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| Csc 436 |
| Kitchen Manager |
| Software Requirement Specifications |
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| This Document contains the Software Requirement Specifications for the Kitchen Manager System. Included are detailed descriptions of some the system’s features and how they interact. Also included are some diagrams that depict how the system functions. All diagrams are constructed using the Object Oriented Analysis concept of Software Engineering |

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# Introduction

## Purpose

The purpose of this document is to describe the requirements for creating a Kitchen Manager system. This is to be used in the customer’s home to keep track of food inventory and assist in meal planning. The system will allow users a very easy way to manage what they eat and to further extend that into helping users adjust their diets with as little effort as possible. This document will have all required information for creating software for the entire system and required hardware needed and recommended.

## Document Conventions

The document will contain detailed descriptions of the functionality of the Kitchen Manager system. The structure of this document consists of chapters with relevant subsections and is written in the standard Times New Roman 12pt. font for ease of readability.

## Intended Audience and Reading Suggestions

This document is intended for the project manager, end users, testers, as well as, document writers and developers of the Kitchen Manager project. The document is meant to be read in the order in which it is presented, although it is not required. If it is not necessary for the document to be read in its entirety please refer to the table of contents.

## Project Scope

Kitchen Manager will be an in home system that will allow users to keep an inventory of their food items. It will allow users to keep track of what they are eating and will do the math on caloric intake and other nutrition information. This will help alleviate users of the tedious task of keeping track of what they eat themselves. Many people are discouraged from maintaining a proper diet because they simply do not want to have to keep track of these things themselves. Kitchen Manager will offer an easy solution for tracking that information.

The system will be a personal computer with a touch-screen LCD monitor, UPC barcode scanner and CPU that are completely integrated. It will also include internal databases and connections to external databases that store the users’ personal information, contain information about the food items such as price and nutritional information, and store information about the users’ daily nutritional intake. The system will allow the user to manage a running inventory of what foods they currently have in their kitchen. Options available to the user will be to scan in any food purchased in order to keep inventory. In the event the item doesn’t have a barcode the touch-screen keyboard will allow the user to manually enter the item into the system.

The system will have built-in Wi-Fi to allow it to connect to either a company branded Wi-Fi printer or any store-bought Wi-Fi printer connected to the user’s home network. The Wi-Fi will also allow the system to connect to the internet through the user’s router. Incorporation of downloadable nutrition information, recipes and meal plans will be enabled through a Wi-Fi connection. The printer will allow users to print off meal plans and/or recipes to assist with cooking,

The system will allow users to keep track of just what exactly they are eating and will do the math on calories and other nutrition facts to alleviate end users of the tedious task of keeping track of what they eat themselves. Many people are discouraged from maintaining a proper diet because they simply don’t want to have to keep track of these things themselves but if an easy solution for tracking that information was available many would be inclined to take advantage of it.

The inventory system on the unit coupled with the optional printer will allow users to print off grocery list before heading to the grocery store. When a user goes into the kitchen to eat they can use the system to subtract an estimated amount of what they ate. An example would be a box of animal crackers. The nutrition facts provide the serving information and the end-user uses the touch-screen device to enter how many servings they ate. The inventory system subtracts the servings from the known total and updates the information into a database. When the user prompts a list of low quantity foods, it is printed from the optional printer assisting them in knowing what foods they need to buy when shopping.

The system will allow various users to keep track of their own eating patterns and habits by having different user boxes for each person in the family. At the user’s request or user pre-programmed intervals, the meal information can be printed or uploaded to the internet where meal suggestions and other dietary assistance can be provided by professionals.

An option for a partnership with grocery store and retail chains presents the optional ability to have information directly added from the store itself. As an example, users could be provided with a membership card with a barcode that will allow the partner store to upload whatever purchases the end-user makes to servers and ultimately to the end-user’s system itself. The cashier would scan or swipe the card before processing the order and at the end of the order the items purchased would be uploaded then downloaded to that specific user’s system. This would further ease the user’s required work to use the system.

The ultimate goal of the system is to allow users a very easy way to manage what they eat and to further extend that into helping users adjust their diets with as little effort as possible. Various interfaces can be used to achieve this result. At the core of the system is the software itself which will be pre-installed to the Kitchen Manager PC.

