

SOFTWARE REQUIREMENTS SPECIFICATION

For

E–Commerce website

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1. Introduction

1.1 Purpose

An e-commerce website serves as a digital platform for businesses to showcase and sell their products or services online. It enables consumers to browse, select, and purchase items conveniently from the comfort of their homes. E-commerce websites facilitate secure online transactions, offer a wide range of products, and often provide customer reviews and ratings to assist in decision-making. They play a crucial role in expanding businesses' reach to a global audience and streamlining the buying process for both buyers and sellers.

1.2 Document Conventions

- Entire document should be justified.
 - Convention for Main title
 - Font face: Times New Roman
 - Font style: Bold
 - Font Size: 14
 - Convention for Sub title
 - Font face: Times New Roman
 - Font style: Bold
 - Font Size: 12
 - Convention for body
 - Font face: Times New Roman
 - Font Size: 12

1.3 Scope of Development Project

- The scope of an e-commerce website includes showcasing products or services, facilitating secure online transactions, optimizing for search engines, implementing marketing strategies, and ensuring legal compliance.

- It serves as a digital storefront for businesses to reach a global audience, manage inventory, and provide customer support.
- E-commerce websites play a pivotal role in the modern retail landscape, offering convenience and accessibility to both consumers and businesses.
- They must adapt to evolving technology and consumer preferences to remain competitive.
- The scope extends beyond just selling products; it encompasses the entire online shopping experience.

1.4 Definitions, Acronyms and Abbreviations

JAVA -> platform independence

SQL-> Structured query Language

ER-> Entity Relationship

UML -> Unified Modeling Language

IDE-> Integrated Development Environment

SRS-> Software Requirement Specification

1.5 References

➤ **Books**

- Software Requirements and Specifications: A Lexicon of Practice, Principles and Prejudices (ACM Press) by Michael Jackson
- Software Requirements (Microsoft) Second Edition By Karl E. Wieggers
- Software Engineering: A Practitioner's Approach Fifth Edition By Roger S. Pressman

