**Virtual Market E-commerce system (VME-SYS)**

**Software Engineering Project**



**Palestine Technical College**

**B.Sc. (H) Computer Science**

**Submitted By:-**

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**PROCESS MODEL**

**Virtual Market E-commerce system follows Incremental model:**

**“**Agile methodology can be an effective approach for developing e-commerce systems ”.

Some key principles and practices for used this model:

* **Prioritize customer needs:** In an e-commerce system, customer satisfaction is key to success. Therefore, it is essential to prioritize customer needs and preferences in the development process.
* **Iterative and incremental development:** This approach allows for frequent testing and feedback, which can help identify and address issues early in the development process.
* **Continuous integration and delivery:** (CI/CD) is a practice that involves frequent integration and testing of code changes. This approach can help ensure that the system is stable and functional throughout the development process.
* **Adaptability:** This can be particularly important in e-commerce systems, where the market and customer needs can change rapidly. By adopting an Agile approach, the development team can respond quickly to changing requirements and market conditions.

**Timeline Gantt Chart for system development processes and activities .**

**Software Requirement Specification (SRS) for VME-SYS.**

**1. Introduction**

**1.1 Purpose:**

The purpose of an e-commerce system is to facilitate the buying and selling of goods and services over the internet. It involves the use of electronic platforms and technologies to enable online transactions between businesses, consumers, or a combination of both. some key purposes of an e-commerce system:

* Online Sales.
* Convenience.
* Cost Efficiency.
* Customer Analytics.
* Inventory Management.
* Customer Relationship Management (CRM).
* Scalability.
* Competitive Advantage.

**1.2 Scope:**

We describe what features are in the scope of the software and what are not in

the scope of the software to be developed.

*In Scope:*

1. Product Catalog Management: The system includes features to manage and display product catalogs, including product details, descriptions, pricing, and availability.
2. Shopping Cart and Checkout: It provides functionalities for customers to add products to a shopping cart, review their selections, and proceed to the checkout process, including payment and order confirmation.
3. User Registration and Account Management.
4. Payment Gateway Integration.
5. Order Management: The system includes features to manage and track orders, including order status updates, shipment tracking, and customer communication.

*Out of Scope:*

1. Infrastructure and hosting: The e-commerce system typically assumes that the necessary infrastructure, including servers, networking, and hosting services, is already in place.
2. Payment gateways: Payment gateways are often third-party services provided by specialized companies.
3. Shipping and logistics: The e-commerce system may interface with these services but does not directly manage them.
4. Tax calculation and compliance.
5. Marketing and advertising.

**1.3 Definitions, Acronyms, and Abbreviations:**

*Acronyms and Abbreviations:*

1. VME-SYS: Virtual Market E-commerce system .
2. SRS: Software Requirements Specification.
3. API: Application Programming Interface
4. CMS: Content Management System
5. CRM: Customer Relationship Management
6. PIM: Product Information Management
7. CMS: Customer Management System
8. UX: User Experience
9. UI: User Interface

*Definitions:*

1. E-commerce: E-commerce, short for electronic commerce, refers to the buying and selling of goods or services over the internet.
2. E-commerce System: An e-commerce system is a software application or platform that facilitates the complete process of conducting online transactions.
3. Shopping Cart: A shopping cart is a virtual basket or container within an e-commerce system where customers can add products they wish to purchase.
4. Payment Gateway: A payment gateway is a service that securely processes online payments and facilitates the transfer of funds between the customer, the merchant, and the financial institution.
5. Mobile Commerce (m-commerce): Mobile commerce refers to the buying and selling of goods or services using mobile devices, such as smartphones or tablets.
6. Customer Relationship Management (CRM): CRM refers to strategies, practices, and technologies used to manage and nurture customer relationships.

**1.4 References:**

**1.5 Overview:**

A Virtual Market E-commerce system refers to an online platform or software that enables the buying and selling of products or services over the internet. It involves various components and functionalities that facilitate the entire process of online transactions, from product browsing and selection to payment processing and order fulfillment. Product catalog displays a list of available products or services with relevant information such as descriptions, prices, and images, Shopping cart enables users to add products, view the selected items, and proceed to checkout. User account provides registration, login, and profile management functionalities for users. Secure payment gateways integrates with payment service providers to facilitate secure online transactions, supporting various payment methods (credit cards, digital wallets, etc.).User authentication and authorization ensures secure access to the system and assigns appropriate user roles and permissions. User profiles allows users to manage their personal information, shipping addresses, and order history. Wish list and favorites enables users to save products for future reference or quick purchase. Customer feedback allows customers to leave reviews, ratings, and comments on products and services.

**2. Overall Description**

**2.1 Product Perspective:**

This website VME-SYS is an E-commerce website that contains a virtual market place for all buyers and sellers in Gaza Strip. The purpose of this software requirement specification is for VME-SYS to provide a clear, documented model of the requirements for the online shopping system, serves to provide top level use cases for a web customer making purchases online. it is implemented as an internet based enterprise and has a vast inventory of products from books, house ware, electronics, groceries and much more.

