Software Requirements Specification

For

TIME TABLE MANAGEMENT SYSTEM USING ANDROID

Version 1.0 approved

Prepared by

Varshitha M K – 15IT151

NATIONAL INSTITUTE OF TECHNOLOGY SURATHKAL

09 January 2018

Table of Contents

1. Introduction

1.1 Purpose

To develop an android app which can help institutions, schools or colleges faculty members managing batches, allotting classes to teachers.

1.2 Document Conventions

This document follows MLA Format. Bold-faced text has been used to emphasize section and sub-section headings. The remainder of the document will be written using the standard font, New Times Roman.

1.3 Intended Audience and Reading Suggestions

1. **Developers who can review project's capabilities and more easily understand where their** Improvement towards efforts is required or add on more features to it (design and code the application which can set guidelines for future development).
2. Project testers can use this document as a base for their testing strategy as some bugs are easier to find using a requirements document. This way testing becomes more methodically organized.
3. End users of this application who wish to read about what this project can do.

1.4 Product Scope

1. Create different users with varied roles and scopes.
2. Manage all project details like tasks, deadlines, team members and resources.
3. Assign different tasks to different members.
4. Provide documentation to the members about the tasks being added.
5. Update all members about new proceedings in the project.
6. Bind all the information provided by the team members at one place and show it to all others.
7. Maintain start date and end date of each task
8. Maintain the overall timeline of the project.

References

1.http://ieeexplore.ieee.org/document/870307/?tp=&arnumber=870307&queryText%3DAutomated%20Timetable%20Generation
2.http://ieeexplore.ieee.org/xpl/articleDetails.jsp?tp=&arnumber=1490384&queryText%3DTimetable+Generation

2. Overall Description

2.1 Product Perspective

This project is basically an android application which in itself is a new and self contained application. It provides a platform which can help institutions, schools or colleges faculty members to plan and schedule classes and batches.

2.2 Product Functions

1. We can find out list of available batches and timings.
2. We can add new batch timings to the existing list.
3. Updating, deleting, modifying existing batch details.
4. Total number of class lists is displayed and allows to Add and update existing class timings with start and end dates.

2.3 User Classes and Characteristics

1. **Batch Module:** In this module information for every department batch students and related lecturers details are provided.
2. **Faculty Module:** Total number of lecturers available for college and there specifications and subject they will teach is provided in this module.
3. **Multi Slot Timetable:** Every faculty member class details are displayed in the form of slots. Details of this allotment are provided in this module.
4. **Time Slot Module:** For every subject lecturer is given with a time slot which includes morning session or evening session and start and end class timings

2.4 Operating Environment

Operating system : Android and linux based mobile devices(Tablet computer and Smartphones) with android version higher than kitkat.

2.5 Design and Implementation Constraints

1. All the implementation will be in Java Language.
2. This application is restricted to android phones and cannot be used on personal computers or laptops.

2.6 User Documentation

The application shall provide an online help system that describes and illustrates all system functions.

2.7 Assumptions and Dependencies

1. The application can be used only by the users who are registered to it.
2. This application is most restricted to the college students and professors particular to that institutions or colleges.
3. Any modifications and updating must be manually changed for automatic reminders to be functional.

3. External Interface Requirements

3.1 User Interfaces

Front end : Implementation in java
Back end : Mysql database

The user interface shall follow basic Android application style and functionality conventions. The interface has floating buttons on the screen, which will allow users to easily switch between the different screens. The various screens are specific to the type of user, for a student, it includes every department to have different login form. Lecturers should register to get user name and password to log to system. Each department related data is stored in separate database. Permissions for users who are accessing this application will be different. Admin will have different permissions; faculty members will have different permissions. History and Log details are updated for reference.

Hardware Interfaces

Operating system : Android and linux based smartphones.
The Device type : Any Android smart phone supporting android version higher than kitkat.

3.3 Software Interfaces

Language used : JAVA
Operating system used : Android

3.4 Communications Interfaces

All data transferred between the server and the individual mobiles is protected from unauthorized access making the communication and the application much secure.

4. System Features

At present colleges are using manual methods for preparing time tables for every department for every month and year based on availability of lecturers. This method is time taking process, management software can help colleges to manage all this works using software. We can find out list of available batches and timings. We can add new batch timings to the existing list. Total number of class lists is displayed and allows to add and update existing class timings with start and end dates are also provided.

4.1 List of available batches and timings.

4.1.1 Description and Priority

1. Class scheduler System is an Android application that aims at determining the time table.
2. This feature allows the students and lecturers of a particular institution to access details related to available batches and timings of the class. This feature is of high priority to ensure that no professor or student group can have more than one class at a time.

4.1.2 Stimulus/Response Sequences

It consists of two fields, student and lecturers. They can access and upload the details about classroom vacancies, class timetable, and batch details.

4.1.3 Functional Requirements

The most important function is to grant access only to the registered users. The student will provide the information on who will be allowed access. Authentication is provided by validation of the credentials against the records stored in the database. In case of an invalid entry access is not allowed. The user shall be allowed to create an account. Any authenticated user will be able to discuss on the forum. They will then be able to ask/answer questions related to the courses they are enrolled in.

4.2 Updating, deleting, modifying batch details and timings.

4.2.1 Description and Priority

This feature allows the students and lecturers of a particular institution to add, Update, delete, and modify batch details and timings. This feature is of high Priority to ensure that the details are dynamic and up to date.

4.1.3 *Stimulus/Response Sequences*

It consists of one field lecturers. They can edit the batch details. They can inform the students about class cancellation and upcoming tests. They can participate on discussion forum.

4.1.4 *Functional Requirements*

The most important function is to allow registered faculty to edit the details and modify the details according to the requirement specification. Registered teachers can edit the details which they can access. User cannot modify the batch timings of other users. Students will be notified about the changes made.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

REQ-1*:* The system shall provide a non-cluttered, user friendly, easy to understand android application.

REQ-2 : The system shall display spare classroom where classes can be held and No professor or student group can have more than one class at a time.

REQ-3: The system shall provide a mobile friendly website which can be viewed on a mobile device.

REQ-4: A classroom must have enough seats to accommodate all students.

REQ-5: To place a class in a classroom, the classroom must have laboratory equipment (computers, in our case) if the class requires it.

5.2 Safety Requirements

No safety requirements have been identified.

5.3 Security Requirements

Users shall be required to log in to the application for all operation. Access to the database should be restricted to people that are required to view information about class details from various sites. Passwords and ID's should be regulated to be at least a certain length and must contain non-alphanumeric characters in both the password and ID.

5.4 Software Quality Attributes

Functionality

•Features Mobile based Applications for more ease of use for Users

•We can find out list of available batches and timings, add new batch timings to the existing list, Update, delete, and modify existing batch details.

Usability

•There is a main page on the mobile Application that has a simple menu that links to all of the other pages on the site.

•All of the pages on the site are created with a similar interface, as not to confuse the User.

•Input boxes are clearly labeled.

Reliability

•Checks are done to see if Users entered valid data on the Mobile Application.

•Version Control of the Applications is done extensively to ensure that no progress is lost as a result of an accident.

Supportability

•Mobile Application runs on all updated Android devices.

