Billing & Inventory Management System *A*

Mini Project Report

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DECLARATION

We hereby certify that the project entitled Mini Project on "Billing & Inventory Management System" by Puja Rani Gantait(10301620073), Rahuldev Bera(10301620076),Saptadeep Hazra(10301620092), Shivangi Sahi (10301620102), Soumyadeep Maity(10301621133) in partial fulfilment of requirements for the award of degree of B.Tech. submitted in the Department of **Electrical Engineering** at **HALDIA INSTITUTE OF TECHNOLOGY** under **MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL (Formerly known as WEST BENGAL UNIVERSITY OF TECHNOLOGY), KOLKATA** is an authentic record of our own work carried out under the supervision of Sri. Goutam Das, Assistant Professor of Department of Electrical Engineering. The matter presented has not been submitted by me in any other University / Institute for the award of B.Tech. Degree.

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ACKNOWLEDGEMENT

We would like to convey our heartfelt gratitude to Sri. Goutam Das, Asst. Professor of Electrical Engineering Department, HIT Haldia for his support and guidance in the completion

of our project. We would also like to thank Prof. (Dr.) Dilip Dey, HOD Dept. of Electrical Engineering, for providing us with this wonderful opportunity to work on a mini project with the topic Billing & Inventory Management System. Their expertise in the field of study has helped us to gain a deeper understanding of the subject matter and has enabled us to develop a more comprehensive and well-rounded report. The completion of the project would not have been possible without their help and insights. We are honored to have had the opportunity to learn from such experienced and talented educators.

INTRODUCTION

A billing system includes procedures and processes that help create bills and invoices for customers. Nowadays, billing systems include software that allows transmitting bills and invoices to the customers offline and online. Businesses need to have billing system software for the following reasons:

- To keep track of sales and payments received
- To manage cash effectively
- To prevent errors in the compilation of bills and invoices
- Optimisation of business processes

LITERATURE SURVEY

A billing system is a combination of software and hardware that receives call detail and services usage information, groups this information for specific accounts or customer, produces invoices, creates reports for management and report payments made to customer accounts.

- According to Okamura A (1999) in his journal in titled “the japanese journal of anesthesiology” there has been loss of anesthesia fee by errors of filling out billing sheets manually. A large loss of anesthesia fee was pointed out by the audit during the past several years. In order to prevent these billing errors, they developed an automated anesthesia billing system combined with an electronic anesthesia record keeping system (EARK). The system derives all the anesthesia cost related parameter from the EARK database and calculates anesthesia fee according to the logic of the Japanese health care insurance system. After implementing the system, anesthesiologist and circulating nurses became free from filling out billing sheets. The accuracy of the automated billing was proved by the comparison with hand filled sheet. The survey showed that the system prevented 2.5 million yen of billing loss in month. Such an economic impact of the system proves the rationale of an EARK as a cost contained tool.
- Further, according to Kagingo U (undated) in an article entitled “Architecture for an SMS based utility-services mobile billing system in Uganda” they took advantages of the existing telecommunication infrastructure to study possibilities to accomplish utility payment form personal phones by the Ugandan public, ascompared to existing methodologies. The basic whole idea being visibledis satisfaction expressed by clients in a tedious process to pay utility bills, the existence of related models that help effect money transfers by phone. Paying autility bill in Uganda is still time consuming venture, taking more time that the majority of clients would actually refer to time spent as alot. In this research project, ideas from different frameworks of related models, all with principle of wireless transaction, were compared and edited, coming up with one that can solved the problem of paying utility bills with an SMS.

OBJECTIVE AND SCOPE

The main objective of the Billing And Inventory System is to manage the details of Payment Bills, Transactions, Customer, Transactions. It manages all the information about Payment, Login, Transactions, Payment. The project is totally built at administrative end and thus only the administrator is guaran- leed the access. The purpose of the project is to build an application program to reduce the manual work for managing the Payment, Bills, Login. Transactions. It tracks all the details about the Transactions, Customer, Transactions.

