**ISTANBUL AYDIN UNIVERSITY FACULTY OF ENGINEERING
SOFTWARE ENGINEERING DEPARTMENT**

SEN334 | SOFTWARE ARCHITECTURE

CINEMA AUTOMATION

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CONTENTS

2. INTRODUCTION

2.1 What is the Cinema Automation?

Cinema automation is a multi-dialect program that permits ticket printing and revealing by making choices, for example, Sessions, lobbies, seats, situate types, motion pictures, wage types in films. Cinema ticketing programming has set-up and deals interfaces. Clients sign in to the framework with their phone number and password and they can view only the screens within their authority.
The most important element of the system is that it can be integrated directly with the next generation of POS systems. Along these lines, it is simple, quick and reliable. Cinema ticketing is parametric. Ticket costs as indicated by individual kinds can be characterized by the organization's wage strategies. Ticket prices according to person types can be defined according to the company's wage policies with their automation screens. The ticket sold can be printed from the printer.

3. The ordered list of functions of the system (what does it do ?)

3.1 Features of the program

- For Web design, Application design theme selection should be done well.
- Making money should be the second plan.
- The first aim is to create a different cinema experience.
- Unique style.
- Personal thoughts should be taken into account (Customer satisfaction).
- System must be original and have not no copy content.
- Provide benefit to the users.
- Every individual in society should be use it.
- It should provide convenience to employees and customers.

3.2 Operating Enviroment of The System

- User friendly.
- The system does not require a special ability to use in everyday life.
- The requirement from the device must be minimum.
- Device must support QR Code inputs.
- The system must be connected to the database and must be open to development.
- User authentication and login from the user. The system must be battery and internet friendly.
- Easy exit from the system.

4. Give list of actors (human or none human) that are involved in functions shown in step 3.

- **Actors :** Employee,Customer or Member ,User ,Admin

4.1 Logon Into System

- It can login to the system.
- Employer and employees can share unlimited messages on their platforms.

4.2 Ticket Reservation

- Customer can buy, booking and cancellation cinema tickets.
- Customer can receive online tickets without waiting queue (With QR Code).
- If student or retired, different ticket tariff will be applied.

4.3 Checking Parameter

- The hall can be added,removed,edited
- Sessions can be added,removed, edited.
- Employee can be added,removed,edited.
- Customer can be added,removed,edited (For Elite Status).
- Movie can be added,removed,edited.
- Movie category can be added,removed,edited.
- Movies and salons can be associated.

5. Context diagram of the system.That is, interaction of your system with its environment (actors).
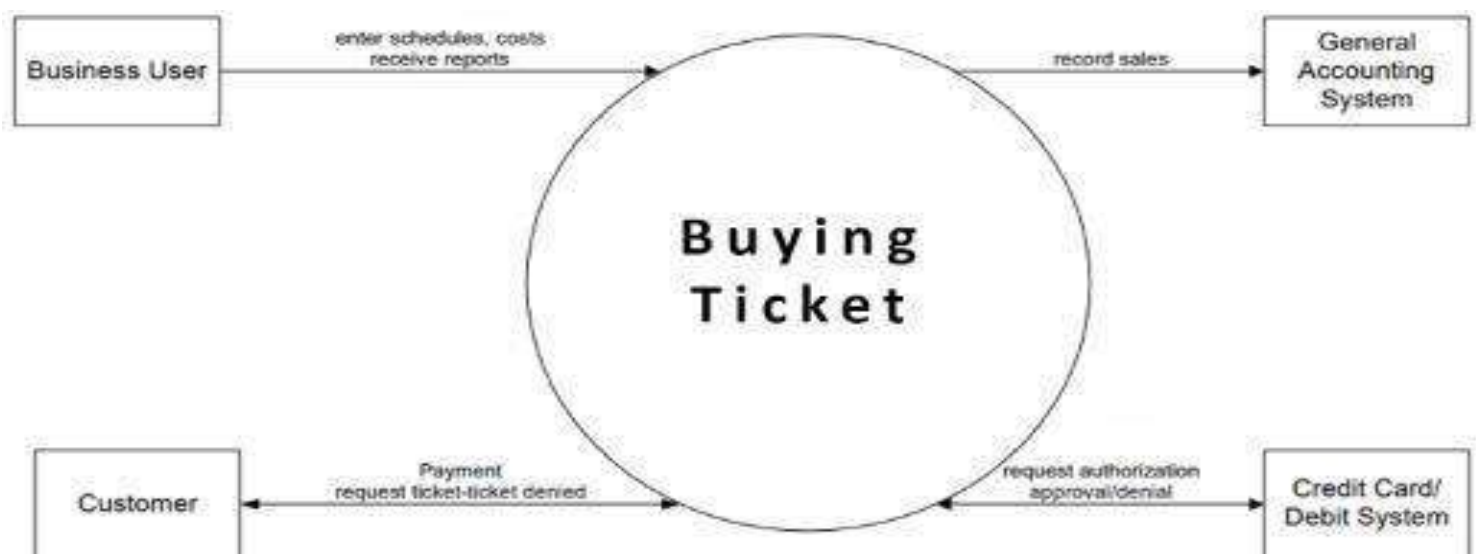
Figure 5.1 : Context Diagram for Buying Ticket

5.2 Interfaces

- User Interface
- Hardware Interface
- Software Interface
- Communications Interfaces

6. Step by step main use case scenario(for main actor).Using IEEE standard.

Figure 6.1 : Use-Case Scenario Diagram

Scenario 1: Includes the user entering the system and the operations he/she can perform in the system.