•Classes are separated clearly in order to increase ease of expanding the Application.

6. Other Requirements

All the major requirements are mentioned in functional and non-functional requirement's sections

Appendix A: Glossary

TERM	DEFINITION
Administrator	Someone who oversees the application and is responsible for overseeing the data intake and manipulation
Application	The main program that the user will be interacting with. This program is made to be user friendly and is located on the application
Current Timetable	Time-table that is currently stored on the Timetable Service application at the time the user is utilizing the timetable monitoring service. This data is concrete.
Database	server or entity that will contain user data, class information.
Developer	Someone who is involved with creating the application front-end and its back-end
Dropdown box	Box with dropdown options that cannot be changed, only selected
Graphical User Interface (GUI)	A type of interface that allows the user to interact with the graphical components, including buttons, dropdown menus, and any maps that appear
Mobile application	Software for an Android smartphone that is available to all users of the class scheduler system.
Mobile application user	Someone who will use the mobile app
Mobile device	A device that is meant primarily for mobile use, including tablets and smartphones
Mobile friendly site	site which is easier to navigate on a mobile device
Radio Button	A family of buttons from which the user can select their batches.
User	A person who intends to use the class scheduler system to access classroom data

Appendix B: Analysis Models

Use Case Diagram

Actor: Student

Description: Student login to the system and if correct credentials are given then he can view the list of all the classes else he has to login into the system again. He can post remarks about the topic which are covered in the class by the teacher which will be updated to the database

Actor: Teacher

Teacher login to the system and if correct credentials are given then he can view the list of all the classes else if he has to login to the system again. He can add new batches classes also modify new classes and batches which are updated to the database.

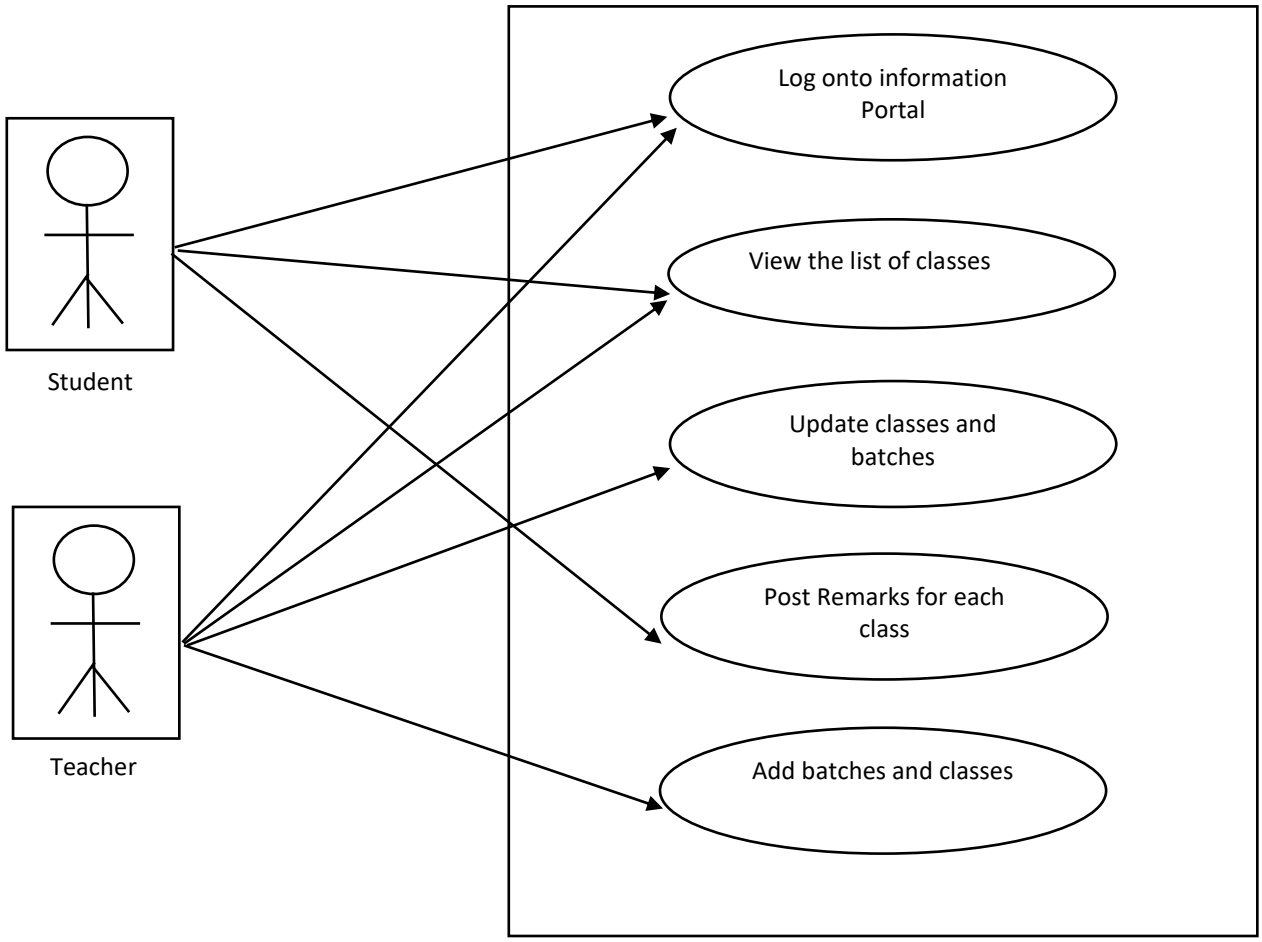

Figure 1: Use case diagram

Class Diagram

Student login to the system and he can post remarks about the topic which are covered in the class by the teacher which will be updated to the database. Teacher login to the system and he/she can add new batches /classes also modify new classes and batches which are updated to the database and eventually set the reminder.

