# **Assignment 1 (Part A) – Due in week 2 at the beginning of your first COMP100 class.**

### **You will work in groups of four students. Each group will submit one printout and all members of the group will receive the same mark. Your printout should have a cover page indicating the course code → COMP100-001, the assignment title → Assignment 1 (Part A) and a list of the members of the group.**

**For each of the problems below determine what is required i.e. identify the output(s) and then the given input(s). Do a sample calculation that will transform the input into the required output. If this is successful, then the problem is solvable. If it can be solved then create a three-column IPO chart similar to the ones we did in your first class and then generate an algorithm. Else if it is not solvable then explain what is needed to make it solvable. If you make any assumption in your calculation, then you must clearly state so.**

**For each question in your submission, you must have either**

1. **the question, output, input, processing (if any) any assumptions, a sample calculation, and the IPO chart/**

**or**

1. **the question and an explanation**
2. Acme Builder’s Inc. has worked out that the wiring of an average house requires 45m of 14AWG wire. If a contractor has to wire 5 houses, what length of wire will be needed?
3. 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.
4. 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?
5. 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?
6. 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?
7. 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.]
8. 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?
9. 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?
10. Isabelle’s Confectionary sells a packet of sourdrops for 25₵. Each packet contains approximately 30 candies. How many packets will Sarah get if she has $3?

Output: packet

Input: money, eachPrice

Sample Calculation: packet = money \* 100 / eachPrice = 3 \* 100 / 25 = 12

|  |  |  |
| --- | --- | --- |
| Input | Processing | Output |
| money  eachPrice | Algorithm:   1. Prompt for packet and eachPrice 2. Calculate packet = money \* 100 / eachPrice 3. Display packet | packet |

1. 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?

Output: cost

Input: flatFee, perkmFee, location1, location2

Sample calculation: distance = googlemap[location1 , location2] = 7.6km

cost = flatFee + perkmFee \* distance = 18 + 5.5 \* 7.6 = $59.8

|  |  |  |
| --- | --- | --- |
| Input | Processing | Output |
| flatFee  perkmFee  location1  location2 | Algorithm:   1. Prompt for flatFee , perkmFee , location1 , location2 2. Calculate distance = googlemap[location1 , location2] 3. Calculate cost = flatFee + perkmFee \* distance 4. Display cost | cost |