

# C# Object-Oriented Exercise

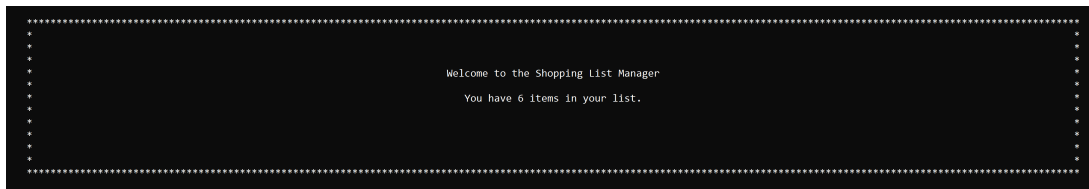
## Shopping List Manager

Write a console application that manages and displays a Shopping List.

Items in the Shopping List have the following attributes:

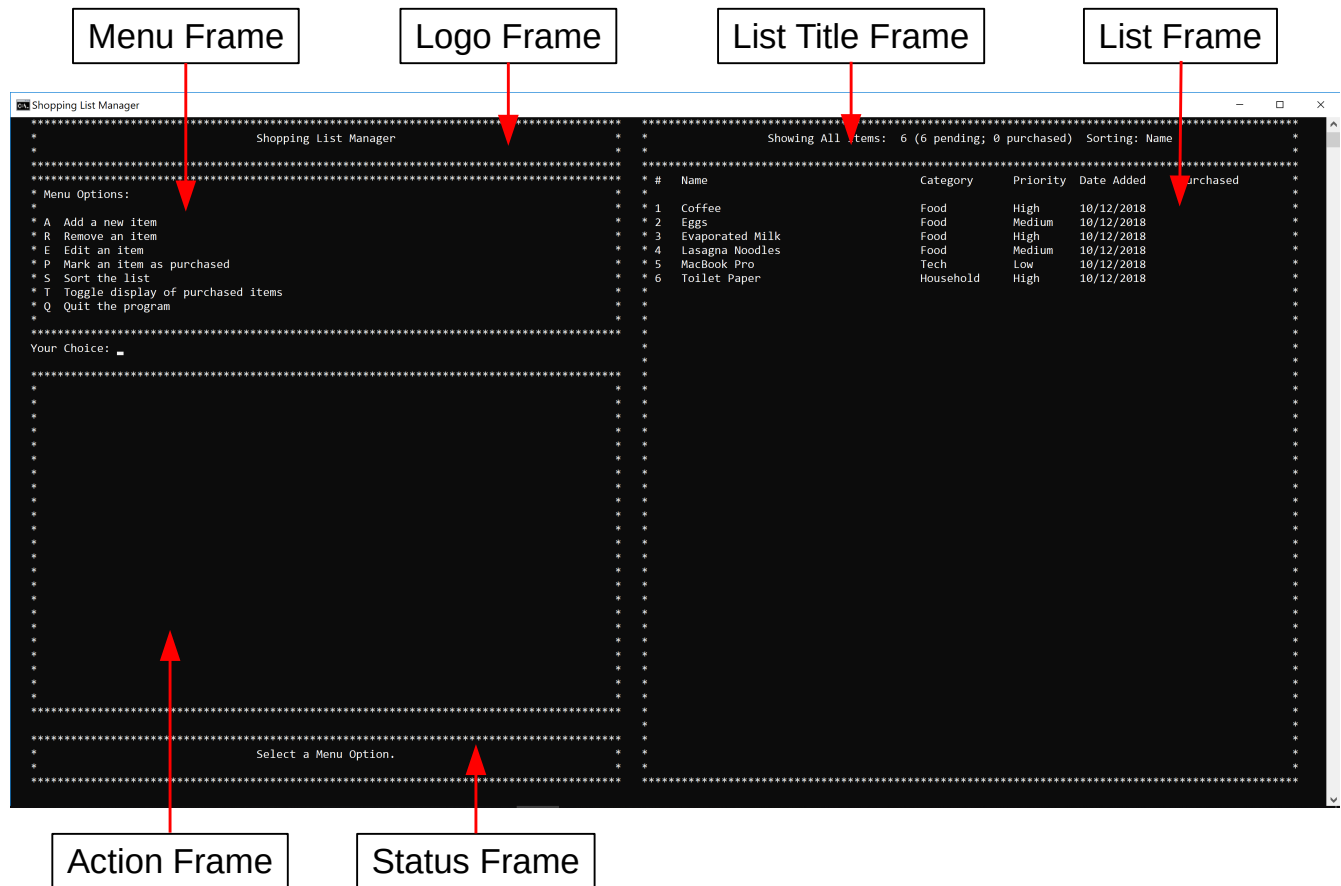
|               |  |
|---------------|--|
| Name          | Name of the item   |
| DateAdded     | Date/time at which the item was added.   |
| Priority      | High/Medium/Low  |
| Category      | Food, Clothing, etc.   |
| DatePurchased | Date on which the item was purchased. If the item has not been purchased, this will be null. |