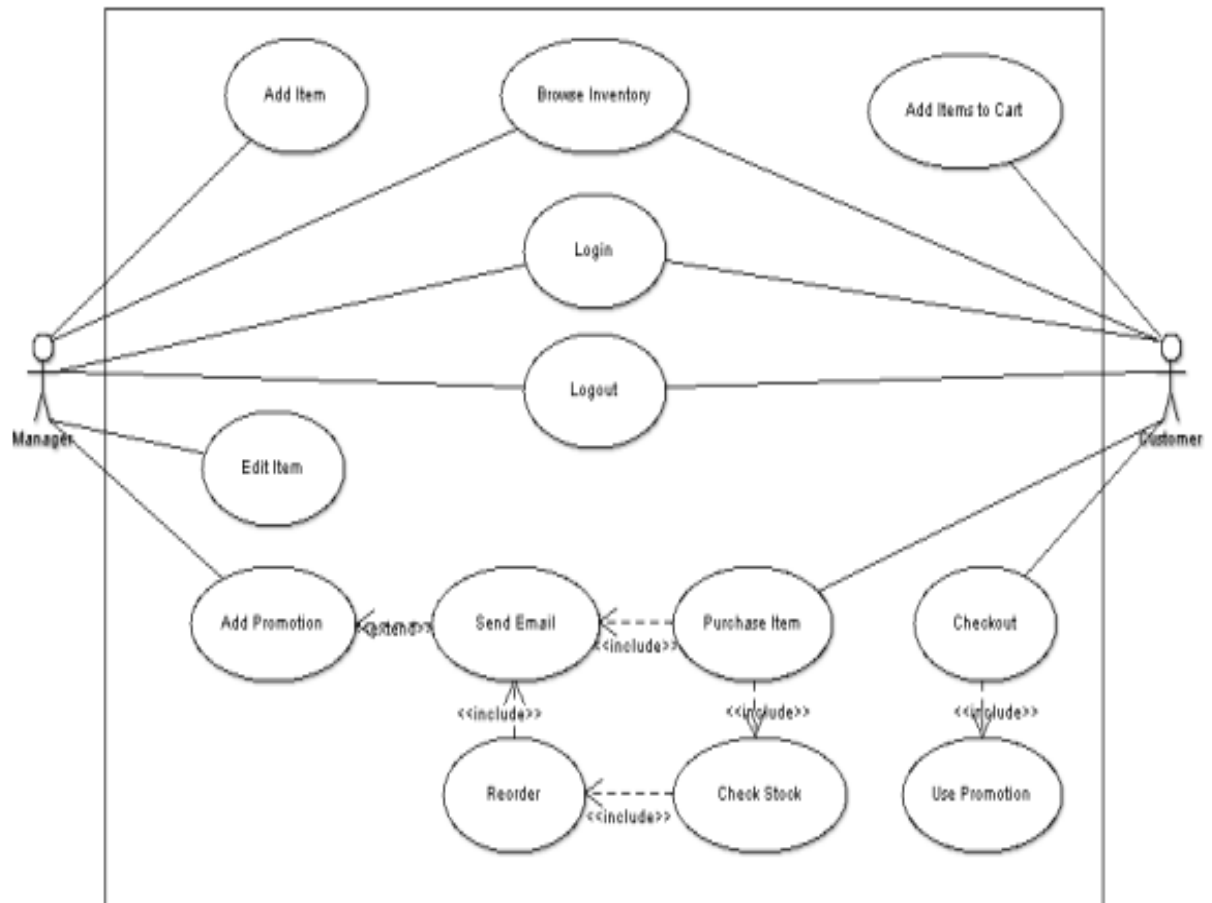
➤ **Websites:**

- <http://www.slideshare.net/>
- <http://code.google.com/p/cse435-group4/>

2. Overall Descriptions

2.1 Product Perspective

Use Case Diagram of E commerce website

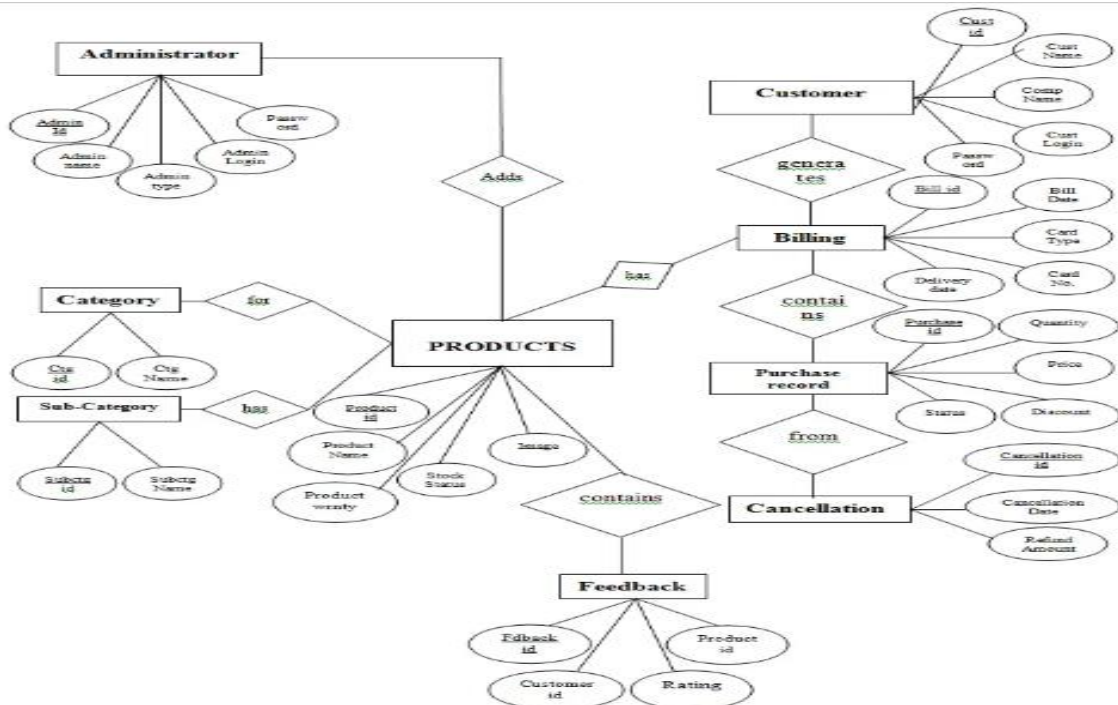


This Use Case Diagram for E-Commerce Websites is a behavioural diagram summarising e-commerce website activities and user information. It depicts a graphical representation of the behavioural structure of the system. The diagram also includes processes and users or actors.

Additionally, the diagram consists of processes (use cases) and users or “actors”. It uses defined symbols to describe the overall flow of the system.