PLAN OF WORK

- The product will come in the store.
- Data entry operator will enter the information of the product in database.
- The Administrator will enter the taxes and commissions for each product.
- The customer will come and take the basket with him/her and choose the product and took it to the counter.
- The bill calculating operator will check the products with the bar code detecting machine then it will match with product-id then it will show its information and price and the bill will be calculated and total payment will shown.
- Customer will pay for the products. • All the products will be packed and delivered to the customer.

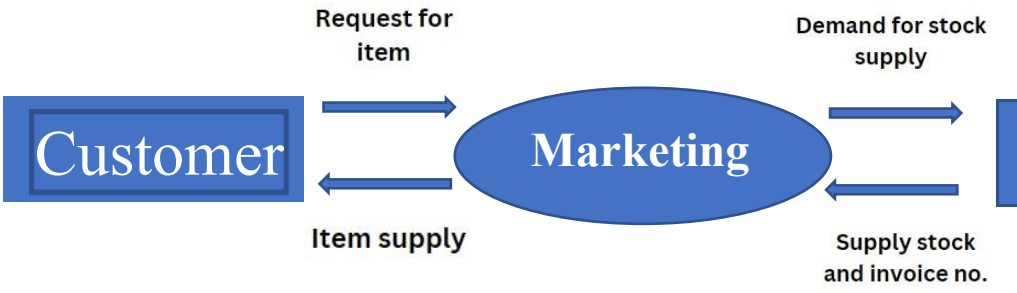

Figure 1:- Billing & Inventory Management System workflow concept

SOURCE CODE

```
import java.io.*;
import java.util.*;

class Product implements Serializable {
    int id;
    String name;
    float price;
    int quantity;
}

public class ShoppingMallSystem {
    private static final String DATABASE_FILE = "database.dat";
    private static final List<Product> products = new ArrayList<>();

    public static void main(String[] args) {
        loadProducts();

        Scanner scanner = new Scanner(System.in);
        int choice = 0;
        while (true) {
            System.out.println("\n-----Shopping Mall Bill & Inventory
Management System-----");
```

```
            System.out.println("1. Customer");
            System.out.println("2. Administrator");
            System.out.println("3. Exit");
            System.out.print("Enter your choice: ");
            choice = scanner.nextInt();
            switch (choice) {
                case 1:
                    customer();
                    break;
                case 2:
                    admin();
                    break;
                case 3:
                    System.out.println("\nThank you for using our
system!\n");
                    System.exit(0);
                    break;
                default:
                    System.out.println("\nInvalid choice. Enter
again!");
            }
        }
    }

    static void addProduct() {
        Scanner scanner = new Scanner(System.in);
        Product p = new Product();
        System.out.print("Enter product id: ");
        p.id = scanner.nextInt();
        scanner.nextLine();
        System.out.print("Enter product name: ");
        p.name = scanner.nextLine();
        System.out.print("Enter product price: ");
        p.price = scanner.nextFloat();
        System.out.print("Enter product quantity: ");
        p.quantity = scanner.nextInt();

        products.add(p);
        saveProducts();

        System.out.println("\nProduct added successfully!");
    }

    static void deleteProduct(int id) {
        for (Product p : products) {
            if (p.id == id) {
                products.remove(p);
                saveProducts();
```

```
                System.out.println("\nProduct with ID " + id + " deleted
successfully!");
                return;
            }
        }
        System.out.println("\nProduct not found! Please enter a valid
ID.");
    }

    static void displayProducts() {
        System.out.println("\nID\tName\tPrice\tQty");
        for (Product p : products) {
            System.out.printf("%d\t%s\t%.2f\t%d\n", p.id, p.name,
p.price, p.quantity);
        }
    }

    static void generateBill() {
        displayProducts();
        int id, quantity, choice;
        float total = 0;
        int found = 0;
        Scanner scanner = new Scanner(System.in);
        while (true) {
            System.out.print("\nEnter the ID of the item: ");
            id = scanner.nextInt();
            System.out.print("Enter the quantity: ");
            quantity = scanner.nextInt();

            for (Product p : products) {
                if (p.id == id && quantity <= p.quantity) {
                    found = 1;
                    total += p.price * quantity;
                    p.quantity -= quantity;
                    saveProducts();
                }
            }

            if (found == 0) {
                System.out.println("\nItem not found, item out of stock,
or insufficient quantity!");
            } else {
                System.out.print("\nDo you want to purchase more items?
(1 for yes, 0 for no): ");
                choice = scanner.nextInt();
                if (choice == 0) {
                    break;
                }
            }
```

```
        }
        System.out.printf("\nTotal amount: %.2f\n\n", total);
    }

    static void admin() {
        int choice = 0;
        int id, qty;
        float price;
        Scanner scanner = new Scanner(System.in);
        while (true) {
            System.out.println("\n-----Admin Menu-----");
            System.out.println("1. Add Products");
