

A Project Report On
Food Ordering Kiosk GUI
Under-Graduation
Integrated Master of Science in
Information Technology
Silver Oak College of Computer Application

Submitted to



Department of Masters
Silver Oak College of Computer Application
Silver Oak University

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This is to certify that the project report submitted along with the project entitled **Food Ordering Kiosk GUI** has been carried out by **Rajvansh Manav Pravinbhai, 2204050200143** under the guidance of Mr. Yogesh Hemnani in fulfillment of the IMSCIT (Sem 5), Degree of Integrated Master of Science in Information Technology at Silver Oak College of Computer Application, Silver Oak University, Ahmedabad during the academic year 2024-25.

Mr. Yogesh Hemnani

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This is to certify that the project report submitted along with the project entitled **Food Ordering Kiosk GUI** has been carried out by **Vaniya Premkumar Ratilal, 2204050200186** under the guidance of Mr. Yogesh Hemnani in fulfillment of the IMSCIT (Sem 5), Degree of Integrated Master of Science in Information Technology at Silver Oak College of Computer Application, Silver Oak University, Ahmedabad during the academic year 2024-25.

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Acknowledgement

We Express Our Heart Gratitude to a number of people Who Extended Their Full Support and Cooperation in Developing This Project. Firstly, We Would Like to Take This Opportunity to Thank "Silver Oak University" For Giving Us This Opportunity and A Platform for Discovering and Developing Our potential, The King of Experience That We Have Received While Making This Project Report Is So Immense That Narrating That in Few Words Is Difficult.

After Putting in Such a Hard-work We Have Realized That Takes to Work in Company and Do a Project. Our Project name is **Food Ordering Kiosk GUI** And Colleagues have been Great Source of Help without Them We Were Unable to Do This Project. There for our Project. As If Small Drop of Water of Sea. We Have Learnt Many Things from Being a Part of Concept Family.

After That Our Heartiest Thanks to Our Guide as Well as Respected Mentor **Mr. Yogesh Hemnani** for Entrusting Upon Us the Responsibility and Acting as Ray of Light in Darkness. We Find Our Self-Short of Words to Describe Our Feeling for the Role she played Of Friend, A Philosopher and Guide, Whenever We Were in Need.



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Preface

It gives us great pleasure to present the project on **Food Ordering Kiosk**, developed for practical application in restaurants and similar environments. This project, designed using Python and the Tkinter library, is aimed at streamlining the ordering process, offering a hands-on experience for both users and developers.

The project integrates core programming concepts with real-world functionality, allowing students and developers to understand the interaction between theory and practical execution. Through this project, users will gain a strong grasp of GUI development, while also enhancing their skills in building responsive, user-friendly interfaces. Each phase of the project was built with increasing complexity, ensuring a comprehensive understanding of the development process.

This project aligns with the practical application of Python programming and the Tkinter library, which is widely used in the industry for developing interactive applications. It not only adheres to the scope of the academic curriculum but also goes beyond by exploring additional features that improve user interaction and system efficiency.

We extend our gratitude to the various resources, tutorials, and online references that guided the development of this project. We hope this project will provide valuable insights into GUI-based application development and contribute to a deeper understanding of practical programming concepts.

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1. PROJECT TITLE:
FOOD ORDERING KIOSK GUI
USING PYTHON

2. INTRODUCTION

Objective:

This project focuses on designing and developing a self-service food ordering kiosk using Python. The kiosk aims to enhance the ordering experience by allowing customers to browse the menu, customize their orders, reducing reliance on staff and improving overall efficiency.

Motivation:

In the fast-paced food industry, restaurants often struggle with long lines, order inaccuracies, and inefficient service during peak hours. Automating the ordering process addresses these challenges, leading to faster service, fewer mistakes, and higher customer satisfaction. This kiosk offers a scalable solution that can be adapted to various restaurant settings, from small cafes to large fast-food chains.

Key Features:

- User-friendly graphical interface for easy interaction
- Real-time menu browsing with customization options
- Order tracking and status updates for both customers and staff

3. PROBLEM DEFINITION

Problem Overview:

Traditional food ordering systems in restaurants often result in inefficiencies, especially during busy hours. Customers face long wait times, and staff can struggle to manage orders accurately, leading to mistakes and delays. Additionally, there is limited ability for customers to browse the menu and customize their orders independently.

