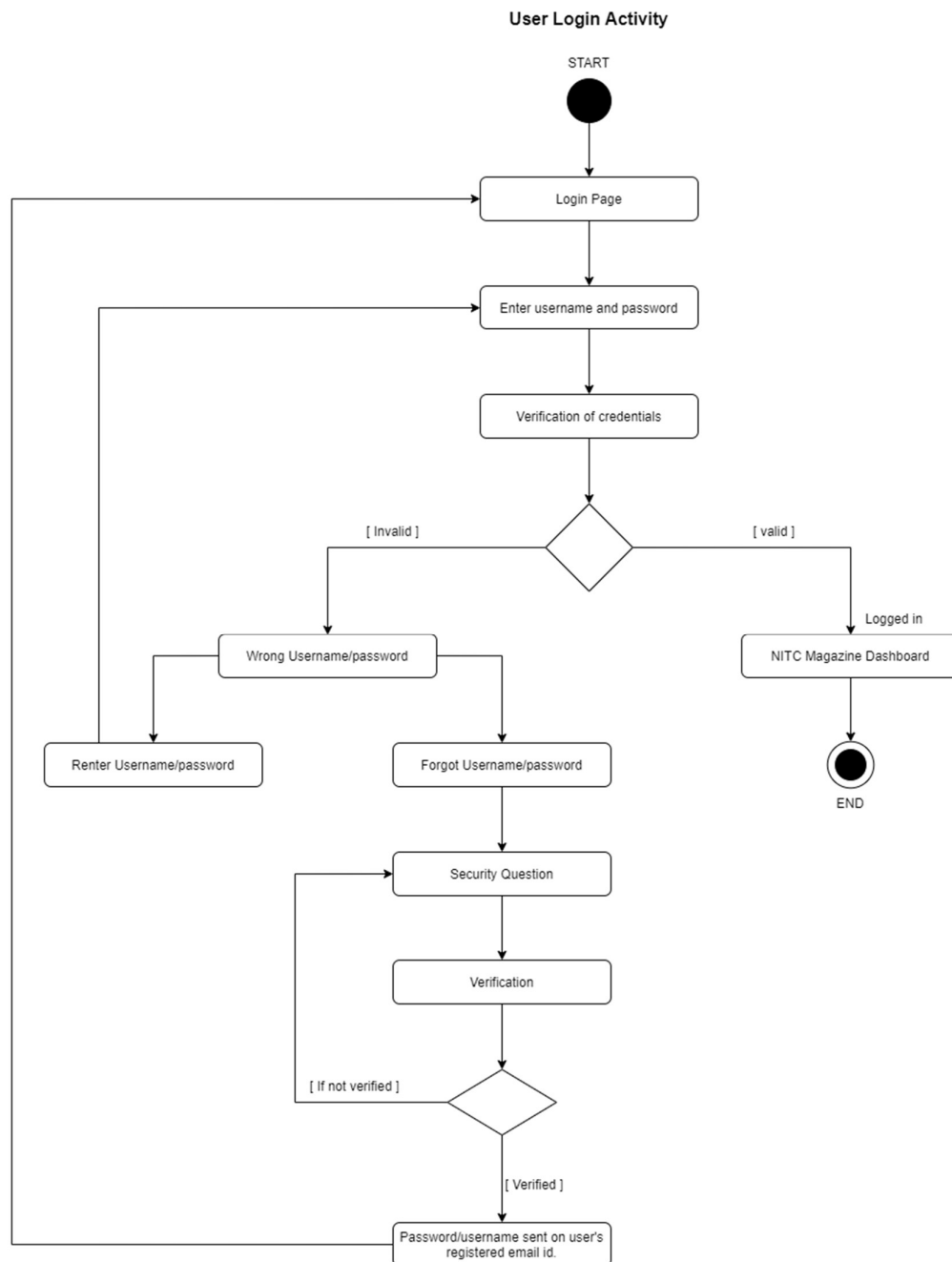
Edges, which are depicted as arrows, connect the individual components of the activity diagram, and represent the control flow and object flow (edge) of the activity. The control flow determines the flow within an activity. The incoming arrow starts an individual step of an activity. After this step is completed, the flow continues along the outgoing arrow. The object flow describes the flow of objects and data within activities. Edges can be labelled with a name (close to the arrow).

