CIS 106

Problems – Using Nested if and Compound Relational Conditions

For each problem, develop the IPO and Code.

1. The input to the problem is quantity of widgets. Your program should determine the price to charge based on the schedule below. Calculate the extended price (quantity x price). Calculate tax at 7%. Display the extended price, tax amount and total.

Quantity Price

>10000 $10

5000 to 10000 $20

Below 5000 $30

|  |  |  |
| --- | --- | --- |
| Input | Process | Output |
| Quantity | If Quantity >10000, set Price to 10  Otherwise if Quantity >5000, set price to 20  Otherwise set Price to 30  Find extended Price by multiplying Price by Quantity  Find Tax by multiplying extended price by 0.07  Find Total by Adding Tax and Extended Price | Display Extended Price  Display Tax  Display Total |

1. Enter a part number and quantity Determine the cost per unit using the table below. Then calculate the total cost (quantity x unit cost). Display the part number, cost per unit and total cost. Note: Part number can be an integer but it can also be a string because you are not doing arithmetic on it. However in your code if statement be sure to compare using consistency, that is, if item == “10” when item is a string and if item == 10 when item is an integer.

Part Unit Cost

10 **or** 55 1.00

99 2.00

80 **or** 70 3.00

All others 5.00

|  |  |  |
| --- | --- | --- |
| Input | Process | Output |
| Part Number  Quantity | If Part Number is 10 or 55, set Price to 1  Otherwise if Part Number is 99, set Price to 2  Otherwise if Part Number is 80 or 70, set Price to 3  Otherwise set Price to 5  Find Total Cost by multiplying Quantity by Price | Display Part Number  Display Price  Display Total Cost |

1. Enter a principle amount of a CD and year to maturity of CD. Determine the interest rate based on the amount of the principle **and** maturity (see below). Calculate first year interest (principle x interest rate). Display principle, interest rate and the interest amount for first year.

Principle Years to Maturity Interest Rate

>$100,000 5 6%

$50,000 to $100,000 10 5%

$50,000 to $100,000 5 4%

Any other principle and years 2%

|  |  |  |
| --- | --- | --- |
| Input | Process | Output |
| Principle  Year To Maturity (Years) | If Principle >100000 and Years = 5, set Rate to 0.06  Otherwise if Principle is <= 100000 and >=50000 and Years = 10, set Rate to 0.05  Otherwise if Principle is <= 100000 and >=50000 and Years = 5, set Rate to 0.04  Otherwise set Rate to 0.02  Find Interest Amount by multiplying Rate by Principle  Find Interest Percent by Multiplying Rate by 100 | Display Principle  Display Interest Percent  Display Interest Amount |

1. Allow the user to enter number of concert tickets. The price per ticket depends on the volume (see below). Display the number of tickets, price per ticket and the total cost (number of tickets x Price Per Ticket).

Quantity Price Per Ticket

>=25 $50

10 to 24 $60

5 to 9 $70

Less 5 $75

|  |  |  |
| --- | --- | --- |
| Input | Process | Output |
| Quantity | If Quantity >= 25, set Price to 50  Otherwise if Quantity >= 10, set Price to 60  Otherwise if Quantity >= to 5, set Price to 70  Otherwise set Price to 75  Find Total by multiplying Quantity by Price | Display Quantity  Display Price  Display Total |

1. The user will enter employee last name, salary and job level (as noted below). Use the job level to determine the bonus rate. Then compute bonus to be salary times bonus rate. Display employee last name and bonus.

Job Level Bonus Rate

10 and above 25%

5 to 9 20%

All others 10%

|  |  |  |
| --- | --- | --- |
| Input | Process | Output |
| Last Name  Salary  Job Level | If Job Level >=10, set Bonus Rate to 0.25  Otherwise if Job Level >= to 5, set Bonus Rate to 0.2  Otherwise set Bonus Rate to 0.1  Find Bonus Amount by multiplying Salary by Bonus Rate | Display Last Name  Display Bonus Amount |