MODULE3

TOPICS (Fundamentals, OOPs)

Assignment Basic Level

B1. What is C#?

- C# is combination of C and C++.
- C# is object oriented programming language.
- C# is programming language and developed by Microsoft 2001.

B2. Can we use keywords as identifier? Why?

- No, because keyword is predefined word.

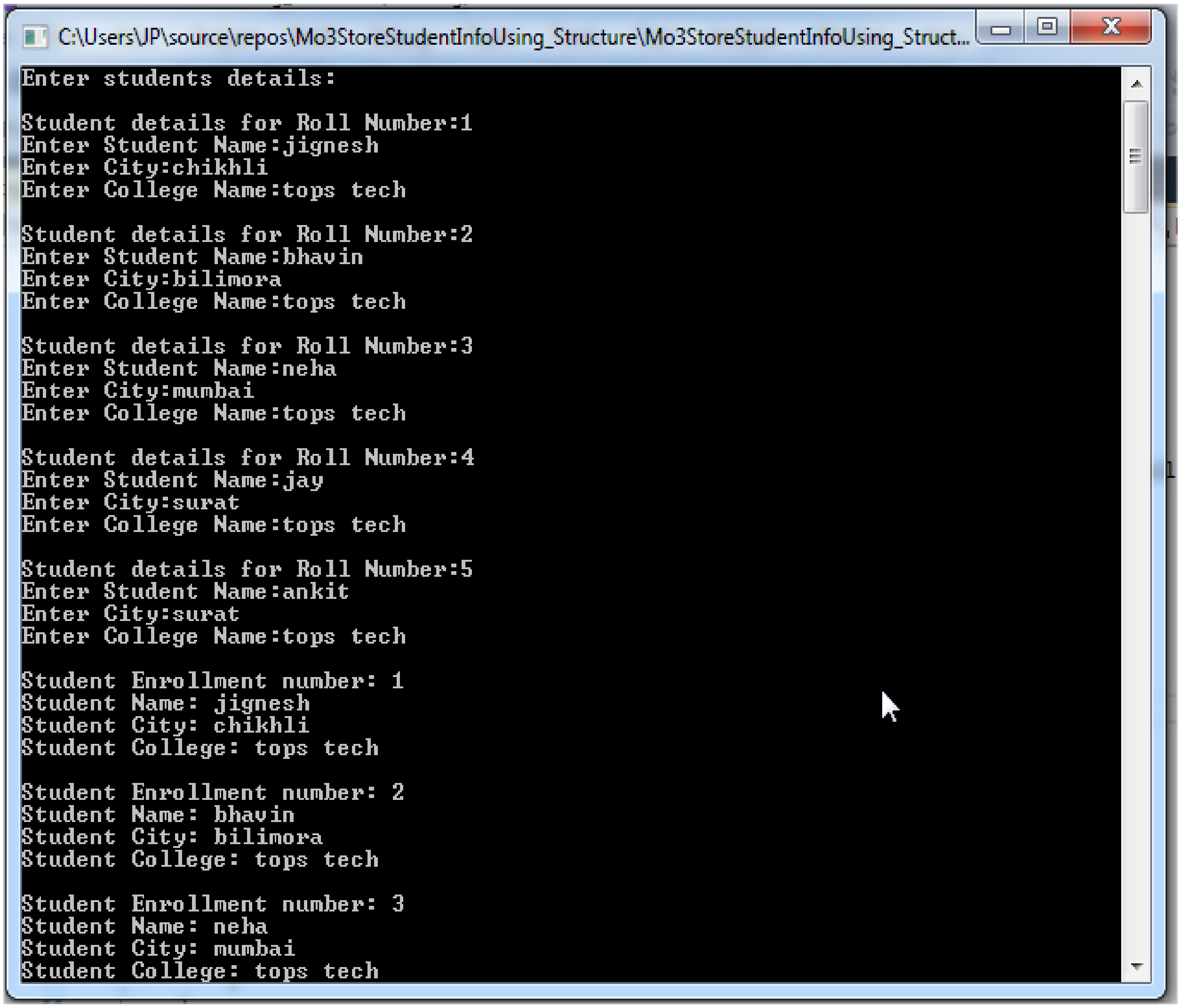
B3. Create program to take 5 students details using structure.

Ans:

```
class Program
{
    struct Student
    {
        public int roll;
        public string name;
        public string city;
        public string collogename;
    }
    static void Main(string[] args)
    {
        Console.WriteLine("Enter students details:");
        Student[] s1 = new Student[5];
        for (int i = 0; i < 5; i++)
        {
            s1[i].roll = i + 1;
            Console.WriteLine("\nStudent details for Roll Number:"
            + s1[i].roll);
            Console.Write("Enter Student Name:");
            s1[i].name = Console.ReadLine();
            Console.Write("Enter City:");
            s1[i].city = Console.ReadLine();
            Console.Write("Enter College Name:");
            s1[i].collogename = Console.ReadLine();
        }
        for(int i = 0; i < 5; i++)
        {
             Console.WriteLine("\nStudent Enrollment number: " +
             s1[i].roll);
```

```
                Console.WriteLine("Student Name: " + s1[i].name);
                Console.WriteLine("Student City: "+ s1[i].city);
                Console.WriteLine("Student College"+s1[i].collogename);
            }
            Console.ReadLine();
        }
    }
```

Output:



C:\Users\JP\source\repos\Mo3StoreStudentInfoUsing_Structure\Mo3StoreStudentInfoUsing_Struct...

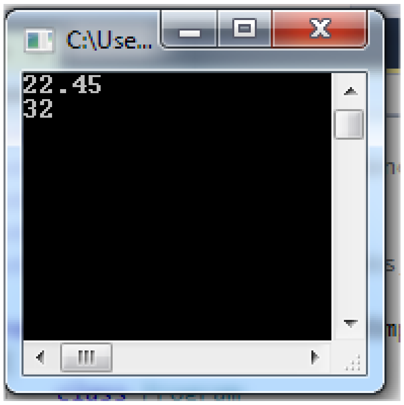
```
Enter students details:

Student details for Roll Number:1
Enter Student Name:jignesh
Enter City:chikhli
Enter College Name:tops tech

Student details for Roll Number:2
Enter Student Name:bhavin
Enter City:bilimora
Enter College Name:tops tech

Student details for Roll Number:3
Enter Student Name:neha
Enter City:mumbai
Enter College Name:tops tech

Student details for Roll Number:4
Enter Student Name:jay
Enter City:surat
Enter College Name:tops tech

Student details for Roll Number:5
Enter Student Name:ankit
Enter City:surat
Enter College Name:tops tech

Student Enrollment number: 1
Student Name: jignesh
Student City: chikhli
Student College: tops tech

Student Enrollment number: 2
Student Name: bhavin
Student City: bilimora
Student College: tops tech

Student Enrollment number: 3
Student Name: neha
Student City: mumbai
Student College: tops tech
```

B4. Create a program to differentiate explicit and implicit conversation.

Ans:

```
class Program
{
   static void Main(string[] args)
   {
       double b = 12.45;
       int x = 10;
       b = b + x; //implicit
       Console.WriteLine(b);

       x = (int)b + x;//explicit

       Console.WriteLine(x);
       Console.ReadLine();
   }
}
```

Output:



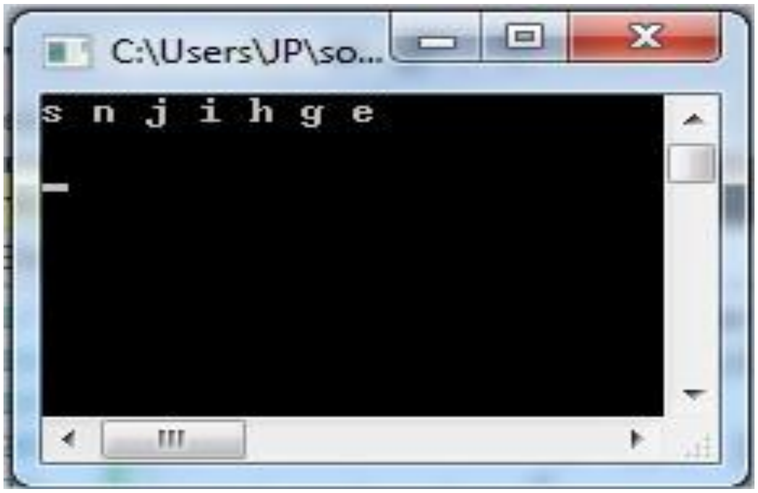
```
22.45
32
```

B5. Create program to sort string in descending order

Ans:-

```
class Program
{
      static void Main(string[] args)
      {
                    string s1 = "jignesh";
                    char[] c1;
                    char ch;
                    int len = s1.Length;
                    c1 = s1.ToCharArray(0,len);
                    for (int i=0;i<len;i++)
                    {
                        for (int j=0;j<len-1;j++)
                        {
                            if (c1[j] < c1[j + 1])
                            {
                                ch = c1[j];
                                c1[j] = c1[j + 1];
                                c1[j + 1] = ch;
                            }
                        }
                    }



                    foreach (char c in c1)
                    {
                    ch = c;
                    Console.Write("{0} ", ch);
                    }
                    Console.WriteLine("\n");
                    Console.ReadLine();
            }

        }
```

Output:-



```
s n j i h g e
```

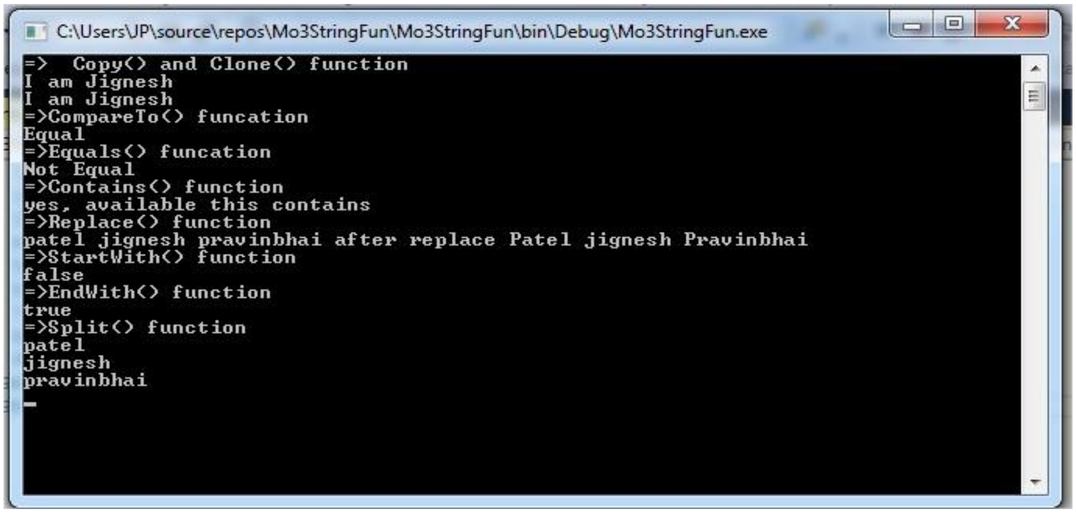
B6. Explain any 5 string operation methods

Ans:

```
class Program
{
     static void Main(string[] args)
     {
           Console.WriteLine("=>  Copy() and Clone() function");
           string str = "I am Jignesh";

           var str1 = str.Clone();//one location twi name.
           var str2 = String.Copy(str);// copy of string two
           sperate location

           Console.WriteLine(str1);
           Console.WriteLine(str2);


      // CompareTo() funcation
           Console.WriteLine("=>CompareTo() funcation");
           string name1 = "jignesh";
           string name2 = "jignesh";
           if (name1.CompareTo(name2) == 0)
           {
                Console.WriteLine("Equal");
           }
           else
           {
                Console.WriteLine("Not Equal");
           }
      // Equals() funcation
           Console.WriteLine("=>Equals() funcation");
           string name3 = "patel";
           string name4 = "jignesh";
           if (name3.Equals(name4))
           {
                Console.WriteLine("Equal");
           }
           else
           {
                Console.WriteLine("Not Equal");
           }

      //Contains() function
           Console.WriteLine("=>Contains() function");
```

```
            string name5 = "patel jignesh pravinbhai";
            if (name5.Contains("jignesh"))
            {
                Console.WriteLine("yes, available this
                contains");
            }
            else
            {
                Console.WriteLine("Not found");
            }
        //Replace() function
            Console.WriteLine("=>Replace() function");
            var repl = name5.Replace("p","P");
            Console.WriteLine(name5+" after replace "+repl);

        //StartWith() and EndWith() function
            Console.WriteLine("=>StartWith() function");
            if (name5.StartsWith("jignesh"))
            {
                Console.WriteLine("true");
            }
            else
            {
                Console.WriteLine("false");
            }
            Console.WriteLine("=>EndWith() function");
            if (name5.EndsWith("pravinbhai"))
            {
                Console.WriteLine("true");
            }
            else
            {
                Console.WriteLine("false");
            }
        //split() function
            Console.WriteLine("=>Split() function");
            var arr = name5.Split(' ');
            foreach( var item in arr)
            {
                Console.WriteLine(item);
            }

            Console.ReadLine();
        }
    }
```

Output:



C:\Users\JP\source\repos\Mo3StringFun\Mo3StringFun\bin\Debug\Mo3StringFun.exe

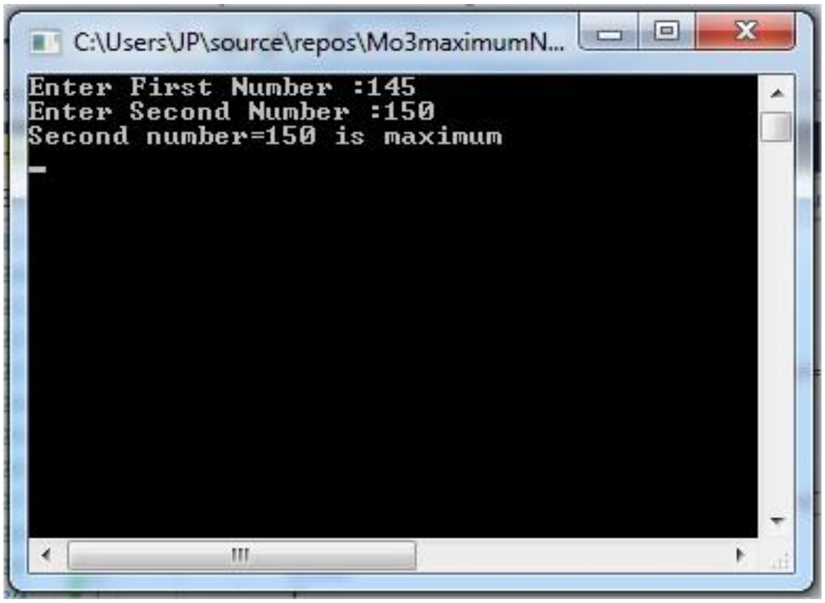
```
=>  Copy() and Clone() function
I am Jignesh
I am Jignesh
=>CompareTo() funcation
Equal
=>Equals() funcation
Not Equal
=>Contains() function
yes, available this contains
=>Replace() function
patel jignesh pravinbhai after replace Patel jignesh Pravinbhai
=>StartWith() function
false
=>EndWith() function
true
=>Split() function
patel
jignesh
pravinbhai
_
```

B7. Create program to take 2 numbers from user and show maximum number

Ans:

```
class Program
{
        int n1, n2;
        public void inputData()
        {
                Console.Write("Enter First Number :");
                n1 = int.Parse(Console.ReadLine());
                Console.Write("Enter Second Number :");
                n2 = int.Parse(Console.ReadLine());
        }
        public void calMax()
        {
                if (n1 > n2)
                {
                        Console.WriteLine("First number={0} is
                        maximum",n1);
                }
                else if(n1==n2)
                {
                        Console.WriteLine("Both number={0},{1} is equal",
                        n1, n2);
                }
                else
                {
                        Console.WriteLine("Second number={0} is maximum",
                        n2);
                }
            }
            static void Main(string[] args)
            {
                Program p1 = new Program();
                p1.inputData();
                p1.calMax();
                Console.ReadLine();
            }
        }
```

Output:



```
Enter First Number :145
Enter Second Number :150
Second number=150 is maximum
_
```

Write a program to perform below series and patterns

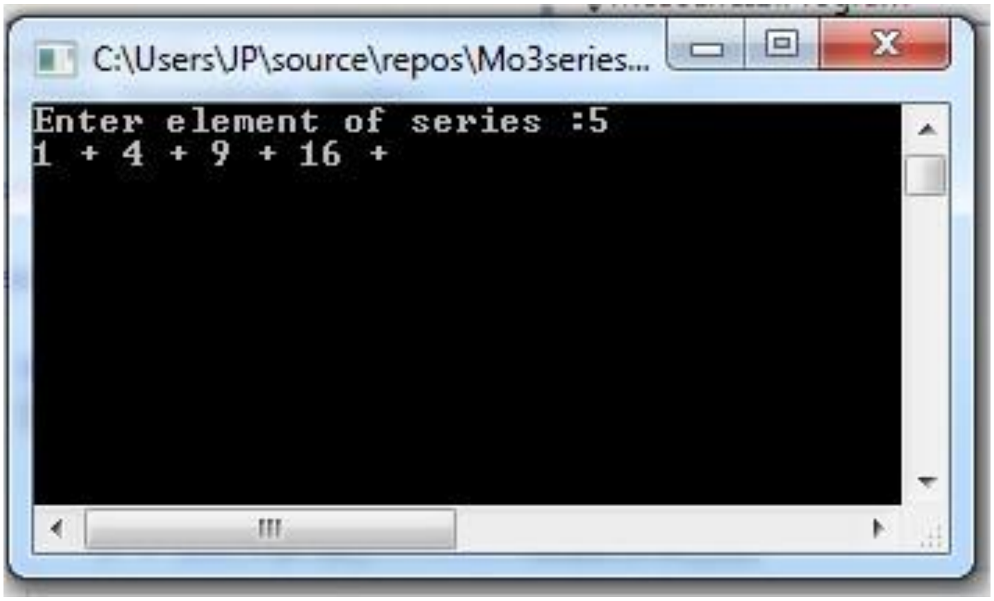
B8. 1+4+9+16+25

Ans:

```
    class Program
    {
        static void Main(string[] args)
        {
            int n,mul,sum=0;
            Console.Write("Enter Series size :");
            n = int.Parse(Console.ReadLine());

            for (int i = 1; i < n; i++)
            {
                mul = i * i;
```

```
                    Console.Write("{0} + ",mul);
                    sum += i * i;

                }
                Console.ReadLine();
            }
        }
```

