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**DEPARTMENT OF COMPUTER ENGINEERING (FET)**

**CEF 440: INTERNET PROGRAMMING (J2EE) AND MOBILE PROGRAMMING**

**SYSTEM REQUIREMENT SPECIFICATION DOCUMENT FOR A MARKET MANAGEMENT SYSTEM**

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3. **Introduction**
   1. **Problem Description**

In Cameroon, we have market sellers who have goods available at very cheap prices but with not enough exposure hence making it difficult to raise income. Secondly, we have buyers who are willing to buy goods but don’t know the exact location where these goods are being sold and so waste time and energy but still end up if successful buying goods at higher prices whereas these goods are sold at lower prices somewhere else in the market.

This system therefore aims in providing enough exposure for buyers to help them increase revenue and also helps sellers get the best available goods at good prices and with minimal waste of time. After all, time is money.

This system will be realistically efficient as possible in terms of informing the buyer on the exact amount of goods present in the possession of a particular seller. Taking into consideration the nature of our local markets, this system allows the seller to indicate the quantity of goods available in three stages:

* **Full Stock:** This can be at the start of the day when she states the number of goods available for sale that day.
* **Half-Available:** By noon for example when half of these goods have been sold
* **Finished:** When all the goods that were available at the start of the day have been sold.

All the information gotten and displayed in this document was a result of serious brainstorming between group members, alongside a few interviews of some market sellers at the Muea market in Buea.

* 1. **Purpose**

The purpose of this document is to capture the description and requirements (functional and non-functional) of a market management system. The focus here is on making the exchange of goods and services between buyers and sellers much more efficient. All requirements are accompanied by short discussions to add their background. Lastly, it also describes other factors necessary to provide a complete and comprehensive description of the requirements of the software.

* 1. **Scope**

This software system will be an online marketing portal aimed at satisfying the needs of buyers and sellers by helping them manage their time and trade efficiently. The system shall provide features to the user of this system like the ability to display products alongside their prices and location(seller), reviewing of prices, and locate where particular goods are sold(buyer).

* 1. **Definitions, Acronyms, and Abbreviations**
     1. **Marketing Portal**

A marketing portal is an online software meant to help facilitate electronic market(trading) management and provide for electronic display and review of various goods, their prices, and locations.

* + 1. **Buyer**

A person who makes a purchase

* + 1. **Seller**

A person who exchanges her goods and services for a form of payment like money.

* 1. **References**
* exemSRS PDF document
* Google
  1. **Overview**

This is a working document and, as such, is subject to change. In its initial form, it is incomplete by definition and will need continuing refinement. Requirements may be modified and additional requirements may be added as the development progresses and the system description becomes more refined. This information will serve as a framework for the current definition and future evolution of the market management system.

1. **Overall Description**

**2.1** **Product Perspective**

This system is meant to serve as a platform where the display and review of goods alongside their prices and locations can be carried out conveniently. Our goal is to develop a computerized system to aid in managing the buyer and seller activities and so increasing the overall efficiency of the Market.

**2.2** **System Interface**

System Interface means an electronic exchange of data between two or more systems to allow an efficient flow of information.

The users will interact with the system via an interface produced using React Native, the operations will be performed by use of Django, and data in the system will be stored using an MYSQL Relational Database

**2.3 User interface**

This system shall provide a very intuitive and simple interface to the buyers and sellers so that the buyers can efficiently review goods and be aware of their availability, prices, and location before visiting the market. The sellers will also easily display their products and locations hence attracting the right customers to their shades.

**2.4 Hardware Interface**

**a) Server side**

The application will be hosted on a web server that is listening on the web standard port, receiving queries and processing them, and returning the appropriate response to the app.

**b) Client side**

Mobile screen – the software shall display information to the user via their Mobile Screen. The software shall interact with the screen of the user and shall activate areas for data input, command buttons, select options from menus, and update the database.

**2.5 Software Interface**

**a) Server side**

A MYSQL web server will accept all requests from the client and forward it accordingly. A database will be hosted centrally using MySQL.

**b) Client side**

An OS that is capable of running a modern app that supports react native.

