Automated Canteen Management System

Project report submitted
in partial fulfillment of the requirements for the Degree of
Bachelor of Engineering
in
Computer Science & Engineering

By

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CERTIFICATE

This is to certify that **Mr. Subhadeep Dan, Mr. Shubham Saurabh** and **Mr. Ankit Kumar Mishra** have developed the project titled "**Automated Canteen Management System** "in my supervision and guidance. To the best of my knowledge the project work is original.

(Signature with Date)
Mr. Balaram Mandal
Guide
Department of Comp. Sc. & Engg.
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(Signature with Date)
Dr. K.N. Mishra
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DECLARATION

We hereby declare that the project entitled **Automated Canteen Management System** which is being submitted in partial fulfillment of the requirement for award of the Degree of Bachelor of Engineering in Computer Science and Engineering to BIRLA INSTITUTE OF TECHNOLOGY, MESRA, OFF-CAMPUS, DEOGHAR is an authentic record of our own work done under the guidance of Mr. Balaram Mandal.

The matter reported in this Project has not been submitted earlier for the award of any other degree.

Date: 09-12-2019

Place: BIT Deoghar

ACKNOWLEDGEMENT

We sincerely express indebtedness to esteemed and revered guide **Mr. Balaram Mandal** of Department of Computer Science and Engineering for his invaluable guidance, supervision, and encouragement throughout the work. Without his kind patronage and guidance, the synopsis would not have taken shape.

We take this opportunity to express a deep sense of gratitude to Dr**. K.N. Mishra**, Head of Department of Computer Science and Engineering for his encouragement and kind approval. Also, we thank him for providing the computer lab facility. We would like to express our sincere regards to him for advice and counseling from time to time.

We owe sincere thanks to all the faculties in Department of Computer Science and Engineering for their advice and counseling time to time.

Date: 09-12-2019

Place: BIT Deoghar

Subhadeep Dan

Shubham Saurabh

Ankit Kumar Mishra

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Abstract:

The Project “Automated Canteen Management System” enables the end users to register online, read and select the food from e-menu card and order food online by just selecting the food that the user want to have using android application. The results after selecting the food from the E-menu card will directly appear on the screen near the Chef who is going to cook the food for you. The system is the combination of Android as well as Web Application. The benefit of this is that if you want your order on your doorstep or want a takeaway from canteen then you can do it online by using this application. The user will have a username and a password, by using which they can login into the system. This implies that the customer is the regular user of the Canteen.

The manual system involves paperwork in the form of maintaining various files and manuals. Maintaining critical information in the files and manuals is full of risk and a tedious process. Including a framework showing how to apply Internet technology progressively as skills and confidence grow, the project demonstrates the route from adapting materials to developing an online environment.

Nowadays people don’t have much time to spend in canteen by just there and waiting for the waiter to take their order. Many customers visit the canteen in their lunch break and recess so they have limited time to eat and return to their respective office and colleges. So this software helps them to save time.

CHAPTER 1

1. 1. INTRODUCTION:

In today's age of fast canteen automation in the canteen, many canteens have chosen to focus on quick preparation and speedy delivery of orders. Until very recently, all of this delivery of orders were placed over the phone, but there are many disadvantages to this system, including the inconvenience of the customer needing to have a physical copy of the menu, lack of a visual confirmation that the order was placed correctly, and the necessity for the canteen to have an employee answering the phone and taking orders.

The main advantage of an online ordering system is that it greatly simplifies the ordering process for both the customer and the canteen. When the customer visits the ordering web page, they are presented with an interactive and up-to-date menu, complete with all available options and adjusting prices based on the selected options. After making a selection, the item is then added to their order, which the customer can review the details at any time before checking out. This provides instant visual confirmation of what was selected.

This system also greatly lightens the load on the canteen's end, as the entire process of taking orders is automated. Once an order is placed on the web page, it is entered into the database and then retrieved, in pretty much real-time, by a web-based application on the canteen's end. Within this application, all items in the order are displayed, along with their corresponding options and delivery details, in a concise and easy to read manner. This allows canteen employees to quickly go through the orders as they are placed and produce the necessary items with minimal delay and confusion.

1.2. OBJECTIVE :

Canteen Automation System is the system where customers order their food and receive food in the canteen or at their doorstep. This system aims to accelerate

customer orders and customer order system used by employees to accept customer order.

- The system requires very fewer time factors as compared to manual system.
- The system will provide fast and efficient automated environment instead of slow and error prone manual system, thus reducing both time and manpower spent in running the system.
- The system will have GUI interface and very less user training is required to learn it.

1.3. AIM :

A complete canteen automation system makes canteen workers monitor overall day to day business analytics more accurately with an ease. It increases the presence of canteen fascinates core customers towards your food business leading to increased sales.

By bringing all necessities in one place canteen automation system benefits both the user as well as the canteen owner smartly. Ultimately all business operation will be mad easier and single handed with the required inbuilt features.

The working of canteen automation system is similar to an e-commerce website. Whenever your customers are busy with their work, instead of coming to your canteen they can just open your website, choose the menu they like and can simply order food.

As soon as order gets placed, you will be notified immediately, so that you can start order processing. One of the main advantages of canteen automation system is the order details are accurate when compared to the phone ordering system or manual system.

This canteen automation system is useful for the canteen as well customer because canteen automation system save the time of the canteen's workers as well of the customers and as saves the manpower.

1.4 RELATED WORK:

- **REQUIREMENT GATHERING & PLANNING**

Planning identifies all deliverable services, describes the facilities, and defines the working to provide details about lab details to the faculties. This planning problem starts with a specification of user demand that is to be met by the production plan. For this context, the facilities provided to the user faculties are the major concern to be concentrated. This includes the easiest and efficient way to make them available an unoccupied lab. Consequently, all the fields must be kept while developing. Generally, a planning problem exists because there are limited production resources that cannot be stored from period to period. Choices must be made as to which resources to include and how to model their capacity and behavior, and their costs. Also, there may be uncertainty associated with the production function, such as uncertain yields or lead times. One might only include the most critical or limiting resource in the planning problem. Here comes the role of proper requirement gathering. If the requirements of the user are clear then it is quite easier for the developer to fulfill his all needs. As he can look into all the required resources, and with proper planning and cost estimation, he can achieve his software. Thus, a proper planning and requirement gathering leads to an efficient software system.

- **DESIGNING AND BACKEND**

Designing is the most important and the most efficient function while software development. Without a proper design, it is very difficult to develop appropriate software that fulfills nearly all user demands. Therefore, managing designing part in an organization is critical. A designer needs to ensure that the design created by him can be easily understood by the all the members of developing a team. A proper design will allow the coder to implement the system development planning properly. Similarly, the backend part that includes the database management plays a key role in any of the systems.

1.5 EXPECTED OUTPUT:

The product developed will provide an easy access to the user to manage and alter the canteen automation according to the need.

Our application will be a platform independent application which will maintain a database of all orders ordered from various sources. Established canteen automation practices will provide the needed connectivity and accountability between those two operational units, and when managed properly, enhances the effectiveness of both operations.

- Registration
- Order
- Payment
- Update

The above are the modules of canteen automation system.