Generated using Argo UML Tool

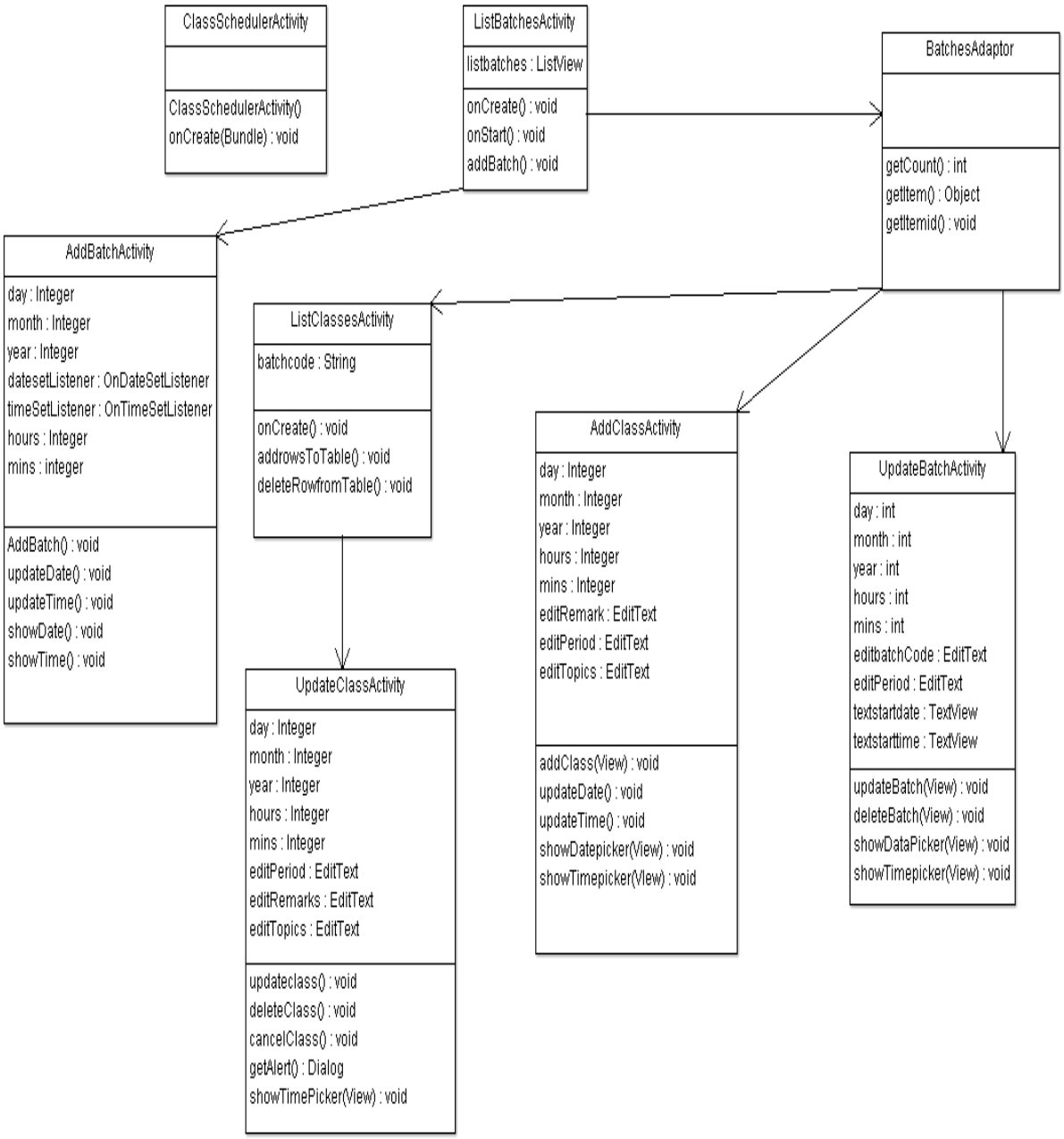

Figure 2: Class Diagram

Class Diagram generated using Eclipse IDE

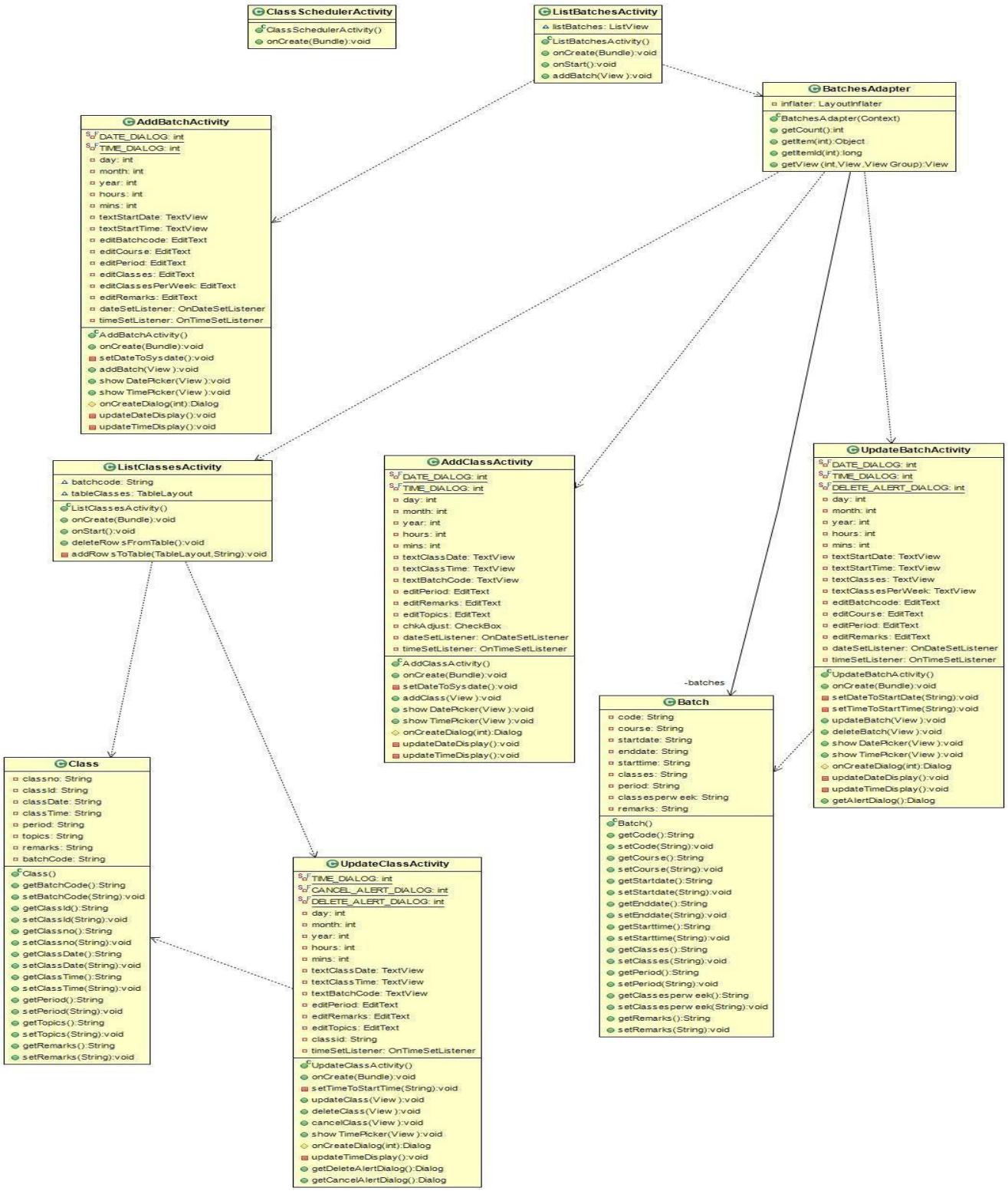

Figure 3: Class Diagram (Eclipse)

Data Flow Diagrams

Student login to the system and if correct credentials are given then he can view the list of all the classes else if he has to login to the system again. Teacher login to the system and if correct credentials are given then he can view the list of all the classes else if he has to login to the system again. He can add new batches /classes also modify new classes and batches which are updated to the database.

