Session 5 Assignment Problems – Nested if Statements and Compound Relational Conditions

For each problem, develop the IPO and Code.

1. The input to the problem is the 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(integer)	If quantity> 10000, price= 10	Extended price
	Else if quantity>5,000,price=20 Else, price=30	Tax amount
	Extended price= quantity x price	total
	Tax amount = extended price x 0.07 Total = extended price + tax amount	

2. 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 (string or integer)	If part number is 10 or 55, unit cost = 1.00	Part number
Quantity (integer)	If part number os 99,unit cost = 2.00	Unit cost
	Of part number is 80 or 70, unit cost =3.00 otherwise , unit cost = 5.00	Total cost
	Total cost = quantity x unit cost	

3. 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
Principal	If principle> 100,000 and years = 5, rate= 0.06	Principle
years	If principle between 50k-100k and years= 10, rate = 0.05	Interest rte
	If principle between 50k and 100k and years = 5, rate = 0.04 else , rate 0.02	Interest amount
	Calculate interest amount = principle x rate	

4. 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
Ticket quantity	If ticket quantity > = 25, price = 50	Ticket quantity
	Else if ticket quantity is 10 to 24, price = 60	Price per ticket
	Else if ticket quantity is 5-9, price = 70 else (less than 5), price = 75	Total cost
	Total cost = ticket quantity x price	

5. 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	If job level >= 10, bonus rate =.25	Last name
Salary	If job level 5 to 9, bonus rate = 0.20	Bonus
Job level	else , bonus rate = .10	
	Bonus = salary bonus rate	

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