PAK-AUSTRIA FACHHOCHSCHULE:
INSTITUTE OF APPLIED SCIENCES AND TECHNOLOGY

Project Proposal for
Shopping Club System

Course Title: Data Structures and Algorithms

Program: BS Computer Science

Date of Submission: Nov 5, 2024

Submitted to: Dr. Sohail Khan

Submitted by: Rania Khan_B23F0082CS073

Irum Imran_B23F0191CS075

Project Overview
The "Shopping Club" project is designed as an online shopping platform, utilizing fundamental data structures such as linked lists, queues, stacks, and arrays to streamline customer interactions and product management. This system creates an efficient and user-friendly environment for customers and provides administrators with powerful tools for managing inventory and customer queues.

Objectives
The key objectives of this project are to:

1. Develop a virtual shopping environment that offers seamless product management and customer service.
2. Implement various data structures to enhance the efficiency and functionality of the system.
3. Ensure a user-friendly interface for both customers and administrators.

Scope of Work
The scope of the "Shopping Club" system includes:

1. **Product Management**
    - Add, Modify, and Remove Products: Using linked lists, new products can be added, edited, or deleted efficiently.
    - Display Products: A complete product catalog will be displayed using linked lists, providing customers with comprehensive shopping experience.
2. **Customer Management**
    - Queue Management: A queue structure will manage the order of customers, creating a fair shopping experience.
    - Stack for Customer Actions: A stack will record customer interactions, ensuring smooth navigation between features.
3. **Shopping Cart Management**
    - Arrays for Purchase Tracking: Arrays will manage the shopping cart for each customer, tracking their selected items and ensuring ease of access.
4. **Administrator Portal**
    - The system will feature a dedicated portal for administrators, allowing them to manage inventory and customer interactions with ease.

Functionality Outline

1. **Customer Functions**
    - EnqueueCustomer(): Adds new customers to the queue.

- DequeueCustomer(): Processes the next customer in the queue.

2. **Product Management Functions**
    - AddProduct(): Adds a product to inventory.
    - ModifyProduct(): Updates product details.
    - RemoveProduct(): Deletes a product from inventory.
3. **Product Purchase Functions**
    - BuyProduct(): Adds selected products to the customer's cart.
4. **Administrator Functions**
    - Allow administrators to add, modify, display, and delete products and manage the customer queue.

Expected Outcome
The "Shopping Club" project will demonstrate the practical applications of data structures in enhancing real-world applications. This system aims to provide a highly responsive and organized online shopping experience.

Conclusion
This project will highlight the importance of data structures in software development, showcasing how they contribute to building efficient and user-friendly platforms. The "Shopping Club" system will serve as a valuable tool for exploring the fundamentals of data management and interaction within an online shopping environment.