CHAPTER 2

2.1 REQUIREMENTS:

• Functional Requirements:

Users of the canteen automation system, namely canteen customers, must be provided the following functionality:

- Create an account.
- Manage their account.
- Log into the system.
- Navigate the canteen's menu.
- Select an item from the menu.
- Customize options for a selected item.
- Add an item to their current order.
- Review their current order.
- Remove an item/remove all items from their current order.
- Provide payment details
- Place an order.
- Receive confirmation in the form of an order number.

- **NON- FUNCTIONAL REQUIREMENTS**

PERFORMANCE CRITERIA:

- **TIME COMPLEXITY:** The elapsed time between the submission of order process between the customer and cashier in a canteen should be as minimum as possible.
- **USER-FRIENDLY**: Our canteen automation system should be more users friendly. The user interface should be kept simple and uncluttered. Since the different type of people will interact with this process so our project should be very easy to them to understand.
- **FLEXIBILITY:** Our project should be so flexible that whenever we want to make changes in it very easily it can be done.
- **EXTENSIBILITY:** It should be able to accommodate the variations like:

  1. The different order should be handled easily.

  2. It should be an option for cash on delivery, pay through card between customer and canteen.

- **PORTABLE:** Our project should be portable on any platform and available on websites easily and at a faster speed than others.
- **REUSABLE:** Our project should be portable on any platform and available on websites easily and at a faster speed than others.

2.2. DIAGRAMS:

2.2.1. USE-CASE DIAGRAMS:

A use case is a description of how end-users will use a software code. It describes a task or a series of tasks that users will accomplish using the software and includes the responses of the software to user actions.

