COMP 100: Assignment 1

Gabriela Gaddini, Nima Javadvand-Tamar, Logan Kim, Ahilan Wigneswaran

Centennial College

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.

|  |  |  |
| --- | --- | --- |
| Input | Processing | output |
| Average Length of Wire,  Number of House to Wire | Algorithm:  1. Enter the average length of wire required for a home.  2. Enter the number of houses to wire.  3. Calculate TotalLength = AverageLength \* NumberofHouse  4. Display total length of wire required for the specified  number of houses. | Total Length of Wire |

|  |  |
| --- | --- |
| IPO Information | C# Statements |
| Input  AverageLength  NumberofHouses  Processing  Output  TotalLength  Algorithm  1. Prompt for AverageLength  2. Accept AverageLength  3. Prompt for NumberofHouse  4. Accept NumberofHouse  5. Calculate TotalLength =  AverageLength \* NumberofHouses  6. Display TotalLength | //Input  int AverageLength;  int NumberofHouses;  //Processing  //Output  int TotalLength;  //Algorithm  Console.Write("Enter the average length of wire  required for a home: ");  AverageLength = Convert.ToInt32(Console.ReadLine());  Console.Write("Enter the number of houses to wire: ");  NumberofHouses = Convert.ToInt32(Console.ReadLine());  TotalLength = AverageLength \* NumberofHouses;  Console.WriteLine(TotalLength); |

1. 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

|  |  |  |
| --- | --- | --- |
| Input | Processing | output |
| Rate of fertilizer,  Unit price of fertilizer, Size of land | Algorithm:  1. Enter the rate of fertilizer (kg/ha).  2. Enter the unit price of fertilizer (dollars/kg).  3. Enter the size of land (hectares).  4. Calculate cost = rate \* unitprice \* size  5. Display the total cost of fertilizing their fields. | Cost of fertilizing |

|  |  |
| --- | --- |
| IPO Information | C# statements |
| Input  rate  unitprice  size  Processing  Output  cost  Algorithm  1. Prompt for rate  2. Accept rate  3. Prompt for unitprice  4. Accept unitprice  5. Prompt for size  6. Accept size  7. Calculate cost = rate \* unitprice \* size  8. Display cost | //Input  int rate;  int unitprice;  int size;  //Processing  //Output  int cost;  //Algorithm  Console.Write("Enter the rate of fertilizer (kg/ha): ");  rate = Convert.ToInt32(Console.ReadLine());  Console.Write("Enter the unit price of fertilizer  (dollars/kg): ");  unitprice = Convert.ToInt32(Console.ReadLine());  Console.Write("Enter the size of land (hectares): ");  size = Convert.ToInt32(Console.ReadLine());  cost = rate \* unitprice \* size;  Console.WriteLine(cost); |

1. 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

|  |  |  |
| --- | --- | --- |
| Input | Processing | output |
| income,  rent fee | Algorithm:  1. Enter the income from the sale of tickets, broadcasting rights  and advertising.  2. Enter the rent fee.  3. Calculate profit = income - rent  4. Display profit. | profit |

|  |  |
| --- | --- |
| IPO Information | C# statements |
| Input  income  rent  Processing  Output  profit  Algorithm  1. Prompt for income  2. Accept income  3. Prompt for rent  4. Accept rent  5. Calculate profit = income - rent  6. Display profit | //Input  int income;  int rent; //Processing //Output  int profit; //Algorithm  Console.Write("Enter the income from the sale of tickets,  broadcasting rights and advertising: ");  income = Convert.ToInt32(Console.ReadLine());  Console.Write("Enter rent fee: ");  rent = Convert.ToInt32(Console.ReadLine());  profit = income - rent;  Console.WriteLine(profit); |

1. 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

|  |  |  |
| --- | --- | --- |
| Input | Processing | output |
| Fuel efficiency,  Length of travel, unit price | Algorithm:  1. Enter fuel efficiency(Km/L).  2. Enter the length of travel(Km).  3. Enter the unit price of fuel(L).  4. Calculate Cost = LengthTravel \* UnitPrice \* FuelEfficiency  5. Display Cost. | the cost of flying an aircraft |

|  |  |
| --- | --- |
| IPO Information | C# statements |
| Input  FuelEfficiency  LengthTravel  UnitPrice  Processing  Output  Cost  Algorithm  1. Prompt for FuelEfficiency  2. Accept FuelEfficiency  3. Prompt for LengthTravel  4. Accept LengthTravel  5. Prompt for UnitPrice  6. Accept UnitPrice  7. Calculate Cost = LengthTravel \*  UnitPrice \* FuelEfficiency  8. Display Cost | //Input  int FuelEfficiency;  int LengthTravel;  int UnitPrice; //Output  int Cost; //Processing //Algorithm  Console.Write("Enter fuel efficiency(Km/L): ");  FuelEfficiency = Convert.ToInt32(Console.ReadLine());  Console.Write("Enter the length of travel(Km): ");  LengthTravel = Convert.ToInt32(Console.ReadLine());  Console.Write("Enter the unit price of fuel(L): ");  UnitPrice = Convert.ToInt32(Console.ReadLine());  Cost = LengthTravel \* UnitPrice \* FuelEfficiency;  Console.WriteLine(Cost); |

