

Assignment 4 – Branching

Learning Objective

Write a Python program that uses arithmetic operators and branching statements.

Assignment Description

Write a program that calculates the amount of change to be returned buying an item using Afghani banknotes. The user will be given a list of items, and they will select one. Then the user will pay by entering the number of 100 AFN banknotes. The program will calculate the change using the highest denomination of the following banknotes: 1, 5, 10, 20, and 50.

The items and prices are:

- Mantu for 300 AFS
- Qabuli for 250 AFS
- Shir Yakh for 215 AFS
- Sohan for 142 AFS

Steps

1. In PyCharm, open your existing APP_Python project.
2. In the Assignments directory, create a new Python file called assignment4.py.
3. At the top of the file, put comments in the following format and replace the name, email, and section with your actual information and fill in the description:

```
# Assignment 4
# Name: First Last
# Description: (such as)
# This program allows user to buy an item and calculates change
```

4. Display the following to the user:

```
Select an item to purchase:
a) Mantu for 300 AFS
b) Qabuli for 250 AFS
c) Shir Yakh for 215 AFS
d) Sohan for 142 AFS
```

5. Get input from the user for their menu choice using the following prompt (the user input is shown in green):

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What item do you want? a

6. Your code must allow the user to enter upper and lower case letters. For example, the user can enter a or A to select a Mantu. Use branching for the four options. Create two variables to hold the item (a string such as "Mantu") and the cost (an integer such as 300).
7. Your code must handle the user entering an invalid menu choice. If the user enters something other than the choices on the menu, then tell them they have entered an invalid option. Since we have not yet covered how to repeat code, pick one of the items for them. Set the two variables (item and cost) to the appropriate values. Here is an example:

**You entered an invalid choice.
The item selected is Sohan.**

8. The user will pay with 100 AFN banknotes. Get input from the user for the number (int) of 100 AFN banknotes. When testing, the grader will only enter integer values. Use the following prompts (user input is shown in green):

**Pay with 100 AFN banknotes.
How many? 2**

9. Calculate the payment and put that into a variable. Print out the cost and the payment using the appropriate variables. The cost of the item should already be in a variable. Here is an example:

**Cost is 300 AFS
Payment is 200 AFS**

10. Use branching (if statement) to check if the payment is enough. If the payment is less than the cost, print a message to the user saying they will not receive their item. Use the item variable. Here is an example:

You did not pay enough money and will not receive the Mantu

11. If the payment is enough (else part of if statement), do the following:
 - o Calculate the change using the appropriate variables and put it into a variable. Print the item and the change using the appropriate variables. Here is an example when the item equals "Mantu" and the number of banknotes is 4:

**You purchased the Mantu
Your change is 100 AFS**

- Calculate the change dispensed in 1, 5, 10, 20, and 50 AFN banknotes using the integer division and modulo operators. Use variables to hold this information. You must dispense change in the largest possible banknotes. For example, if an item costs 215 AFS and the payment is three 100 AFN notes (total of 300 AFS), the change is 85 AFS. You should return one 50 AFN, one 20 AFN, one 10 AFN, and one 5 AFN.
- Print the number of each note for the change. Here is an example when the change is 100 AFS:

```
Number of 50 AFN is 2  
Number of 20 AFN is 0  
Number of 10 AFN is 0  
Number of 5 AFN is 0  
Number of 1 AFN is 0
```

12. Be sure to comment your code.
13. Follow coding conventions. Use camelCase or snake_case for variable names.
14. Test the program. Look at the Sample Output below.
15. Submit your assignment4.py file over WhatsApp.

Sample Output

Example 1:

Select an item to purchase:

- a) Mantu for 300 AFS
- b) Qabuli for 250 AFS
- c) Shir Yakh for 215 AFS
- d) Sohan for 142 AFS

What item do you want? **a**

Pay with 100 AFN banknotes.

How many? **2**

Cost is 300 AFS

Payment is 200 AFS

You did not enter enough money and will not receive the Mantu

Example 2:

Select an item to purchase:

- a) Mantu for 300 AFS
- b) Qabuli for 250 AFS
- c) Shir Yakh for 215 AFS
- d) Sohan for 142 AFS

What item do you want? **B**

Pay with 100 AFN banknotes.

How many? **3**

Cost is 250 AFS

Payment is 300 AFS

You purchased the Qabuli

Your change is 50 AFS

Number of 50 AFN is 1

Number of 20 AFN is 0

Number of 10 AFN is 0

Number of 5 AFN is 0

Number of 1 AFN is 0

Example 3:

Select an item to purchase:

- a) Mantu for 300 AFS
- b) Qabuli for 250 AFS
- c) Shir Yakh for 215 AFS
- d) Sohan for 142 AFS

What item do you want? **c**

Pay with 100 AFN banknotes.

How many? **3**

Cost is 215 AFS

Payment is 300 AFS

You purchased the Shir Yakh

Your change is 85 AFS

Number of 50 AFN is 1

Number of 20 AFN is 1

Number of 10 AFN is 1

Number of 5 AFN is 1

Number of 1 AFN is 0

Example 4:

Select an item to purchase:

- a) Mantu for 300 AFS
- b) Qabuli for 250 AFS
- c) Shir Yakh for 215 AFS
- d) Sohan for 142 AFS

What item do you want? **d**

Pay with 100 AFN banknotes.

How many? **3**

Cost is 142 AFS

Payment is 300 AFS

You purchased the Shohan

Your change is 158 AFS

Number of 50 AFN is 3

Number of 20 AFN is 0

Number of 10 AFN is 0

Number of 5 AFN is 1

Number of 1 AFN is 3

Example 5:

Select an item to purchase:

- a) Mantu for 300 AFS
- b) Qabuli for 250 AFS
- c) Shir Yakh for 215 AFS
- d) Sohan for 142 AFS

What item do you want? **x**

You entered an invalid choice.

The item selected is Shohan.

Pay with 100 AFN banknotes.

How many? **2**

Cost is 142 AFS

Payment is 200 AFS

You purchased the Shohan

Your change is 58 AFS

Number of 50 AFN is 1

Number of 20 AFN is 0

Number of 10 AFN is 0

Number of 5 AFN is 1

Number of 1 AFN is 3

Example 6:

Select an item to purchase:

- a) Mantu for 300 AFS
- b) Qabuli for 250 AFS
- c) Shir Yakh for 215 AFS
- d) Sohan for 142 AFS

What item do you want? **a**

Pay with 100 AFN banknotes.

How many? **3**

Cost is 300 AFS

Payment is 300 AFS

You purchased the Mantu

Your change is 0 AFS

Number of 50 AFN is 0

Number of 20 AFN is 0

Number of 10 AFN is 0

Number of 5 AFN is 0

Number of 1 AFN is 0