**2.6 Communication Interfaces**

* A dashboard that allows users to monitor and control various aspects of the market, such as inventory, orders, customers, suppliers, …
* A notification interface that provides users with real-time notifications and alerts on market events
* A messaging interface that enables users to interact with the market vendors

**2.7 Tools Used**

1. **React Native**: It will be used to build the frontend because of the following reasons below:

* Supports IOS and Android users which covers all our targeted users
* Write once and use everywhere (code written can be used on any platform to build applications)
* Uses Javascript which has widespread usage and is also very popular
* Easy to use if you know javascript.
* Live reload (modify code and see modifications simultaneously)
* Strong community support
* Compatible plugins third-party packages
* Cost-efficient testing (provides few unit testing functionalities via Javascript frameworks and other third-party testing tools).
* It relies heavily on third-party applications and plugins

1. **Django:** This will be used to build the backend because:

* It leverages the capabilities of python
* It is versatile and scalable
* It has a large community
* It is flexible
* It enables fast development
* It is very secure

1. **MYSQL** Relational Database for the database
2. **StarUML** for drawing the various UML diagrams

**2.8 Memory Constraints**

Memory constraints are the limits on the amount of memory that software can use to run efficiently and reliably.

* The size and complexity of the data that the software needs to store and process.
* The performance and scalability requirements of the software.
* The hardware and operating system specifications of the devices that run the software.

**2.9 Site Adaptation Requirements**

Some common requirements for adapting a product to a new market include understanding cultural factors, customer preferences, purchasing power, tax laws, restrictions, quality standards, and safety standards.

Additionally, it is important to consider the product functions, user characteristics, constraints, assumptions and dependencies, specific requirements, external interface requirements, functional requirements, performance requirements, and logical database requirements.

1. **SPECIFIC REQUIREMENTS**

This subsection will be detailing out what exactly will be the functional and non-functional requirements of a mobile app that manages a market system

* 1. **FUNCTIONAL REQUIREMENTS**
     1. **What is a functional requirement?**

It is defined as any **explicit** Requirement Which Specifies **What the System Should Do.** In other words, a functional requirement will describe a particular behavior of function of the system when certain conditions are met, for example: “Send email when a new customer signs up” or “Open a new account”. Here are the three stages that a functional requirement goes through when performing an action



* **Input:** This refers to any form of signal that makes the system behave in a particular way. For example, if a website allows a user to click on a link that takes them to another webpage, the act of clicking the link is the input.
* **System behavior:** This is a response to the input, and it defines how a functional requirement behaves. For example, a system behavior may include if software shuts down when detecting a potential security threat.
* **Output:** This is how the behavior effects software. For example, if the system behavior involves expanding more storage space, then the output includes more file space for users to save their data.
  + 1. **System Functional Requirements**

The functional requirements for such an app having different sellers and buyers at different locations with smooth and efficient operations are listed below

* **Create Account:** Sellers and buyers can create accounts so that each users’ information can be easily managed and linked to them in the database. This also ensures security as they need to be authenticated before they log into these accounts.
* **View and Update Profiles:** Sellers can view and update their profiles like the goods available for sell, prices and location. Buyers are also allowed to view this display.
* **Product Catalog:**

The app shall have a product catalog that displays the available products in the market uploaded by sellers, allows buyers to go through the different products and their price lists, display detailed information about a selected product and provide browsing and searching options to see product details

* **Search facility:**

The app shall provide the ability for a buyer to make searches based on their location, search for vendors with lower or moderate prices, search for a particular product

* **Notification system:**

The app shall be able to notify the buyers of the newly added products in the market, the price increase or drop in products

* **Customer support:**

The app shall provide help to buyers and sellers, choose the support type they want, display FAQs upon request, provide a customer support contact number to call for urgent supports

* **Tax Calculations:**

The app shall be able to provide subscription plans for sellers be it weekly or monthly before they can broadcast their products

* **Rating system:**

The app will provide a rating mechanism for users to rate the sellers

* **A messaging system:**

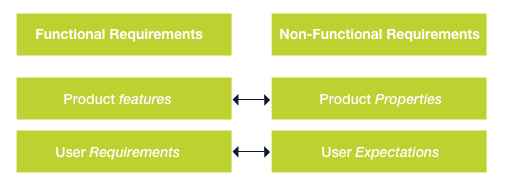
The app will be able to allow buyers make negotiations with the sellers before they move to the market to purchase whatever product they want. This negotiation will be done through a one-on-one chat system in the app

* 1. **NON-FUNCTIONAL REQUIREMENTS**
     1. **What is a nonfunctional requirement?**

It is defined as any **implicit** (what everyone expects and won’t need writing down) requirementthat Specifies **How** **the System Performs A Certain Function**. In other words, a non-functional requirement will describe how a system should behave and what limits there are on its functionality.

