BASAVARAJESWARI GROUP OF INSTITUTIONS

Ballari Institute of Technology & Management

AUTONOMOUS INSTITUTE UNDER VISVESVARAYA TECHNOLOGICAL UNIVERSITY JNANASANGAMA ,BELAGAVI 590018

Course Project on

"RESTAURANT BILLING SYSTEM"

Submitted in partial fulfillment of the requirements for the award of degree of

Bachelor of Engineering

In

COMPUTER SCIENCE & ENGINEERING

Submitted by

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that the course project for the course R Programming entitled **"RESTAURANT BILLING SYSTEM"** has been successfully completed by **D VAISHNAVI, PAVITRA T R, SADIYA FARHAD, SRILEKHA K** bearing USN **3BR22CS405, 3BR22CS413 3BR22CS415, 3BR22CS417,** a Bonafide students of Ballari Institute of Technology and Management, Ballari. For the partial fulfillment of the requirements for the **Bachelor's Degree in Computer Science and Engineering** during the academic year 2022-2023.

Signature of Staff incharge
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Asst professor
Department of CSE, BITM, Ballari

Signature of HOD
Dr. R. N. Kulkarni

ACKNOWLEDGEMENT

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ABSTRACT

This project is aimed at developing a Restaurant Billing System. The purpose of the project is to develop a user-friendly GUI based billing system. The application can be accessed and effectively used by the user. The billing system contains the menu which is available in the restaurant. The owner or the cashier has to check the item ordered by the customer and enter the number of orders given for a particular item in the menu. Once the items are selected, the cashier can automatically get the total and the receipt will be generated. A simple GUI is provided for the easy access. The system's design is so simple that users won't find it difficult to use and understand

In the ever-evolving landscape of the hospitality industry, efficiency and precision are paramount. The Restaurant Billing System stands as a technological solution designed to meet these demands. This abstract explores the core functionalities and advantages of this system, offering a glimpse into how it enhances the dining experience for both customers and restaurant staff. From order management to payment processing, this system digitizes and streamlines operations, revolutionizing the way restaurants serve their patrons.

Our restaurant billing system is a digital solution to the challenges faced by restaurants in billing customers. It is designed to increase efficiency, accuracy, and customer satisfaction.

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INTRODUCTION

The “Restaurant Billing System” or “RBS” is an application to automate the process of information recording and billing of a restaurant. This desktop based application is designed to administer its users and customers. RBS is a billing system, made for the effective utilization of modern technology in the organization. It is an automated software that can handle a lot of information about the restaurant’s employees, order history, reservation data. It has the capability to process bills and gather information about its employees and billing history. It is designed for the sole purpose of efficiency, speed and accuracy
The Restaurant Billing system is desktop based application developed by using java programming language. This system often used by managers to effectively generate bills for customer very reliablily and effectively...

A Restaurant Billing System is an essential component of modern dining establishments, streamlining the process of recording orders, calculating bills, and enhancing overall customer service. In an era of digital transformation, this system harnesses technology to create a seamless dining experience, ensuring accuracy, efficiency, and customer satisfaction. This introduction will delve into the key features and benefits of a Restaurant Billing System, shedding light on its pivotal role in today's hospitality industry.
A restaurant management software comes with all the features that can help improve and enhance every possible function within a restaurant, be it kitchen order management, online ordering, timely food delivery or inventory management.

PROBLEM STATEMENT

To design and develop application for Restaurant Billing System which helps to the restaurant managers to manage the restaurant more effectively and efficiently by computerizing meal ordering billing.

OBJECTIVES:

The main Objective for Restaurant Billing System is to mainly help Restaurant Manger to automate and process bills to customer for their meals efficiently and error free. The Restaurant Billing System is to automate and streamline the process of managing orders, calculating bills, and enhancing the overall efficiency and accuracy of restaurant operations.

The Restaurant Billing System aims to enhance operational efficiency, improve accuracy, and provide a better dining experience for customers while assisting restaurant owners in managing their finances and business operations effectively.

A Restaurant Billing System aims to enhance operational efficiency, improve accuracy, and provide a better dining experience for customers while assisting restaurant owners in managing their finances and business operations effectively.

The main objective of this software is a computerized working environment. This system is made on the assumption that the organization is fully requires manual work for any task. This project will serve the following objectives:

- To add and maintain records of available menu.
- To add and maintain customer details.
- To add and maintain description of new menu.
- To provide view of transaction to the owner.
- To provide a convenient solution of billing pattern.
- To make an easy to use environment for users.
- Easy to use system.

HARDWARE AND SOFTWARE REQUIREMNENTS:

Hardware Requirements:-

Processor : Intel R core TM i3-1005G1Pentium core i5

Hard Disk:4 GB

RAM:8 .00 GB

Software Requirement:

Design Constraint: • Operating System:- windows 11

• Front End:- Java , Net Beans

• Programming Language:- Java

REQUIREMENT ANALYSIS

SYSTEM REQUIREMENTS

- The system we will designing will provide the most important features that every restaurant system must offer.
- However do note that a restaurant system can have other sub – systems .

FUNCTIONAL REQUIREMENT

- the system shall allow to add and remove menu items.
- The system shall generate bills
- The system shall manage payment of bills.
- The system shall generate kitchen order tickets

NON - FUNCTIONAL REQUIREMENT

- Accessibility: the system should be usable by people with impairments and adhere to relevant accessibility standards.
- Performance: the system should be able to manage a large number of con current transactions and requests without Major delays .
- Compatibility: the system shall be compatible with restaurants existing systems and technology.
- Usability: both customers and workers should find the system simple to use.
- Reliability: the system should be dependable and always available to users.