The object flow in an activity diagram shows the path of one or more business objects between the various activities.
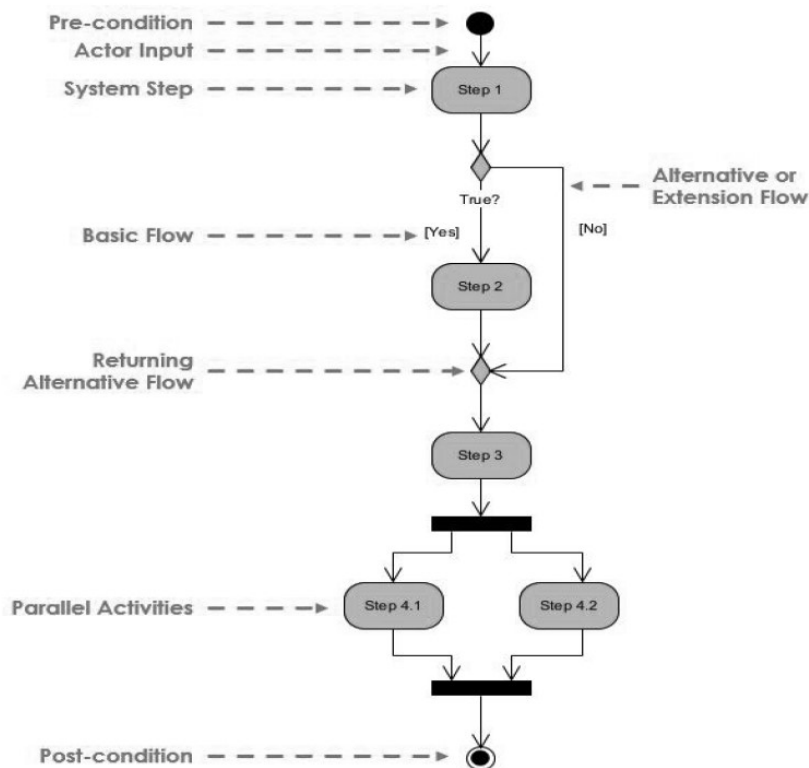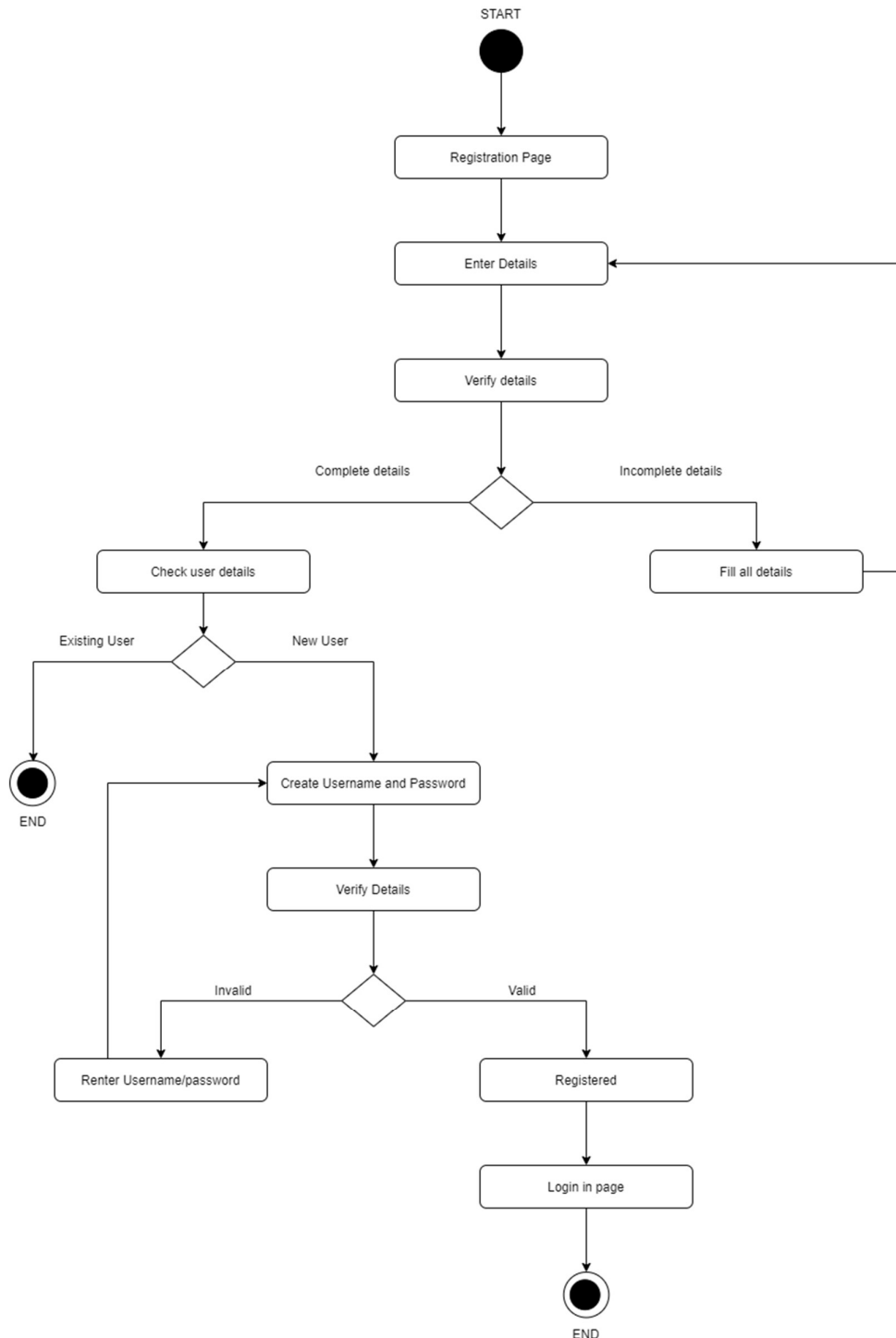
1.5.1 Login Activity: Tom Saju

