Title of the Project: Classroom Management System

Group Number: 03

Group Members:

Student ID	Student Name
16301028	Md. Akib Hossain
16101173	Md.Alif-uz-zaman Dhrubo
17301215	Mohd. Rahat Bin Abdullah

Introduction

We are proposing a system which is a smart classroom management system in which both teacher and students will have maximum flexibility and they can communicate with each other anytime anywhere and the students can also download any necessary documents related to the course whenever he or she needs. By using our system the faculties will not have to use any third party classroom management system like 'Google Classroom' and others. Both the teachers and the students will be able to use official website for their daily needs about the academic purpose. Faculties can also take class by video conference via the website if he or she is not able to take class in person at the university due to emergency. In a nutshell we want to make academic life easier for both students and faculty members.

Motivation

The motivation for this proposed system is that it solves some underlying problems in various spheres both students and faculty members' face while using different classroom management software or websites. In our 'BRAC University' there is no online database from where a student can take updated course materials from home and also a faculty member cannot upload assignment, quiz or important announcement in an official platform. Both students and faculty members have to use third party classroom management software or websites which is not so efficient and it creates many problems for both students and faculty members. Keeping these things in mind we have created this system to solve these issues as much as we can.

System Description

In our system, we will be using the most emerging software development methodology, agile development. It is a time saving methodology which reduces modeling and documentation task to a great extent. Our project will be more like a code based system than design based, that's why we will prefer agile methodology. Our system will be able to respond to changing requirements causing less effort since overheads will be reduced in the whole process. Among agile methods, we will be using extreme programming. Extreme programming is founded on four core values, they are: communication, simplicity, feedback and courage. We will be embracing incremental changes for system growth. Key principles of XP for creating our system successfully are: continuous testing, coding performed by pairs of developers and close interactions with end users. As our system will be developed through pair programming, individuals will not be held responsible for any type of problem in the coding. It supports informal review of each line of code. It also supports software improvement process named refactoring. Program will be checked after every single change is made. Above all, to create a successful system we will be focusing on individuals and interactions; working software; responding to change over processes and tools; comprehensive documentation; contract negotiation and following plan respectively.

Requirement analysis

Functional Requirements:

- Admins will have the authorization of adding faculty users to the courses that they will take.
- Faculty users will have the courses list with proper schedule.
- Faculty will add course material and can announce anything regarding courses, exams.
- Student and faculty users will have an open discussion thread.
- Student users can check timings and add themselves in portal of the section of courses
- Students can make post in the course section portals.
- Students can submit assignment and the faculty users can check them while giving them proper feedback.
- Option for video conferencing for emergency.

Non-Functional Requirements:

- Our system should be available 24/7.
- Users can download and upload unlimited amount of resources from the system.
- Users can change the initial password to their own for security purpose.
- Our system will be interactive with no system delay i.e. users can get instant help.
- Only admin users can access all the information of the system.