Non-functional requirements focus on user **expectations,** as they are product properties**.**

For example, a system loads a webpage when someone clicks on a button. The related non-functional requirement specifies how fast the webpage must load. A delay in loading will create a negative user experience and poor quality of the system even though the functional requirement is fully met.



* + 1. **System Non-Functional Requirements**

The functional requirements can be seen below

* **Usability:**

The app shall have a user-friendly graphical user interface (GUI) to allow sellers and buyers freely browse through

* **Performance:**

The app shall load quickly so as to respond to user actions promptly thereby preventing frustration on the app

* **Security:**

The app shall be secured enough to protect user data and prevent fraud

* **Scalability:**

The app shall be able to handle a large number of users especially when the price level of goods decreases.

* **Compatibility:**

The app shall be designed such that it is compatible with the different operating systems, be it Android or iOS and as well as responsive

* **Accessibility:**

The app shall be friendly for easy access

* **Reliability:**

The app shall be reliable and free from errors to prevent disruptions in service

* **Availability:**

The app shall be available to users both buyers and sellers 24/7 so as to easily access the app without difficulties

* **Manageability:**

The app will be designed such that it can be easily monitored by the administrators

1. **Supporting Information**

**4.1 Parties Involved and Their Benefits**

***4.1.1 Buyers:***

* **Convenience:** Buyers can easily search for and compare products from multiple sellers, without the need to physically visit different shops or markets.
* **Transparency:** Buyers have access to detailed information about product availability, prices, and location, allowing them to make informed purchasing decisions.
* **Cost savings:** With easy price comparisons, buyers can find the best deals and save money on their purchases.

***4.1.2 Sellers:***

* **Increased visibility:** Sellers can reach a wider audience through the marketplace app, increasing their chances of attracting potential customers.
* **Reduced costs:** As a virtual marketplace, some sellers can avoid the costs associated with maintaining a physical store, such as rent and utilities.
* **Improved customer targeting:** With detailed information about buyer preferences and behavior, sellers can tailor their product offerings and marketing strategies to better target their ideal customers.

**4.1.3** **Admin:**

* **Manage the System:** System admins are responsible for managing, troubleshooting, and updating hardware and software assets, minimizing downtime and ensuring overall maintainability of the system.

Overall, a marketplace app offers numerous benefits to both buyers and sellers, making it a valuable tool for the e-commerce industry.

**4.2 Glossary**

***Software:*** A program or set of programs designed to perform specific tasks on a computer system.

***Customers:*** Individuals who purchase goods or services from sellers.

***Sellers****:* Individuals or entities who offer goods or services for sale.

***Review****:* To examine or assess something in detail and provide feedback or opinions on its quality, value, or performance.

***Prices****:* The amount of money required or offered for a particular good or service.

***Availability****:* The state of being accessible, obtainable, or ready for use.

***Location:*** A specific place or position.

***Products:*** Goods or services that are offered for sale.

***Attraction:*** The ability to draw or pull something towards oneself.

***Shades:*** An area set up for a seller to display and sell their products.

***Market:*** A place where buyers and sellers come together to exchange goods or services.

**4.2 Use Cases:**

**Use Case 1: Create an Account**

Sellers and buyers can create accounts so that each user’s information can be easily managed and linked to them in the database. This also ensures security as they need to be authenticated before they log into these accounts.

**Use Case 2: Login**

All users with accounts can always login to use the system.

**Use Case 3: Forgot Password**

This use case helps users generate a new password after email authentication if the previous password has been forgotten.

**Use Case 4: Rate System**

Buyers are allowed to rate a particular seller who they ordered goods from.

**Use Case 5: Subscribe**

Sellers are allowed to subscribe weekly or monthly so they can display their products.