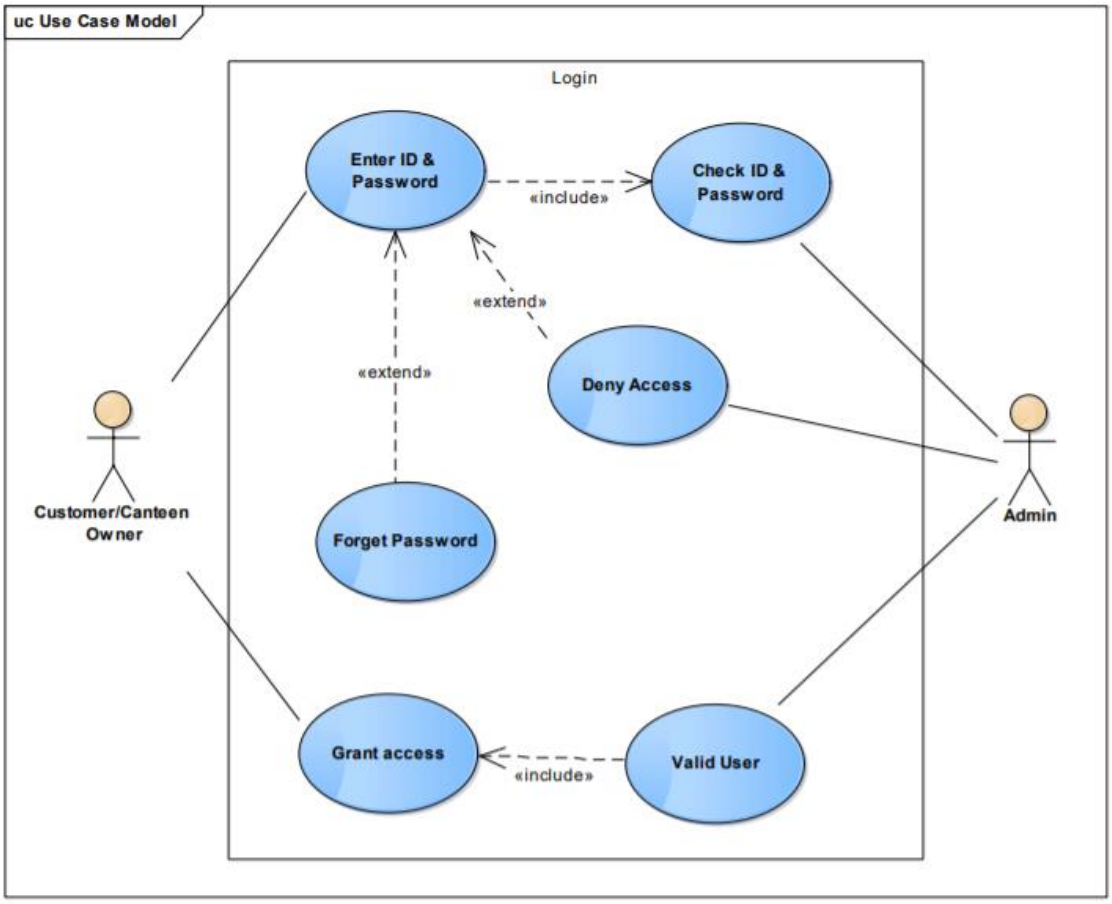

Fig 1.1 Use case for Login Page

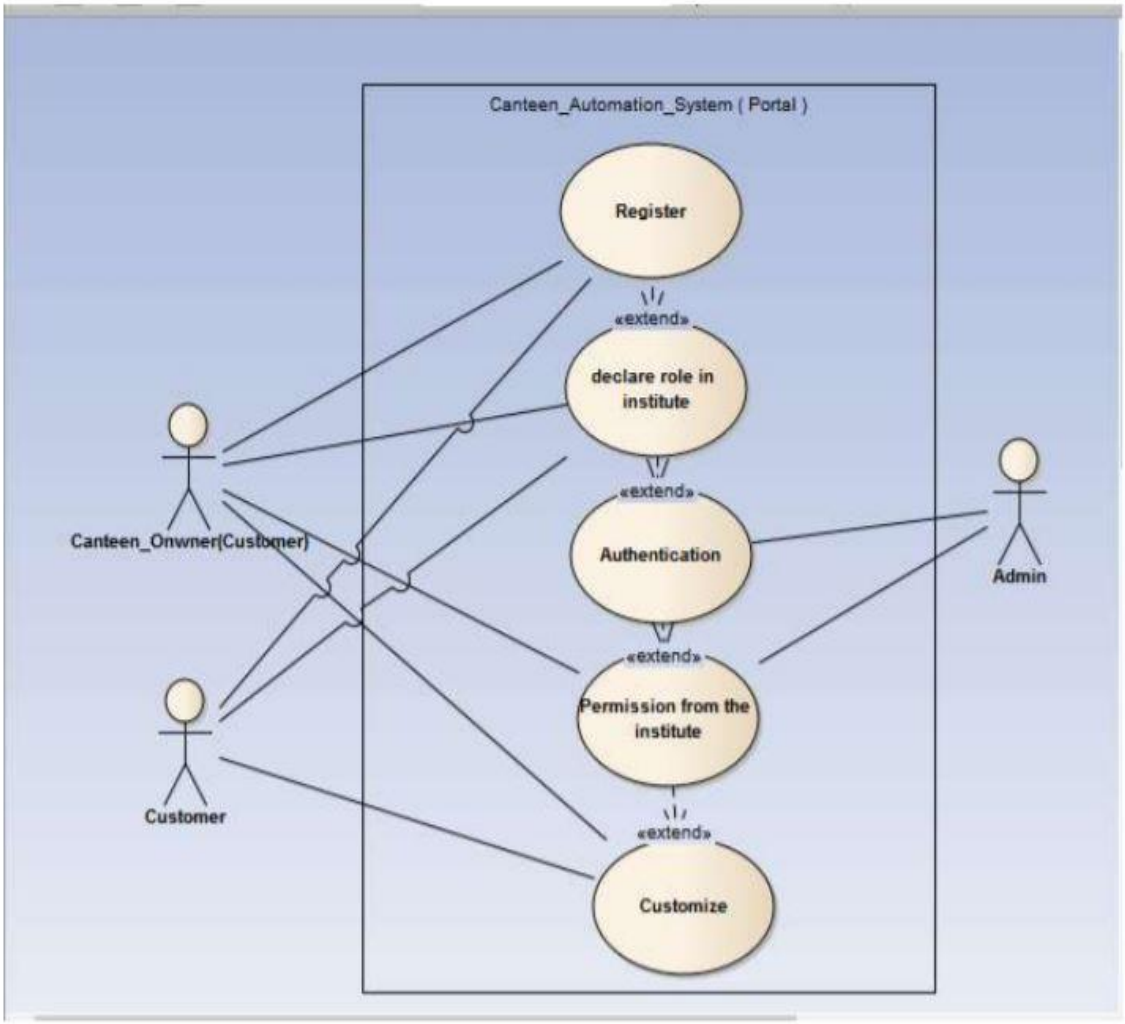

Fig. 1.2 Use Case Diagram for Registration

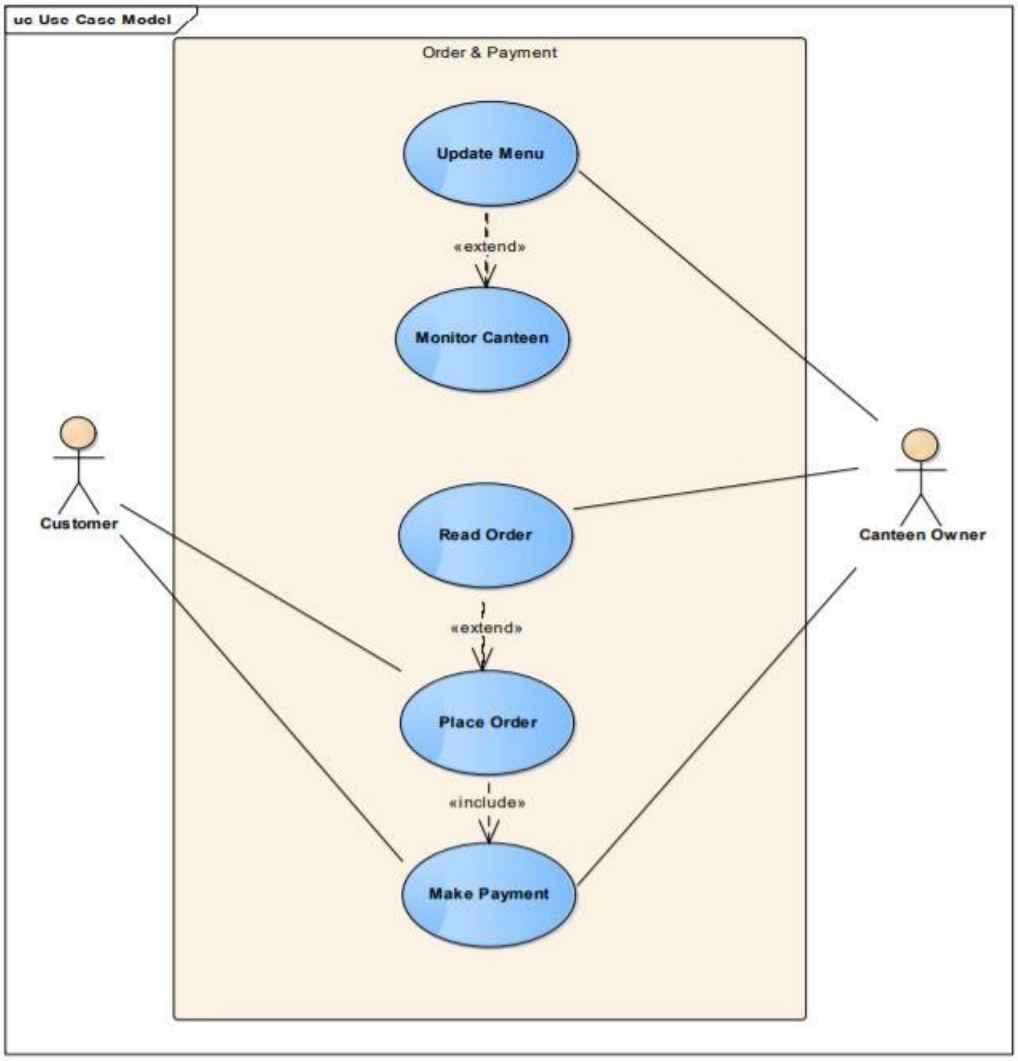

Fig. 1.3 Use case for Order, Payment & Update

2.2.2. CLASS DIAGRAMS:

In the Unified Modeling Language (UML), a class diagram is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, and the relationships between the classes.