SYSTEM DESIGN

UNIFIED MODELING LANGUAGE:

UML, short for Unified Modeling Language, is a standardized visual modeling language used in software engineering to design, visualize, and document software systems. It provides a set of graphical notations for creating visual representations of various aspects of a system, including its structure, behavior, and interactions.

UML is widely used in the software development industry as a common language for communication between stakeholders, such as developers, designers, testers, and clients. It helps in understanding, analyzing, and documenting complex systems, making it easier to communicate and collaborate effectively.
The main components of UML are diagrams, which represent different aspects of a system. Some commonly used UML diagrams include:

1. Context modeling: A context model is a representation of the relevant aspects and relationships within a system or environment. It helps to understand the interactions, dependencies, and boundaries of the system being analyzed or designed.

2. Activity Diagram: Represents the flow of activities or processes within a system, showing the order of activities and decision points.
3. Use Case Diagram: Illustrates the interactions between actors (users, systems, or external entities) and the system, focusing on the system's functionalities or use cases.

4. Sequence Diagram: Visualizes the dynamic behavior of a system by showing the sequence of interactions between objects over time.

5. Class Diagram: Represents the static structure of a system, showing classes, their attributes, methods, relationships, and inheritance hierarchies.

UML provides a standardized and platform-independent way of representing software systems, making it easier to understand, analyze, and design complex systems. It promotes better communication, reduces ambiguity, and helps in identifying and resolving design issues early in the development process.

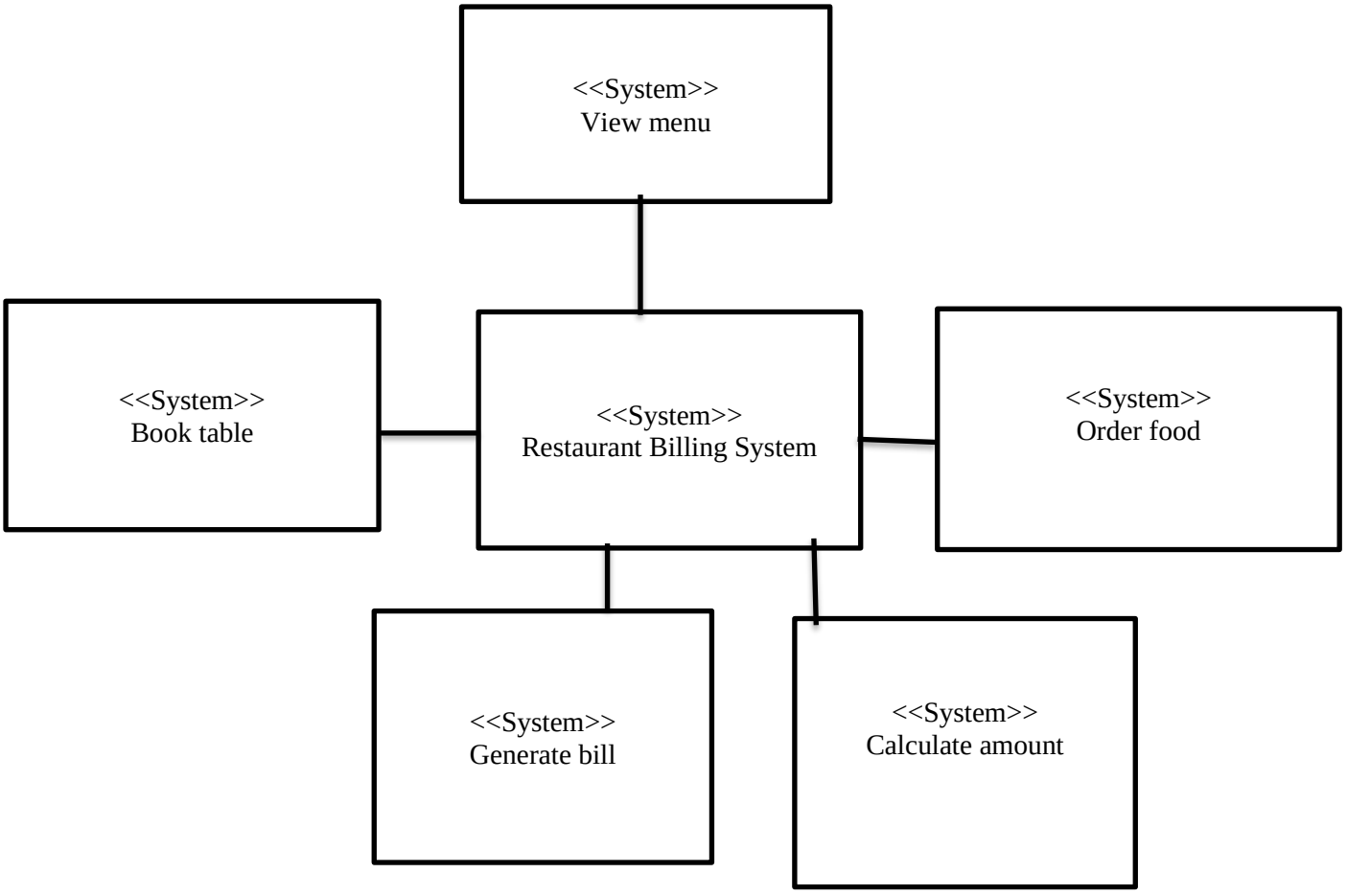
Overall, UML is a powerful tool for visualizing and documenting software systems, aiding in the analysis, design, and implementation of high-quality software applications.

