**Assignment 02:   
Data Types, Conversions and Operators**

* IF ANY ASSIGNMENT IS FOUND **“CHEATED”** or **“COPIED”** IT WILL BE GRADED **STRAIGHT-FORWARD “ZERO”**
* Last date of Submission: Week 4

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**Question 01:** Google out what are the most significant and commonly used data types, especially in C#. Prepare a table that will answer the following questions:

1. How much space in memory will they grab if we declare one variable?
2. What can be the minimum and maximum values they can hold? *(for example: maximum value that Integers can store is 2147483647)*

**Question 02:** what is meant by precedence of operators in programming?  
**Question 03:** Suppose we have eight data types: *Integers, Long, Double, Float, Decimal, Character, Strings* and *Boolean.* Write a program that will take input from user one by one, convert it rest of all data types and print the converted value. DO it for ALL data types.While converting do following:

1. Note down differences in values
2. Note down methods you are using
3. Note down errors/ exceptions you encountered – if any!

For example: I am writing a program that asks integer input from user, I know that Console.ReadLine( ) will give me result in “string” I have to convert it into integer via built-in library function that is Convert.ToInt32( ) and save in a variable of integer data type. What if I have to convert that very integer data type in rest of all data types?.

1. Console.Write(“Enter integer value”);
2. int intValue = Convert.ToInt32(Console.ReadLine());
3. // Converting integer into Float. Note the is there any difference in value after converting integer value in float
4. float floatValue = Convert.ToSingle(intValue);
5. Console.WriteLine (“Integer value after converting into float = ” + floatValue);
6. // Converting integer into long
7. long longValue = Convert.ToInt64( intValue );
8. Console.WriteLine (“Integer value after converting into long = ” + longValue);
9. // Converting integer into double
10. double doubleValue = Convert.ToDouble( intValue );
11. Console.WriteLine (“Integer value after converting into double = ” + doubleValue);
12. // Converting integer into decimal
13. decimal decimalValue = Convert.ToDecimal( intValue );
14. Console.WriteLine (“Integer value after converting into decimal = ” + decimalValue);
15. // Converting integer into character
16. char characterValue = Convert.ToChar( intValue );
17. Console.WriteLine (“Integer value after converting into character = ” + characterValue);
18. // Converting integer into string
19. string strValue = Convert.ToString( intValue );
20. Console.WriteLine (“Integer value after converting into string = ” + strValue);
21. // Converting integer into boolean
22. bool boolValue = Convert.ToBool( intValue );
23. Console.WriteLine (“Integer value after converting into boolean = ” + boolValue);

**Question 04:** Write programs that calculates following:

* Assume the appropriate data types for the input
* Name variable properly in camelCasing
* Make separate programs for each.

1. Take initial velocity, time and acceleration from user, convert and save them in respective data types and calculate final velocity as per following formula:

1. Take distance and time, convert and save them in respective data types and calculate speed as per following formula:

1. Take initial velocity, final velocity and time from user, convert and save them in respective data types and calculate acceleration as per following formula:
2. Take mass and velocity from user, convert and save them in respective data types and calculate Kinetic Energy as per following formula:
3. Take initial velocity, final velocity, acceleration from user, convert and save them in respective data types and calculate Distance per following formula:
4. Take initial velocity and final velocity from user, convert and save them in respective data types and calculate Average Velocity per following formula:
5. Take value of x from user, convert and save them in respective data type and calculate Result per following formula:
6. Take value of mass of body one (m1) and mass of body two (m2) from user, convert and save them in respective data type and calculate Reduced Mass per following formula:
7. Make a program that calculates the Newtonian Gravity as per following formula:

* Where m1 and m2 are the masses of two body,
* G is the universal gravitational constant which has a value of 6.67300 × 10-11
* r is distance between the two bodies

1. Make a program where it is asked form user to enter total amount, you have to answer how much ZAKAAT to be paid on that amount. ZAKAAT is the 2.5% of the total amount.
2. Make a program that ask user to enter temperature in Ferinheight and you have to convert that into Celsius.

°C = (°F - 32) x 5/9

1. Write a program that will tell you how many meters are there in a mile. Where mile is supposed to be input by user.
2. Write a program that will calculate percent composition of element as per following formula, where n = the number of moles of the element in one mole of the compound.
3. Write a program that will calculate energy of an electron in the nth state in a hydrogen atom. Below is the formula, where RH = Rydberg constant = 2.18 x 10-18 J
4. Write a program that will calculate area of circle, where value of is 3.142
5. Write a program that will calculate area of Trapezoid
6. Write a program that will calculate distance between two points
7. Write a program that will calculate area of triangle
8. Write a program that will ask unit price of chocolate, ice-cream and fries. Then your program will as about how many chocolates, ice-creams and fries you have to buy. In the end you have to print the total amount of bill.
9. Make a program that will ask number of marks achieved in subjects and prints MarksSheet. Total marks per subject is 100 and number of subjects is up to you.

– Happy Coding –