In [1]:
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#Author: Muhammad Umar Khalid
#Professor: Robert Domanski
#Program: Personal Budget Program
#Date: 05/09/2020


#Import necessary modules
import os
import sys


#menu function so user can make a choice
def menu():
    print("\n")
    print("            ********** Welcome to the Personal Budget program ****
******")
    print()

    choice = input("""
                    A: Start the Program!
                    B: What is meant by deficit and surplus!
                    C: Purpose of the program!
                    D: About author!
                    E: Quit!

                    Please enter your choice: """)
    print("\n")
    if choice == "A" or choice == "a":
        Application()
    elif choice == "B" or choice == "b":
        meaning()
        menu()
    elif choice == "C" or choice == "c":
        purpose()
        menu()
    elif choice == "D" or choice == "d":
        Aboutme()
        menu()
    elif choice == "E" or choice == "e":
        print("Exiting the program.")
        print("Babye!!!")
        sys.exit
    else:
        print("You must only select either A, B, C, D, or E.")
        print("Please try again")
        menu()



#Function for understanding surplus and deficit
def meaning():
    print('Deficit: A deficit is an amount by which a resource, especially mon
ey, falls short of what is required. \nA deficit occurs when expenses exceed r
evenues, imports exceed exports, or liabilities exceed assets. \nA deficit is
 synonymous with shortfall or loss and is the opposite of a surplus.')
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    print('\nSurplus: A surplus describes the amount of an asset or resource t
hat exceeds the portion that is actively utilized. \nA surplus can refer to a
 host of different items, including income, profits, capital, and goods. \nIn
 the context of inventories, a surplus describes products that remain sitting
 on store shelves, unpurchased. \nIn budgetary contexts, a surplus occurs when
income earned exceeds expenses paid. A budget surplus can \nalso occur within
 governments when there is leftover tax revenue after all governmental program
s are fully financed.')
```

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#Function for intro about me
def Aboutme():
    print("Hi, My name is Muhammad Umar Khalid majoring in compter science.\nI
love to do coding and fix things. My favourite sport is cricket\n ")
```

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#Purpose functuon of the program
def purpose():
    print('The purpose of this program to take income and expenses from the us
er \nand tells the user whether they have a surplus, a deficit, or if they are
breaking even. ')
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#Declaring class
class Application:
    #init to assign values to object properties or other operations
    #declaring and initializing
    def __init__(self):
        self.income = 0
        self.expenses = 0
        self.expense_l = []
        self.expense_name = []
        self.income_name = []
        self.income_l = []
        self.prompt_income()


    #income ask from user function
    def income_ask(self):
        add_income = input('\nLets Add your Income? [Enter y for YES, or n for
No]: ')
        return add_income


    #income sum function
    def income_sum(self):
        self.income = sum(self.income_l)
```

```
    #expense ask from user function
    def expense_ask(self):
        add_expense = input('\nNow Lets Add your Expenses? [Enter y for YES, o
r n for NO]: ')
        return add_expense




    #expense sum function
    def expense_sum(self):
        self.expenses = sum(self.expense_l)






    #check income function
    def income_check(self):
        if not self.income_l:
            print('Please enter atleast one source of Income: ')
            self.prompt_income()




    #check expense function
    def expense_check(self):
        if not self.expense_l:
            print('Please enter atleast one Expense: ')
            self.prompt_expense()






    #prompt income function to get income inputs from the user
    def prompt_income(self):
        while True:
            result = self.income_ask()
            if result == 'y':
                try:
                    income_input = int(input('Enter source of Income. [Numbers
Only]: '))
                    #adding in income_l
                    self.income_l.append(income_input)
                    income_name = input('Enter Income name. [Name Only]: ')
                    #adding in income_name
                    self.income_name.append(income_name)
                    inp = input('\nDo you have another source of Income. [Ente
r y for YES, or n for NO]: ')
                    if inp == 'y':
                        self.prompt_income()
                    else:
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                        self.income_check()
                        break

                except ValueError:
                    print("Input is not valid enter valid input!")
                    income_input = int(input('Enter source of Income. [Numbers
Only]: '))
                    #adding in income_l
                    self.income_l.append(income_input)
                    income_name = input('Enter Income name. [Name Only]: ')
                    self.income_name.append(income_name)
                    inp = input('\nDo you have another source of Income. [Ente
r y for YES, or n for NO]: ')
                    if inp == 'y':
                        self.prompt_income()
                    else:
                        self.income_check()
                        break
            else:
                #checkif user didnot put any income
                self.income_check()
                break
        #updating income by adding all together which user enter
        self.income_sum()
        incomedict = dict(zip(self.income_name, self.income_l))
        for detail in incomedict:
            print(detail + ': ', '$' + str(incomedict[detail]))
        print('Total user Income: ', '$' + str(self.income))
        self.prompt_expense()




