**Introduction to Object-Oriented Programming**

**Programming Assignment – Discount Coupon**

A grocery store awards coupons depending on how much a customer spends. For example, if you spend $45, you will get a coupon worth 5% percent of that amount. The following table shows the percent used to calculate the coupon awarded for different amounts spent. Write a program that calculates and prints the value of the coupon a person can receive based on the items purchased, and the amount paid after the discount is applied.

|  |  |
| --- | --- |
| ***Money Spent*** | ***Coupon Percent*** |
| Less than $10 | No coupon |
| Between $10 and $50 | 5% |
| Between $50 and $75 | 10% |
| Between $75 and $125 | 15% |
| Between $125 and $200 | 18% |
| More than $200 | 20% |

Your program should use a currency instance for formatting dollar amounts and a percent instance for formatting percents. Both can be found in the java.text.NumberFormat package. Do not print $ and % as characters in your print statements. The number formatters should take care of them.

Here is a sample run:

*Please enter the cost of your groceries: 78.24*

*You earned a discount coupon of $11.74. (15% of your purchase)*

*Please pay $66.50. Thank you for shopping with us!*

When your program includes multiple alternatives, you need to test all of the possible branches of your program. Let’s assume that you do not enter costs less than zero. Test each branch of your program using the inputs below. Compare your answers with those below.

Case 1: Less than $10

*Please enter the cost of your groceries: 8.28*

*You earned a discount coupon of $0.00. (0% of your purchase)*

*Please pay $8.28. Thank you for shopping with us!*

Case 2: Between $10 and $50

*Please enter the cost of your groceries: 45.67*

*You earned a discount coupon of $2.28. (5% of your purchase)*

*Please pay $43.39. Thank you for shopping with us!*

Case 3: Between $50 and $75

*Please enter the cost of your groceries: 68.20*

*You earned a discount coupon of $6.82. (10% of your purchase)*

*Please pay $61.38. Thank you for shopping with us!*

Case 4: Between $75 and $125

*Please enter the cost of your groceries: 124.32*

*You earned a discount coupon of $18.65. (15% of your purchase)*

*Please pay $105.67. Thank you for shopping with us!*

Case 5: Between $125 and $200

*Please enter the cost of your groceries: 184.32*

*You earned a discount coupon of $33.18. (18% of your purchase)*

*Please pay $151.14. Thank you for shopping with us!*

Case 6: More than $200

*Please enter the cost of your groceries: 260.91*

*You earned a discount coupon of $52.18. (20% of your purchase)*

*Please pay $208.73. Thank you for shopping with us!*

Figure out the math before you try to program a solution. Use a calculator to determine what the following discount amounts should be before you run your program. Then check to see if your program agrees with the calculated amounts.

|  |  |  |  |
| --- | --- | --- | --- |
| **Cost** | **Coupon Percent** | **Discount Amount** | **Total Paid** |
| $8.28 |  |  |  |
| $45.67 |  |  |  |
| $68.20 |  |  |  |
| $124.32 |  |  |  |
| $184.32 |  |  |  |
| $260.91 |  |  |  |

Remember the programmer’s mantra, “think first, code second”. Before jumping onto the computer, write some pseudocode to help with the logic of the program. For example, in a first iteration I might write something like this:

*Prompt for the purchase amount*

*In a nested if structure (possibly with compound conditions)*

*Determine the discount percent*

*Discount amount = purchase amount \* discount percent*

*Total paid = purchase amount – discount amount*

*Print the 3 output statements*