Output:



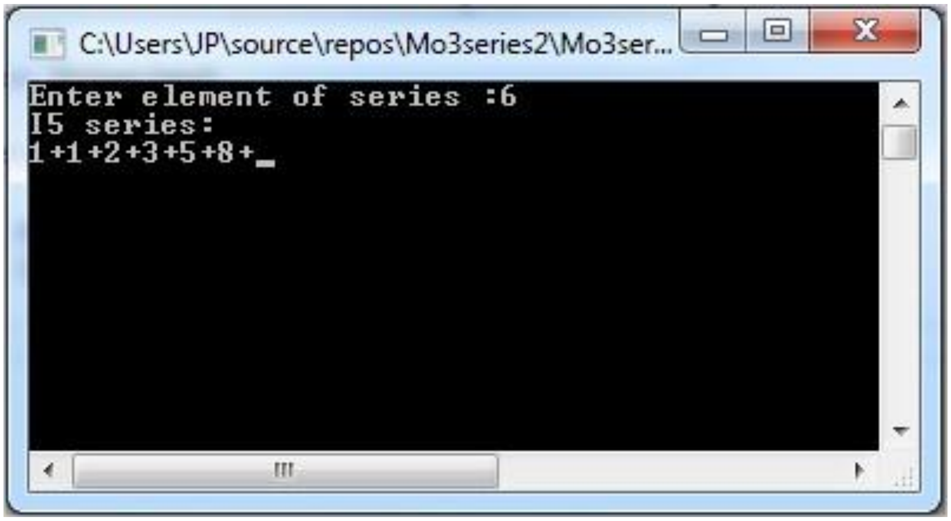
```
Enter element of series :5
1 + 4 + 9 + 16 +
```

I5. 1+1+2+3+5+8+

Ans:

```
class Program
{
      public static void Main(string[] args)
      {
            int n;
            int x = 1, y = 1, res;

            Console.Write("Enter element of series :");
            n = int.Parse(Console.ReadLine());

            Console.WriteLine("I5 series:");
            Console.Write(x + "+" + y + "+");

            for (int i = 2; i < n; ++i)
            {
                  res = x + y;
                  Console.Write(res + "+");
                  x = y;
                  y = res;
            }
            Console.ReadLine();
      }
}
```

Output:



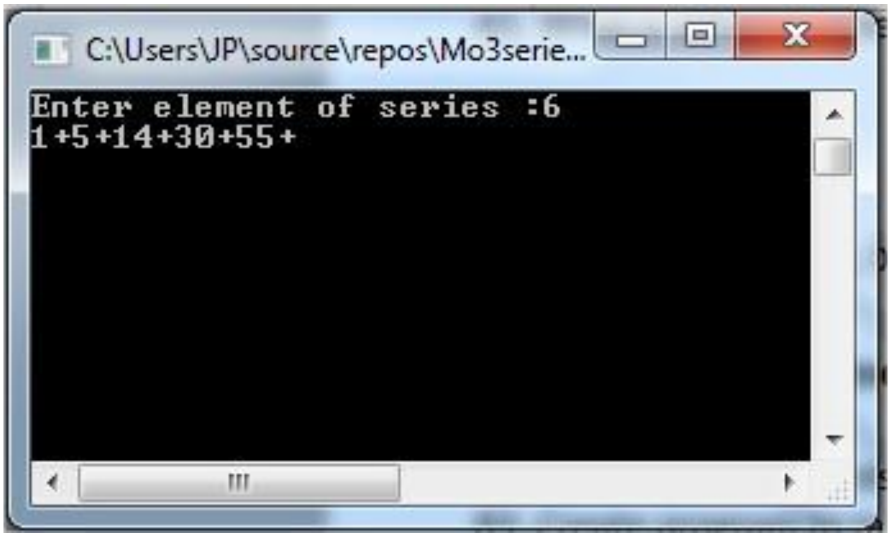
```
Enter element of series :6
I5 series:
1+1+2+3+5+8+_
```

A4. 1+5+14+30+55+

Ans:

```
class Program
{
        static void Main(string[] args)
        {
                int n, mul, sum = 0;
                Console.Write("Enter element of series :");
                n = int.Parse(Console.ReadLine());
                for (int i = 1; i < n; i++)
                {
                        mul = i * i;
                        sum += i * i;
                        Console.Write("{0}+", sum);
                }
                Console.ReadLine();
        }
}
```

Output:



```
Enter element of series :6
1+5+14+30+55+
```

Pattern 1:

1

2 3

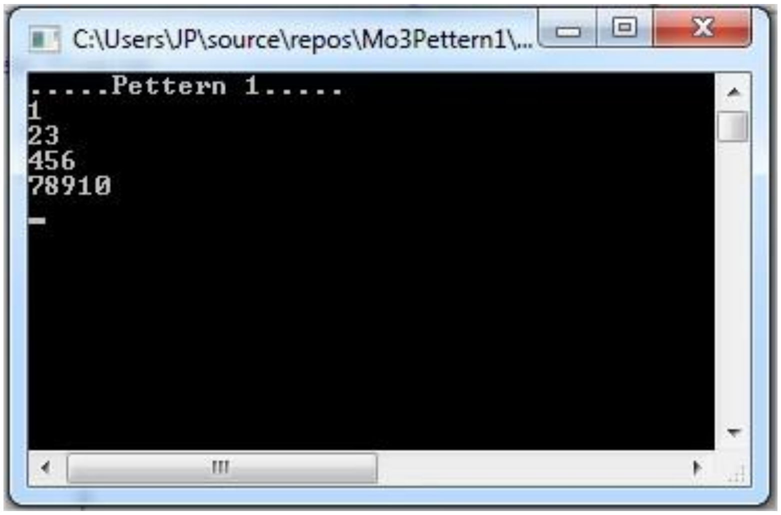
4 5 6

7 8 9 10

Ans:

```
class Program
{
        static void Main(string[] args)
        {
                Console.WriteLine(".....Pettern 1.....");
                int k = 1;
                for (int i = 0; i < 4; i++)
                {
                        for (int j = 0; j <= i; j++)
                        {
                                Console.Write(k++);
                        }
                        Console.WriteLine();
                }
                Console.ReadLine();
        }
}
```

Output:



```
.....Pettern 1.....
1
23
456
78910
_
```

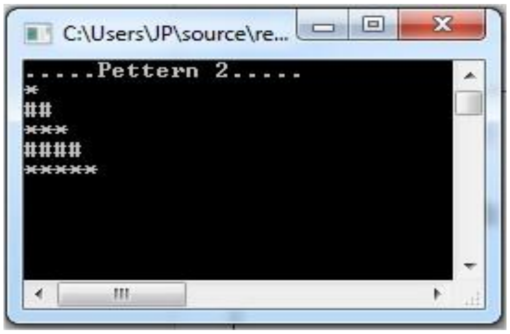
Pattern 2:

```
*
##
***
####
*****
```

Ans:

```
class Program
{
      static void Main(string[] args)
      {
            Console.WriteLine(".....Pettern 2.....");
            for (int i = 0; i < 5; i++)
            {
                  for (int j = 0; j <= i; j++)
                  {
                        if (i % 2 == 0)
                        {
                              Console.Write("*");
                        }
                        else
                        {
                              Console.Write("#");
                        }
                  }
                  Console.WriteLine();
            }
            Console.ReadLine();
      }
}
```

Output:



```
.....Pettern 2.....
*
##
***
####
*****
```

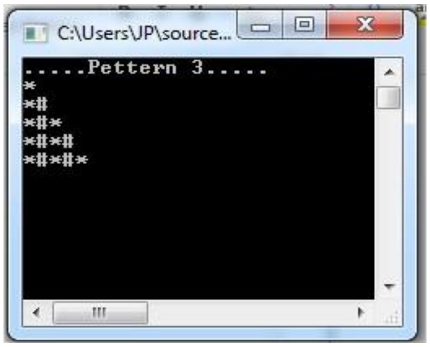
Pattern 3:

```
*
*#
*#*
*#*#
*#*#*
```

Ans:

```
class Program
{
        static void Main(string[] args)
        {
                Console.WriteLine(".....Pettern 3.....");
                for (int i = 0; i < 5; i++)
                {
                        for (int j = 0; j <= i; j++)
                        {
                                if (j % 2 == 0)
                                {
                                        Console.Write("*");
                                }
                                else
                                {
                                        Console.Write("#");
                                }
                        }
                        Console.WriteLine();
                }
                Console.ReadLine();
        }
}
```

Output:



```
.....Pettern 3.....
*
*#
*#*
*#*#
*#*#*
```

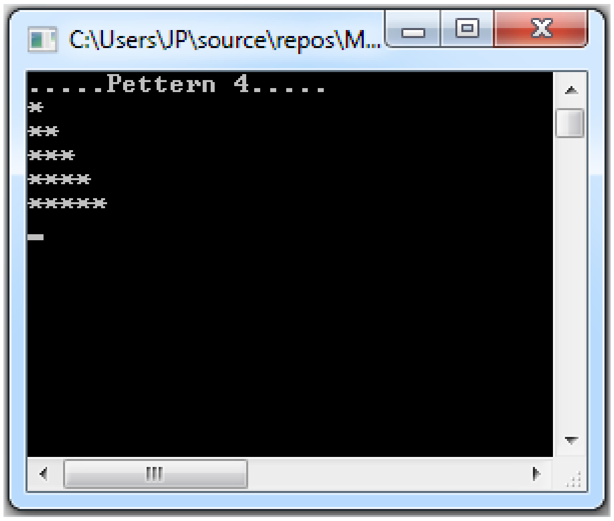
Pattern 4:

```
*

**

***

****

*****
```

Ans:

```
class Program
{
        static void Main(string[] args)
        {
                Console.WriteLine(".....Pettern 4.....");
                for (int i = 0; i < 5; i++)
                {
                        for (int j = 0; j <= i; j++)
                        {
                                Console.Write("*");
                        }
                        Console.WriteLine();
                }
                Console.ReadLine();
        }
}
```

Output:



```
.....Pettern 4.....
*
**
***
****
*****
```

Pattern 5:

1

22

333

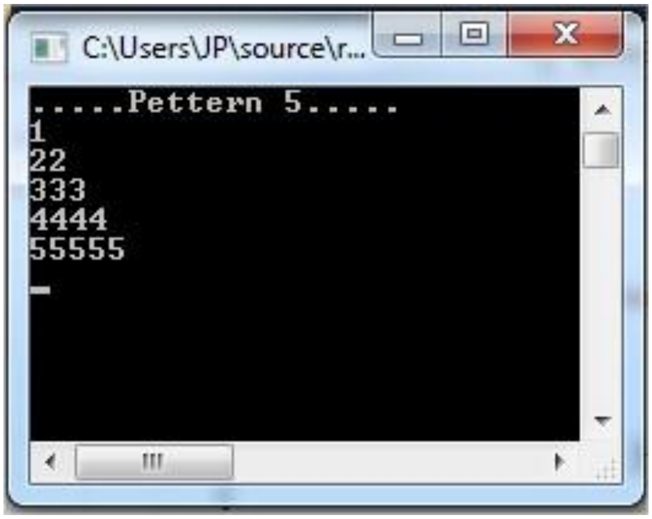
4444

55555

Ans:

```
class Program
{
        static void Main(string[] args)
        {
                Console.WriteLine(".....Pettern 5.....");
                for (int i = 0; i < 5; i++)
                {
                        for (int j = 0; j <= i; j++)
                        {
                                Console.Write(i+1);
                        }
                        Console.WriteLine();
                }
                Console.ReadLine();
        }
}
```

Output:



```
.....Pettern 5.....
1
22
333
4444
55555
```

Pattern 6:

1

12

123

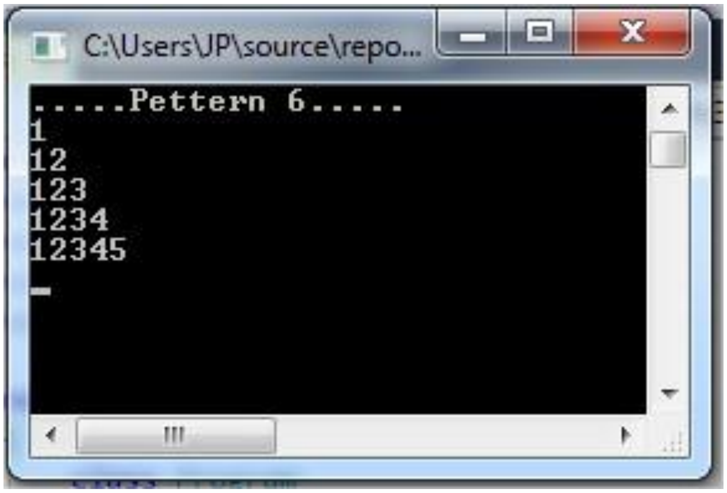
1234

12345

Ans:

```
class Program
{
        static void Main(string[] args)
        {
                Console.WriteLine(".....Pettern 6.....");
                for (int i = 1; i <= 5; i++)
                {
                        for (int j = 1; j <= i; j++)
                        {
                                Console.Write(j);
                        }
                        Console.WriteLine();
                }
                Console.ReadLine();
        }
}
```

Output:



```
.....Pettern 6.....
1
12
123
1234
12345
```

B9. What do you mean by loop variable?

Ans:

- ⇨ Loop variable is index of for loop.

B10. What do you mean by iteration?

Ans:

- ⇨ Iteration is fancy word for a loop.
- ⇨ It is set of number of time operation perform in loop.

B11. What is Array?

Ans:

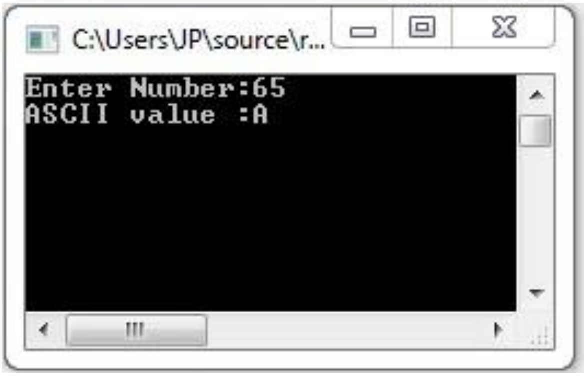
- ⇨ Arrays are used to store multiple values in a single variable.

B12. Show ASCII value of entered number.

Ans:

```
class Program
{
        static void Main(string[] args)
        {
                int n;
                Console.Write("Enter Number:");
                n = int.Parse(Console.ReadLine());
                Console.WriteLine("ASCII value :"+Convert.ToChar(n));
                Console.ReadLine();
        }
}
```

Output:



```
Enter Number:65
ASCII value :A
```

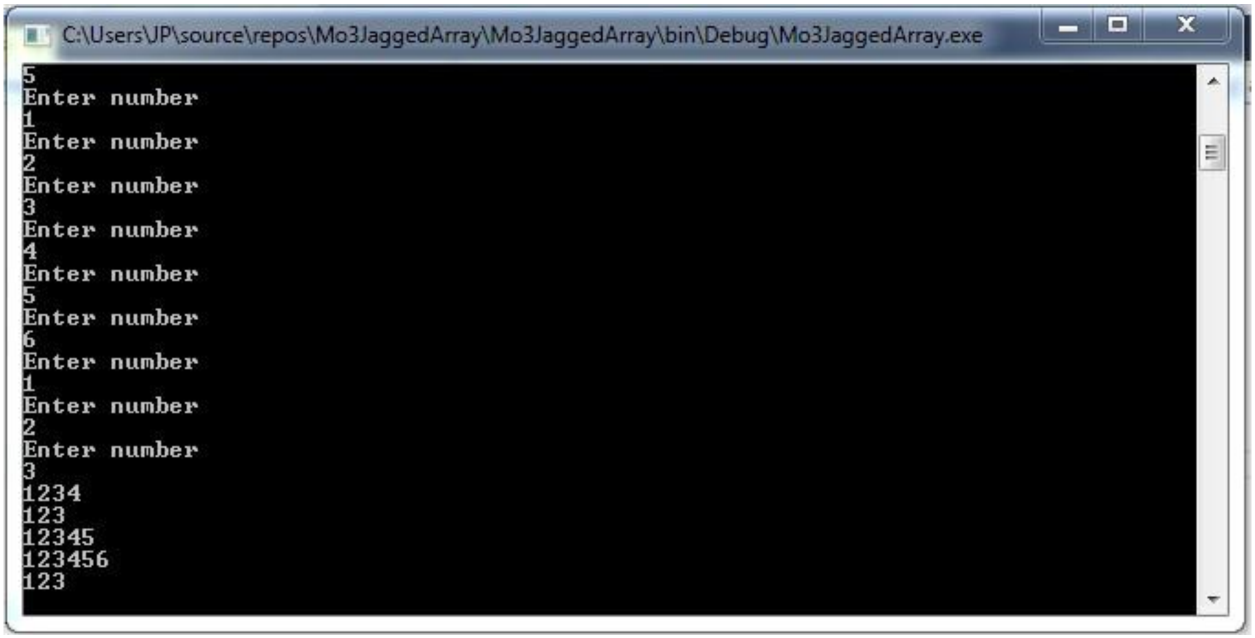
B13. What is jagged array? Explain with example.

