

Design and architecture Document :

4+1 architecture View Model

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Course Project : Inventory Management Application with focus on institute sports complex

Team Members:

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Quality Attributes of the application according to ISO 25000 Standards

Security :

1. Separate logins are provided for admin and student ensuring accountability ,authenticity and confidentiality of the application.
2. Before any change in the database , security password is required which ensures integrity of the application

Maintainability:

1. A active sql database cloud server to store the databases.
2. After deployment , user/client feedback is taken and new version with improvements are updated on the download link

Usability

1. The application should be user intuitive and easy to use. That is , application at every step prints a list of inputs that user can enter and what function it leads to.

Compatibility

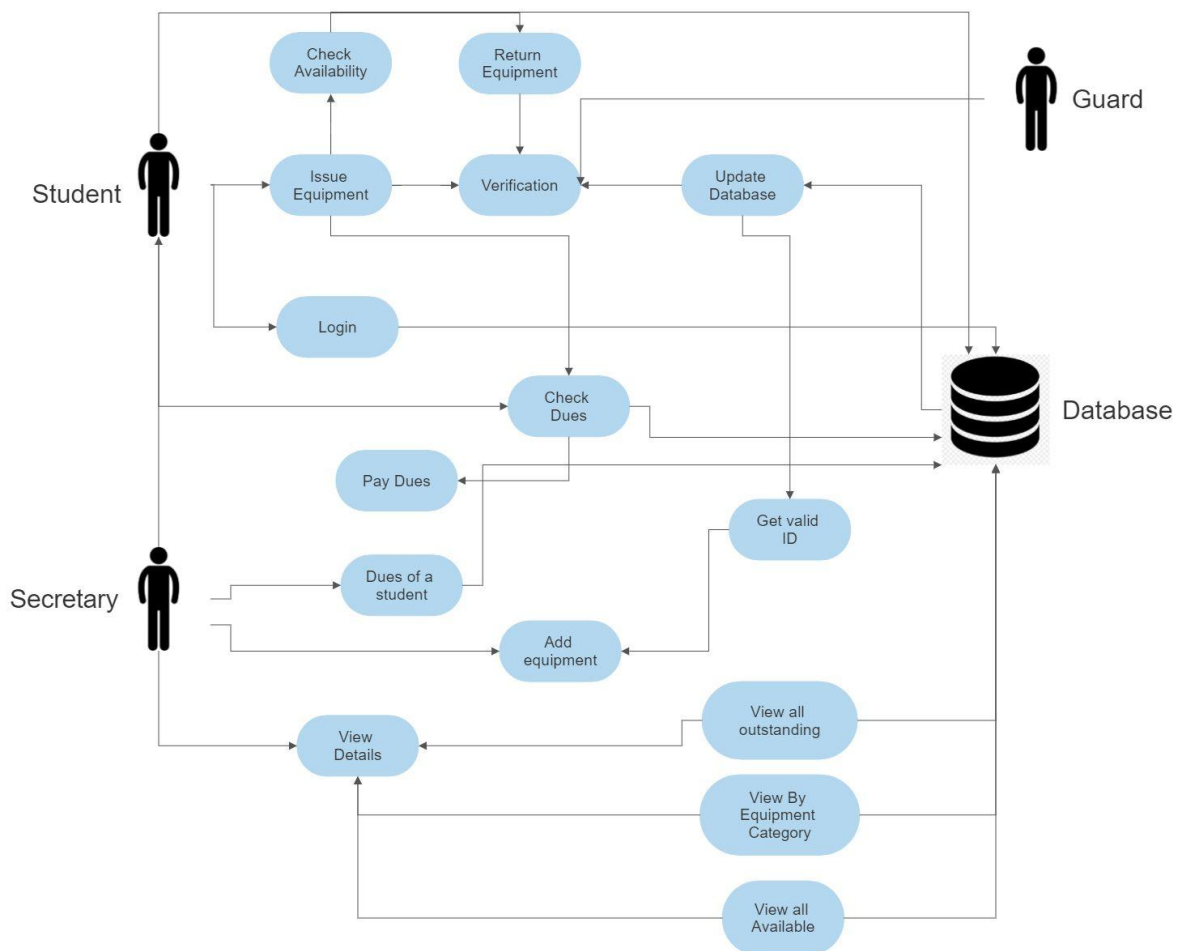
1. App can be run on any system with a active internet connection, terminal system like linux or wsl like ubuntu in windows while the main system should also have few megabytes of ROM and RAM with sql c api for connection between database

and c application , cmake for building the executable from the c/c++ modules. If the executable is already build , no sql c api and cmake is required

DESIGN Architecture explained by 4+1 architecture view

User scenario/ Use cases

Use Case Diagram



User Case Diagram

Description

The Application homepage provides 2 login options : one for students and other for the admin which may be the hostel secretary or the sports secretary or admin .