Key Issues:

- **Long Wait Times:** During peak hours, manual order-taking slows down service, leading to frustrated customers.
- **Order Inaccuracies:** Miscommunication between customers and staff can result in incorrect or incomplete orders.
- **Limited Customization:** Customers often find it difficult to customize their meals, especially with complex or special requests.

Need for a Solution:

There is a need for an automated, self-service solution that allows customers to place orders, customize their selections. This can reduce wait times, minimize human errors, and improve the overall customer experience.

4. NEED OF THE PROJECT

Why This Project is Important:

1. Improving Service Efficiency:

Traditional food ordering systems, especially in busy environments, often result in long wait times and slow service. This project aims to automate the process, reducing manual intervention and speeding up order placement.

2. Reducing Human Errors:

Human errors in taking and processing orders lead to incorrect meals, customer dissatisfaction, and lost revenue. A self-service kiosk minimizes these errors by allowing customers to input their orders directly.

3. Enhancing Customer Experience:

In an increasingly digital world, customers expect fast, seamless, and personalized service. This project provides a user-friendly platform for customers to customize orders, browse menus at their own pace.

4. Cost-Effectiveness for Businesses:

By automating the ordering, restaurants can reduce their reliance on staff for repetitive tasks, lowering operational costs while maintaining high service standards.

5. Adaptability to Changing Trends:

The rise in self-service and contactless technologies in the post-pandemic era underscores the need for automated solutions. This project aligns with these trends, offering a scalable solution that can be expanded as business needs evolve.

4.1. CURRENT SYSTEM AND ITS DRAWBACK

Current System:

- **Manual Ordering Process:**
Most restaurants still rely on waitstaff to take orders manually, either at the counter or at the table.
- **Verbal Communication:**
Customers place orders by verbally communicating with staff, who then input the orders into the system.
- **Manual Payment Handling:**
Payments are processed manually, either through cash or by staff operating card machines, often leading to slow service during peak times.

Drawbacks of the Current System:

1. **Long Wait Times:**
Orders can take longer to process, especially during rush hours, resulting in customer frustration.
2. **Human Errors:**
Miscommunication between customers and staff often leads to incorrect or incomplete orders.
3. **Limited Customization:**
Customers may find it difficult to communicate specific preferences or special requests.
4. **Inefficient Payment Processing:**
Manual payment handling slows down the transaction process and increases wait times.
5. **Increased Operational Costs:**
Restaurants need more staff to handle peak times, raising labor costs without necessarily improving service quality.

4.2. PROPOSED SYSTEM AND ITS FEATURE

Proposed System:

The proposed system is a self-service, automated food ordering kiosk powered by a Python-based GUI, allowing customers to handle the entire ordering process independently.

Key Features of the Proposed System:

1. **Self-Service Interface:**
Customers can interact with a touchscreen display to browse the menu and place orders without needing staff assistance.
2. **Order Customization:**
Users can easily modify their orders by adding, removing, or customizing ingredients directly on the screen.
3. **Real-Time Menu Display:**
The system provides an up-to-date menu with images, descriptions, and prices, improving transparency for customers.
4. **Order Tracking:**
Customers can track the status of their order in real-time, giving them a clear idea of when it will be ready.
5. **Reduced Staffing Needs:**
By automating the ordering and, the system reduces the need for staff to handle these tasks, cutting down operational costs.
6. **Scalability:**
The system can be adapted to different restaurant sizes and integrated with existing restaurant management systems.

5. REQUIREMENTS

5.1 Hardware Requirements:

- **Touchscreen Display:** For user interaction.
- **Computer/Processor:** Raspberry Pi or small PC.
- **Stable Power Supply:** Continuous power to run the kiosk.

5.2 Software Requirements:

- **Python:** For developing the system.
- **Tkinter/PyQt:** For building the GUI.
- **Operating System:** Linux or Windows.
- **Other Libraries:** For device management and order processing.

Network Requirements:

- **Internet Connection:** For receipt processing and updates.

