“DEPARTMENT STORE PRODUCT AND INVOICE MANAGEMENT”

A PROJECT REPORT

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Certified that this project report **"DEPARTMENT STORE PRODUCT AND INVOICE MANAGEMENT"** is the bonafide work of Bharat, Neeraj, Mudit, Arun, who carried out the project work under my supervision.

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Submitted for the project viva-voice examination held on _____

INTERNAL EXAMINER **EXTERNAL EXAMINER**

ACKNOWLEDGEMENT

It gives us the privilege to complete this mid semester project. This is the only page where we have the opportunity to express my emotions and gratitude. It is a great pleasure in expressing sincere and deep gratitude towards my supervisor **Ms Deepinder Kaur** and guide **Mr Vikas Wasson** for their valuable suggestions, guidance, and constant support throughout the completion of this project named **Department Store Product and Invoice Management.** This project, though done by us, wouldn't be possible without the support of varied people, who by their cooperation have helped us in bringing out this project successfully. I am really very thankful to Chandigarh University for providing me such a great opportunity to make such a wonderful project which can solve real-life problems and extremely valuable hands- on experience along with crucial soft skills such as working in a team, communication skills, and much more. I also offer my most sincere thanks to every team member of our group who was working rigorously on this project and staff members of the Computer Science Department, University Institute of Engineering, Chandigarh University for cooperation provided by them in every possible way. We thank all the faculty members and other supporting staff for the help they provided to us for the completion of our project.

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ABSTRACT

Department store product and invoice management are critical aspects of retail operations. Efficient management of inventory and invoices can help retailers minimize stock-outs, reduce waste, and maintain accurate financial records. This paper discusses the importance of effective department store product and invoice management, the challenges associated with these processes, and the technology solutions available to retailers. The use of inventory management software, point of sale systems, and accounting software can streamline these processes and improve efficiency. Additionally, artificial intelligence and machine learning technologies have the potential to further enhance department store product and invoice management in the future. Retailers must continually explore new technologies and strategies to optimize inventory levels, reduce errors, and improve financial performance.

ABBREVIATIONS

1. **XML:** Extensible Markup Language
2. **CSV :** Comma Separated Values
3. **POS** : Point of Sale
4. **GDPR :** General Data Protecton Regulation.
5. **VAT :** Value Added Tax.
6. **IDE:** Integrated Development Environment

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CHAPTER 1
INTRODUCTION

1. Identification of Need

The old manual system was suffering from a series of drawbacks. Since the whole of the system was to be maintained with hands the process of keeping maintaining and retrieving the information was very tedious and lengthy. The records were never used to be in a systematic order. There used to be lots of difficulties in associating any particular transaction with a particular context. If any information was to be found it was required to go through the different registers, documents there would never exist anything like report generation. There would always be unnecessary consumption of time while entering records and retrieving records. One more problem was that it was very difficult to find errors while entering the records. Once the records were entered it was it is very difficult to update these records. The reason behind it is that there is a lot of information to be maintained and have to be kept in mind while running the business. For this reason we have provided features. Present system is partially automated (computerized), actually the existing system is quite laborious as one has to enter the same information at three different places.

Following Points should be well considered:

A. Documents and reports that must be provided by the new system: there can also be few reports, which can help management in decision-making and cost controlling, but since these reports do not get required attention, such kind of reports and information were also identified and given required attention.
B. Details of the information needed for each document and report.
C. The required frequency and distribution for each document.
D. Probable sources of information for each document and report.
E. With the implementation of a computerized system, the task of keeping records in an organized manner will be solved. The greatest of all is the retrieval of information, which will be at the click of the mouse. So the proposed system helps in saving the time in different operations and making information flows easily, giving valuable reports.

2. Identification of Problem:

Invoicing is foundational for any Department Store. The process also requires accuracy and timeliness. Get it wrong, and you won't get paid or you'll get paid late for your products or services, which really impacts your cash flow. And when you don't get paid, you can't compensate your employees or cover your overhead Department store product and invoice management can pose several challenges, including:

A. **Inventory Management:** Department stores carry a wide variety of products, which can make it challenging to track inventory levels accurately. This can lead to stock outs, overstocking and increased costs.
B. **Pricing:** Department stores often run sales discounts which can make it difficult to keep track of prices and ensure that they are applied correctly at the point of sale.
C. **Invoice Management:** Managing invoices can be a tedious and time-consuming process. Department stores typically receive invoices from multiple vendors, which can make it challenging to reconcile invoices with purchase orders and receipts.
D. **Data Management:** Department stores generate a vast amount of data related to sales, inventory, and customer behavior. Managing this data and using it to make informed business decisions can be a significant challenge.
E. **Compliance and regulation:** Department stores need to comply with various regulations, such as labor laws, safety standards, and environmental regulations. Compliance can be a complex and time-consuming process, and failure to comply can result in fines and legal action.
F. **Customer Service:** Department stores rely on providing excellent customer service to maintain customer loyalty and generate repeat business. Managing customer inquiries, complaints, and feedback can be challenging, especially during peak shopping periods.
G. **Technology and automation:** Many department stores are investing in technology to automate processes, such as inventory management, pricing, and invoicing. However, implementing and managing new technologies can be challenging and can require significant resources.
H. **Competition:** Department stores face intense competition from online retailers and other brick-and-mortar stores. To remain competitive, department stores need to continually innovate and adapt to changing consumer preferences and market trends. This can be a significant challenge, especially for smaller or less established stores.

3. Identification of Tasks:

The tasks involved in the "Department Store product and invoice management" project can be broken down into the following:

A. **Requirements gathering:** This involves identifying the requirements of the department store, such as the types of products they sell, the pricing structure, and the invoicing process.

B. **System design:** Based on the requirements gathered, a system design will be created that includes the database schema, user interface design, and data flow diagrams.
C. **Database implementation:** The database for the system will be created and populated with product information and pricing data.
D. **User interface implementation:** The user interface for the system will be developed, providing store employees with easy access to product information and inventory management functions.
E. **Inventory management:** The system will be able to track product stock levels and update the inventory when products are sold, ensuring that the store always has accurate information on product availability.
F. **Invoicing:** The system will generate invoices for customer purchases, including accurate pricing information and tax calculations.
G. **Testing:** The system will be thoroughly tested to ensure that it meets the requirements of the department store and that it is functioning correctly.
H. **Maintenance:** Ongoing maintenance and support will be provided to ensure that the system continues to function correctly and meet the changing needs of the department store.
I. **Security:** The system should be designed to ensure the security of customer information and payment details, and to prevent unauthorized access to the system.
J. **Integration:** The system should be designed to integrate with other systems used by the department store, such as accounting software, customer relationship management systems, and online marketplaces.
K. **Scalability:** The system should be scalable to handle increasing volumes of product data and customer transactions as the department store grows.
L. **Performance optimization:** The system should be optimized for performance to ensure that it can handle large volumes of data and customer transactions without slowing down.
M. **Backup and recovery:** The system should be designed to ensure that data is regularly backed up and that there is a plan in place for data recovery in case of system failure or data loss.
N. **User feedback:** Regular feedback should be collected from the store employees on their experience using the system, so that improvements can be made to the user interface and functionality over time.

4. Goals Objective

Milestone 1: Completion of Product Management System

A. Develop a system that allows store staff to add, update, and remove products.
B. Ensure the system accurately records product information and inventory levels.

