TUNIS BUSINESS SCHOOL
UNIVERSITY OF TUNIS

جامعة تونس
المعهد العالي للأعمال بتونس

# OOP Project

## Inventory Management and Sales Reporting System

## for Small Businesses

**Project Description:**

The considered project aims to enhance the operational efficiency of a Small Business (SB) through the development of an advanced Inventory Management and Sales Reporting System. This multifaceted system is meticulously designed to address two crucial aspects: the seamless management of the SB's inventory and the generation of insightful sales reports.

**Key Features:**

1) **Product Management**: Enable users to add, update, and delete products in the inventory. Each product should have attributes such as name, quantity, price, and category.
2) **Inventory Management**: Establish a robust inventory management system that empowers the SB to effortlessly add, update, and remove products.
3) **Sales and Purchase Logging**: Record sales and purchase transactions, capturing details like product, quantity, date, and transaction type.
4) **Basic sales reporting**: Generate basic reports, such as the current inventory status, sales history, and popular products. Furthermore, the program generate data analysis features, like calculating average sales, identifying peak sales periods, and determining the most popular products
5) **User Authentication**: Incorporate a simple user authentication system to secure access to the inventory system.
6) **Data Entry**: Develop a system that allows users to input sales data, including product details, sales quantity, and dates.
7) **File Handling**: Use file handling to store and retrieve sales data. Employ text files or simple flat file databases for storage.
8) **Data Display**: Create a dashboard-like interface to display basic sales statistics, such as total sales, best-selling products, and sales trends over time.

**Technical Requirements:**

1) Object-Oriented Design: Utilize object-oriented principles to design classes for products, transactions, users, etc. The program must include at least one inheritance relationship between classes. Examples of the main used classes are described as follow:

**Class "Product"**:
Attributes: 'productId', 'productName', 'quantityInStock', 'price', 'category', etc.
Methods: Getters and setters for attributes, methods for updating quantities, and any other product-specific functionality.
**Class "InventoryManager"**:
Attributes: List of 'Product' objects.
Methods: Add, update, and remove products from the inventory. Categorization and organization of products.
**Class "SalesReportGenerator":**
Attributes: List of sales transactions, product sales data.
Methods: Generate sales reports based on different criteria (e.g., date range, product, trends). Analyze and calculate revenue, popular products, and sales trends.
**Class "User":**
Attributes: 'userId', 'username', 'password',' role', etc.
Methods: Authentication methods, authorization checks.

These classes follow a modular and organized approach, adhering to principles of object-oriented design and promoting maintainability and scalability of the system. Depending on the project's complexity, you might further decompose functionalities into additional classes or introduce interfaces for better abstraction.

**2)** File Handling: Implement file I/O operations to store and retrieve product information, transactions, user details and sales reports.
**3)** Basic Data Structures: Utilize basic data structures (arrays, lists) to manage and manipulate sales data.
**4)** User Interface: Create a text-based user interface for easy interaction.

**Bonus Features (Optional):**

**A.** Supplier and Customer Management: Extend the system to manage supplier and customer information, linking transactions to respective entities.
**B.** Graphical Reports: Enhance reporting capabilities by incorporating graphical charts or graphs for a more intuitive presentation. For example, integrate basic charts or graphs (e.g., bar charts) to visually represent sales data trends.
**C.** Export to PDF/Excel: Allow users to export reports to commonly used formats such as PDF or Excel.