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

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| --- | --- | --- |
| Input | Process | Output |
| widgets | If widgets > 10000:  Then price = $10  Else if 10000 > widgets > 5000:  Then price = $20  Otherwise price = $30  extendedprice = widgets \* price  Tax = .07 \* extendedprice  Total = extendedprice + tax | Extendedprice  Tax  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

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| --- | --- | --- |
| Input | Process | Output |
| Partnumber  Quantity | If partnumber = 10 or 55  Then cost = 1.00  If partnumber = 99  Then cost = 2.00  If partnumber = 70 or 80  Then cost = 3.00  Otherwise pass  Totalcost = quantity \* cost | Partnumber  Cost  totalcost |

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%

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| --- | --- | --- |
| Input | Process | Output |
| Principle  maturity | If principle > 100000 and maturity = 5  Then interest = 6%  If 50000 <= principle <= 100000 and maturity = 10  Then interest = 5%  If 50000 <= principle <= 100000 and maturity = 5  Then interest = 4%  Otherwise interest = 2%  Fyinterest = interest \* principle | Principle  Interest  fyinterest |

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

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| --- | --- | --- |
| Input | Process | Output |
| tickets | If tickets >= 25  Then price = 50  If 10 <= tickets <= 24  Then price = 60  If 5 <= tickets <= 9  Then price = 70  Otherwise price = 75  Total = tickets \* price | Tickets  Price  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 |
| Name  Salary  level | If level >= 10  Then rate = 25%  If 5 <= level <= 9  Then rate = 20%  Otherwise rate = 10%  Bonus = rate \* salary | Name  Bonus |