Context Free Diagram (DFD 0)

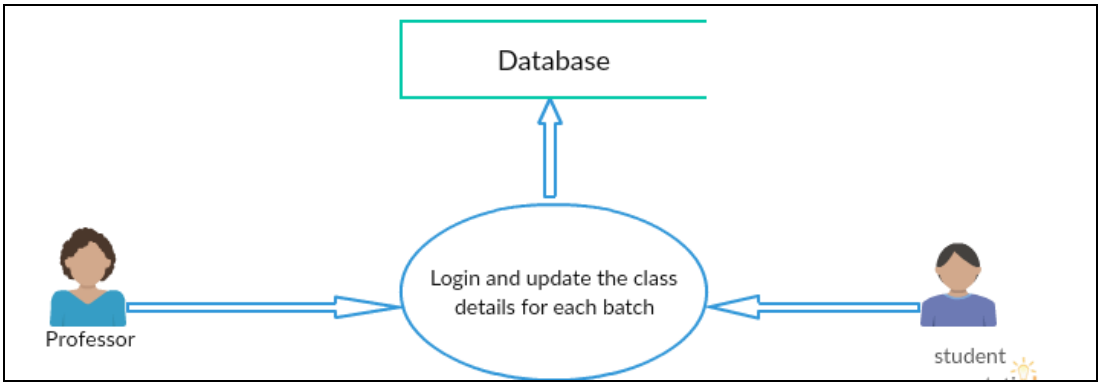

Figure 4: Context Free Diagram

DFD Level 1

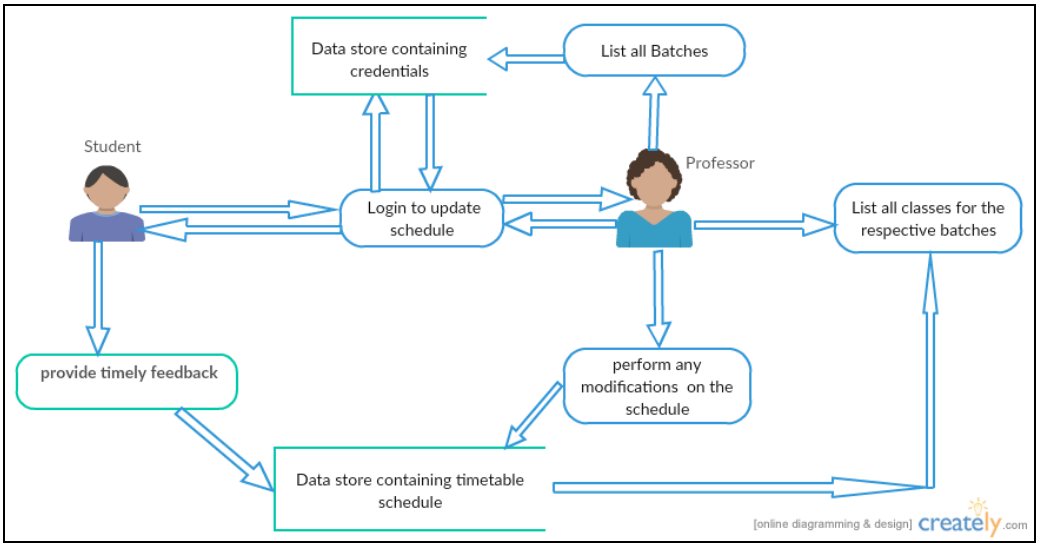

Figure 5: Data Flow Diagram (DFD1)

Collaboration Diagram

Student login to the system and if correct credentials are given then he can view the list of all the classes else if he has to login to the system again. He can post remarks about the topic which are covered in the class by the teacher which will be updated to the database. Teacher login to the system and if correct credentials are given then he can view the list of all the classes else if he has to login to the system again. He/she can add new batches /classes also modify new classes and batches which are updated to the database.

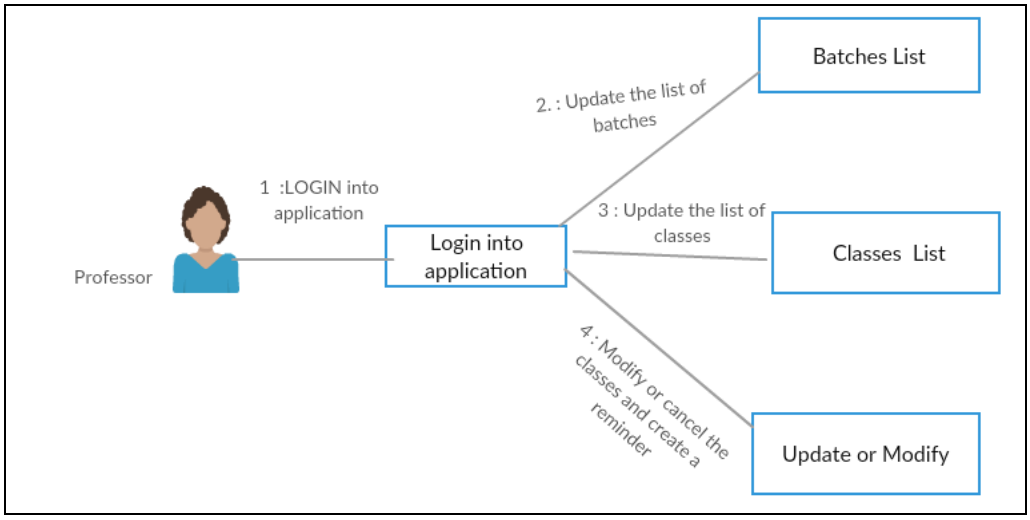

Figure 6: Collaboration Diagram of Professor

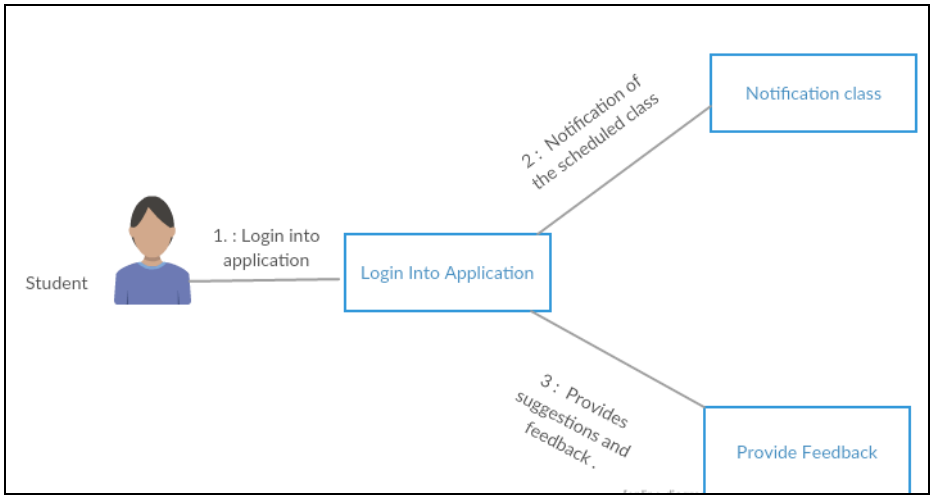

Figure 7: Collaboration Diagram of Student

Control Flow Diagram

Student login to the system and if correct credentials are given then he can view the list of all the classes else if he has to login to the system again. He can post remarks about the topic which are covered in the class by the teacher which will be updated to the database. Teacher login to the system and if correct credentials are given then he can view the list of all the classes else if he has to login to the system again. He/she can add new batches /classes also modify new classes and batches which are updated to the database.