CONTEXT MODEL:

A context model is a visual representation or diagram that helps to understand the relationships, interactions, and boundaries of a system or environment. It provides a high-level overview of the relevant aspects and components that influence the system being analyzed or designed. The context model helps stakeholders and designers to identify the external entities, systems, and factors that interact with the system, as well as the information flows and dependencies between them. By visualizing the larger context, the model aids in understanding the scope, requirements, and potential impacts of the system, facilitating effective decision-making and problem-solving.

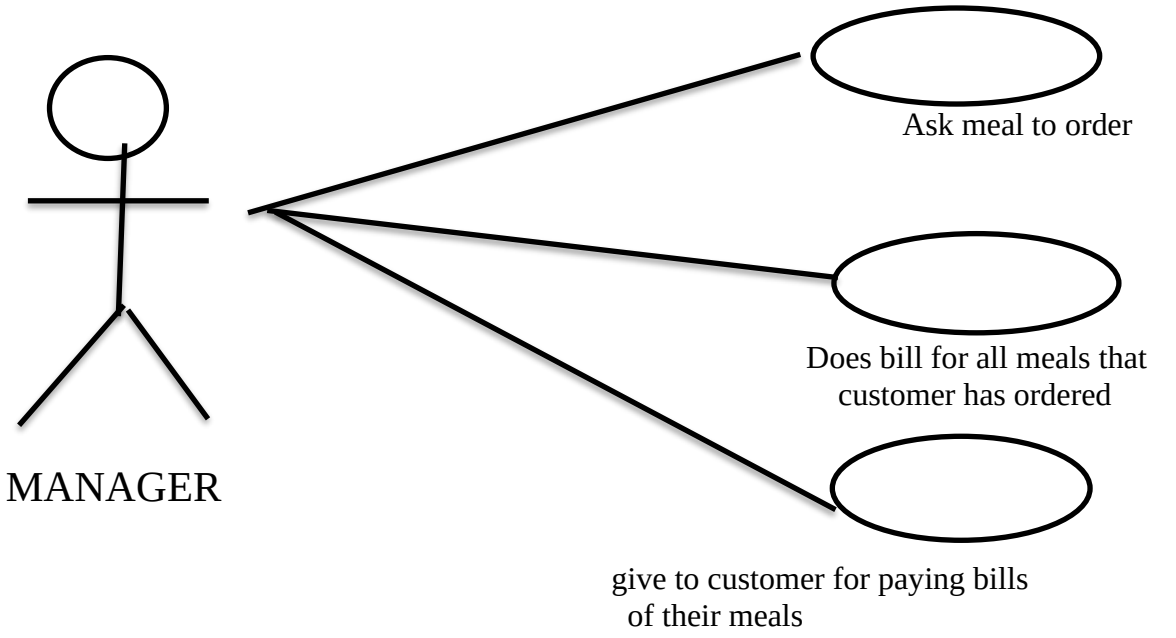
UML Diagram:

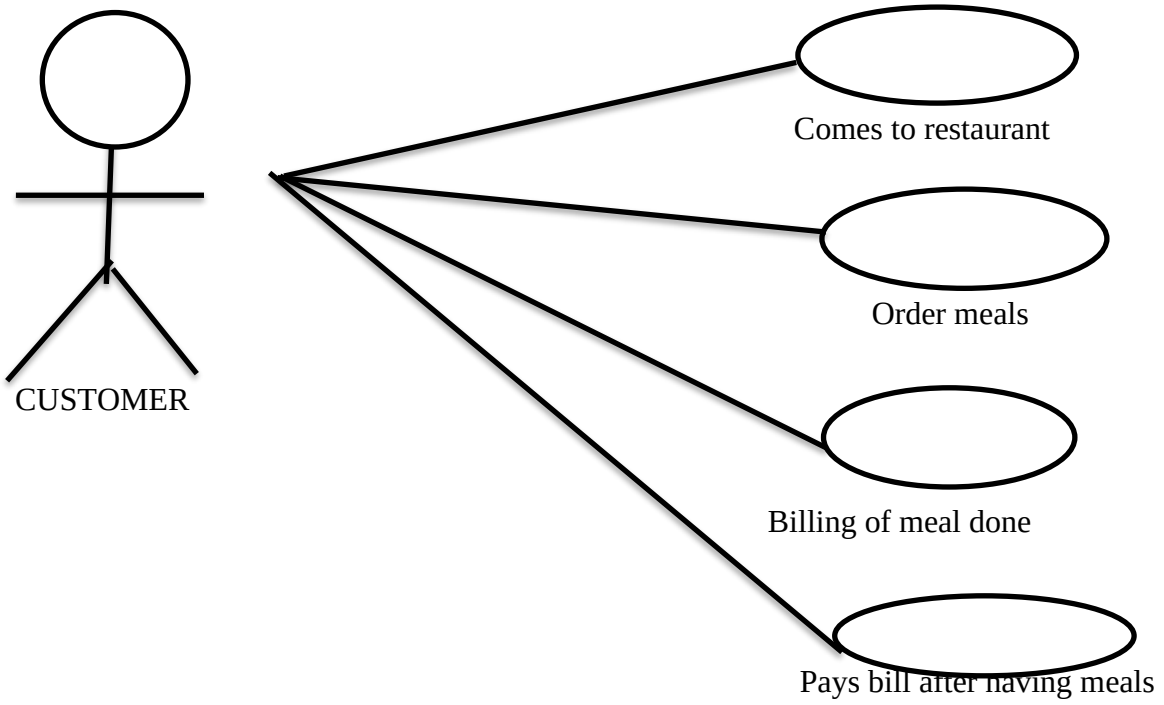
1. Context Diagram



USE CASE DIAGRAMS:

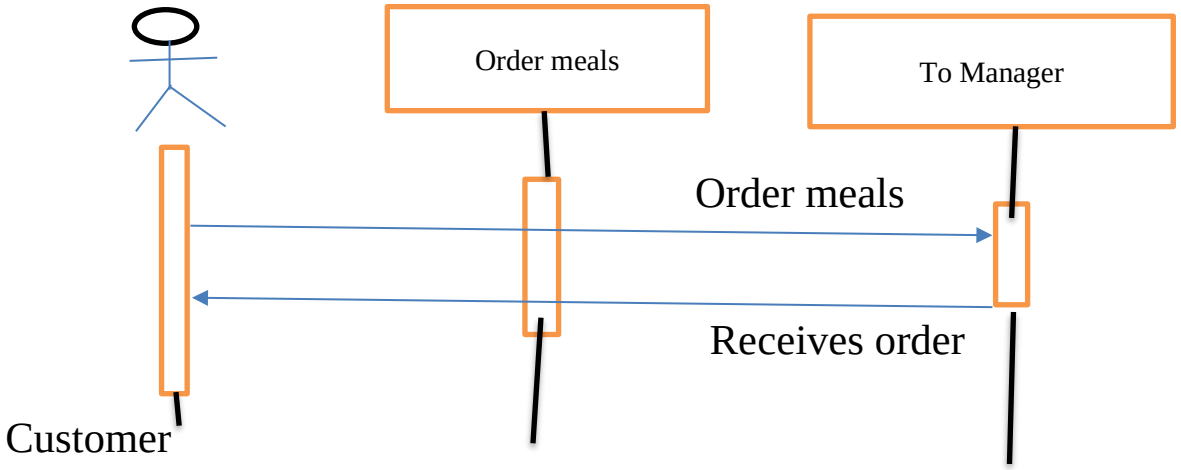
Use case diagrams are a type of behavioral modeling diagram in software development that depict the interactions between actors (users or external systems) and a system. They provide a visual representation of the functional requirements of a system and help to identify the different use cases or scenarios in which the system is used. Use case diagrams consist of actors, use cases, and their relationships, showcasing how users or external systems interact with the system to achieve specific goals. They are valuable for understanding system functionality, defining system boundaries, and facilitating communication between stakeholders, developers, and design.