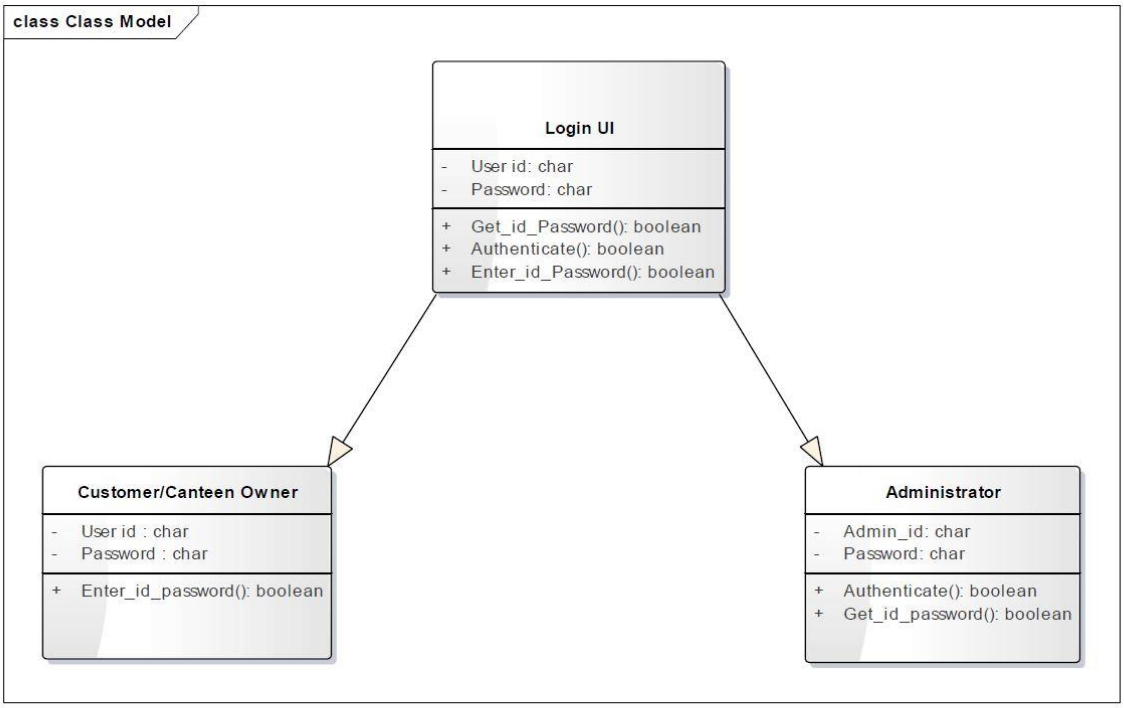

Fig. 2.1 Class diagram of Login Page

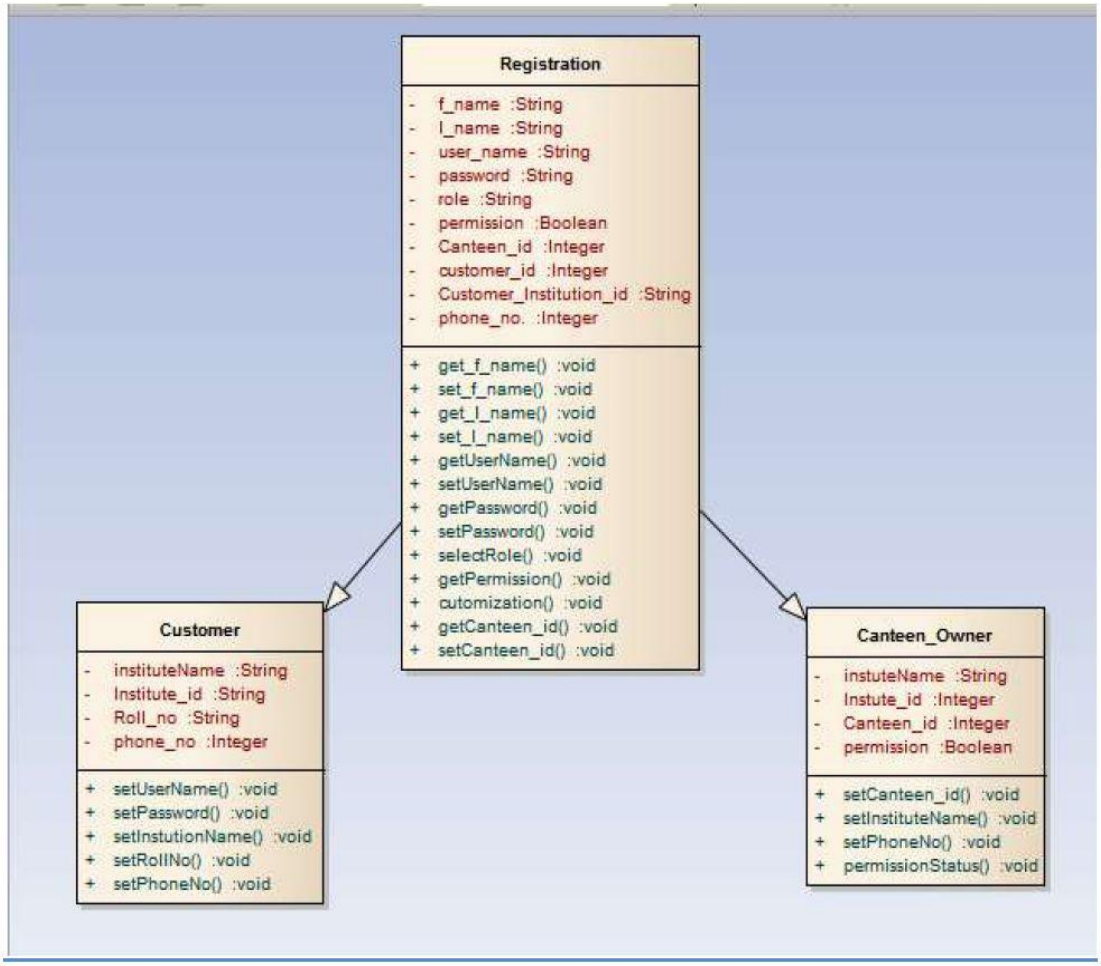

Fig. 2.2 Class Diagram for Registration

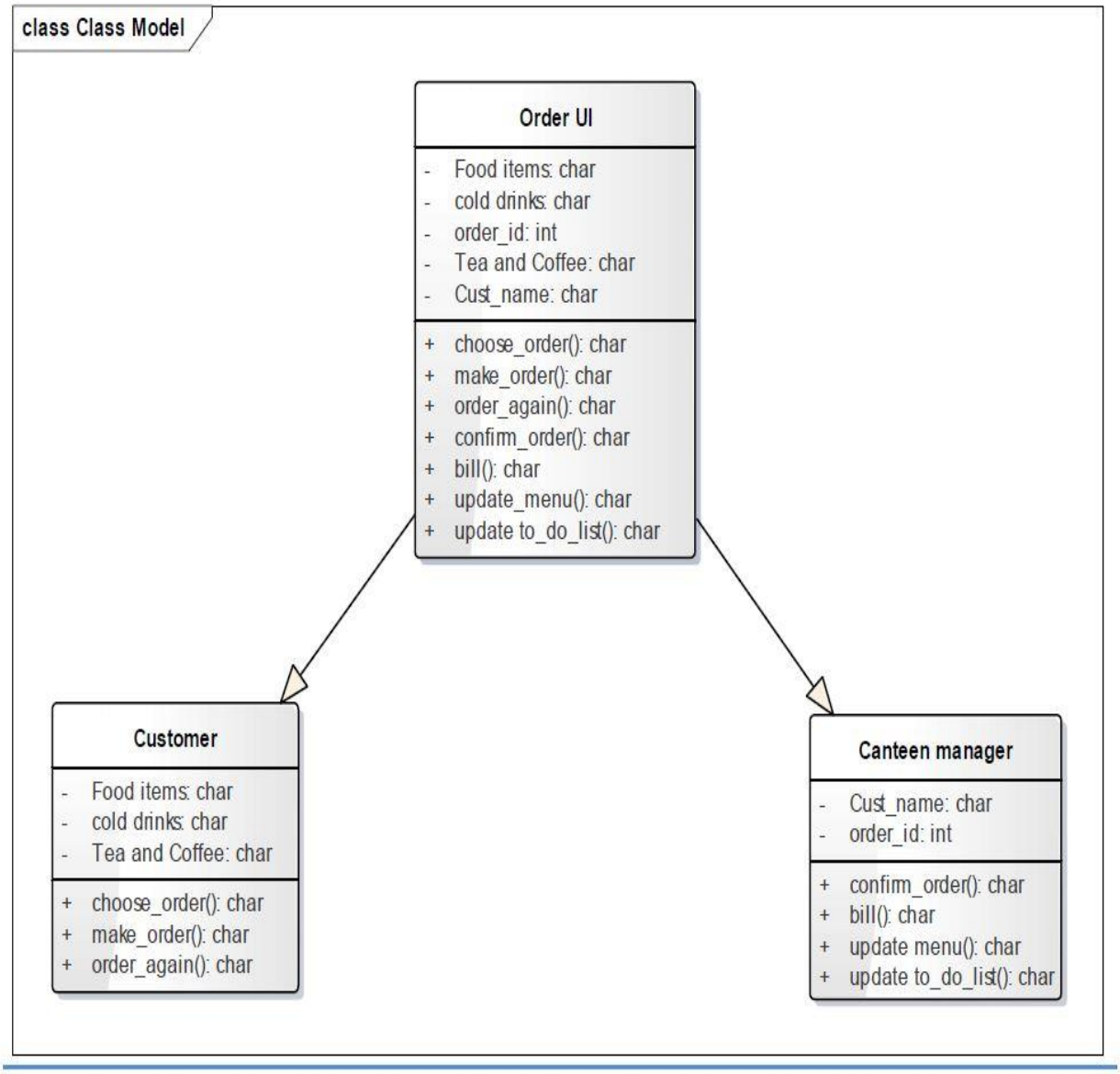

Fig. 2.3 Class diagram of Order and Update

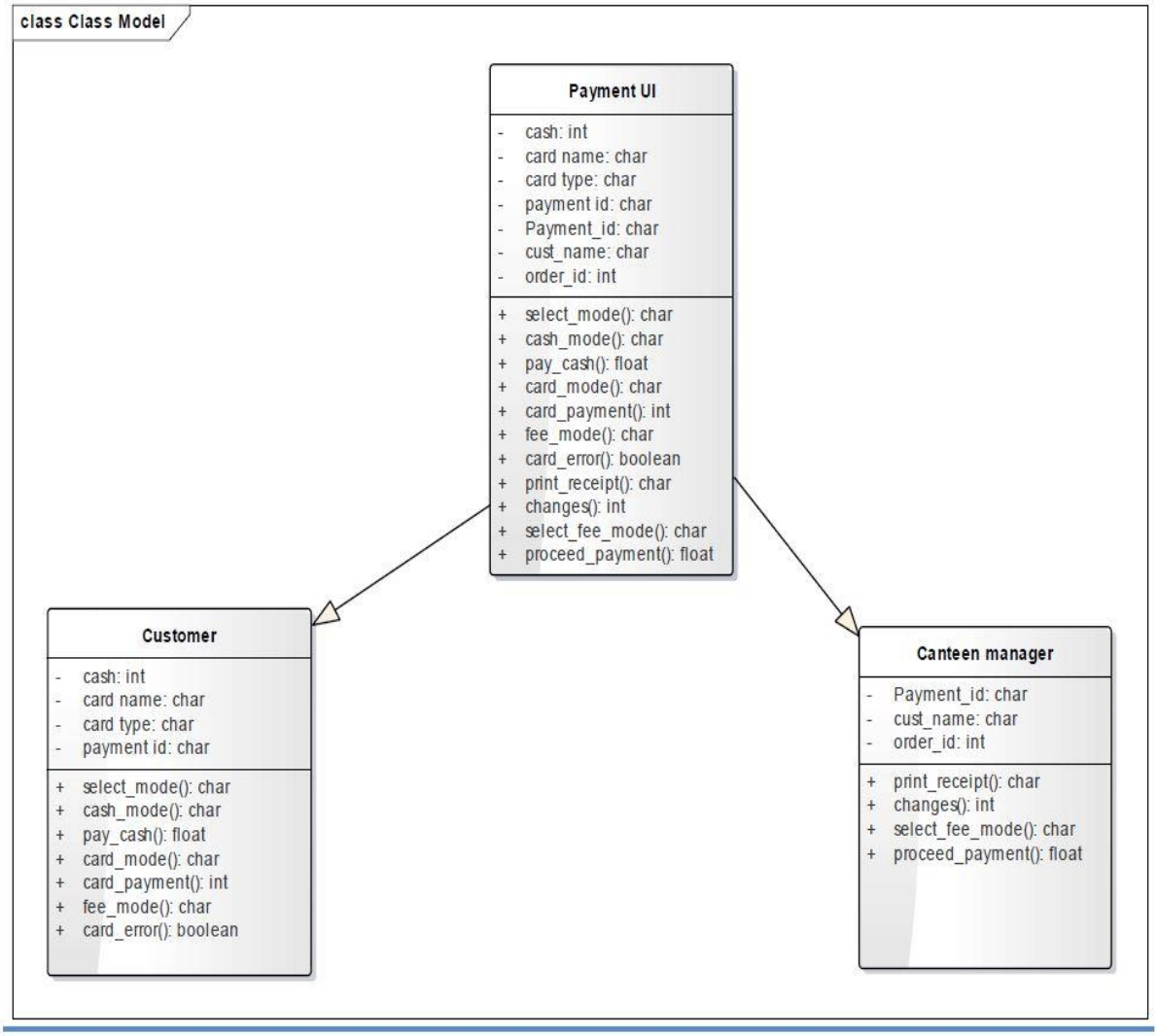

Fig. 2.4 Class diagram for Payment

2.2.2. SEQUENCE DIAGRAMS:

A sequence diagram in Unified Modeling Language (UML) is a kind of interaction diagram that shows how processes operate with one another and in what order. It is a construct of a Message Sequence Chart. Sequence diagrams are sometimes called event diagrams, event scenarios, and timing diagrams.