6. TIME DURATION

Phase 1: Planning and Design (2 Weeks)

- Define project scope and objectives
- Gather requirements (hardware, software)
- Design the system architecture and GUI layout

Phase 2: Development (3 Weeks)

- **Week 1-2:** Set up development environment, implement basic GUI
- **Week 3:** Integrate menu browsing and order customization features

Phase 3: Testing and Debugging (2 Weeks)

- Test the system for bugs and errors
- Validate functionality (menu browsing, receipt forwarding)
- Conduct usability testing with real users

Phase 4: Deployment and Maintenance (2 Weeks)

- Install the kiosk hardware and software in a test environment
- Train staff (if needed)
- Monitor performance and make adjustments

Total Duration: 9 weeks

7. TECHNOLOGY USED

Programming Language:

- **Python:** The core programming language used to develop the kiosk's functionality and graphical user interface (GUI).

GUI Framework:

- **Tkinter or PyQt:** Libraries for creating the interactive, user-friendly interface, allowing customers to browse the menu, customize orders, and interact with the system.

Hardware Integration:

- **Touchscreen Interface:** For smooth user interaction.
- **Receipt Printer:** To generate order receipts.

Operating System:

- **Linux or Windows:** The operating system used to run the application, ensuring compatibility and stability.

External Libraries:

- Additional Python libraries for managing input/output (e.g., `requests`, `json`, `os`).

7. FUNCTIONAL & NON- FUNCTIONAL DEPENDENCY

Functional Dependencies:

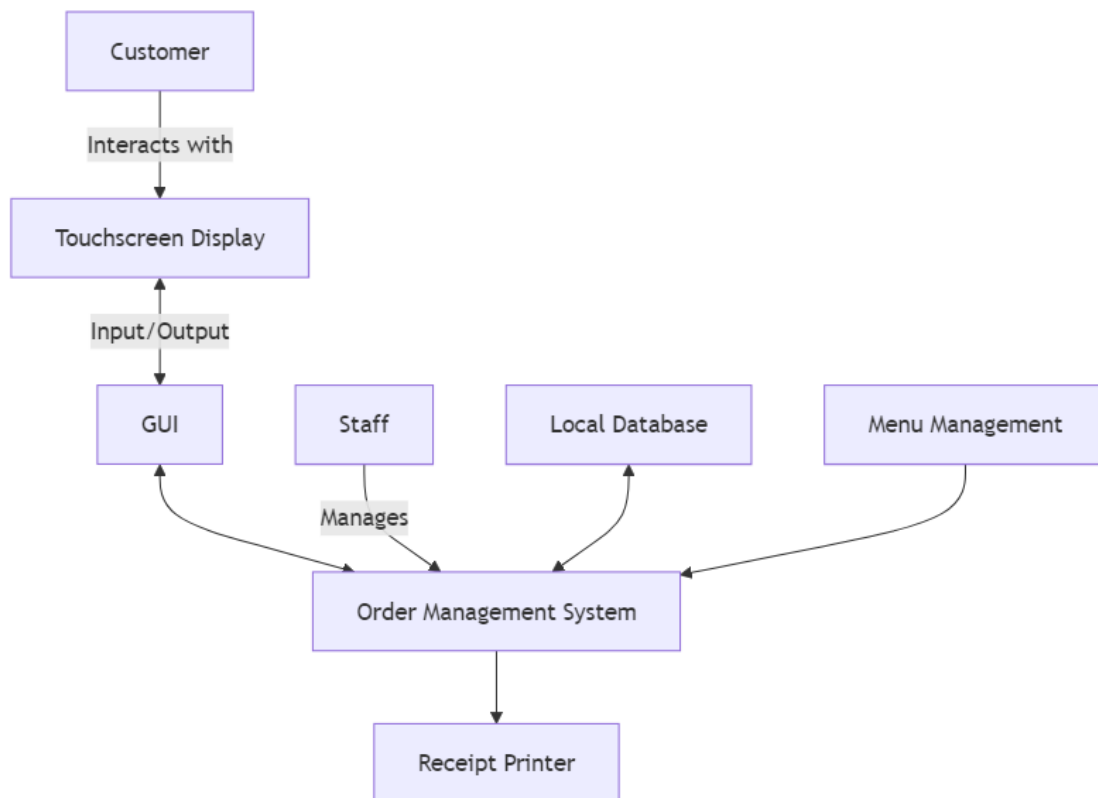
1. **Menu Display & Customization:**
Users can browse and customize menu items.
2. **Order Management:**
Handle and track multiple orders simultaneously.
3. **Receipt Sending:**
Send order receipts to Smartphones via msg.
4. **Order Status Tracking:**
Provide real-time updates on order status.