Scenario 2: Covers software engineering. Determines the visual and software risks.

Scenario 3: Covers company and employees. Determines the customer and business risks.

7. Domain model UML diagram.

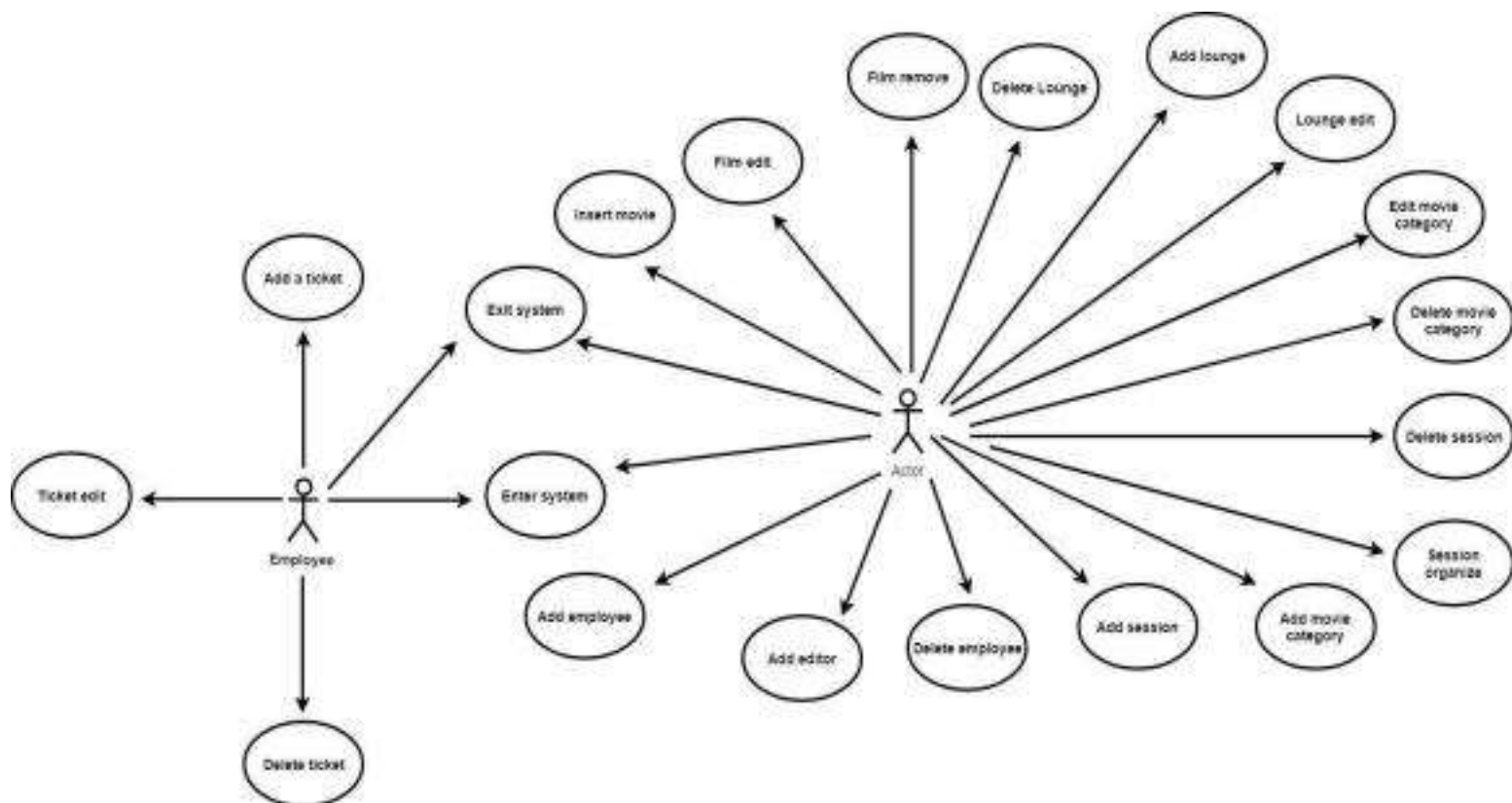This process will be added to the class list, since it is known that users make reservations at the first stage. However, this link can be added to the class list as it is known that some seats are reserved for each buying.
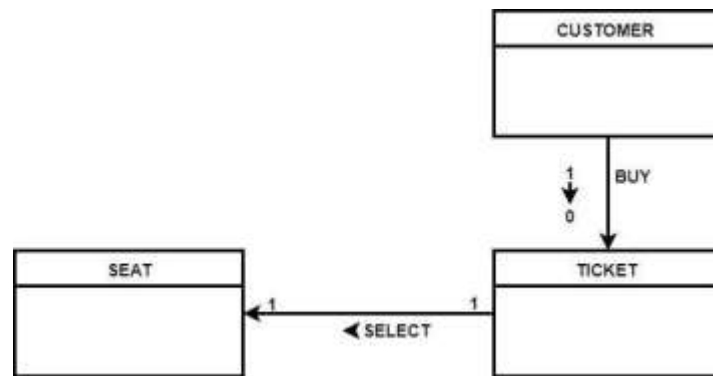