2.2 Product Function

Entity Relationship Diagram for E commerce website.



The function of an e-commerce website is to facilitate online buying and selling of products or services. Some key features that enable this function include:

1. Product listing and catalog
2. Search and navigation
3. Shopping cart
4. Secure payment processing
5. User reviews and ratings
6. Wishlist and saved items
7. Order tracking
8. Customer support
9. Mobile responsiveness
10. Personalization and recommendations

These are just a few of the many functions that an e-commerce website should have to provide a smooth and engaging shopping experience for customers.

2.3 User Classes and Characteristics

User characteristics of e-commerce websites refer to the traits and behaviors of the individuals who interact with and make purchases on these platforms.

Some key user characteristics include:

1. Demographics
2. Online Behavior
3. Device Preference
4. Purchase History
5. Payment Preferences
6. Shopping Habits
7. Customer Loyalty
8. Reviews and Ratings
9. Social Media Engagement
10. Customer Feedback

2.4 Operating Environment

- The product will be operating in windows environment. The E-Commerce website shall operate in all famous browsers, for a model we are taking Microsoft Internet Explorer, Google Chrome, & Mozilla Firefox.
- Also it will be compatible with the IE 6.0. Most of the features will be compatible with the Mozilla Firefox & Opera 7.0 or higher version.
- The only requirement to use this online product would be the internet connection.
- The hardware configuration include Hard Disk: 40 GB, Monitor: 15" Color monitor, Keyboard: 122 keys.
- The basic input devices required are keyboard, mouse and output devices are monitor, printer etc.

2.5 Assumptions and Dependencies

The assumptions are:-

- The coding should be error free.
- The system should be user-friendly so that it is easy to use for the users.
- The information of all users must be stored in a database that is accessible by the website.
- The system should have more storage capacity and provide fast access to the database.
- The system should provide search facility and support quick transactions.
- The E-Commerce website is running 24 hours a day.
- Users must have their correct usernames and passwords to enter into their online accounts and do actions.

2.6 Requirement

Software Configuration:-

This software package is developed using java as front end which is supported by sun micro system.

Microsoft SQL Server as the back end to store the database.

Operating System: Windows 10

Language: Java, HTML, CSS, React JS, JavaScript, (front end).

Database: My SQL Server (back end).

Hardware Configuration:-

Processor: Pentium(R) Dual-core CPU.

Hard Disk: 40GB.

RAM: 256 MB or more.

2.7 Data Requirement

In this project Product Data collect's detailed information about products, including names, descriptions, prices, images, and availability. Customer Data Gather's customer details such as names, addresses, contact information, and purchase history for order processing and customer management. Transaction Data Record order details, payment information, and shipping status to track and fulfill orders. Inventory Data Maintains real-time data on product stock levels to prevent overselling and manage restocking. Analytics Data Capture user interactions and behaviour on the website to analyze and improve the user experience and marketing strategies.

3. External Interface Requirement

3.1 GUI

- The software provides good graphical interface for the customer and the administrator can operate on the system, performing the required task such as purchasing, update, viewing the details of the products.
- It allows user to purchase different types of products.
- It provides product verification and search facility based on different criteria.
- All the modules provided with the software must fit into this graphical user interface and accomplish to the standard defined.
- The design should be simple and all the different interfaces should follow a standard template.

4. System Features

1. User Registration and Authentication:

- Allow users to create accounts and log in securely.

2. Product Catalog:

- Display products with images, descriptions, and prices.
- Organize products into categories and subcategories.

3. Shopping Cart:

- Enable users to add and remove items from their cart.
- Show the total cost of items in the cart.

4. Product Search and Filtering:

- Implement a search bar to find products.
- Provide filters for sorting and narrowing down product choices.

5. Product Details:

- Show detailed product information, including reviews and ratings.

6. User Profiles:

- Allow users to manage their profiles and shipping information.

7. Checkout and Payment Processing:

- Enable secure payment options (credit/debit cards, PayPal, etc.).
- Calculate taxes and shipping costs.

5. Other Non-functional Requirements

5.1 Performance Requirement

- Fast page load times to minimize user frustration and bounce rates.
- Responsive and accurate search functionality for quick product discovery.
- Scalability to handle high traffic volume without slowdowns or crashes.
- Smooth checkout process with minimal steps for a seamless customer experience.
- Secure payment processing to protect customer data and foster trust in the website.