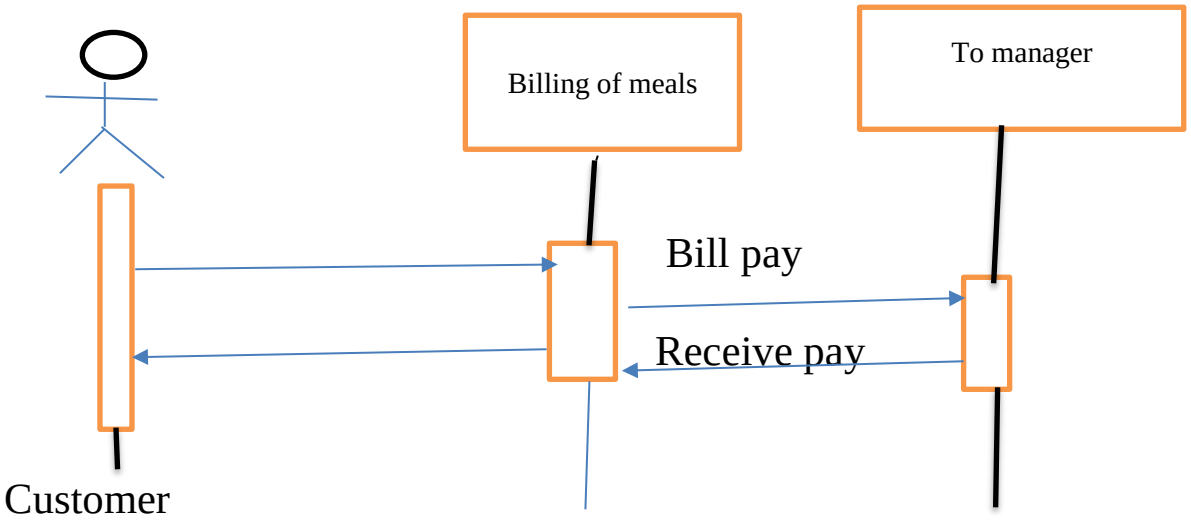


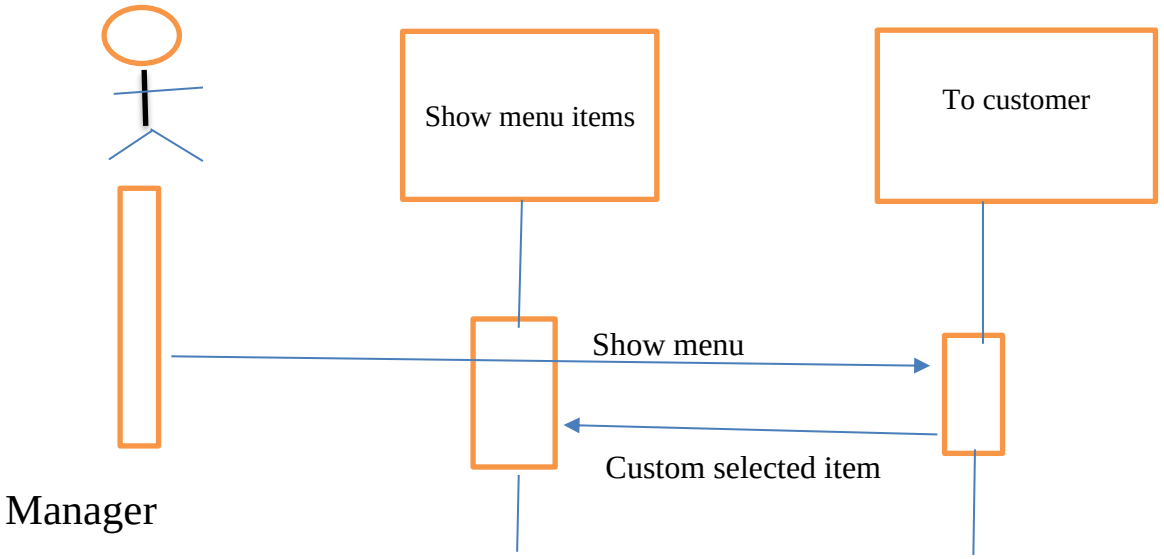


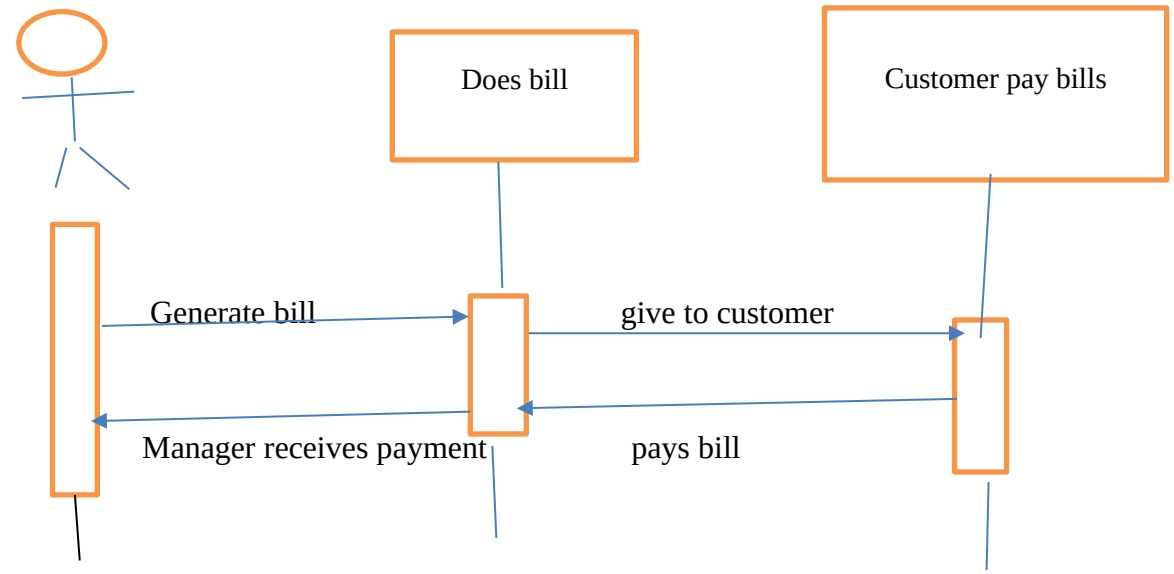
SEQUENCE DIAGRAM

Sequence diagrams are a powerful tool used in software development to visually represent the interactions between different components or objects in a system. They illustrate the flow of messages or method calls between these components, helping to understand the behavior and relationships within the system. Sequence diagrams use vertical lines called lifelines to represent the different components, and arrows to depict the messages or method calls exchanged between them. They provide a clear and concise overview of the dynamic behavior of a system, making them valuable for designing, documenting, and communicating software systems.