Figure 7.1 : User, Ticket, Seat Classes

Considering that there are seats in every lounge, we can connect the seats to the lounge. The registration will be used for the registration of the tickets and cancellations received. In this case, it would be appropriate to connect the recording to the ticket.
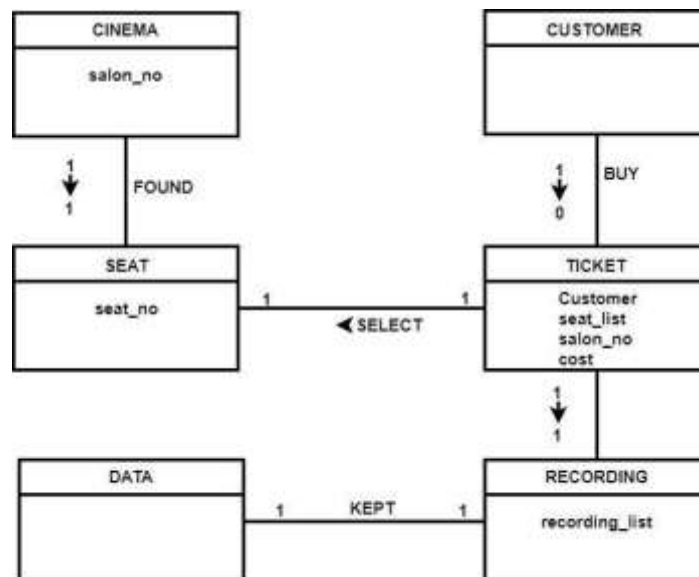
Figure7.2 : Cinema,Customer,Ticket,Seat,Recording,Data Class

8. Class diagram UML diagram
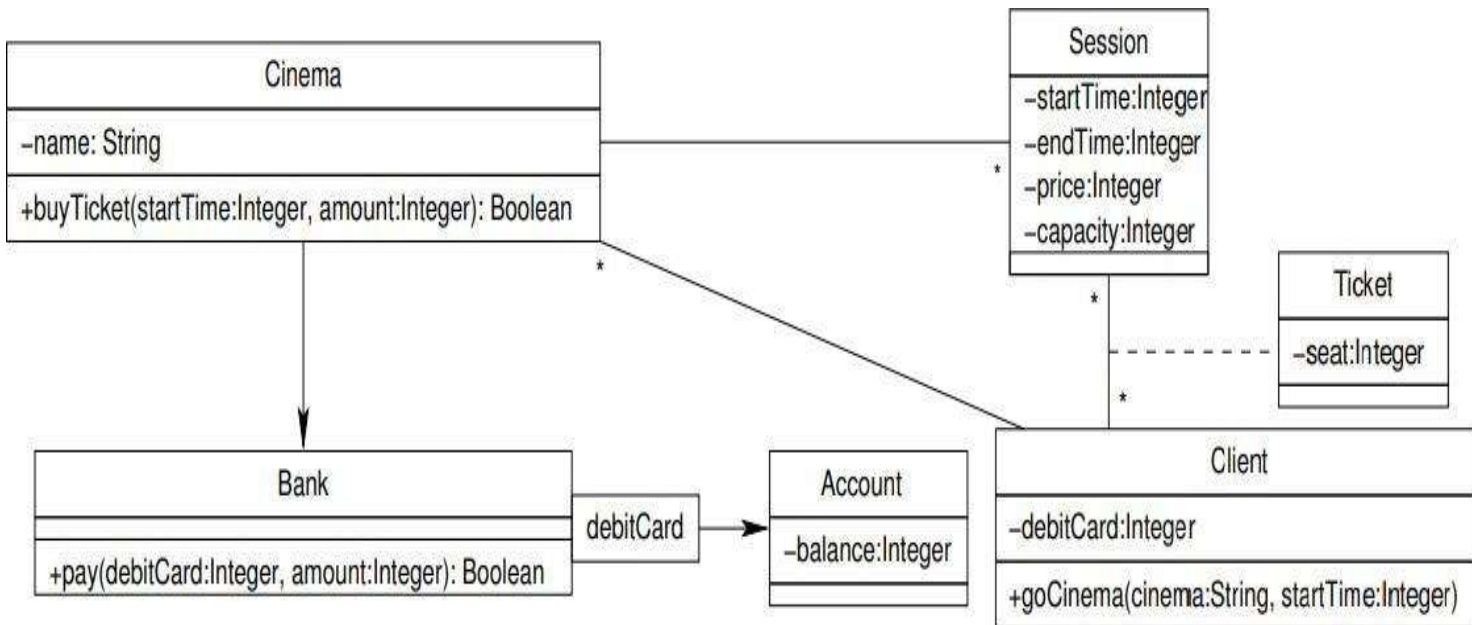
Figure 8.1: Cinema Automation UML Class Diagram

- Cinema has a name and offers various sessions, for which it moves tickets, dealing with the installment through a solitary bank.