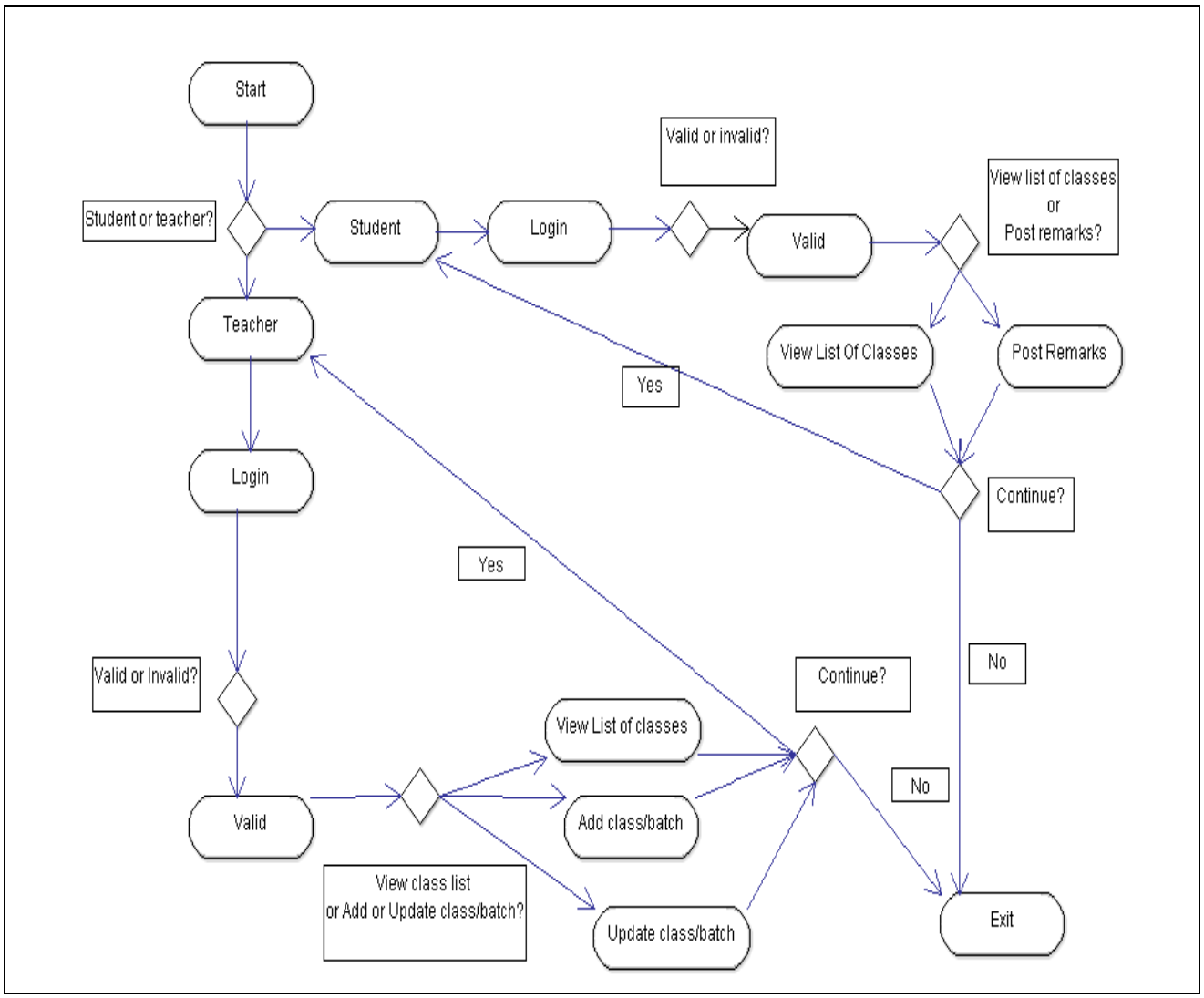

Figure 8: Control Flow Diagram

Interaction Diagrams

Swim lane Diagrams

Student Swim lane Diagram:

Student logins to the system, interacts with the interface and then username and password will be validated using the username and password information stored in the database. Once he logins to the system he views all the classes and can post the remarks on the topics discussed in the class by the teacher.

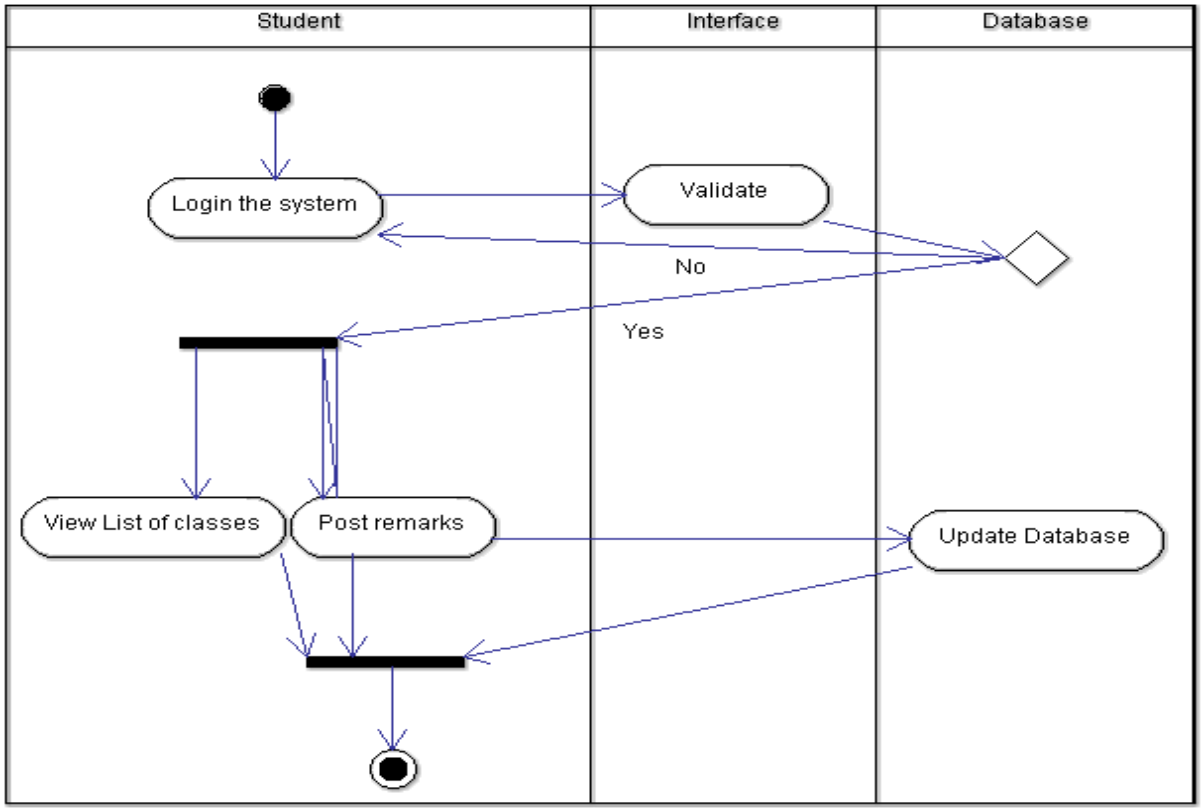

Figure 9: Swim lane Diagram of Student

Teacher Swim lane Diagram

Teacher logins to the system, interacts with the user and then username and password will be validated using the username and password information stored in the database. Once he logins to the system he views all the classes add the new classes/batches and update classes/batches which are updated in the database.