Design Diagram

- **Use Case Diagram**

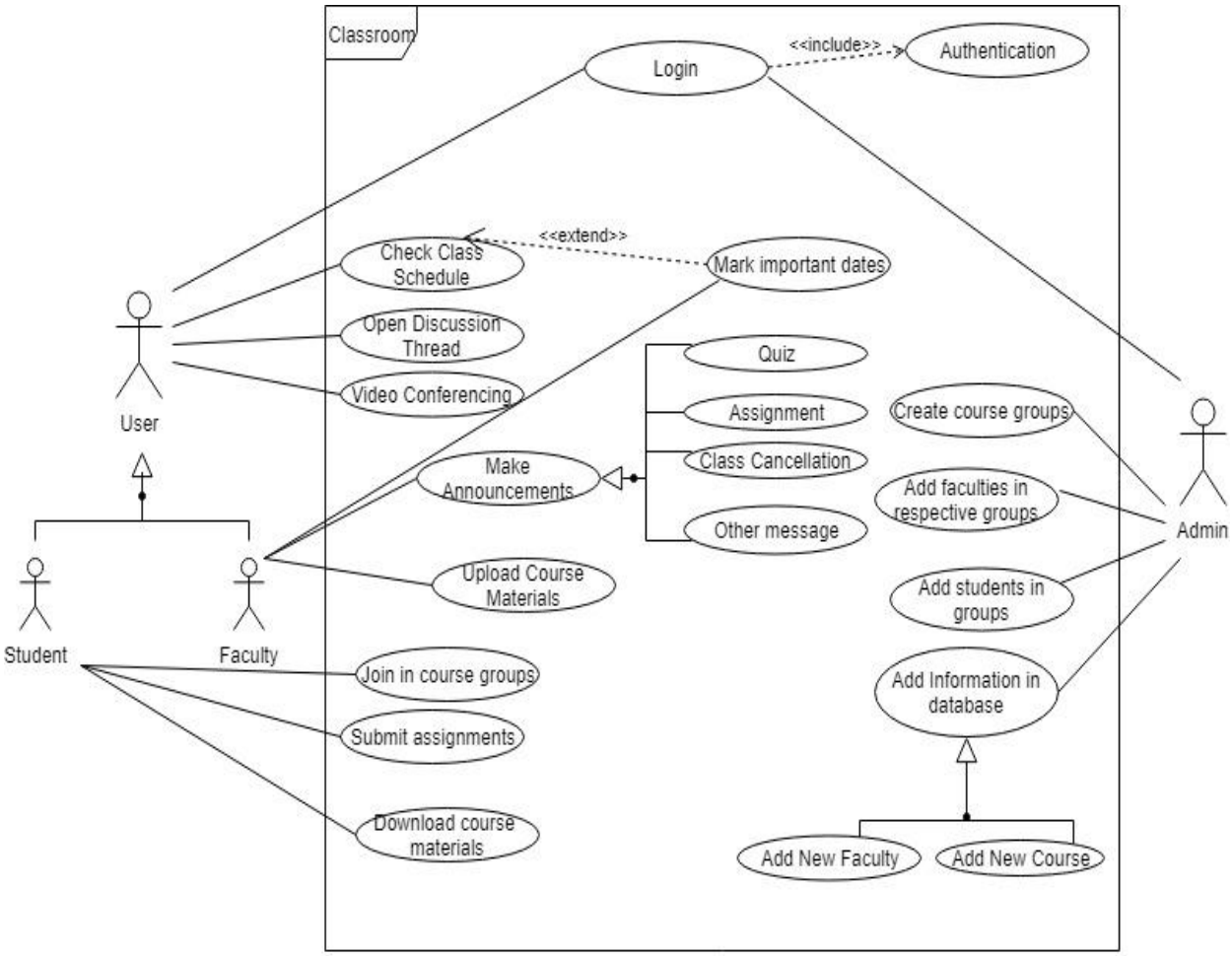

Figure: Use-Case Diagram of Classroom Management System.

Explanation of Use-Case Diagram:

There are three actors in our system like Student, faculty and admin. Faculty and student have some common use cases like check class schedule, open discussion thread and video conferencing. Apart from the common use case, student has use case like join in group, download course materials. Faculty can make announcements, can upload course materials. Make announcement has child cases like quiz, assignments etc. Secondary user admin has use cases like create groups; add faculties and students in groups. They can also add information in the database.