C. Validate the system by testing its functionality with a small set of products.

Milestone 2: Completion of Invoice Generation System

A. Develop a system that tracks product inventory levels and total revenue generated from sales.

B. Ensure the system can handle large amounts of data and is scalable.

C. Validate the system by comparing its results with manual inventory counts.

Milestone 3: Completion of Invoice Generation System

A. Develop a system that generates invoices for customer purchases, including product name, price, quantity, and total cost

B. Ensure the system accurately calculates the total cost and applies any applicable discounts or taxes

C. Validate the system by comparing generated invoices with manual calculations

Milestone 4: Completion of Reporting System

A. Develop a system that generates reports on sales and inventory data, including insights into product popularity and revenue trends

B. Ensure the system can generate reports for various time periods and product categories

C. Validate the system by comparing its results with manual data analysis

Milestone 5: User Acceptance Testing and Deployment

A. Conduct user acceptance testing to ensure the system is user-friendly and meets the needs of store staff.

B. Address any feedback or issues raised during user acceptance testing.

C. Deploy the system to the store and ensure it is properly integrated with existing hardware and software systems.

These milestones are narrow, specific, and concrete, with precise intentions that can be measured or validated. Each milestone representing a tangible step towards the completion of the overall project.

5. Timeline

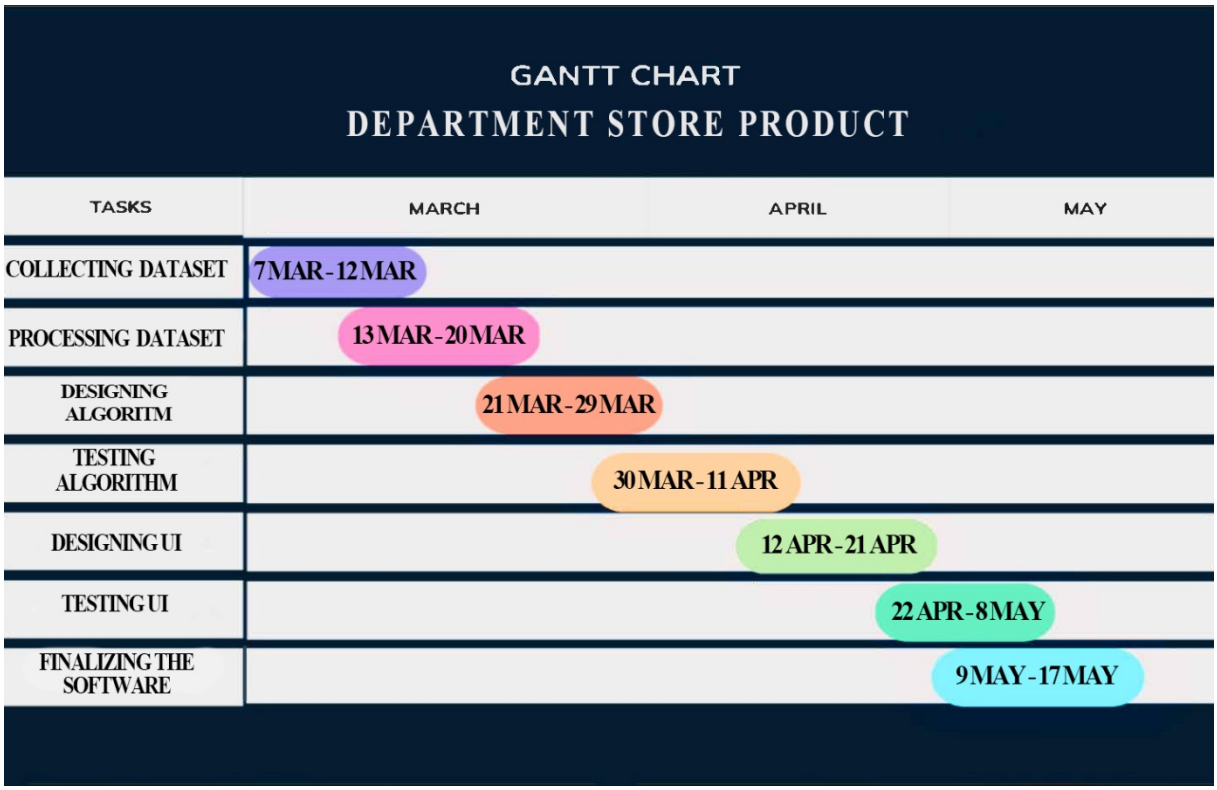

Figure 1: Timeline along with the different phases of work distribution

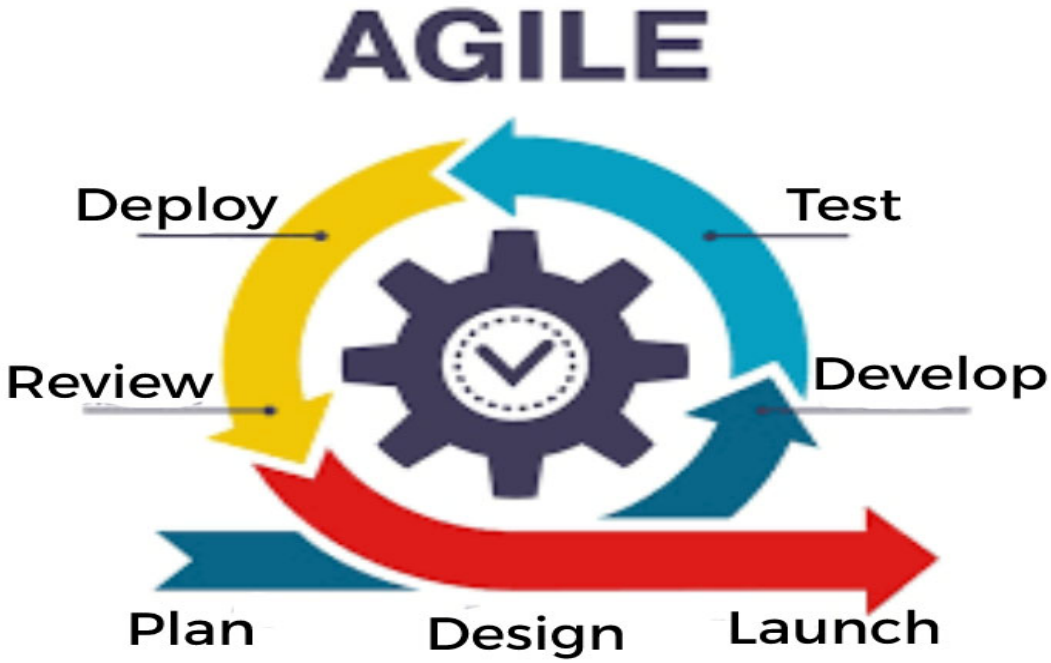

Figure 2: Agile Project Management

CHAPTER 2
LITERATURE REVIEW / BACKGROUND STUDY

1. Existing Solutions

Many supermarkets have used this type of billing system for a decade. It is also improved many times according to requirements of sellers and customers. It does the same work that is calculating the bill, gives it to the customer and maintains a proper database. They are accurate in calculation and printing and they also generate records. A new concept is also added in the billing system is that they also maintain relationships with the customers who purchase more products from the store regularly. System also concerns their requirements and gives them more commission. It also shows the overall profit and profit on a particular product and gives reports which then are required and which have crossed their expiry date.

