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

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 of widgets	Determine **price per widget**: -If quantity > 10,000 - price = $10	Extended price
	- If quantity is 5,000 to 10,000 - price = $20	Tax amount
	-If quantity < 5,000 - price = $30	Total amount due

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	Determine **unit cost**: If part number is 10 or 55 - unit cost = $1.00	Part number
Quantity	If part number is 99 - unit cost = $2.00	Cost per unit
	If part number is 80 or 70 - unit cost = $3.00	Total cost
	Otherwise - unit cost = $5.00	
	Calculate **total cost** = quantity × unit cost	

3. Enter the principal amount of a CD and the 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 the 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 amount	Determine **interest rate**: - If principal > $100,000 and years = 5 -rate = 6%	Principal amount
Years to maturity	-If principal is $50,000–$100,000 and years = 10 -rate = 5%	Interest rate
	- If principal is $50,000–$100,000 and years = 5 -rate = 4%	First-year interest amount
	Otherwise -rate = 2%	
	Calculate **first-year interest** = principal × interest rate	

4. Allow the user to enter a 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:
Number of concert tickets	Determine **price per ticket**: -If tickets ≥ 25 -price = $50	Number of tickets
	-If tickets are 10 to 24 -price = $60	Price per ticket
	-If tickets are 5 to 9 -price = $70	Total cost
	-If tickets < 5 - price = $75	

	Calculate **total cost** = number of tickets × price per ticket	

5. The user will enter the employee's last name, salary and job level (as noted below). Use the job level to determine the bonus rate. Then compute the 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:
Employee last name	Determine **bonus rate**: -If job level ≥ 10 -bonus rate = 25%	Employee last name
Salary amount	-If job level is 5 to 9 -bonus rate = 20%	Bonus amount
Job level	Otherwise -bonus rate = 10%	
	Calculate **bonus amount** = salary × bonus rate	