



ASSIGNMENT-1

COMP100 SEC002

Deepa K
Student Number: 301250548

ASSIGNMENT 1

1. **SOLVABLE** - Acme Builder's Inc. has worked out that the wiring of an average house requires 45m of 14AWG wire. If a contractor must wire 5 houses, what length of wire will be needed? **Given as an example.**
2. **Solvable**- Burnaby Farms wants to estimate the cost of fertilizing their fields for the coming year. Each hectare of cultivated land requires 15kg and they intend to work 300 hectares.

IPO Chart		
Input	Processing	Output
<ul style="list-style-type: none">• amountPerHectare• numOfHectares	Assumptions: <ol style="list-style-type: none">1. All hectares of land require the same amount of fertilizer. Processing Items: <ul style="list-style-type: none">• None Algorithm: <ol style="list-style-type: none">1. Enter amountPerHectare and numOfHectares2. Calculate totalAmount of fertilizer needed by multiplying amountPerHectare by numOfHectares3. Display totalAmount	<ul style="list-style-type: none">• totalAmount

Sample Calculation / Desk -Checking Table		
amountPerHectare(input)	numOfHectares(input)	totalAmount(output)
15 kg	300	4500kg

3. **Solvable-** Cherry Entertainment Corp. is looking into the profitability of hosting MMA XXII at the Rogers Center. The sale of tickets, broadcasting rights and advertising will gross approximately \$2 million. How much profit will Cherry Entertainment Center make if Rogers Centre cost \$800, 000?

To calculate the profit, Total expenses are required which would include stage decorations, hiring workers for various tasks and paying the players. To solve this problem, we can assume that the only expenses incurred is the \$800,000 for buying Roger's center.

Total profit would be calculated then by subtracting the total expenses from the gross amount earned from the sale of tickets, broadcasting rights and advertising:

\$2 million - (\$800,000+Rest of the expenses)

IPO Chart		
Input	Processing	Output
<ul style="list-style-type: none">expensegrossIncome	Assumptions: Other expenses such as stage decorations, hiring workers for various tasks and paying the players would not be included in the total expenses. Processing Items: <ul style="list-style-type: none">None Algorithm: <ol style="list-style-type: none">Enter expense and grossIncomeCalculate totalProfit by subtracting expense from grossIncomeDisplay totalProfit	<ul style="list-style-type: none">totalProfit

Sample Calculation / Desk -Checking Table		
expense (input)	grossIncome (input)	totalProfit(output)
\$800,000	2,00,0000	\$1,200,000

4.Solvable Delta Airlines estimates that the fuel efficiency of a Boeing 747 jet is 12 liters per km. If the price of aviation fuel is \$1 per liter, how much would it cost the airline to fly to New York and back from Toronto?

IPO Chart		
Input	Processing	Output
<ul style="list-style-type: none"> costPerLitre fuelEff totalDistance 	<p>Assumptions:</p> <p>1.The distance between New York and Toronto is 561 kilometres. (Total distance for a round trip=1122km)</p> <p>Processing Items:</p> <ul style="list-style-type: none"> totalFuel <p>Algorithm:</p> <ol style="list-style-type: none"> 1. Enter fuelEff 2. Enter totalDistance 3. Calculate totalFuel needed for a round trip to Toronto from New York by multiplying totalDistance by fueleff 4. Enter costPerLitre 5. Calculate totalFuelPrice by multiplying totalFuel and costPerLitre 	<ul style="list-style-type: none"> totalFuelPrice

Sample Calculation / Desk -Checking Table			
costPerLitre (input)	fueleff (input)	totalDistance	totalFuelPrice (output)
\$1	12 litres per Km	1122km	\$13,464.00

5.**Solvable:** Estelle's Grocery is having a back-to-school sale of up to 50% off on most food items. The price of potatoes is 11[¢] per kg. A plastic bag costs 5[¢]. What will the total cost (potatoes and bag) if someone buys 25kg of potatoes?