- **Class Diagram**

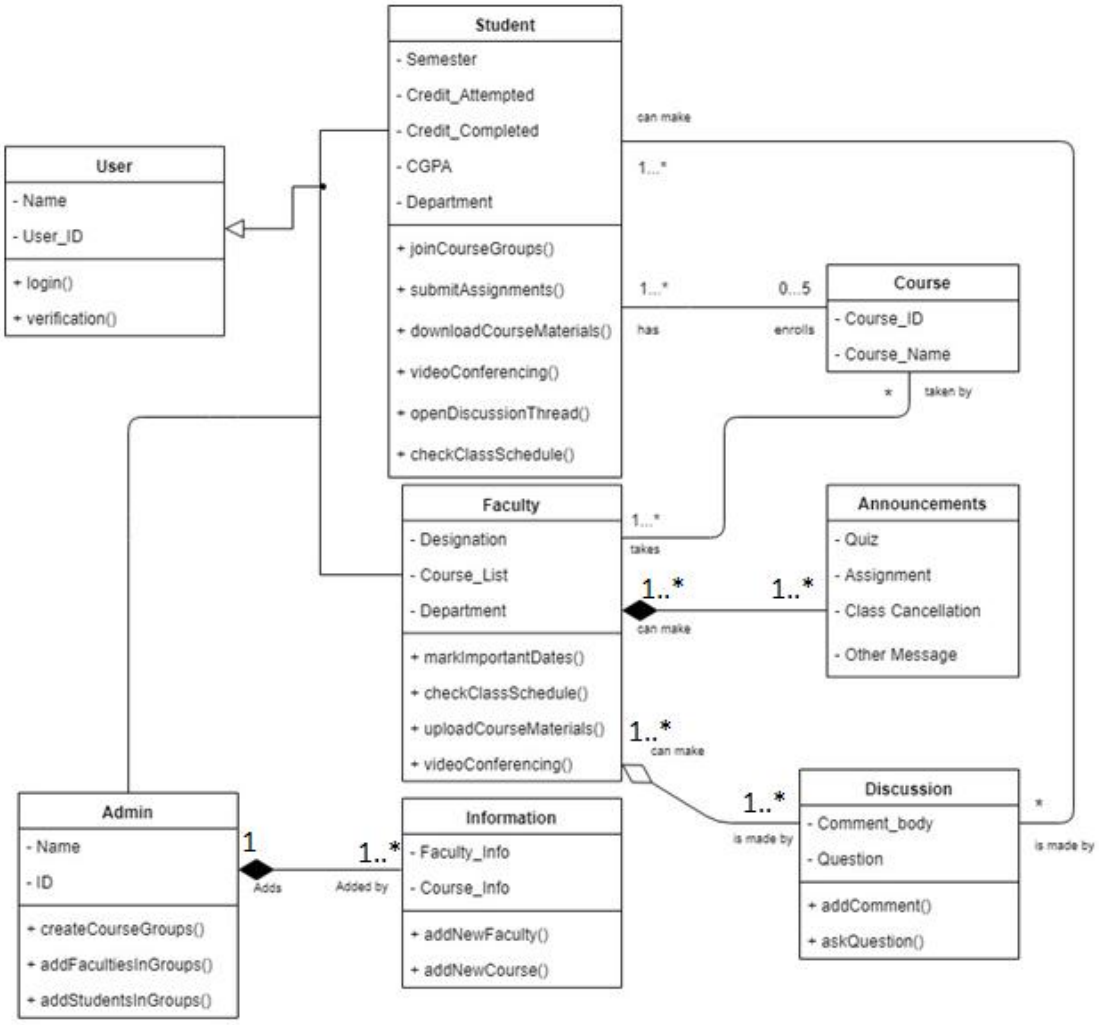

Figure: Class Diagram of Classroom Management System

Explanation of Class Diagram:

In our class diagram there are mainly 8 classes. Each class contains the name of the class, attributes and the methods it can perform. In the user class there are attributes like name and used id and it contains the method of log in and verification. After log in and verification user class can be divided into three more class which are: student, faculty and admin. Each class containing different attributes and methods of their own and they have relationship between each other. For instance, student class has attributes like semester, credit attempted, credit completed etc. Student class contains method like joinCourseGroup(), submitAssignment(), downloadCourseMaterils() and so on. It is connected with different classes with different relationship like course, announcements, discussion etc. Faculty and admin class also contain different methods and they are also connected to other classes with different relationship as well like student class.