- A Session has a limit, a ticket value, begin/complete occasions (startTime/endTime), and the tickets sold to customers.

- A Client knows a few films, pays with a debitCard and approaches the tickets he has purchased. The affiliation class Ticket speaks to a ticket purchased by a customer for a given session; each ticket grabs a chair number.

- A Bank knows the records that are related with the check cards, displayed as a qualified relationship with the debitCard number as key. Each Account has an equalization.

9. Activity UML diagram for main scenario

Figure 9.1 : Activity Diagram

Use Case Name: Add Sale Tickets From Automation System

Summary: The actor wants to register ticket sales to automation system

Actor: User (Employee)

Main Successful Scenario (Basic Flow):
- The employee going to the register menu and clicks on add register.
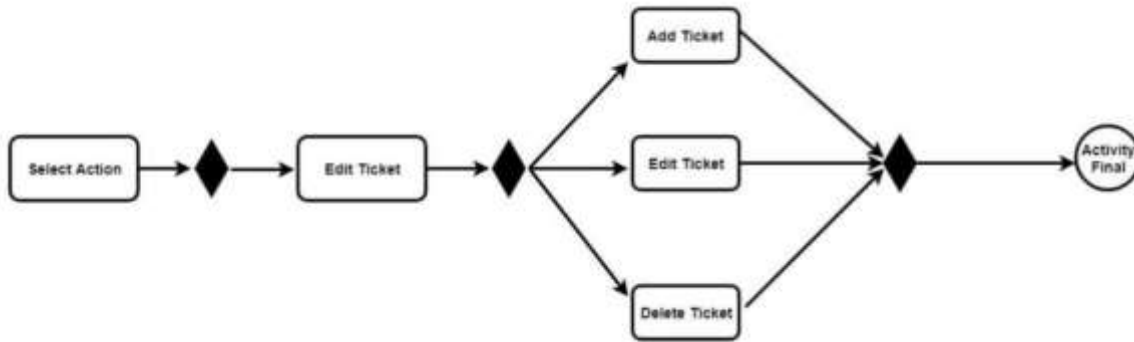- The system will display register's page.
- The system requests the customer's name, surname, country, city, town, e-mail, phone number, user name and password (customer's information) for the registration process.
- The employee inserts them to the fields.
- The employee asks the customer to read the QR code to the device.
- The system checks the username, email and QR code in database.
- If the customer has not QR code , the system will add the user in database and display member's page of the website.
- Employee ask to customer about if he/she new register.
- The employee requests customer information for the registration process.
- Try to new QR code.
- The system adds the new customer in database and displays user's information of the system.
- The system checks the username, email and QR code in database.
- Customer leaves with receipt and goods (if any).

Extensions (Alternative Flows):
Step 6: If the username or email is available for another user, the system displays an error message and prompts for another username or email.
Step 1-8: If the employee clicks on cancel button, the system will go on the main page of the website.
Post Condition: The actor registers in automation system.
Post Condition: The employee registers in automation system.

10. Sequence UML diagrams
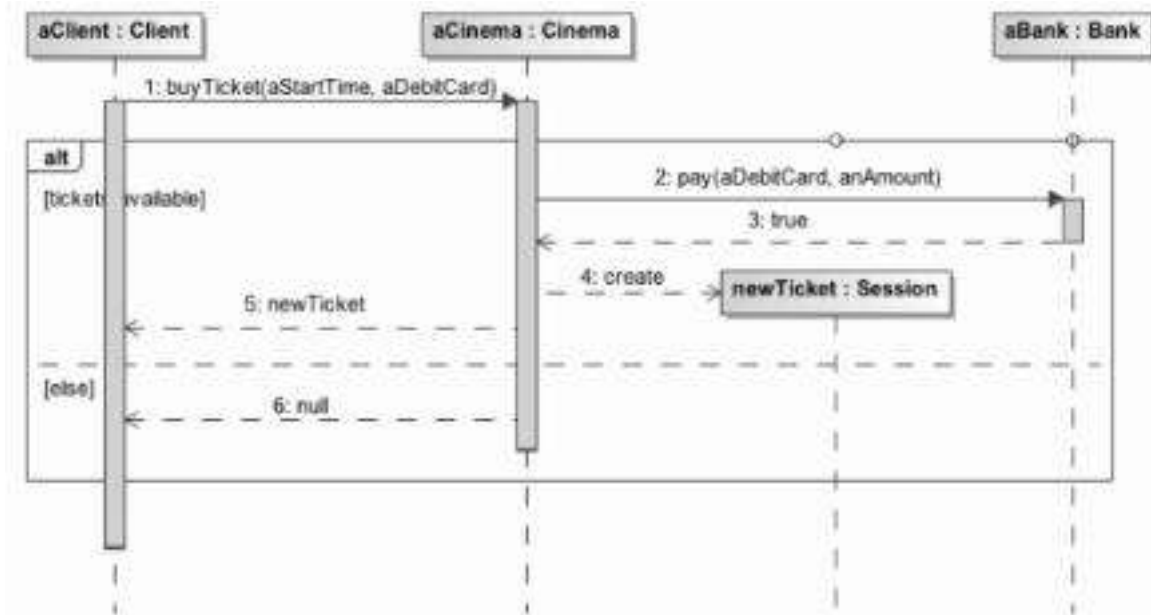
10.1 Buying Tickets Sequence Diagram

Figure 10.1 : Buying Tickets Sequence Diagram

Use Case Name: Buy Tickets From System
Summary: The actor wants to buy ticket in system
Actor: Employee, Customer
Precondition: The sales page must be displayed.