# Overall Description

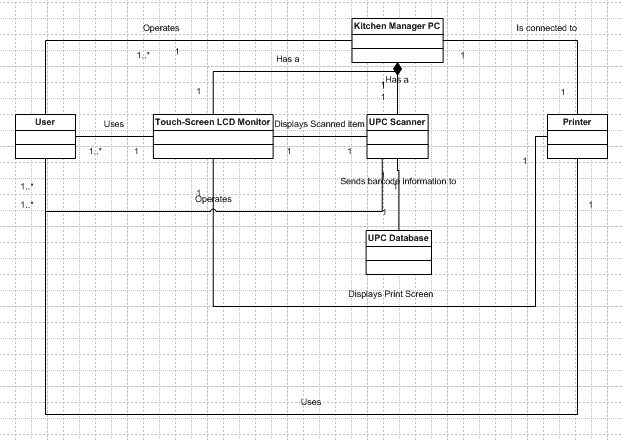
## Product Perspective

The Kitchen Manager system is a new self-contained product. It is composed of pre-existing hardware and software platforms that are programmed and setup to function as a next-generation grocery scanner.

## Product Features

The Kitchen will contain the following features:

* A LCD monitor with touch-input capability. All button clicks and scroll functions are implemented by the users’ touch. For alphabetical and/or numerical input the monitor includes an on-screen keyboard feature, accessed from the system’s menu.
* A built-in UPC scanner to scan the barcode of certain food items. The scanner sends the UPC barcode information to the UPC database, which will automatically provide information of the food item scanned.
* The Kitchen Manager will include option to connect to a printer wirelessly or by USB input. A printer provides the user with the option of printing shopping lists of any depleted or low-quantity food items, automatically uploaded to the on-screen shopping list by the food inventory database.



## User Classes and Characteristics

There are several user classes that make up the functionality of the Kitchen Manager System. These include:

|  |  |
| --- | --- |
| High-Level Importance | |
| Class | Stereotype |
| Kitchen Manager Personal Computer | Controller |
| Touch-Screen LCD Monitor | Interface |
| UPC Scanner | External Entity |
| UPC Database | Information Holder |
| Main Screen | Interface |
| User | Person |
| Current User Details Screen | Interface |
| User Management Screen | Interface |
| User List | Object |
| User Database | Information Holder |
| Recipe Screen | Interface |
| Recipe | Object |
| Ingredient | Object |
| Recipe Relevancy Search Engine | Occurrence |
| Add New Recipe Screen | Interface |
| Recipe List | Object |
| Food Item | Object |
| Food Item Details List | Object |
| Food Item Entry Screen | Interface |
| Non-existing Food Item Entry Screen | Interface |
| Food Inventory Screen | Interface |
| Food Inventory Database | Information Holder |
| Daily Log Database | Information Holder |
| In-Stock/Depleted Food Items List | Interface |
| Meal List | Object |
| Shopping list | Report |
| Low-level Importance | |
| Class | Stereotype |
| Printer | External Entity |
| Grocer Membership Card | External Entity |
| Grocer Databases | Information Holder |
| System Preferences Screen | Interface |
| Language Translator | Service Provider |
| Units of Measurement Converter | Service Provider |
| System Color Editor | Occurrence |

## Operating Environment

The system will operate on the Windows 7 platform using a 2.00 GHZ Intel Core 2 Duo processor. It includes the Acer T230H bmidh 23-Inch Wide Touch Screen monitor, the Symbol LS2208 Laser Barcode Scanner and a built-in 802.11 b/g/n wireless network adapter. The software application running on the system will be the Visual Studio 2010 Integrated Development Environment (IDE).

## Design and Implementation Constraints

The Kitchen Manager system is a work in progress. The final product submitted will be a functioning prototype at the end of a three month development period. With this information provided, there will be time constraints in which some functions cannot be implemented. This includes the system operating on other platforms such as Mac OS. Also, memory storage will be limited since the primary object being stored to memory is the databases’ information. As a U.S, based product, the only language option available is in English and it will use the metric system for ingredient measurements. The user must have an Internet Service Provider (ISP) and preferably a secure wireless LAN. The user is primarily responsible for maintaining delivered software.

## User Documentation

A hardcopy user manual will be provided along with the product as well as access to an online user manual. It will provide a step-by-step walkthrough of all user processes. A quick user guide will be provided as well for faster comprehension of the product.

