Unit Code: 8936

Semester/Year: Semester 1, Year 1 (2024)

Lecturer/Tutor Name: Julio Romero

Workshop /Tutorial Day & Time: Tuesday, 08:30 a.m.

Assignment Number and Title: Assessment 3: Python application programming

Date & Time Submitted: 26/04/2024, 9.30p.m

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1. Background

In the current world, it has become extremely important to keep track of our expenses. The proper understanding of the flow of money in a person's life can have a significant impact on their quality of life. It will help people to get an idea of how much they earn, how much they spend, and what they spend on etc. A financial tracker tool will help the people to keep track of their incomes and expenses. My financial tracker tool called "**MoneyMapped**" is a convenient tool that will help people to monitor their finances monthly.

2. Business Rules

2.1 The problem at Hand.

In the program, we need to have an option to select the month. After selecting the month, there should be an option to add different incomes, along with descriptions, specifying the origin of the income. Sources of incomes should also be stated. There should be an option to add expenses. The expenses should also have a section where the user can input what is the cause of expense (like grocery, rent, etc.). All the incomes and expenses from different sources should be added to get the income and expense summary of a month. The summary should clearly indicate what are the sources of income and cause of expenditure. An option to see the remaining balance should also be given. Furthermore, It would be good if there is a monthly spend analyser.

Assumptions
- The user will enter the amounts of incomes and expenditure in number, not in words.
- The user will input accurate descriptions of incomes and expenditures without fail.

2.2 Describing inputs and outputs.

The inputs will be Month, Amount (Income/Expense), Description (Source/Cause of Income/Expense).

The output will be Current Balance of a month, Income history of a month, Expense history of a month, and a Monthly Expense Analyser.