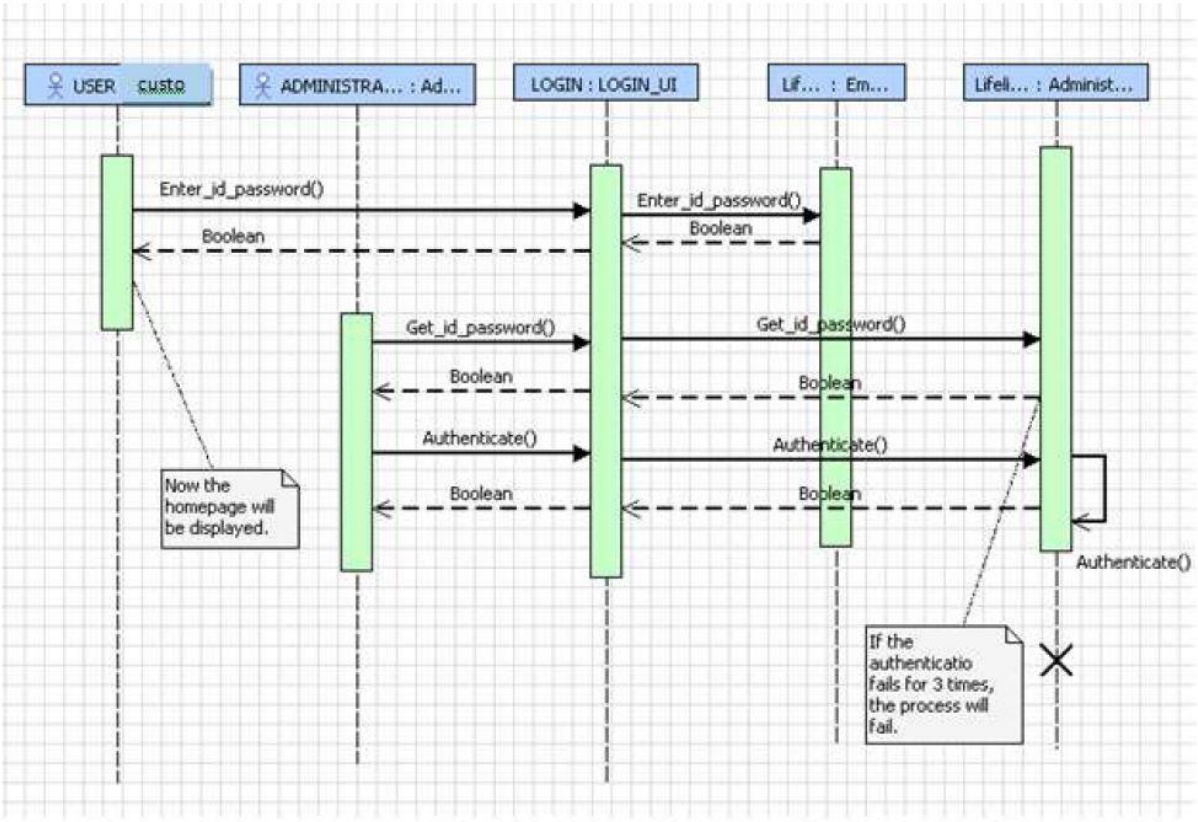

Fig. 3.1 Sequence of Login

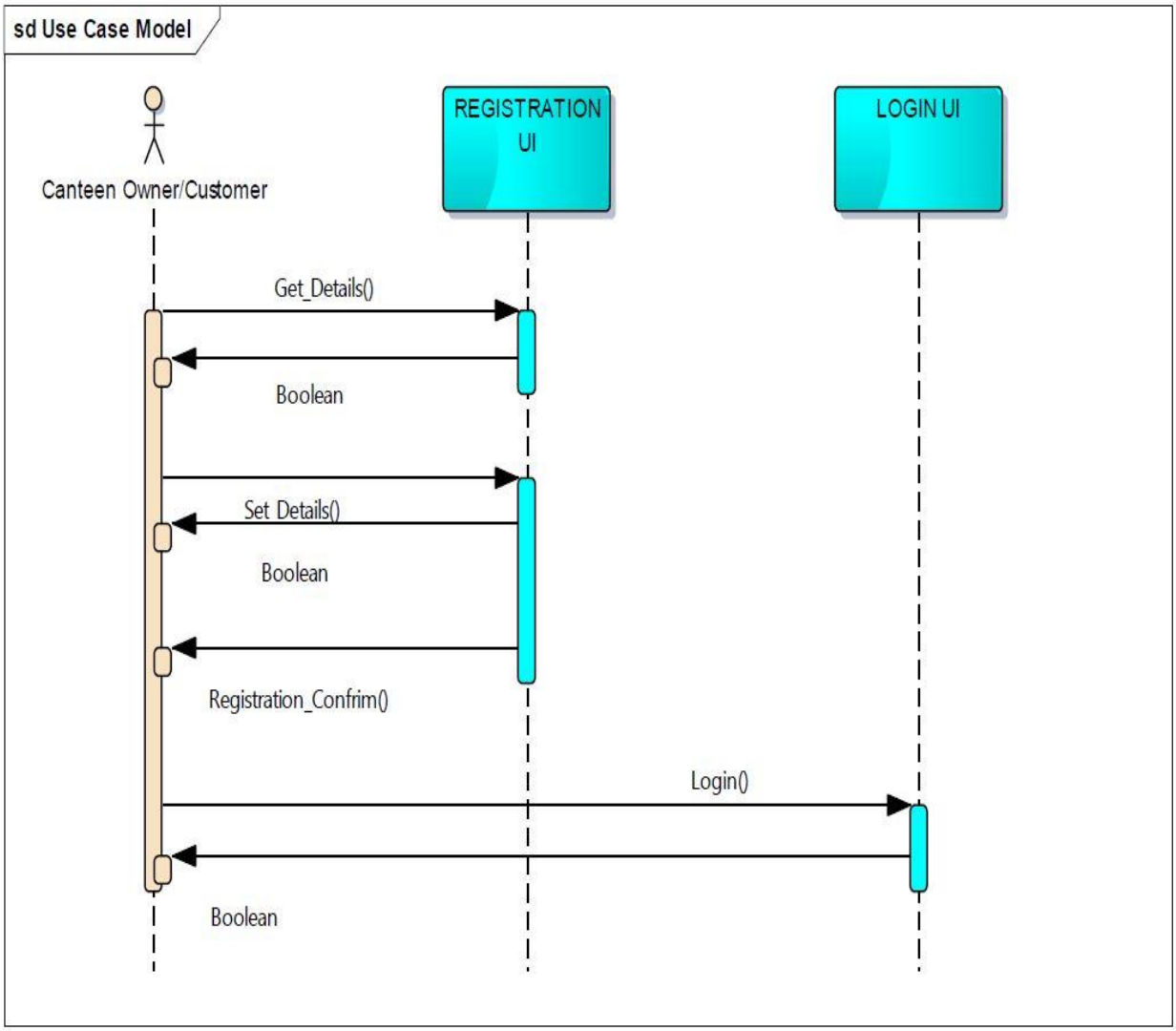

Fig. 3.2 Sequence Diagram for Registration

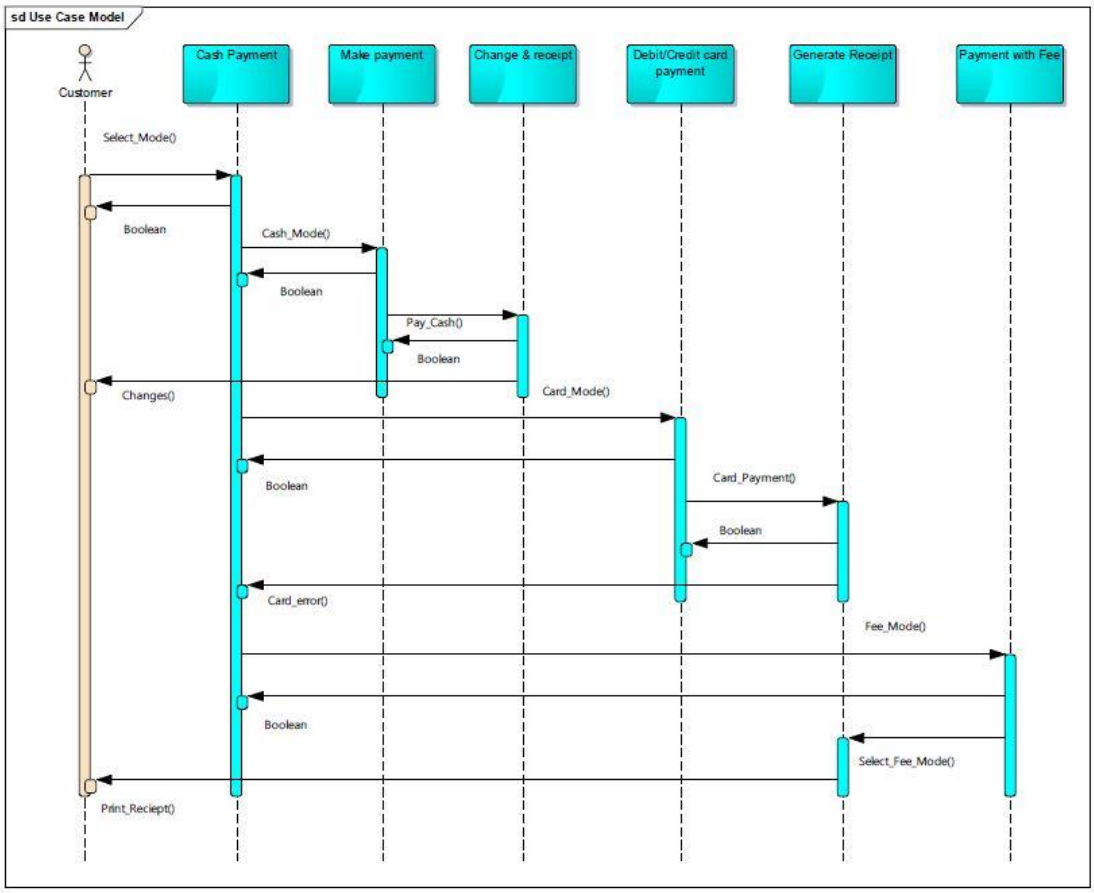

Fig. 3.3 Sequence diagram for payment

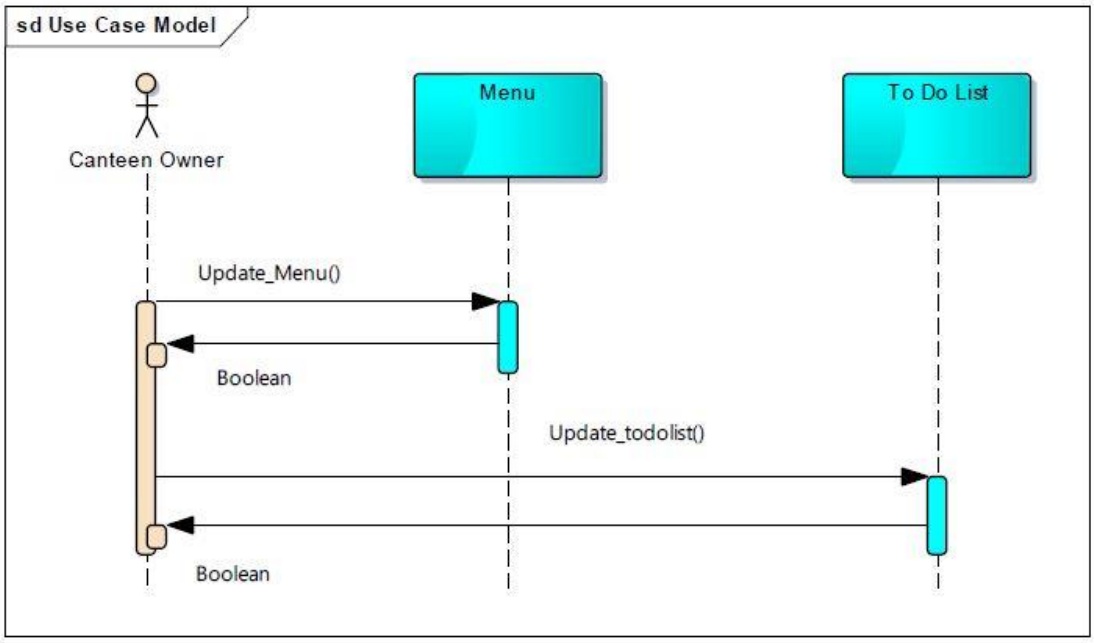

Fig 3.4 Sequence Diagram for Menu Selection

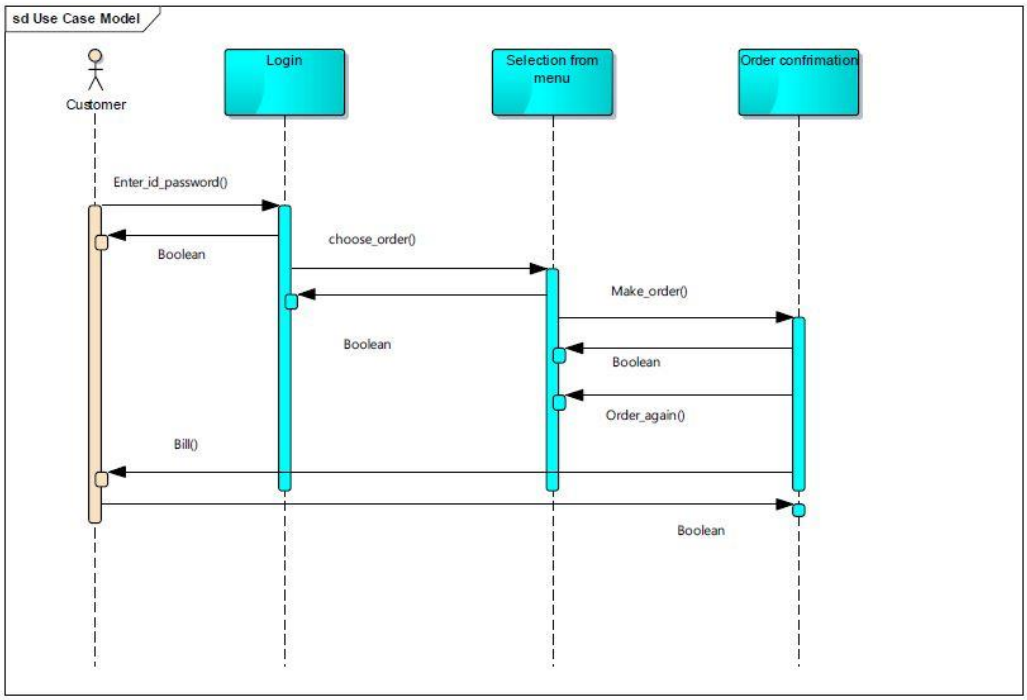

Fig 3.5 Sequence diagram for Payment

CHAPTER 3

3.1. DESIGN TECHNIQUES:

The design of the app has been done using the following technologies:-

- JAVA
- XML
- ANDROID STUDIO
- FIREBASE DATABASE

3.1.1 JAVA: Java is a known language; developers know it and don't have to learn it. It's harder to shoot yourself with Java than with C/C++ code since it has no pointer arithmetic. It runs in a VM, so no need to recompile it for every phone out there and easy to secure. Large number of development tools for Java (see point 1).Several mobile phones already used Java ME, so Java was known in the industry. The speed difference is not an issue for most applications; if it was you should code in low-level language.