            System.out.println("2. Delete Products");
            System.out.println("3. Display Products");
            System.out.println("4. Update Quantity");
            System.out.println("5. Update Price");
            System.out.println("6. Go back to main menu");
            System.out.println("7. Exit");
            System.out.print("Enter your choice: ");
            choice = scanner.nextInt();
            switch (choice) {
                case 1:
                    addProduct();
                    break;
                case 2:
                    System.out.print("\nEnter the ID to delete product:
");
                    id = scanner.nextInt();
                    deleteProduct(id);
                    break;
                case 3:
                    displayProducts();
                    break;
                case 4:
                    System.out.print("\nEnter the ID to update product
quantity: ");
                    id = scanner.nextInt();
                    System.out.print("Enter the new quantity: ");
                    qty = scanner.nextInt();
                    updateQuantity(id, qty);
                    break;
                case 5:
                    System.out.print("\nEnter the ID to update product
price: ");
                    id = scanner.nextInt();
                    System.out.print("Enter the new price: ");
                    price = scanner.nextFloat();
                    updatePrice(id, price);
                    break;
```

```
                case 6:
                    return;
                case 7:
                    System.exit(0);
                    break;
                default:
                    System.out.println("\nInvalid choice. Enter
again!");
            }
        }
    }

    static void updateQuantity(int id, int newQuantity) {
        for (Product p : products) {
            if (p.id == id) {
                p.quantity = newQuantity;
                saveProducts();
                System.out.println("\nProduct quantity updated
successfully!");
                return;
            }
        }
        System.out.println("\nProduct not found! Invalid ID.");
    }

    static void updatePrice(int id, float price) {
        for (Product p : products) {
            if (p.id == id) {
                p.price = price;
                saveProducts();
                System.out.println("\nProduct price updated
successfully!");
                return;
            }
        }
        System.out.println("\nProduct not found! Invalid ID.");
    }

    static void customer() {
        int choice = 0;
        Scanner scanner = new Scanner(System.in);
        while (true) {
            System.out.println("\n-----Customer Menu-----");
            System.out.println("1. Display Products");
            System.out.println("2. Generate Bill");
            System.out.println("3. Go back to main menu");
            System.out.println("4. Exit");
            System.out.print("Enter your choice: ");
            choice = scanner.nextInt();
```

```
            switch (choice) {
                case 1:
                    displayProducts();
                    break;
                case 2:
                    generateBill();
                    break;
                case 3:
                    return;
                case 4:
                    System.exit(0);
                    break;
                default:
                    System.out.println("\nInvalid choice. Enter
again!");
            }
        }
    }

    private static void loadProducts() {
        try {
            FileInputStream fileInputStream = new
FileInputStream(DATABASE_FILE);
            ObjectInputStream objectInputStream = new
ObjectInputStream(fileInputStream);
            products.clear();
            while (true) {
                try {
                    Product p = (Product)
objectInputStream.readObject();
                    products.add(p);
                } catch (EOFException e) {
                    break;
                }
            }
            objectInputStream.close();
            fileInputStream.close();
        } catch (IOException | ClassNotFoundException e) {
            // Ignore errors for now
        }
    }

    private static void saveProducts() {
        try {
            FileOutputStream fileOutputStream = new
FileOutputStream(DATABASE_FILE);
            ObjectOutputStream objectOutputStream = new
ObjectOutputStream(fileOutputStream);
            for (Product p : products) {
```

```
                objectOutputStream.writeObject(p);
            }
            objectOutputStream.close();
            fileOutputStream.close();
        } catch (IOException e) {
            System.err.println("\nError writing file: " +
e.getMessage());
        }
    }
}
```