Ans:

⇨ It is a row wise column declaration.

```
class Program
{
   static void Main(string[] args)
     {
         int[][] arr = new int[5][];
         arr[0] = new int[4];
         arr[1] = new int[3];
         arr[2] = new int[5];
         arr[3] = new int[6];
         arr[4] = new int[3];

         for (int i = 0; i < 5; i++)
         {
             for(int j=0;j<arr[i].Length;j++)
             {
                 Console.WriteLine("Enter number");
                 arr[i][j] = int.Parse(Console.ReadLine());
             }
         }

         for (int i = 0; i < 5; i++)
         {
             for (int j = 0; j < arr[i].Length; j++)
             {
                 Console.Write(arr[i][j]);
             }
             Console.WriteLine();
         }
         Console.ReadLine();
     }
}
```

Output:



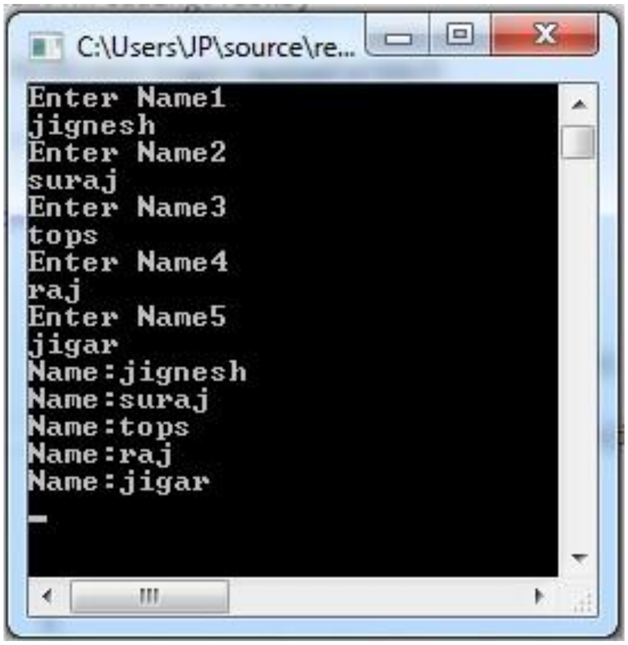
C:\Users\JP\source\repos\Mo3JaggedArray\Mo3JaggedArray\bin\Debug\Mo3JaggedArray.exe

```
5
Enter number
1
Enter number
2
Enter number
3
Enter number
4
Enter number
5
Enter number
6
Enter number
1
Enter number
2
Enter number
3
1234
123
12345
123456
123
```

B14. Create program to iterate string variable using foreach loop.
Ans :

```
class Program
{
   static void Main(string[] args)
   {
       String[] str = new string[5];

       for (int i = 0; i < str.Length; i++)
       {
           Console.WriteLine("Enter Name"+(i+1));
           str[i] = Console.ReadLine();
       }

       foreach (string item in str)
       {
           Console.WriteLine("Name:"+item);
       }
       Console.ReadLine();
   }
}
```

Output:



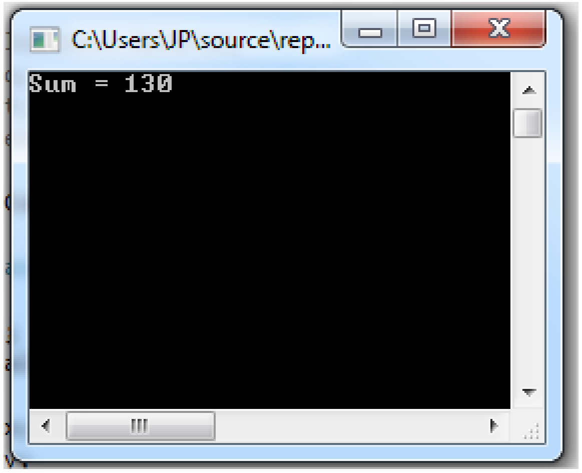
```
Enter Name1
jignesh
Enter Name2
suraj
Enter Name3
tops
Enter Name4
raj
Enter Name5
jigar
Name:jignesh
Name:suraj
Name:tops
Name:raj
Name:jigar
_
```

B15. Write a program to call class method.

Ans:

```
class CallClassMethod
{
   int a, b;
   public CallClassMethod(int x,int y)
   {
        a = x;
        b = y;
   }
   public void sum()
   {
        int c = a + b;
        Console.WriteLine("Sum = "+c);
   }
}
class Program
{
   static void Main(string[] args)
   {
        CallClassMethod obj1 = new CallClassMethod(45,85);
        obj1.sum();
        Console.ReadLine();
   }
}
```

Output:



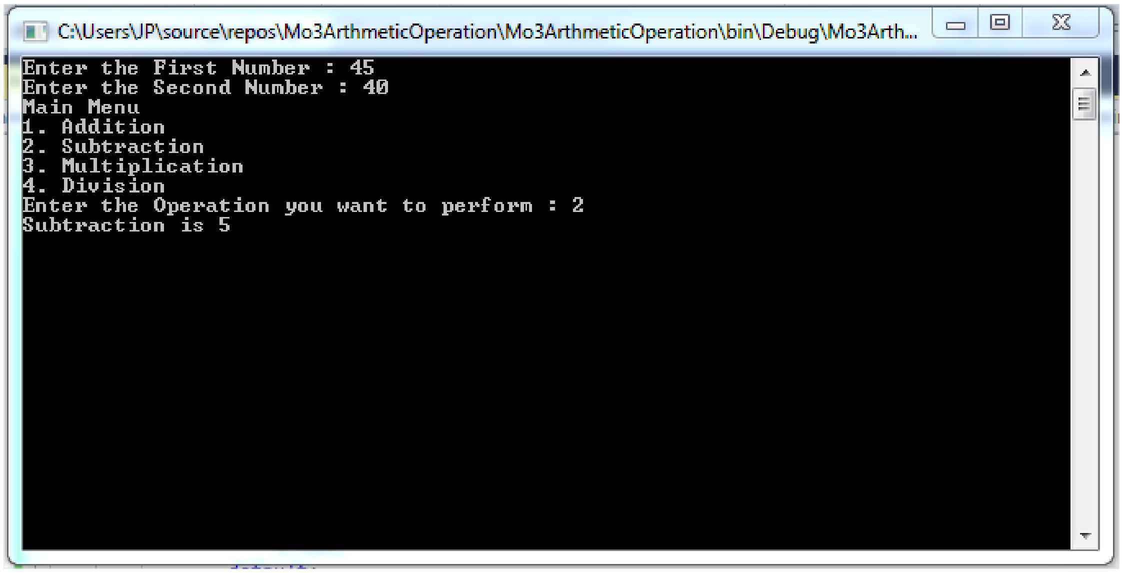
```
Sum = 130
```

B16. Write a program to calculate arithmetic operations using class and object.
Ans:

```
class Addition
{
  public Addition(int a, int b)
  {
      int c = a + b;
      Console.WriteLine("Addition is "+c);
  }
}
class Subtraction
{
  public Subtraction(int a, int b)
  {
      int c = a - b;
      Console.WriteLine("Subtraction is " + c);
  }
}
class Multiplication
{
  public Multiplication(int a, int b)
  {
      int c = a * b;
      Console.WriteLine("Multiplication is " + c);
  }
}
class Division
{
  public Division(int a, int b)
  {
      int c = a / b;
      Console.WriteLine("Division is " + c);
  }
}
class Program
{
  static void Main(string[] args)
  {
      char n;
      int Num1, Num2;
      Console.Write("Enter the First Number : ");
      Num1 = Convert.ToInt32(Console.ReadLine());
      Console.Write("Enter the Second Number : ");
      Num2 = Convert.ToInt32(Console.ReadLine());
```

```
            Console.WriteLine("Main Menu");
            Console.WriteLine("1. Addition");
            Console.WriteLine("2. Subtraction");
            Console.WriteLine("3. Multiplication");
            Console.WriteLine("4. Division");
           Console.Write("Enter the Operation you want to perform :");
            n = Convert.ToChar(Console.ReadLine());
            switch (n)
            {
                case '1':
                    Addition a = new Addition(Num1, Num2);
                    break;
                case '2':
                    Subtraction s = new Subtraction(Num1, Num2);
                    break;
                case '3':
                    Multiplication m = new Multiplication(Num1, Num2);
                    break;
                case '4':
                    Division d = new Division(Num1, Num2);
                    break;
                default:
                    Console.WriteLine("Invalid Option");
                    break;
            }
            Console.ReadLine();
        }
    }
```

Output:



C:\Users\JP\source\repos\Mo3ArthmeticOperation\Mo3ArthmeticOperation\bin\Debug\Mo3Arth...

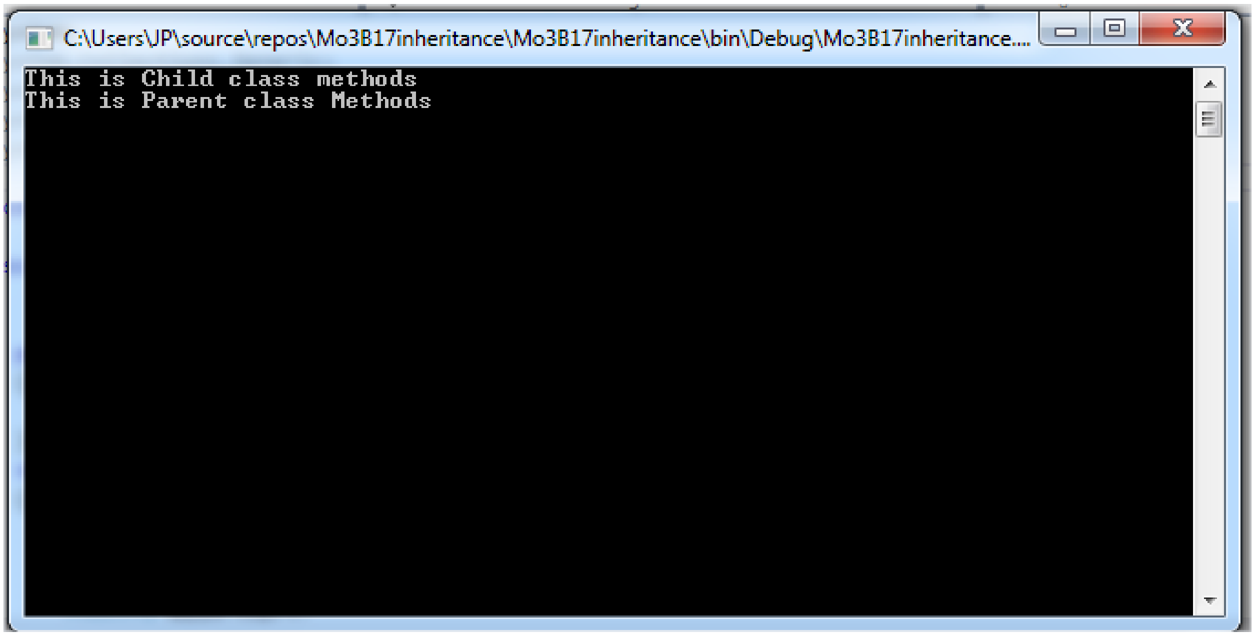
```
Enter the First Number : 45
Enter the Second Number : 40
Main Menu
1. Addition
2. Subtraction
3. Multiplication
4. Division
Enter the Operation you want to perform : 2
Subtraction is 5
```

B17. Write a program to call method of parent class.

Ans:

```
class ParentClass
{
   public void show()
   {
       Console.WriteLine("This is Parent class Methods");
   }
}
class Program : ParentClass

{
   public void test()
   {
       Console.WriteLine("This is Child class methods");
   }
   static void Main(string[] args)
   {
       Program p1 = new Program();
       p1.test();
       p1.show();
       Console.ReadLine();
   }
}
```

Output:



C:\Users\JP\source\repos\Mo3B17inheritance\Mo3B17inheritance\bin\Debug\Mo3B17inheritance....

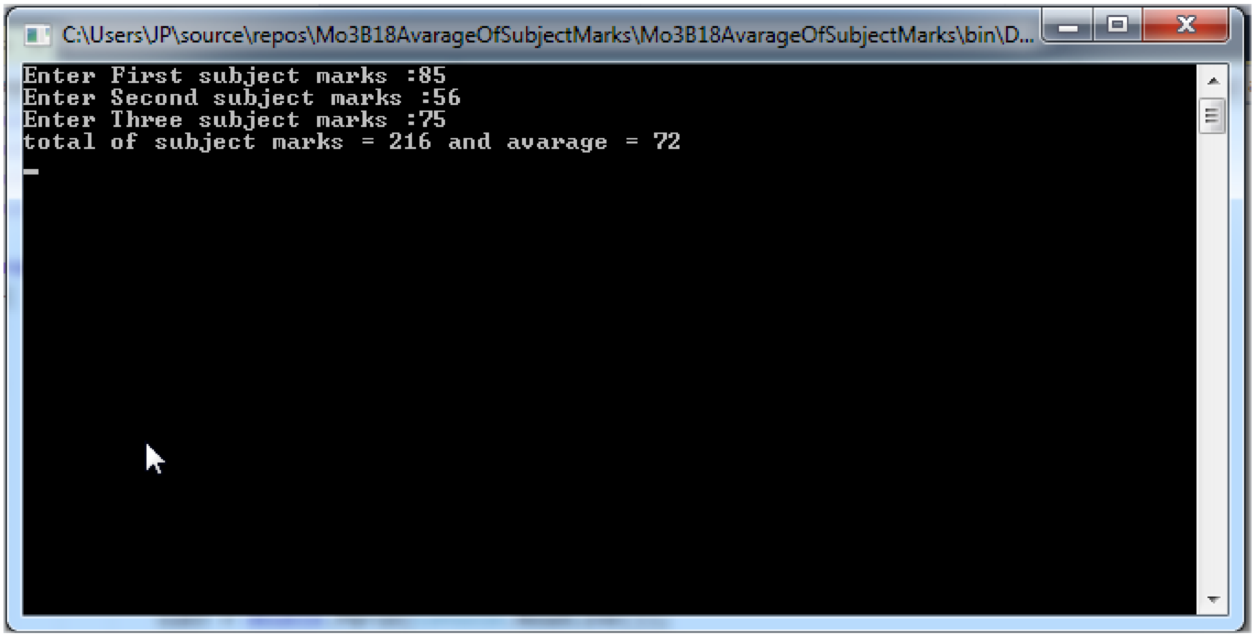
```
This is Child class methods
This is Parent class Methods
```

B18. Write a program to get three subject marks details and then show average and sum.

Ans:

```
class Program
{
    static void Main(string[] args)
    {
        double sub1, sub2, sub3, total, avarage;
        Console.Write("Enter First subject marks :");
        sub1 = double.Parse(Console.ReadLine());
        Console.Write("Enter Second subject marks :");
        sub2 = double.Parse(Console.ReadLine());
        Console.Write("Enter Three subject marks :");
        sub3 = double.Parse(Console.ReadLine());

        total = sub1 + sub2 + sub3;
        avarage = total / 3;

        Console.WriteLine("total of subject marks = {0} and
        avarage = {1}",total,avarage);
        Console.ReadLine();

    }
}
```

Output:



C:\Users\JP\source\repos\Mo3B18AvarageOfSubjectMarks\Mo3B18AvarageOfSubjectMarks\bin\D...

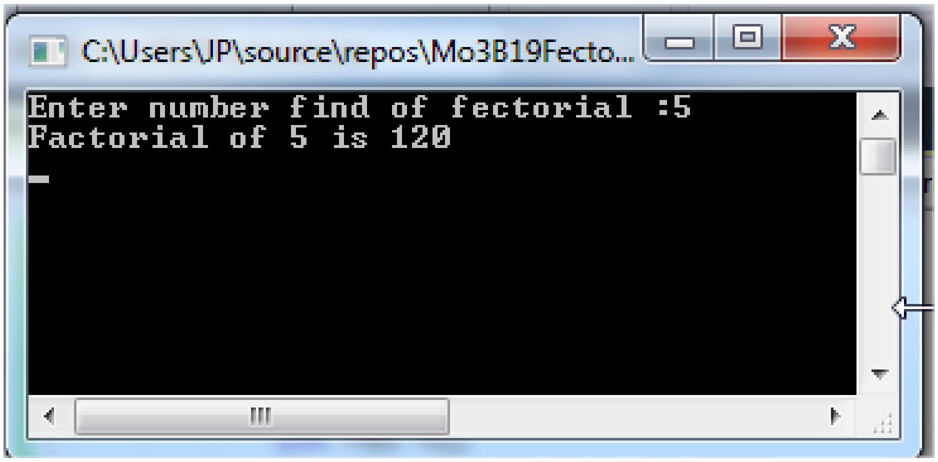
```
Enter First subject marks :85
Enter Second subject marks :56
Enter Three subject marks :75
total of subject marks = 216 and avarage = 72
```

B19. Write a program to calculate factorial number of user defined value using class.