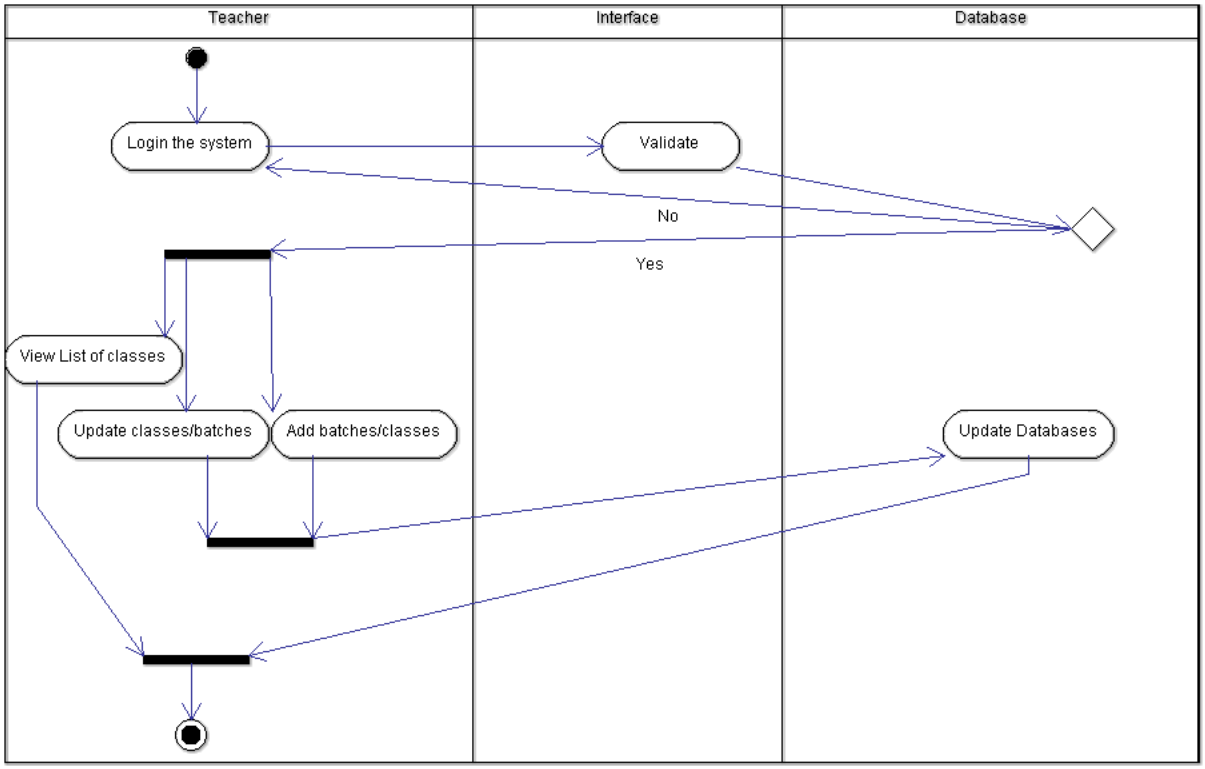

Figure 10: Swim lane Diagram of Teacher

Sequence Diagrams:

- Student View Class Sequence Diagram

Student logins to the system and interacts with the interface. Then username and password will be validated using the username and password information stored in the database .Once he logins to the system he views all the classes

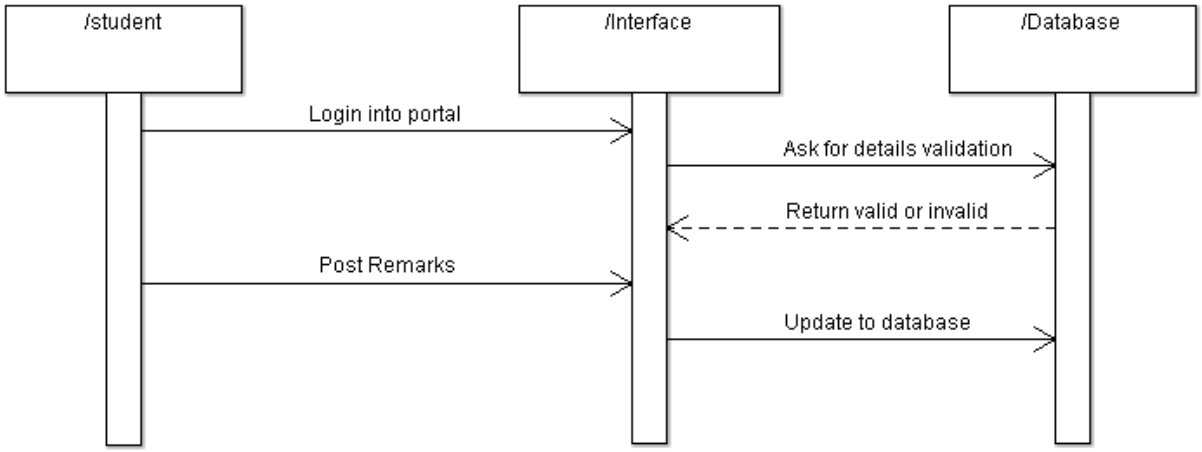

Figure 11: Sequence Diagram-View Class List (Student)

- Teacher View Class Sequence Diagram

  Teacher logins to the system and interacts with the interface. Then username and password will be validated using the username and password information stored in the database. Once he logins to the system he views all the classes.

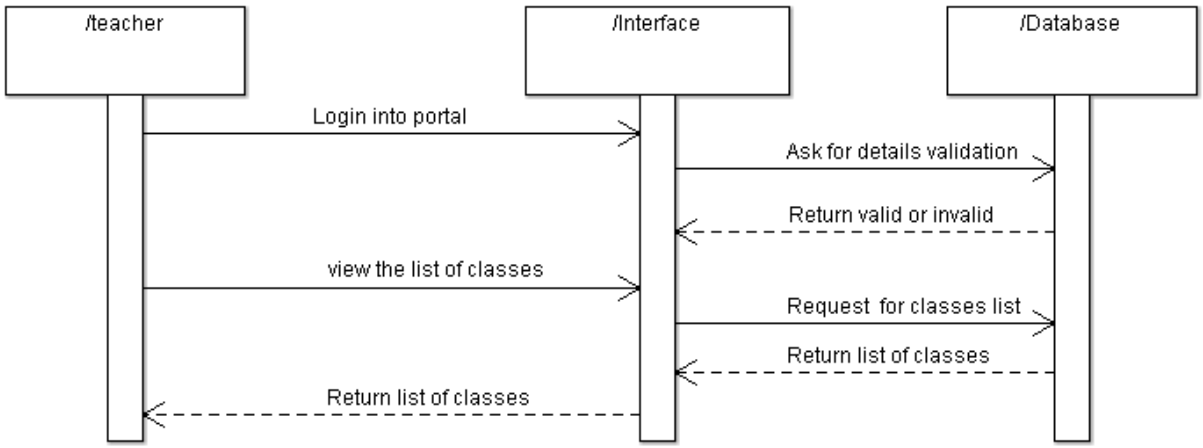

Figure 12: Sequence Diagram -View class list

- Student Post Remark Sequence Diagram

  Student logins to the system and interacts with the interface. Then username and password will be validated using the username and password information stored in the database. Once he logins to the system he post the remarks on the topics discussed in the class by the teacher.