RESULT AND ANALYSIS

The results of the Billing & Inventory Management System using c will depend on the specific needs and requirements of the user. However, some possible outcomes and benefits of using the script could include:

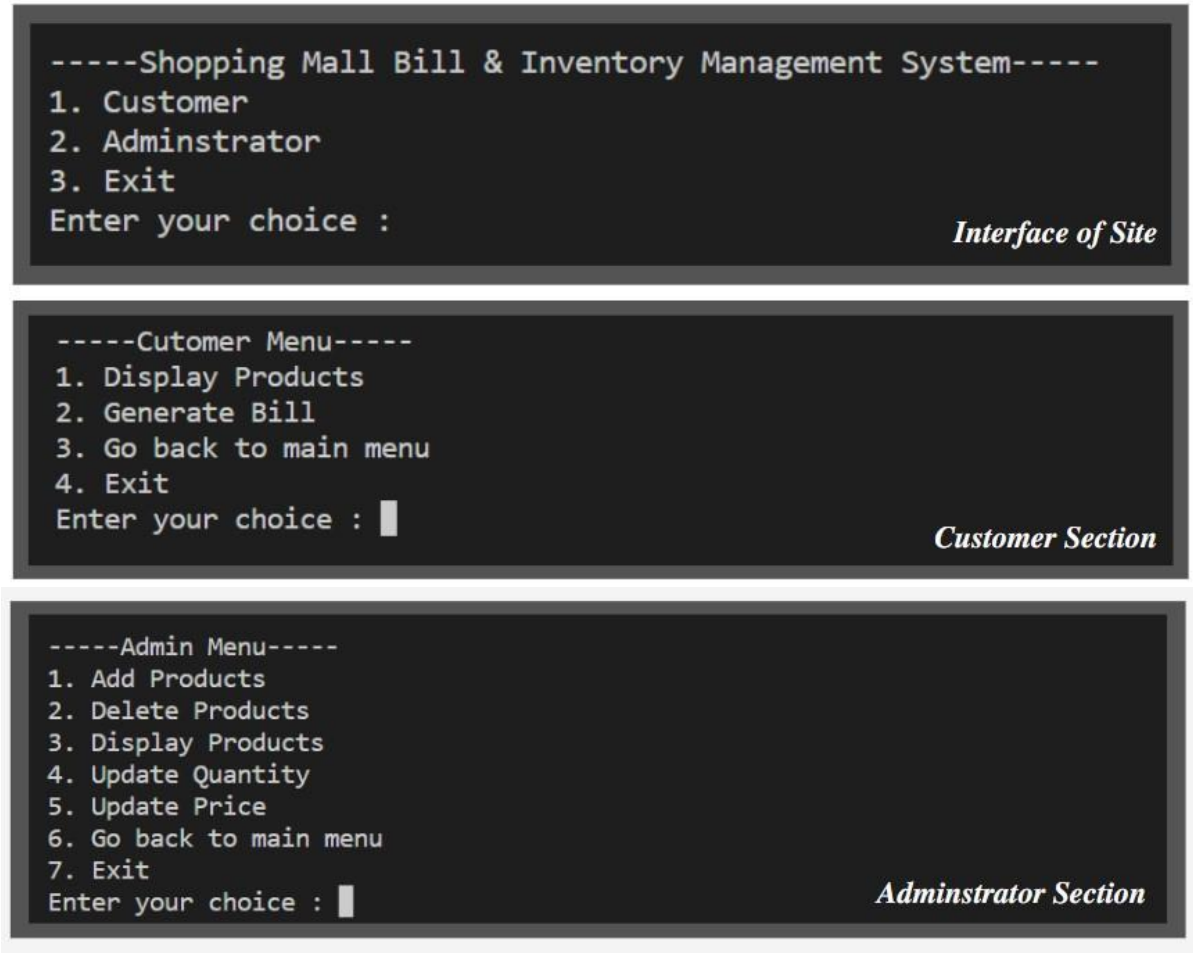

Figure 2:- Interface of the Billing System

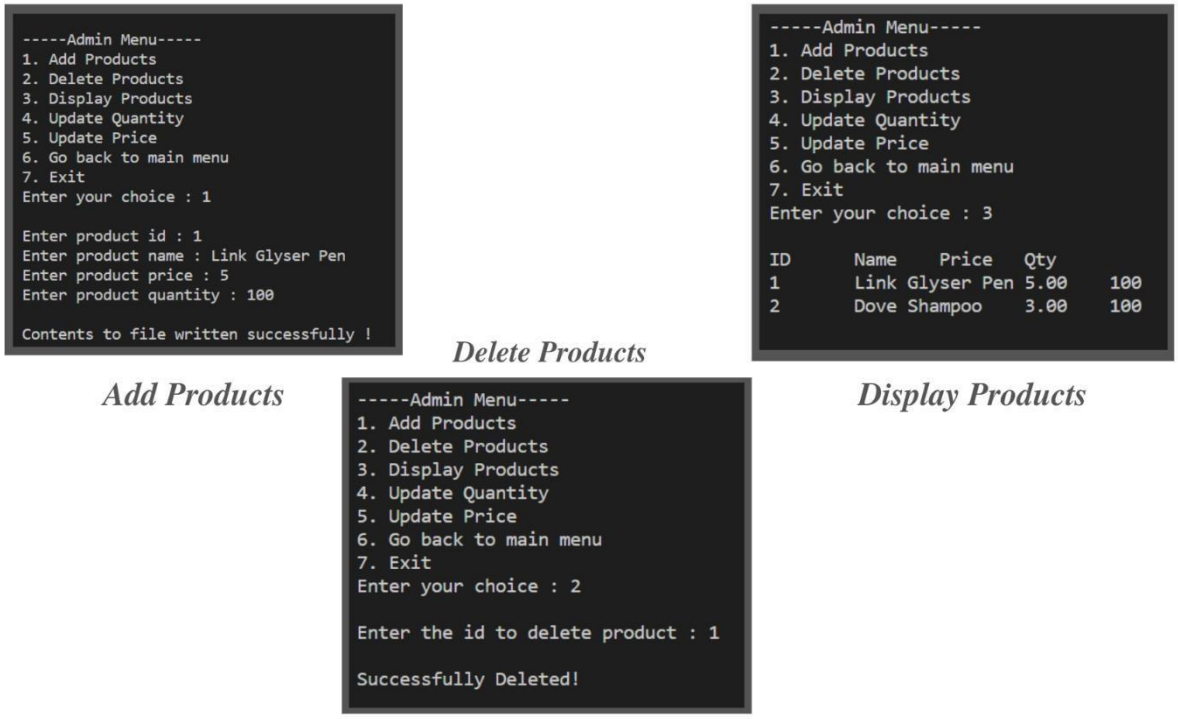

Figure 3:- Adminstrator Operations

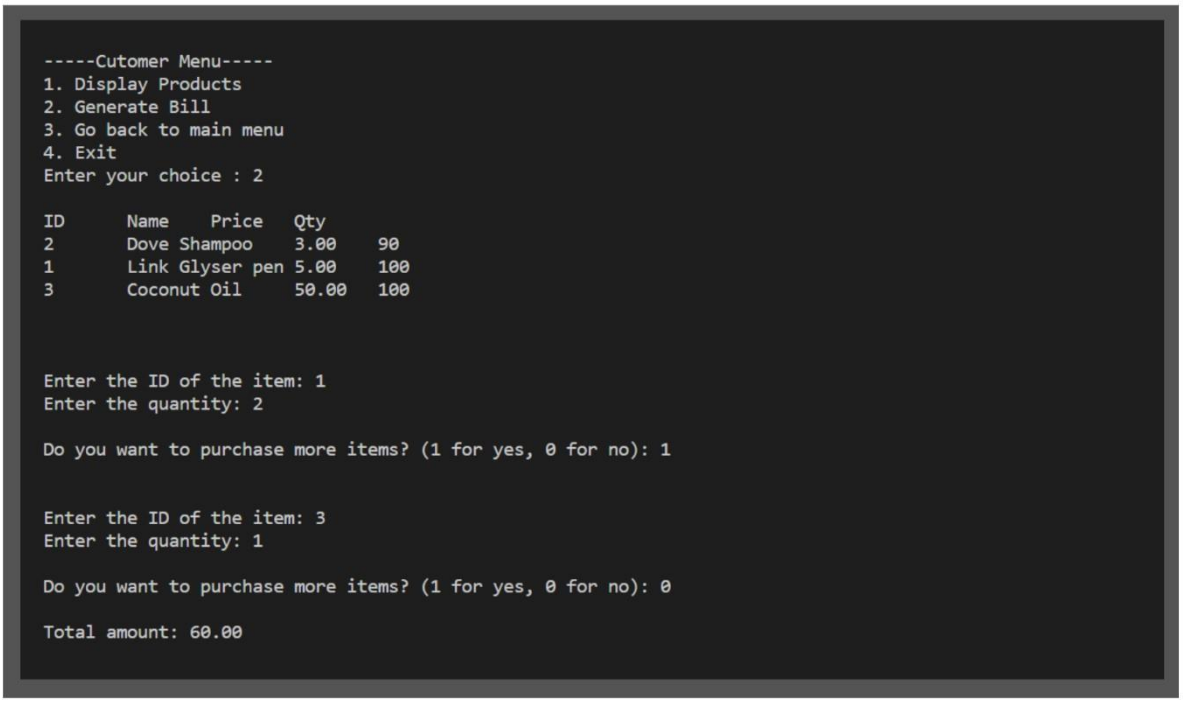

Figure 4:- Billing Operation

CONCLUSION

Our project and implementation is on supermarket Billing System. We have successfully completed