**Recipe Cost Calculator**

**TASK:** A recipe cost calculator. This program should ask users for a recipe name and serving size. It should then ask users to list each ingredient in the recipe, the amount of the ingredient needed and the cost of that ingredient. Then the program should then work out the cost per serving. *Caution: you will need to go online and look up prices and amounts for key ingredients to be able to properly test your program. \**

**PLANNING:**

The program I plan to construct is called a ‘Recipe Cost Calculator’. This program will be designed for users who would like to determine the cost (per serving) of a recipe that they would like to make. This program is specifically being made for people who like to bake or professional bakers. This program will make finding the total cost of a recipe much more efficient for the user as well as easier. The program will run on Python 3.7 and will be written in English. The user will be asked to list each ingredient needed for the recipe and the amount needed for each ingredient in order to determine the total cost (per serving) for the recipe. Due to this, the users will have to make sure they are able to read and write the English language. This program can be used by a person of any age (above 10 years old – for safety purposes) and gender as long as they are able to read and write the English language.

I will make sure to work on the purpose of the program which is to create a program in order to determine the cost (per serving) of a recipe that a user would like to make.

**TIMELINE:**

I will follow a specific timeline in order to complete this task to the best of my ability in time for the due date. I plan to divide the project into a number of periods over the 8-10 weeks. Since the project is due by the 14th Of September 2021, I will divide the project into 4 time periods.

In the first time period, I will complete the planning which outlines the brief for the project as well as a logical design to be used as a foundation in order to code the program (in the following time periods). The planning will also include a suitable flowchart as well as clearly outline the purpose of the program and specify the computer language being used. In this time period I will also clearly explain the input and output requirements of the program which involves the names and types of variables. **The first time period consists of about 4 school (in class) periods and will end around 4/08/2021.**

In the second time period, I will create a excel spreadsheet with the ingredients, measurements and costs required for baking and then start writing the code for the program. I will use the information from the first time period to help me write this code and have a working program. I will make sure to get a friend or family member to test out my program in order to see if the program is working properly and if they enter something that breaks the program. I will make sure to report all testing in my testing document. **The second time period consists of about 6 school (in class) periods and will end around 20/08/2021.**

In the third time period, I will use the information from the testing of my program in order to test as well as debug my program and record these updates in my testing document. I will then make sure that my program is working properly as well as make sure that my testing document is up to date and all updates are recorded. **The third time period consists of about 4 school (in class) periods and will end around 1/09/2021.**

In the final time period, I will complete the relevant implications document required for this project. I will then make sure everything is completed to the best of my ability and that all documents and files meet all the requirements. **This last time period consists of about 3 school (in class) periods and will end around 9/09/2021 which will allow me to have everything done by the due date.**

Ready to hand in for **14/09/2021**. – Planning + Design

**24/09/2021** - Program

**Module List:**

**For dictionary: based on ingredients from countdown (as at 12th August 2021)**

| read in | read file in   * create dictionary {ingredient: [measurement, cost]} |
| --- | --- |
| search | search for ingredient   * print ingredient, measurement and cost |
| amount | ask for how much of ingredient is needed   * add to list to add up ingredients |
| data | print list of ingredients and costs needed   * ask if data is correct * print total cost and cost of serving |

**Resources:** Me, my computer at home, the school computer, LucidChart, Microsoft Excel, Python 3.7 and Wing IDE 6.1 on both computers (at home and at school).

**Input Information:**

| **Input Variable Name** | **What it does (job/ role)** | **Data type** | **Further specifications** |
| --- | --- | --- | --- |
| a\_dictionary | Variable used for dictionary of baking data file | Dictionary |  |
| recipe\_name | Variable used to save the name of the recipe user is making | String |  |
| ingredient | Variable used to label the ingredients | String | In the dictionary |
| measurement | Variable used to label the measurement of the ingredient | String | Eg. Cups/ Tablespoon  In the dictionary |
| cost | Variable used to label the cost per 1 of the measurement | Float | Eg. 1 cup is $0.62  In the dictionary |
| serving | Variable used to label the serving size the user desires | Integer |  |
| total\_ing | Variable used to label how many ingredients the user requires | Integer |  |
| ing\_red | Variable used to search for ingredient that is in the dictionary | String |  |
| ing | Variable used to label the amount of the ingredient needed | Float | Float due to fraction measurements (¾, ½, etc.) |
| user\_ingredients | Variable use for dictionary which saves ingredients that is input by the user | Dictionary |  |
| correct | Variable used to label if more ingredients are needed | String | Yes/ no question |
| yes | Variable used to label a set of possible inputs from the user | String |  |
| no | Variable used to label a set of possible inputs from the user | String |  |
| ing\_change | Variable used to find which ingredient is used to change | String |  |
| new\_ing | Variable used to replace old ingredient | String |  |
| val | Variable used to create a list of the values of the costs from the user\_ingredients dictionary | List |  |
| cost\_values | Variable used to remove brackets and convert list into int for calculation | Int |  |
| total\_cost | Variable used to label the total cost of the ingredients user needs | Float | Used to find cost per servings by dividing total cost by serving size inputted by user at start of program |