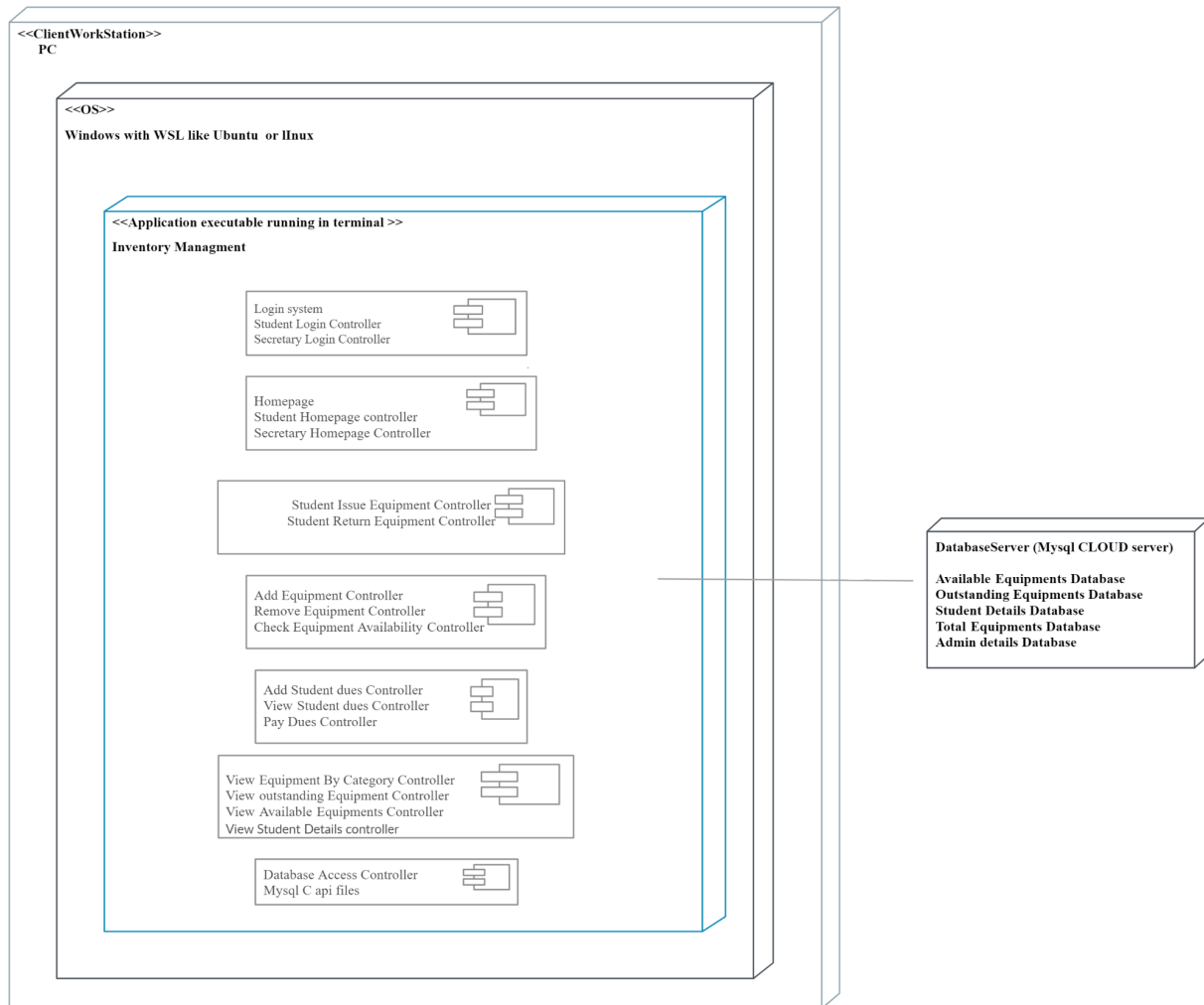
1. The students login allow them to issue/return equipment and check/pay dues. Issue equipment /return equipment / pay dues can only be done in the main system under the surveillance of a guard with a security password as it involves changes in the database.
2. The secretary /admin login allows access to the software either for checking availability of products in the inventory or to check what items are issued and to whom and how much fine is pending for each student .
3. Security: In addition to both these users there is one more security person who will also interact with the system to securely facilitate all processes.

Use cases for the application

- Student / Admin Login
- Issue Equipment
- Return Equipment
- Check his Dues by student
- Pay dues
- Check dues by admin/Secretary of other students
- Check Availability of equipment
- View details of inventory
- View equipment by category
- View all available equipments
- View all issued Equipments details
- add/remove equipment from inventory
- Verification of any change in database by a password

Detailed explanation of the use cases and user requirements are in the SRS.

Physical or deployment View



Description

The Physical view shows the execution environment of the application and describes the mapping of software onto hardware and reflects its distributed aspect.