IPO Chart		
Input	Processing	Output
<ul style="list-style-type: none"> pricePerKg pricePlasticBag amtOfPotato discount numBags 	<p>Assumptions:</p> <p>The total bags used is 10.</p> <p>The user can enter discount percentage. (if discount is not applicable on potatoes, discount can be 0.)</p> <p>The price of potatoes and plastic bags are entered in cents.</p> <p>convertToDollar is constant value.</p> <p>Processing Items:</p> <p>priceOfPotatoes</p> <p>discountPrice</p> <p>totalPricePlasticBags</p> <p>dicountAmount</p> <p>Algorithm:</p> <ol style="list-style-type: none"> 1. Enter pricePerKg and amtOfPotato 2. Calculate priceInDollars by dividing pricePerKg by convertToDollar to convert cents to dollars 3. Calculate priceOfPotatoes by multiplying priceInDollars by amtOfPotato 4. Enter discount in percentage 5. Calculate the discountPrice by multiplying priceOfPotatoes by discount. 6. Calculate discountAmount by subtracting discountPrice from priceOfPotatoes 	<ul style="list-style-type: none"> totalCost

	<p>7. Enter pricePlasticBag</p> <p>8. Calculate pricePBIInDollars by dividing pricePlasticBag by convertToDollar to convert cents to dollars</p> <p>9. Enter numBags</p> <p>10. Calculate totalPricePlasticBags by multiplying pricePlasticBag and numBags</p> <p>11. Calculate the totalCost by adding discountAmount and totalPricePlasticBag</p>	
--	---	--

Sample Calculation / Desk -Checking Table					
pricePerKg (input)	amtOfPotato (input)	numBags(input)	discount (input)	pricePlasticBag (input)	totalCost (output)
11 cents	25 kg	10	50%	5 cents	\$1.875

6. **Solvable:** Fancy Jewelers is located in the Scarborough Town Center on the second floor near to Wal-Mart. In their Boxing week sale earrings were priced at \$20 per pair. If Narendra wants to get a pair for as many females in his family as he can. How many pairs can he get if he has \$125? [You may assume that there are more females in his family than he can buy earrings.]

IPO Chart		
Input	Processing	Output
<ul style="list-style-type: none"> pricePerPair totalBudget numOfPairs 	<p>Assumptions: There are more females in his family than he can buy earrings.</p> <p>Processing Items:</p> <ul style="list-style-type: none"> None <p>Algorithm:</p> <ol style="list-style-type: none"> 1. Enter pricePerPair 2. Enter totalBudget 3. Calculate numOfPairs by dividing totalBudget by pricePerPair 4. Display numOfPairs 	<ul style="list-style-type: none"> numOfPairs

Sample Calculation / Desk -Checking Table		
totalBudgets (Input)	pricePerPair (input)	numOfPairs (output)
125 dollars	20 dollars	6

7. **Solvable:** Gerard the Plumber charges \$1.25 per meter for pipe installation. Each join cost 90¢. How much will Gerard charge for a job that is 12m with 4 joins?

IPO Chart		
Input	Processing	Output
<ul style="list-style-type: none"> pricePerMeter costPerJoint PipeLength numOfJoint 	<p>Assumptions: All the joints cost the same.</p> <p>ConvertToDollar is a constant value.</p> <p>Processing Items:</p> <ul style="list-style-type: none"> costPerJointInDollars totalPipePrice totalJointPrice <p>Algorithm:</p> <ol style="list-style-type: none"> 1. Enter pricePerMeter and costPerJoint 2. Calculate costPerJointInDollars by dividing costPerJoint by ConvertToDollar to convert cents to dollars 3. Enter PipeLength 4. Calculate totalPipePrice by multiplying pricePerMeter and PipeLength 5. Enter number of joints 6. Calculate totalJointPrice by multiplying costPerJointInDollars by numOfJoint 7. Calculate totalCharge by adding totalJointprice and totalPipePrice 8. Display totalCharge 	<ul style="list-style-type: none"> totalCharge