Ans:

```
class Fectorial
{
   public int fect(int x)
   {
        int res =1;
        for (int i = 2; i <= x; i++)
        {
            res = res * i;
        }
        return res;
   }
}
class Program
{
   static void Main(string[] args)
   {
        Console.Write("Enter number find of fectorial :");
        int n = int.Parse(Console.ReadLine());
        Fectorial fect = new Fectorial();
        Console.WriteLine("Factorial of {0} is {1},n,fect.fect(n));
        Console.ReadLine();
   }}
```

Output:



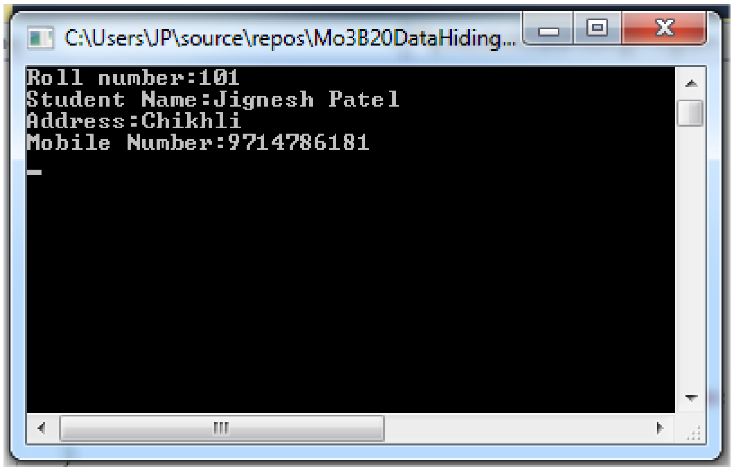
```
Enter number find of fectorial :5
Factorial of 5 is 120
```

B20. Write a program to perform an example of data hiding.

Ans:

```
class Datahiding
{
   private int rollnumber;
   private string studnetname;
   private string address;
   private string mobilenumber;

   public void getinfo()
   {
       rollnumber = 101;
       studnetname = "Jignesh Patel";
       address = "Chikhli";
       mobilenumber = "9714786181";

       Console.WriteLine("Roll number:{0}\nStudent
       Name:{1}\nAddress:{2}\nMobile
       Number:{3}",rollnumber,studnetname,address,mobilenumber);

   }
}
class Program
{
   static void Main(string[] args)
   {
       Datahiding obj = new Datahiding();
       obj.getinfo();
       Console.ReadLine();
   }
}
```

Output:



```
Roll number:101
Student Name:Jignesh Patel
Address:Chikhli
Mobile Number:9714786181
_
```

B21. How can we manage runtime errors?
Ans:

- ⇨ By using exception handling we can solved runtime errors.
- ⇨ Exception handling is built upon three keywords: try, catch, and finally.-
- ⇨ **Try: -** This block is write code of execution.
- ⇨ **Catch: -** This block is catch runtime errors.

B22. What is abstract class?
Ans:

- ⇨ A class that contain abstract and non-abstract method it is called abstract class.

B23. What is thread?
Ans:

- ⇨ Thread is an independent path of execution within a program.

B24. What is dll?
Ans:

- ⇨ Dynamic link library.
- ⇨ It is library that contains function and codes that we can be used by more than one program at a time.
- ⇨ A .dll file contains compiled code you can use in your application to perform specific program functions.

B25. What is namespace?
Ans:

- ⇨ Namespace is collection of class.
- ⇨ Are used to organize too many classes.
- ⇨ It helps to control the scope of methods and classes in larger application.

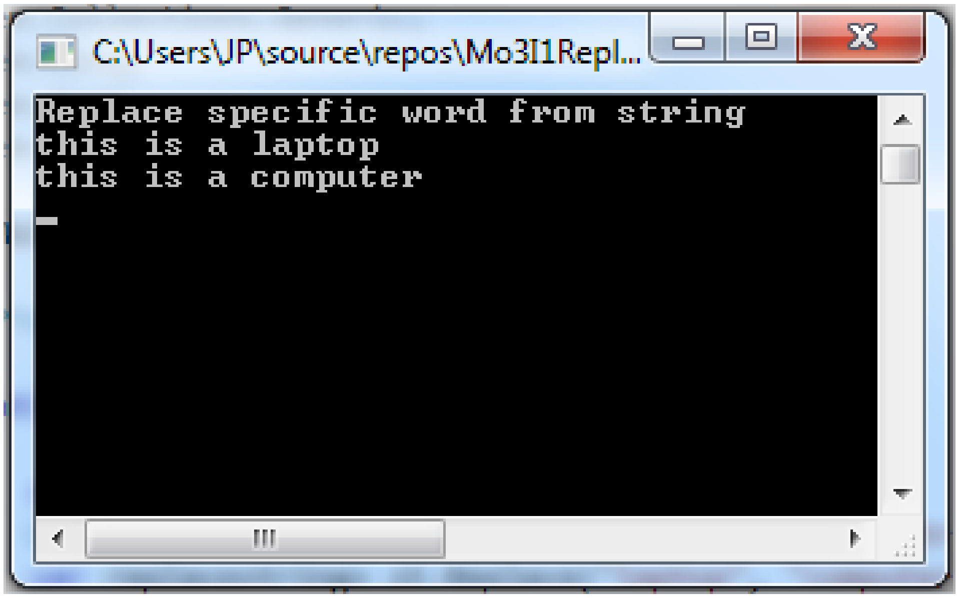
Assignment Intermediate Level

I1. Create program to replace specific word from string

Ans:

```
class Program
{
   static void Main(string[] args)
   {
        string st = "this is a laptop";
        Console.WriteLine("Replace specific word from string");
        var replacestring= st.Replace("laptop", "computer");
        Console.WriteLine(st + " \n" + replacestring);
        Console.ReadLine();
   }
}
```

Output:



```
Replace specific word from string
this is a laptop
this is a computer
_
```

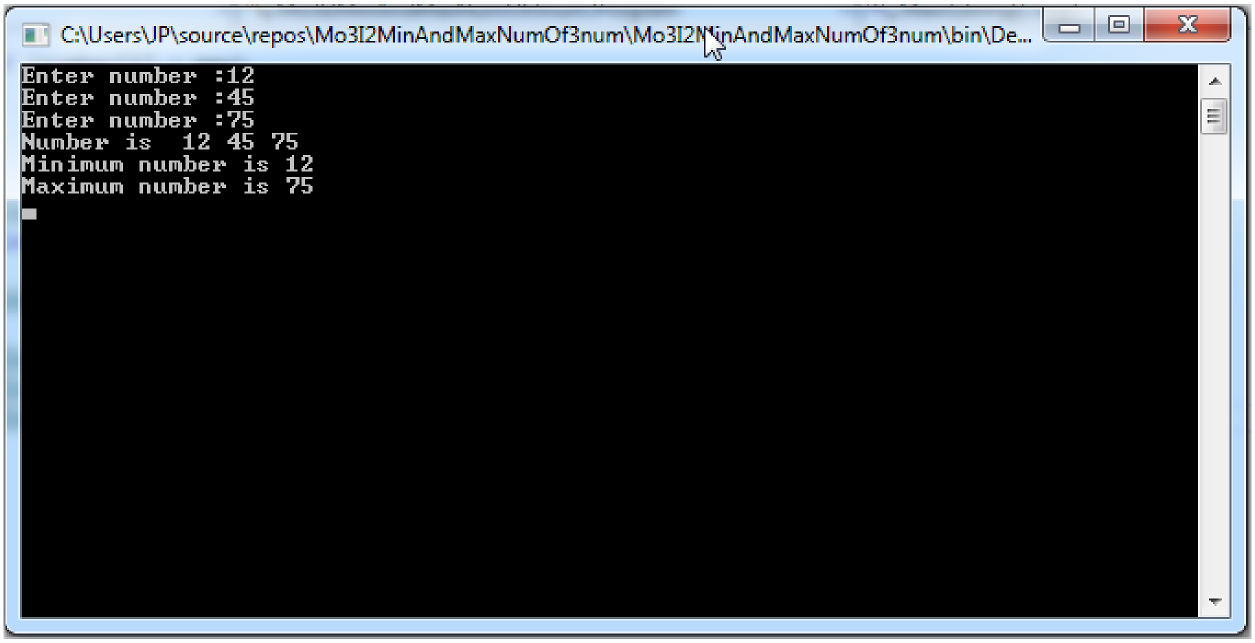
I2. Create program to take 3 numbers from user and show maximum and minimum number

Ans:

```
class Program
{
   static void Main(string[] args)
   {
        int[] number = new int[3];
        for (int i = 0; i <number.Length; i++)
        {
            Console.Write("Enter number {0}:", number[i]+1);
            number[i] = int.Parse(Console.ReadLine());
        }
```

```
            int min = number[0];
            int max = number[0];
            for (int i = 1; i < 3; i++)
            {
                if (number[i] > min)
                {
                    max = number[i];
                }
                if (number[i] < max)
                {
                    min = number[i];
                }
            }
            Console.Write("Number is ");
            for (int i = 0; i < 3; i++)
            {
                Console.Write(" {0}",number[i]);
            }
            Console.WriteLine("\nMinimum number is {0}", min);
            Console.WriteLine("Maximum number is {0}", max);
            Console.ReadLine();
        }
    }
```

Output:



C:\Users\JP\source\repos\Mo3I2MinAndMaxNumOf3num\Mo3I2MinAndMaxNumOf3num\bin\De...

```
Enter number :12
Enter number :45
Enter number :75
Number is  12 45 75
Minimum number is 12
Maximum number is 75
```

I3. What is difference between else if ladder and switch case?

Ans:

If else	**Switch case**
If-else is a selection statement.	It is a multiple choice selection statement.
If-else statement can test any type expression like int, float, char etc.	Switch case can test only integer and character expression.
Else can be used inside if body	Break can be used inside switch body
If else statement will be executed output of the expression inside if statement.	Switch statement will be executed is decided by user.
Either if statement will be executed or else statement is executed.	Switch statement execute one case after another till a break.

I4. What will occur if we not write break statement in switch case?

Ans:

- We not write break in each case then specific case execute switch case will continue to execute all case in switch case.

I6. What is difference between entry loop and exit loop? Explain with example

Ans:

Entry Loop	**Exit Loop**
A loop in the given condition is checked first before entering loop.	A loop in the loop is executed first then after given condition checked.
If condition is false, loop will not be executed.	If condition is false, loop will be executed once.
Example for loop, while loop	Example do while loop.

for(int i = 0; i <= 3; i++)
{
sum= sum + i ;
}
	Int i =0;
	do
	{
	sum = sum +i;
	i++;
	}while(i<=10)

I7. What do you mean by multi-dimension array?

Ans:

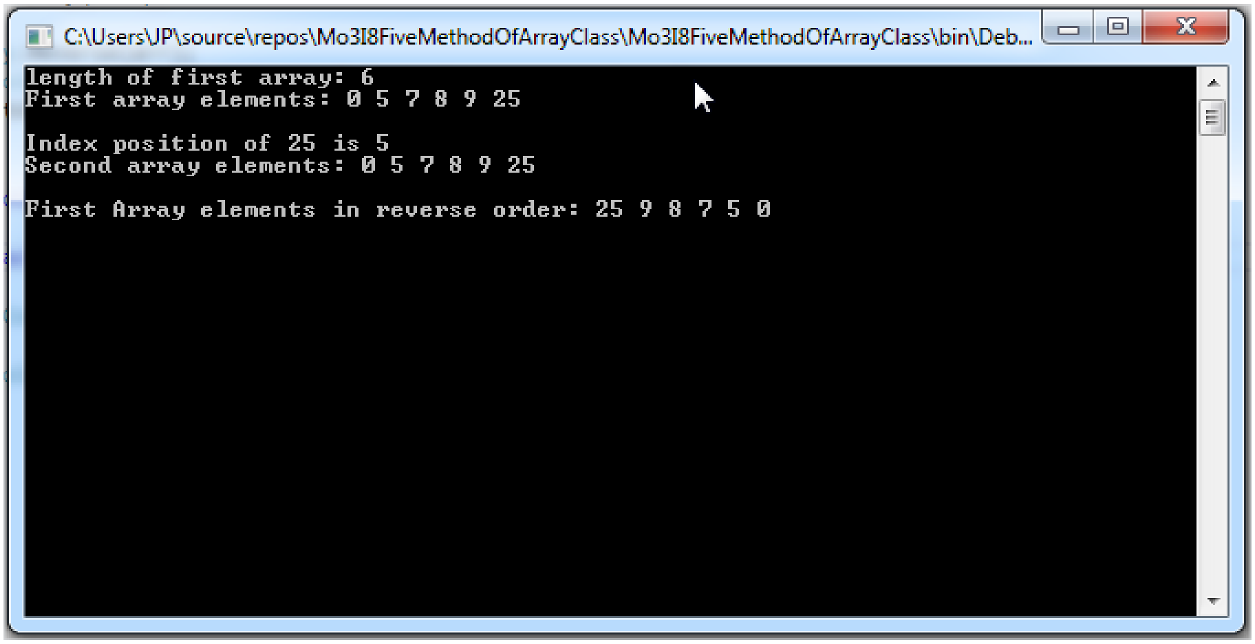
- It is also know two dimension or three dimension array.
- We can take n number of rows and columns.

I8. Explain 5 method of array class with example.

Ans:

```
 class Program
 {
    static void Main(string[] args)
    {
        int[] arr = new int[6] { 5, 8, 9, 25, 0, 7 };

        int[] arr2 = new int[6];

        Console.WriteLine("length of first array: " + arr.Length);

        // Sorting array
        Array.Sort(arr);
        Console.Write("First array elements: ");
        PrintArray(arr);// Displaying sorted array

        // Finding index of an array element
        Console.WriteLine("\nIndex position of 25 is " +
        Array.IndexOf(arr, 25));

        // Coping first array to empty array
        Array.Copy(arr, arr2, arr.Length);
        Console.Write("Second array elements: ");
        PrintArray(arr2);

        Array.Reverse(arr);
       Console.Write("\nFirst Array elements in reverse order: ");
        PrintArray(arr);

    }
    static void PrintArray(int[] arr)
    {
        foreach (Object elem in arr)
        {
            Console.Write(elem + " ");
        }
        Console.ReadLine();
    }
}
```

Output:


C:\Users\JP\source\repos\Mo3I8FiveMethodOfArrayClass\Mo3I8FiveMethodOfArrayClass\bin\Deb...

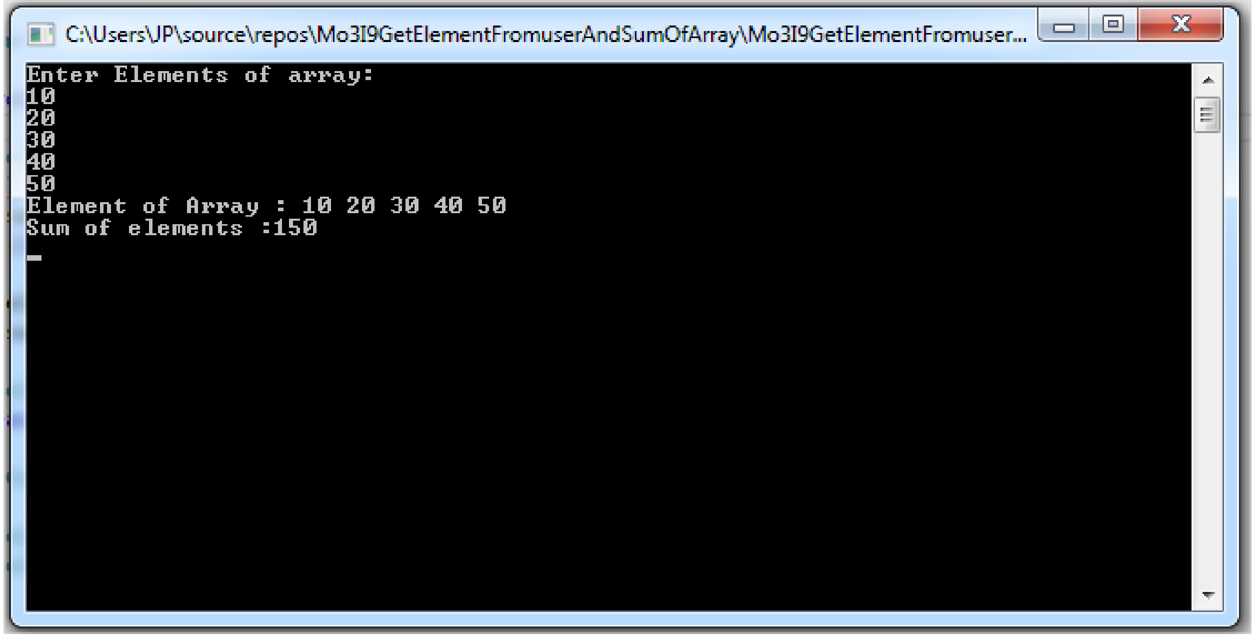
```
length of first array: 6
First array elements: 0 5 7 8 9 25

Index position of 25 is 5
Second array elements: 0 5 7 8 9 25

First Array elements in reverse order: 25 9 8 7 5 0
```

I9. Get 5 values from user and store in array and show all elements and sum of elements

Ans:

```
class Program
{
   static void Main(string[] args)
   {
        Console.WriteLine("Enter Elements of array:");
        int[] element = new int[5];
        int sum = 0;
        for (int i = 0; i < 5; i++)
        {
            element[i] = int.Parse(Console.ReadLine());
            sum = sum + element[i];
        }
        Console.Write("Element of Array :");
        foreach(var list in element)
        {
            Console.Write(" "+list);
        }
        Console.WriteLine("\nSum of elements :" + sum);
        Console.ReadLine();
   }
}
```

Output:



C:\Users\JP\source\repos\Mo3I9GetElementFromuserAndSumOfArray\Mo3I9GetElementFromuser...

```
Enter Elements of array:
10
20
30
40
50
Element of Array : 10 20 30 40 50
Sum of elements :150
_
```

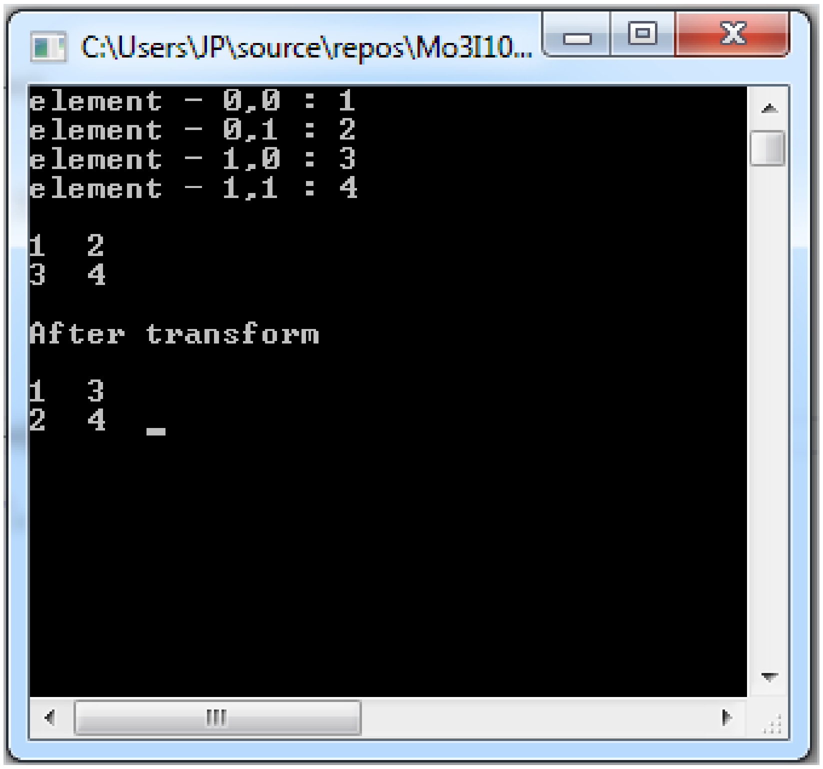
I10. Create program to make transform of two matrices.