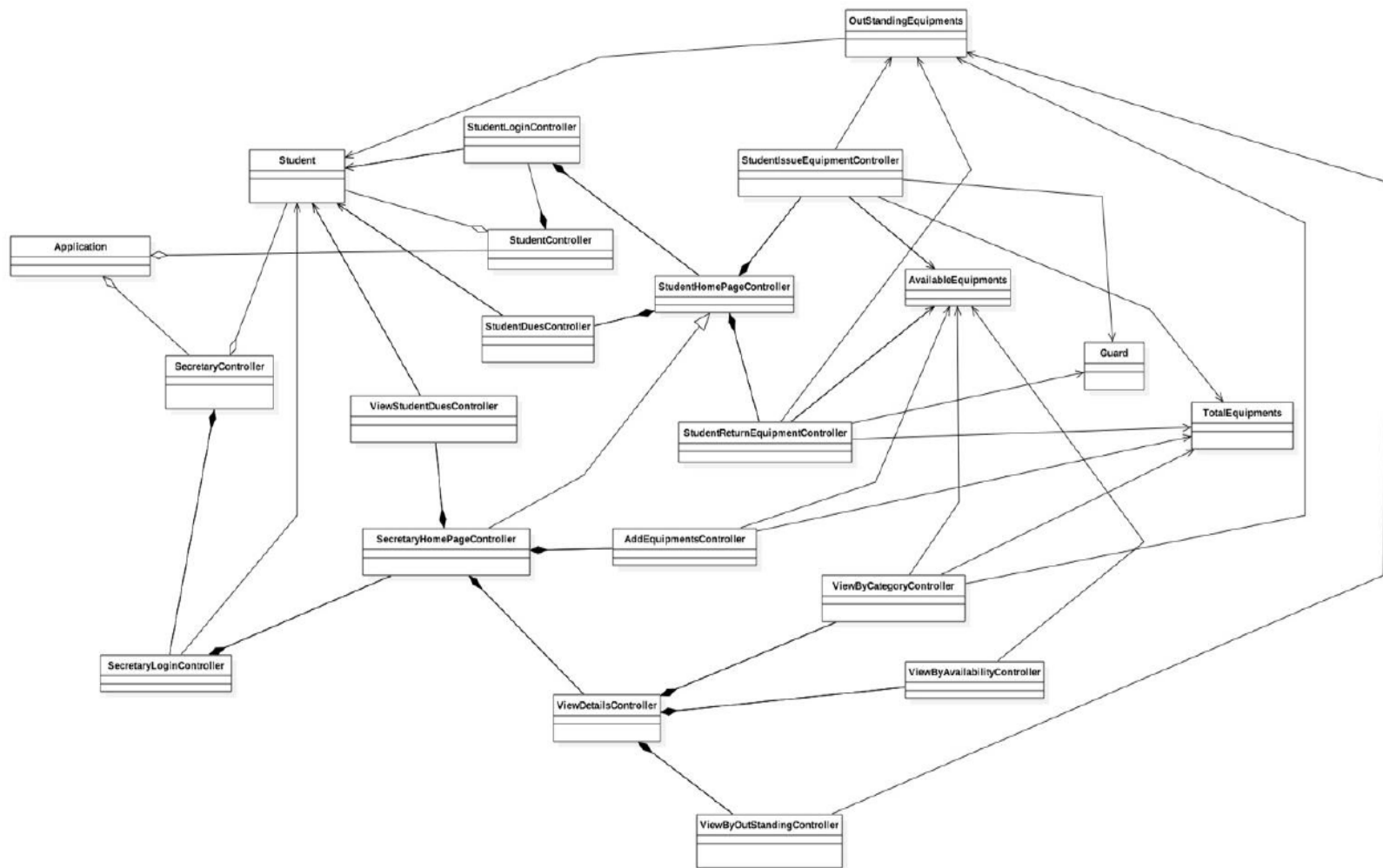
- The application is a executable that could be run in a terminal.
- Mysql cloud Database server stores all the required databases
- The application executable is connected to the database server with the use of mysql C api so that changes can be done in the database by appropriate users.

Logical View

Modules Diagram

Description

The module diagram or the class diagram shows the modules of the application and interaction between them . It shows what the application should provide in terms of service to its user .The module names describe their purpose . It shows how the application serves the user requirements (Use cases).