When the user opens the web app, they are prompted to enter username and password, the moderator then verifies the user's username and password. if the verification is successful, they are logged into the NITC magazine dashboard, otherwise it displays "Invalid password and username" message. The user is then given 2 options, either to re-enter username and password, or forgot password. if the user wants to re-enter username and password, the page is re-directed to login page. if the user clicks forgot password, they are asked a security question and if not verified, they are given a new security question and if verified, they are given a new password, or an option to reset password, after which they can login again.

User Login Activity

START

Login Page

Enter username and password

Verification of credentials

[Invalid]   [valid]

Wrong Username/password   Logged in

NITC Magazine Dashboard

Renter Username/password   Forgot Username/password

END

Security Question

Verification

[If not verified]

[Verified]

Password/username sent on user's registered email id.

1.5.2 Register Activity: Tom Saju

The users can become registered users by filling their details in the registration page. Then the details are verified, if all the details are not filled, the user is prompted to fill in all details, otherwise the user details are checked, if they are new users, they can create a username and password, which is verified and if they are valid, the user is registered, and are re-directed to login page. if the username and password is invalid, they can re-enter username and password.

1.5.3 Comment Activity: Tom Saju

When the user logs into the dashboard, they can view articles. Registered users and alumni can comment on articles. If the user logs in as a guest or moderator or admin they cannot comment on articles.
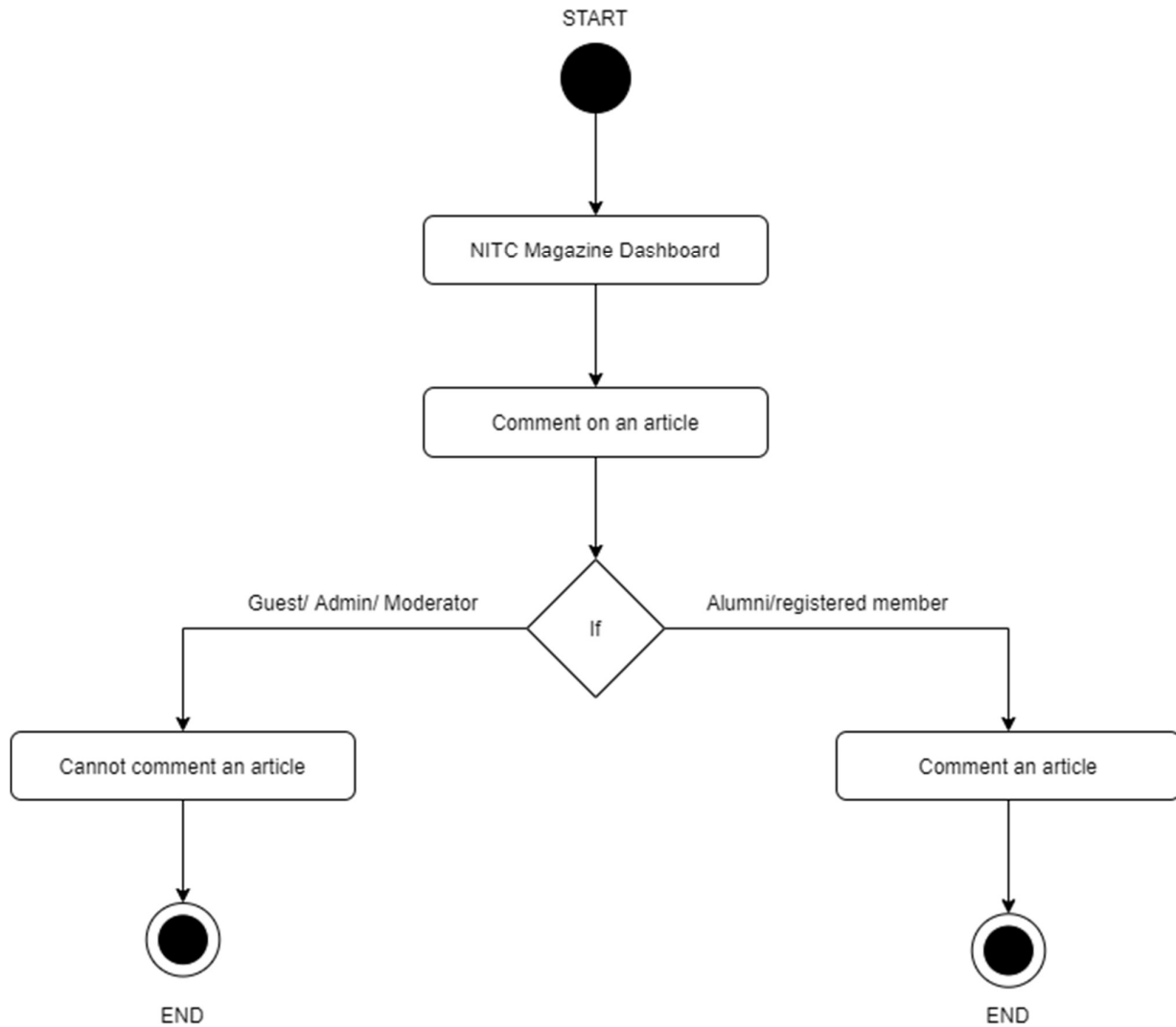
## 1.5.4 Submit article Activity: Bhavana Ketavath