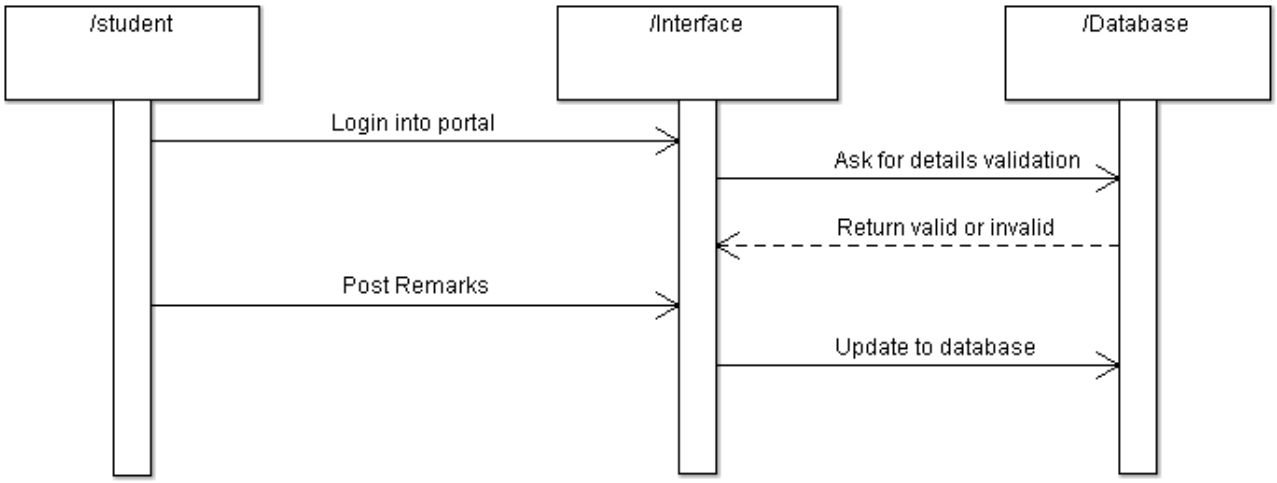

Figure 13: Sequence Diagram-Post Remarks

- Teacher: Add New Classes/Batches Sequence Diagram

  Teacher logins to the system and interacts with the interface. Then username and password will be validated using the username and password information stored in the database. Once he logins to the system he can add new classes/batches which are updated in the database.

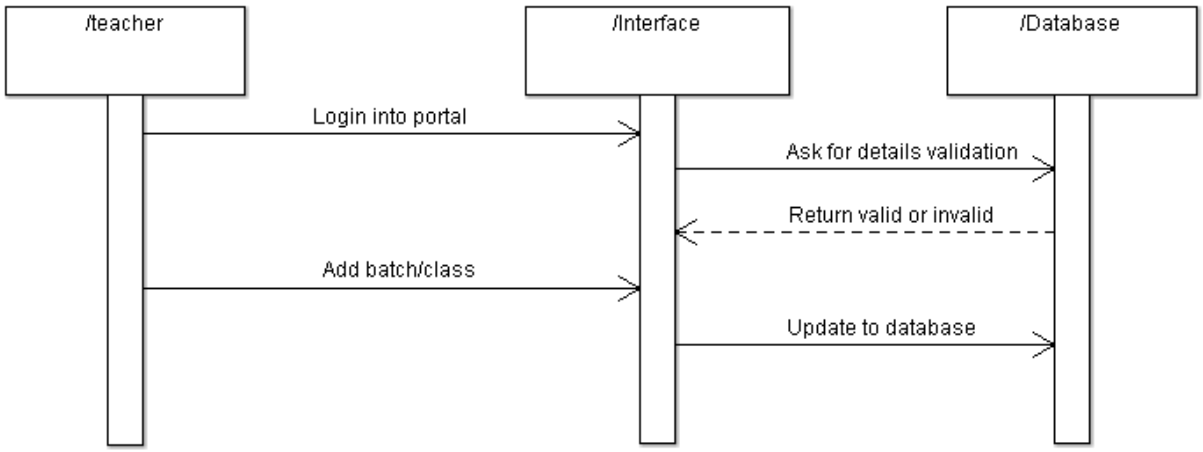

Figure 14: Sequence Diagram-Add New Classes/Batches

- Teacher Update Classes/Batches Sequence Diagram

  Teacher logins to the system and interacts with the interface. Then username and password will be validated using the username and password information stored in the database. Once he logins to the system he can update the classes/batches which are updated in the database.

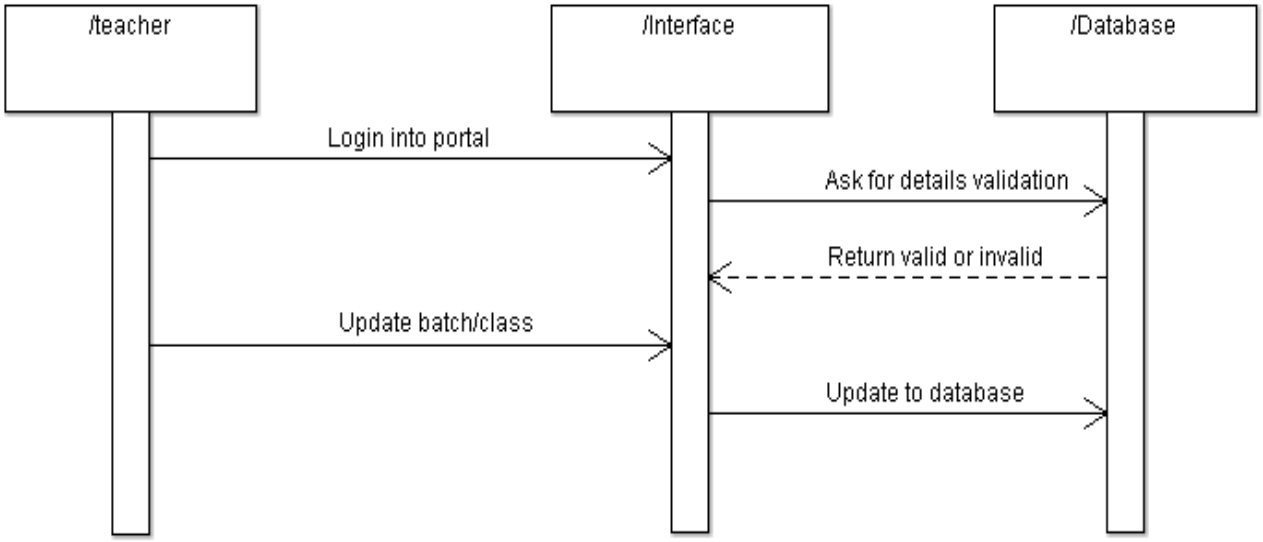

Figure 15: Sequence Diagram-Update Classes/Batches

Activity Diagrams:

- Student Activity Diagram

Student logins to the system and then username and password will be validated using the username and password information stored in the database. Once he logins to the system he views all the classes and can post the remarks on the topics discussed in the class by the teacher.