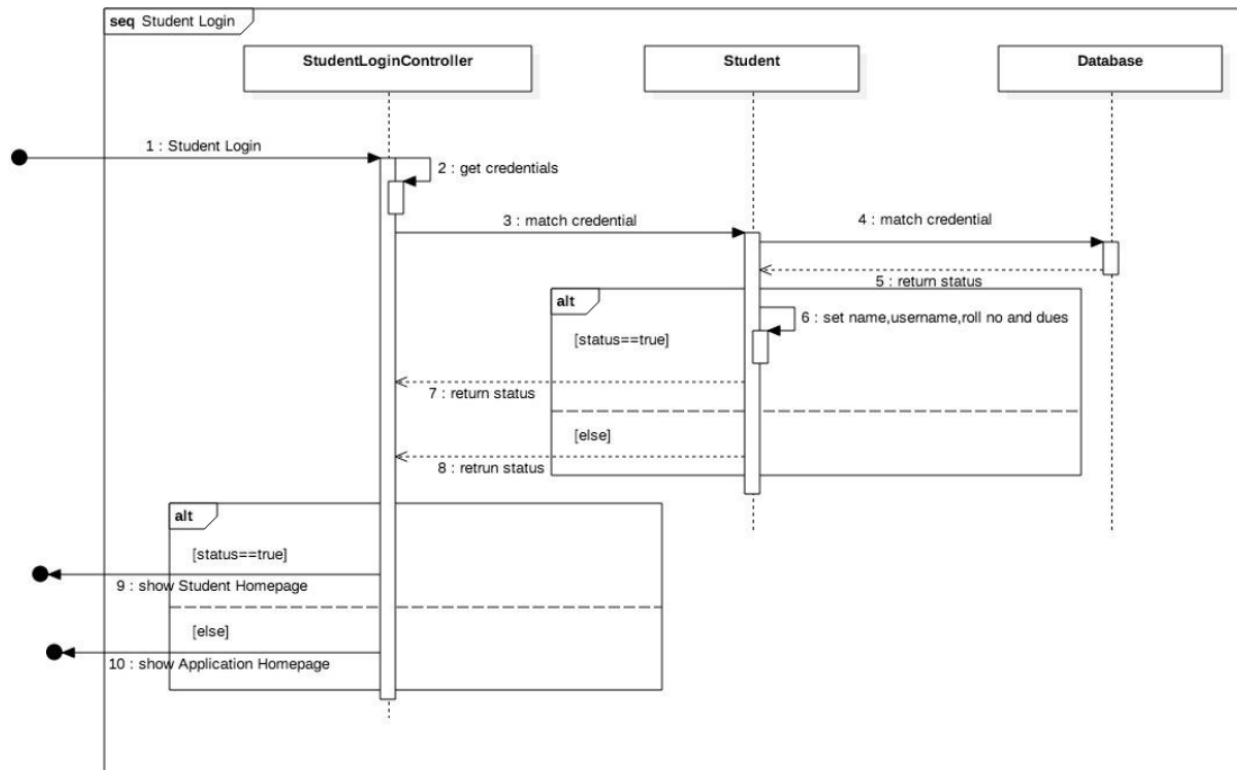


PROCESS VIEW

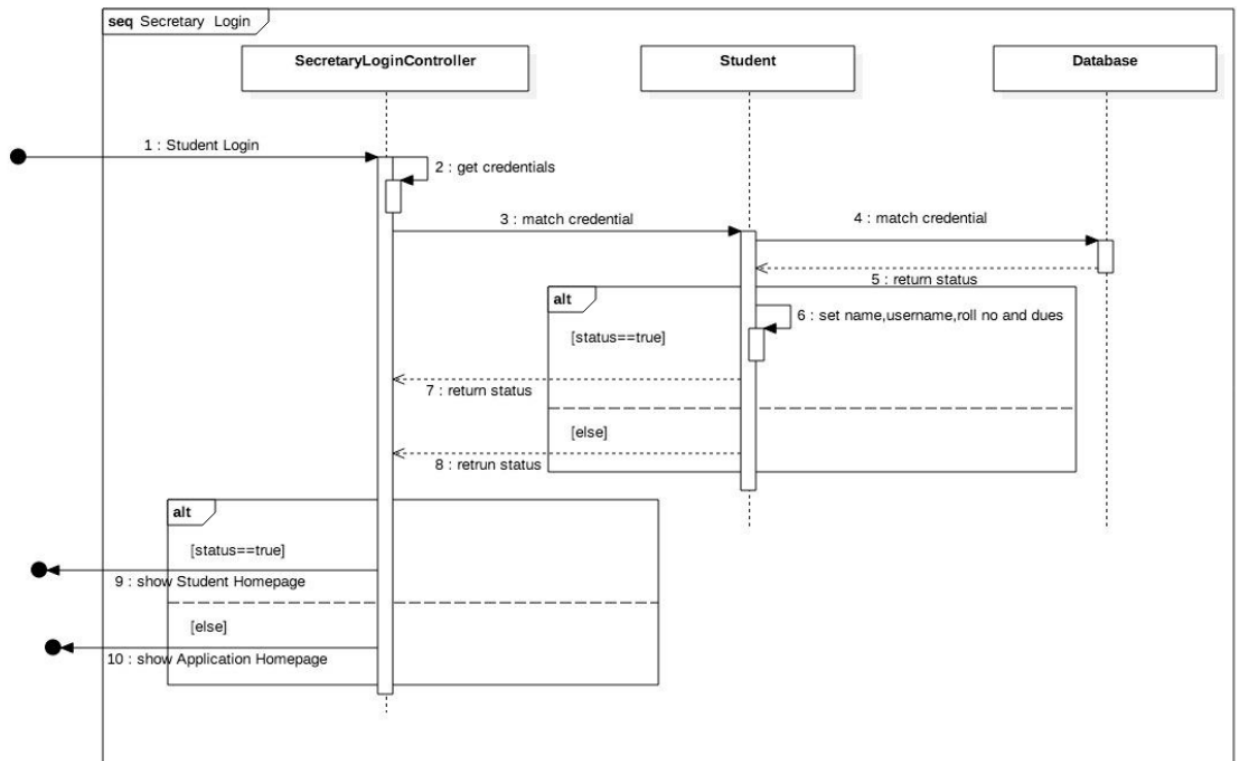
Sequence Diagrams

The sequence diagram shows how and in what the order the modules work together for a particular use case.