Users can log in to the NITC magazine dashboard, create and submit articles. When they submit, the account is verified, if they are a registered user, Moderators go through the article, and only if approved, the article is published. If the users are logged in as Moderator/ admin/ alumni/ guest, then they cannot submit articles.
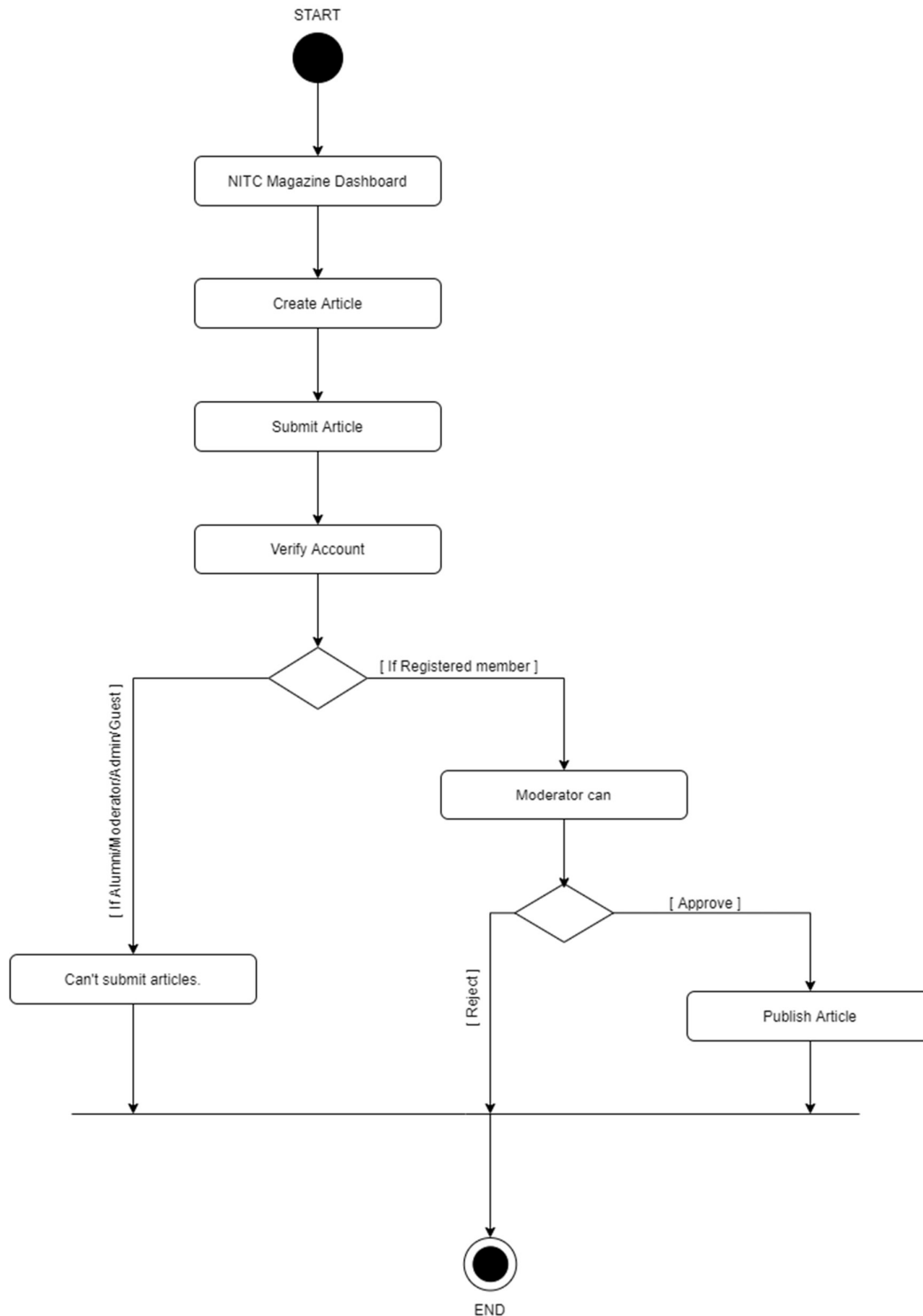
1.5.5 Article management Activity: Abhiram KP

Moderators can edit/ delete articles before they approve it. Once they are logged in, they check if the article exists, which is to be approved. If it exists moderator can edit/ delete it.
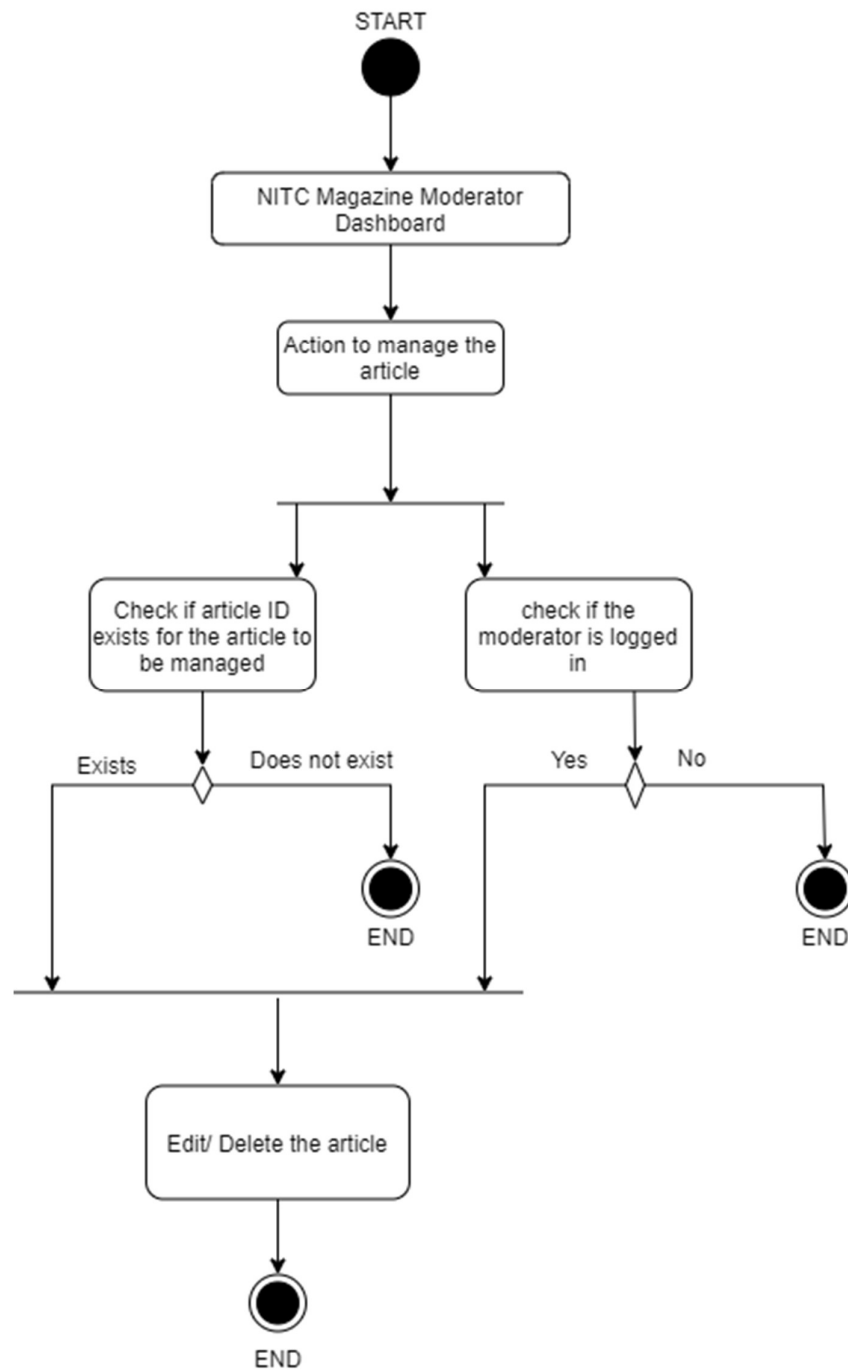
1.5.6 User account management Activity: Abhinav P