1. 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.

|  |  |  |
| --- | --- | --- |
| Input | Processing | output |
| price, weight, bagprice,  bagcapacity | Algorithm:  1. Enter the price of the produce (cents/lb).  2. Enter the weight of the produce (lb).  3. Enter the price of the plastic bag (cents).  4. Enter the capacity of bag (lb).  5. Calculate currentprice = weight \* price  6. Calculate numberofbag = (weight - 1) / bagcapacity + 1  7. Calculate totalbagprice= numberofbag \* bagprice  8. Calculate cost = currentprice + totalbagprice.  9. Display total cost of sale. | Total cost of sale |

|  |  |
| --- | --- |
| IPO Information | C# statements |
| Input  price  weight  bagprice  bagcapacity  Processing  currentprice  numberofbag  totalbagprice  Output  cost  Algorithm  1. Prompt for price  2. Accept price  3. Prompt for weight  4. Accept weight  5. Prompt for bagprice  6. Accept bagprice  7. Prompt for bagcapacity  8. Accept bagcapacity  9. Calculate currentprice = price \*  weight  10. Calculate numberofbag = (weight   - 1) / bagcapacity + 1  11. Calculate totalbagprice =  numberofbag \* bagprice  12. Calculate cost = currentprice +  totalbagprice  13. Display cost | //Input  int price;  int weight;  int bagprice;  int bagcapacity; //Processing  int currentprice;  int numberofbag;  int totalbagprice; //Output  int cost; //Algorithm  Console.Write("Enter the price of the produce (cents/lb): ");  price = Convert.ToInt32(Console.ReadLine());  Console.Write("Enter the weight of the produce (lb): ");  weight = Convert.ToInt32(Console.ReadLine());  Console.Write("Enter the price of the plastic bag (cents): ");  bagprice = Convert.ToInt32(Console.ReadLine());  Console.Write("Enter the capacity of bag (lb): ");  bagcapacity = Convert.ToInt32(Console.ReadLine());  currentprice = price \* weight;  numberofbag = (weight - 1) / bagcapacity + 1;  totalbagprice = numberofbag \* bagprice;  cost = currentprice + totalbagprice;  Console.WriteLine(cost); |

1. Parker would like to get each of the members 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)

|  |  |  |
| --- | --- | --- |
| Input | Processing | Output |
| Price of item,  Amount of money | Algorithm  1. Enter the price of item (dollars).  2. Enter the amount of money that you have (dollars).  3. Calculate itemsbought = amountofmoney / priceofitem  4. Calculate totalcost = priceofitem \* itemsbought  5. Calculate leftover = amountofmoney - totalcost  6. Display the most items that he can buy.  7. Display leftover money. | the most items that he can buy, leftover money |

|  |  |
| --- | --- |
| IPO Information | C#statements |
| Input  priceofitem  amountofmoney  Processing  totalcost  Output  itemsbought  leftover  Algorithm  1. Prompt priceofitem  2. Accept priceofitem  3. Prompt amountofmoney  4. Accept amountofmoney  5. Calculate itemsbougnt =  amountofmoney / priceofitem  6. Calculate totalcost = priceofitem \*  itemsbought  7. Calculate leftover = amountofmoney  - totalcost  8. Display itemsbought  9. Display leftover | //Input  int priceofitem;  int amountofmoney;  //processing  int totalcost;  //Output  int itemsbought;  int leftover;  //Algorithm  Console.Write("Enter the price of the item: ");  priceofitem = Convert.ToInt32(Console.ReadLine());  Console.Write("Enter the amount of money that you  have: ");  amountofmoney = Convert.ToInt32(Console.ReadLine());  itemsbought = amountofmoney / priceofitem;  totalcost = priceofitem \* itemsbought;  leftover = amountofmoney - totalcost;  Console.WriteLine(itemsbought);  Console.WriteLine(leftover); |

1. 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)]

|  |  |  |
| --- | --- | --- |
| Input | Processing | Output |
| Length rate,  join rate,  the length,  the number of join | Algorithm  1. Enter the length rate (dollars/m).  2. Enter the join rate (dollars/ea).  3. Enter the length (meter).  4. Enter the number of joins.  5. Calculate cost = length \* lengthrate + numberofjoins \* joinrate  6. Display total cost of pipe installation. | total cost of pipe installation |

|  |  |
| --- | --- |
| IPO Information | C#statements |
| Input  lengthrate  joinrate  length  numberofjoins  Processing  Output  cost  Algorithm  1. Prompt lengthrate  2. Accept lengthrate  3. Prompt joinrate  4. Accept joinrate  5. Prompt length  6. Accpet length  7. Prompt numberofjoins  8. Accpet numberofjoins  9. Calculate cost = length \* lengthrate  + numberofjoins \* joinrate  10. Display cost | //Input  int lengthrate;  int joinrate;  int length;  int numberofjoins;  //processing  //Output  int cost;  //Algorithm  Console.Write("Enter the length rate (dollars/m): ");  lengthrate = Convert.ToInt32(Console.ReadLine());  Console.Write("Enter the join rate (dollars/ea): ");  joinrate = Convert.ToInt32(Console.ReadLine());  Console.Write("Enter the length (meter): ");  length = Convert.ToInt32(Console.ReadLine());  Console.Write("Enter the number of joins: ");  numberofjoins = Convert.ToInt32(Console.ReadLine());  cost = length \* lengthrate + numberofjoins \* joinrate;  Console.WriteLine(cost); |