**Use Case 6: Messaging**

This system allows further communication between buyers and sellers using the messaging functionality

**Use Case 7: Customer Support**

This enables both sellers and buyers to get extra help concerning any default happenings in the system when need be.

**Use Case 8: Receive Market Update**

Both buyers and sellers receive notifications on updates like new products, market price changes and overall happenings concerned with the market.

**Use Case 9: View Product List**

Description: Customers can view a list of products and their prices in the market.

**Use Case 10: Search Products**

Description: Customers can search for specific products in the market and view their prices and availability.

**Use Case 11: View Seller List**

Description: Customers can view a list of sellers and their locations in the market.

**Use Case 12: Search Sellers**

Description: Customers can search for specific sellers in the market and view their products and prices.

**Use Case 13: View Product Details**

Description: Customers can view the details of a specific product, including its description, features, and specifications.

**Use Case 14: View Seller Details**

Description: Customers can view the details of a specific seller, including their contact information, ratings, and reviews.

**Use Case 15: Add Product**

Description: Sellers can add their products to our app, including their name, description, price, and location.

**Use Case 16: Edit Product**

Description: Sellers can edit their product details, including their name, description, price, and location.

**Use Case 17: Remove Product**

Description: Sellers can remove their products from our app.

**Use Case 18: View Sales History**

Description: Sellers can view their sales history, including the number of products sold, revenue generated, and customer feedback.

**Use Case 19: Manage Inventory**

Description: Sellers can manage their inventory and update the availability of their products in real time.

**Use Case 20: Promote Products**

Description: Sellers can promote their products through our app, such as by offering discounts or running promotions to attract more customers.

**Use Case 21: Manage Orders**

Description: Sellers can manage their orders and update the order status and delivery time.

**Use Case 22: View Customer Feedback**

Description: Sellers can view customer feedback and ratings on their products and services.

* 1. **System Models**

Our app is both customer and seller-centric, that is, it is an app that connects buyers and sellers and facilitates transactions between them.

Here's a basic outline of our apps model:

* **User Registration:** Both buyers and sellers can create an account on the app. Sellers need to provide details about their products, such as name, description, price, and location, while buyers provide basic information like name and contact details.
* **Product Listing:**Sellers can create product listings with all relevant information like name, description, price, and location, along with any images or videos they wish to upload.
* **Search and Filter:** Buyers can search for products based on keywords, categories, and location. They can also filter the results based on price, location, and other attributes.
* **Product Details:** Buyers can view detailed information about a product, including the name, description, price, location, and any images or videos uploaded by the seller.
* **Seller Ratings and Reviews:** Buyers can leave ratings and reviews for sellers based on their experience with the product and the seller's service. This can help other buyers make informed decisions when choosing a seller.
* **Transaction Management:** Our app provides tools for managing transactions, such as payment processing, order tracking, and dispute resolution.
* **Analytics and Insights:** Both buyers and sellers can access analytics and insights to track their performance on the app. Sellers can see how many views, clicks, and sales they have generated, while buyers can see their purchase history and recommendations.

Overall, our systems model would enable both buyers and sellers to have a seamless experience while using the app. Buyers can easily find the products they need at the right prices and locations, while sellers can attract the right customers to their shades and manage their transactions efficiently.

**4.4 Supplementary Requirements**

* **User accounts:** our app allows users to create accounts, where they can save their preferences, search history, and favorite products.
* **Search functionality:** our app provides search functionality that allows buyers to search for products by name, category, price range, location, and availability.
* **Product listings:** our app allows sellers to create product listings that include product names, descriptions, prices, locations, and availability.
* **Reviews and ratings:** our app allows users to leave reviews and ratings for products and sellers, which can help other buyers make informed decisions.
* **Notifications:** our app sends notifications to buyers when their desired item becomes available, or when a seller offers a discount or promotion.
* **Secure payment processing:** our app provides a secure payment processing system that allows buyers to pay for their purchases using a variety of payment methods.
* **Analytics and reporting:** our app provides analytics and reporting features that allow sellers to track their sales, monitor customer behavior, and identify trends in the market.

**4.5 Index**

* Software
* Customers
* Sellers
* Item prices
* Availability
* Location
* Market
* Buyers' awareness
* Desired items
* Attracting customers
* Shades
* Index generation.