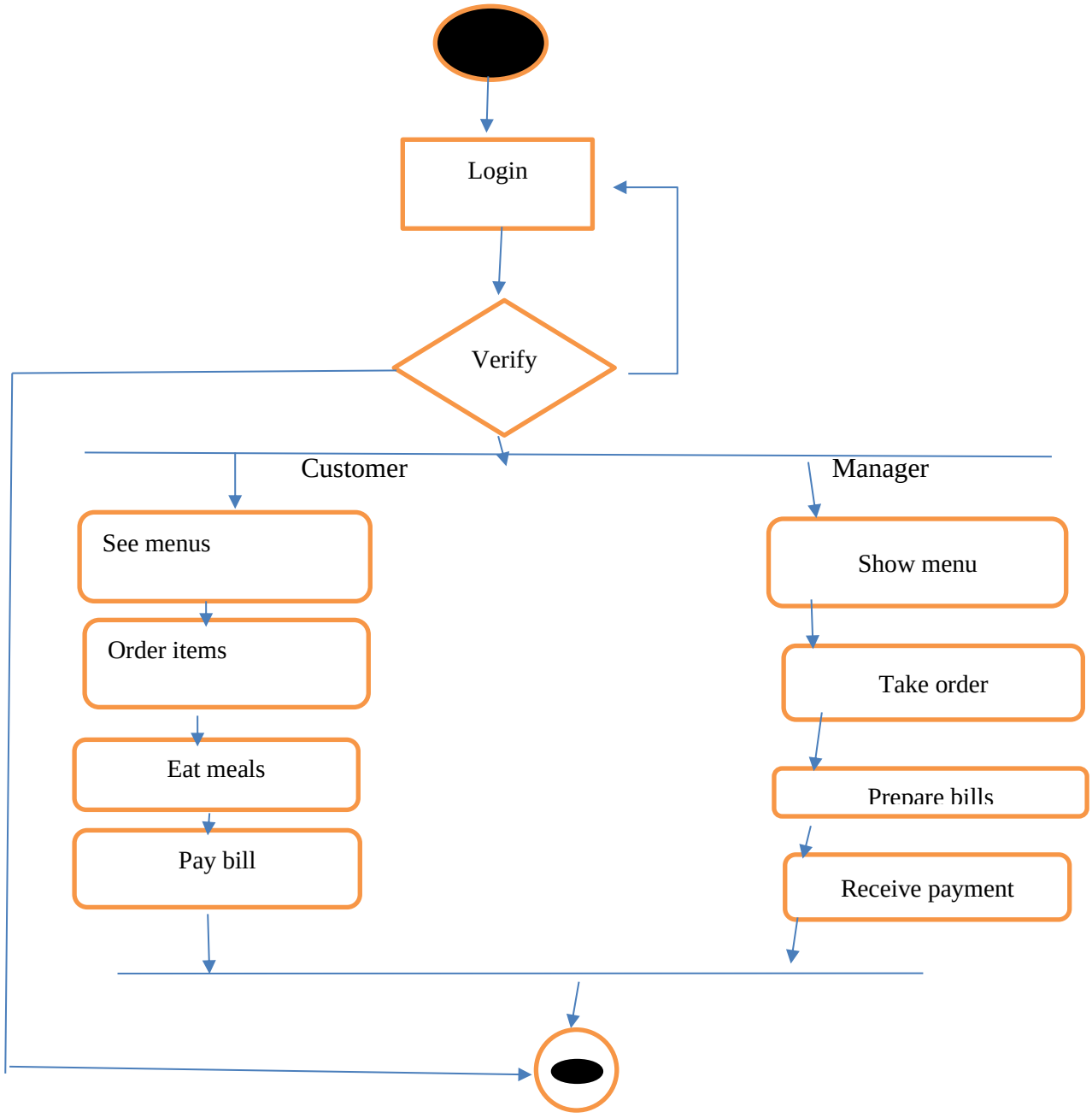



Show menu items
To customer
Show menu
Custom selected item
Manager


Does bill
Customer pay bills
Generate bill
give to customer
Manager receives payment
pays bill
Manager

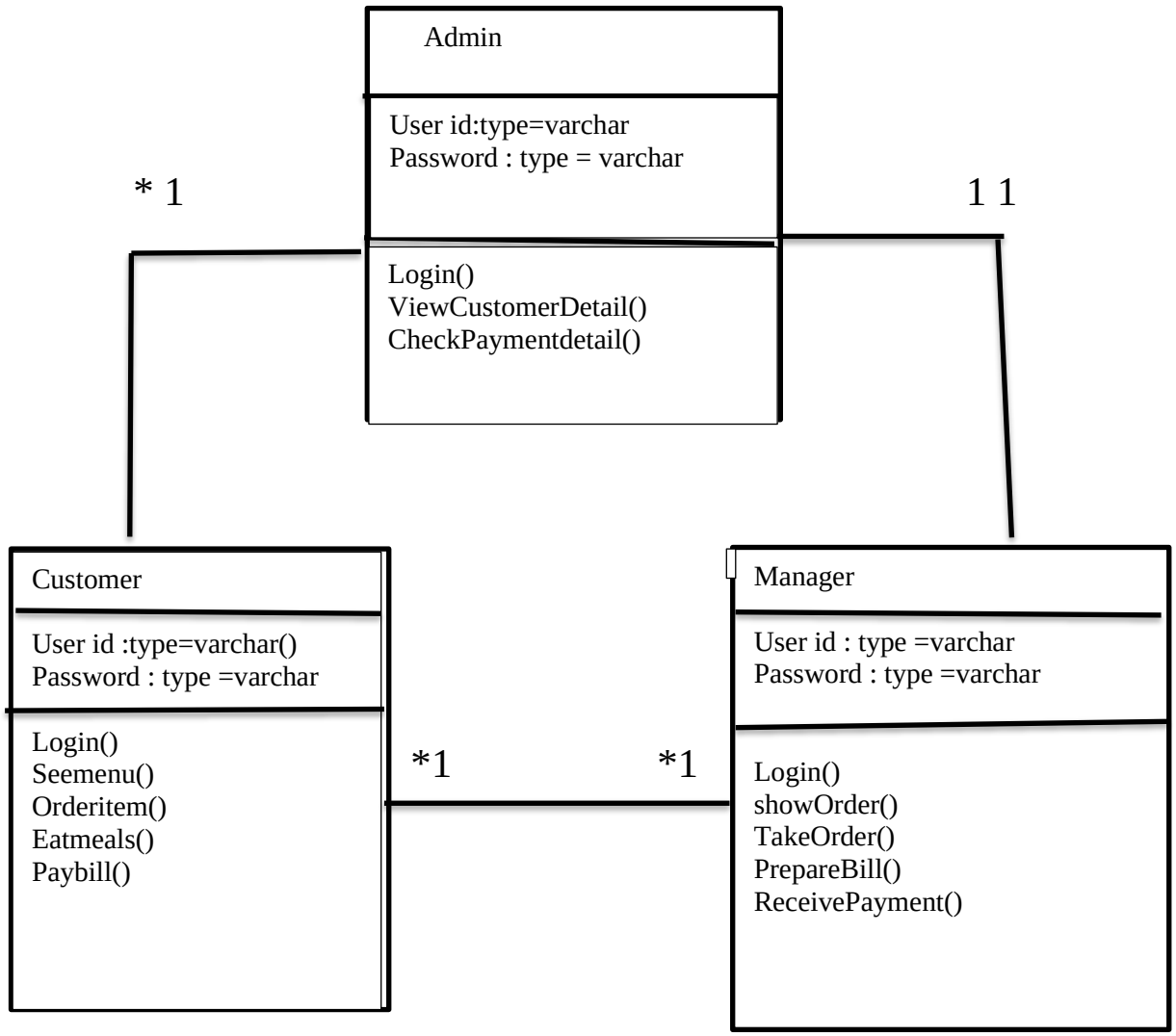
ACTIVITY DIAGRAM:

Activity diagrams are a type of behavioral modeling diagram used in software development to visually represent the flow of activities, actions, and decisions within a system or process. They provide a high-level view of the sequence of actions taken by different entities in a system, illustrating the order, conditions, and parallelism of activities. Activity diagrams use various symbols and notations, such as actions, decisions, control flows, and swim lanes, to depict the steps and interactions involved in a specific process. They are particularly useful for capturing complex workflows, business processes, and use cases, enabling stakeholders to understand, analyze, and communicate the behavior and logic of a system.



CLASS DIAGRAM

Class diagrams are a fundamental tool in object-oriented software development, providing a visual representation of the structure and relationships between classes in a system. They depict the attributes, methods, and associations of classes, helping developers understand the system's architecture and design. Class diagrams showcase the static structure of a system, illustrating the classes, their properties, and the interactions between them. They serve as a blueprint for software development, aiding in communication among stakeholders and guiding the implementation process. By visually organizing classes and their relationships, class diagrams facilitate efficient development, maintenance, and documentation of object-oriented systems.



Implementation: Description Of All Modules In Project

The description of each module or component in our restaurant billing system Java program. Here's a breakdown of what each major component does:

1. User Interface Components:
   - JFrame: This is the main window or frame of the application where all the user interface elements are placed.
   - JLabel: Labels used to display text or descriptions for various input fields.
   - JTextField: Input fields where users can enter text or data.
   - JRadioButton: Radio buttons for selecting either "Diet" or "Normal" type.
   - JComboBox: Dropdown lists for selecting food and drink items.
   - JTextArea: A text area for displaying and possibly editing the receipt or customer details.
   - JButton: Buttons for actions like reset, print, receipt generation, and calculation.

2. Data Entry and Display:
   - tNumber, tName, tContact: Text fields for entering customer number, name, and contact information.
   - c1, c2: Combo boxes for selecting food and drink items.
   - b1, b2: Radio buttons for selecting diet or normal type.
   - area1: Text area for displaying receipt and customer information.

3. Buttons and Actions:
   - reset: Clears the text fields.
   - print: Attempts to print the contents of `area1`.
   - receipt: Generates a receipt with customer information and selected items.
   - calculate: Calculates the total amount based on selected food and drinks.

4. Amount Calculation:
   - The `calculate` button calculates the total amount based on the selected food and drink items. Prices for food and drinks are hardcoded based on the selected item.

5. Layout and Design:
   - The program uses a `null` layout, which means you manually specify the positions and sizes of components. This can be customized for better user experience.

6. Main Method:
   - The `main` method initializes the program by creating an instance of the `Resturant12` class.

7. Error Handling:
   - Some error handling is missing, especially when dealing with user inputs. It's a good practice to validate user input and handle exceptions.

8. User Instructions:
   - It would be beneficial to include instructions or labels within the GUI to guide users on how to use the system effectively.

9. Code Cleanup and Consistency:
   - There are some commented-out code sections and variable naming inconsistencies. It's a good practice to remove unused code and maintain consistent naming conventions for better code readability.

