**Practice for coding assessment for 11DTP.**

*The following is an analysis of the problem.*

*You are to construct a computer program to implement this plan, recoding your process of code/test/debug.*

*Follow the “Simple steps to code” to ensure you complete all the required documentation and save the versions of code.*

*Note that you need to draw up a table of expected data for testing.*

*For Merit and Excellence additional testing and coding is required once you have achieved a working program on expected data.*

**Planning Tutorial 5 Question 3 Solution**

a) Write a program that will do the following for each customer: For each item bought, the data entered is a code and a price. The codes used are: F (Food), C (Clothing), and H(Hardware).

A code of T is used to end the purchase for the client.

Construct an algorithm that will determine how much is bought for each of the codes F, C and H, and will also print out the Total for all the purchases.

For example, if the input is F, 3.50, C, 67.90, F, 43.35, H, 123.90, F, 59.50, T

Then the output is:

Food: 106.35

Clothing: 67.90

Hardware: 123.90

Total: 298.15

b) Modify the program so that any number of customers can have their purchase slips printed

c) Further modify the program so that if the customer buys hardware for more than $100 as well as food for more than $75 then they get a 15% fuel voucher

**Input**

|  |  |  |
| --- | --- | --- |
| *variableName* | *Type* | *Where* |
| code | character | User - keyboard - loop quits with T for code |
| price | float | User - keyboard |

**Constants**

N/A

**Output**

|  |  |  |
| --- | --- | --- |
| *variableName* | *format* | *where* |
| foodTotal | Currency – 2dp | screen |
| clothingTotal | Currency – 2dp | Screen |
| hardwareTotal | Currency – 2dp | Screen |
| totalPrice | Currency – 2dp | screen |

**Calculations and Processing**

Sum code for each of food, clothing and hardware

Sum code for total sum

**Test data (expected)**

See question for example and add in another set for testing

**Algorithm structure version 1**

#data entry loop

Enter code

While code not = T

Enter price

#processing

Enter code

#end program

**Algorithm structure version 2**

#data entry loop

# code for sum of food

foodTotal 🡨 0

Enter code

While code not = T

Enter price

#processing

If code = “F”

foodTotal 🡨 foodTotal + price

Enter code

Display foodTotal

#end program

**Algorithm structure version 3**

# data entry loop

# code for sum of food

# code for sum of clothing, hardware

foodTotal 🡨 0

clothingTotal 🡨 0

hardwareTotal 🡨 0

Enter code

While code not = T

Enter price

#processing

If code = “F”

foodTotal 🡨 foodTotal + price

If code = “C”

clothingTotal 🡨 clothingTotal + price

If code = “H”

hardwareTotal 🡨 hardwareTotal + price

Enter code

Display foodTotal

Display clothingTotal

Display hardwareTotal

#end program

**Algorithm structure version 4**

# data entry loop

# code for sum of food

# code for sum of clothing, hardware

# code for total price

foodTotal 🡨 0

clothingTotal 🡨 0

hardwareTotal 🡨 0

total 🡨 0

Enter code

While code not = T

Enter price

#processing

total 🡨 total + price

If code = “F”

foodTotal 🡨 foodTotal + price

If code = “C”

clothingTotal 🡨 clothingTotal + price

If code = “H”

hardwareTotal 🡨 hardwareTotal + price

Enter code

Display foodTotal

Display clothingTotal

Display hardwareTotal

Display total

#end program

**Algorithm structure version 5**

# data entry loop

# code for sum of food

# code for sum of clothing, hardware

# code for total price

# code for any number of clients - (b)

Ask if more clients? Y/N?

While dataOption = “Y”

foodTotal 🡨 0

clothingTotal 🡨 0

hardwareTotal 🡨 0

total 🡨 0

Enter code

While code not = T

Enter price

#processing

total 🡨 total + price

If code = “F”

foodTotal 🡨 foodTotal + price

If code = “C”

clothingTotal 🡨 clothingTotal + price

If code = “H”

hardwareTotal 🡨 hardwareTotal + price

Enter code

Display foodTotal

Display clothingTotal

Display hardwareTotal

Display total

Ask if more clients? Y/N?

#end program

Add to test data table

**Algorithm structure version 6**

# data entry loop

# code for sum of food

# code for sum of clothing, hardware

# code for total price

# code for any number of clients - (b) for merit

# code for determining if voucher issued (c)

Ask if more clients? Y/N?

While dataOption = “Y”

foodTotal 🡨 0

clothingTotal 🡨 0

hardwareTotal 🡨 0

total 🡨 0

Enter code

While code not = T

Enter price

#processing

total 🡨 total + price

If code = “F”

foodTotal 🡨 foodTotal + price

If code = “C”

clothingTotal 🡨 clothingTotal + price

If code = “H”

hardwareTotal 🡨 hardwareTotal + price

Enter code

Display foodTotal

Display clothingTotal

Display hardwareTotal

Display total

If hardwareTotal >100 and foodTotal >75

Voucher issued of 15% of total

Ask if more clients? Y/N?

#end program

Add another test data table for unexpected data (merit and excellence)