- **Activity Diagram**

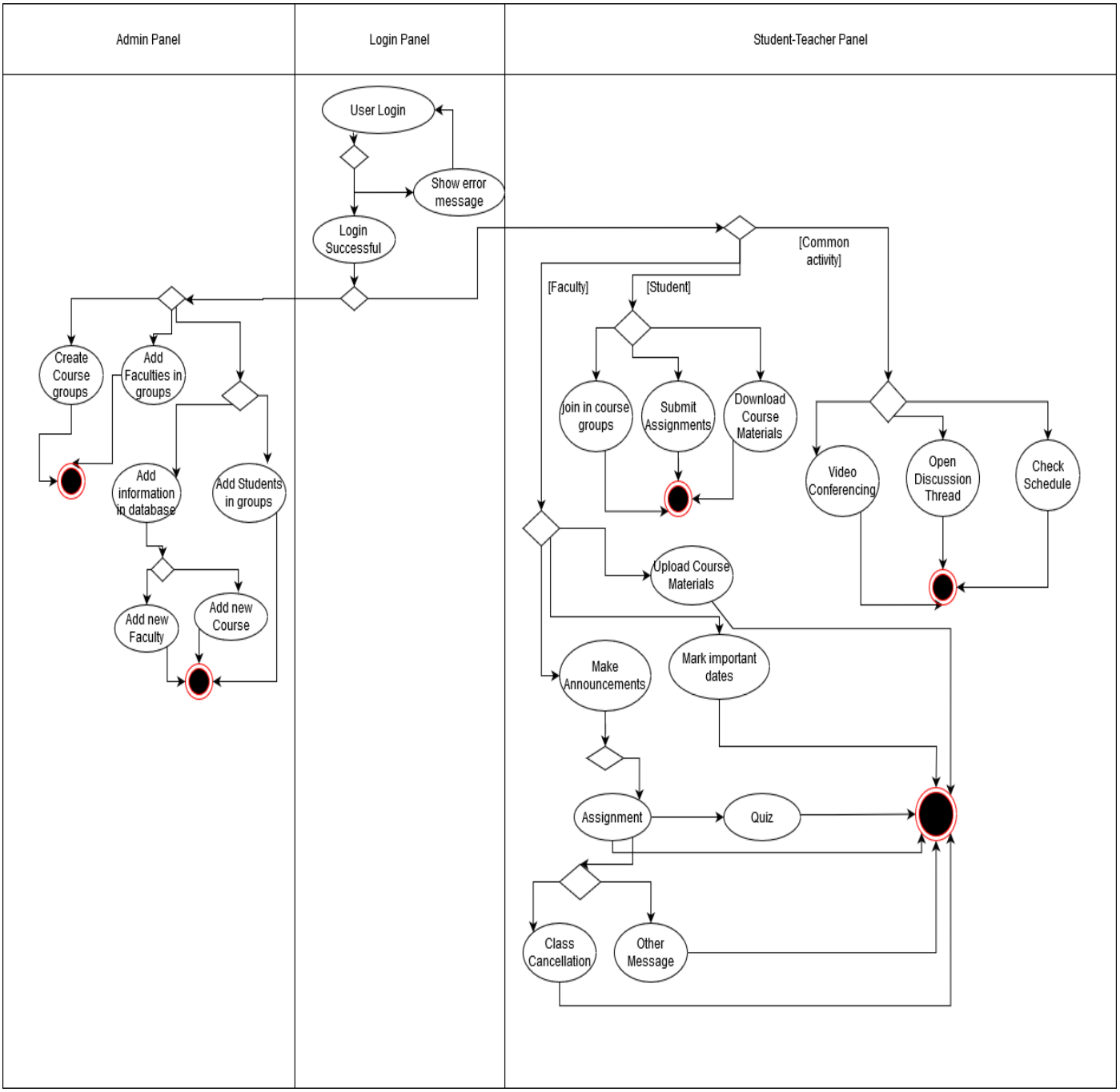

Figure: Activity Diagram of Class Room Management System

Explanation of Activity Diagram:

In our class diagram it is shown that different types of users can log in to the system to do different types of activity. The users can be students, faculties and admins. If the given password matches the designated password then they can continue their activity. Students and faculties can do some similar activities like open video conference, make discussion threads, check class schedule and so on. Whereas, the student can only do activates like download course materials, submit assignments and check important dates but the faculties can do activities like upload course materials, make important announcements about quizzes or assignments, upload assignment files, cancel class schedule and so on. Admins can do activities like create course groups in new semester, add new faculty members or students and can also delete them as well. Admins are also able to update faculty members, students and their information. The whole diagram is divided into three different swimlane where one is admin panel, second one is login panel and last one is student-teacher panel.