1. When the application first starts, it displays a splash screen similar to the one shown below.



2. After 3 seconds, it the application displays the main screen.

# The Main Screen



The main screen consists of 6 parts:

Logo Frame: This simply displays the name of the application.

Menu Frame: This lists all available menu options.

Action Frame: When a menu option is activated, this is where the actions occur.

Status Frame: When actions are completed, status messages are displayed here.

List Title Frame: This provides a summary of items in the list.

List Frame: This is where the Shopping List is displayed.

# The Menu Frame

Main menu operations are:

- A     Add a new item
- R     Remove an item
- E     Edit an item
- P     Mark an item as purchased
- S     Sort the list
- T     Toggle the display of purchased items
- Q     Quit the program.

Menu selections are made just below the Menu Frame with prompt of “Your Choice: “.

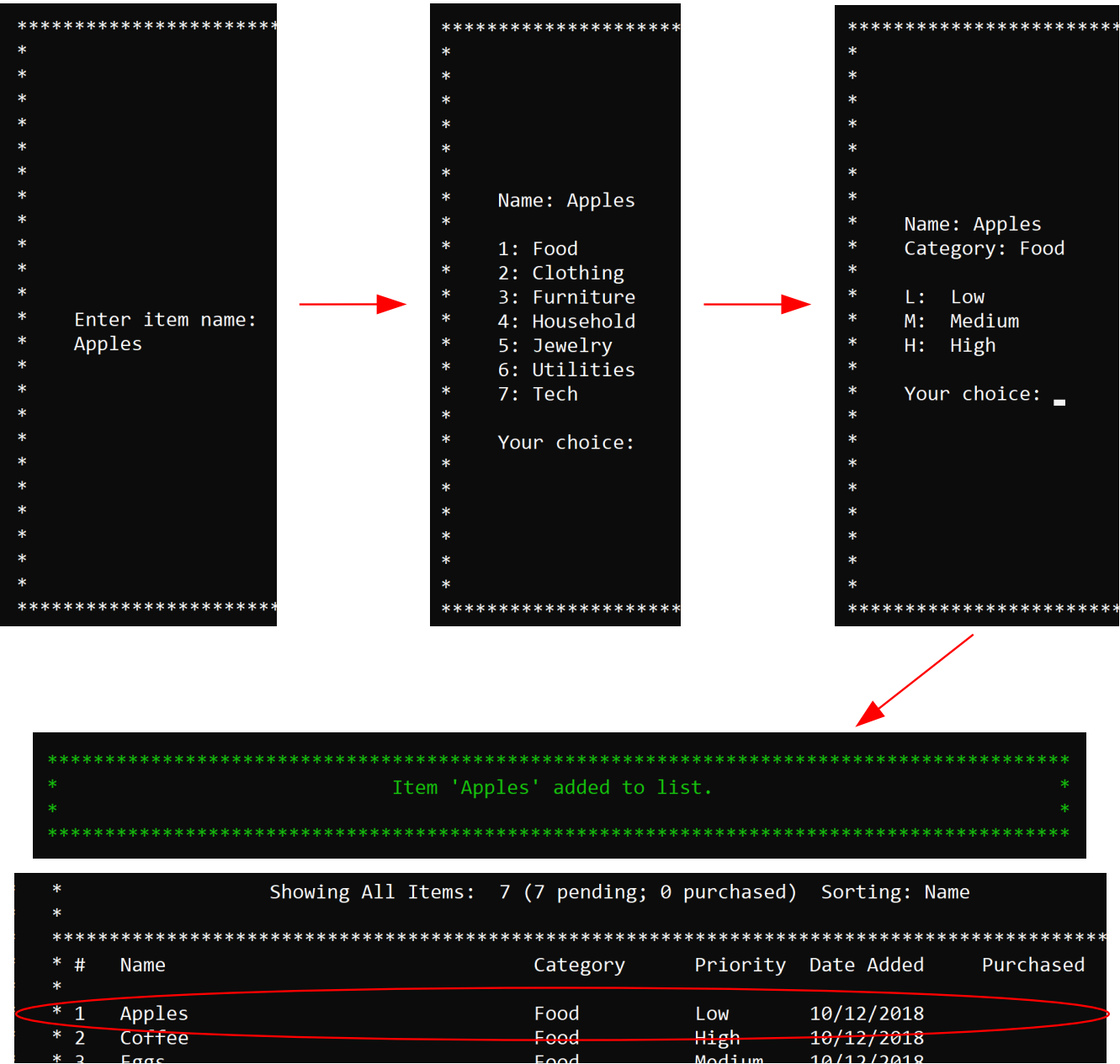
```
*****
* Menu Options:                                     *
*                                                    *
* A  Add a new item                                *
* R  Remove an item                                *
* E  Edit an item                                  *
* P  Mark an item as purchased                      *
* S  Sort the list                                  *
* T  Toggle display of purchased items              *
* Q  Quit the program                              *
*                                                    *
*****
Your Choice:
```

