CIS 106
Problems – Using Nested if and Compound Relational Conditions
For each problem, develop the IPO and Code.

- 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

qty	If qty > 10000
	  Price = 10
	Elif qty >= 5000 and <= 10000
	  Price = 20
	Else
	  Price = 30
	
	Price_ext = qty * price
	Tax = price_ext * 0.07
		Price_ext
		Tax
		total

- 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
prt	if prt == 10 or prt == 55	Prt

qty	unit_c = 1.00 elif prt == 99 unit_c = 2.00 elif prt == 80 or prt == 70 unit_c = 3.00 else unit_c = 5.00 Total_c = qty * unit_c	Unit_c total_c

- 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
Cd_pa cd_m	If cd_pa > 100000 and cd_m == 5 Rate_i = 0.06 Elif cd_pa >= 50000 and cd_pa <= 100000 and cd_m == 10 Rate_i =0.0 5 Elif cd_pa >= 50000 and cd_pa <= 100000 and cd_m == 5 Rate_i = 0.04 Else Rate_i =0.0 2 Amount_i = cd_pa * rate_i	Cd_pa Rate_i Amount_i

- 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

qty	If qty >= 25
	  Ppt = 50
	Elif qty >=10 and qty <= 24
	  Ppt = 60
	Elif qty >= 5 and qty <= 9
	  Ppt = 70
	Else
	  Ppt = 75
	
	Total = qty * ppt
		Qty
		Ppt
		total

- 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

lName
Salary
level
	If level >= 10
	  Rate = 0.25
	Elif level >= 5 and level <= 9
	  Rate = 0.20
	Else
	  Rate = 0.10
	
	Bonus = salary * rate
		lname
		bonus