TESTING:

TABULAR REPRESENTATION OF TESTCASES:

Login by Admin:

Test Case ID	Input	Description	Expected result	Pass/Fail
TC_01	Empty adminname, password, confirm password.	Empty adminname, password, confirm password.	Fields should not be empty	Login Fail
TC_02	Invalid adminname and valid id, password, confirm password.	An Invalid name given by admin	adminname field should be in specified format	Login Fail
TC_03	Different password and confirm password provided.	Different password and confirm password provided by admin.	Password mismatch	Login Fail

Login by User:

Test case ID	Input	Description	Expected result	Pass/Fail
TC_01	Enter User id	Empty user id given by System user	User id field should not be empty	Login Fail
TC_02	Enter Password	An empty field given by System user	Password field should not be empty	Login Fail

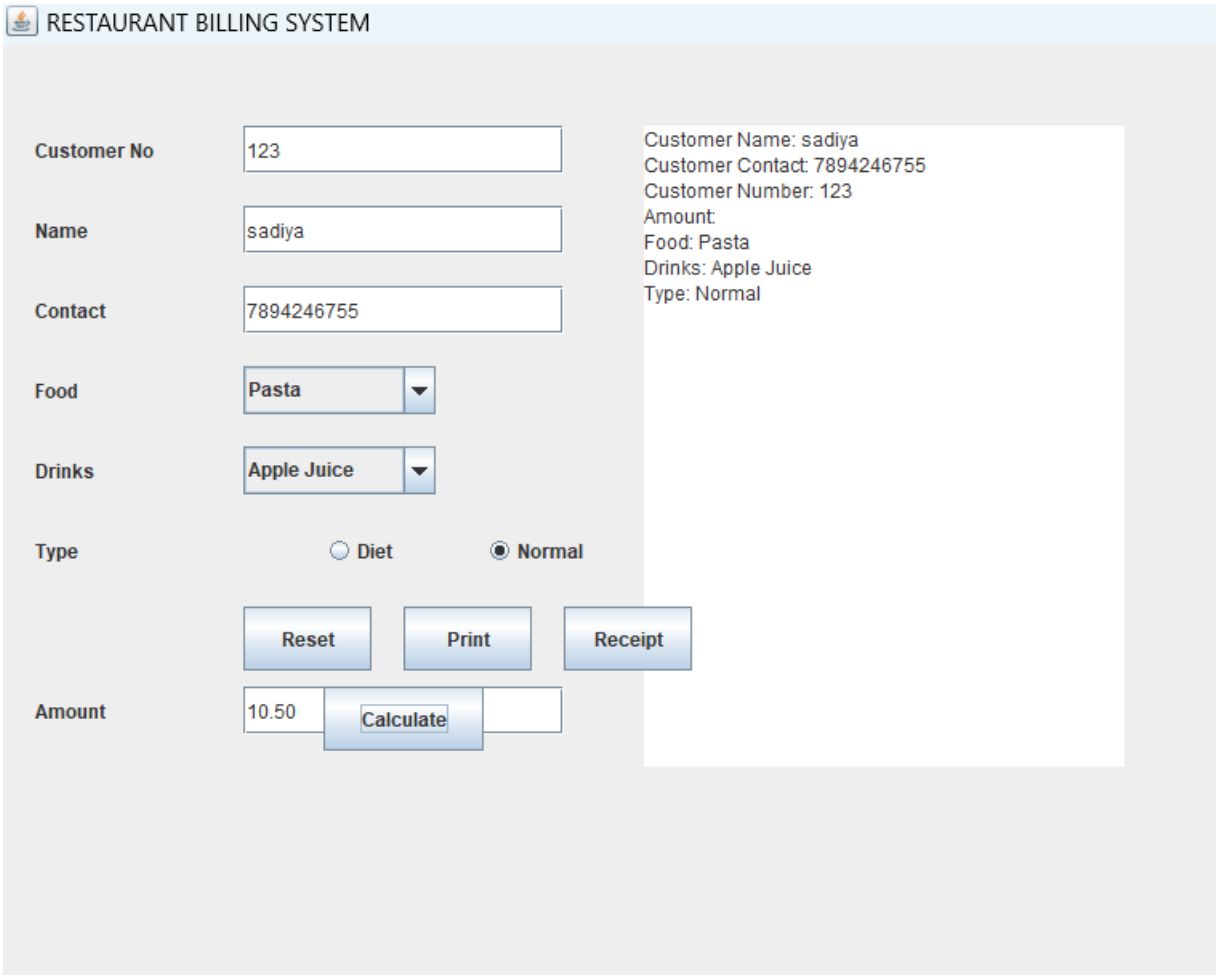
Order the coffee :

Test case ID	Input	Description	Expected result	Pass/Fail
TC_01	Enter order choice	Empty order choice given by System user	Order id field should not be empty	Pass
TC_02	Enter the item number	An empty field given by System user	Item number field should not be empty	Pass
TC_03	Enter the invalid item number	Number are entered by the user is incorrect	Number should be valid	Pass

Generate bill:

Test case ID	Input	Description	Expected result	Pass/Fail
TC_01	Select order to generate bill	Empty selection of order	fields should not be empty	Pass
TC_02	invalid order number	User selected invalid order number	Order number should be valid	Pass
TC_03	Invalid choice to generate bill	User selected invalid choice	Choice should be valid	Pass

OUTPUT SCREENSHOTS



CONCLUSION:

The restaurant billing system we offer is designed to be a comprehensive solution to the billing challenges faced by restaurants. We hope that restaurant owners will take advantage of this innovative system to improve their operations and enhance the experience of their customers.

This system is developed by java and is aim for managers to effectively process bills and to increase customers satisfaction.

A restaurant billing machine is a integral part of any restaurant's operations, enhancing efficiency, accuracy, inventory management, financial reporting, and customer service. Whether you're running a small café or a large hotel, the right restaurant billing software can make all the difference.

REFERENCE

- **https://www.softwaresuggest.com/restaurant-billing-software**
- **https://www.google.com**