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CS162

Assignment 1

design documeNt

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# Overview

This design document will cover the basic use cases, classes and variables used in creating a list of variable length. Assignment 1 task to create a program which takes an items name, quantity, type of quantity and price and adds this to running list of items. The user can add items, display the entire list and delete items.

# Use Case Creating A List

### **UC-1: Creating a List**

Main Success Scenario

1. User enters program creating list (REQ-1-1)
2. User is displayed menu options to modify or view list (REQ-1-2)

| Related Requirements | Name | Description | Notes |
| --- | --- | --- | --- |
| **REQ-1-1** | List Class is Initialized | Creates a dynamic array of 4 Item Object |  |
| **REQ-1-2** | Displays Menu to User | Add Item, Delete Item, Display Shopping List |  |
|  |  |  |  |

# Use case Adding An Item

### **UC-2: Adding an Item**

Main Success Scenario

1. User selects a menu item to create new item (REQ-2-1)
2. User enters item name (REQ-2-2)
3. User enters type of units. (REQ-2-3)
4. User enters number of units to buy (REQ-2-4)
5. User enters price. (REQ-2-5)
6. User enters c to return to main menu. (REQ-2-6)

| Related Requirements | Name | Description | Notes |
| --- | --- | --- | --- |
| **REQ-2-1** | User selects to add new item. | Creates Item Object |  |
| **REQ-2-2** | Set Function for Item Name called | Function call validates input and allows spaces. Passes string to setItemName which stores the string in the variable itemName |  |
| **REQ-2-3** | Set Function for unit type is called | Function call validates input and allows spaces. Passes string to setUnit which stores the string in the variable unit. |  |
| **REQ-2-4** | Set Function for number to buy is called | Function call validates input and only allows numbers to be entered. Passes number to setUnit which stores the double in the variable numberToBuy. |  |
| **REQ-2-5** | Set Function for price is called. | Function call validates input and only allows numbers to be entered. Passes number to setPrice which stores the double in the variable Price. Price is masked to only allow input in a XXXX.XX format. |  |
| **REQ 2-6** | List Array size is checked. | Calls ListSize Check Function |  |
| **REQ 2-6a** | If list is full, list is doubled in size. | doubleList Function is called when array is full. |  |
| **REQ 2-7** | Item is added to List | addItem function is called in list. Adding item in the next available array spot. |  |
| **REQ 2-8** | User is returned to main menu | Add Item Display Item Delete Item |  |

# Use Case Displaying List

### **UC-3: Displaying the Item List**

Main Success Scenario

1. User selects a menu item to display list (REQ-3-1)
2. List is generated in console(REQ-3-2)
3. User enters c to return to main menu. (REQ-2-3)

| Related Requirements | Name | Description | Notes |
| --- | --- | --- | --- |
| **REQ-3-1** | User selects to menu item to display list | Calls displayList Function in class List. |  |
| **REQ-3-2a** | Display List Function | Outputs position in list, item name, number to buy, unit, and price and on exit Calls totalCost Function which outputs totalCost of list. Informs user to press c to return to main menu. |  |
| **REQ-3-2b** | totalCost Function | Multiplies the quantity by price adds to a running total. |  |
| **REQ-3-3** | User returns to main menu | Displays: Add Item Display Item Delete Item menu options |  |
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# Use Case Deleting ITem

### **UC-4: Delete Item**

Main Success Scenario

1. User selects a menu item to delete item(REQ-4-1)
2. List is generated in console(REQ-4-2)
3. User selects a number in list to delete item (REQ-4-3)
4. List is regenerated without item. (REQ-4-4)
5. User is asked if he want to delete another item (REQ-4-5)
6. User presses c to return to main menu. (REQ-4-6)

| Related Requirements | Name | Description | Notes |
| --- | --- | --- | --- |
| **REQ-4-1** | User selects to menu item to Delete Item | calls displayList Function in class List. |  |
| **REQ-4-2a** | Display List Function | Outputs position in list, item name, number to buy, unit, and price on exit Calls totalCost Function which outputs totalCost of list. Informs user to press q to return to main menu. See Appendix for Output. |  |
| **REQ-4-3** | Prompt User to Select Number of Item to Delete |  |  |
| **REQ-4-4** | Calls DeleteItem | If number on list exists then deletes that item in the array and returns true. If the number does not exist in array. Returns False |  |
| **Req-4-5** | User enters c to return to main menu |  |  |

Classes

### **Class-1: List**

| Function Names | Description | Variables Used | Parameters | Output |
| --- | --- | --- | --- | --- |
| **List Constructor** | Creates a dynamic array of Items of size 4 | Item[] itemList | Void | none |
| **addItem** | adds an Item to Item[] itemList | Item newItem; Item[] itemList | Item newItem | none |
| **checkList** | Checks itemList for items, if full calls doubleList |  | Void | none |
| **doubleList** | Doubles List Size  Creates copy of itemList and appends it to itemList | Item[] itemList | Void | Return point to newlist |
| **displayList** | Displays List in Console: Prints out |  |  |  |
| **totalCost** | Multiplies number to buy \* price and then adds to a toal |  | Void | Total Cost of Shopping Cart |
| **deleteItem** | Deletes Item from itemList, changes size of Array to adjust | Integer position, Item[] itemList | position | The Item has been Deleted |
| **Deconstructor** | Deletes itemList on exit |  |  |  |

### **Class-2: Item**

| Function Names | Description | Variables Used | Parameters | Output |
| --- | --- | --- | --- | --- |
| **Item Constructor** | Default Constructor Initializes Item Class |  |  |  |
| **setItemName** | Sets Item Name | String itemName | String from user input | none |
| **setUnit** | Sets Unit | String Unit | String from user input | none |
| **setNumberToBuy** | Sets numberToBuy | Double numberToBuy | double from user input | none |
| **setPrice** | Sets price | double price | Double from user input | none |
| **getItemName** | Gets Item Name | String itemName |  | String itemName |
| **getUnit** | Gets Unit | String Unit |  | String Unit |
| **getNumberToBuy** | Gets numberToBuy | Double numberToBuy |  | Double numberToBuy |
| **getPrice** | getsPrice | double price |  | double price |

### **Class-3: Main**

| Function Names | Description | Variables Used | Parameters | Output |
| --- | --- | --- | --- | --- |
| **displayMenu** | Displays system Menu Example 6-14 in Gaddis |  |  | A printout list of menu choices |
| **getChoice** | Allows user to enter menu item  Example 6-14 in Gaddis | Int choice | InputValid Object | choice |
| **continueOn** | Stops input until c is entered. |  | InputValid Object | “Printout to screen asking for c” |
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