Lab sheet 1

C# and .Net Framework

1. For each of the data item given below, choose an appropriate data type and write a C# statement to declare the variable
   - Variable myAge to store your own age
   - Variable income to keep track of Arun's personal income
   - Variable temp_c to store temperature in degree Celsius
   - Variable temp_k to store temperature in Kelvin
   - Variable name to store Aum's full name
2. Let x, y and z be of type int and ch of type char. Describe the condition that makes each of the following Boolean expressions true
   - x > 2 true when x is greater than 2
   - x%2 == 0 true when x is an even number
   - (x%5 == 0)
   - (x%y == 0)
   - ((x%y == 0) && (z%y == 0))
   - ch == 'a'
   - ((ch >= 'a') && (ch <= 'z'))
   - ((ch >= 'A') && (ch <= 'Z'))
   - ((ch >= '0') && (ch <= '9')) true if ch is a character between '0' and '9'
   - (ch != '*')
   - !(ch == '*')

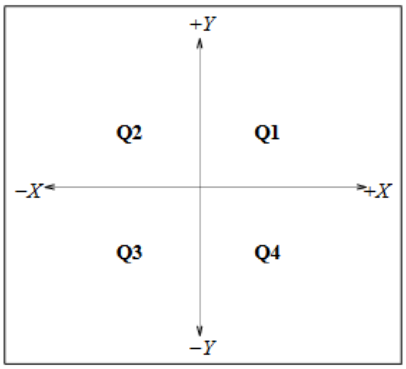
3. Run the code snippet given below and fill the answers of the question

```
using System ;

class Test {

static void Main () {

double x = 3.0 , y = 2.0;

int a = 10 , b = 2;

-------------------------(fill this line with code to be
executed mentioned below)

Console.ReadLine ();

}

}
```

```
Console.WriteLine(a);     --------- 10
Console.WriteLine(x+a);
Console.WriteLine(a/b);
Console.WriteLine(y/x);
Console.WriteLine(y%x);
Console.WriteLine((a+b)/b%a);
Console.WriteLine(9.0/5.0*(a-x));
Console.WriteLine(x+y-x*y%x);
Console.WriteLine(57%50/25);
```

4. Using if else construct write C# program to check whether a number is
    - even or odd
    - positive or negative
    - multiple of 6 or not
    - multiple of 100 or not

5. Write a C# program which attempts to identify the quadrant of the input (x, y) coordinates. If the input coordinates happen to be on either X-axis or Y-axis, the program will display "I don't know."



Sample Output

Please input X: -50
Please input Y: 10
(-50, 10) is in Q2

To take the user input

```
int   i = int.Parse(Console.ReadLine());  //  reading an integer data
float f = float.Parse(Console.ReadLine());// reading a floating point data
```

6. A cellular phone company has a promotion plan for its customers. The air time fee is calculated as follows
    - Each of the first two minutes costs 5 paise (per minute)
    - Each of the remaining minutes costs 2 paise (per minute)

   Take the number of minutes from the user, and computes the total air time fee.

   Sample output

   Enter the number of minutes: 1

   The air time fee is 5 paise.

   Enter the number of minutes: 5

   The air time fee is 16 paise.

7. Write a BMI calculator program which will find your body status. Use the following rule
   *BMI = Weight(in kg)/ height*height (in meter)*

BMI	Interpretation
$BMI < 18.5$	Underweight
$18.5 \leq BMI < 25$	Normal
$25 \leq BMI < 30$	Overweight
$BMI \geq 30$	Obese

   Sample output

   Enter your weight: 65
   Enter your height: 1.75
   Your BMI is 21.22.
   You are normal.

8. Write a C# program to determine whether the input number is an integer. (Hint: Use the method Math.Round())

9. Write a C# program using ***switch case*** to translate a letter to a number according to a given mapping table (from a cell-phone's dial pad).

Letters	Number
A B C	2
D E F	3
G H I	4
J K L	5
M N O	6
P Q R S	7
T U V	8
W X Y Z	9

   Sample Output

   Please input a letter: A

The corresponding number of A is 2.

Please input a letter: *
There is no corresponding number for *.

10. Write a C# program to compute the cost of book shipping. The shipping cost is computed according to the shipping type and the package weight. The shipping rate is show in thefollowing table.

Shipping Type	**Weight (gram)**	**Rate (paise/ gram)**
Regular	First 2000	0.50
Regular	After 2000	0.75
Express	Use the same rate as regular + 50 paise fee	

Note that the shipping cost is computed from the possible valid minimum rate.
For example,
The shipping cost of a book package of 4.5 kilograms is
cost = (2000 grams 0.50 paise/gram) + (2500 grams 0.75 paise/gram)
= 1000 paise +1 875 paise = 2875 paise = 28 rupees 75paise