BOTTLENECK OF EXISTING SYSTEM

Every system has pros and cons so existing systems also have many advantages and disadvantages. So, the bottlenecks of the existing system are as follows:

A. **User Interface:** User interface is not so good that operators feel some problem.
B. **Graphical User Interface:** GUI not good so the operators get bored by watching the screen.
C. **Processing Speed:** Processing speed of the software is not so good to operate fast.
D. **Flexible:** Existing system is not so much flexible that can be changed according to the operators and customers.

2. Bibliometric analysis

The key features of the Department Product Store and Invoice Management project include inventory management, invoice generation, and sales data analysis. An analysis of each of these features could provide insights into the potential benefits and challenges of implementing the project.

A. **Inventory Management:** The inventory management feature of the Department Product Store and Invoice Management project aims to provide an efficient and accurate system for managing inventory levels and tracking product availability. The benefits of this feature include reduced inventory costs, improved customer satisfaction, and increased sales. However, challenges associated with inventory management include the need for accurate forecasting and demand planning, as as well as the risk of overstocking or under stocking inventory.
B. **Invoice generation:** The invoice generation feature of the Department Product Store and Invoice Management project aims to provide a user-friendly and efficient system for generating invoices and managing customer accounts. The

benefits of this feature include improved customer satisfaction, reduced errors and disputes, and increased efficiency in the billing process. However, challenges associated with invoice generation include the need for accurate data entry and record keeping, as well as the risk of security breaches or data loss.

C. **Sales data analysis:** The sales data analysis feature of the Department Product Store and Invoice Management project aims to provide insights into sales trends and customer behavior, which can be used to inform marketing and sales strategies. The benefits of this feature include improved decision-making, increased revenue, and a competitive advantage. However, challenges associated with sales data analysis include the need for accurate and timely data collection and analysis, as well as the risk of data breaches or misuse. Overall, the Department Product Store and Invoice Management project has the potential to provide significant benefits for retail businesses by improving inventory management, invoice generation, and sales data analysis. However, careful planning and implementation will be necessary to ensure that the project is successful and that the potential challenges associated with these features are addressed effectively. The effectiveness of the Department Product Store and Invoice Management project can be analyzed based on its ability to achieve its intended goals and objectives. Some key factors that can affect the effectiveness of the project include its design, implementation, and impact on key stakeholders.

D. **Design:** The design of the Department Product Store and Invoice Management project should be carefully planned to ensure that it aligns with the needs and objectives of the business. This includes identifying key features and functionalities, selecting appropriate technologies and software, and ensuring that the project is scalable and adaptable to changing business needs.

E. **Implementation:** The implementation of the Department Product Store and Invoice Management project is critical to its effectiveness. This involves ensuring that the project is properly scoped, resourced, and managed throughout its lifecycle, as well as ensuring that appropriate training and support is provided to stakeholders. Effective implementation can help to ensure that the project is delivered on time, within budget, and to the required quality standards.

F. **Impact:** The impact of the Department Product Store and Invoice Management project can be assessed by analyzing its effects on key stakeholders, including customers, employees, and shareholders. The project should aim to provide tangible benefits, such as improved inventory management, reduced costs, increased revenue, and improved customer satisfaction. Additionally, the project should be evaluated in terms of its long-term sustainability and its ability to generate a return on investment for the business. Overall, the effectiveness of the Department Product Store and Invoice Management project will depend on its ability to deliver on its intended goals and objectives, as well as its impact on key

stakeholders. Careful planning, implementation, and evaluation will be necessary to ensure that the project is successful and that it provides tangible benefits to the business.

There are several drawbacks associated with Department store product and invoice management. Some of them are:

A. **Human Error:** One of the main drawbacks of managing products and invoices in a supermarket manually is the risk of human error. This can occur when products are incorrectly labeled or priced, or when invoices are incorrectly generated or processed.
B. **Time Consuming:** Manual management of supermarket products and invoices can be time-consuming, as employees have to spend a significant amount of time in checking and updating stock levels, processing invoices, and managing price changes.
C. **Inefficiency:** Manual management can also lead to inefficiency in the supply chain process. This can result in stock shortages, overstocking of products, and missed sales opportunities.
D. **Difficulty in tracking inventory:** It can be challenging to keep track of the inventory in a supermarket manually, especially when there are many different products and variants of each product.
E. **Security Risks:** Manual management of invoices can also pose a security risk, as they can be easily lost, damaged or stolen. This can result in financial losses for the supermarket.
F. **Lack of Transparency:** Manual management of products and invoices can also result in a lack of transparency in the supply chain process. This can make it difficult for supermarkets to identify and address issues such as pricing discrepancies, stock shortages or overstocking of products. Overall, the manual management of supermarket products and invoices can be cumbersome, prone to errors and inefficiencies, and can pose significant security and transparency risks. Therefore, many supermarkets are moving towards automated systems to streamline these processes and improve overall efficiency.

3. Review Summary

A. Inventory management is critical for the success of a retail business. The literature suggests that effective inventory management can lead to reduced costs, improved customer satisfaction, and increased sales. The Department Product Store and Invoice Management system aims to provide efficient and accurate inventory management to ensure that the store can meet customer demand and maximize profitability.
B. Customer satisfaction is an important factor in the success of a retail business. The literature suggests that providing excellent customer service can lead to

increased loyalty and repeat business. The Department Product Store and Invoice Management system aims to provide a user-friendly and efficient system for generating invoices and managing inventory, which can improve the customer experience and increase customer satisfaction.

C. Data analytics can provide valuable insights for retail businesses. The literature suggests that analyzing sales and inventory data can help businesses make informed decisions about which products to stock, which products to discount, and which products to remove from inventory. The Department Product Store and Invoice Management system aims to provide a reporting system that generates insights into sales and inventory data, which can help store managers make informed decisions and optimize store performance. Overall, the literature review highlights the importance of effective inventory management, customer satisfaction, and data analytics for the success of a retail business. The Department Product Store and Invoice Management project aims to address these factors by providing a system that can efficiently manage inventory, generate invoices, and provide insights into sales and inventory data.

4. Problem Definition

The problem at hand is to develop a Department Product Store and Invoice Management system that can efficiently manage the inventory of products in a department store and generate invoices for customer purchases. The system should allow store staff to perform tasks such as adding new products updating existing product information, and removing products that are no longer in stock.

The system should maintain an accurate count of the available products, their cost, and the total revenue generated from sales. It should also be able to generate invoices for customer purchases, which include the product name, price, and quantity purchased, as well as the total cost of the purchase.

To accomplish these goals, the system should have the following features:

A. **Product Management:** The system should allow store staff to add new products, update existing product information, and remove products that are no longer in stock.

B. **Inventory Management:** The system should keep track of the number of products available in the store, their cost, and the total revenue generated from sales.

C. **Invoice generation:** The system should be able to generate invoices for customer purchases that include the product name, price, and quantity purchased, as well as the total cost of the purchase.

D. **Reporting:** The system should be able to generate reports that provide insights into the sales and inventory of the store. These reports can help store managers make informed decisions about which products to stock, which products to discount, and which products to remove from inventory.

It's important to note what not to be done, which includes:

A. The system should not allow unauthorized access to product information or customer data.

B. The system should not generate incorrect invoices or reports due to inaccurate data.

C. The system should not be overly complex or difficult to use, as this can lead to errors and frustration for store staff.