3. Hand Calculation, Flowchart and Pseudo Code.

3.1. Hand Calculation

Month: March

Income: Amount:- 3000, Description:- Salary

Income: Amount:- 500, Description:- Rental Income

Expense: Amount:-1000, Description:- Rent

Expense: Amount:- 350, Description:- Grocery

Income History = Salary + Rental Income = 3000 + 500 = 3500

Expense History = Rent + Grocery = 1000 + 350 = 1350

Balance = Income – Expense = 2150

Expense Analysis (in %) = (Rent/ Total Expense)*100, (Grocery/Total Expense)*100

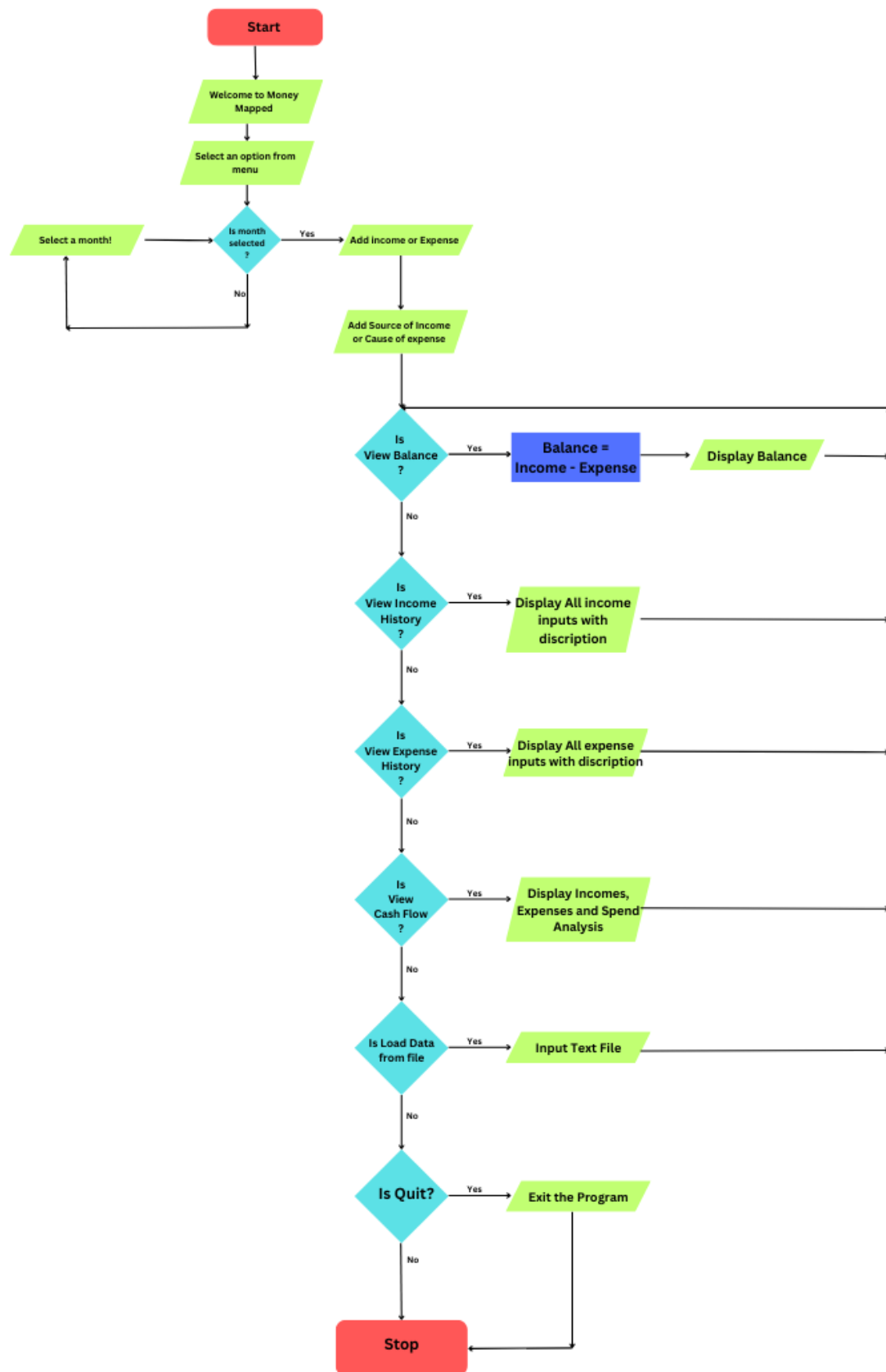$$= (1000/1350)*100, (350/1350)*100$$

$$= 74.07\%, \ 25.93\%$$

Rent = 74.07%

Grocery= 25.93%

(please refer to next page for flow chart)

3.2. Flow Chart

3.3. Algorithm

1. Start
2. Display "Welcome to Money Mapped"
3. Display "Select an option from Menu".
4. Input Month
5. Input Amount (Income or Expense)
6. Check If month is selected,
   a. If no go to step 4,
   b. Else go to step 6.
7. Input Description (Source of Income or Cause of Expense)
8. Input task to be performed.
9. Check if "View Balance" option is selected,
   a. if yes, perform set Balance = Income – Expense, display Balance
   b. Else, go to step 10.
10. Check if "View Income History" option is selected,
    a. If yes, display income history.
    b. Else, go to step 11.
11. Check if "View Expense History" option is selected,
    a. If yes, display expense history
    b. Else, go to step 12.
12. Check if "View Cash Flow" option is selected,
    a. If yes, display Cash Flow Analysis
    b. Else, go to step 13.
13. Check if "Load Data from file" option is selected,
    a. If yes, load data from file and go to step 9.
    b. Else, go to step 14.
14. Check if "Quit" Options is selected.
    a. If yes, go to step 15,
15. Stop

3.4. Pseudo Code

Program: Money Mapped- Personal Finance Tracker

Print Money Mapped on the Screen

Print Menu on the Screen

If [option 0]:

    Display "Enter Month" and Input month.

Else [option 1]:

    Check if [month] is selected:

        If yes, continue.

Else, display" Select a month" and transfer program control to input month.

    Else:

        Display "Enter Amount" and input "Income".

        Display "Enter Description" and input "source of Income".

Else [Option 2]:

    Display "Enter Amount" and input "Expense".

    Display "Enter Description" and input "cause of expense".

Else [Option 3]:

    Perform "Income" – "Expense" and Display Balance amount for the month.

Else [option 4]:

    Display all the incomes of the particular month.

Else [option 5]:

    Display all the expenses of the particular month.

Else [option 6]:

    Display the income and expense summary of the month and the spend analysis.

Else [option E]:

    Display "Thank You" and exit the program.