Ans:

```
class Program
{
   static void Main(string[] args)
   {
       int[,] arr1 = new int[2, 2];
       for (int i = 0; i < 2; i++)
       {
           for (int j = 0; j < 2; j++)
           {
               Console.Write("element - {0},{1} : ", i, j);
               arr1[i, j] = Convert.ToInt32(Console.ReadLine());
           }
       }
       for(int i = 0; i < 2; i++)
      {
           Console.WriteLine();
           for (int j = 0; j < 2; j++)
           {
               Console.Write("{0}  ", arr1[i, j]);
           }
       }
```

```
            Console.WriteLine("\n\nAfter transform");
             int[,] brr1 = new int[2, 2];
             for (int i = 0; i < 2; i++)
             {
                 for (int j = 0; j < 2; j++)
                 {

                     brr1[j, i] = arr1[i, j];
                 }
             }
             for (int i = 0; i < 2; i++)
             {
                 Console.WriteLine();
                 for (int j = 0; j < 2; j++)
                 {
                     Console.Write("{0}  ", brr1[i, j]);
                 }
             }
             Console.ReadLine();
         }
     }
```

Output:



```
element - 0,0 : 1
element - 0,1 : 2
element - 1,0 : 3
element - 1,1 : 4

1   2
3   4

After transform

1   3
2   4   _
```

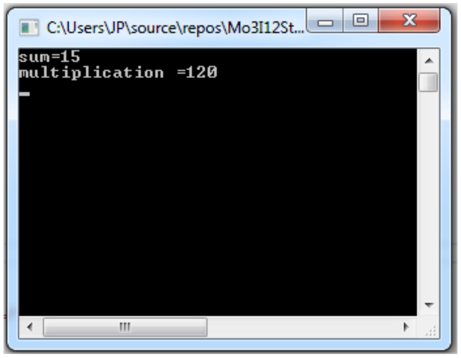
I11. What is difference between for loop and foreach loop?
Ans:

For loop	Foreach loop
For loop we need to set condition.	Foreach loop does not have any condition.
It is loop variable type always integer type.	It is variable type is always array type
It is focus on index.	It is focus on value ,not index.

I12. Write a program to call static method using class.
Ans:

```
class Program
{
    static int a, b, c;
    static void sum(int x,int y)
    {
        a = x;
        b = y;
        c = a + b;
        Console.WriteLine("sum="+c);
    }
    static void mul(int x, int y)
    {
        a = x;
        b = y;
        c = a * b;
        Console.WriteLine("multiplication =" + c);
    }
    static void Main(string[] args)
    {
        Program.sum(10,5);
        Program.mul(12,10);
        Console.ReadLine();
    }
}
```

Output:



```
sum=15
multiplication =120
```

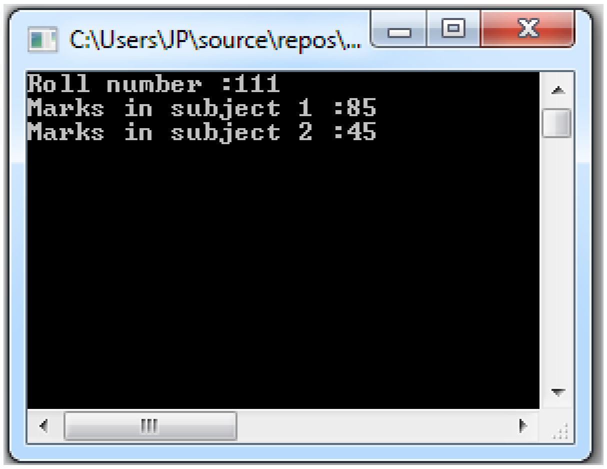
I13. Write a program to implement multilevel inheritance.

Ans:

```
    class Student
    {
        protected int roll_number;
        public void get_number(int a)
        {
            roll_number = a;
        }
        public void show_number()
        {
            Console.WriteLine("Roll number :"+roll_number);
        }
    }
    class Test : Student
    {
        protected float sub1, sub2;
        public void get_marks(float a, float b)
        {
            sub1 = a;
            sub2 = b;
        }
        public void show_marks()
        {
            Console.WriteLine("Marks in subject 1 :{0} \nMarks in
            subject 2 :{1}", sub1, sub2);
        }
    }
    class Program:Test
    {
        float total;
        public void display()
        {
            total = sub1 + sub2;
            show_number();
            show_marks();
        }
        static void Main(string[] args)
        {
            Program student1= new Program();
            student1.get_number(111);
            student1.get_marks(85.0f, 45.0f);
            student1.display();
            Console.ReadLine();
        }
```

```
}
```

Output:



```
Roll number :111
Marks in subject 1 :85
Marks in subject 2 :45
```

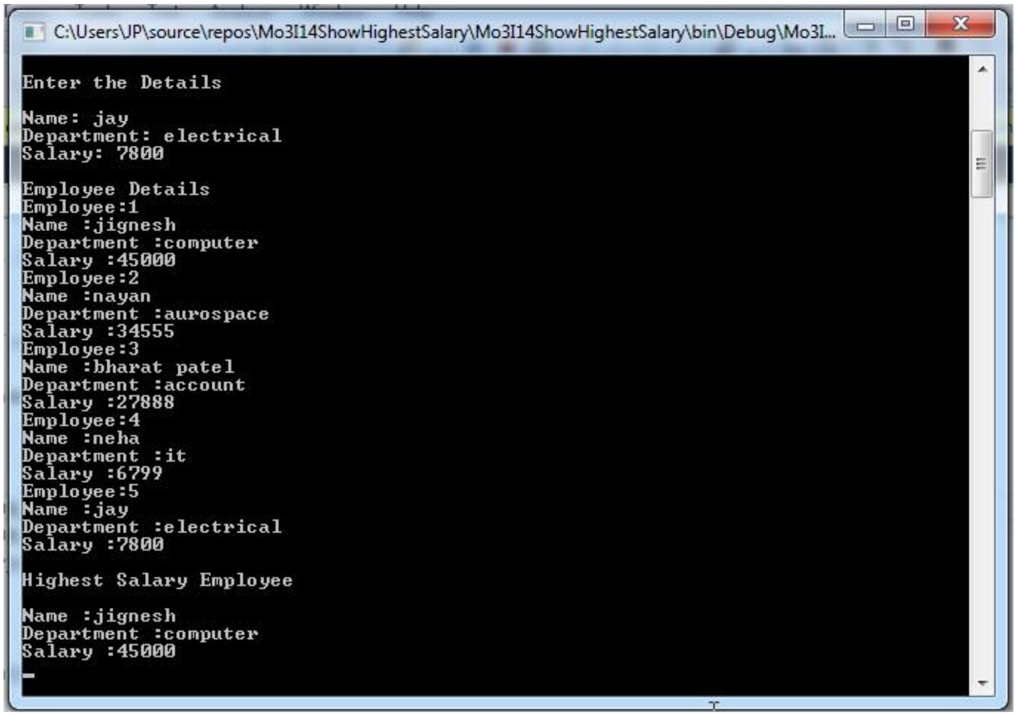
I14. Write a program to get 10 Employee details including name, salary, department and show name and designation whose salary is highest.

Ans:

```
struct Employee
{
   public string emp_name;
   public string emp_dept;
   public int salary;
}
class Program
{
   static void Main(string[] args)
   {
       int high;
       Employee[] emp = new Employee[10];

       for (int i = 0; i < 5; i++)
       {
           Console.WriteLine("\nEnter the Details\n");
           Console.Write("Name:  ");
           emp[i].emp_name = Console.ReadLine();
           Console.Write("Department:  ");
           emp[i].emp_dept = Console.ReadLine();
           Console.Write("Salary: ");
           emp[i].salary = int.Parse(Console.ReadLine());
       }
       Console.WriteLine("\nEmployee Details");
       for (int i = 0; i < 5; i++)
       {
           Console.WriteLine(i+1);
```

```
          Console.WriteLine("Name :" + emp[i].emp_name);
          Console.WriteLine("Department :" + emp[i].emp_dept);
          Console.WriteLine("Salary :" + emp[i].salary);
      }
      high = emp[0].salary;
      for (int i = 0; i < 5; i++)
      {
          if (emp[i].salary>high)
          {
              high = emp[i].salary;
          }
      }
      Console.WriteLine("\nHighest Salary Employee\n");
      for (int i = 0; i < 5; i++)
      {
          if (emp[i].salary == high)
          {
              Console.WriteLine("Name :" + emp[i].emp_name);
             Console.WriteLine("Department :" +
          emp[i].emp_dept);
              Console.WriteLine("Salary :" + emp[i].salary);
          }
      }
      Console.ReadLine();
  }
}
```

Output:


C:\Users\JP\source\repos\Mo3I14ShowHighestSalary\Mo3I14ShowHighestSalary\bin\Debug\Mo3I...

```
Enter the Details

Name: jay
Department: electrical
Salary: 7800

Employee Details
Employee:1
Name :jignesh
Department :computer
Salary :45000
Employee:2
Name :nayan
Department :aurospace
Salary :34555
Employee:3
Name :bharat patel
Department :account
Salary :27888
Employee:4
Name :neha
Department :it
Salary :6799
Employee:5
Name :jay
Department :electrical
Salary :7800

Highest Salary Employee

Name :jignesh
Department :computer
Salary :45000
_
```

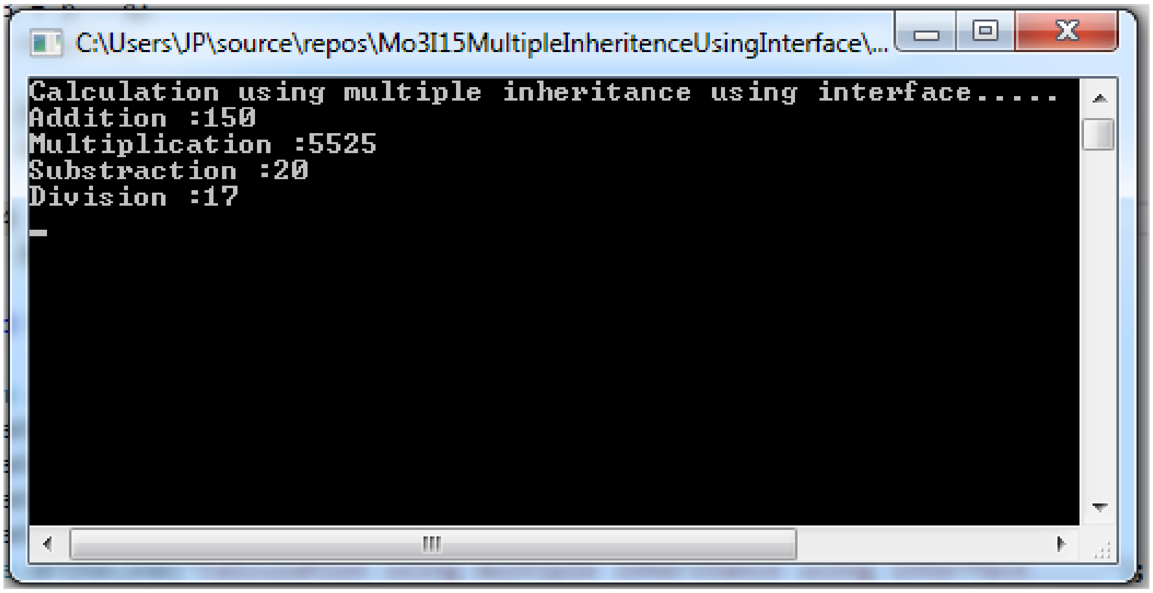
I15. Write a program to implement multiple inheritance.

Ans:

```
interface Cal1
{
    int add(int a, int b);
}
interface Cal2
{
    int mul(int x, int y);
}
interface cal3
{
    int sub(int p, int q);
}
interface Cal4
{
    int div(int r, int s);
}
class Program : Cal1, Cal2, cal3, Cal4
{
    public int result1;
    public int add(int a, int b)
    {
        Result1 = a + b;
        return result1;
    }
    public int result2;
    public int mul(int x, int y)
    {
        Result2 = x * y;
        return result2;
    }
    public int result3;
    public int sub(int p, int q)
    {
        Result3 = p - q;
        return result3;
    }
    public int result4;
    public int div(int r, int s)
    {
        Result4 = r / s;
        return result4;
    }
    static void Main(string[] args)
```

```
        {
            Program calculation = new Program();
            calculation.add(85, 65);
            calculation.mul(85, 65);
            calculation.sub(85, 65);
            calculation.div(85, 5);
            Console.WriteLine("Calculation using multiple inheritance 
using interface.....");
            Console.WriteLine("Addition :"+calculation.result1);
            Console.WriteLine("Multiplication :" + 
calculation.result2);
            Console.WriteLine("Substraction :" + calculation.result3);
            Console.WriteLine("Division :" + calculation.result4);
            Console.ReadLine();
        }
    }
```

Output:



C:\Users\JP\source\repos\Mo3I15MultipleInheritenceUsingInterface\...

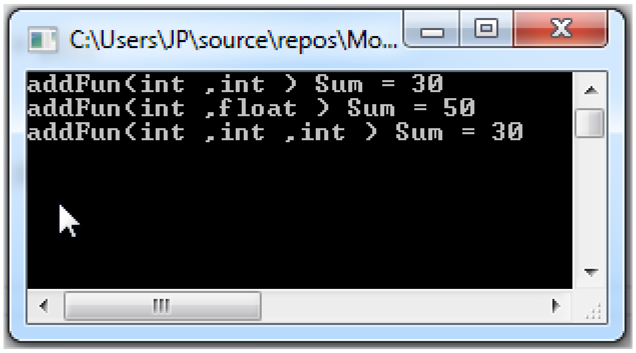
```
Calculation using multiple inheritance using interface.....
Addition :150
Multiplication :5525
Substraction :20
Division :17
_
```

I16. Write a program to redefine method logic in child class. (Overloading).
Ans:

Method Overloading

```
class Program
{
    public void addFun(int x ,int y)
    {
        Console.WriteLine("addFun(int ,int ) Sum = "+(x+y));
    }
    public void addFun(int x, float y)
    {
        Console.WriteLine("addFun(int ,float ) Sum = " + (x + y));
    }
    public void addFun(int x, int y,int z)
    {
        Console.WriteLine("addFun(int ,int ,int ) Sum = " + (x + y
+ z));
    }

    static void Main(string[] args)
    {
        Program p1 = new Program();
        p1.addFun(10,20);
        p1.addFun(20, 30f);
        p1.addFun(10, 10, 10);
        Console.ReadLine();
    }
}
```

Output:

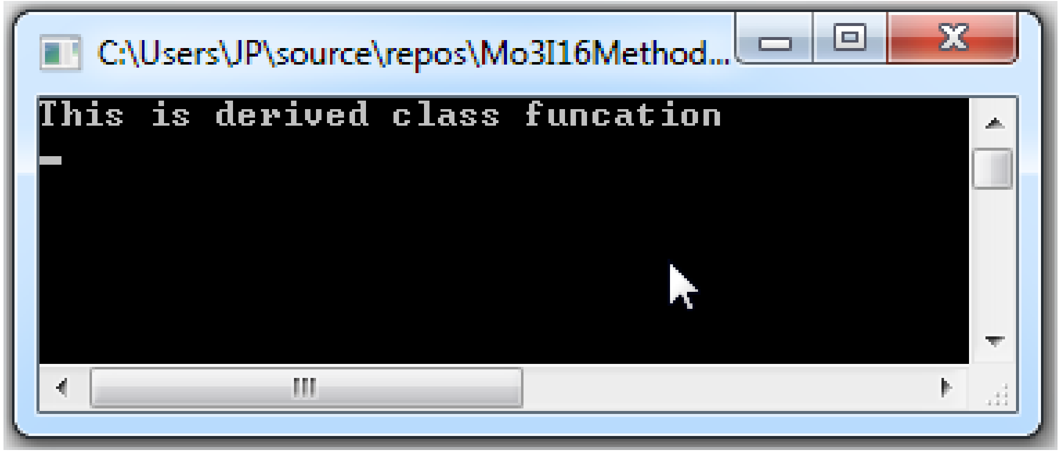


```
addFun(int ,int ) Sum = 30
addFun(int ,float ) Sum = 50
addFun(int ,int ,int ) Sum = 30
```