Overall, the Department Product Store and Invoice Management system should be user-friendly, efficient, and accurate in managing inventory, generating invoices, and providing insights into the sales and inventory of the store.

CHAPTER 3
DESIGN FLOW

1. Concept Generation

The potential concepts for a department store product invoice management system include automated invoice processing, centralized invoice management, integration with inventory management, a supplier portal, expense tracking, alerting and notifications, mobile accessibility, multi-currency support, an audit trail, and customizable workflows. These features could help streamline the invoice management process, reduce errors, and improve overall efficiency.

2. Evaluation & Selection of Specifications/ Features

A. **Functionality:** The software should have the necessary features to manage inventory levels, sales transactions, and customer data, as well as create and process invoices. This means that the software should have a comprehensive set of features that allow the department store to manage its inventory levels, such as real-time tracking of stock levels, automated restocking alerts, and the ability to manage stock across multiple locations or warehouses. The software should also be able to manage sales transactions, including the ability to process payments and issue refunds, as well as to manage customer data, such as customer contact information and purchase history. In addition, the software should be able to create and process invoices, including the ability to customize invoices with the store's branding and logo.

B. **Ease of Use:** The software should be user-friendly and easy to navigate, with intuitive interfaces and clear instructions. The software should be designed with the end-user in mind and should be easy to understand and use, even for non-technical staff members. The software should have a simple and intuitive user interface, with clear instructions and help documentation available if needed.

C. **Customizability:** The software should be customizable to meet the specific needs of the department store. This means that the software should be flexible enough to allow the store to create custom reports, set up alerts and notifications, and integrate with other systems as needed. Customizability is especially important for department stores with unique needs or requirements that may not be met by off-the-shelf software solutions.

D. **Security:** The software should have robust security measures in place to protect sensitive customer and transaction data. This means that the software should use encryption to protect data in transit and at rest, and should have appropriate access controls in place to ensure that only authorized personnel have access to sensitive data. The software should also be regularly updated to address any security vulnerabilities that are discovered.

E. **Cost:** The software should be affordable and provide value for money. This means that the software should have transparent pricing structures with no hidden costs, and should be priced competitively relative to other similar software

solutions on the market. The software should also provide value for money by offering a comprehensive set of features and functionality that meet the needs of the department store.

F. **Integration:** The software should be able to integrate with other systems and software used by the department store, such as accounting software or ecommerce platforms. This means that the software should have a flexible and open architecture that allows for easy integration with other software solutions, and should be compatible with standard data formats such as CSV or XML.
G. **Support:** The software provider should offer comprehensive customer support, including technical support and training. This means that the software provider should have a knowledgeable and responsive support team that can provide assistance with any technical issues or questions that C++ is a powerful programming language that offers many advantages for developing a department store product and invoice management system.

Here are some reasons why C++ might be a good choice for this project:

1. **Performance:** C++ is a high-performance language that can handle large volumes of data and process multiple transactions simultaneously. It can be optimized to run faster than many other programming languages, making it ideal for real-time applications.
2. **Memory Management:** C++ allows for fine-grained control over memory management, which can be useful when dealing with large data structures. This can help optimize the system's memory usage and improve overall performance.
3. **Object Oriented Programming:** C++ supports object-oriented programming (OOP), which allows for the creation of reusable code and promotes modularity. This can make the system easier to maintain and update over time.
4. **Compatibility:** C++ is a widely-used language that is compatible with many different operating systems and platforms. This makes it easier to deploy the system across multiple environments and integrate with other systems.
5. **Libraries and frameworks:** C++ has a large number of libraries and frameworks available, which can help simplify development and speed up the coding process. This can also help reduce the likelihood of errors and improve overall code quality.
6. **Industry Standard:** C++ is a well-established language that has been used for many years in industries such as gaming, finance, and embedded systems. Choosing C++ can help ensure that the system is developed using industry-standard practices and is compatible with other systems in use.

Overall, the choice of programming language for a department store product and invoice management system will depend on a variety of factors, including the development team's expertise, project requirements, and available development tools and libraries. However, C++ is a strong candidate for this type of project due to its performance, memory management capabilities,object-oriented programming support, compatibility, available libraries and frameworks, and industry standard status arise. The software provider should

also offer training and on boarding to help department store staff learn how to use the software effectively.

3. Design Constraints

A. **Security:** A secure system is essential to protect sensitive information such as customer data and financial information. Security features should include measures such as user authentication, encryption of data in transit and at rest, and monitoring for unauthorized access or suspicious activity. A department store product and invoice management system should have robust security features to prevent unauthorized access to sensitive information. It should provide different levels of access control to ensure that only authorized personnel can access and modify data. The system should also have data encryption capabilities to protect data in transit and at rest. Regular system updates and security patches should be implemented to prevent vulnerabilities and protect against emerging security threats.

B. **Scalability:** As a department store grows, its product and invoice management system must be able to handle an increasing volume of products and invoices. A scalable system can expand to accommodate this growth without sacrificing performance. A department store product and invoice management system should be designed to accommodate the growth of the department store. It should have the ability to scale up or down as needed to handle the increasing volume of products and invoices. This can be achieved by using cloud-based infrastructure, using a distributed architecture, or by implementing load-balancing techniques to distribute traffic across multiple servers. This ensures that the system can handle peak traffic loads during peak sales periods.

C. **Integration:** A department store product and invoice management system should be able to integrate with other systems, such as POS systems, inventory management systems, and accounting software. This integration ensures that data is consistent across all systems and can be easily shared between them. Integration capabilities are essential for a department store product and invoice management system. It should be able to integrate with other systems, such as point of sale (POS) systems, inventory management systems, and accounting software. This integration ensures that all systems have consistent data and can share data seamlessly. This allows for accurate inventory tracking and financial management, which can help the department store make informed business decisions.

D. **User friendly interface:** A user-friendly interface ensures that all employees can access and use the system efficiently, regardless of their technical background. A well-designed interface should be intuitive, easy to navigate, and provide relevant information in a clear and concise manner. A department store product and invoice management system should have a user-friendly interface that is easy to use for all employees. The system should be designed with an intuitive and easy-to-navigate interface, and relevant information should be displayed in a clear and concise manner. The interface should be customizable to suit different users and roles, and should provide relevant training materials to help users understand how to use the system effectively.

E. **Reliability:** A reliable system ensures that invoices and products are always available when needed. A reliable system should have minimal downtime, backups in case of failure, and a plan for disaster recovery. A department store product and invoice management system should be reliable and available when needed. It should have a robust architecture that can handle high traffic loads, and should have minimal downtime. The system should have a backup and recovery plan in case of failure, and should have a disaster recovery plan in place to ensure that the system can be restored quickly in case of an unexpected event.