- **Data-Flow Diagram**

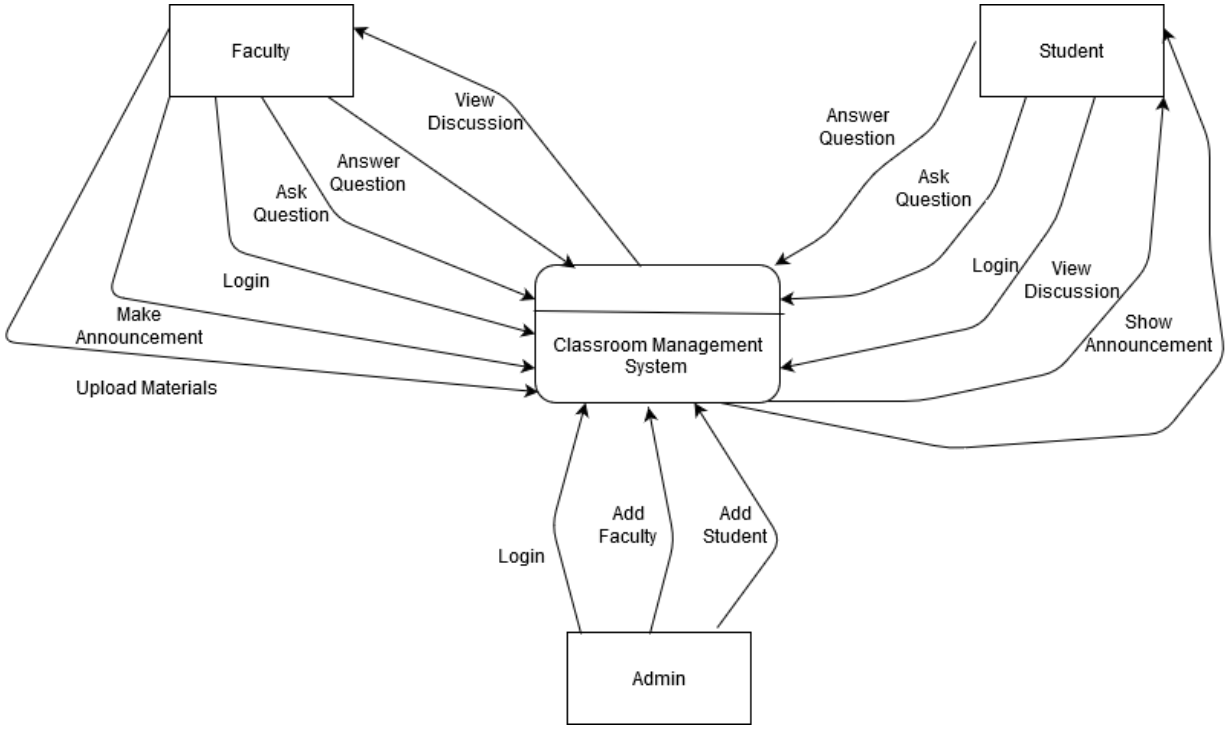

Figure: Context Data Flow Diagram of Classroom Management System.