Main Successful Scenario (Basic Flow):
1. The customer clicks the "buy" button on the screen with its own powers.
Last condition: confirmation from the system of cinema, ticket segment is recorded, ticket is printed out and delivered to the customer.
Success Guarantee(Cinema Application): Buying is saved. Pay is correctly calculated. Accounting and Data are updated. Purchased tickets recorded.

Main Successful Scenario (Basic Flow):
1. Customer arrives at movie box office checkout with goods and/or services to purchase.
2. The customer say the movie and the time he/she wants to go in.
3. Cashier starts a new sale.
4. Cashier check customer's wants in the system.
5. If system check and verifies customer's wants, cashier equests information from the customer.
6. Customer give own information to the cashier.
7. Cashier enters customer information.
8. Cashier selects the appropriate movie and time for the customer's request.
9. System brings up seat list.
10. The customer selects and approves the appropriate empty seats.

11. The system prompts the user for payment information.
12. Customer select payment way.
13. The cashier enters the customer's payment information into the system.
14. System presents total with taxes calculated.
15. The system assigns a discount based on customer status.
16. The system calculates the new fee and presents it to the customer.
17. Cashier tells customer the total, and asks for payment.
18. Customer pays and System handles payment.
19. System logs completed sale and sends sale and payment information to the external
Accounting system (for accounting and commissions) and Inventory system (to update inventory).
20. The customer is informed about the successful transaction and the ticket is given to the customer by
the system.
21. After that system presents receipt.
22. Customer leaves with ticket and receipt (if any).

Extensions (Alternative Flows):

Step 5: The appropriate film sequence was not found. Cashier is informed of the customer.
5a. The hall is full at the desired time. The user is informed and the transaction is aborted.
Step 9: Is there an empty seat.
1. The cashier offers the customer two options, another session time/movie or cancel.
2. The customer understands that there are no seats left and reacts.
2a. The customer chooses a new session or film. → □2

 2aa. There is another appropriate session, selects it. →3
2ab. There is no other appropriate session. → 20
2b. The customer cancels the transaction and returns. →20
Step 12: (If the customer is paying by credit card) The credit card confirmation centre is not accessible.
1. The system informs the customer and ends the transaction.
2. The customer is asked to enter the information again.
2a. The customer leaves the system.
2b. Enters customer information again. → 13

Special Requests: The answer from the credit card confirmation Centre should be within 30 seconds.

Open Points: If the customer has lost his ticket, how is the information verified in the system? When
should you enter the room for the purchased seat at the latest so that the ticket does not burn?
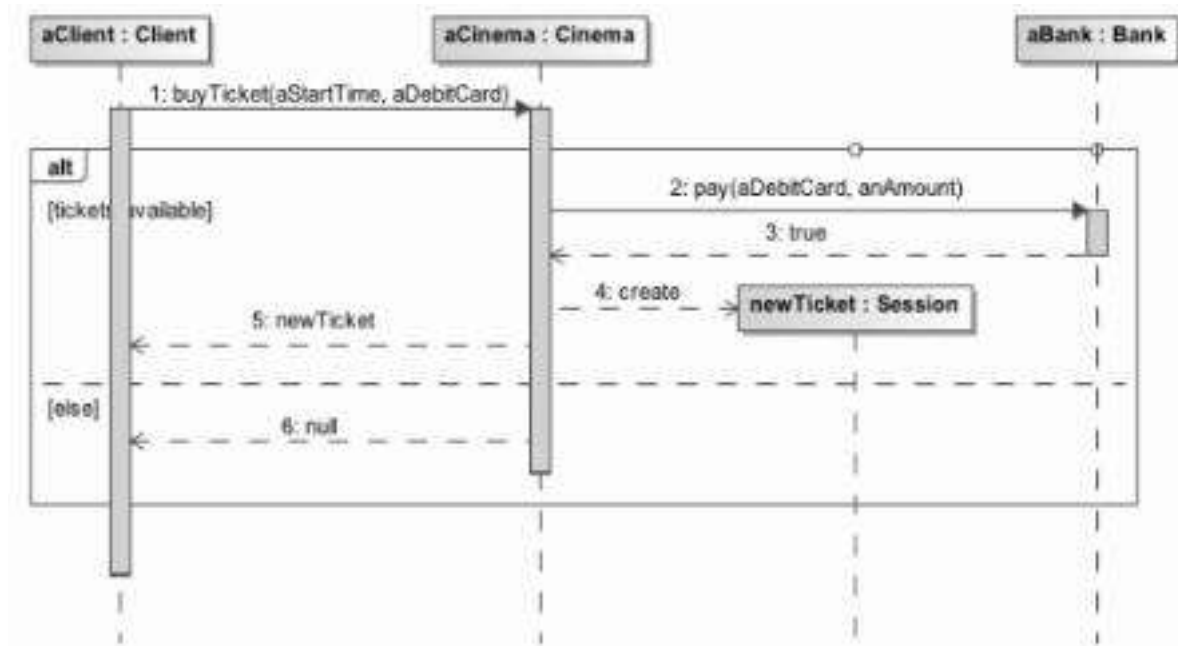
10.2 Ticket Reservation Sequence Diagram