it. We take this opportunity to express our sense of indebtedness and gratitude to all those people who helped us in completing this project and implementation.

BIBLIOGRAPHY

A Case Study of Inventory Management System for an International Lifestyle Product Retailer in Bolivia, April 2021, Boris Herbas Torrico, Universidad Católica Boliviana San Pablo Cochabamba, San Pablo, Bolivia.

A Review of Inventory Management System, Varalakshmi G S1, Asst Prof. Shivaleela S2, Student, Dept of MCA, Dr.Ambedkar Institute of Technology, Bengaluru-560056, Karnataka, India, Professor, Dept of MCA, Dr. Ambedkar Institute of Technology, Bengaluru-560056, Karnataka India.

AN ONLINE BASED INVENTORY MANAGEMENT SYSTEM IMPLEMENTATION IN PRINTING BUSINESS Rafat Ara, Md. Abdur Rahim, Lecturer, Department of Computer Science & Engineering, German University Bangladesh, Gazipur, Dhaka, Bangladesh.

REFERENCES

I. https://www.youtube.com
II. https://www.programiz.com/
III. https://www.geeksforgeeks.org
IV. https://github.com/topics/billing-and-inventory-managment-system.com
V. https://www.freeprojectz.com/php-projects-projects/billing-and-inventory-system