CIS 121 Introduction to Programming
Problem Set – Nested If and compound relational conditions. For each problem create an IPO chart and c++ code file.

1. The input to the problem is quantity of widgets and customer status. You set the price based upon quantity and status using the table below. Your program should determine the price to charge based on the schedule below. Calculate the extended price. Calculate tax at 7%. Display the extended price, tax amount and total.

Quantity	Status	Price
>10000	A	$10
>10000	B	$12
5000 to 10000	C	$20
5000 to 10000	D	$22
Below 5000	Any	$30

input	process	output
Quantity of widgets, customer status	If quantity > 10000 and status = A → price = $10 Else if quantity > 10000 and status = B → price = $12 Else if 5000 <quantity < 10000 and status = C → price = $20 Else if 5000 ≤ quantity < 10000 and status = D → price = $22 Else (below 5000 any status) → price = $30 Extended price = price × quantity Tax = 7% of extended price Total = extended price + tax	Extended price, tax amount, total

2. Enter a part number of the following (10, 99, 55, 70, 50). Also enter the quantity. Determine the cost per unit using the table below. Then calculate the total cost. Display the part number, cost per unit and total.

Part	**Quantity**	**Cost Per Unit**
10	> 1000	1.00
99	> 500	2.00

All others All others 5.00

input	Process	output
Part number,quantity	If part = 10 and quantity > 1000 → cost = 1.00 If part = 99 and quantity > 500 → cost = 2.00 If part = 70 and quantity > 200 → cost = 5.00 Else → cost = 10.00 Total = cost × quantity	Part number, cost per unit, total

3. Allow the user to enter number of concert tickets and location code (H, L). The price per ticket depends on the volume and location (see below). Display the number of tickets, price per ticket and the total cost.

   Volume is greater than 25 or location is H cost per ticket is $30.00
   Volume is greater than 10 (10 to 24) or location is L cost per ticket is $40.00
   All other quantities or locations are $50.00

input	process	output
Volume (number of tickets), Location (H or L)	If volume > 25 and location == H → cost per ticket = 30 Else if volume > 10 and volume <= 24 and location == L → cost per ticket = 40 Else → cost per ticket = 50 Total = cost per ticket × volume	Cost per ticket, total cost

4. Allow the user to enter equipment code of a rental and a code indicating half day or full day. Determine the cost of the rental. Display the rental cost

Equipment Code	Day	Cost
A	F	10.00
A	H	15.00
B	F	20.00
B	H	35.00

C	H	40.00
C	F	45.00
All others	All others	50.00

input	process	output
Equipment code, Day code (H = half, F = full)	A-F → $10 A-H → $15 B-F → $20 B-H → $35 C-H → $40 C-F → $45 All others -> $50	Equipment code, cost

5. You need to display the gross salary for an employee. They input a job code and Hours. First, determine the rate of pay based on job code and hours (see table below). Next, compute gross pay (hrs * rate). No overtime pay.

Job Code	Hours	Rate of Pay
L	> 40	50.00
L	<=40	40.00
J	>60	100.00
J	<=60	75.00
A	>40	25.00
A	<=40	20.00

input	process	output
Job code, hours worked	L > 40 hrs → $50, ≤ 40 hrs → $40 J > 60 hrs → $100, ≤ 60 hrs → $75 A > 40 hrs → $25, ≤ 40 hrs → $20 Compute gross salary = hours x rate of pay	Job code, hours worked, rate of pay, gross salary