Main menu key entries should be case-insensitive.

When a menu action is selected, actions occur in the Action Frame.

# Menu Actions

1. Add a new item. The sequence in the Action Frame for adding a new item is shown below:



When the sequence completes, the action is shown in the Status Frame, and the new item is added to the list.

The list should never contain to unpurchased items with the same name. If a duplicate name is entered at step one, the user is notified and given the choice to edit the item:

```
*
*   Item 'Eggs' is already in the list.
*   Edit the item (y/n)?
*
```

Entering 'y' or 'Y' takes the user to the edit action for the named item. Any other key causes control to revert to the menu.

2. Remove an item. The action sequence for removing an item is shown below:

```
*
*   Select Item # to Remove:
*
*
```



```
*
*   Remove 'MacBook Pro' from the list? (y/n):
*   _
*
```



```
*****
*                                     *
*                               Item 'MacBook Pro' removed.                      *
*                                     *
*****
```

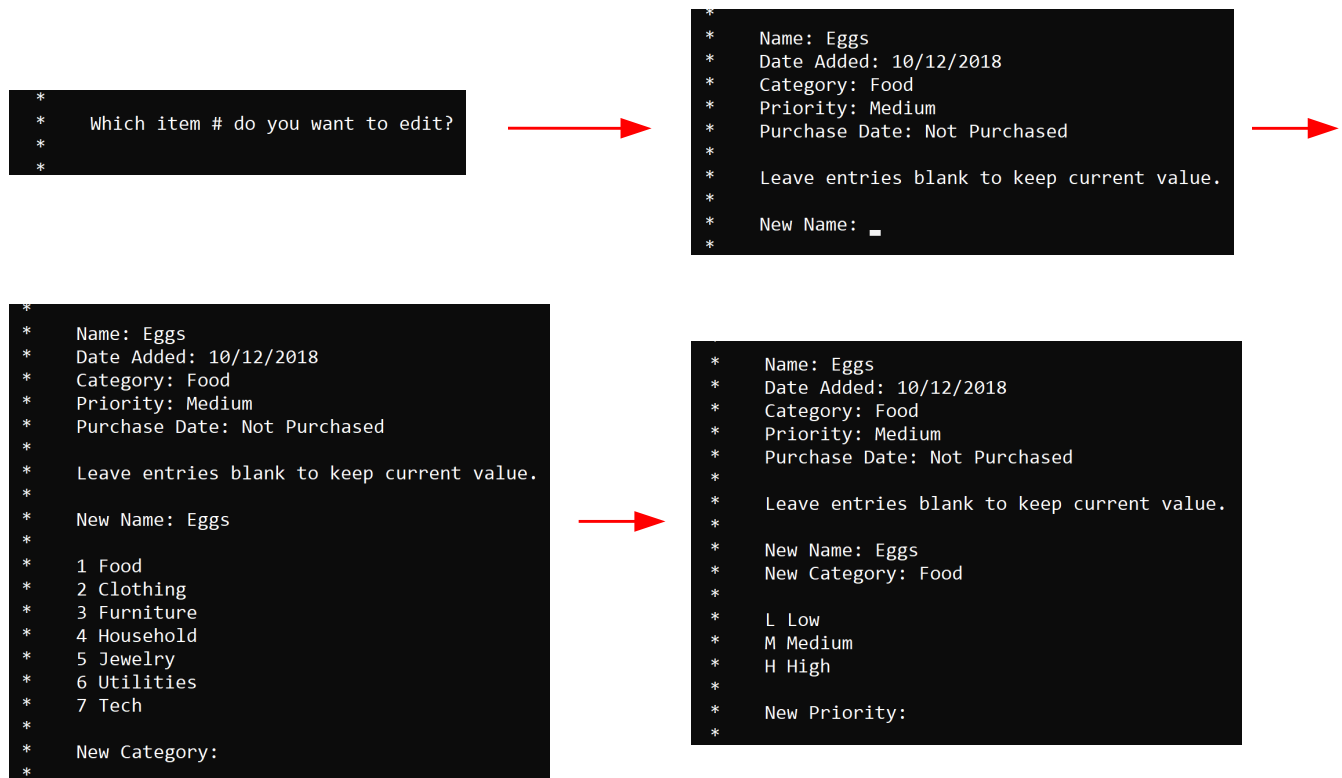
```
* 4 Evaporated Milk      Food      High      10/12/2018
* 5 Lasagna Noodles      Food      Medium     10/12/2018
* 6 Toilet Paper         Household  High      10/12/2018
*
```

If an invalid entry is made in the first step, the status displays the error and no action is taken. Control reverts to the main menu.

```
*****
*                                     *
*                               Number 8 is out of range.                      *
*                                     *
*****
```

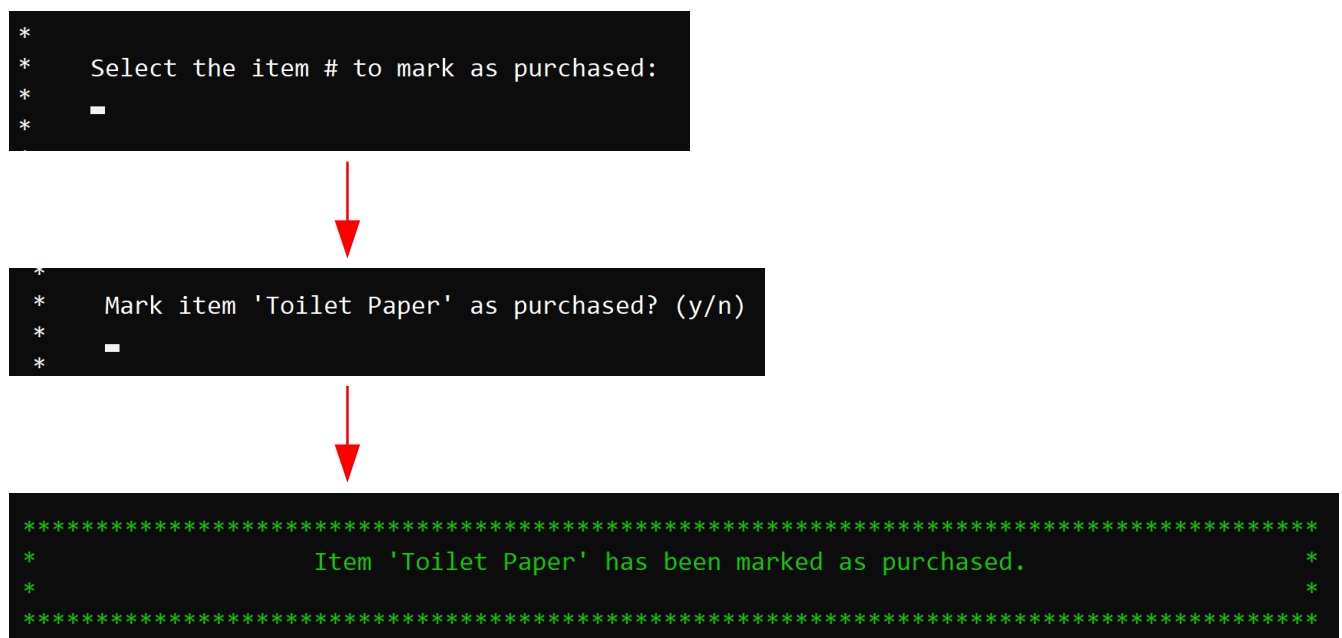
If any value other than 'Y' or 'y' is entered at the confirmation step, no action is taken, and control reverts to the main menu.

