**Software Requirements Specification (SRS) for**

**E-Commerce Application  
  
  
1. Introduction :**   
The e-commerce app is designed to make online shopping easy and hassle-free. Using the latest web tech, it solves the problems of traditional shopping and ensures a smooth experience for both buyers and sellers.

**2. Requirements Analysis :**  
**2.1 Inconvenient Traditional Shopping Methods**

Issue: Traditional shopping often involves physical visits to brick-and-mortar stores, which can be time-consuming and inconvenient for customers.

Solution: The e-commerce website provides a convenient alternative, allowing users to browse, select, and purchase products from the comfort of their homes using computers or mobile devices.

**2.2 Limited Product Accessibility**

Issue: Physical stores have limited space, leading to a restricted range of products available for customers.

Solution: The e-commerce platform overcomes this limitation by offering a vast and diverse range of products. Users have access to a comprehensive catalog, including various categories, brands, and options that may not be available in local stores.

**2.3 Lack of Centralized Product Information**

Issue: In traditional shopping, obtaining detailed product information can be challenging. Customers may need to rely on limited details provided in-store or visit multiple stores for comprehensive information.

Solution: The e-commerce website centralizes product information, providing detailed descriptions, specifications, reviews, and images for each product. This allows customers to make informed decisions without the need for physical inspection.

**2.4 Difficulty in Managing and Tracking Orders**

Issue: Traditional methods of order management involve paper receipts and manual tracking, leading to potential errors and difficulties in tracking the order status.

Solution: The e-commerce platform simplifies order management for users. Clients can easily track the status of their orders in real-time, receive notifications on shipping and delivery, and have a digital record of their purchase history. This enhances overall order transparency and reduces the chances of errors.

**3. Functional Specification :**

**3.1 Client**

**3.1.1 User Registration and Authentication**

* Users should be able to register and log in securely.
* Users can create accounts with a unique username and password.
* Registration process includes email validation and secure password requirements.
* Two-factor authentication may be implemented for enhanced security.

**3.1.2 Browsing and Searching**

* Users should be able to search products by category, price range, or keywords.
* This provides an intuitive search bar with advanced filtering options.
* Users can refine their search based on categories, price ranges, or specific keywords.

**3.1.3 Shopping Cart**

* Users should be able to add/remove items from the cart and view/edit the cart before checkout.
* Items can be added to the cart with a single click and dynamically updated.
* Cart displays items, quantities, and prices, allowing editing options before checkout.

**3.1.4 Checkout and Payment**

* Multiple payment options (credit card, PayPal, etc.) should be supported.
* The platform supports various payment methods, including credit/debit cards and digital wallets.
* Secure transaction handling is ensured using HTTPS protocol and encryption.

**3.2 Administrator**

**3.2.1 Product Management**

* Admins should be able to add/remove/edit products and manage product categories.
* Admin interface allows management of the product catalog and categories.

**3.2.2 Order Management**

* Admins should be able to view/process customer orders.
* Admin dashboard displays pending orders with relevant details.
* Admins can update order status and process orders efficiently.

**3.2.3 User Management**

* Admins should be able to manage client accounts and monitor user activity.
* Admins can add/remove/edit client accounts and access logs/reports of user activity.

**3.2.4 Analytics and Reporting**

* Admins should be able to generate reports on sales, popular products, etc.
* Detailed reports are generated covering sales trends, popular products, and user behavior.

**4. External Interface Specification**

**4.1 User Interface**

* The user interface should be responsive and intuitive for both clients and administrators.
* Responsive design ensures optimal viewing experience across devices.
* Intuitive navigation provides easy access to functionalities.

**4.2 Communication Protocols**

* Secure data transmission using HTTPS protocol and RESTful API for client-server communication.
* HTTPS protocol ensures encrypted data transmission.

**4.3 Hardware Interfaces**

* Compatibility with common web browsers and mobile-friendly interface.
* Compatible with popular web browsers and optimized for mobile devices.
* Responsive design and device detection ensure a consistent user experience.

**5. Technical Specification**

**5.1 Performance Constraints**

* Page load time is less than 3 seconds and support for at least 1000 concurrent users.
* Optimize page load time through image optimization, CDN utilization, and script minimization.
* Employ load balancing and efficient server-side caching for robust concurrent user handling.

**5.2 Memory/OS/Hardware**

**5.2.1 Minimum Server Requirements:**

* 8GB RAM, Quad-Core Processor: Ensure the server has enough power to handle multiple tasks at once, like handling user requests and managing the database.

**5.2.2 Compatibility with Linux-Based Hosting:**

* Use Linux-based systems (like Ubuntu or CentOS) for stability and security. They work well with popular web servers like Apache or Nginx, making integration smoother.

**5.2.3 Database Optimization:**

* Efficiently use memory to keep the database running smoothly, especially with large amounts of data.

**5.2.4 Considerations for Devices:**

* Make sure the website looks good and works well on both phones and laptops by using responsive design techniques.
* Optimize code and minimize large files to ensure fast loading times, regardless of the device.