3.1.2 XML: You can see that in android app development we store information about activity size, layout, etc information in xml file. Here security about this information is not our main concern. We can store password in xml but it is not logical to store secure information in xml. Because xml is almost public database. In many cases the information about the products are kept in xml. For example in a medicine company they maintain a record about all medicine in a xml file. So when a hospital or medical store needs to add those medicines's information to their website or application then they can use the xml file provided by the medicine company instead creating new database.

3.1.3 ANDROID STUDIO: Android Studio is called IDE it is an abbreviation of " Integrated Development Environment", which is used for developing Android applications, such as whatsApp, Instgram, snapchat and camscan. It has a virtual android device, which you can try your app on it before publishing in the market to be ensure that it's work normaly and effectively.

3.2. SOFTWARE PROCESS MODEL:

We are using RAD model for developing this application. The striking feature of the incremental model is that each module can be completed and released as and when the requirement arises because of lack of time.

The user can thus get a feel of these modules and give his feedback which can be utilized for making the software more user-friendly and in line with the user requirements.

Not only that the deadline set for this project is 6 months and we need a high Adaptation model and again will be concentrating on parallelism because our team will be working on the different module at the same time. Moreover, we will be using latest tools such as Visio, Project Manager as a result of which we can work much faster. So looking into all these requirements we find Incremental RAD model is best suited for our system because it enables the development team to create a fully functional system within a very short period of time.

Why not Waterfall model?

Waterfall model can be adopted because in our case because requirements are known in advance but there are some limitations of waterfall model due to which it is not feasible to adopt:

- No parallelism of work.
- Time consuming.

Why not Evolutionary models?

These models are best suited where requirements are fuzzy. These models are best suited for the systems where requirements keep on changing. But for our system requirements are crystal clear so it is not feasible to adopt any of the evolutionary models.

CHAPTER 4

The final product will be an application using which you can order your food from canteen menu.

Fig: The Login page

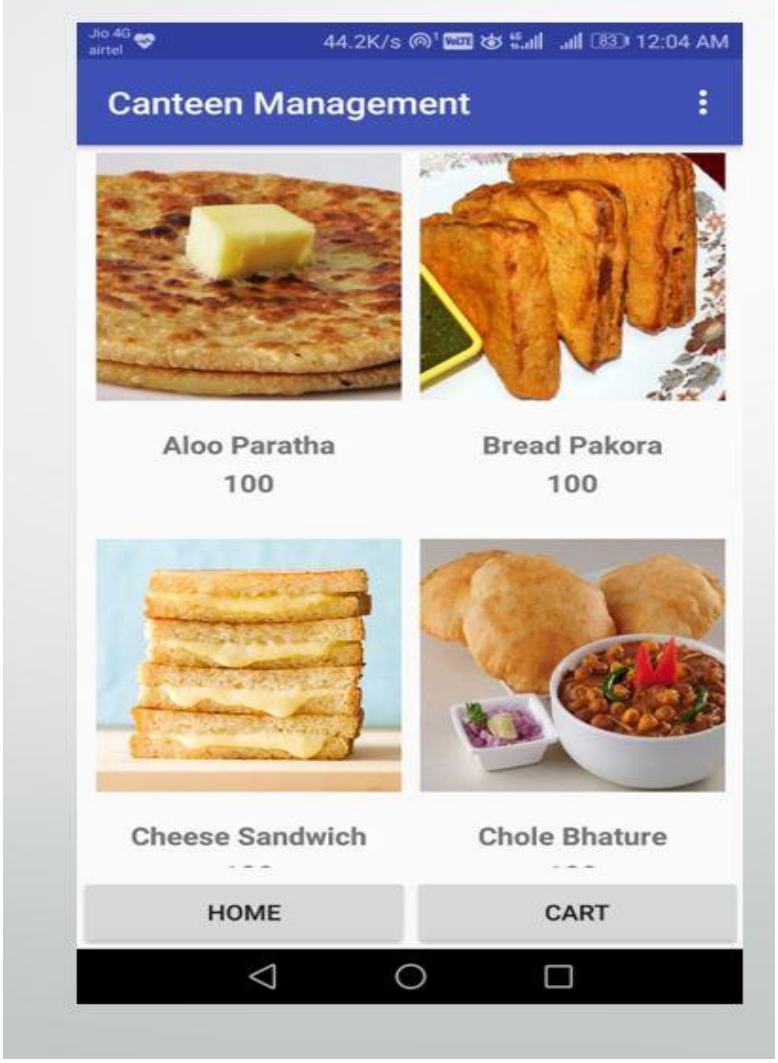
Jio 4G
airtel
44.2K/s
12:04 AM
Canteen Management
Aloo Paratha
100
Bread Pakora
100
Cheese Sandwich
Chole Bhature
HOME
CART

Fig : Menu

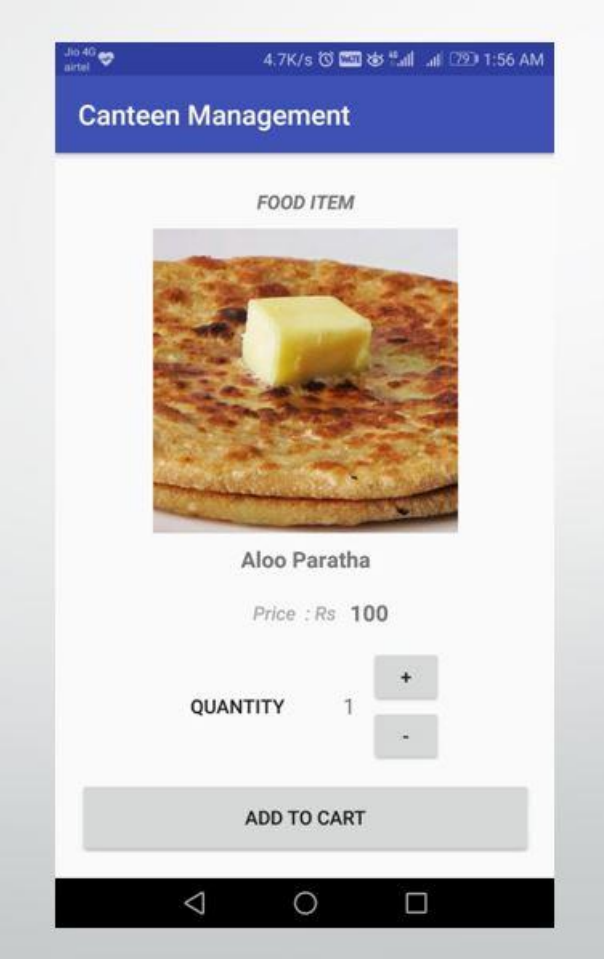

Fig : order by customizing.

CHAPTER 5

5.1. CONCLUSION AND FUTURE WORK:

With this project we are trying to reduce the distance between your room and canteen. Here all the order details like the order types are stored daily which reduces manual work. Use of Real-time database makes it one of a kind as all the data will be saved in the database and administrator can view all the data on time.

Add different payment options such as Paytm, PayPal, UPI etc. Enhance user interface by adding more user interactive features. Allow to process order as a guest.

5.2 REFERENCES:

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