Method Overriding

```
class BaseClass
{
   virtual public void show()
   {
        Console.WriteLine("this is base class function");
   }
}
class DerivedClass : BaseClass
{
   override public void show()
   {
        Console.WriteLine("This is derived class funcation");
   }
}
class Program
{
   static void Main(string[] args)
   {
        DerivedClass p1 = new DerivedClass();
        p1.show();
        Console.ReadLine();
   }
}
```

Output:



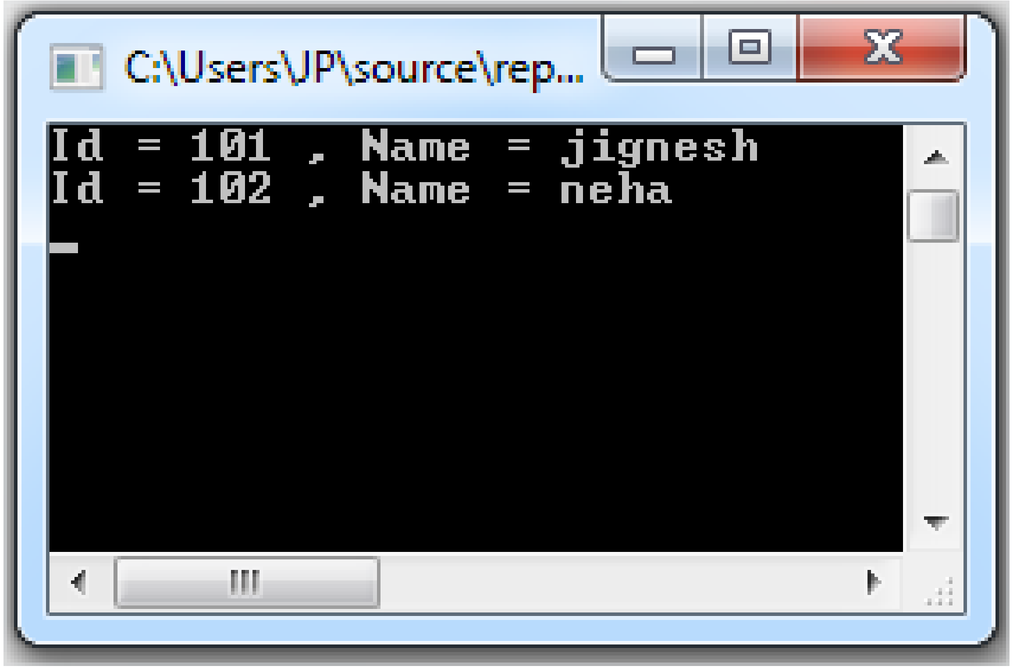
```
This is derived class funcation
_
```

I17. Write a program to access private variables outside of class.
Ans:

```
class Employee
{
  private int id=101;
  private string name="jignesh";
  public int _id
  {
      get
      {
          return id;
      }
      set
      {
          id = value;
      }
  }
  public string _name
  {
      get
      {
          return name;
      }
      set
      {
          name = value;
      }
  }
  public void show()
  {
      Console.WriteLine("Id = {0} , Name = {1} ",id,name);
  }
}
```

```
class Program
{
   static void Main(string[] args)
   {
       Employee obj = new Employee();
       Console.WriteLine("Id = {0} , Name = {1} ", obj._id,
      obj._name);//using by properties
       obj._id = 102;
       obj._name = "neha";
       obj.show();// using by public method
       Console.ReadLine();
   }
}
```

Output:

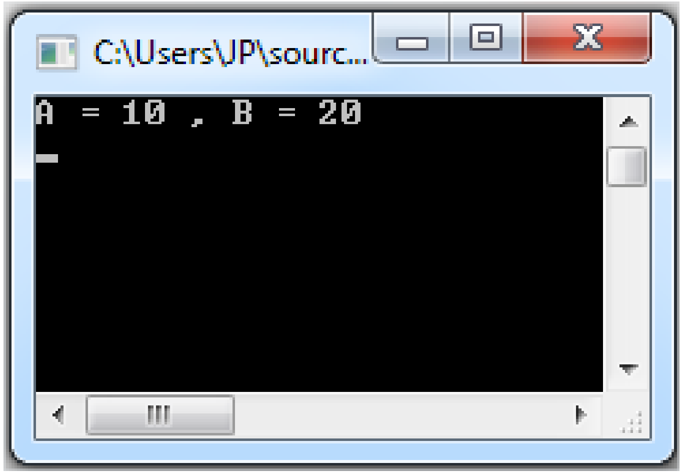


```
Id = 101 , Name = jignesh
Id = 102 , Name = neha
```

I18. Write a program to divide class definition into multiple parts. (Partial Class).
Ans:

```
 partial class test
{
        int a, b;
        public test()
        {
                    a = 10;
                    b = 20;
        }
}
partial class test
{
        public void print()
        {
                    Console.WriteLine("A = {0} , B = {1}",a,b);
        }
}
class Program
{
        static void Main(string[] args)
        {
                    test t1 = new test();
                    t1.print();
                    Console.ReadLine();
        }
}
```

Output:



```
A = 10 , B = 20
_
```

I19. What is dictionary? Advantages of Dictionary?

Ans:

- ⇨ It is a predefined generic class that has key value pair format.
- ⇨ It is collection of key and values pairs.
- ⇨ The key is must be unique.

I20. What is multithread?

Ans:

- ⇨ Multithreading is a process in which multiple threads work simultaneously.
- ⇨ It is a process to achieve multitasking. It saves time because multiple tasks are being executed at a time.

I21. How to prevent class to be instantiate?

Ans:

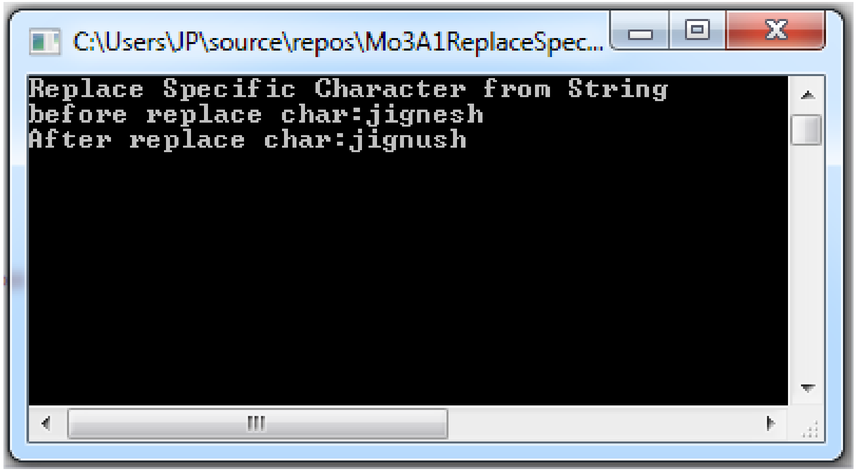
- ⇨ Stop create instance of class.
- ⇨ Stop inheritance.
- ⇨ Using private or protected constructor.
- ⇨ Using abstract class.
- ⇨ Using static class.

Assignment Advanced Level

A1. Create program to replace specific character from string.
Ans:

```
class Program
{
    static void Main(string[] args)
    {
       Console.WriteLine("Replace Specific Character from String");
        string s1 = "jignesh";
        int len = s1.Length;
        char[] ch = s1.ToCharArray(0,len);

        for (int i = 0; i < len; i++)
        {
            if (ch[i] == 'e')
            {
                ch[i] = 'u';
            }
        }
        Console.WriteLine("before replace char:"+s1);
        Console.Write("After replace char:");
        foreach (var c in ch)
        {
            Console.Write(c);
        }
        Console.ReadLine();
    }
}
```

Output:



```
Replace Specific Character from String
before replace char:jignesh
After replace char:jignush
```

A2. What is mutable and immutable string?

Ans:

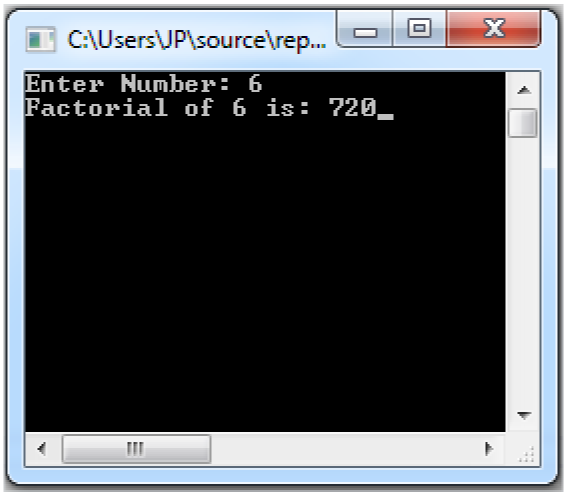
- ⇨ StringBuilder is mutable string in c#.
- ⇨ Mutable string can be change without create object in the memory.
- ⇨ Mutable string are modify.
- ⇨ String is Immutable string in c#.
- ⇨ Immutable string are create objects every time.
- ⇨ Immutable string is cannot change once it is create.

A3. Write a program to find factorial of userdefined number.

Ans:

```
class Program
{
   static void Main(string[] args)
   {
        int i;
        int fact = 1;
        int number;
        Console.Write("Enter Number: ");
        number = int.Parse(Console.ReadLine());
        for (i = 1; i <= number; i++)
        {
            fact = fact * i;
        }
        Console.Write("Factorial of " + number + " is: " + fact);
        Console.ReadLine();
   }
}
```

Output:



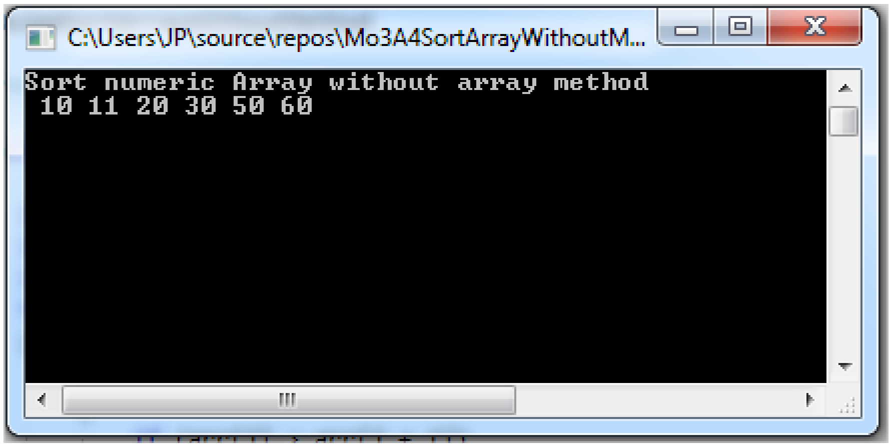
```
Enter Number: 6
Factorial of 6 is: 720_
```

A4. Write a program to sort a numeric array without using array methods.

Ans:

```
    class Program
    {
        static void Main(string[] args)
        {
                int[] arr = {10,30,50,20,60,11};
                int num;
                int len = arr.Length;
                for (int i=0;i<len;i++)
                {
                for(int j=0;j<len-1;j++)
                {
                    if (arr[j] > arr[j + 1])
                    {
                        num = arr[j];
                        arr[j] = arr[j + 1];
                        arr[j + 1] = num;
                    }
                }
                }

                foreach (var n in arr)
                {
                Console.Write(" "+n);
                }
                Console.ReadLine();
        }
    }
```

Output:



```
Sort numeric Array without array method
 10 11 20 30 50 60
```

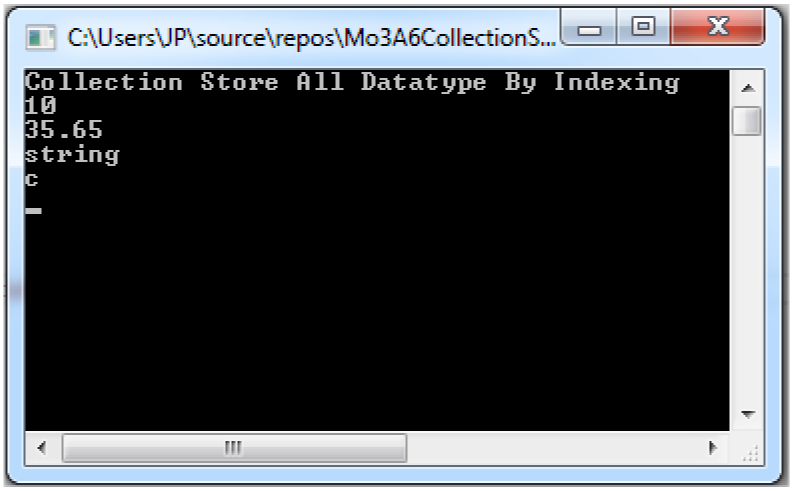
A5. What is difference between array and list?
Ans:

Array	**List**
Array size fixed.	List size not fix.
Array is static memory allocation.	List is dynamic memory allocation.
Array can be store only one type of data.	List can be store multiple type of data.
Waste memory.	Save memory.

A6. Create one collection where can be store all data types by indexing.
Ans:

```
class Program
{
   static void Main(string[] args)
   {
       ArrayList list = new ArrayList();

       list.Add(10);//int
       list.Add(35.65);//float
       list.Add("string");//string
       list.Add('c');//char

       for(int i=0;i<list.Count;i++)
       {
           Console.WriteLine(list[i]);
       }
       Console.ReadLine();
   }
}
```

Output:

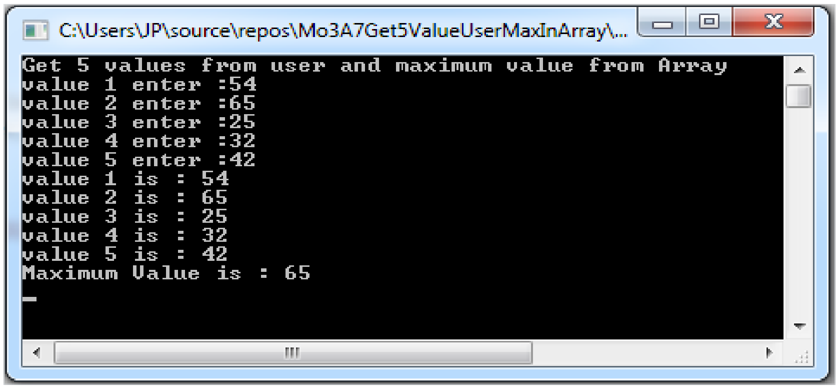


```
Collection Store All Datatype By Indexing
10
35.65
string
c
_
```

A7. Get 5 values from user and show maximum value from array.
Ans:

```
class Program
{
   static void Main(string[] args)
   {
      Console.WriteLine("Get 5 values from user and maximum value
      from Array");

       int[] arr = new int[5];
       for (int i = 0; i < arr.Length; i++)
       {
           Console.Write("value {0} enter :",(i+1));
           arr[i] = int.Parse(Console.ReadLine());
       }
       for (int i = 0; i < arr.Length; i++)
       {
           Console.WriteLine("value {0} is : {1}", (i +
           1),arr[i]);
       }
       int max = arr[0];
       for (int i = 0; i < arr.Length; i++)
       {
           if (arr[i] > max)
           {
               max = arr[i];
               Console.WriteLine("Maximum Value is : "+max);
           }
       }
       Console.ReadLine();
      }
 }
```

Output:



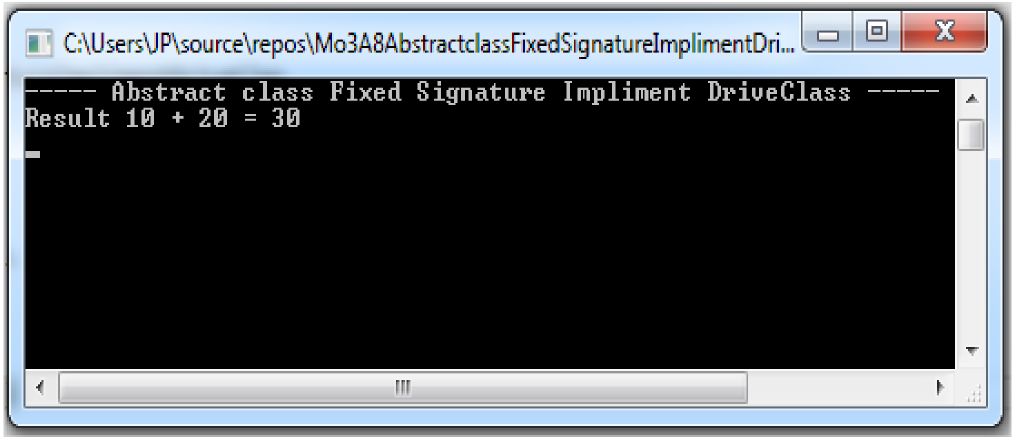
```
Get 5 values from user and maximum value from Array
value 1 enter :54
value 2 enter :65
value 3 enter :25
value 4 enter :32
value 5 enter :42
value 1 is : 54
value 2 is : 65
value 3 is : 25
value 4 is : 32
value 5 is : 42
Maximum Value is : 65
_
```

A8. Write a program to define base class with fixed method signature and implement them into derived class. (Abstract Class).