F. **Discounts and promotion:** These are an essential part of a department store's marketingstrategy to attract and retain customers. A department store product and invoice management system should have the capability to manage discounts and promotions on products and invoices effectively. The system should be able to accommodate various types of discounts and promotions, such as percentage discounts, flat-rate discounts, and buy-one-get-one (BOGO) offers. It should also be able to apply discounts and promotions to individual products or entire orders, depending on the specific requirements. The system should also be able to manage expiration dates for discounts and promotions to ensure that they are applied within the specified time frame. For example, a promotion may only be valid for a limited period, such as a weekend or a holiday season, and the system should be able to automatically apply the promotion and remove it after the promotion period ends. The system should be able to handle complex discount and promotion scenarios, such as discounts that apply only to specific products or customers, or promotions that require a minimum order value. It should also be able to accommodate multiple promotions on the same order and apply them in the correct order to ensure that customers receive the maximum possible discount. Effective management of discounts and promotions can help a department store increase sales, attract new customers, and retain existing ones. By ensuring that the department store product and invoice management system can handle discounts and promotions effectively, the store can improve customer satisfaction, increase revenue, and gain a competitive edge.

G. **Compliance:** A department store product and invoice management system should comply with all relevant regulations, such as data protection laws and tax regulations. Compliance ensures that the system operates legally and can protect the department store from legal and financial consequences of non-compliance. A department store product and invoice management system should comply with all relevant regulations to ensure that the department store operates legally. The system should comply with data protection laws, such as the General Data Protection Regulation (GDPR), and tax regulations, such as the Value Added Tax (VAT) regulations. The system should also have.

4. Design Flow and Implementation

A. Block Diagram

Below we have shared the Block Diagram of the project to depict how the entire system will work.

