

# Sales Tax Application: Full Technical Document

Version 1.0.0

Author: Bashar

Date: August 15, 2025

## 1. Executive Summary

This document provides a comprehensive overview of the Sales Tax Application, a Java Maven project designed to calculate sales tax and total costs for various products from a command-line interface. The application is built on modern object-oriented programming (OOP) principles to ensure it is clean, extensible, and maintainable. The system correctly handles tax exemptions and import duties based on the item's classification, and its design allows for easy extension with new product types or tax rules.

## 2. System Architecture

The application's architecture is a clear example of a layered design, with a strong emphasis on the separation of concerns. The core business logic is entirely decoupled from the user interface (the command line).

**Core Business Logic Layer:** Contains the business rules for calculating taxes and costs, independent of the user interface.

**Product.java (Abstract Class):** Defines common properties and enforces tax calculation behavior through abstract methods.

**Concrete Product Classes:** Book, Food, MedicalProduct, and GeneralProduct extend Product, implementing specific tax logic.

**Receipt.java:** Aggregates products, calculates totals, and demonstrates polymorphism in processing product lists.

**Main Application Layer:** Handles user interaction and entry point logic via *SalesTaxSystem.java*, which reads inputs and delegates to business logic classes.

## 3. Technology Stack

- Java 17: Main programming language
- Apache Maven: Build automation and dependency management
- SLF4J & Logback: Structured and configurable logging
- JUnit 5 & Mockito: Unit and integration testing
- Docker: Containerization for runtime consistency

## 4. Build, Run, and Testing

### 4.1. Building with Maven

To build the project and create a JAR:

```
mvn clean package
```

This compiles code, runs tests, and creates a jar in target/.

### 4.2. Running the Application

```
java -jar target/sales-tax-system-1.0-SNAPSHOT.jar
```

Then input each item on a new line and press Enter on an empty line to complete the receipt.

### 4.3. Testing

To run the test suite:

```
mvn test
```

#### **4.4. Dockerization**

To containerize the application:

```
docker build -t sales-tax-app .
```

```
docker run -it sales-tax-app
```

This ensures a reproducible runtime for deployment and testing.