## Assumptions and Dependencies

The user can obtain a grocer membership card from a participating grocery retailer. The customers’ personal Kitchen Manager System depends on the information of the items scanned at the grocer. This information is automatically uploaded to the customers’ system food inventory database. The information should be sent over a secure network and the customers’ identification should be kept private as well. The grocers should provide each customer with a “Terms of Service” agreement and a Privacy Policy, ensuring that their identification will not be sold to third-party vendors.

# System Features

## User Profile Setup

### Description and Priority

The user can setup a personal profile to keep track of daily nutritional intake, save favorite recipes and set a personal icon. The user information can be added or removed at any time.

Priority: Medium

### Stimulus/Response Sequences

Name: User Management – Add User

Actor: User

System: 0. User open Kitchen Manager

1. System display Main Screen
2. User select Current User Details
3. System display Current User Details Screen
4. User select User Management screen
5. System display User Management options
6. User select Add User option
7. System display Add User option
8. User enter user information
9. System save user information

Name: User Management – Remove User

Actor: User

System: 0. User open Kitchen Manager

1. System display Main Screen
2. User select Current User Details
3. System display Current User Details Screen
4. User select User Management screen
5. System display User Management options
6. User select Remove User option
7. System display Remove User option
8. User remove user information
9. System accept and remove user information

Name: Switch User

Actor: User

System: 0. User open Kitchen Manager

1. System display Main Screen
2. User log into user account
3. System display Current User Details Screen
4. User select Switch User option
5. System display Switch User option
6. User select from available users
7. System display User details

Name: Add Custom Recipe

Actor: User

System: 0. User open Kitchen Manager

1. System display Main Screen
2. User log into user account
3. System display Current User Details Screen
4. User select Add Custom Recipe option
5. System display Recipe Screen
6. User add custom recipe

### Functional Requirements

REQ-1: User must have a user name and password to access profile. If username and/or password is incorrect or does not exist, an error message is displayed.

## Add Food items to Food Inventory

### Description and Priority

The user uses the UPC barcode scanner to scan food items. If the item is found in the UPC database and the item is already in the Food Inventory database, the quantity of the item is updated. If the item is not in Food Inventory database, the item is simply added as a new item. If the item is neither in the UPC database and Food Inventory database, the user is prompt to enter the item manually.

Priority: High

### Stimulus/Response Sequences

Name: Existing Food Item Entry

Actor: User

System: 0. User open Kitchen Manager

1. System display Main Screen
2. User select Food Item Entry Screen
3. System display Food Item Entry Screen
4. User select Increase Quantity option
5. System display Increase Quantity option
6. User scans new food
7. System accept updated quantity

Name: Non-existing Food Item Entry

Actor: User

System: 0. User open Kitchen Manager

1. System display Main Screen
2. User select Food Item Entry Screen
3. System display Food Item Entry Screen
4. System display Increase Quantity option
5. User scans new food
6. System does not accept updated quantity
7. User select Add Not Recognized Item Screen
8. System display Add Not Recognized Item option
9. User enters food item manually
10. System accept updated quantity

### Functional Requirements

REQ-1: TBD

## User Sets Preferences

### Description and Priority

The user chooses preferences for their Kitchen Manager environment. They can choose language, unit of measurement, and system color preferences. One user cannot set preferences for every user that has a profile; therefore the user must be logged in to their personal profile in order to make changes.

Priority: Low

### Stimulus/Response Sequences

Name: System Preferences - Language

Actor: User

System: 0. User open Kitchen Manager

1. System display Main Screen
2. User log into user account
3. System display System Preferences
4. User select language option
5. System display available language options
6. User select from available languages
7. System change system language

Name: System Preferences – Units of Measure

Actor: User

System: 0. User open Kitchen Manager

1. System display Main Screen
2. User log into user account
3. System display System Preferences
4. User select Unit of Measure options
5. System display available Unit of Measure options
6. User select from available unit of Measure
7. System change units of measurement

Name: System Preferences – Background Change

Actor: User

System: 0. User open Kitchen Manager

1. System display Main Screen
2. User log into user account
3. System display System Preferences
4. User select Background Change options
5. System display available Background Change options
6. User select from available background options
7. System update background

### Functional Requirements

REQ-1: System preferences must be pre-installed to the system

# External Interface Requirements

## User Interfaces

When the Kitchen Manager system boots up the user is displayed the main screen. The screen contains a list of recently checked-out items, a view of the food inventory, a food item entry list, and an interchangeable list of items chosen for check-out and a list of items that need to be purchased. From the main screen the user can access the current user details screen, recipe screen and system preferences menu. From the current user details screen the user can access the user management screen. From the recipe screen the user can access the recipe database. All sub screens from the main screen are accessed via button click and are modal. This means that when a screen pops-up, no other action can be carried out until that screen is closed.