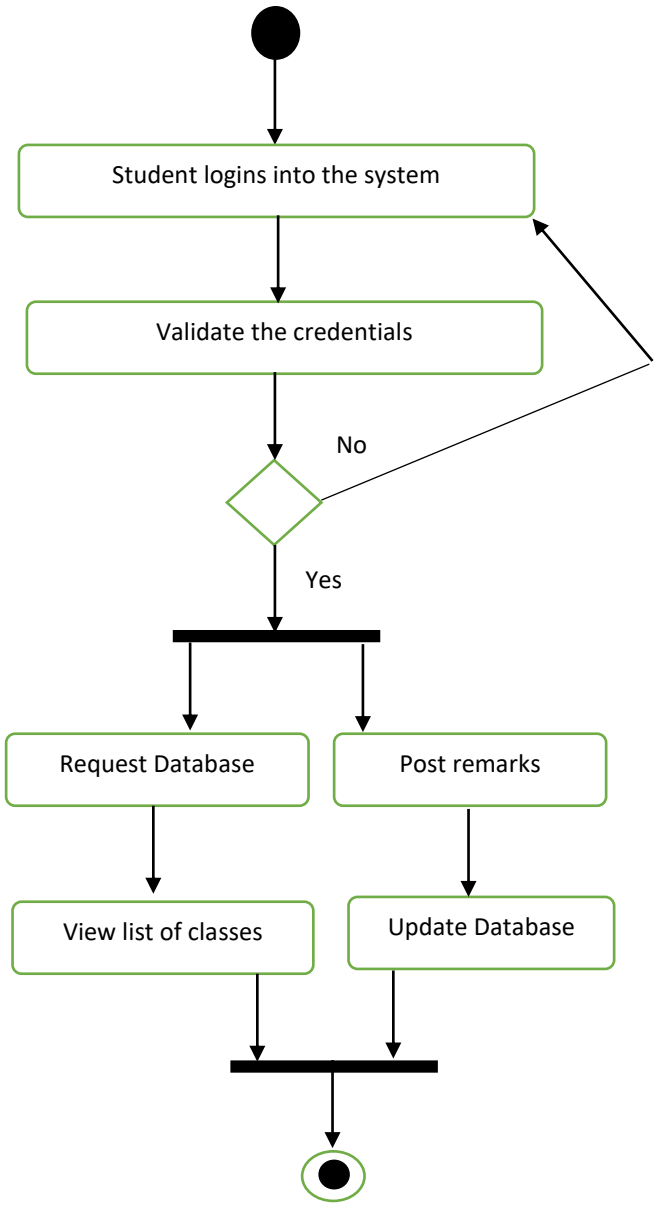

Figure 16: Activity Diagram of Student

- Teacher Activity Diagram

Teacher logins to the system and then username and password will be validated using the username and password information stored in the database. Once he logins to the system he views all the classes add the new classes/batches and update classes/batches which are updated in the database.

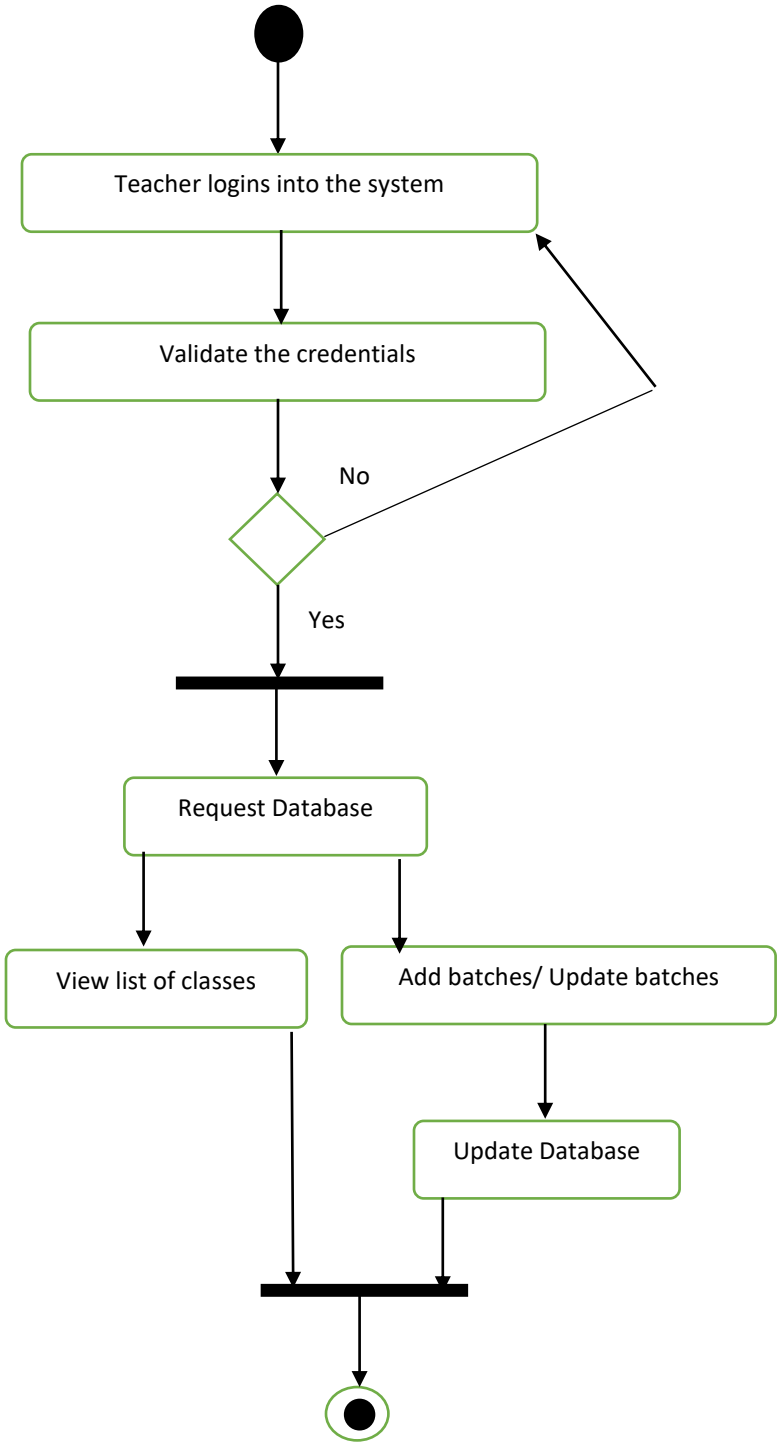

Figure 17: Activity Diagram of Teacher