Figure 10.2: Ticket Reservation Sequence Diagram

Use Case Name: Tickets Reservation From System
Summary: The actor wants to ticket reservation in system
Actor: Employee, Customer
Precondition: The reservation page must be displayed and same buying tickets.

Main Successful Scenario (Basic Flow):
1. The customer clicks the "buy" button on the screen with its own powers.
2. Click on "See The Nearest Cinema." button in the web page.
3. Click "Select Film" button.
4. Click "Session" button.
5. Click "Next" button.
6. The required information is entered in the interface.
7. Click "Next" button.
8. The operation is done with the "Edit" or "Cancelled" button before to the payment to be incoming interface.
9. Click "Just Reservation" button
10. Payment information is entered and the ticket is purchased (Just Pay Deposit).
11. Customer leaves with receipt and goods (if any).

Extensions (Alternative Flows):
Step 8: When you click the "Edit" button, the system displays the information again.
Step 6: The desired change is made in this interface and is confirmed by clicking on the "Next" button.
Step 8: If the customer cancels the transaction, it will be directed to the homepage.

Post status: The customer pay deposit for tickets from the system.
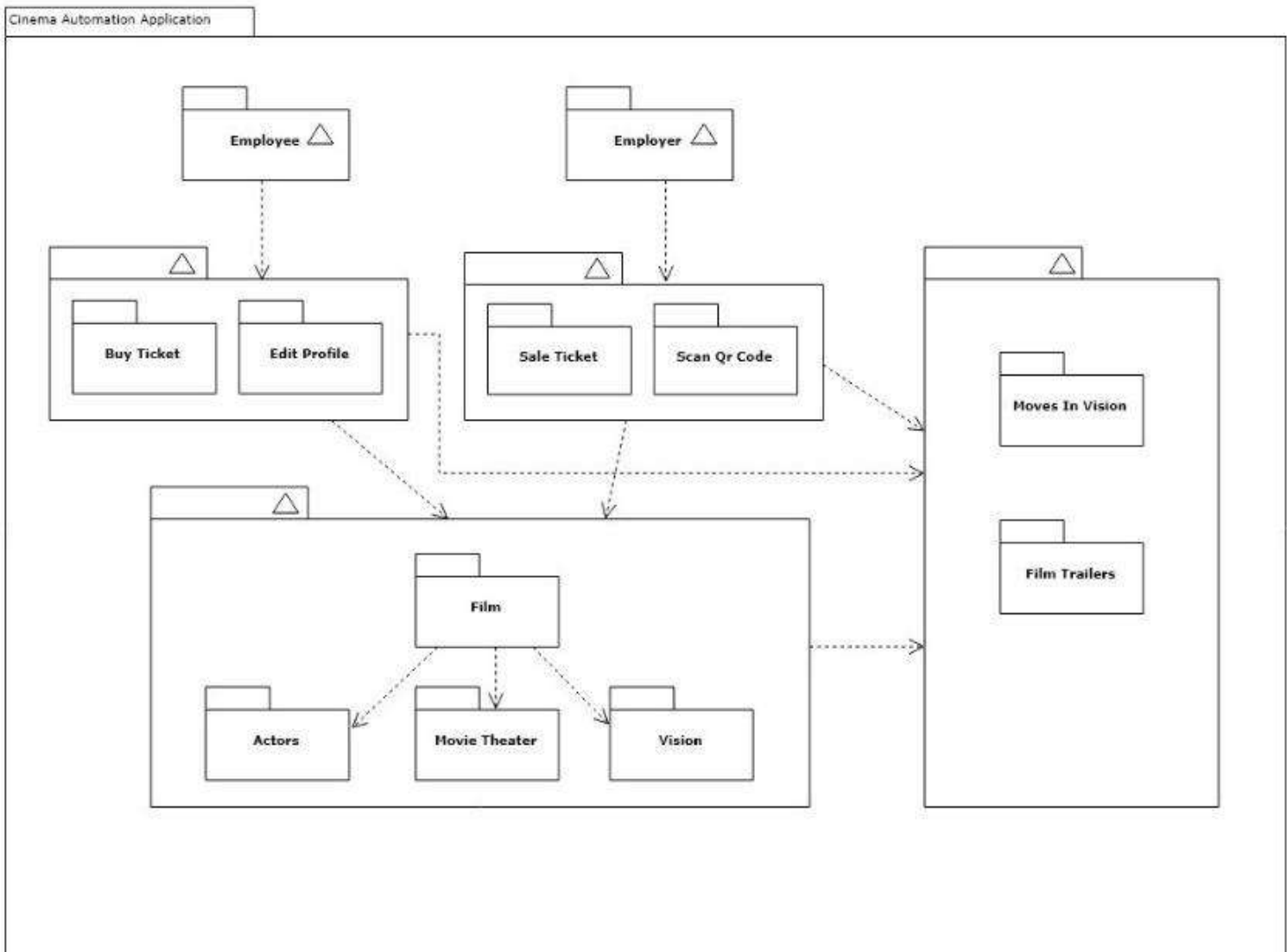
11. Pacakage UML diagram