5.2 Safety Requirement

- Secure SSL encryption to protect customer data during transmission.
- Robust user authentication and authorization mechanisms to prevent unauthorized access to sensitive information.
- Regular security audits and vulnerability assessments to identify and address potential risks.
- Compliance with data protection regulations, such as GDPR, to ensure proper handling and storage of customer data.
- Implementation of secure payment gateways that comply with payment card industry security standards (PCI DSS).

5.3 Security Requirement

- Use of strong passwords and multi-factor authentication for all user accounts, including administrators and customers.
- Regular software updates and patch management to address security vulnerabilities.
- Protection against SQL injection and cross-site scripting (XSS) attacks through proper input validation and data sanitization.
- Implementation of secure coding practices to prevent common security flaws like buffer overflows and insecure direct object references.
- Use of web application firewalls (WAFs) and intrusion detection systems (IDS) to monitor and block suspicious activities.
- Regular backups of the website and its database to ensure data integrity and availability in case of a security incident.
- Training and awareness programs for employees to educate them about safe browsing habits and the importance of following security policies.
- Incident response plan to effectively handle and mitigate security breaches or incidents.
- Continuous monitoring and logging of system activities to detect and respond to any unauthorized access or malicious activities.
- Regular security assessments and penetration testing to identify and address any vulnerabilities before they can be exploited.

5.4 Requirement attributes

- User-friendly
- Mobile responsiveness
- Secure
- Scalable
- Reliable
- Fast loading speed
- Search engine optimization (SEO)
- Payment options
- Analytics and reporting
- Integration capabilities

5.5 Business Rules

A business rule is anything that captures and implements business policies and practices. A rule can enforce business policy, make a decision, or infer new data from existing data. This includes the rules and regulations that the System users should abide by. This includes the cost of the project and the discount offers provided. The users should avoid illegal rules and protocols. Neither admin nor customer should cross the rules and regulations.

5.6 User Requirement

- User registration and login
- Product search and browsing
- Product information
- Shopping cart and checkout process
- Wishlist and save for later
- Order tracking and notifications
- Customer support
- Reviews and ratings
- Personalization and recommendations
- Social sharing

6. Other Requirements

1. Payment Gateway Integration:

- Integrate with multiple payment gateways to offer customers various payment options (credit cards, digital wallets, etc.).

2. Inventory Management:

- Implement real-time inventory tracking to prevent overselling and out-of-stock issues.

3. Product Recommendations:

- Provide personalized product recommendations based on user browsing and purchase history.

4. User Reviews and Ratings:

- Allow users to leave reviews and ratings for products, helping others make informed decisions.

5. Guest Checkout:

- Offer a guest checkout option to streamline the purchase process for users who don't want to create an account.

6. Abandoned Cart Recovery:

- Implement strategies to recover abandoned carts through email reminders and incentives.

7. Cross-Selling and Up selling:

- Suggest related or higher-priced products during the checkout process to increase sales.

6.3 Glossary

The following are the list of conventions and acronyms used in this document and the project as well:

- Administrator: A login id representing a user with user administration privileges to the software
- User: A general login id assigned to most users
- Client: Intended users for the software
- SQL: Structured Query Language; used to retrieve information from a database
- SQL Server: A server used to store data in an organized format
- Layer: Represents a section of the project
- User Interface Layer: The section of the assignment referring to what the user interacts with directly

- Application Logic Layer: The section of the assignment referring to the Web Server. This is where all computations are completed
- Data Storage Layer: The section of the assignment referring to where all data is recorded
- Use Case: A broad level diagram of the project showing a basic overview
- Class diagram: It is a type of static structure diagram that describes the structure of a system by showing the system's cases, their attributes, and the relationships between the classes
- Interface: Something used to communicate across different mediums
- Unique Key: Used to differentiate entries in a database

6.4 Class Diagram

In this diagram, we have three main classes: User, Product, and Order. The User class represents users of the e-commerce website and contains attributes such as id, username, password, and email. It also has methods for user registration, login, and logout. The Product class represents the products available for purchase and contains attributes such as id, name, price, and quantity. It has a method to get product details. The Order class represents an order placed by a user and contains attributes such as id, user_id, date, and total. It has methods to place an order and view order details. The Shopping Cart class represents the shopping cart of a user and contains attributes such as items (a list of products) and total_price. It has methods to add items to the cart, remove items from the cart, and checkout.