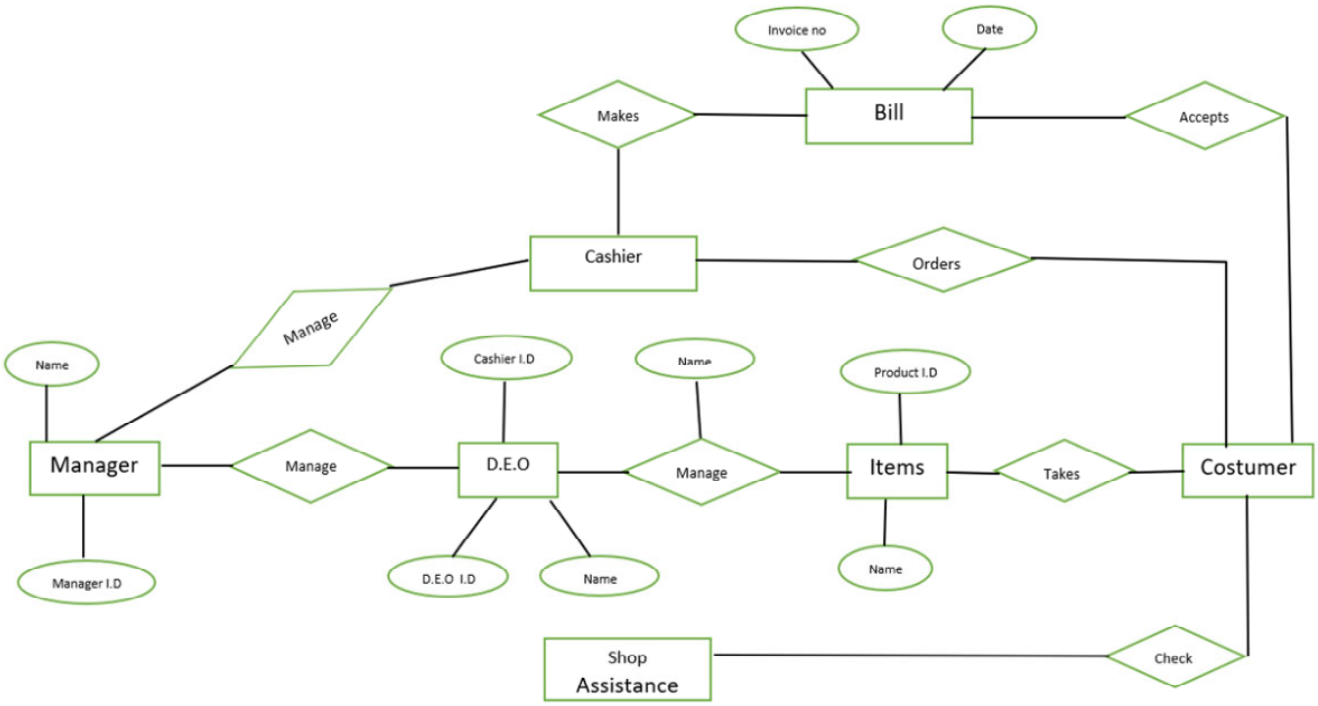

Figure 3: Block Diagram

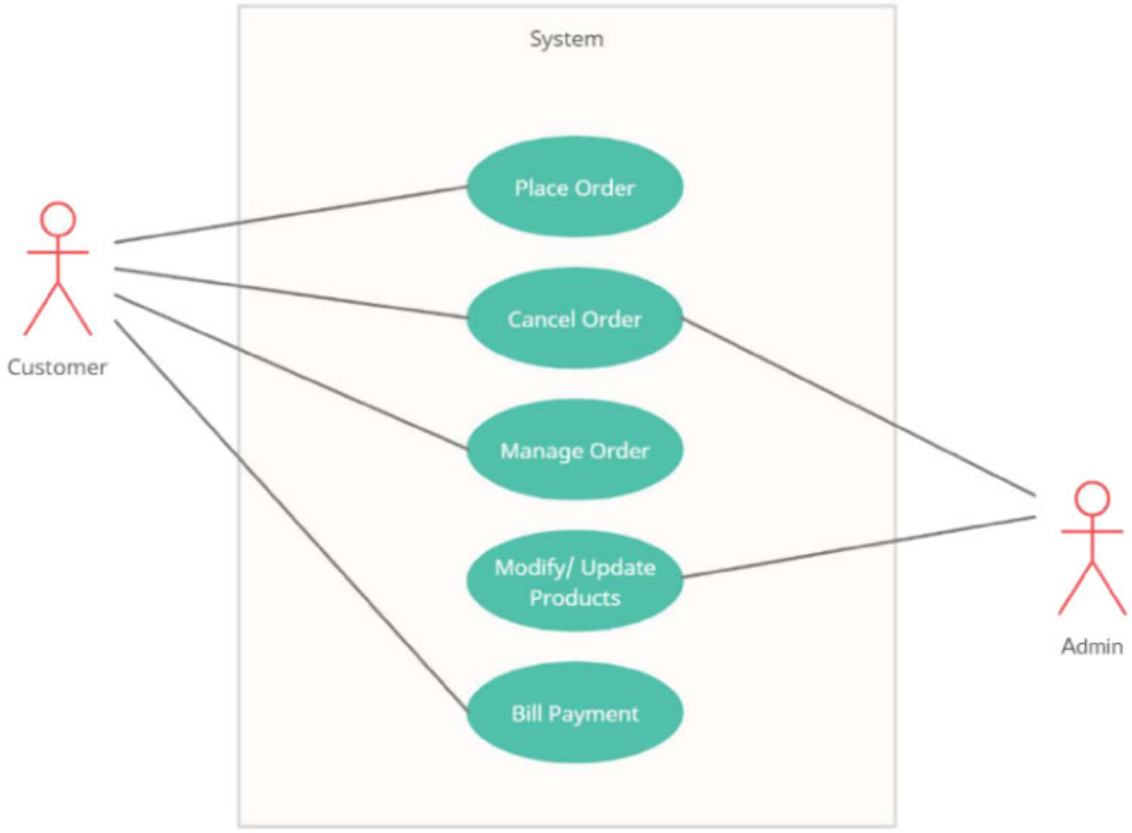

Figure 4: Flow Diagram Design

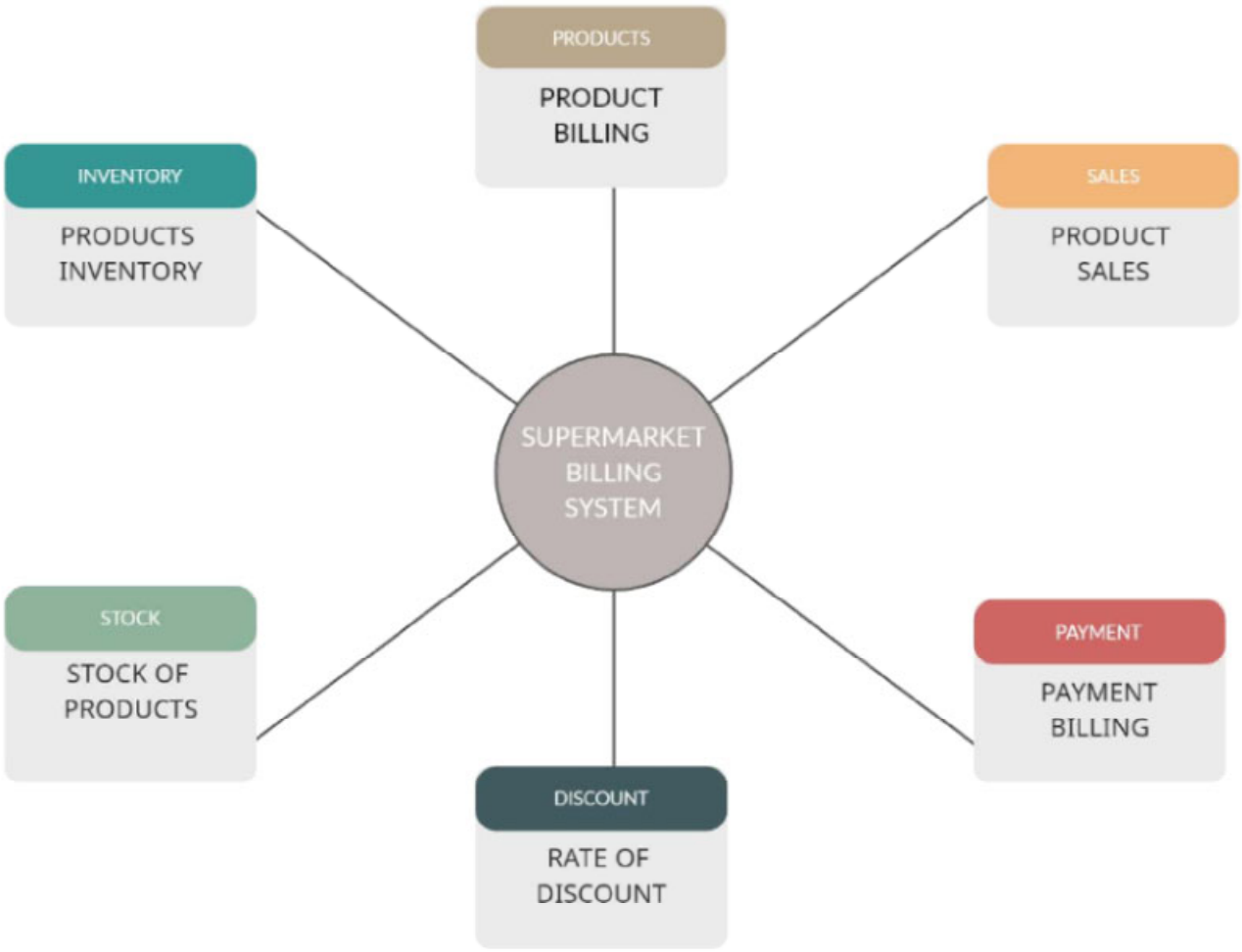

Figure 5: Features of Billing System

5. Coding

The coding for a department store product and invoice management system can be complex, as it involves managing a large volume of data and processing multiple transactions simultaneously. However, here are some general ideas of what the coding might entail:

A. **Database design:** The system needs to store data about products, inventory, customers, and invoices. The database design should be efficient and scalable to handle the growing volume of data.
B. **User Interface:** The user interface should be intuitive and easy to use. The system should provide relevant information to the user and allow them to perform actions such as creating new invoices or modifying existing ones.
C. **Product Management:** The system should allow the department store to manage their product catalog, including adding new products, updating product information, and setting prices.

D. **Inventory Management:** The system should track inventory levels, including incoming shipments and outgoing sales, to ensure that the department store can fulfill customer orders and avoid stock outs.
E. **Invoice Management:** The system should generate and manage invoices, including calculating taxes, applying discounts, and generating reports. It should also be able to track payments and manage refunds or returns.
F. **Security:** The system should implement security measures to protect customer data, including user authentication, data encryption, and monitoring for suspicious activity.
G. **Integration:** The system should be able to integrate with other systems, such as point of sale (POS) systems and accounting software, to ensure that data is consistent across all systems.

6. Database Design

The data in the system has to be stored and retrieved from the database. Designing the database is part of system design. Data elements and data structures to be stored have been identified at the analysis stage. They are structured and put together to design the data storage and retrieval system. A database is a collection of interrelated data stored with minimum redundancy to serve many users quickly and efficiently. The general objective is to make database access is easy, quick, inexpensive and flexible for the user. Relationships are established between the data items and unnecessary data items are removed. Normalization is done to get an internal consistency of data and to have minimum redundancy and maximum stability. This ensures minimizing data storage required, minimizing chances of data inconsistencies and optimizing for updates. The My SQL Access database has been chosen for developing the relevant databases.

Table 1: Administration Table

Field Name	**Data Type**	**Description**
Admin	Char	Primary Key

Table 2: Customer Table

Field Name	**Data Type**	**Description**
Customer	Char	Primary Key

Table 3: Product Table

Field Name	**Data Type**	**Description**
Number	int	Product's Number
Name	char	Product's Name
Price	float	Product's Price
Quantity	float	Product's Quantity
Discount	float	Product's Discount

7. Design Progress

In our project we have mainly two modules. They are:

1. Customer
2. Administrator
3. Exit

A. Customer: Customer is one of the modules in our project. They can purchase the available product. The product number will be shown by the administrator. Using the product number, they can purchase and they can enter the amount of quantity they required after completion the admin will generate the total price of the product with discount and he also generate the bill of the particular product to the customer. The steps involved are:-

1. Enter the product number of the product from the list.
2. Enter the quantity.
3. Then place your order.

B. Administrator: Administrator plays a major role in our project. They are responsible to create a product and delete new product and they can modify the product and view and they can check the product after modification or altering the project. Initially the administrator of the system will add the amount of the particular product after entering the details of the product; he can also add the discount of a particular product. The administrator module consists of the following options:

1. Create a product.
2. Modify a product.
3. Delete a product.
4. View product menu.
5. Back to the main menu.

The functions used in this project are:

1. **createpr():**This function is used to create new product, with name, price and discount by the administrator.
2. **showpr():**This function is used by the administrator to see the product list, with description and price.
3. **writepr():**This function writes the information about the product in the file.
4. **disp():**This function is used to display all records from the file.
5. **dispsp():**This function is used to read specific data/records based on the product number entered by the file.
6. **modifypr():**This function is used modifies the product details by entering the product number.
7. **deletepr():**This function is used to delete the product by entering the product number.
8. **menu():** Display all product price list.
9. **placeorder():**Function to place orders and generate bills for products.
10. **into():**This function displays the project name.
11. **admin():**This function displays a list of function to be operated by administrator to modify/update product details.