    #prompt expense function to get expenses inputs from the user
    def prompt_expense(self):
        while True:
            result = self.expense_ask()
            if result == 'y':
                try:
                    expense_input = int(input('Enter Expense amount. [Numbers
 Only]: '))
                    #adding in expense_l
                    self.expense_l.append(expense_input)
                    expense_name = input('Enter Expense name. [Name Only]: ')
                    #adding in expense_name
                    self.expense_name.append(expense_name)
                    inp = input('\nDo you have another Expenses. [Enter y for
 YES, or n for NO]: ')
                    if inp == 'y':
                        self.prompt_expense()
                    else:
                        self.expense_check()
                        break

                except ValueError:
                    print("Input is not valid! Try again...")
```

```
                    expense_input = int(input('Enter Expense amount. [Numbers
 Only]: '))
                    #adding in expense_l
                    self.expense_l.append(expense_input)
                    expense_name = input('Enter Expense name. [Name Only]: ')
                    #adding in expense_name
                    self.expense_name.append(expense_name)
                    inp = input('\nDo you have another Expenses. [Enter y for
 YES, or n for NO]: ')
                    if inp == 'y':
                        self.prompt_expense()
                    else:
                        self.expense_check()
                        break

            else:
                #check if user didnot put any expense
                self.expense_check()
                break
        #updating income by adding all together which user enter
        self.expense_sum()
        expensedict = dict(zip(self.expense_name, self.expense_l))
        for detail in expensedict:
            print(detail + ': ', '$' + str(expensedict[detail]))
        print('Total user Expenses: ', '$' + str(self.expenses))
        self.uservalue()




    #check user value and compare it after substracting income minus expenses
    def uservalue(self):
        result = self.income - self.expenses
        if result < 0:
            print('\nYour total Income is: ' +  '$' + str(self.income))
            print('Your total Expenses are: ' + '$' + str(self.expenses))
            print('Result = Caution! Budget exceeded, You are in negative, you
have a deficit of: ${amount}'.format(amount=result))

        if result == 0:
            print('\nYour total Income is: ' +  '$' + str(self.income))
            print('Your total Expenses are: ' + '$' + str(self.expenses))
            print('Result = You have broken even, you are spending exactly as
 much as you make.')

        if result > 0:
            print('\nYour total Income is: ' +  '$' + str(self.income))
            print('Your total Expenses are: ' + '$' + str(self.expenses))
            print('Result = Congratulations! You are in positive, you have a s
urplus of: ${amount}'.format(amount=result))

        #asking user if he wants to run another analysis
        another = input('Would you like to run another analysis? [Enter y for
 YES, or n for NO]: ')
        if another == 'y':
            self.reset_program()
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        else:
            self.close_program()



    #reset function and emptying list
    def reset_program(self):
        self.income = 0
        self.expenses = 0
        del self.expense_l[0:]
        del self.expense_name[0:]
        del self.income_name[0:]
        del self.income_l[0:]
        self.prompt_income()



    #exiting the program function using sys.exit
    def close_program(self):
        print('\nExiting Program.')
        print('Babye!!!')
        sys.exit(0)



#Main function
if __name__ == '__main__':
    name = input("\nEnter your name: " )
    print("Welcome " + name + "!")
    #calling menu function
    menu()
```

```
Enter your name: Umar
Welcome Umar!


              ********** Welcome to the Personal Budget program **********


                     A: Start the Program!
                     B: What is meant by deficit and surplus!
                     C: Purpose of the program!
                     D: About author!
                     E: Quit!

                     Please enter your choice: a



Lets Add your Income? [Enter y for YES, or n for No]: y
Enter source of Income. [Numbers Only]: 15000
Enter Income name. [Name Only]: A

Do you have another source of Income. [Enter y for YES, or n for NO]: y

Lets Add your Income? [Enter y for YES, or n for No]: y
Enter source of Income. [Numbers Only]: 5000
Enter Income name. [Name Only]: B

Do you have another source of Income. [Enter y for YES, or n for NO]: n
A:  $15000
B:  $5000
Total user Income:  $20000

Now Lets Add your Expenses? [Enter y for YES, or n for NO]: y
Enter Expense amount. [Numbers Only]: 1400
Enter Expense name. [Name Only]: Rent

Do you have another Expenses. [Enter y for YES, or n for NO]: y

Now Lets Add your Expenses? [Enter y for YES, or n for NO]: y
Enter Expense amount. [Numbers Only]: 150
Enter Expense name. [Name Only]: Bills

Do you have another Expenses. [Enter y for YES, or n for NO]: n
Rent:  $1400
Bills:  $150
Total user Expenses:  $1550

Your total Income is: $20000
Your total Expenses are: $1550
Result = Congratulations! You are in positive, you have a surplus of: $18450
Would you like to run another analysis? [Enter y for YES, or n for NO]: n

Exiting Program.
Babye!!!
```