Non-Functional Dependencies:

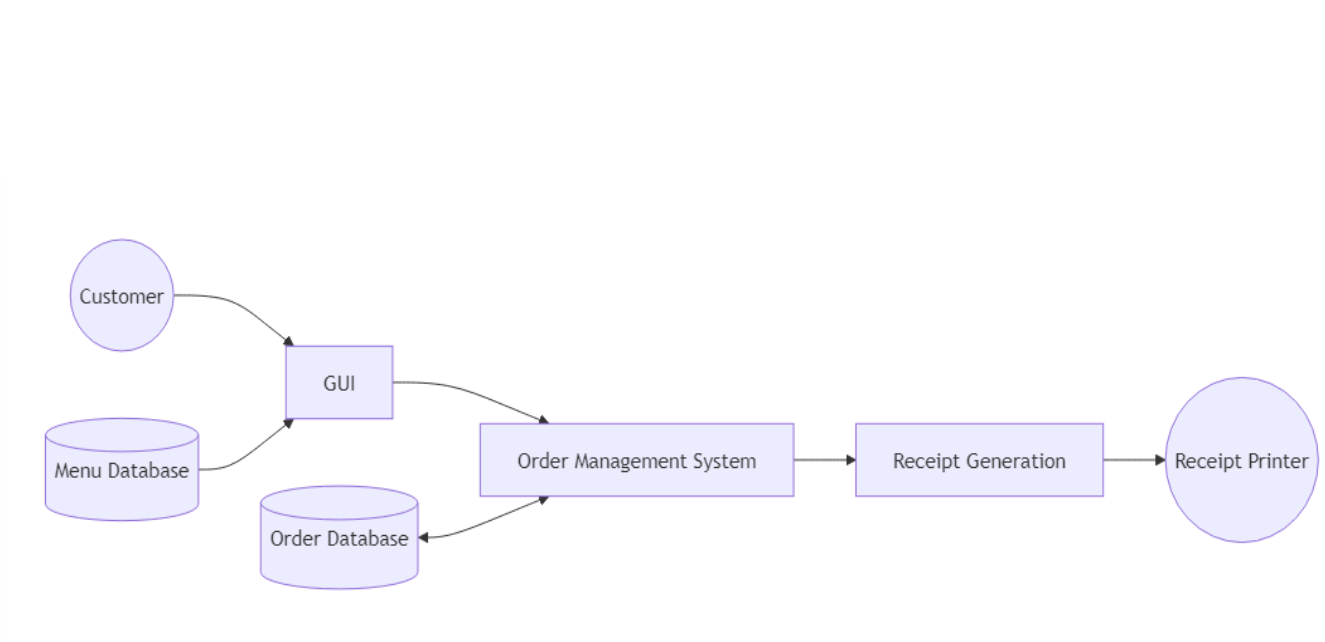
1. **Performance:**
Fast response times (under 5 seconds) for menu.
2. **Reliability:**
Ensure continuous operation without crashes.
3. **Usability:**
Intuitive and user-friendly interface.
4. **Scalability:**
Handle increasing user load and orders efficiently.
5. **Maintainability:**
Easy to update and maintain with minimal downtime.