## Hardware Interfaces

With the touch-screen monitor, a user’s touch is read as a mouse click. In order to scroll, the user slides two fingers in a horizontal or vertical movement. Each time the UPC reads a food item it is read as a keystroke input.

## Software Interfaces

The Visual Studio 2010 IDE has access to databases through SQL express. Whenever a user executes a function that requires the use of one or more the system’s databases, that information is retrieved from memory and displayed on the appropriate screen.

## Communications Interfaces.

The wireless network adapter detects any available networks in range. The networks detected are displayed on the monitor for the users’ benefit. The grocery retailer and the Kitchen Manager system communicate through a network server.

# Other Nonfunctional Requirements

## Security Requirements

To ensure the best network communications experience, developers, users, and business chains must have a secure network. The Kitchen Manager System does not require pertinent information yet it is still beneficial for all parties involved to prevent security threats such as hacking and viruses.

# Appendix A: Analysis Models

## Use Case Diagram





## CRC Cards

Name: User

Knows:

Name

Does:

Interacts with main screen

Collaborates with:

Name: Current User Details Screen

Knows:

Current user

Does:

Add custom recipe

Store user weight

Switch user

Change Icon

Collaborates with:

Mail Screen

User Management Screen

Name: Add Customer Recipe

Knows:

User input

Does:

Store recipe

Collaborates with:

Recipe Relevancy Search Engine

Name: Weigh User

Knows:

Current user

Does:

Store user weight

Collaborates with:

Current User details Screen

Name: User Management

Knows:

User input

Does:

Add new user

Remove user

Collaborates with:

Main Screen

Name: Switch User

Knows:

Current user

Other users

Does:

Switches user

Collaborates with:

Current User Details Screen

Name: Change Icon

Knows:

Current user icon

Does:

Change icon

Collaborates with:

Current User Details Screen

(Icon Database)

Name: Food Item Entry Screen

Knows:

Current quantity

Does:

Increases quantity

Opens add not recognized screen

Collaborates with:

Main Screen

UPC Scanner

Food Inventory Database

Name: Add not Recognized Item Screen

Knows:

User input

Does:

Add new item

Collaborates with:

Main Screen

Food Item Entry Screen

Name: Browse Food Screen

Knows:

Items in inventory

Items in depleted

Does:

Shows in-stock items

Shows depleted items

Collaborates with:

Main Screen

Food Inventory Screen

Food Inventory Database

Name: In-Stock Inventory (list)

Knows:

Items in inventory

Does:

Shows in-stock items

Add food to meal

Find recipes

Quick add to meal

Sort inventory

Collaborates with:

Main Screen

Food Inventory Database

Recipe Relevancy Search Engine

(Cart)

(Shopping List)

(Depleted Inventory)

Name: Depleted Inventory (list)

Knows:

Items in depleted inventory

Does:

Shows depleted items

Add food to shopping list

Quick add shopping list

Sort inventory

Collaborates with:

Main Screen

Food Inventory Database

(Shopping List)

(Depleted Inventory)

Name: Sort Inventory

Knows:

Food inventory

Does:

Sort by calories

Sort by food group

Sort alphabetical

Collaborates with:

Food Inventory Database

In-Stock Inventory

Depleted Inventory

Name: Meal/Shopping List

Knows:

Item for meal

Items for shopping list

Does:

Per item decrement

Clear items from list

Remove items from inventory

Add items to shopping list

Collaborates with:

Food Inventory Database

Shopping List

Depleted Items

Name: Sort Recipes

Knows:

Food in cart

Selected meal – B, L, D

Does:

Sorts recipes based on B, L, D

Collaborates with:

Recipe database

Recipe Relevancy Search Engine

Name: System Preferences

Knows:

Current user preferences

Does:

Change language

Change units of measure

Change background

Collaborates with:

(Language Translator)

(Units of Measurement Converter)

(System Color Editor)