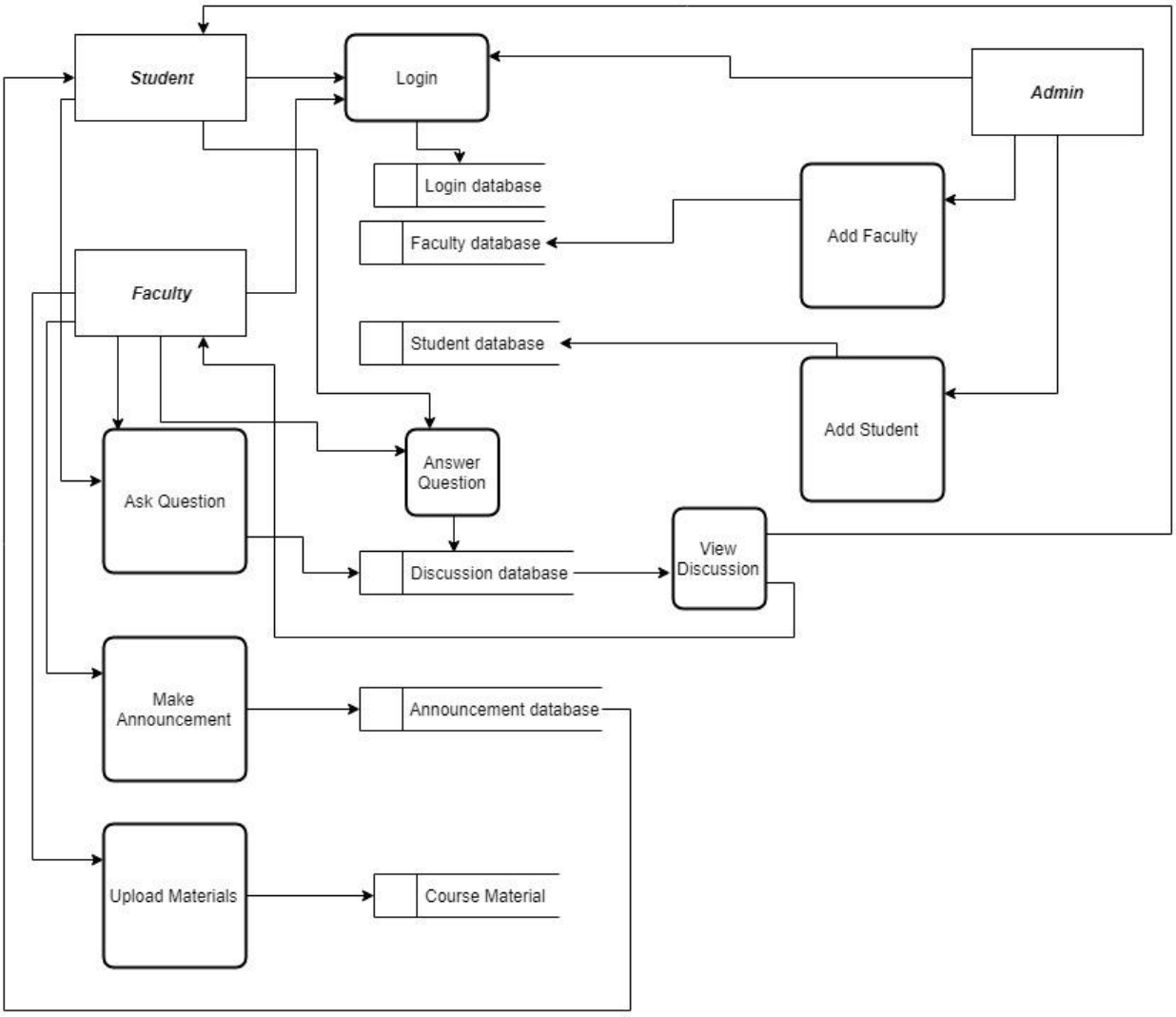

Figure: Level-1 Data Flow Diagram of Classroom Management System.

Explanation of Data-Flow Diagram:

In this data flow diagram of our classroom management system there are several external entities like: admin, student and faculty. Data flow through these entities by several processes and data stores. For example, if a user wants to log in to the system then they have to go through the log in process. After they type their password and user ID in this process then the typed information goes to the log in database and if it matches to the given information of that user then they can log in. All other processes like Add Faculty, Add student, Ask question, Make announcement, Upload Materials work like the same way by storing data to their designated data stores and then give output to the external entities. In context DFD, whole process is shown by a single process but in Level-1, multiple sub-process is used but input and outputs are same as context DFD.