**2.2 Product Functions:**

**2.3 Uses Case diagram**

**2.4 use cases descriptions**

**2.5 General system constraints**.

* System must be able to process orders quickly and accurately, handle multiple users simultaneously, and provide a responsive user interface.
* System must be able to scale to accommodate increased traffic and transactions.
* System must be secure in order to protect sensitive customer data.
* System must be available to customers at all times.
* System must comply with legal and regulatory requirements, such as data protection laws, privacy regulations, and payment card industry (PCI) standards.
* System must be easy to use and navigate for customers, with intuitive interfaces and clear navigation.
* System must be able to integrate with other systems and platforms, such as payment gateways, shipping providers, and marketing platforms.
* System must be easy to maintain and update, with tools and processes in place to monitor and resolve issues quickly.

**2.6 Hardware requirements.**

* Servers: E-commerce systems typically require one or more servers to host the website, application, and databases.
* Storage: The storage requirements will depend on the size of the product catalog and the expected growth of the system.
* Networking: A robust and reliable network infrastructure is essential for an e-commerce system to handle incoming and outgoing traffic.
* Backup and Redundancy: Implementing backup and redundancy systems is crucial to ensure business continuity and data protection.
* Load Balancing: Load balancers, either hardware-based or software-based, help optimize performance and ensure that the system can handle increased traffic without compromising user experience.
* Monitoring and Analytics: To effectively monitor system performance, track user behavior, and gather analytics data.

**2.7 Assumptions and dependencies**

* **Internet Connectivity:** The system relies on users being able to access the website or application to browse products, make purchases, and complete transactions.
* **Technology Infrastructure**: This includes servers, databases, network infrastructure, and other hardware and software components necessary for the system to operate.
* **Security Measures:** assumes the implementation of security measures to protect user data, such as encryption protocols, and secure payment gateways.
* **Product Inventory and Availability:** assumes that the system is integrated with inventory management systems to ensure that product availability is accurately reflected, and that out-of-stock items or discontinued products are properly indicated to users.
* **Payment Processing:** depends on the availability and proper functioning of payment processing systems and gateways. It assumes that users will have valid payment methods and that financial transactions will be processed securely and efficiently.
* **Third-Party Integration:** depend on integration with third-party services, such as shipping providers, analytics platforms, or marketing tools.
* **Customer Support:** assumes the availability of customer support channels to handle inquiries, complaints, and requests for assistance from users.

**UI Interfaces**

**Non-functional Requirements:**

1. **Performance Requirement**

The system should be a web-based application accessible from any device with a web browser. It should be capable of functioning on a single computer or multiple devices connected over a local area network (LAN) or the internet**.**

* **Accuracy and Validity**

All calculations and data processing in the VME-SYS must be accurate and valid. This is particularly important for maintaining the integrity of product information and financial transactions.

* **Response Time**

The system should have fast response times for user interactions and operations. The maximum response time for tasks such as login, product search, and order processing should be within 2 seconds to provide a seamless user experience.

* **Availability**

The VME-SYS should be available and accessible to users and administrators 24/7.

* **Failure Contingency**

The system should have robust backup tools and mechanisms in place to handle unexpected failures and interruptions.

1. **Security Requirement**

* **User Authentication and Authorization**

It should verify the identity of users during login and enforce access controls based on user roles and permissions. This ensures that only authorized users can access and perform specific actions within the system.

* **Data Privacy**

The VME-SYS should adhere to data privacy regulations and protect user data. It should employ encryption techniques to secure sensitive information, such as passwords and payment details, during storage and transmission. The system should also have mechanisms in place to prevent unauthorized access to user data.

1. **Usability Requirement**

* **User-Friendly Interface**

The system should have a user-friendly interface that is intuitive and easy to navigate. It should provide clear instructions and error messages to guide users through various tasks. The interface design should consider usability best practices to enhance the user experience and minimize user errors.

* **Mobile Responsiveness**

The VME-SYS should be responsive and adaptable to different screen sizes and devices, including mobile phones and tablets**.**

1. **Reliability Requirement**

* **System Availability**

The VME-SYS should have a high level of reliability and be available for users at all times. It should have measures in place to minimize downtime, such as regular system maintenance, monitoring, and proactive issue resolution.

* **Error Handling**

The system should have effective error handling mechanisms to gracefully handle unexpected errors or exceptions. It should provide informative error messages to users, assist in troubleshooting, and log error details for system administrators to analyze and resolve issues promptly**.**

1. **Scalability Requirement**

The VME-SYS should be designed to handle increased user load and accommodate future growth. It should be scalable both horizontally and vertically, allowing for the addition of more servers or resources as the system demands. This ensures that the system can handle a growing number of users, products, and transactions without compromising performance.