Sample Calculation / Desk -Checking Table				
pricePerMeter (Input)	costPerJoint(Input)	pipeLength(input)	numOfJoint (input)	totalCharge (output)
\$1.25	90 cents	12m	4	\$18.60

8. **Solvable:** Last year at the CNE, the Halls family bought 50 ride tickets. If the Polar Express, the Ferris Wheel, the HighDrop and the WaterFall requires 15, 10, 12 and 9 tickets respectively, how many tickets will remain at the end of the day?

IPO Chart		
Input	Processing	Output
<ul style="list-style-type: none"> totalTicket ticketsForPolar ticketsForFerris ticketsForHighDrop ticketsForWaterFall 	<p>Assumptions: The family go in all of the rides mentioned and ride only once in each ride.</p> <p>Processing Items:</p> <ul style="list-style-type: none"> usedTicket <p>Algorithm:</p> <ol style="list-style-type: none"> 1. Enter totalTicket 2. Enter ticketsForPolar ticketsForFerris ticketsForHighDrop ticketsForWaterFall 3. Calculate usedTicket by adding ticketsForPolar, ticketsForFerris, ticketsForHighDrop and ticketsForWaterFall. 4. Calculate remNumOfTicket by subtracting usedTicket from totalTicket 	<ul style="list-style-type: none"> remNumOfTickets

Sample Calculation / Desk -Checking Table					
totalTickets (input)	ticketsForPolar (input)	ticketsForFerris (input)	ticketsForHighDrop (input)	ticketsForWaterFall (input)	remNumOfTicket (output)
50	15	10	12	9	4

9. **Solvable**-Isabelle's Confectionary sells a packet of Maynard's sourdrops for 25¢. Each packet contains approximately 30 candies. How many packets will Sarah get if she has \$3?

IPO Chart		
Input	Processing	Output
<ul style="list-style-type: none"> priceOfPacket amountAtHand 	<p>Assumptions: All the packets have the same price.</p> <p>All packets have 30 candies</p> <p>Price of sourdrops is in cents</p> <p>ConvertToDollar is a constant value.</p> <p>Processing Items:</p> <p>None.</p> <p>Algorithm:</p> <ol style="list-style-type: none"> 1. Enter priceOfPacket 2. Calculate priceOfPacketInDollars by dividing priceOfPacket by ConvertToDollar to convert cents to dollars 3. Enter amountAtHand 4. Calculate numOfPackets by dividing amountAtHand by priceOfPackets 	<ul style="list-style-type: none"> numOfPackets

Sample Calculation / Desk -Checking Table		
priceOfPacket (Input)	amountAtHand (Input)	numOfPackets(Output)
25 cents	\$3.00	12

10. **Solvable:** Jake's Towing Services works out of the Markham/Finch area. They charge \$5.50 per km for towing in addition to a flat service fee of \$18. What would be the cost of towing a Toyota RAV 4 from Morningside/Ellesmere to McCowan/Sheppard?

This requires the distance from Morningside/Ellesmere to McCowan/Sheppard to calculate the total cost.

IPO Chart		
Input	Processing	Output
<ul style="list-style-type: none"> pricePerKm flatFee Distance 	<p>Assumptions: The distance between Morningside/Ellesmere to McCowan/Sheppard is 7.5 km.</p> <p>Processing Items:</p> <ul style="list-style-type: none"> towingCharge <p>Algorithm:</p> <ol style="list-style-type: none"> Enter pricePerKm Enter distance in Km Calculate towingCharge by multiplying pricePerKm and distance Calculate totalCost by adding towingCharge and flatFee 	<ul style="list-style-type: none"> totalCost

Sample Calculation / Desk -Checking Table			
pricePerKm (Input)	distance (Input)	flatFee(input)	totalCost(Output)
\$5.50	7.5	\$18.00	\$59.25