- **Sequence Diagram**

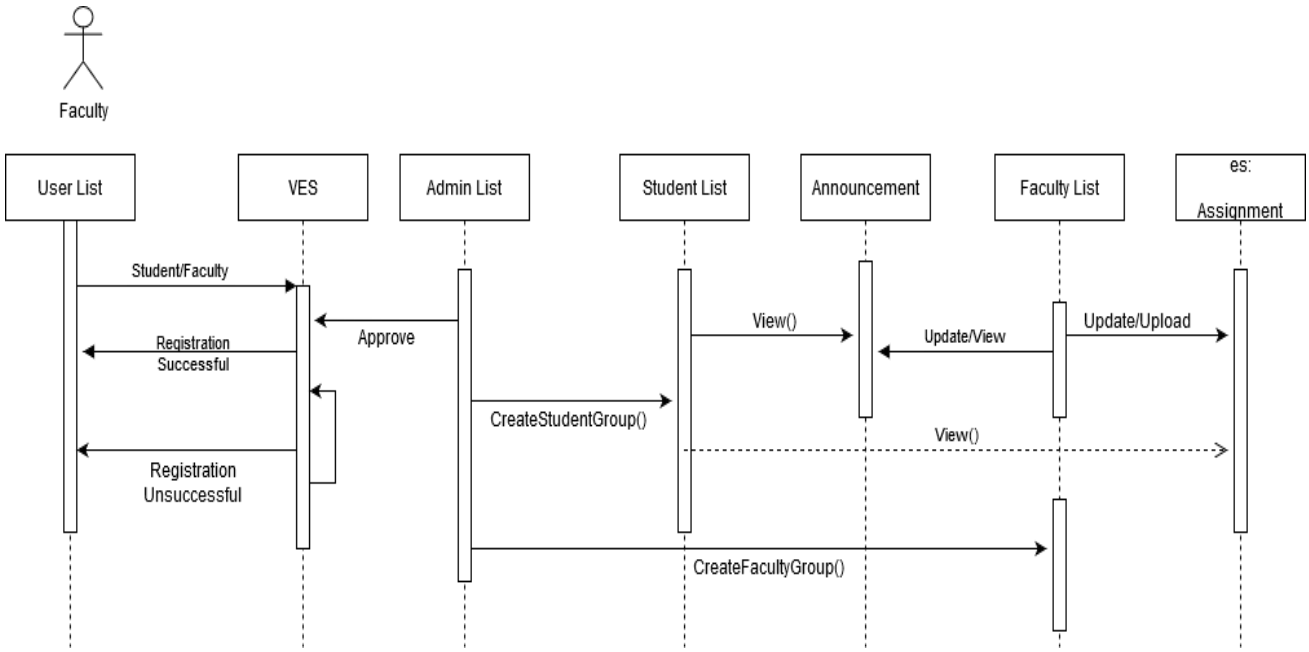

Figure: Sequence Diagram of Classroom Management System.

Explanation of Sequence Diagram:

In this Sequence diagram illustrate the actors that participate in use case diagram which is Student, faculty and admin. It is a dynamic model. There are some objects for example: user: list, student: list, faculty: list etc. It is Show the sequence of messages that pass between objects for a particular use-case over time. Faculty and Student have some common use cases. User and faculty got approval by admin. When admin approve student see the announcement and discussion in threads. Secondary user admin has to create groups, add faculties and students in the group. Admin also responsible for add information in the database.

Conclusion

In this classroom management system project we tried to build a smart classroom management system in which both teacher and students will have maximum flexibility and they can communicate with each other anytime anywhere. For this requirement we draw use-case diagram, activity diagram, class diagram, data flow diagram and sequence diagram. This diagram is useful to build our required model or system. Firstly, we plan the project then we go for system analysis and then we design our system specification. Finally, we build our new system and maintenance plan. We implemented our design through JAVA and .NET. and database will create by MySQL. In future, we add more features in our classroom management system for productive classroom. Moreover, we will add exam room, message notification, private message option, pin announcements etc. In conclusion, classroom management system is beneficial to the success of the students and faculties in modern time.