**UNIVERSITY INSTITUTE OF COMPUTING**

**PROJECT REPORT**  **ON**

# Online Shopping System

Program Name: BCA

Subject Name/Code: Java Programming LAB /(22CAP-352)

Submitted by: Submitted to:

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# ABSTRACT

This project develops a functional prototype of an Online Shopping System using Java AWT/Swing for the graphical user interface (GUI) and integrates it with a database (MySQL) for backend operations. The system facilitates product browsing, adding items to a cart, and placing orders. Key features include user registration, product listing, cart management, and order processing. The system implements exception handling to manage invalid user inputs and enhance application robustness. By incorporating GUI design, database connectivity, and exception management, this project UNIVERSITY INSTITUTE OF COMPUTING delivers a comprehensive shopping experience simulation. This solution mirrors real-world e-commerce platforms and aims to provide a learning foundation for building scalable and user-friendly software systems using Object-Oriented Programming and software engineering principles.

# Introduction

Online shopping is a rapidly growing sector that allows customers to purchase products from anywhere through the internet. The goal of this project is to simulate an online shopping experience through a desktop application built in Java using AWT/Swing. Key components of the system include:- GUI for user interactions- Product and user management- Shopping cart functionality- Order placement and database recording- Input validation and exception handling Through this project, we focus on integrating user-friendly interfaces with efficient backend logic to simulate the operation of a real e-commerce platform

# Technique

1. GUI Design: Created using Java AWT/Swing components (e.g., JFrame, JTable, JButton, JTextField).

2. Backend Integration: MySQL is used for managing product, user, and order data

3. CRUD Operations: Products and user details are fetched, added, updated, and deleted from the database.

4. Cart Handling: Temporary memory-based cart object stores selected items until order confirmation.

5. Exception Handling: Catches errors like invalid inputs, SQL exceptions, and runtime failures. 6. Testing: Manual test cases applied to validate core functionalities.

MODULES

1. User Module: Handles login, registration, and profile management.

2. Product Module: Displays product catalog from the database.

3. Cart Module: Allows adding/removing items and viewing cart summary.

4. Order Module: Finalizes purchase and inserts order details into the database.

5. Admin Module: (Optional) Enables product and user management

DATABASE DESIGN

* Tables Used:-
* users(user\_id, name, email, password)
* - products(product\_id, name, category, price, stock)
* - orders(order\_id, user\_id, date, total\_amount)
* - order\_items(order\_item\_id, order\_id, product\_id, quantity)

FORMULAS & LOGIC

* - Total Price per Item = quantity price
* - Order Total = (all item totals)
* - Stock Update = stock - quantity ordered
* - Input Validation = Ensure valid numbers for quantity, non-empty fields
* - Exception Handling = Try-Catch blocks for input errors and database failures

RESULT & ANALYSIS

* - User-Friendly Interface: Intuitive navigation for product selection and checkout
* - Error Resilience: Handled improper inputs and unexpected SQL errors
* - Database Connectivity: Smooth interaction between frontend and MySQL backend
* - Functional Modules: Users could register, browse items, manage carts, and place orders
* -Real-time Updates: Stock updated after every successful purchase
* SUMMARY
* This project provided hands-on experience in building an interactive GUI application integrated with a database. It taught key concepts of modular software design, exception handling, and the importance of user experience in application development. The Online Shopping System showcases the core functionality of a retail platform and can be further extended to include:- Payment Gateway Simulation- Admin Panel- User Ratings and Reviews- Email Confirmation System

FUTURE SCOPE

* - Mobile Version: Port to Android using Java/Kotlin
* - AI Recommendations: Suggest products using past user behavior
* - Analytics: Real-time data on sales and user engagement
* - Security Enhancements: Encrypt sensitive data and enforce user authenticatio