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Section: SE3-2

Course: Software Engineering

Project Report

Project Title: Shopping Mall Management System

Project Brief Description

The Shopping Mall Management System will be designed to streamline the operations of shopping malls for both administrators and customers. The system will handle product browsing, inventory management, sales tracking, shopping cart functionality, and payment processing. Additionally, the system will provide secure admin management and maintain data persistence through file handling.

Key product categories include

Gents Products: Pants, Shirts, Suits.

Ladies Products: Frocks, Shoes, Jewelry Sets.

The application will use file handling to maintain data persistence and provides an intuitive command-line interface.

Stakeholders

1. **Users (Customers):**
    - Customers who will browse products, add items to their cart, and make purchases.
2. **Administrators:**
    - Admins who will manage the product inventory, sales records, and system functionality.
3. **Management:**
    - Higher-level personnel who will analyze system-generated reports to monitor performance and sales metrics.

Project Scope

1. User Features

1. **Product Browsing:**
    - Users will browse available products based on categories (Gents Products, Ladies Products).
    - Users will search for products by name, description, or category.
2. **Shopping Cart Management:**
    - Users will add items to their shopping cart for purchasing.
    - Users will view the cart's content and make changes if needed before proceeding to checkout.
3. **Checkout and Payment:**
    - Users will proceed to checkout and pay their bills through the system.
    - The system will calculate the total amount, provide detailed billing information, and return the correct change if the payment exceeds the bill.

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2. Administrator Features

1. **Product and Inventory Management:**
    - Administrators will add, delete, and modify products in the inventory.
    - Administrators will manage product categories, including Pants, Shirts, Suits, Frocks, Shoes, and Jewelry Sets.
2. **Sales and Payment Records Management:**
    - Administrators will view detailed sales records and payment transactions.
    - Administrators will delete specific or all records as needed.
3. **Admin Registration:**
    - Administrators will securely register new admins into the system using password-based authentication.
4. **Reporting:**
    - The system will generate reports on product sales, and payment statuses for management review.

Functional and Non-Functional Requirements

Functional Requirements

1. **Product Browsing and Searching:**
    - The system will allow users to browse all available products and search for specific items by name, category, or description.
2. **Shopping Cart Management:**
    - Users will be able to add selected items to the cart and modify the cart's contents before proceeding to checkout.
3. **Billing and Checkout:**
    - The system will calculate the total cost of items in the cart.
    - The system will display the bill and process payments securely.
4. **Admin Features:**
    - Administrators will add, modify, or delete product records from the system.
    - Administrators will view and manage sales and payment records.
    - Administrators will register new admins.

Non-Functional Requirements

1. **Usability:**
    - The system will provide an intuitive and easy-to-navigate user interface for both users and administrators.
    - The system will provide clear instructions and error messages to guide users during their interactions.
2. **Performance:**
    - The system will handle multiple users efficiently and ensure quick responses for product browsing and payment processing.
3. **Security:**
    - The system will ensure secure storage of user data and payment records using file handling.
4. **Scalability:**
    - The system will be designed to accommodate a growing number of users and products in the future.

Software Design

- Class Diagram
- Activity Diagram

Tools/Technologies

Programming Language: C++

IDE: Visual Studio code

Libraries:

- **`<iostream>`** for input/output operations.
- **`<fstream>`** for file handling (reading and writing to files).
- **`<vector>`** for dynamic data storage and management.
- **`<sstream>`** for string stream operations like parsing and formatting strings.

- **<iomanip>** for formatted input/output, such as setting precision or width.
- **<string>** for using the `std::string` class and handling text manipulation.
- <**windows.h>** for Windows-specific APIs, such as system calls, console control, and window manipulation.

Operating System: Windows

File Handling: Persistent storage for product and admin records.