9. DESIGN

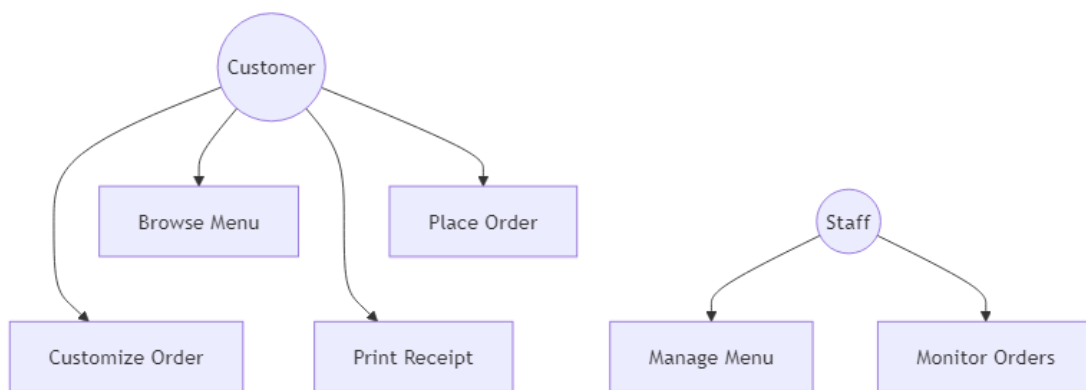
9.1 SYSTEM FLOW DIAGRAM



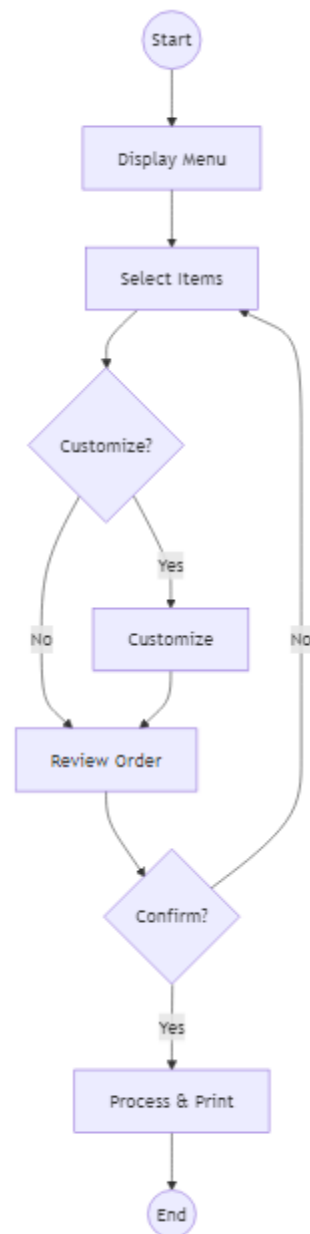
9.2 DATA FLOW DIAGRAM



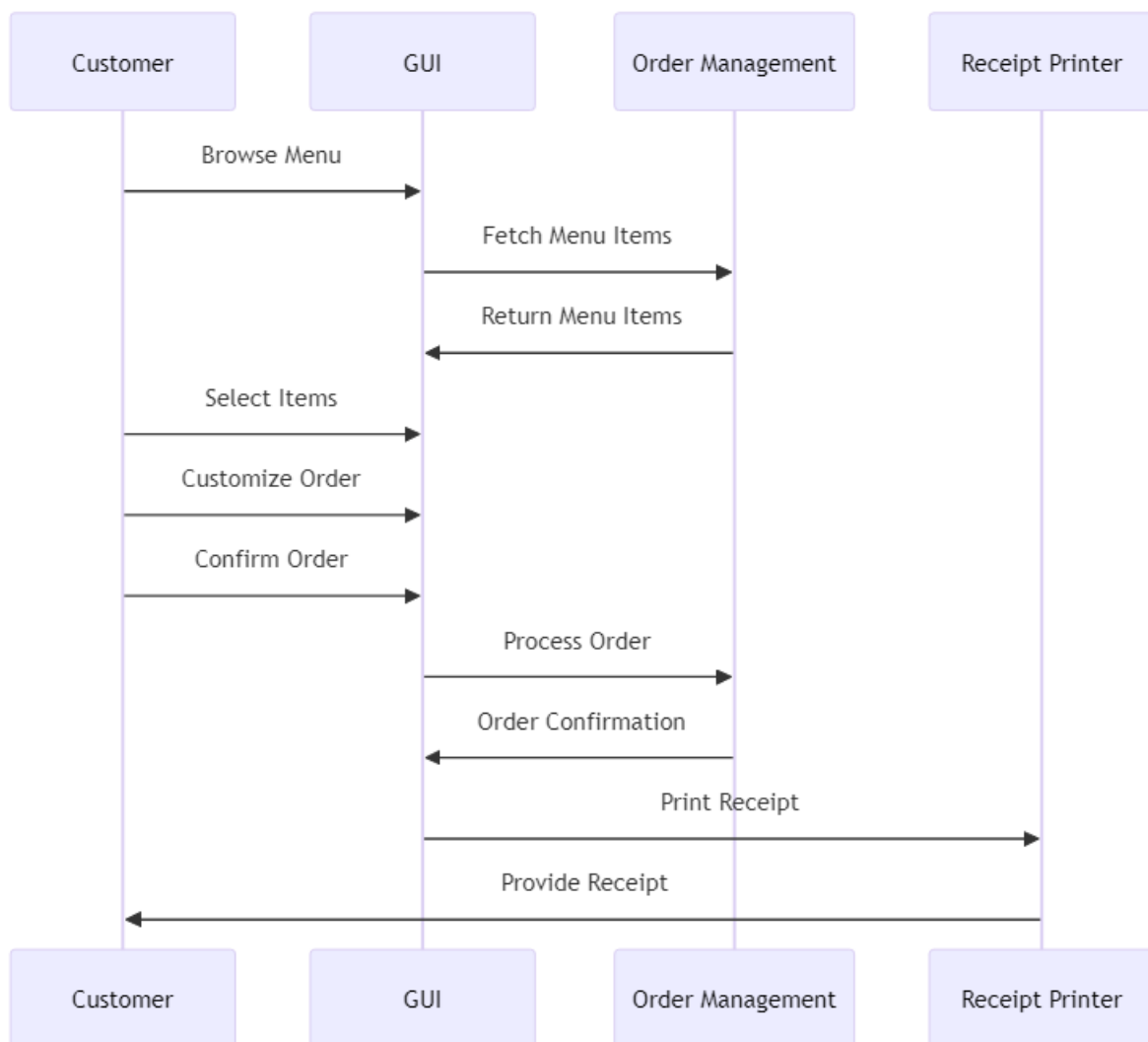
9.2.1 USE CASE DIAGRAM



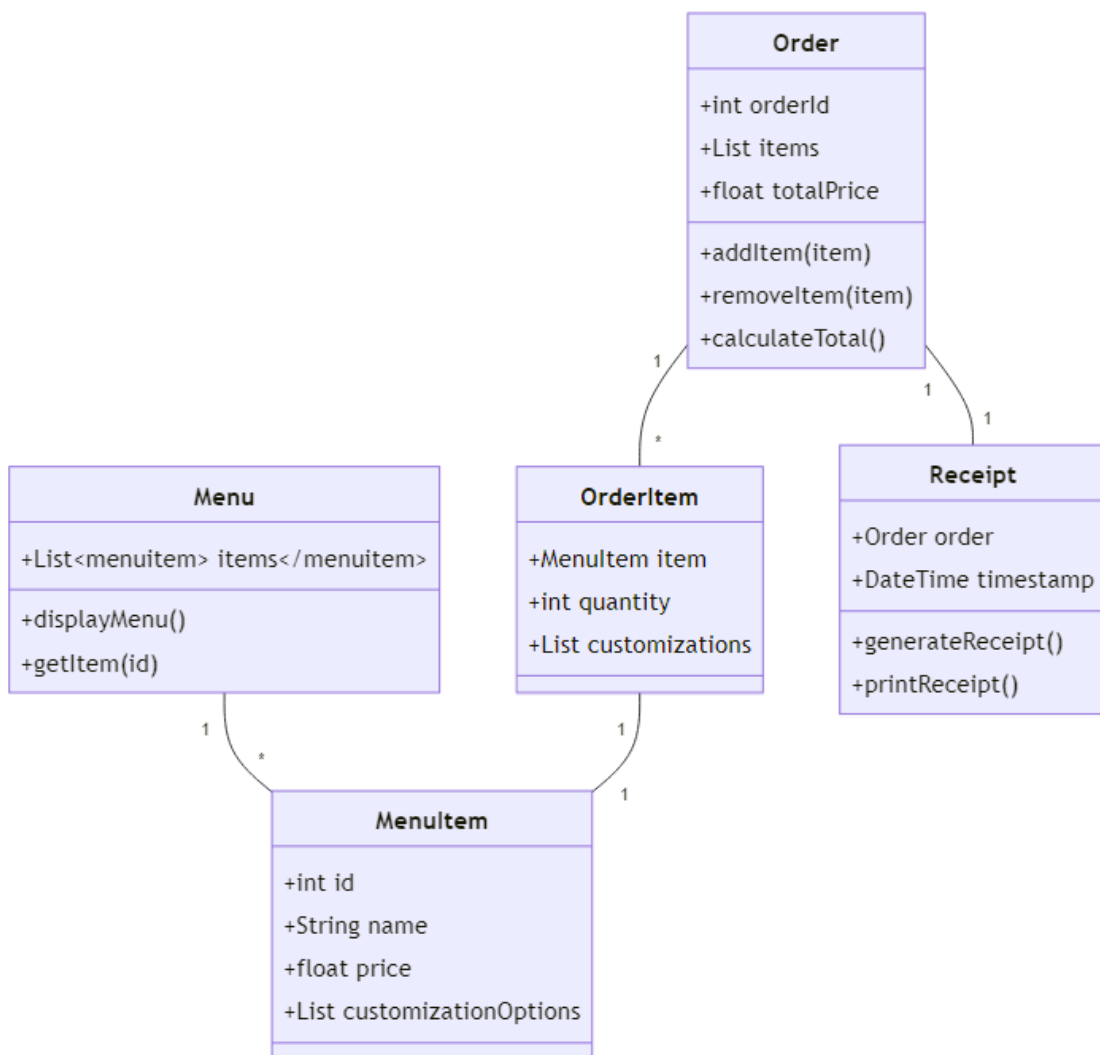
9.2.2 ACTIVITY DIAGRAM



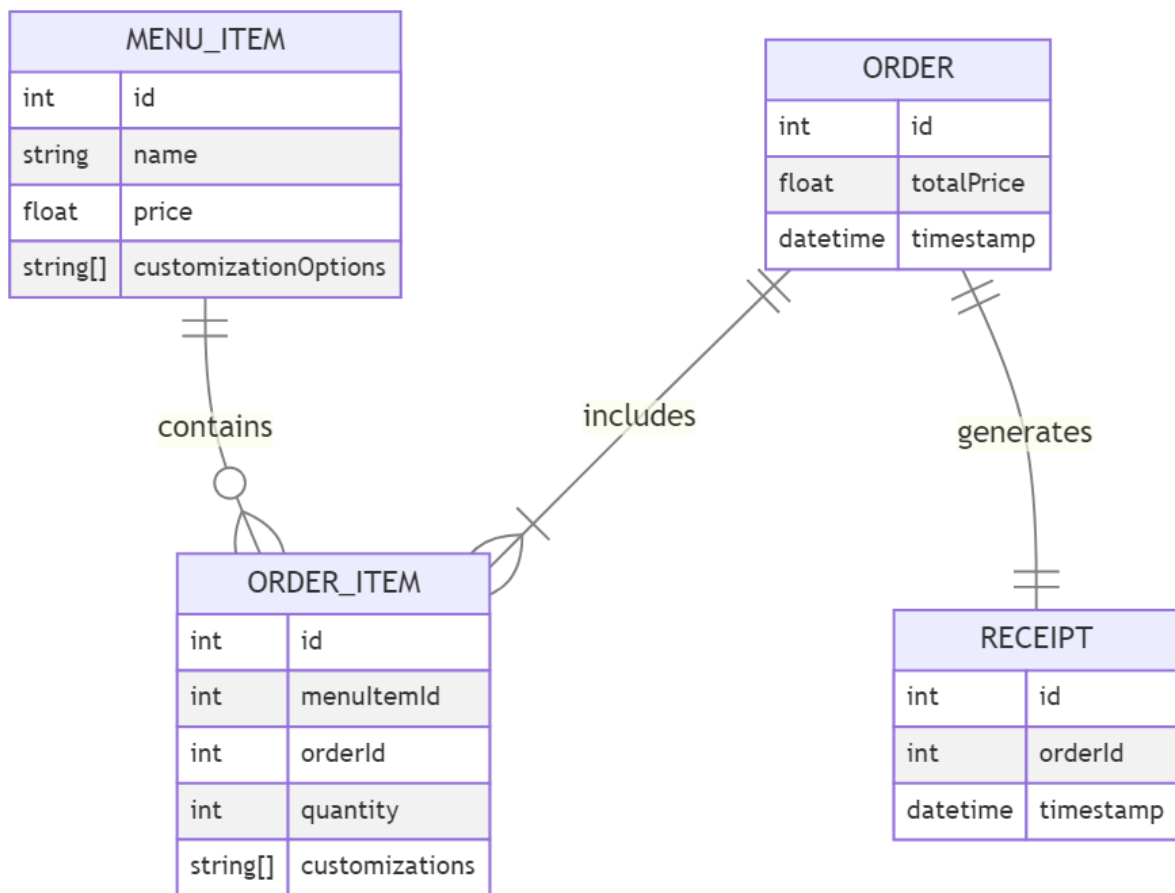
9.2.3 SEQUENCE DIAGRAM



9.2.4 CLASS DIAGRAM



9.3 ER DIAGRAM






9.4 DATA DICTIONARY

Field Name	Data Type	Description	Example
order_id	Integer	Unique identifier for each order	101, 102, 103
customer_name	String	Name of the customer placing the order	"Jane Doe"
menu_item	String	Name of the item selected from the menu	"Pepperoni Pizza"
quantity	Integer	Number of items ordered	1, 3, 5
customization	String	Details of any modifications to the order	"No cheese, extra sauce"
order_status	String	Status of the order (e.g., Pending, Preparing, Ready)	"Preparing", "Ready"
total_price	Float	Total price of the order	12.99, 5.50
receipt_number	Integer	Unique receipt identifier generated after the order	5001, 5002





















































