CHAPTER 4
RESULT

1. Implementation of Design

To implement the design of a department store product and invoice management system using modern engineering tools, the following steps can be taken:

A. **Requirements gathering:** Collect all the requirements for the system from stakeholders including store managers, sales associates, and customers. Identify the features that the system should have and the problems that it should solve.
B. **System Design:** Based on the requirements, design the system architecture, data models, user interface, and other key components of the system. Consider the scalability, maintainability, and extensibility of the system.
C. **Technology Selection:** Choose the appropriate technologies for the development of the system. Consider the programming language, database, frameworks, and libraries that will be used.
D. **Development:** Implement the system using modern engineering tools such as integrated development environments (IDEs), version control systems, automated testing frameworks, and continuous integration/continuous deployment (CI/CD) pipelines.
E. **Testing:** Test the system to ensure that it meets all the requirements and is free of defects. Use various testing techniques such as unit testing, integration testing, and system testing.
F. **Deployment:** Deploy the system to a production environment and make it available to users. Use modern deployment tools such as containerization and orchestration to ensure scalability and availability.
G. **Maintenance:** Monitor the system for any issues and perform regular maintenance tasks such as updates, backups, and security patches.

In terms of specific modern engineering tools, some examples that could be used in the development and implementation of a department store product and invoice management system are:

A. **IDEs:** Visual Studio Code, IntelliJ IDEA, Eclipse
B. **Version Control System:** Git, SVN
C. **Automated testing framework:** Selenium , JUnit, NUnit
D. **CI/CD Pipelines:** Jenkins, Travis CI , Circle CI
E. **Containerization:** Docker , kubernetes
F. **Orchestration:** AWS Elastic Beanstalk, Azure Kubernetes Service

By following these steps and using these modern engineering tools, a department store product and invoice management system can be developed and implemented effectively, efficiently, and with high quality.

2. Testing

To ensure that the department store product and invoice management system is working as expected and meeting all the requirements, various types of testing can be conducted. The following are some of the testing that can be performed:

A. **Unit Testing:** This involves testing individual units of code in isolation to ensure that they are working as expected. It helps to catch bugs early in the development process and ensure that each unit of code is functioning correctly.
B. **Integration Testing:** This involves testing the interaction between different components of the system to ensure that they are working together correctly. It helps to ensure that all the components are integrated properly and that the system is working as a whole.
C. **System Testing:** This involves testing the entire system end-to-end to ensure that it meets all the requirements and performs as expected. It helps to ensure that the system is working correctly in a real-world environment.
D. **Performance Testing:** This involves testing the system under heavy load to ensure that it can handle the expected number of users and transactions. It helps to identify any bottlenecks or performance issues and ensure that the system is scalable.
E. **Security Testing:** This involves testing the system for vulnerabilities and ensuring that it is secure against attacks such as SQL injection, cross-site scripting, and other types of attacks. It helps to ensure that customer data is protected and that the system is compliant with regulatory requirements.

Once the testing is complete, the system can be deployed to production. Continuous testing and monitoring can be performed to ensure that the system is functioning correctly and to catch any issues as they arise. The system can also be updated and maintained regularly to ensure that it is up-to-date with the latest security patches and features.

Overall, the testing and monitoring process is crucial to ensuring the success of the department store product and invoice management system. By conducting thorough testing and monitoring, the system can be optimized for performance, security, and reliability, ensuring that it meets the needs of both the store and its customers