1. Use case : Student Login

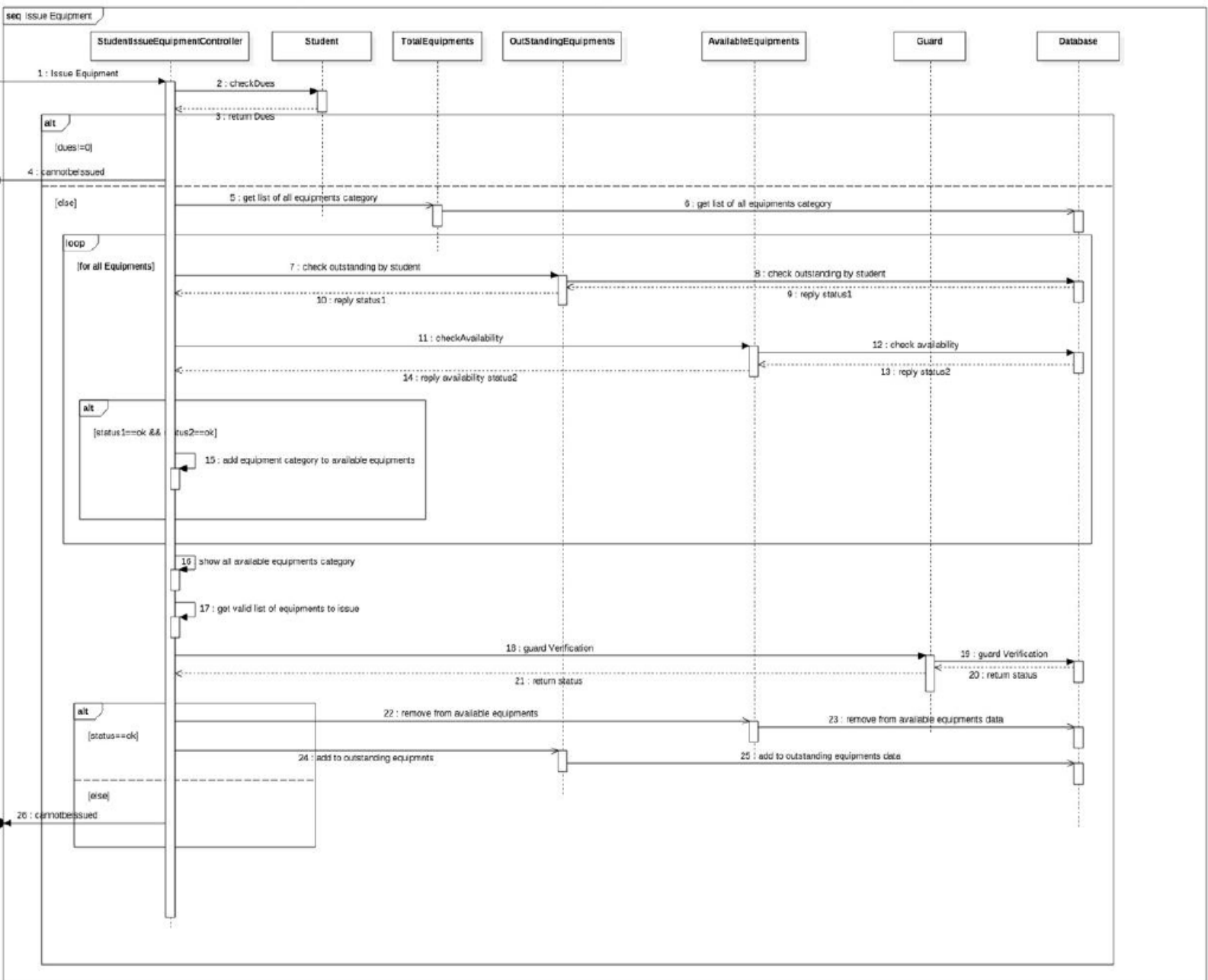


2. Use Case : Secretary Login



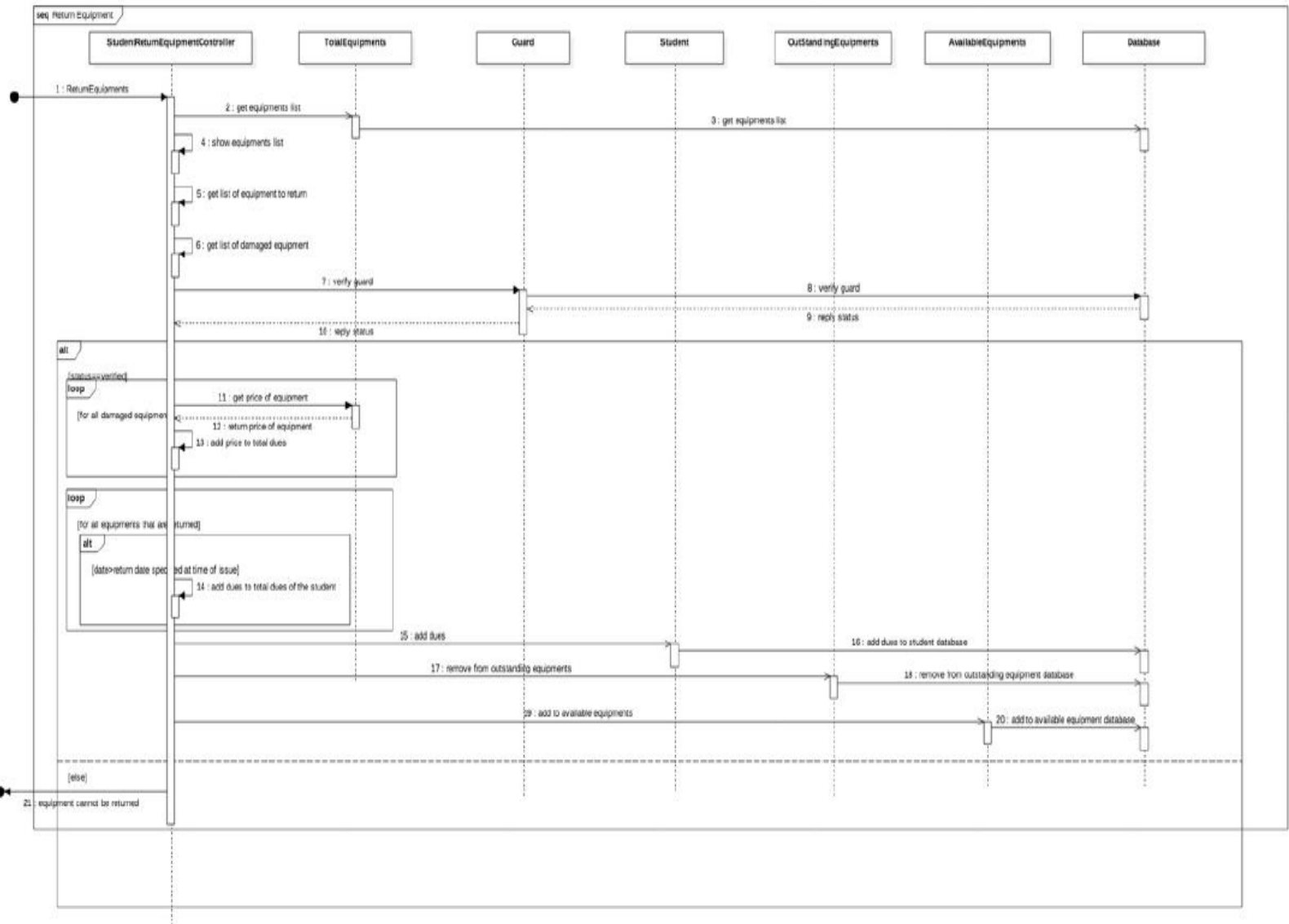
3. Use case : Pay Dues

seq Pay dues

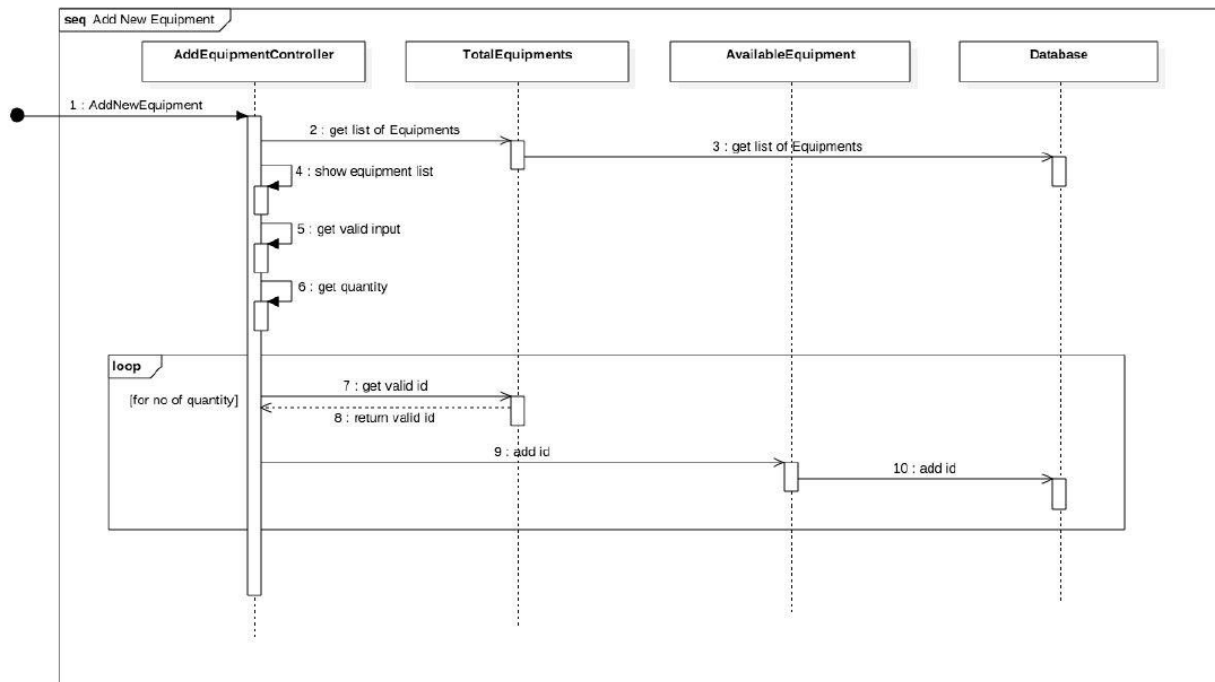


4. Issue Equipment

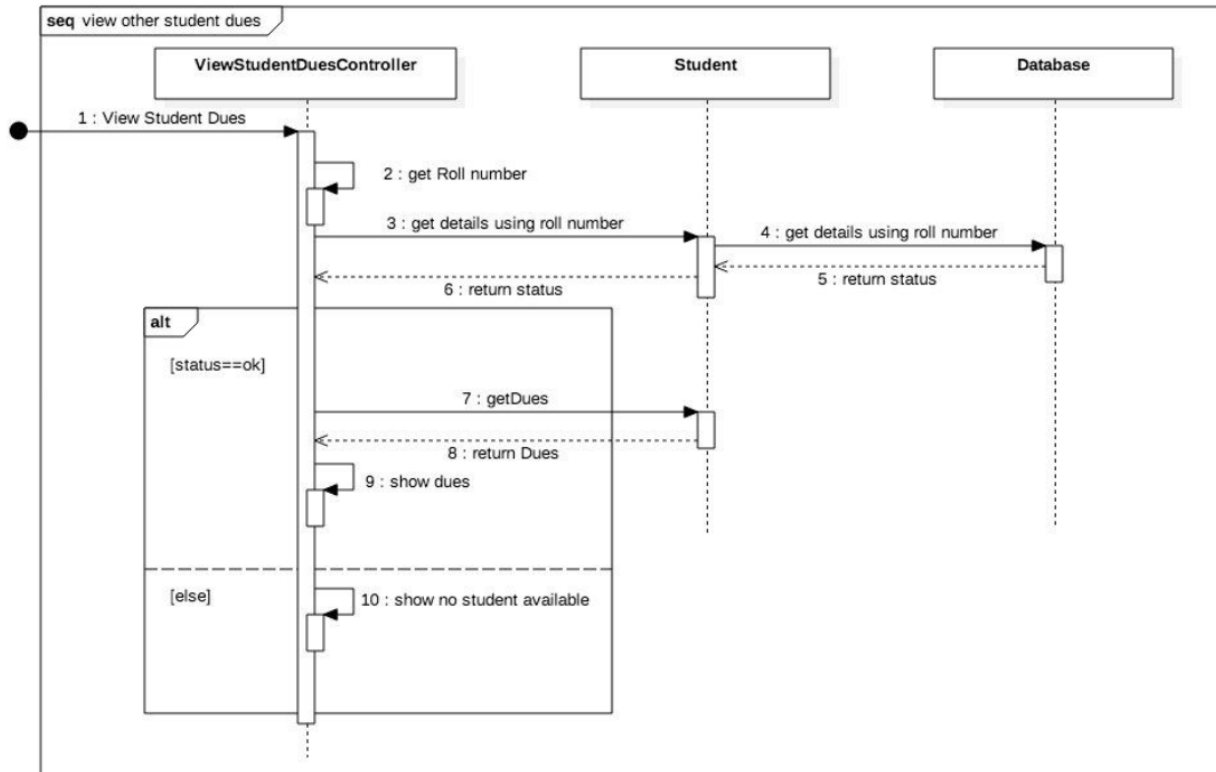
5. Use case : Return Equipment



