CS330 Software Engineering

Retail Inventory Management System
Group 2
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Software Requirements Specification Document

Version: (2.0) **Date: (02/09/2018)**

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1. Introduction

1.1 Purpose

This document is to explain the requirements and features of the Retail Inventory Management System. The application will be used by an retail shop.

1.2 Scope

Retail Inventory Management System is a software that will give retail business a way to access and modify their records of sales and orders of products. This enables a business to easily manage their storefront through continuous inventory tracking, management of product orders, and the ability to add or remove inventory items over time. This application will differentiate levels of access to the system between employees and managers. The software will allow for categorization and sorting of products within the inventory so that specific items can be easily searched for. Items can also be associated with quantity thresholds, so that if the item's in-stock quantity falls below its threshold.

1.3 Definitions, Acronyms, and Abbreviations.

JDBC - Java Database Connectivity API provides database-independent connectivity between the Java programming language and a wide range of databases.
SQL - a language used in programming and designed for managing data held in a relational database management system.
MariaDB - community-developed relational database management system
Java - a general-purpose computer-programming language that is concurrent, class-based, and object-oriented.
DB - database.
DBA - database administrator.
GUI - graphical user interface
Quantity threshold - a number representing a set value that indicates when an item reaches low stock.
JRE - Java Runtime Environment
JavaFx - a software platform for creating and delivering desktop applications, as well as rich internet applications that can run across a wide variety of devices.
API - Application programming interface

1.4 References

No references.

1.5 Overview

The rest of this document will cover the overall description, the specific requirements, and an appendix for the app. For customers, the overall description will describe the overall use and purpose of the app. The specific requirements are intended for developers.

2. The Overall Description

2.1 Product Perspective

2.1.1 System Interfaces

The Retail Inventory Management application will not require any additional existing systems to run on any PC.

2.1.2 Interfaces

The user interface will be a graphical user interface that can be navigated with a mouse and keyboard. The GUI should be self-explanatory and navigable by a person with no training. Early iterations of the system will however use the console to emulate this GUI and then developed later.

2.1.3 Hardware Interfaces

The system has no hardware interface requirements.

2.1.4 Software Interfaces

10.2.12 MariaDB SQL. The system must use SQL Server as its database component. Communication with the DB is through JDBC connections. The system must provide SQL data table definitions to be provided to the company DBA for setup.

2.1.5 Communications Interfaces

This application will be used across several computers to create SQL queries to interact with the DB. This system is self contained and does not require any further communications to run.

2.1.6 Memory Constraints

There are two different modes of operations for this application: employee and manager. The manager mode gives full access to the system, including the power to manage and delete other accounts, while the employee mode has a limited access to the system.

2.1.8 Site Adaptation Requirements

New data tables created for this system must be installed on the company's existing DB server and populated prior to system activation.

2.2 Product Functions

This software will give retail businesses a way to access and modify their records of sales and orders of products. This enables a business to easily manage their storefront through continuous inventory tracking, management of product orders, and the ability to add or remove inventory items over time. The software will also allow for categorization and sorting of products within the inventory so that specific items can be easily searched for. Items can also be associated with quantity thresholds, so that if the item's in-stock quantity falls below its threshold, managers will see the item flagged for reorder. Quantity thresholds can be automatically calculated based on sale trends or manually set by a manager.

2.3 User Characteristics

Intended users are retail employees who are moderately comfortable with Graphical Users Interfaces, but may not have technical expertise or understanding of the Low level operations of the system.

2.4 Constraints

The application should make changes in the database, especially item quantities, in as close to real-time as possible. Many instances of the application may interact with a

single database simultaneously, and should be able to obtain up-to-date data from the database as soon as users request it.

2.5 Assumptions and Dependencies

This application relies on Java Runtime Environment for the application and SQL for the DB. We assume that these are available on our client's existing hardware.

2.6 Apportioning of Requirements.

The first iteration of the software will implement the back-end functionalities. This includes storage/modification of data, as well as computations regarding that data. This iteration will provide a emulation of the desire GUI through use of the console. Creating a full, detailed GUI and display of statics will be the focus of the second iteration.

3. Specific Requirements

3.1 External Interfaces

JDBC will be used to connect our software to the database.

3.2 Functions

3.2.1. User account system

3.2.1.1. Introduction/Purpose:

Upon launching the system, a sign-in page will be displayed, giving all users the option to sign in.