Ans:

```
abstract class Addition
{
        abstract public void Add(int a, int b);
}
class Program : Addition
{
        int result;
        override public void Add(int a, int b)
        {
                result = a + b;
        }
        static void Main(string[] args)
        {
                Program p1 = new Program();
                p1.Add(10,20);
                Console.WriteLine("----- Abstract class Fixed
                Signature Impliment DriveClass -----");
                Console.WriteLine("Result 10 + 20 = " +
                p1.result);
                Console.ReadLine();
        }
}
```

Output:



C:\Users\JP\source\repos\Mo3A8AbstractclassFixedSignatureImplimentDri...

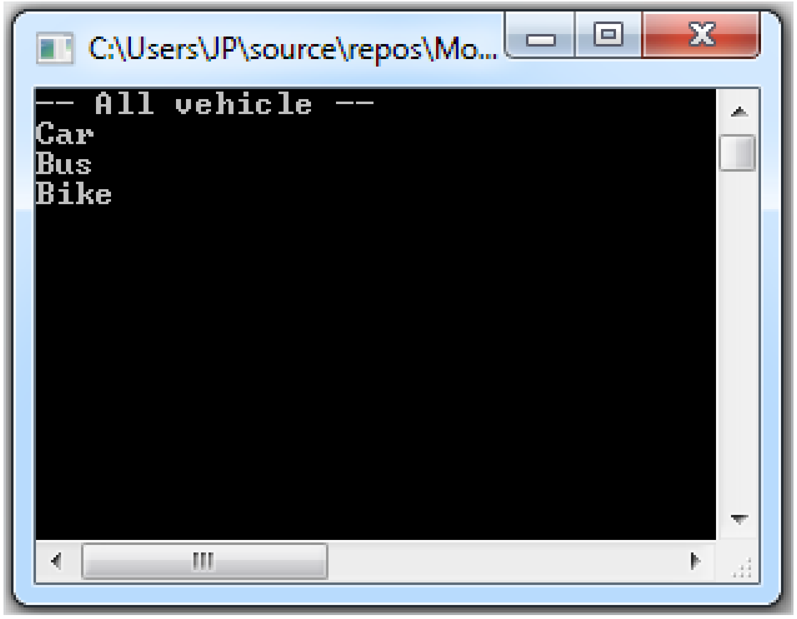
```
----- Abstract class Fixed Signature Impliment DriveClass -----
Result 10 + 20 = 30
```

A9. Write a program of abstract class with implemented methods and declared methods.

Ans:

```
abstract class vehicle
{
    public abstract void display();
}
class Car : vehicle
{
    public override void display()
    {
        Console.WriteLine("Car");
    }
}
class Bus : vehicle
{
    public override void display()
    {
        Console.WriteLine("Bus");
    }
}
class Bike : vehicle
{
    public override void display()
    {
        Console.WriteLine("Bike");
    }
}
class Program
{
    static void Main(string[] args)
    {
        Console.WriteLine("-- All vehicle --");
        vehicle v;
        v = new Car();
        v.display();
        v = new Bus();
        v.display();
        v = new Bike();
        v.display();
        Console.ReadLine();
    }
}
```

Output:



```
-- All vehicle --
Car
Bus
Bike
```

A10. Write a program of abstract class with implemented methods and declared methods.

Ans:

Repeat.

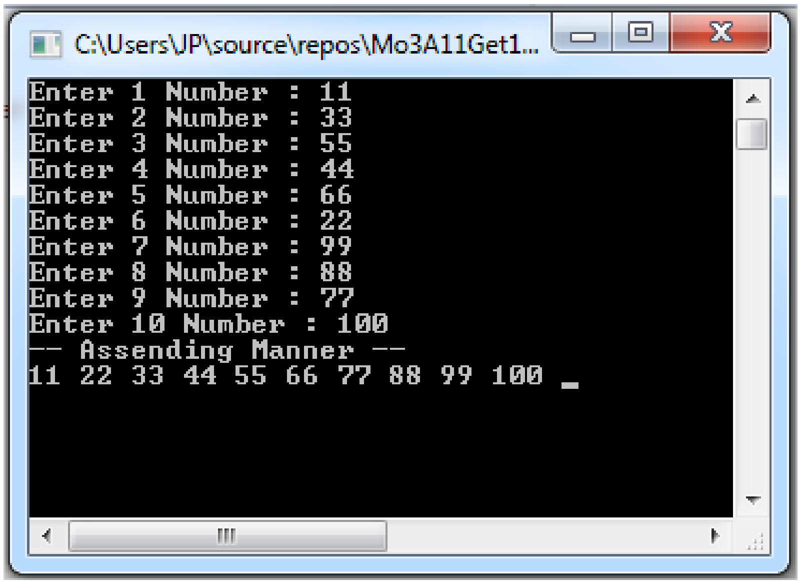
A11. Write a program to Get 10 random numbers using parent class's constructor and implement one method in derived class to show them in ascending manner.

Ans:

```
class GetNumber
{
        public int[] arr = new int[10];
        public GetNumber()
        {
                for (int i = 0; i < arr.Length; i++)
                {
                        Console.Write("Enter {0} Number : ",(i+1));
                        arr[i] = int.Parse(Console.ReadLine());
                }
        }
}
class ShowNumber : GetNumber
{

        public void show()
        {
                int num=0;
```

```
            for (int i = 0; i < arr.Length; i++)
            {
                for (int j = 0; j < arr.Length - 1; j++)
                {
                    if (arr[j] > arr[j + 1])
                    {
                        num = arr[j];
                        arr[j] = arr[j + 1];
                        arr[j + 1] = num;
                    }
                }
            }
            Console.WriteLine("-- Assending Manner --");
            foreach (var n in arr)
            {
                Console.Write("{0} ",n);
            }
        }
    }
    class Program
    {
        static void Main(string[] args)
        {
            ShowNumber obj1 = new ShowNumber();
            obj1.show();
            Console.ReadLine();
        }
    }
```

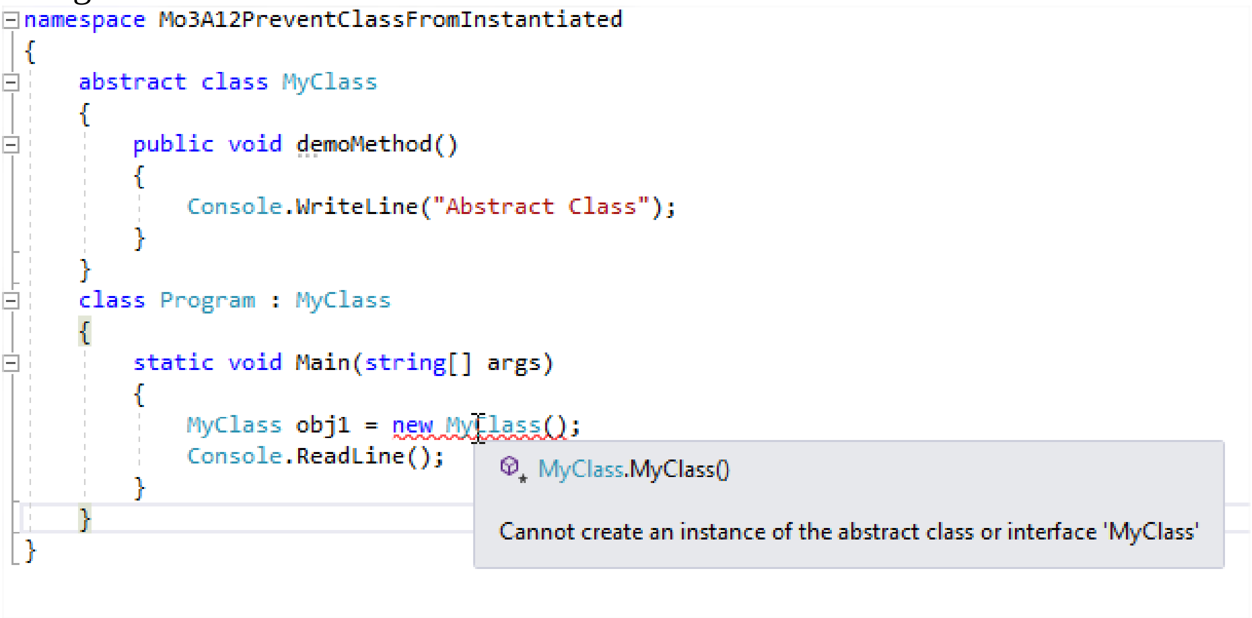
Output:



```
Enter 1 Number : 11
Enter 2 Number : 33
Enter 3 Number : 55
Enter 4 Number : 44
Enter 5 Number : 66
Enter 6 Number : 22
Enter 7 Number : 99
Enter 8 Number : 88
Enter 9 Number : 77
Enter 10 Number : 100
-- Assending Manner --
11 22 33 44 55 66 77 88 99 100 _
```

A12. Write a program to prevent class from being instantiated.
Ans:

- Using abstract class

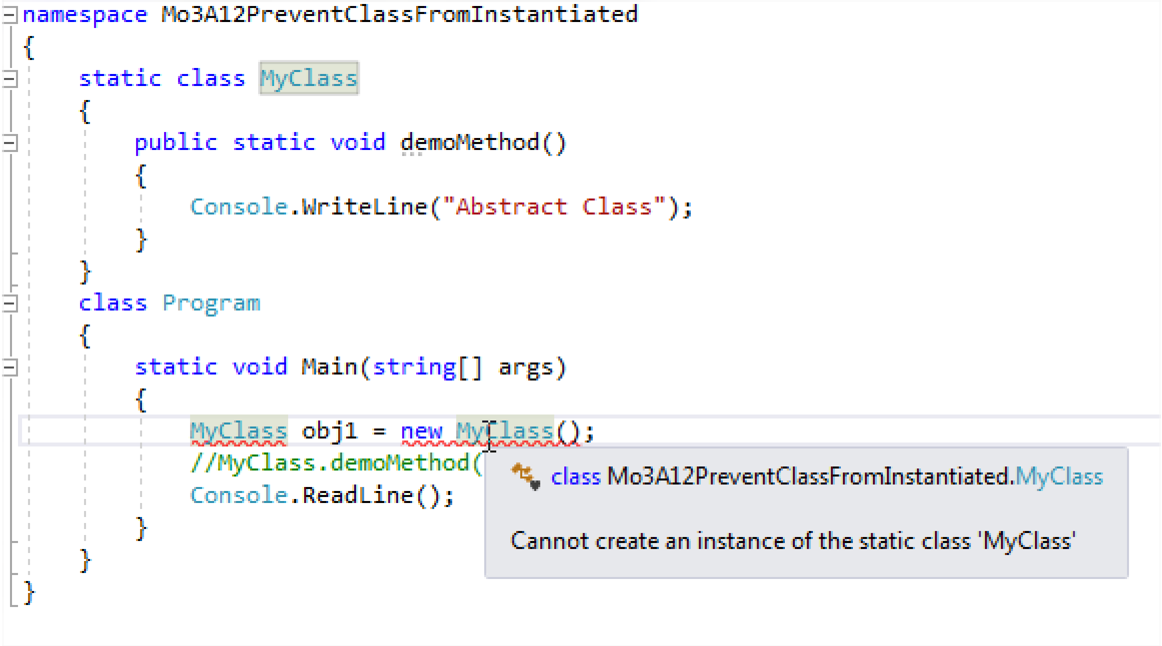


```
namespace Mo3A12PreventClassFromInstantiated
{
    abstract class MyClass
    {
        public void demoMethod()
        {
            Console.WriteLine("Abstract Class");
        }
    }
    class Program : MyClass
    {
        static void Main(string[] args)
        {
            MyClass obj1 = new MyClass();
            Console.ReadLine();
        }
    }
}
```

MyClass.MyClass()

Cannot create an instance of the abstract class or interface 'MyClass'

- Using static class

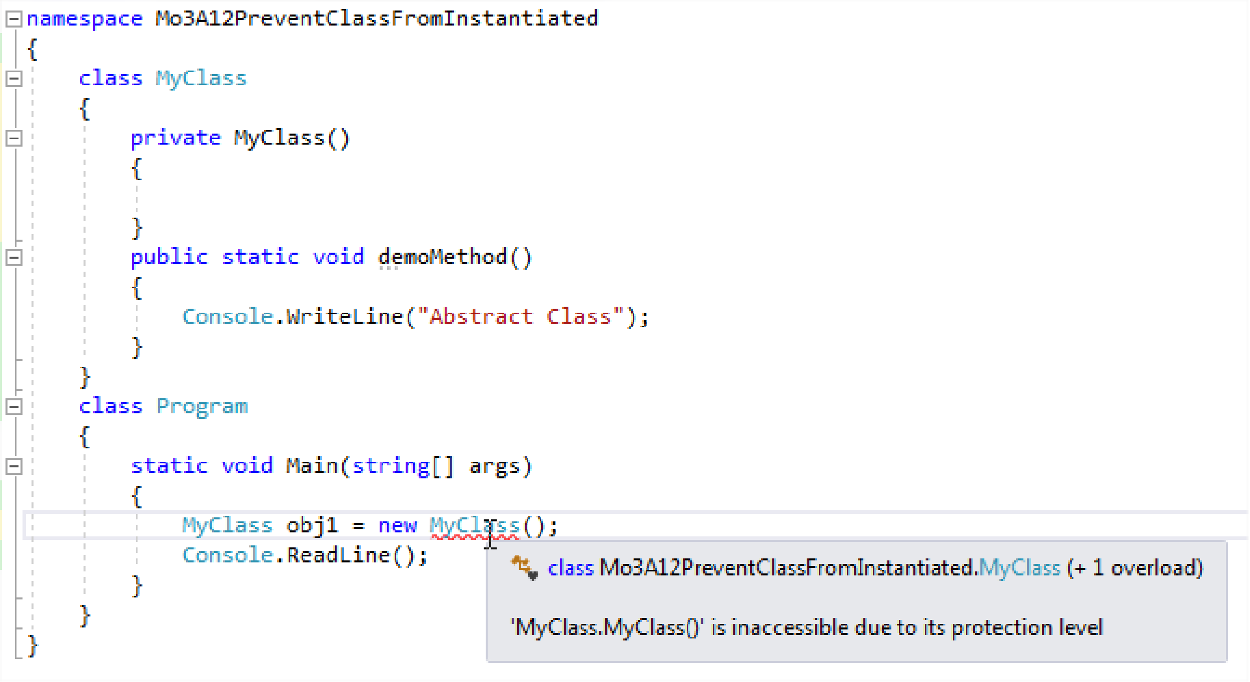


```
namespace Mo3A12PreventClassFromInstantiated
{
    static class MyClass
    {
        public static void demoMethod()
        {
            Console.WriteLine("Abstract Class");
        }
    }
    class Program
    {
        static void Main(string[] args)
        {
            MyClass obj1 = new MyClass();
            //MyClass.demoMethod(
            Console.ReadLine();
        }
    }
}
```

class Mo3A12PreventClassFromInstantiated.MyClass

Cannot create an instance of the static class 'MyClass'

- ⇨ Using private or protected class

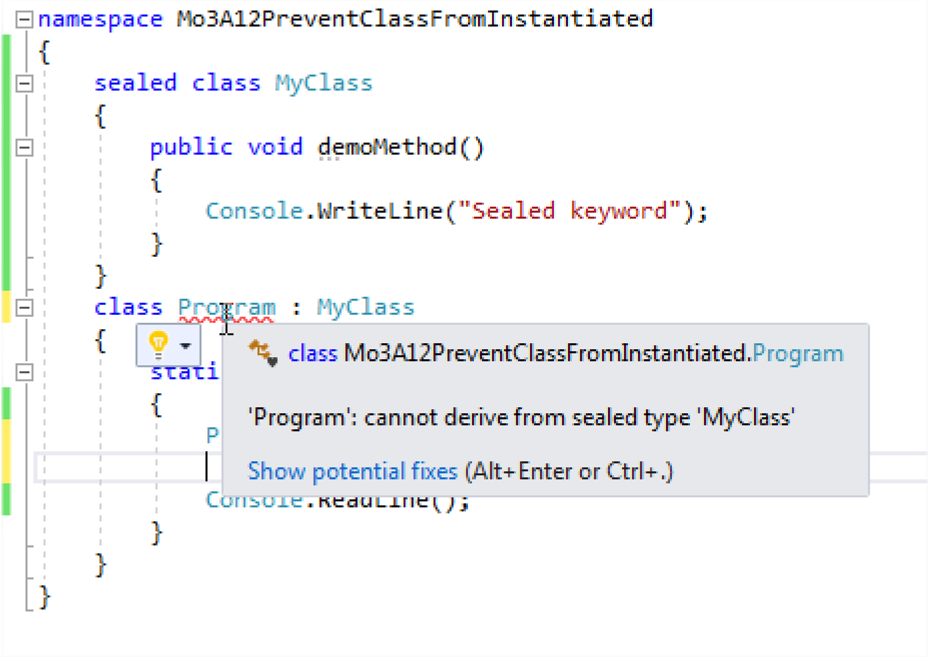


```
namespace Mo3A12PreventClassFromInstantiated
{
    class MyClass
    {
        private MyClass()
        {

        }
        public static void demoMethod()
        {
            Console.WriteLine("Abstract Class");
        }
    }
    class Program
    {
        static void Main(string[] args)
        {
            MyClass obj1 = new MyClass();
            Console.ReadLine();
        }
    }
}
```

class Mo3A12PreventClassFromInstantiated.MyClass (+ 1 overload)

'MyClass.MyClass()' is inaccessible due to its protection level

- ⇨ Using sealed keyword



```
namespace Mo3A12PreventClassFromInstantiated
{
    sealed class MyClass
    {
        public void demoMethod()
        {
            Console.WriteLine("Sealed keyword");
        }
    }
    class Program : MyClass
    {
        stati
        {
            P
            Console.ReadLine();
        }
    }
}
```

class Mo3A12PreventClassFromInstantiated.Program

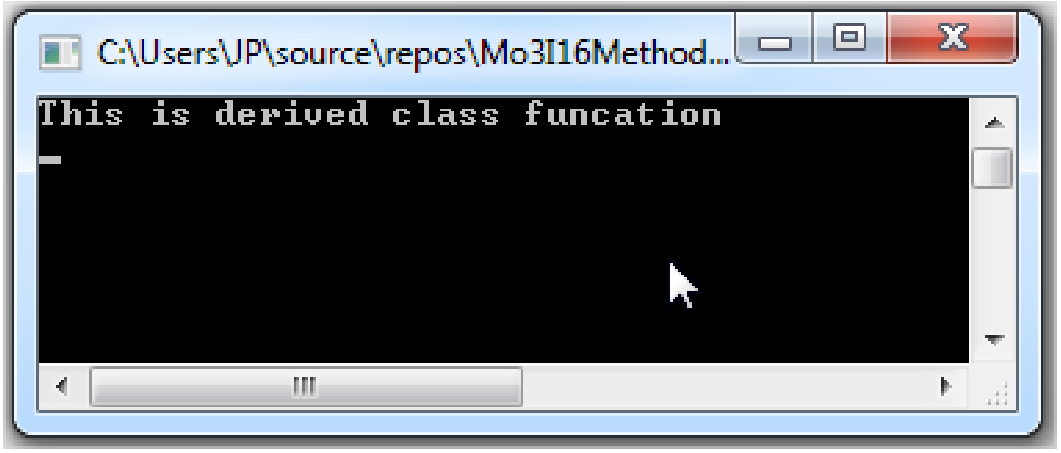
'Program': cannot derive from sealed type 'MyClass'

Show potential fixes (Alt+Enter or Ctrl+.)

