Workshop #2

Breakdown: Part-1 Coding: 20% | Part-2 Coding: 80%

Introduction

In this workshop, you will code and execute a C language program that implements a simple validation on a series of user input values that are stored to arrays and later analyzed to produce a variety of summary reports. The program will ask for the user's monthly income and then ask for the price and priority of a series of items the user would like to purchase in the future. It will store this information and allow the user to view predictions on how long it will take to save enough money to purchase their wish list items.

Topic(s)

• Computations: **Arrays**

Learning Outcomes

Upon successful completion of this workshop, you will have demonstrated the abilities:
• to store data of common/primitive type using an array structure
• to associate related data using parallel arrays
• to process the elements of an array using an iteration construct
• To describe to your instructor what you have learned in completing this workshop

Submission Policy

• Part-1 is due after two days from the date of receiving this document.
• Part-2 is due after five days from the date of receiving this document.
• In each case, the due date is the **end of day by 23:59** IST
• Late submissions will NOT be accepted
• Due dates are in effect **even during a holiday**
• You are responsible for **backing up your work regularly**

Late Submission/Incomplete Penalties

If any Part-1 or Part-2 portions are missing, the mark will be **ZERO**.

Part-1 (20%)

1. Carefully review the "Part-1 Output Example" (next section) to see how this program is expected to work

2. Code your program in the file named "**w2p1.c**"

3. Begin by prompting the user for their **NET monthly** income
- The monthly income must be at least **$500.00**, and not more than **$400,000.00**
- The minimum and maximum values should be stored in **unmodifiable variables** and used in the validation logic accordingly
- Display an appropriate error message if the entered value is outside this range
- **Validation** must be **nested in an iteration construct** and repeat until a valid value is entered

4. Next, prompt the user to specify the **number of wish list items** they want to use in the forecast Note
- The maximum number of items should be limited to **10** (define a macro to help with this)
- Display an appropriate error message if the entered value is outside this range
- **Validation** must be **nested in an iteration construct** and repeat until a valid value is entered

5. Now you are ready to **store the wish list item details**. Use an iteration construct to Iterate the number of times necessary to obtain the number of wish list item details specified by the user (from step #5)

6. The item details are made-up of **three (3) related pieces of information** and must be stored in **matching (parallel) arrays**:

a) Cost
- A **double** floating-point value representing the value of the item
- The entered value must be at least **$100.00** (use an **unmodifiable variable** to help with the validation logic accordingly)
- Display an appropriate error message if the entered value is invalid
- **Validation** must be **nested in an iteration construct** repeating until a valid value is entered

b) Priority
- An **integer** value representing the priority of the item
- The entered value must be **between 1 and 3 inclusive** where:
  - 1 = a must-have item
  - 2 = important to have item
  - 3 = want to have item
- Display an appropriate error message if the entered value is out of range
- **Validation** must be **nested in an iteration construct** repeating until a valid value is entered

c) Finance Options
- A **character** value representing if an item has financing options (don't need to pay entire value up-front)
- The entered value can only be a lowercase **y** or **n**
- Display an appropriate error message if the entered value is not a **y** or **n**
- **Validation** must be **nested in an iteration construct** repeating until a valid value is entered

7. After storing the data to **parallel array's**, display a formatted table of the data entered
   • Use the following printf statements for the **table header**:

```
printf("Item Priority Financed        Cost\n");
printf("---- -------- -------- -----------\n");
```

- Use the following printf formatting to display **each wish list item** record:

```
printf("%3d  %5d    %5c    %11.2lf\n", ...
```

8. After all the data is displayed, **summarize** it with the **total of all the item costs**.
Use the following printf statement to properly align it with the appropriate Cost column:

```
printf("---- -------- -------- -----------\n");
printf("                     $%11.2lf\n\n", ...
```

9. Finally, before ending the application, display an exit message

Part-1 Output Example *(Note: Use this data for submission)*

```
+--------------------------+
+   Wish List Forecaster   |
+--------------------------+

Enter your monthly NET income: $0
ERROR: You must have a consistent monthly income of at least $500.00

Enter your monthly NET income: $500000
ERROR: Liar! I'll believe you if you enter a value no more than $400000.00

Enter your monthly NET income: $6500.50

How many wish list items do you want to forecast?: 0
ERROR: List is restricted to between 1 and 10 items.

How many wish list items do you want to forecast?: 11
ERROR: List is restricted to between 1 and 10 items.

How many wish list items do you want to forecast?: 3

Item-1 Details:
   Item cost: $39030.15
   How important is it to you? [1=must have, 2=important, 3=want]: 0
      ERROR: Value must be between 1 and 3
   How important is it to you? [1=must have, 2=important, 3=want]: 4
```

```
      ERROR: Value must be between 1 and 3
   How important is it to you? [1=must have, 2=important, 3=want]: 1
   Does this item have financing options? [y/n]: N
      ERROR: Must be a lowercase 'y' or 'n'
   Does this item have financing options? [y/n]: Y
      ERROR: Must be a lowercase 'y' or 'n'
   Does this item have financing options? [y/n]: k
      ERROR: Must be a lowercase 'y' or 'n'
   Does this item have financing options? [y/n]: n

Item-2 Details:
   Item cost: $99.99
      ERROR: Cost must be at least $100.00
   Item cost: $1200000
   How important is it to you? [1=must have, 2=important, 3=want]: 3
   Does this item have financing options? [y/n]: y

Item-3 Details:
   Item cost: $350500.25
   How important is it to you? [1=must have, 2=important, 3=want]: 2
   Does this item have financing options? [y/n]: n

Item Priority Financed        Cost
---- -------- -------- -----------
  1        1        n       39030.15
  2        3        y     1200000.00
  3        2        n      350500.25
---- -------- -------- -----------
                     $ 1589530.40

Best of luck in all your future endeavours!
```