**Output Information:**

| **Output Variable Name** | **Output format** | **Data type** | **Further specifications** |
| --- | --- | --- | --- |
| ingredients | List of ingredients printed | string |  |
| ing\_red | Printing the ingredient after input from user | string | Print for every ing\_red |
| measurement | Printing the ingredient after input from user | string | Print for every ing\_red |
| cost | Printing the ingredient after input from user | float | Print for every ing\_red |
| user\_ingredients | Prints list of ingredients which were input by the user | dictionary |  |
| total\_cost | Used to print total cost and print cost per serving when divided by serving size. | float |  |

**Constant and Existing Variables:**

| **Constant** | **Scope** | **Values set** |
| --- | --- | --- |
| recipe\_name | will be used to print name of recipe along with cost |  |
| serving | will be used to save serving size and work out cost per serving |  |
| total\_ing | will be used to loop asking for ingredients a certain amount of times depending on how many user needs |  |
| user\_ingredients | will be used to save the ingredients the user needs along with the cost of how much is needed |  |
| ing\_red | will be used as the key when costs are assigned in the user\_ingredients |  |
| ing | will be used to calculate cost and assign it to ing\_red in the user\_ingredients |  |
| total\_cost | will be used to save the total cost and then find out the cost per serving |  |

**Calculations:**

The cost of each ingredient input by the user will be calculated by multiplying how much of the ingredient is needed with the cost saved in the dictionary.

Eg.

Standard Milk costs $0.62, if user would like 2 cups, the cost would be $1.24 and would be saved in another dictionary (user\_ingredients)

The total cost will then be calculated by taking all of the values from the second dictionary (user\_ingredients) and adding them all up; total\_cost=sum(cost\_values)

This total cost will be used to then print the cost per serving by dividing the total cost by the serving size; total\_cost/serving

**Modular Structure:**

The code will be separated into modules. I will create a function for the heading of the program so that the users of the program will know what the program is about. The first module that will be created will be reading in the file. The second module created will be the module that checks if the ingredient is in the dictionary. If an ingredient is not in the dictionary, the user will be asked to enter an ingredient again from the list. The third module that will be created will be checking how much of the ingredient is needed. This module will help to determine the total cost and therefore the cost per serving. The fourth module that will be created will be the module for checking whether the ingredients are correct and changing the ingredients if they are incorrect. This module will also print out the total cost for the recipe and the cost per serving.

**Pseudo Code:**

**PSEUDO CODE 1 (for 1st flowchart)**

START

Ask for name of recipe

Ask for serving size

Enter ingredients required

Create list of ingredients

Ask for price of each

Create dictionary of prices and ingredients

Print dictionary and ask if it is correct

Calculate and print cost per serving

END

**PSEUDO CODE 2 (for 2nd flowchart)**

START

Create dictionary

Ask for name of recipe

Ask for serving size

Enter ingredient required

Print information of ingredient

Check ingredient is in dictionary

Ask how much of ingredient is needed

Ask if data is correct

Calculate the cost of each ingredient

Calculate and print cost per serving

END

**Flowchart (see flowcharts below):**

Flowchart one was created before flowchart two, I decided that this flowchart (1) was very complicated to follow and the program to create would be too hard. Therefore, I created another flowchart (2); this flowchart was more specific and so then it would be easier to follow. It is narrowed down to just baking recipes rather than all types of recipes where I would not be able to make a dictionary with the basic ingredients. For baking recipes however, I can make a dictionary with the basic ingredients such as milk, sugar, eggs, etc. and associate them with the measurement used to measure the ingredient as well as how much it would cost for a specific amount of the ingredient. Using this I would be able to work out the cost of the ingredient faster than doing it manually as I would have had to do if I followed the first flowchart.

 