

## Session 4 Assignment Problems - the Basic If Statement

Develop an IPO Chart and Python code the following problems. Upload the IPO and code files to Blackboard.

- Allow a user to enter a quantity of an item. If the quantity is greater than or equal to 1000, the unit price should be \$3.00. For quantities under 1000 the unit price is \$5.00. Compute extended price to be quantity x unit price. Compute tax to be 7% of the extended price. The total is computed as extended price plus the tax.  
Display the quantity, unit price, extended price, tax and total.

Input	Process	Output
<b>quantity(integer/float)</b>	<b>If quantity &gt;= 1000, unit price = 3</b>	<b>quantity</b>
	<b>Else, unit price = 5.00 Extended price= quantity unit price</b>	<b>Unit price Extended price</b>
	<b>tax= extended price x 0.07 total= extended price+ tax</b>	<b>Tax Total</b>

- The program asks the user for an item and quantity. Determine the unit price of the item based on the chart below. Compute the extended price to be quantity x unit price. Display the item, unit price and extended price. Note: if the item entered is not A then assume the item is B. No need to check for B.

Item	Unit Price
A	\$10.00
B	\$20.00

(Note: assume the user will enter the data correctly. Assume if they enter capital A then \$10.00 gets assigned to unit price variable. Any other entry is assumed to be a capital B whether they enter B or not. Therefore, you only need a relational condition for A. This makes the if statement easier and removes data validation from the program which could get quite complex).

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if item == "A":  
    Unit_price = 10.00  
else:  
    Unit_price = 20.00
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Input	Process	Output
<b>Item(string)</b>	<b>If item =A , unit price = 10.00</b>	<b>item</b>
<b>quantity(integer)</b>	<b>Else, unit price = 20.00</b>	<b>Unit price</b>

	<b>Extended price= quantity x unit price</b>	<b>Extended price</b>
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3. Enter the number of books to order and cost per book. If the order total is over \$50.00 shipping is free. If the order total is \$50.00 or under charge \$25 shipping. Display the order total and shipping charge (note 0 should display for a free shipping charge).

<b>Input</b>	<b>Process</b>	<b>Output</b>
<b>Number of books</b>	<b>Order total= number of books x cost per book</b>	<b>Order total</b>
<b>Cost per books</b>	<b>If order total&gt; 50.00, shipping = 0</b>	<b>Shipping charge</b>
	<b>Else, shipping = 25.00</b>	

4. The warrantee of an appliance depends on the cost of the appliance. For appliances over \$1,000 the warrantee cost is 10% of the price. For appliances \$1,000 or less the warrantee cost is 5% of the price. The user will enter the name and cost of an appliance. Display name and cost of appliance, the cost of the warrantee and the total (cost of the appliance + warranty).

<b>Input</b>	<b>Process</b>	<b>Output</b>
<b>Appliance name</b>	<b>If cost&gt; 1000, Warranty= 10% of price</b>	<b>Appliance name</b> <b>Appliance cost</b>
<b>Appliance cost</b>	<b>Else, warranty = 5% of price</b>	<b>Warranty cost</b>
	<b>total= cost + warranty</b>	<b>Total</b>

5. Enter the user's last name, number of dependents and gross income. Compute adjusted gross income to be gross income minus dependents times \$12000. Next determine an income tax rate. Adjusted gross incomes over \$50,000 have a tax rate of 20%. Adjusted gross incomes \$50,000 or under have a tax rate of 10%.

Once you determine the tax rate, compute income tax to be adjusted gross income times tax rate. If the income tax is less than 0, set the income tax to \$100.

Display last name, gross income, number of dependents, adjusted gross income, and income tax.

<b>Input</b>	<b>Process</b>	<b>Output</b>
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Last name	<b>Adj gross= gross income - dependents x 12000</b>	Last name <b>Gross income</b>
Dependents	<b>If adj. Gross. 50000, tax rate = 20% Else, tax rate = 10%</b>	Dependents <b>Adj. gross income</b>
Gross income	<b>Income tax= adj. Gross x tax rate If income tax &lt;0, set tax income to 100</b>	Income tax

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