CSCE 361

Software Engineering

Software Requirements Specification Document

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01/25/2016	Initial document	1.0
2/8/2017	-aesthetics -wording -punctuation/grammar -consistency	1.1

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1. Introduction

1.1 Purpose

This document is intended to guide the development of Nventory, the stockroom management system. Additionally, it will provide the audience with all required functionality and specifications for the product. Furthermore, it will outline the needs of the stockroom employees to be implemented in following increments of the project.

1.2 Scope

Nventory is an inventory management tool specifically designed to streamline the day to day operations of the Biological Resources Stockroom at the University of Nebraska - Lincoln. The web application is responsible for providing a real time updating list and documentation of item checkout and restocking. Nventory does not handle the purchasing of items to restock the inventory, nor does it handle the budgeting for client users that purchase from the storeroom.

1.3 Definitions, Acronyms, and Abbreviations.

- Bootstrap - HTML, CSS, and JS framework for developing responsive, mobile first projects on the web
- SQL - Structure Query Language
- UML Diagram – Unified Modeling Language Diagram
- Cost Number - Number associated with some sort of funding entity used to assign charges for labs
- Lab User - clients of the software that work in labs and purchase from the Biological Resources Stockroom
- Admin/Administrative User - Clients of the software that work as employees of the Biological Resources Stockroom

1.4 References

No external sources are referenced in the document.

1.5 Overview

The rest of this document contains necessary systems and technologies that Nventory is comprised of and operates with. It also details the routine operations that Nventory must perform along with their specific requirements. Clients may refer to section two of this document to determine their compatibility with Nventory. Developers should refer to section three for guidance on the required functionality and performance specifications.

2. The Overall Description

The inventory management system is formally known as Nventory. The system serves as an interface for clients check items out from a given stockroom and document the transactions. It allows administrative users to restock and view useful information on items and purchases. Lab users, on the other hand, are only able to view the inventory and check out items. Instead of keeping track of inventory manually or on paper, these things can be carried out by Nventory in a much more efficient manner.

2.1 Product Perspective

Nventory is an independent inventory management system meant to operate within the Google Chrome web browser. The system is unique from other storeroom management systems in that the university requires specific information needed from each transaction. This information is captured by the application at the time of each checkout. The system currently in use for stockroom transactions includes recording everything in paper. Maintaining an updated inventory is currently done by manually checking the amount of each item. With Nventory, these systems would be greatly improved.

2.1.1 System Interfaces

Nventory only interfaces with a database that serves to populate inventory within the web application.

2.1.2 Interfaces

Users interface with Nventory through a browser. The browser loads the Nventory web application allowing the user to view the login portal. All the users have to do is put in the PIN that they are assigned and they will be brought to an admin or lab user landing page. The system uses very few clicks of buttons to accomplish the primary goals this ensures that system memorability is high.

2.1.3 Hardware Interfaces

This system has no hardware interface requirements.

2.1.4 Software Interfaces

Nventory shall interface with MySQL Standard Edition, an open source database tool, in order to store data for the application.

2.1.5 Communications Interfaces

~~Nventory does not require the use of any communications interfaces~~. The communication interface is HTTP.

2.1.6 Memory Constraints

This system has no memory constraints.

2.1.7 Operations

- Administrative Users
  - Monitor purchasing of items by labs
  - View and update inventory
  - Checkout items to labs
- Lab Users
  - View inventory
  - Update their Cost Numbers

2.1.8 Site Adaptation Requirements

Nventory can be accessed from any of the lab or stockroom computers with internet access. The database and code shall reside on the stock room computer which meets all the necessary hardware and software requirements.

2.2 Product Functions

- Login
    - Both admin and lab users log in with a four-digit PIN number
- Administrative User Functions
    - View a live inventory list with detailed item information
    - Edit/Add users
    - Checkout inventory to lab users
    - Edit Inventory
- Lab User Functions
    - View a live inventory list with basic item information
    - Add/Remove cost numbers

2.3 User Characteristics

Users will be either stockroom employees (admins) or researchers in a lab that get items from the stockroom (lab users). All users will have some sort of college education and knowledge of the context of the application. Admin users will most likely use the application several times a day. Lab users will use once or twice a week on average. The goal is to make the interface as straight-forward and easy to use as possible for any user.

2.4 Constraints

There are no known constraints for the system.

2.5 Assumptions and Dependencies

There is an assumption that all users can load the page on any browsers.