1. 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

|  |  |  |
| --- | --- | --- |
| Input | Processing | Output |
| amount of ticket bought, number of times riding Polar Express ride, number of times riding Ferris wheel | Algorithm  1. Enter the amount of ticket bought.  2. Enter the number of times that Polar Express was taken.  3. Enter the number of times that Ferris Wheel was taken.  4. Calculate leftover = ticketbought - polarexpress \* 5 - ferriswheel \* 3  5. Display leftover tickets. | Leftover tickets |

|  |  |
| --- | --- |
| IPO Information | C#statements |
| Input  ticketbought  polarexpress  ferriswheel  Processing  Output  leftover  Algorithm  1. Prompt ticketbought  2. Accept ticketbought  3. Prompt polarexpress  4. Accept polarexpress  5. Prompt ferriswheel  6. Accpet ferriswheel  7. Calculate leftover = ticketbought -  polarexpress \* 5 - ferriswheel \* 3  8. Display leftover | //Input  int ticketbought;  int polarexpress;  int ferriswheel;  //processing  //Output  int leftover;  //Algorithm  Console.Write("Enter the amount of ticket bought: ");  ticketbought = Convert.ToInt32(Console.ReadLine());  Console.Write("Enter the number of times that Polar  Express was taken: ");  polarexpress = Convert.ToInt32(Console.ReadLine());  Console.Write("Enter the number of times that Ferris Wheel  was taken: ");  ferriswheel = Convert.ToInt32(Console.ReadLine());  leftover = ticketbought - polarexpress \* 5 - ferriswheel \* 3;  Console.WriteLine(leftover); |

1. Stephanie’s Confectionery 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.

|  |  |  |
| --- | --- | --- |
| Input | Processing | Output |
| price of the candy, amount of money | Algorithm  1. Enter the price of the candy (dollars).  2. Enter the amount of money that you would like to spend (dollars).  3. Calculate candyamount = moneyamount / candyprice  4. Calculate remainmoney = moneyamount - candyprice \* candyamount  5. Display amount of candies that can be purchased.  6. Display amount of money remaining. | amount of candies that can be purchased, amount of money remaining |

|  |  |
| --- | --- |
| IPO Information | C#statements |
| Input  candyprice  moneyamount  Processing  Output  candyamount  remainmoney  Algorithm  1. Prompt candyprice  2. Accept candyprice  3. Prompt moneyamount  4. Accept moneyamount  5. Calculate candyamount =  moneyamount / candyprice  6. Calculate remainmoney =  moneyamount - candyprice \*  candyamount  7. Display candyamount  8. Display remainmoney | //Input  int candyprice;  int moneyamount;  //processing  //Output  int candyamount;  int remainmoney;  //Algorithm  Console.Write("Enter the price of the candy (dollars): ");  candyprice = Convert.ToInt32(Console.ReadLine());  Console.Write("Enter the amount of money that you would  like to spend (dollars): ");  moneyamount = Convert.ToInt32(Console.ReadLine());  candyamount = moneyamount / candyprice;  remainmoney = moneyamount - candyprice \* candyamount;  Console.WriteLine(candyamount);  Console.WriteLine(remainmoney); |

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.

|  |  |  |
| --- | --- | --- |
| Input | Processing | Output |
| towing rate, the distance, flat service rate | Algorithm  1. Enter the towing rate (dollars/km).  2. Enter the distance (km).  3. Enter the flat service rate (dollars).  4. Calculate cost = towingrate \* distance + servicerate  5. Display the cost of towing job. | the cost of towing job |

|  |  |
| --- | --- |
| IPO Information | C#statements |
| Input  towingrate  distance  servicerate  Processing  Output  cost  Algorithm  1. Prompt towingrate  2. Accept towingrate  3. Prompt distance  4. Accept distance  5. Prompt servicerate  6. Accept servicerate  7. Calculate cost = towingrate \*  distance + servicerate  8. Display cost | //Input  int towingrate;  int distance;  int servicerate;  //processing  //Output  int cost;  //Algorithm  Console.Write("Enter the towing rate (dollars/km): ");  towingrate = Convert.ToInt32(Console.ReadLine());  Console.Write("Enter the distance (km): ");  distance = Convert.ToInt32(Console.ReadLine());  Console.Write("Enter the flat service rate (dollars): ");  servicerate = Convert.ToInt32(Console.ReadLine());  cost = towingrate \* distance + servicerate;    Console.WriteLine(cost); |