3. Edit an item. The sequence of events for editing is shown below:



As for removing an item, if the user enters an invalid item # in the first step, an error is displayed in the Status Frame.

4. Mark an item as purchased. The workflow for this action is shown below:



As before, entering an invalid number in the first step results in an error in the Status Frame:

```
*****
*                                     *
*                               Number 8 is out of range.                       *
*                                     *
*****
```

If the number entered corresponds to an item which has already been marked as Purchased, the message below is shown:

```
*****
*                                     *
*                               Item 'Toilet Paper' has already been purchased.   *
*                                     *
*****
```

5. Sort the list. The workflow for sorting is below:

```
*
*      N  Sort by Name
*      C  Sort by Category
*      P  Sort by Priority
*      D  Sort by Date Added
*      B  Sort by Purchase Date
*
*      Your Choice:
```



```
*
*      Sort by Priority:
*
*      A  Sort ascending
*      D  Sort descending
*
*      Your Choice:
```



```
*****
*                                     *
*                               Sorting changed to Priority, Descending.           *
*                                     *
*****
```

6. Toggle display of purchased items.

The display mode toggles between three states: all items, pending items only, and purchased items only. The default display is all items, and pressing 'T' (or 't') at the menu toggles through the other states. The Status Frame indicates successful change to the sorting:

- Quit the program. Quit causes the screen to clear and the program to exit.

## The List Frames

## The List Title Frame

The List Title Frame displays summary information about the Shopping List, including which items are being shown, the # of pending and purchased items, and the current sorting:

[illegible]

## The List Frame

The List Frame displays the currently selected items in the active sort order. It should use fixed-width columns to display Name, Category, Priority, Date Added, and Date Purchased (if available) for each item. It also displays row #, which allows uniquely identifying the items for use in the Menu actions.

```

*****
* #      Name                      Category      Priority   Date Added   Purchased   *
*                                              *
* 1      Toilet Paper              Household    High       10/12/2018   10/12/2018 *
* 2      Evaporated Milk           Food         High       10/12/2018   *
* 3      Coffee                    Food         High       10/12/2018   *
* 4      Lasagna Noodles           Food         Medium     10/12/2018   *
* 5      Eggs                      Food         Medium     10/12/2018   *
* 6      Apples                    Food         Low        10/12/2018   *
*
*****

```

The List Frame is automatically refereshed after any operation that modifies the Shopping List.



## **Saving the Shopping List**

This application saves the list automatically after each and every operation that modifies the list. Note that there is no “Save” option in the main menu.

## **Notes on Object Oriented Programming**

While the Shopping List and items in that list will obviously be represented by classes, consider also the possibility of creating a class (or classes) to represent the various frames of the console screen.