Figure 11.1: Package UML Diagram

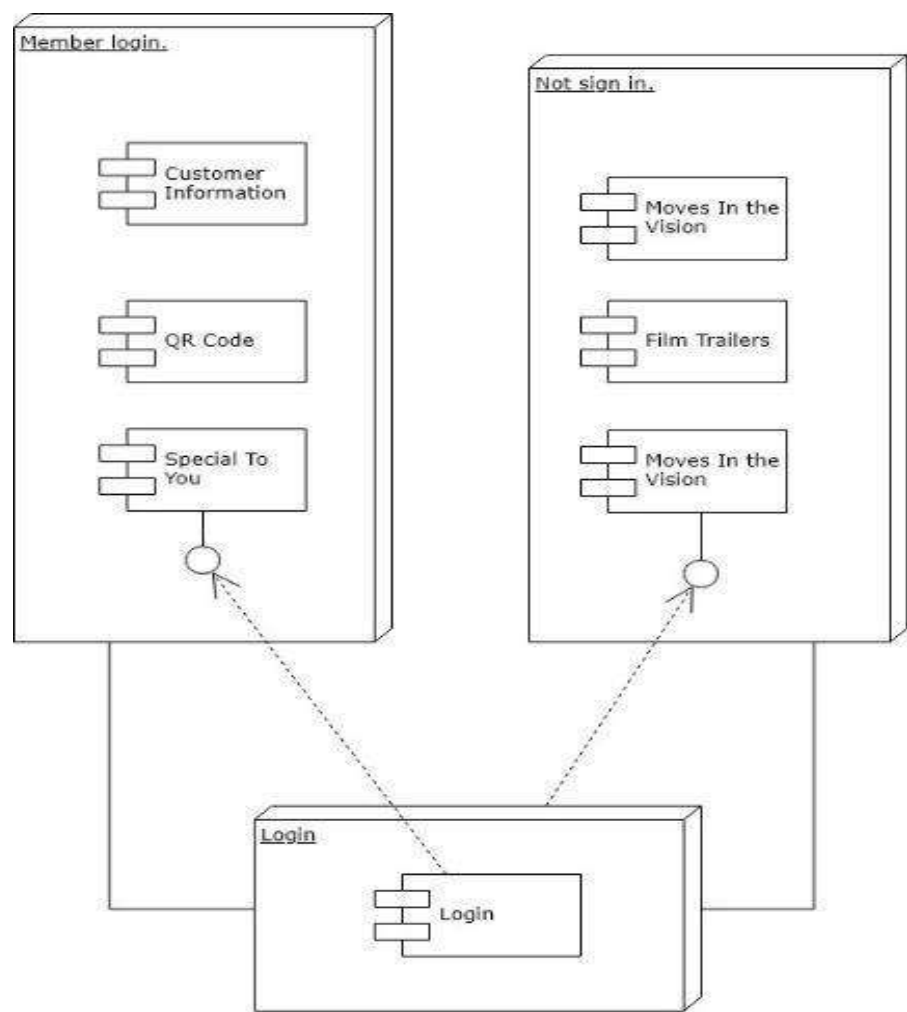# 12. Component UML diagram.