Moderator can manage user accounts. Once they are logged in, they can check for user ids that have requested for updating or deletion. After searching and reviewing their accounts, moderators can modify the required changes of the selected user.
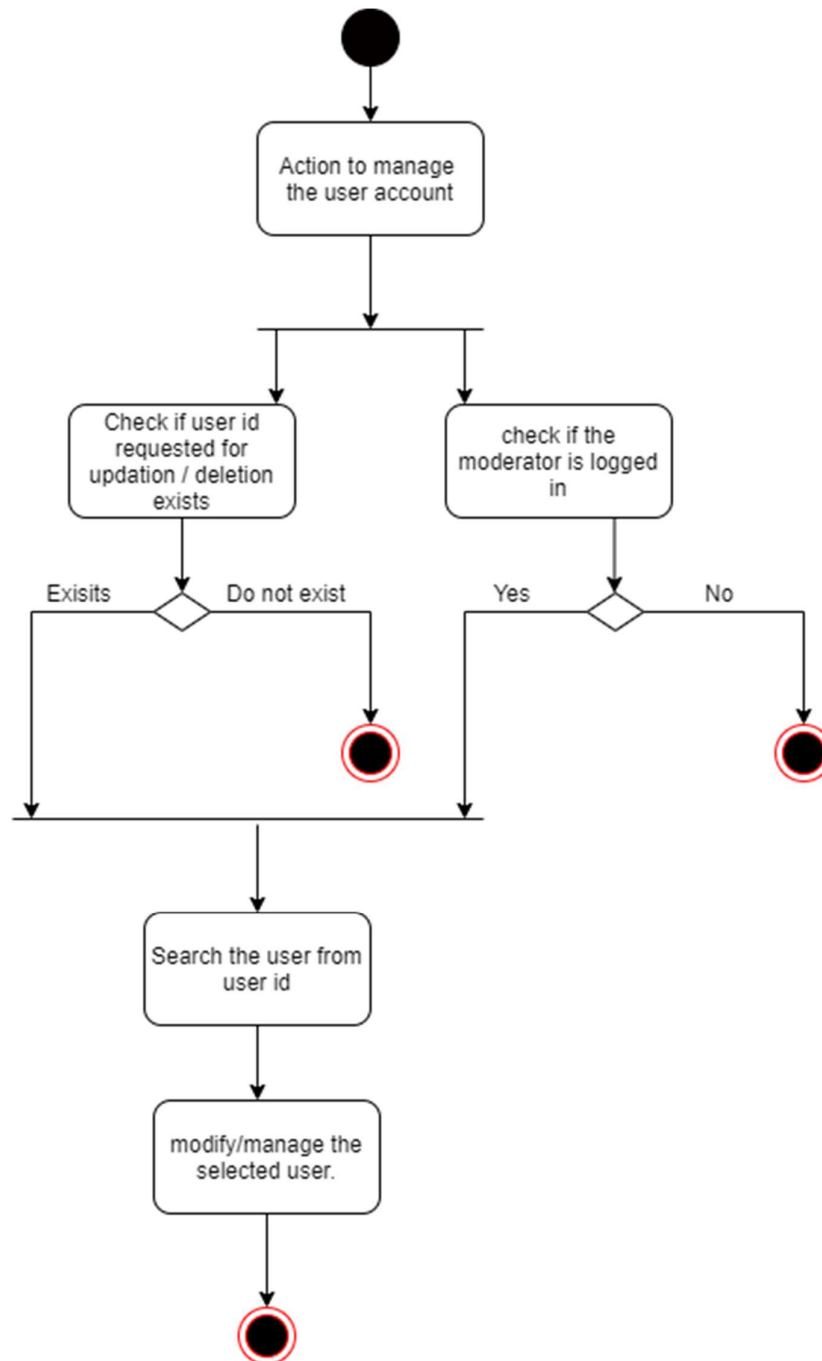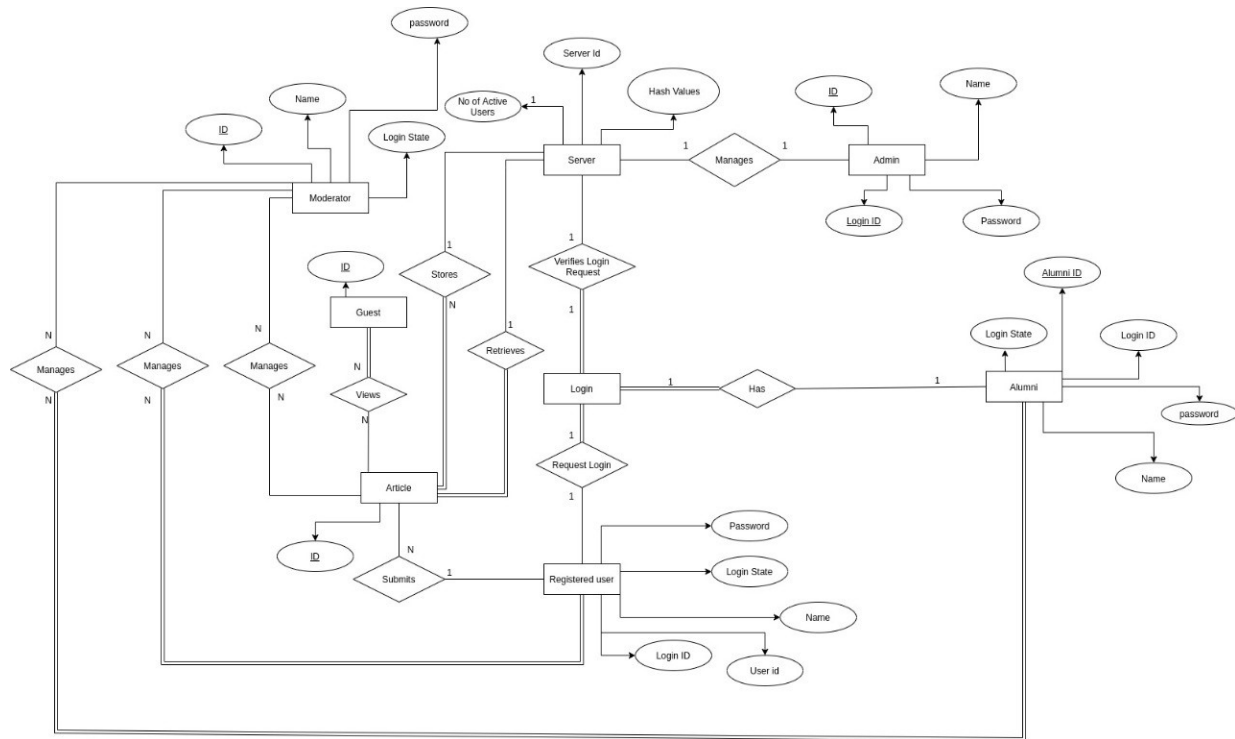
1.5.7 Confirm membership Activity: Abhinav P