A13. Write a program to implement virtual method in derived class.
Ans:

```
class BaseClass
{
  virtual public void show()
  {
      Console.WriteLine("this is base class function");
  }
}
class DerivedClass : BaseClass
{
  override public void show()
  {
      Console.WriteLine("This is derived class funcation");
  }
}
class Program
{
  static void Main(string[] args)
  {
      DerivedClass p1 = new DerivedClass();
      p1.show();
      Console.ReadLine();
  }
}
```

Output:



```
This is derived class funcation
_
```

A14. Write a program to show details of 10 products including Product Name, Product Price, Qty to user and provide them ability to make order with qty and show final amount of bill.

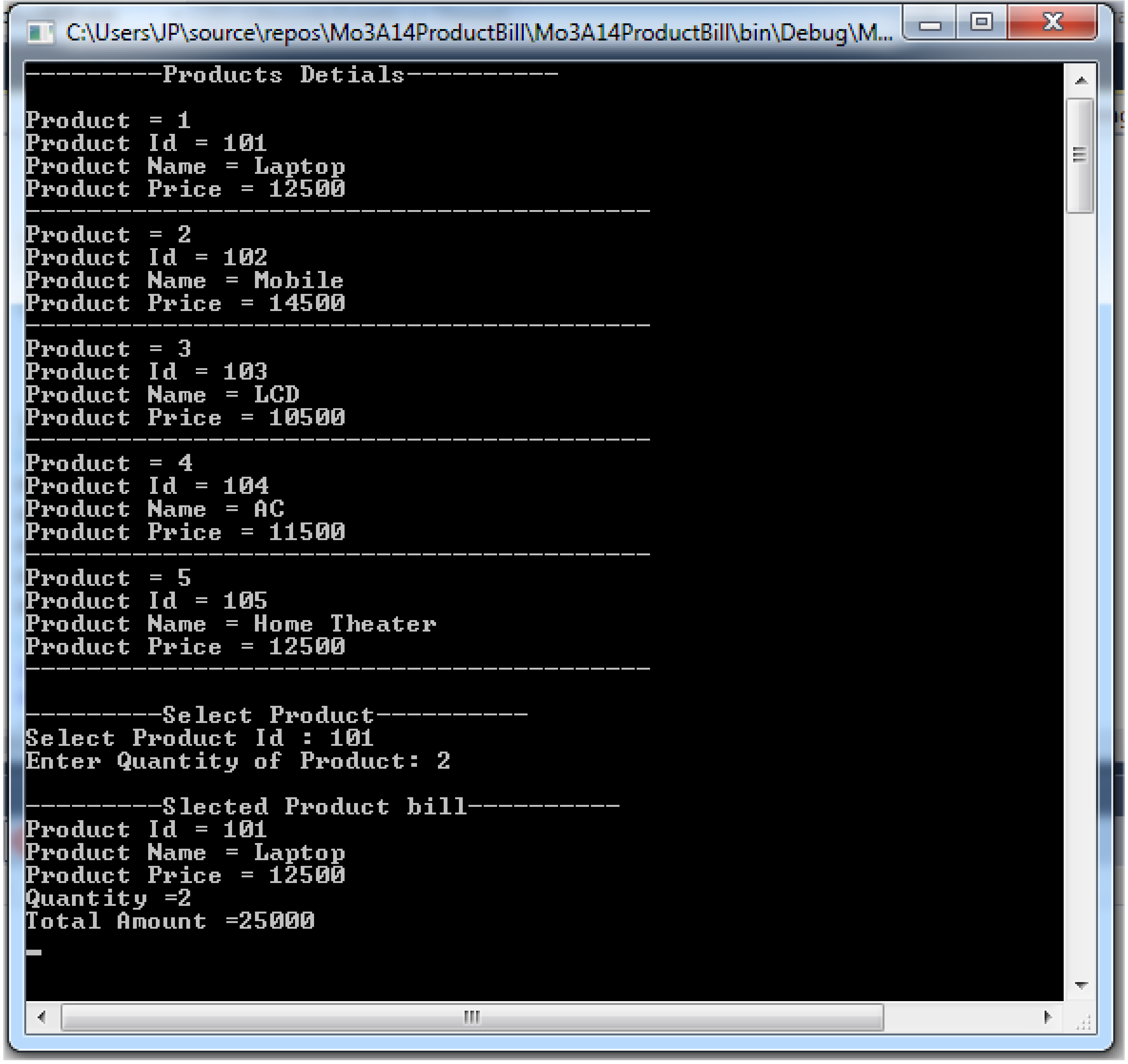
Ans:

```
class Products
{
    public int product_id { get; set; }
    public string product_name { get; set; }
    public int product_price { get; set; }
}
class Program
{
    static void Main(string[] args)
    {
        Products P1 = new Products()
        {
            product_id = 101,
            product_name = "Laptop",
            product_price = 12500
        };
        Products P2 = new Products()
        {
            product_id = 102,
            product_name = "Mobile",
            product_price = 14500
        };
        Products P3 = new Products()
        {
            product_id = 103,
            product_name = "LCD",
            product_price = 10500
        };
        Products P4 = new Products()
        {
            product_id = 104,
            product_name = "AC",
            product_price = 11500
        };
        Products P5 = new Products()
        {
            product_id = 105,
            product_name = "Home Theater",
            product_price = 12500
        };
```

```
Dictionary<int, Products> ProductDetails = new
Dictionary<int,Products>();
ProductDetails.Add(P1.product_id, P1);
ProductDetails.Add(P2.product_id, P2);
ProductDetails.Add(P3.product_id, P3);
ProductDetails.Add(P4.product_id, P4);
ProductDetails.Add(P5.product_id, P5);
Console.WriteLine("---------Products Detials----------
\n");
int sno = 1;
foreach (var pdkv in ProductDetails)
{
    Console.WriteLine("Product = {0}", (sno++));
    Products pdc= pdkv.Value;
    Console.WriteLine("Product Id = {0},\nProduct
    Name = {1},\nProduct Price = {2}",
    pdc.product_id, pdc.product_name,
    pdc.product_price);
    Console.WriteLine("------------------------------
    -----------");
}
Console.WriteLine("\n---------Select Product----------
");
int amount=0;
Console.Write("Select Product Id : ");
int P_id = int.Parse(Console.ReadLine());
Console.Write("Enter Quantity of Product: ");
int P_qty = int.Parse(Console.ReadLine());
for (int i = 101; i < 106; i++)
{
    if (ProductDetails[i].product_id == P_id)
    {
        amount =
        ProductDetails[i].product_price*P_qty;
    }
}

Console.WriteLine("\n---------Slected Product bill----
------");
```

```
            foreach (var pdkeyvalues in ProductDetails)
            {
                Products pd = pdkeyvalues.Value;
                if (pd.product_id == P_id)
                {
                    Console.WriteLine("Product Id =
                    {0},\nProduct Name = {1},\nProduct Price =
                    {2},\nTotal Amount ={3}", pd.product_id,
                    pd.product_name, pd.product_price, amount);
                }
            }
            Console.ReadLine();
        }
    }
```

Output:

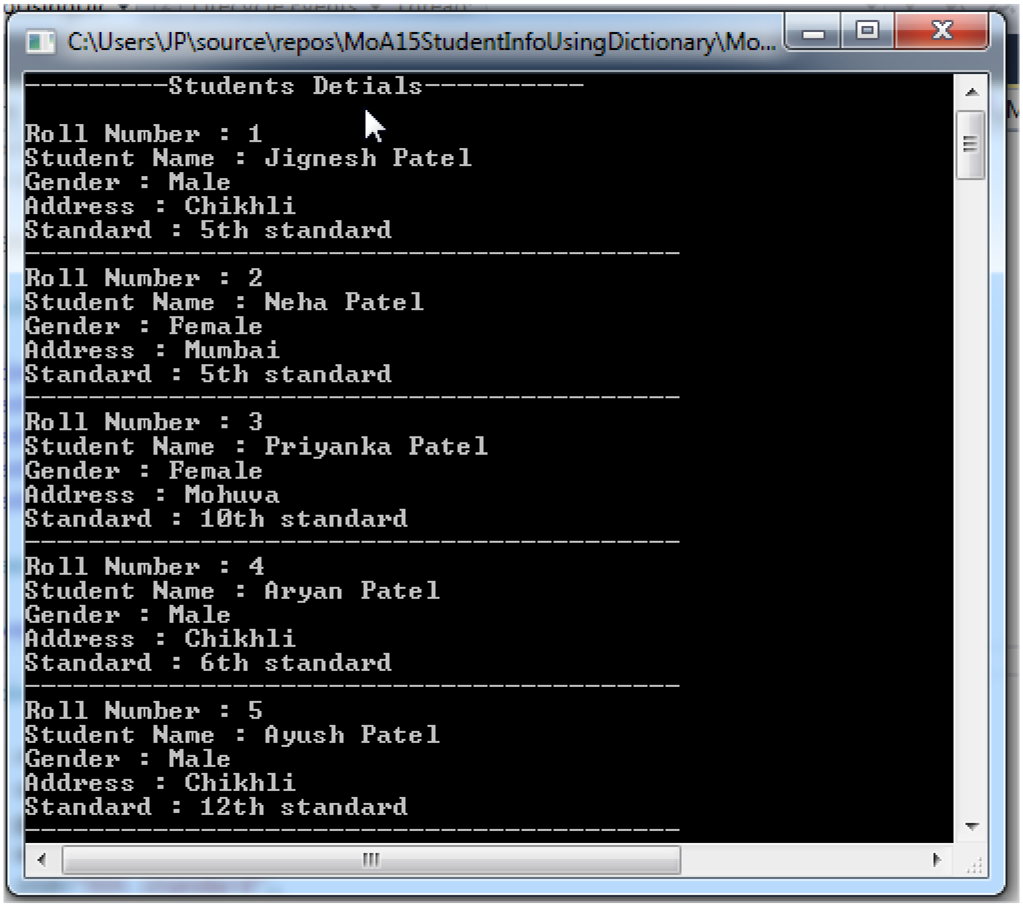

C:\Users\JP\source\repos\Mo3A14ProductBill\Mo3A14ProductBill\bin\Debug\M...

```
---------Products Detials----------

Product = 1
Product Id = 101
Product Name = Laptop
Product Price = 12500
-----------------------------------------
Product = 2
Product Id = 102
Product Name = Mobile
Product Price = 14500
-----------------------------------------
Product = 3
Product Id = 103
Product Name = LCD
Product Price = 10500
-----------------------------------------
Product = 4
Product Id = 104
Product Name = AC
Product Price = 11500
-----------------------------------------
Product = 5
Product Id = 105
Product Name = Home Theater
Product Price = 12500
-----------------------------------------

---------Select Product----------
Select Product Id : 101
Enter Quantity of Product: 2

---------Slected Product bill----------
Product Id = 101
Product Name = Laptop
Product Price = 12500
Quantity =2
Total Amount =25000
```

A15. Create a program to store student’s details using Dictionary.
Ans:

```
class Students
{
    public int roll_no { get; set; }
    public string student_name { get; set; }
    public string gender { get; set; }
    public string address { get; set; }
    public string std { get; set; }
}
class Program
{
    static void Main(string[] args)
    {
        Students S1 = new Students()
        {
            roll_no = 1,
            student_name = "Jignesh Patel",
            gender = "Male",
            address="Chikhli",
            std="5th standard",
        };
        Students S2 = new Students()
        {
            roll_no = 2,
            student_name = "Neha Patel",
            gender = "Female",
            address = "Mumbai",
            std = "5th standard",
        };
        Students S3 = new Students()
        {
            roll_no = 3,
            student_name = "Priyanka Patel",
            gender = "Female",
            address = "Mohuva",
            std = "10th standard",
        };
        Students S4 = new Students()
        {
            roll_no = 4,
            student_name = "Aryan Patel",
            gender = "Male",
            address = "Chikhli",
            std = "6th standard",
        };
        Students S5 = new Students()
        {
            roll_no = 5,
            student_name = "Ayush Patel",
            gender = "Male",
            address = "Chikhli",
            std = "12th standard",
        };
        Dictionary<int, Students> StudentDetails = new
        Dictionary<int, Students>();
        StudentDetails.Add(S1.roll_no, S1);
        StudentDetails.Add(S2.roll_no, S2);
        StudentDetails.Add(S3.roll_no, S3);
        StudentDetails.Add(S4.roll_no, S4);
        StudentDetails.Add(S5.roll_no, S5);
        Console.WriteLine("---------Students Detials----------
        \n");

        foreach (var sdkv in StudentDetails)
        {
            Students sdc = sdkv.Value;
            Console.WriteLine("Roll Number : {0}\nStudent
            Name : {1}\nGender : {2}\nAddress : {3}\nStandard
            :
            {4}",sdc.roll_no,sdc.student_name,sdc.gender,sdc.
            address,sdc.std);
            Console.WriteLine("------------------------------
            -----------");
        }
        Console.ReadLine();
    }
}
```

Output:


C:\Users\JP\source\repos\MoA15StudentInfoUsingDictionary\Mo...

```
---------Students Detials----------

Roll Number : 1
Student Name : Jignesh Patel
Gender : Male
Address : Chikhli
Standard : 5th standard
-----------------------------------------
Roll Number : 2
Student Name : Neha Patel
Gender : Female
Address : Mumbai
Standard : 5th standard
-----------------------------------------
Roll Number : 3
Student Name : Priyanka Patel
Gender : Female
Address : Mohuva
Standard : 10th standard
-----------------------------------------
Roll Number : 4
Student Name : Aryan Patel
Gender : Male
Address : Chikhli
Standard : 6th standard
-----------------------------------------
Roll Number : 5
Student Name : Ayush Patel
Gender : Male
Address : Chikhli
Standard : 12th standard
-----------------------------------------
```

A16. What is generics? Explain with example.

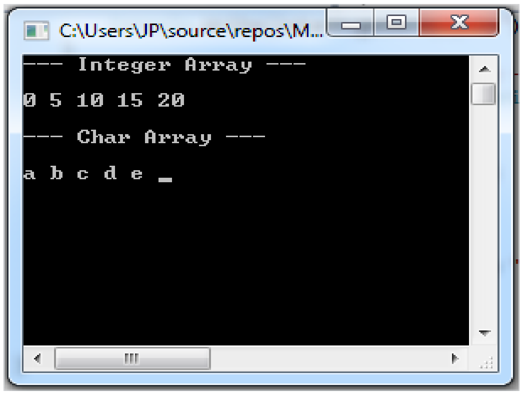
Ans:

- ⇨ Generic means we can create a single class that will work all datatypes.
- ⇨ Generics are used to provide reusability of code in a program.

Example:

```
class GenericArray<T>
{
        private T[] arr;
        public GenericArray(int i)
        {
                arr = new T[i + 1];
        }
        public T getArr(int i)
        {
                return arr[i];
        }
        public void setArr(int i, T value)
        {
            arr[i] = value;
        }
    }
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("--- Integer Array ---\n");
            GenericArray<int> intarr = new GenericArray<int>(5);
            for (int i = 0; i < 5; i++)
            {
                intarr.setArr(i,i*5);
            }
            for (int i = 0; i < 5; i++)
            {
                Console.Write(intarr.getArr(i)+" ");
            }
            Console.WriteLine("\n\n--- Char Array ---\n");
            GenericArray<char> chararr = new
            GenericArray<char>(5);
            for (int i = 0; i < 5; i++)
            {
                chararr.setArr(i,(char)(i + 97));
            }
            for (int i = 0; i < 5; i++)
            {
                Console.Write(chararr.getArr(i) + " ");
            }
         Console.ReadLine();
      }
    }
```

Output:



```
--- Integer Array ---

0 5 10 15 20

--- Char Array ---

a b c d e _
```

]

A17. What is use of method overriding?

Ans:

- ⇨ Method overriding is same method name, same signature of method in derived class as same method and signature in base class.
- ⇨ Method overriding is allow a derived class to provide specific implementation of method that is already provide by base class.
- ⇨ Method overriding is able to modify of method in derived class.