Figure 12.1: Component UML Diagram
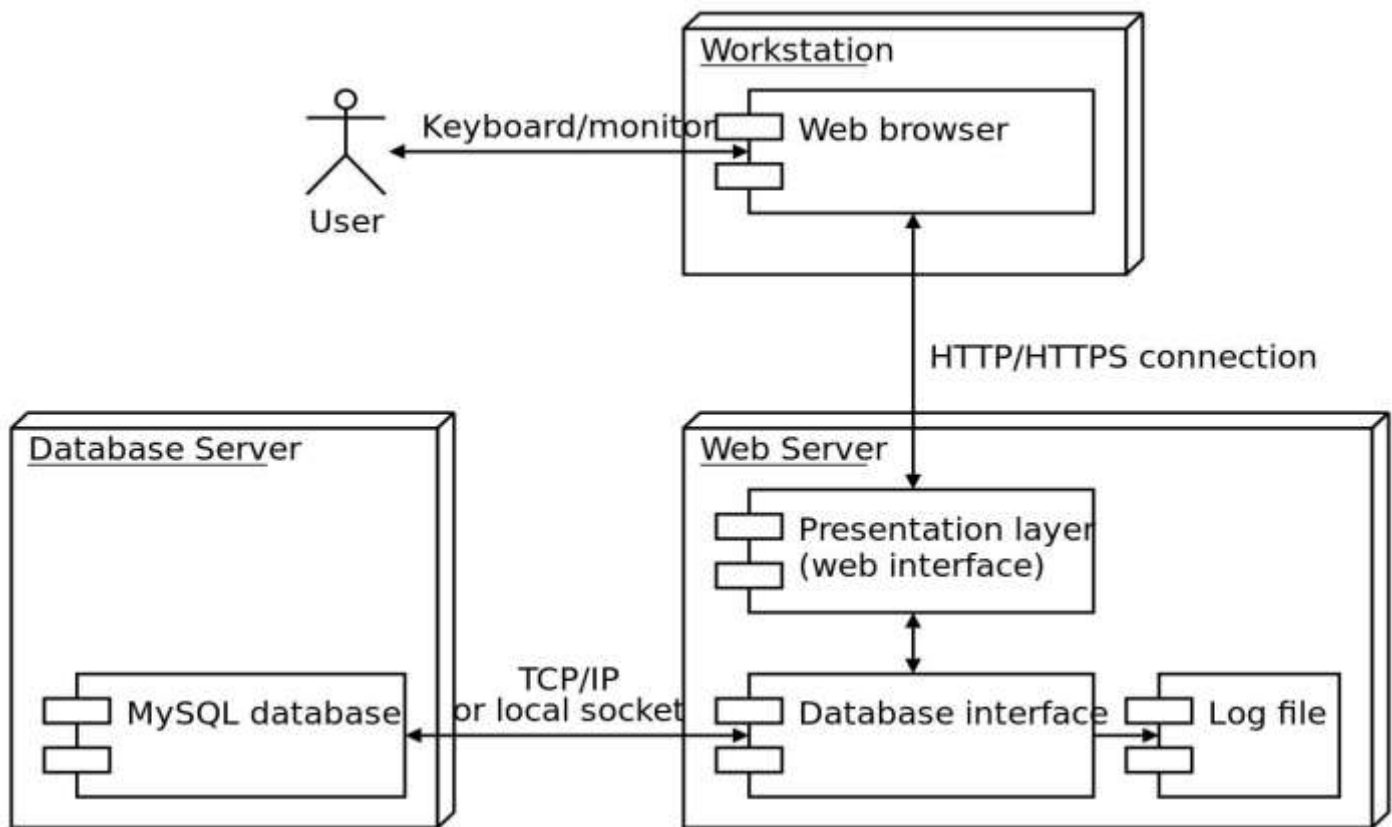
13. Deployment UML Diagram

Figure 13.1: Ticket Reservation Deployment Diagram

14. Quality attributes for our application , based on this choose architectural pattern (style) and five reason for our choice.

14.1 Quality for Advantages and Disadvantages of Cinema Automation

Advantages	Disadvantages
Speed Factor	High initial installation costs
Safe and competitive, Repeatable	Increase in mechanization
Guarantee of quality	Rise in investment cost
Efficiency	Digitization
Flexibility	
Controllability	
Decrease in product cost	
Reduction of work accidents	
Save time	
Invertion with the computer in case of failure	
An application that doubles the speed of development	

14.2 Why we select this architectural pattern (style).

- Make sure targets are logical and safe
- Program performance
- Perform brainstorming lists to identify potential hazards associated with the system
- Project's hazards scenarios
- Identify potential causes of the hazard
- Determine the risk of the potential hazards scenarios
- System to the eliminate or mitigate the potential risks.
- Software hazard analysis and pass the hazard testing and appropriate tests
- Software safety requirements review
- Convenient and safe to use by the user
- Making a project that meets long-lasting and requirements
- Accept full responsibility for the project
- Meet the requirements
- Improve the quality of life
- For software that does not harm the environment
- Fully understand the features of the software I am working on

14.3 Product Functions

• For Customer Web Part Management :

The website works 24 hours a day. But Elite status does not provide free movie watching every hour (like TV plus). There is just possibility to watch movies during the film's viewing hours. As seen in cinema, the fee is paid and watched. The purpose here is to prevent piracy. Elite status has a simpler use and reliability. The website identifies a user with a mobile number and password.
Employees must share every new movie and trailer (Like Cinemaximum Website). It can share content such as pictures, movie news, videos at any time. This project may be considered a movie rental site, but it is not. Users of this site do not require any technical expertise or skills.

Main Page: If the user is not a member, user may be a new member. The member can continue with the password and phone number. Members and non-members can see information about movies. But only members can benefit (buying ticket, Elite Status etc). Both customers can see Vision films, trailers,future programmes and popular films. The customer who selects the contracted cinema for the ticket can select the movie,date and time but customer has to watch in cinema. (if not Elite Status). Since every individual in society is important, there are international language options and voice commands for visually impaired citizens.

Message: Customers can contact the support line in case of any problems. Employee can communicate with each other employees.

HTML Editing**:** This software allows you to change the theme in special days to attract user's attention.

• Inbox and Messaging for Employee Application Part :

Employees allow them to send messages to other employees and employers depending on one situation. There is also a "support line" function that allows customers to send answers to their questions. The messaging system only supports text-based conversations, but in the future other features (such as group chat for employee) will be added.