3. Output

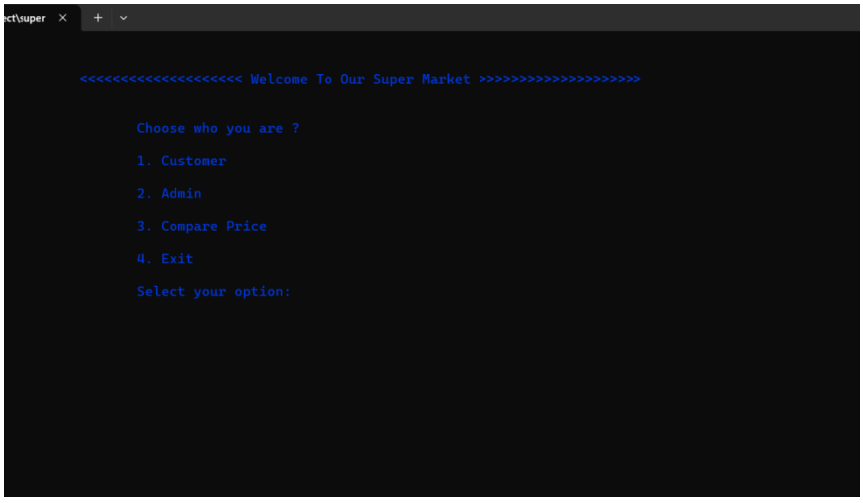

Figure 6: Welcome to Software

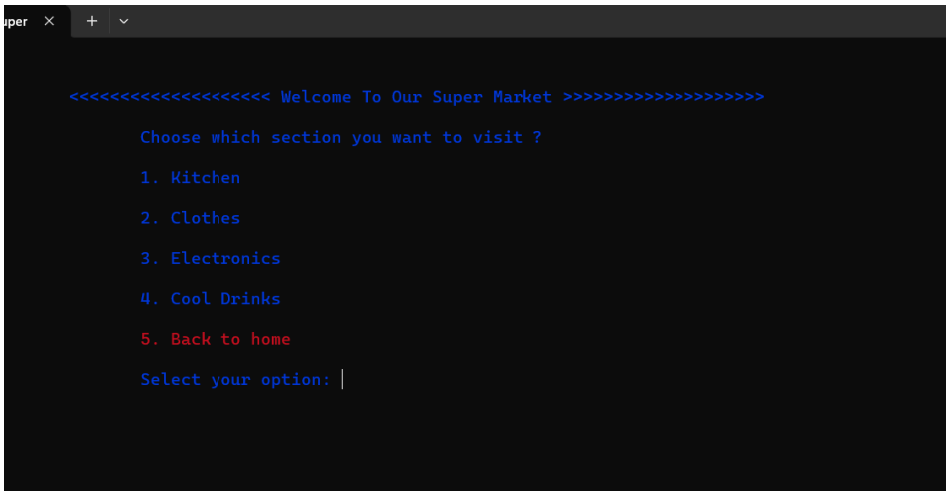

Figure 7: Category in Customer

Figure 8: Products in Clothes Category

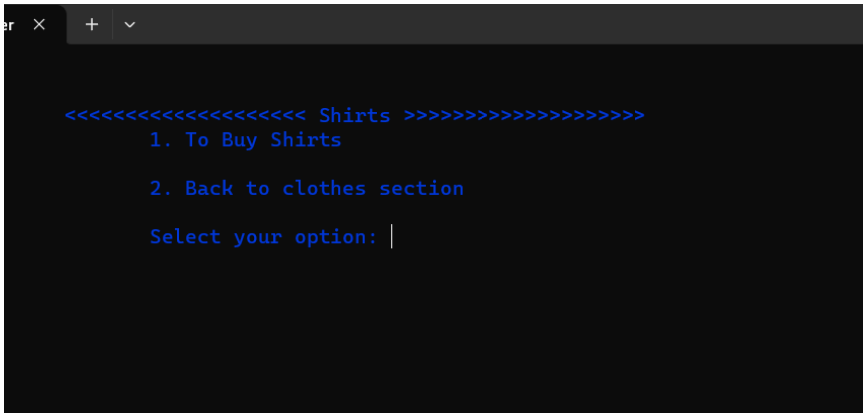

Figure 9: Buy the Product

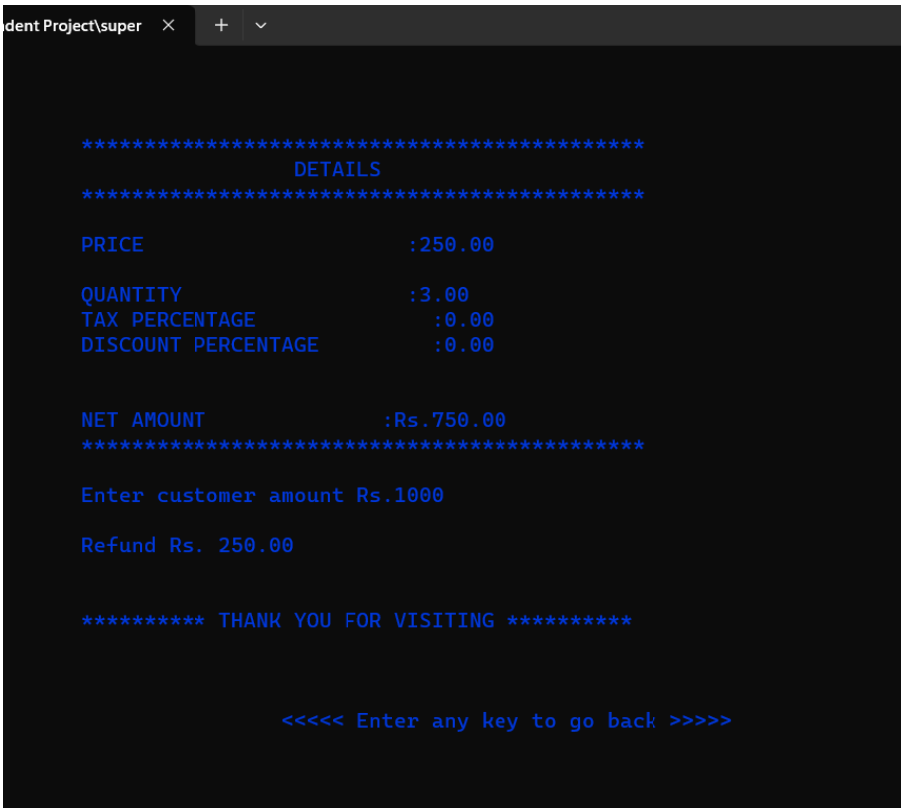

Figure 10: Invoice

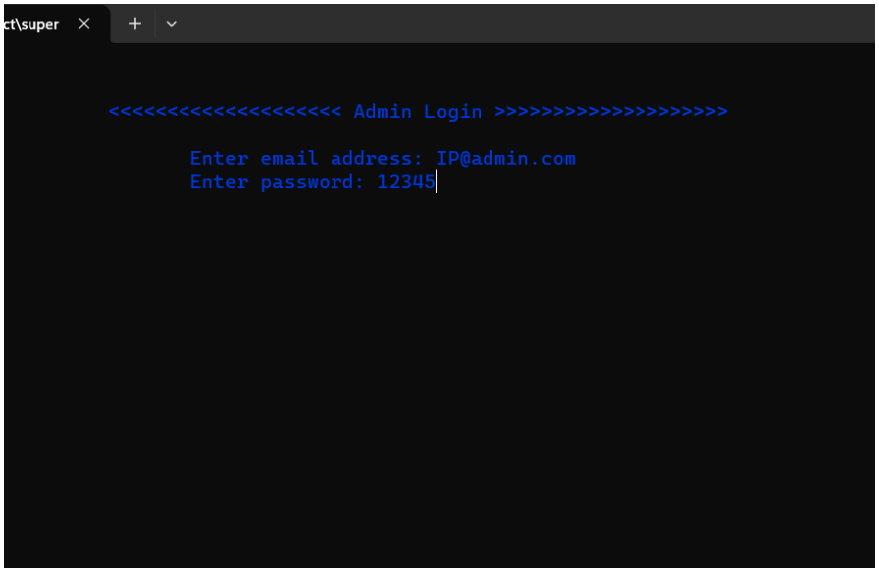

Figure 11: Admin

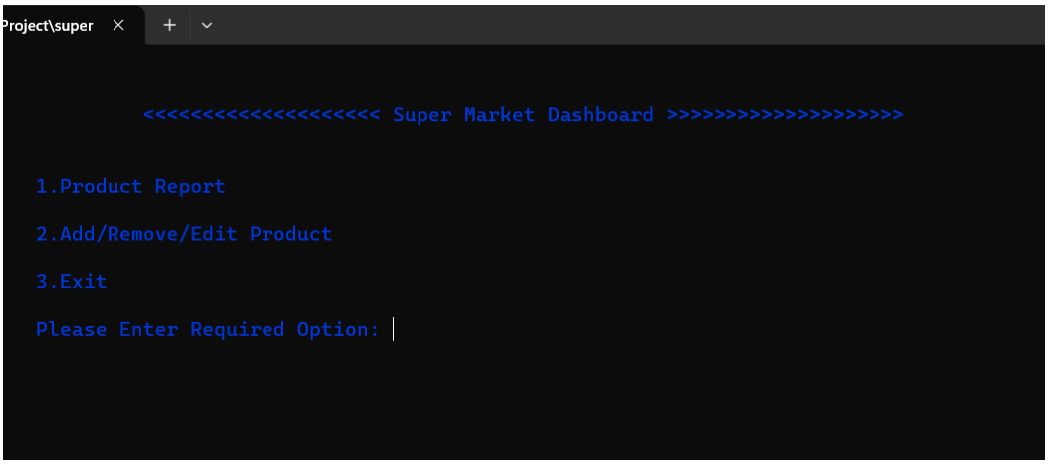

Figure 12: Admin Interface

CHAPTER 5
CONCLUSION AND FUTURE SCOPE

1. Conclusion

The future scope of Department store product and invoice management is very promising. With the ever-increasing demand for Management and the need for more efficient and effective methods of data collection, the development of store is crucial. This software has the potential to revolutionize the way we study and understand the management. As technology advances, the capabilities of Managing continue to grow. This Software will become more nimble and able to maneuver. They will be equipped with more features and be able to collect more data than ever before. The future of Department Store product and Invoice Management is very exciting and the potential applications are endless.

2. Future Scope

Our project is only a humble venture to satisfy the needs to manage their project work. Several user-friendly coding have also been adopted. This package shall prove to be a powerful package in satisfying all the requirements of the school. The objective of software planning is to provide a framework that enables the manager to make reasonable estimates made within a limited time frame at the beginning of the software project and should be updated regularly as the project progresses

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