9.5 SCREENSHOTS OF MODULE

Point Of Sale



Item	Qty	Amount
------	-----	--------

ITEMS



10. APPLICATION

Overview:

The food ordering kiosk application is designed to streamline the ordering process in restaurants through a self-service, automated interface. It enhances efficiency and improves customer satisfaction by handling menu browsing, order customization, and receipt printing.

Key Features:

1. **Interactive Menu Display:**
Customers can view and select items with detailed descriptions and images.
2. **Customizable Orders:**
Allows users to modify their orders by adding or removing ingredients.
3. **Order Confirmation & Receipt:**
Generates and prints a receipt for each completed order.
4. **Real-Time Order Tracking:**
Provides updates on the status of the order, reducing wait times and increasing transparency.

Benefits:

- **Increased Efficiency:**
Automates the ordering process, reducing wait times and operational delays.
- **Enhanced Customer Experience:**
Features a modern, user-friendly interface that caters to customer expectations.
- **Cost Savings:**
Reduces the need for additional staff, cutting labor costs during peak periods.
- **Scalability:**
Adaptable to various restaurant sizes and environments, from small cafes to large chains.

11. EXPECTED OUTCOMES

Improved Efficiency:

- **Faster Order Processing:**
Streamlines ordering, reducing wait times.
- **Reduced Bottlenecks:**
Automates tasks, minimizing delays.

Enhanced Customer Experience:

- **User-Friendly Interface:**
Simplifies browsing and customizing orders.
- **Real-Time Updates:**
Keeps customers informed about order status.

Cost Savings:

- **Lower Labor Costs:**
Reduces the need for additional staff.
- **Operational Efficiency:**
Cuts costs through streamlined processes.

Scalability and Adaptability:

- **Versatility:**
Suits various restaurant sizes and settings.
- **Future Upgrades:**
Allows for easy enhancements and integrations.

Increased Accuracy:

- **Reduced Human Error:**
Minimizes mistakes with direct order entry.

12. FUTURE SCOPE

Feature Enhancements:

- **Advanced Customization:**
Add options for detailed modifications and special requests.
- **Multi-Language Support:**
Include additional languages for a wider audience.

Integration with Other Systems:

- **Inventory Management:**
Connect with inventory systems for real-time updates.
- **Loyalty Programs:**
Implement customer loyalty features and rewards.

Technology Upgrades:

- **AI and Machine Learning:**
Use AI for predictive analytics and personalized recommendations.
- **Touchless Interfaces:**
Explore touchless or voice-activated options for hygiene and convenience.

Scalability:

- **Expansion:**
Deploy the system in new locations and sectors.
- **Industry Adaptation:**
Adapt the system for use in other industries.

Ongoing Maintenance:

- **Regular Updates:**
Provide continuous updates and improvements.

13. REFERENCES

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<https://stackoverflow.com>

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- **JavaTpoint – Python Tkinter**

<https://www.javatpoint.com/python-tkinter>