Admin must check the user's qualification and approve them to be a moderator. Once the admin is logged in, they check for if the requested user exists and search the user from user id. When found makes the user a moderator.
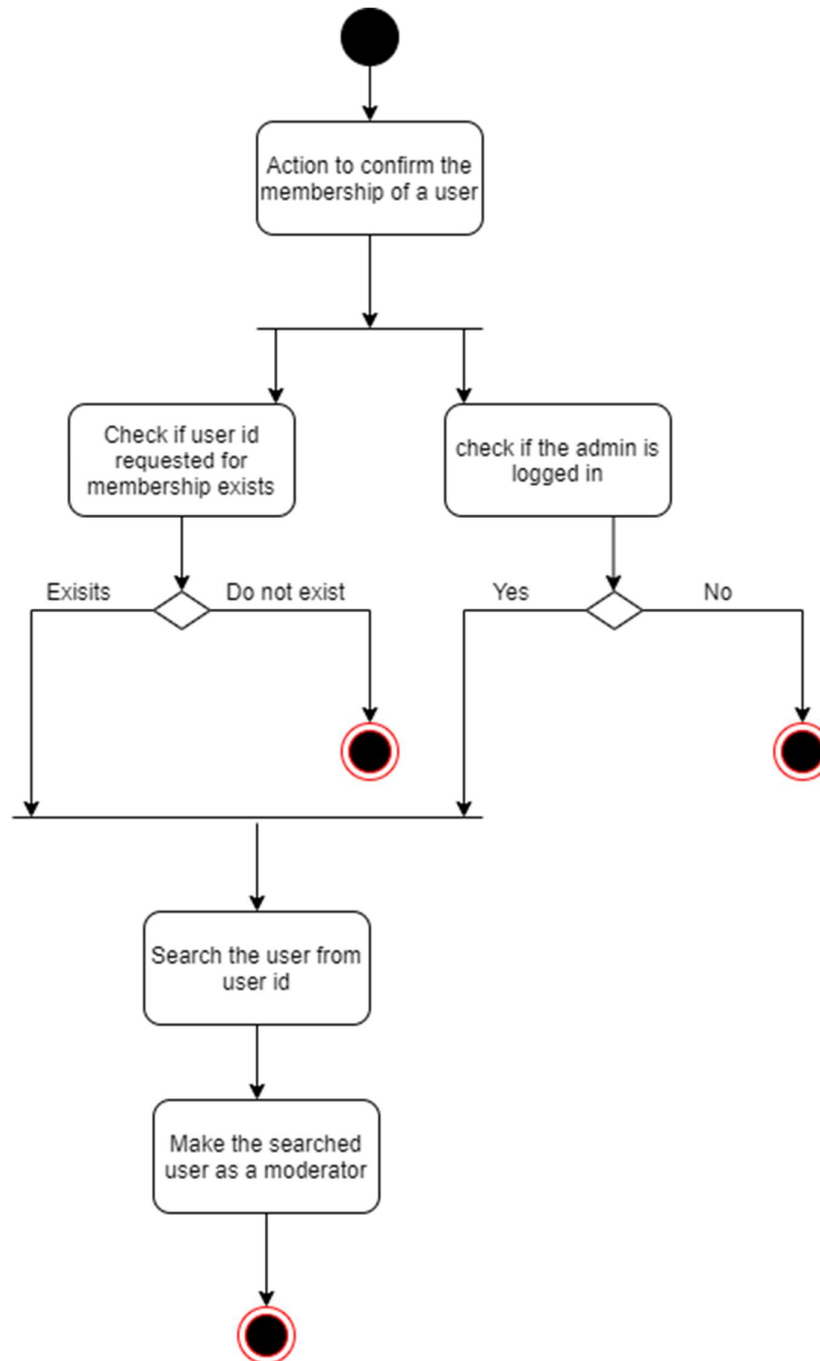
2.   Database Design

2.1   ER Diagram

3. Implementation Plans

3.1 Technology Stack

Stack used:
MEAN (Mongo db., Express, Angular, Node js)

Database used:
Mongo db. Ver: 5.0

Framework used:
Angular Ver: 11

Language used:
JavaScript, python

Markup language:
HTML + CSS

References

- IEEE. IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications. IEEE Computer Society, 1998

- Object diagram, sequence diagram, class diagram, activity diagram, ER model, use case model: course material from eduserver

- Object Oriented Modelling and Design with UML-Michael Blaha, James Rambaugh.

- Object Oriented Analysis and Design with UML by Daminni Grove