3.5. Test Cases

TEST CASE 1

Select Month: February
Amount: 3000
Description: Salary
<mark style="background-color:green">Press Add Amount to Income</mark>

Amount: 1000
Description: Rental Income
<mark style="background-color:green">Press Add Amount to Income</mark>

Amount:1000
Description: Rent
<mark style="background-color:red">Press Add Amount to Expense</mark>
Amount:250
Description: Grocery
<mark style="background-color:red">Press Add Amount to Expense</mark>

INPUT
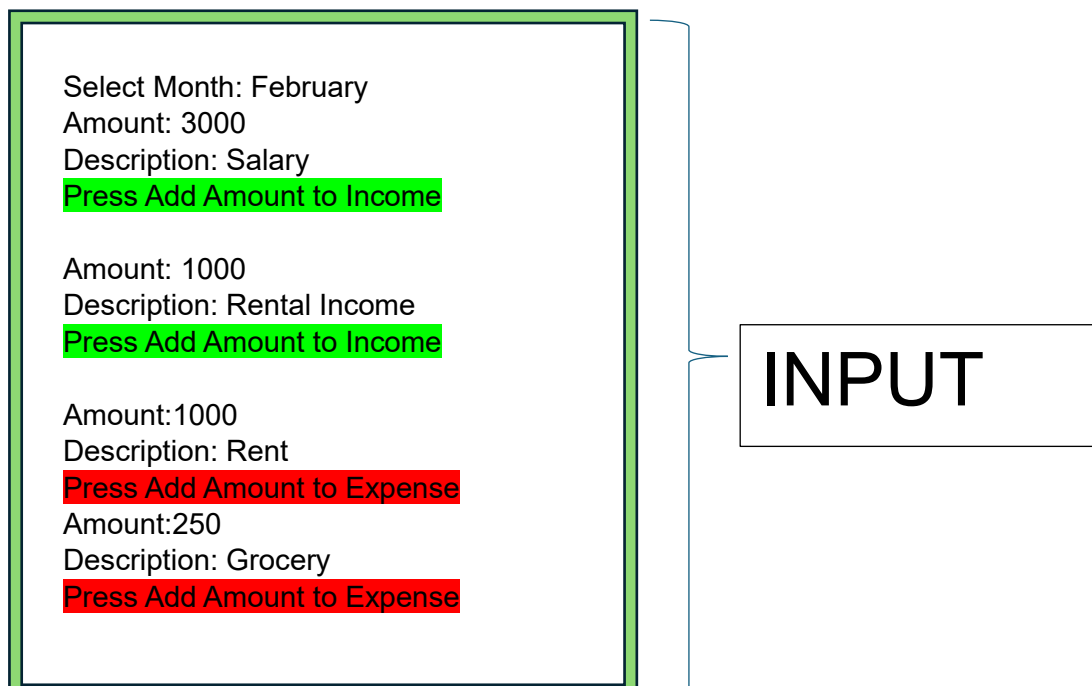
View Balance: →	Current Balance= $2750.0
View Income History: →	Febraury's income history: $3000.0 :- Salary $1000.0 :- Rental Income
View Expense History: →	Febraury's expense history: $1000.0 :- Rent $250.0 :- Grocery Monthly Expense Analysis Rent:80.00% Grocery:20.00%
View Cash Flow →	Current balance: $2750.0 Febraury's income history: $3000.0 :- Salary $1000.0 :- Rental Income Febraury's expense history: $1000.0 :- Rent $250.0 :- Grocery Monthly Expense Analysis Rent:80.00% Grocery:20.00%

OUTPUT

'

TEST CASE 2

Select Month: February
Amount: 3276.9
Description: Salary
Press Add Amount to Income

Amount: 876.12
Description: Business
Press Add Amount to Income

Amount:980
Description: Rent
Press Add Amount to Expense

Amount:124.54
Description: Grocery
Press Add Amount to Expense

Amount:99.99
Description: Eating Out
Press Add Amount to Expense

View Balance: →   Current balance: $2948.490

View Income History: →   October's income history:
                             $3276.9 :- Salary
                             $876.12 :- Business

View Expense History: →   October's expense history:
                             $980.0 :- Rent
                             $124.54 :- Grocery
                             $99.99 :- Eating Out

                             Monthly Expense Analysis
                             Rent:81.36%
                             Grocery:10.34%
                             Eating:8.30%

View Cash Flow →   Current balance: $2948.4900

                             October's income history:
                             $3276.9 :- Salary
                             $876.12 :- Business

                             October's expense history:
                             $980.0 :- Rent

$124.54 :- Grocery
$99.99 :- Eating Out

Monthly Expense Analysis
Rent:81.36%
Grocery:10.34%
Eating:8.30%