2.6 Apportioning of Requirements

Later iterations of the software may include a request function for lab users. This function would require a cart for users to fill with desired goods. Once they have finished their request, it is sent to the admin users to accept or decline the order. If accepted, the lab user should get some sort of confirmation and the inventory will be updated. The items in their cart would be delivered to them by stockroom employees. If declined, the lab user would get a notification saying why it was not fillable.

Another important feature to be implemented is the ability for an admin user to view statistics. Most importantly, the user shall be able to see a running total of the expenses for each cost number by month. These statistics would only be accessible from an administrative login.

3. Specific Requirements

3.1 External Interfaces

- MySQL is the external software of Nventory application. The purpose of it is to store information about users, items, purchases, and items available in stock. Some input validation is necessary in order to maintain the integrity of the database. The database stores information in four main tables:
  - User
    - User ID
    - Type (admin/lab)
    - Name
    - PIN
  - Items
    - Item ID
    - Name
    - Price
    - Description
    - Quantity
    - Vendor
  - Checkouts
    - Checkout ID
    - Date
    - Amount
    - Cost Number
  - Cost Numbers
    - Cost Number ID

- User ID
- Cost Number

3.2 Functions

1. Login Functionality
    1.1. Users login with a four-digit PIN
    1.2. There should be one unique PIN for each lab
    1.3. There should be one PIN for all admins
    1.4. Login should be the first thing a user sees when visiting the site
2. Inventory Display
    2.1. Every user, once logged in, should be brought to a landing page with a current list of the items in stock
        2.1.1. For users: Only item name, description, price, and quantity are shown
        2.1.2. For admins: All item information is visible
3. Checkout
    3.1. For admins, a checkout option should be available on the landing page
        3.1.1. Step One
            3.1.1.1. Admins are prompted to add inventory items to the checkout with respective quantities
        3.1.2. Step Two
            3.1.2.1. Lab user can enter PIN and select a cost number to charge the order to
            3.1.2.2. If the customer does not have a lab user account, there must be an option to just assign the checkout to a Cost Number and Finish
    3.2. There should be an option to cancel a checkout at any time
4. Settings
    4.1. The landing page should include an option for both admin and lab users to see settings
        4.1.1. For admins, settings should include the ability to:
            4.1.1.1. Add/Edit/Remove Users
            4.1.1.2. Add/Edit/Remove Items from Inventory
        4.1.2. For lab users, settings should only include the ability to:
            4.1.2.1. Add/Remove Cost Numbers

3.3 Performance Requirements

The program should support no more than approximately 20 users at a time. Users shall be able to view the program on multiple devices allowing them to check on inventory before coming to the stockroom. The system shall update the inventory every time users checkout or admins edit stock. This information consists of quantity and type of goods. Over 95% of transactions should be processed in one second to allow other users to see what is available.

3.4 Logical Database Requirements

The database shall be able to refresh quantities of materials. It shall also be able to update and remove items as they are no longer available. The database will constantly be updated throughout the period the stock room is open.

3.5 Design Constraints

There are no constraints for the application.

3.5.1 Standards Compliance

Every transaction from the UNL stockroom must be associated with a cost number. This cost number and purchase should be assigned to either a lab or person.

3.6 Software System Attributes

Login page should resemble something simple but still cutting edge. The Nventory logo shall be displayed creatively on every page.

3.6.1 Reliability

- The system must always maintain a correct record of items in-stock.
- Checkout shall only be possible through an admin user
- System should consistently log every checkout in the database along with the information pertaining to that transaction

3.6.2 Availability

The application should only be accessible to those with a UNL internet connection. Nventory must be available to alter its database at any time during the stockroom's operational hours. The system will run 24/7 to display current inventory levels to users wishing to check on items.

3.6.3 Security

Nventory will keep a specific log book of items checked in and out for verifiability. Nventory must validate all user PINs before allowing checkout to continue. Nventory must check that a valid cost number is selected before allowing users to complete a checkout.

3.6.4 Maintainability

The software will be modular. Three main portions of the site will be developed separately. SQL database, web interface, and backend code will be written so that each may be altered individually to accommodate future functions.

3.6.5 Portability

Software is web based and once hosted off of a server can be accessed on any UNL device. Software can be hosted on nearly any server compatible with the SQL database and our timing requirements.

4. Change Management Process

Changes can be made on a rolling basis as we receive feedback from customers on how the system can be optimized. New and updated versions of the application can be released when changes accumulate.

5. Document Approvals

No approvals necessary.