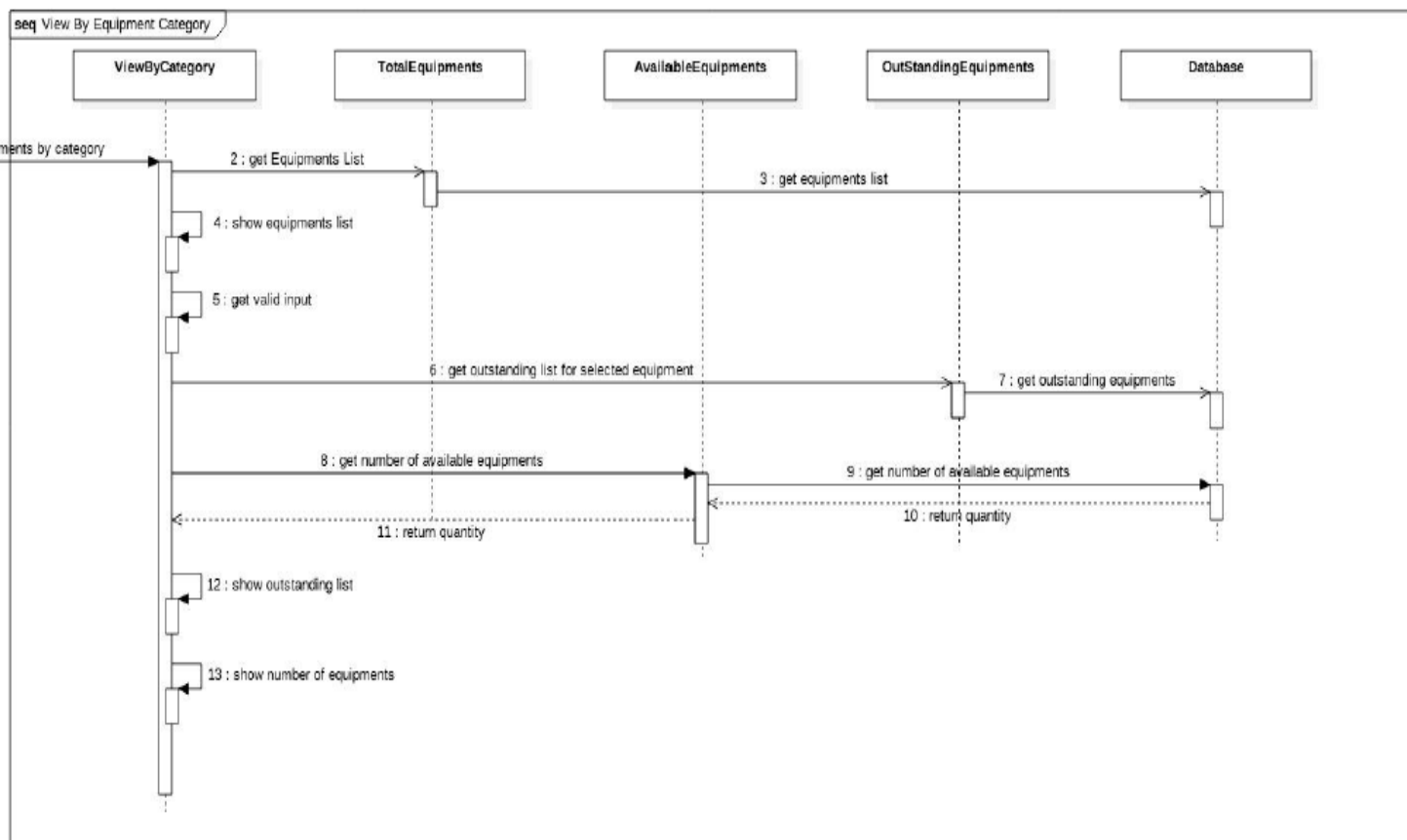
6. Use Case: Add new Equipment



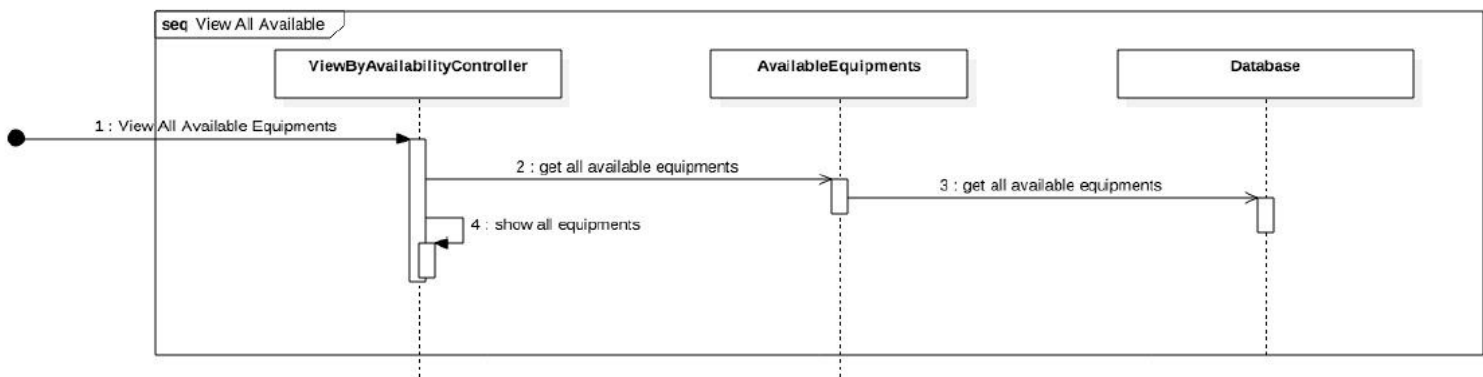
7. Use Case : View Other student Dues



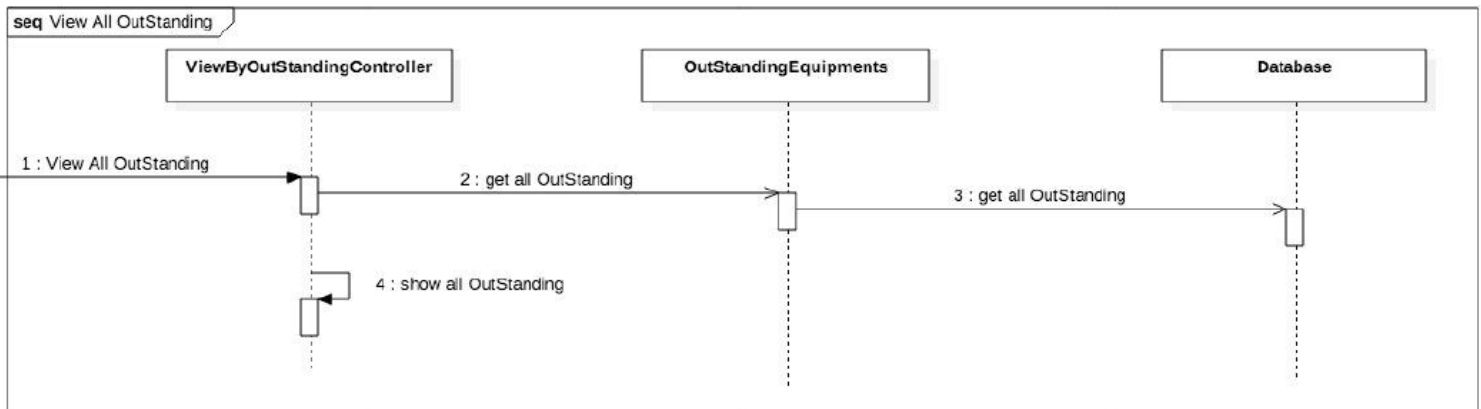
8. Use case : View Equipment By Category



9. Use Case : View all available

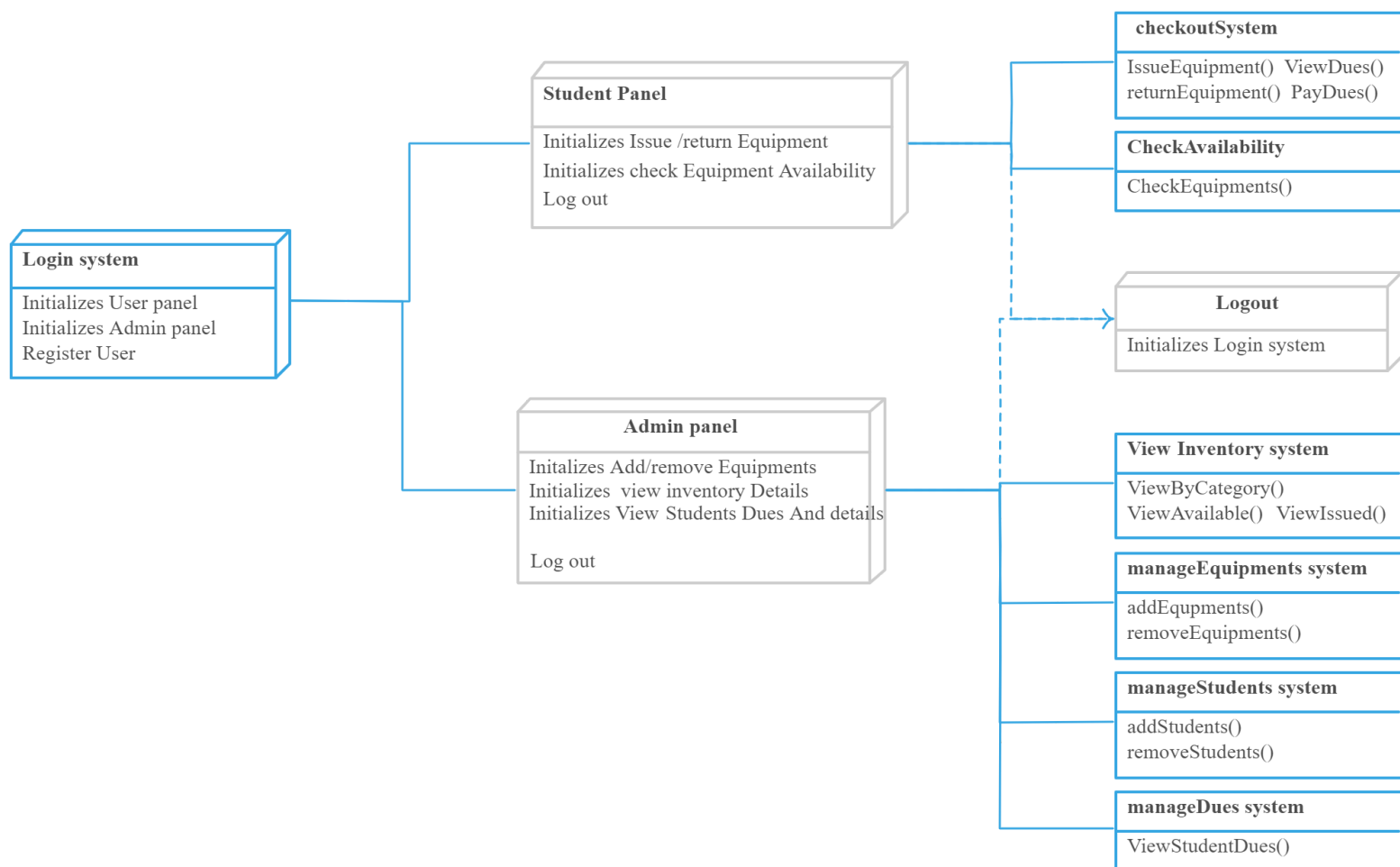


10. Use Case : View all Outstanding



Development View

Component Diagram



Description

The component Diagram divides the overall application in various system components . Each system serves a particular functionality . A system consists of one or more classes and these classes work together to serve the functionality.

There are 2 persons in the development team with distribution of tasks as follows:

- Abhijeet Verma** : login system , checkout System , Check Availability
- AdityaRaje Ashok Devade**: View Inventory System , Manage Equipments system , Manage student system , Manage Dues System.