UNIVERSITY OF CALOOCAN CITY
COMPUTER ENGINEERING DEPARTMENT

Software Design

Progress Report No. 8

Data Structures and Algorithms

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I. Objectives

In this section, the goals in this laboratory are:

- To explain the basic idea and design of the Clothing Brand Web System
- To identify and understand **Data Structure**, which is one way a program organizes and uses data.

II. Methods

In a computer program, one of the hardest things to understand is how data is organized and used. A system becomes confusing if we do not know where data comes from, where it is stored, and how it is used.

This is why we use **data maps** such as **algorithms, flowcharts, and diagrams**. These tools help explain what the system does step by step. They are very useful when a system handles many kinds of data, such as users, products, orders, and inventory.

Why do we need Data Structure?

- It helps organize data in a clean and proper way.
- It shows how data is saved and retrieved from the system.
- It allows actions like adding, deleting, updating, and sorting data.
- It helps manage large amounts of data without confusion.
- It makes searching and sorting faster, which helps the system work smoothly.

How Data Structure Is Used in the System

In the Clothing Brand Web System, data structures are used to handle:

- User accounts for customers and administrators
- Product information such as name, price, and stock
- Orders made by customers
- Inventory records

Algorithm

1. User submits a request through the frontend interface.
2. The frontend validates input and sends the request to the backend API.
3. The backend authenticates the user and processes business logic.
4. The database is queried or updated as required.
5. The backend sends a response to the frontend.
6. The frontend displays the result to the user.

Flowchart

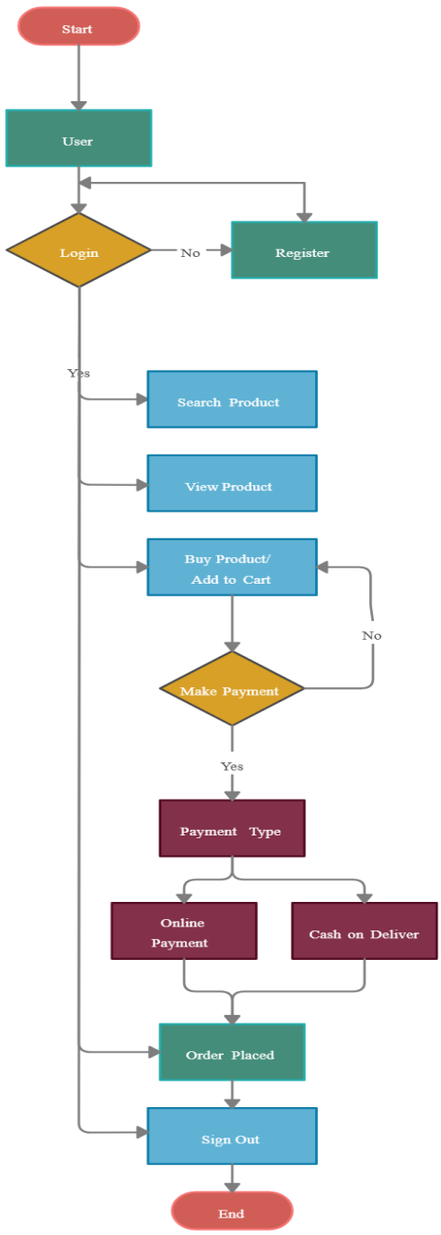

Figure 1 Flowchart

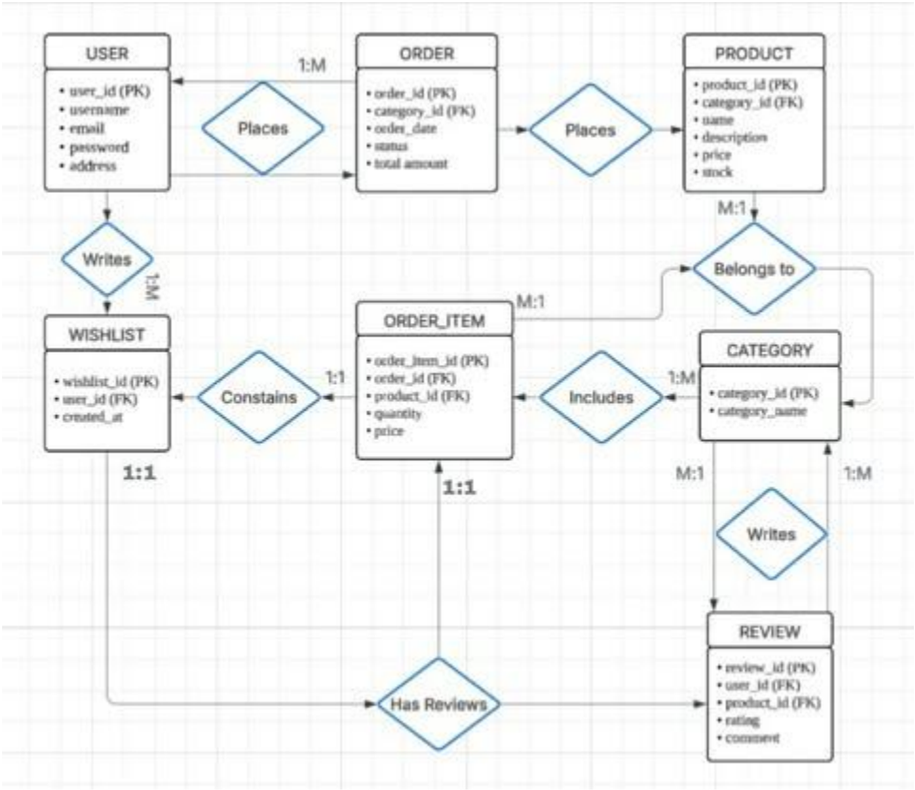

Figure 2 ERD

III. Conclusion

This lab demonstrated how data is arranged and utilized, which aided in the explanation of how a system functions. It became evident from examining the Clothing Brand Web System that data structures are crucial for maintaining clear, well-organized, and manageable information. The system was made simpler to comprehend by using flowcharts and diagrams. Overall, this exercise demonstrated how a system can function more effectively and quickly when data is properly organized.

References

[1] Wikipedia contributors, “Algorithm,” Wikipedia, Jan. 11, 2026. **https://en.wikipedia.org/wiki/Algorithm**

[2] GeeksforGeeks, “What is a Flowchart and its Types?,” GeeksforGeeks, Apr. 07, 2025.

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