# **Assignment 1 (Part B) – Due in week 3 at the beginning of your first COMP100 class.**

### **Like your first assignment, 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 → COMP100-061, the assignment title → Assignment 1 (Part B) and a list of the members of the group.**

**For each of the problems below, identify the output(s) and the inputs. Generate a detailed algorithm (you must prompt for and accept inputs and then display the output on the console) and create a two-column IPO chart with the required algorithm. Your C# statements must align with the matching IPO chart information. Your identifiers must be description and the type must be appropriate to the data that you will be working with. You should desk check your algorithm**

**Checklist:**

* **Did you copy the problem specification to your answer page?**
* **Do you have a sample calculation?**
* **Do you have 2 columns?**
* **Are you using identifiers without spaces?**
* **Does the IPO statement align with the appropriate c# statement? (You may add empty lines, reduce the size of the fonts and/or adjust the width of the columns)**

1. After surveying a number of new-home electrical installations, Kelly Builder’s Inc. has worked out what the length of wire a typical house would require. Write a program that will prompt the user for the average length required for a home and the number of houses to wire. The program will then calculate and display the total length of wire required for the specified number of houses.
2. Loreto Farms wants a program to estimate the cost of fertilizing their fields for the coming year. The program will prompt the user for the rate of fertilizer application (how many kg per hectares), the unit price of fertilizer (dollars per kg) and the size (hectares)of land to be cultivated and then calculate and display the cost
3. Montgomery Entertainment Corp. is looking into the profitability of hosting MMA XXII at the Rogers Center. Write a program that will calculate and display the profit that will result from hosting such as event. The program will calculate the income (you must prompt for each of the following) from the sale of tickets, broadcasting rights and advertising and subtract the cost of renting the Center
4. Narendra Airlines would like a program that will calculate and display the cost of flying an aircraft between various locations. Write a program that will compute the cost which is based on the fuel efficiency (amount of fuel used for each km travelled) of the aircraft, the unit price of fuel and the length of the journey
5. Othello’s Grocery is small business located in the West Hill area. They would like a program that will prompt the user for the weight and price of the produce, the price and capacity of plastic bag and then calculate and display the total cost of the sale. You may assume that all customers will require bags.
6. Parker would like to get each of the females in his family the same gift for the holidays. He has an amount of money which he is willing to use up completely. Write a program that will prompt him for the price of the item and the amount of money that he has and then calculate and display the most items that he can buy and the left-over money. (There are 2 outputs for this question)
7. Quincy “The Plumber” bills customer for pipe installation based on the length as well as the number of joins of the job. Build a program that will prompt for length rate, join rate, the length, the number of join and calculate and display the total cost. [cost = (length \* lengthRate) + (numberOfJoins \* joinRate)]
8. Last year at the CNE, the Robert Family brought ride tickets. If the Polar Express and the Ferris wheel cost 5 and 3 tickets respectively. Write a program that prompts the user for the amount of ticket bought, the number of times each of the two rides were taken and then calculate how many tickets will remain at the end of the day

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| IPO Information | C# Statements |
| Input  ticketsBought  polarTimes  ferrisTimes  Processing  polarCost  ferrisCost  Output  ticketsRemain  Algorithm:   1. Prompt for ticketsBought 2. Accept ticketsBought 3. Prompt for polarTimes 4. Accept polarTimes 5. Prompt for ferrisTimes 6. Accept ferrisTimes 7. Calculate polarCost = 5 \* polarTimes 8. Calculate ferrisCost = 3 \* ferrisTimes 9. Calculate ticketsRemain = ticketsBought – polarCost - ferrisCost 10. Display ticketsRemain | // Input  int ticketsBought;  int polarTimes;  int ferrisTimes;  // Processing  int polarCost;  int ferrisCost;  // Output  int ticketsRemain;  // Algorithm  Console.WriteLine("Enter the amount of ticket bought");  ticketsBought = Convert.ToInt32(Console.ReadLine());  Console.WriteLine("Enter the number of Polar Express times");  polarTimes = Convert.ToInt32(Console.ReadLine());  Console.WriteLine("Enter the number of Ferris wheel times");  ferrisTimes = Convert.ToInt32(Console.ReadLine());  polarCost = 5 \* polarTimes;  ferrisCost = 3 \* ferrisTimes;  ticketsRemain = ticketsBought – polarCost – ferrisCost;  Console.WriteLine(ticketsRemain); |

1. Stephanie’s Confectionary wants a program that will prompt the user for the price of the candy and the amount of money she would like to spend and then calculates and display the amount of candies that can be purchased as well as the amount of money remaining after purchase.

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| IPO Information | C# Statements |
| Input  price  money  Processing  Output  amount  remain  Algorithm:   1. Prompt for price 2. Accept price 3. Prompt for money 4. Accept money 5. Calculate amount = Math,Abs(money / price) 6. Calculate remain = money-amount \* price 7. Display amount 8. Display remain | // Input  double price;  double money;  // Processing  // Output  double amount;  double remain;  // Algorithm  Console.WriteLine("Enter the price of the candy");  price = Convert.ToDouble(Console.ReadLine());  Console.WriteLine("Enter the amount of money");  money = Convert.ToDouble(Console.ReadLine());  amount = Math,Abs(money / price);  remain = money-amount \* price;  Console.WriteLine(amount);  Console.WriteLine(remain); |

1. Thomas’ Towing Services would like an application that calculates and display the cost of a towing job. The cost is based on the towing rate, the distance as well as a flat service rate. The service rate is the same regardless of the towing distance and it is always applied in any job.

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| IPO Information | C# Statements |
| Input  towingRate  serviceRate  distance  Processing  towingCost  Output  cost  Algorithm:   1. Prompt for towingRate 2. Accept towingRate 3. Prompt for serviceRate 4. Accept serviceRate 5. Prompt for distance 6. Accept distance 7. Calculate towingCost = towingRate \* distance 8. Calculate cost = towingCost + serviceRate 9. Display cost | // Input  double towingRate;  double serviceRate;  double distance;  // Processing  double towingCost;  // Output  double cost;  // Algorithm  Console.WriteLine("Enter the towing rate");  towingRate = Convert.To double(Console.ReadLine());  Console.WriteLine("Enter the service rate");  serviceRate = Convert.To double(Console.ReadLine());  Console.WriteLine("Enter the towing distance");  distance = Convert.To double(Console.ReadLine());  towingCost = towingRate \* distance;  cost = towingCost + serviceRate;  Console.WriteLine(cost); |