3.2.1.2. Associated functional requirements:

3.2.1.2.1. There are two types of accounts: *manager* and *employee*

3.2.1.2.2. The power to create or delete accounts will be accessible through manager accounts.

3.2.1.2.3. The account creation process will require the manager to designate username and password credentials for the account

3.2.1.2.4. Once the account is created, it can be accessed through the sign-in page using the account credentials

3.2.1.2.5. Manager accounts have full access and control over all accounts and system settings

3.2.1.2.6. Both *employee* accounts and *manager* accounts can view details regarding their own account

3.2.1.2.7. Only *manager* accounts will be able to view details about all *employee* accounts

3.2.1.2.8. Users will be able to update their account credentials

3.2.1.2.9. *Manager* accounts will have the ability to update the credentials of any *employee* account

3.2.1.2.10. All accounts can be logged out of after they have been logged in to

3.2.1.2.11. At all times the user will have the option to terminate the application

3.2.2. Inventory system

3.2.2.1. Introduction/Purpose: The inventory system will give a real time account of the items in-stock.

3.2.2.2. Associated functional requirements:

3.2.2.2.1. Managers and employees will be able to see a complete record of items sold by the store

3.2.2.2.2. Managers will be able to manually update the inventory e.g. items sold, quantity, price, etc

3.2.2.2.3. Employee will not be able to manually update the inventory e.g. items sold, quantity, price, etc

3.2.2.2.4. Managers and employees will be able to select specific items to find more details regarding the item

3.2.2.2.5. When an item is sold, the system will automatically decrease the quantity of items in-stock appropriately

3.2.2.2.6. The application's information on a specific item being viewed will automatically be refreshed each minute that the application is running

3.2.2.2.7. The user (employee or manager) will have the option to manually refresh the records in the inventory to see current data

3.2.2.2.8. The user will have the ability to start a cart, an accumulation of items that have not yet been purchased

3.2.2.2.9. The user will have the ability to add items to a cart

3.2.2.2.10. The user will be able to remove items from a cart

3.2.2.2.11. The user will have the ability to *check-out*, which purchases all items that are stored in the cart

3.2.2.2.12. The user will have the ability to clear all items from a cart

3.2.2.2.13. The user will have the option to sort the list of items in the inventory by name, type, quantity, price, or supplier

3.2.3. Data report

3.2.3.1. Introduction/Purpose: This feature allows manager accounts to view a data summary regarding the inventory

3.2.3.2. Associated functional requirements:

3.2.3.2.1. Manager accounts will have the option to display weekly, monthly, and yearly summaries about the inventory

3.2.3.2.2. A summary will report data regarding the inventory as a whole, as well as data on each item in the inventory

3.2.3.2.3. The summary regarding the entire inventory will display the ten highest selling items, as well as the ten lowest selling items within the specified time period

3.2.3.2.4. Individual summaries of each item will show how many of that item were sold in the specified time period

3.2.3.2.5. Individual summaries will also display the quantity threshold for that item

3.2.3.2.6. The threshold will be calculated for each item based on how quickly the item sells

3.2.3.2.7. If a stock quantity of an item is below the threshold, the item will be flagged for manager accounts, indicating that another order should be placed

3.2.3.2.8. A list of flagged items will also be displayed under the complete data summary

3.3 Performance Requirements

The system will be stable for all PC. The number of interaction between each device based on how many devices was registered under the same manager account. To the end the application should be able to handle:

- About 98% of the PC should support this application with appropriate environment.
- 90% of data transaction between system and DB should be less than 1 second.
- At least 50 devices can retrieve and update data through the DB at the same time.

3.4 Logical Database Requirements

The system will save user account information and retail inventory items into the DB.

3.5 Design Constraints

The main constraint of this system is that it will be made for PC, so it will only be available on PC.

3.5.1 Standards Compliance

There are no standards compliance constraints.

3.6 Software System Attributes

3.6.1 Reliability

The system should be reliable enough to use with basic functions without any bugs or errors.

3.6.2 Availability

The system should be able to run 24 hours a day. The application shall allow all users to restart and retrieve data if it has an error or crash.

3.6.3 Security

An account is required to use this system. Thus passwords will be used to keep accounts secure. Other security functions will be added in further development.

3.6.4 Maintainability

The development is separated into interface and background process, thus future function like monthly report can be easily add to manager's menu. The background process will be developed in a highly functional form as much as possible, which allows this application to be more extensible. Allowing more functions to be added by individual requirement.

3.6.5 Portability

The system will be designed for PC, and will not need to be ported to other operating systems. The application can be easily download and installed from GitHub.

3.7 Organizing the Specific Requirements

3.7.1 System Mode

3.7.1.1 The application has two modes of operations: the manager mode and the employee mode.

3.7.1.2 The manager mode will have more functionalities and as result the interface on this mode will be different than the interface on employe mode.

3.8 Additional Comments

No additional comments.

4. Change Management Process

Our team consists of only 5 people. We come to a consensus on what to change before changing it.