A

LAB REPORT

ON

DOTNET TECHNOLOGY

By

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Submitted to:

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In partial fulfillment of the requirements for the Course

Dot net Technology

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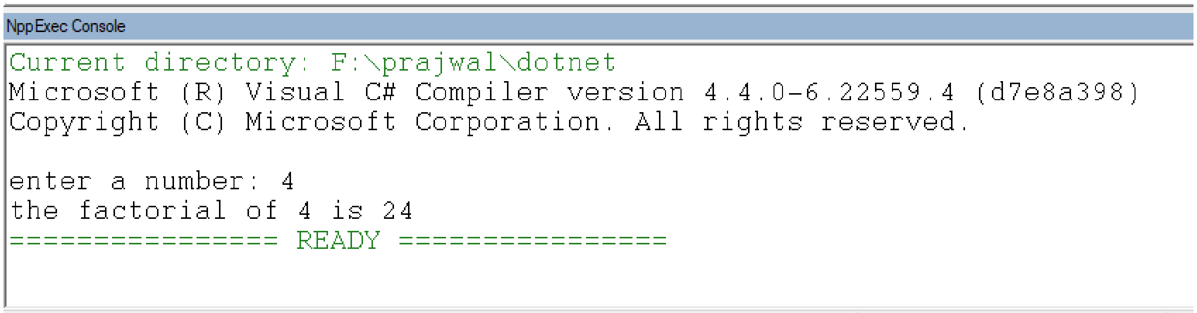
TABLE OF CONTENTS

1 Write a program to print factorial of a number.

1.1 Source Code

```
using System;
class Factorial{
 public static int CalcFactorial(int n){
       if(n==0 || n==1)
            return 1;
       else
            return n*CalcFactorial(n-1);
 }
 public static void Main(){
       Console.Write("enter a number: ");
       int a=Convert.ToInt32(Console.ReadLine());
           Console.WriteLine("the factorial of {0} is
           {1}",a,CalcFactorial(a));
 }
}
```

1.2 Output Window



```
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Microsoft (R) Visual C# Compiler version 4.4.0-6.22559.4 (d7e8a398)
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enter a number: 4
the factorial of 4 is 24
================ READY ================
```

2 Write a program to create an array by taking input from user and displaying odd and even number from that array.

2.1 Source Code

```
using System;
class OddEven{
 public static void Main(){
      int[]a=new int[5];
      int counte=0;
      int counto=0;
      for(int i=0;i<5;i++){
           Console.Write("enter a number: ");
           a[i]=Convert.ToInt32(Console.ReadLine());
      }
      int[]odd=new int[5];
      int[]even=new int[5];
      for(int i=0;i<5;i++){
           if(a[i]%2==0){
                even[counte]=a[i];
                counte++;
           }
           else{
                odd[counto]=a[i];
                counto++;
           }
      }
      Console.WriteLine("even numbers are: ");
      for(int i=0;i<counte;i++){
           Console.Write(" {0}",even[i]);
```

```
        }

        Console.WriteLine();

        Console.WriteLine("odd numbers are: ");

        for(int i=0;i<counto;i++){

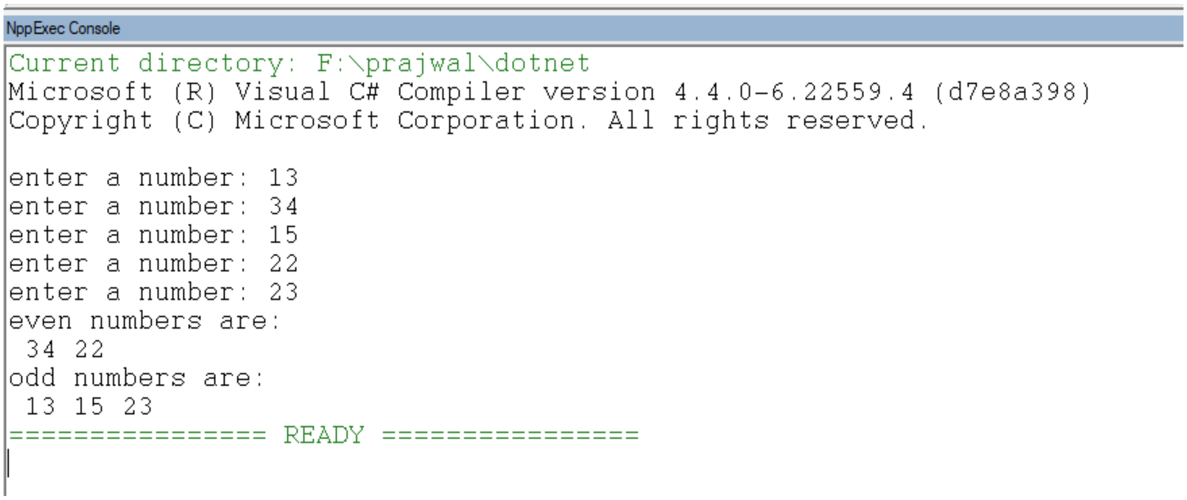
              Console.Write(" {0}",odd[i]);

        }

  }

}
```

2.2 Output Window



```
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enter a number: 13
enter a number: 34
enter a number: 15
enter a number: 22
enter a number: 23
even numbers are:
 34 22
odd numbers are:
 13 15 23
================ READY ================
```

3 Write a program to show constructor and destructor in C#.

3.1 Source Code

```
using System;

class Member

{

    public Member()

    {

        Console.WriteLine("Default Constructor was called.");

    }

    public Member(string name)

    {

       Console.WriteLine("Parameterized Constructor was
      called.");

    }

    ~Member()

    {

        Console.WriteLine("Destructor was called.");

    }

 public static void Main(){

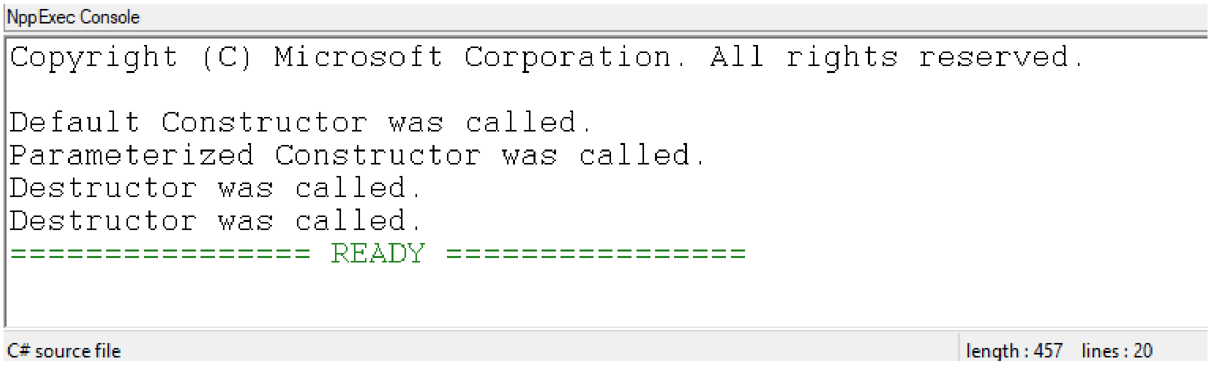
      Member m = new Member();

      Member m1 = new Member("Hello");

 }

}
```

3.2 Output Window



```
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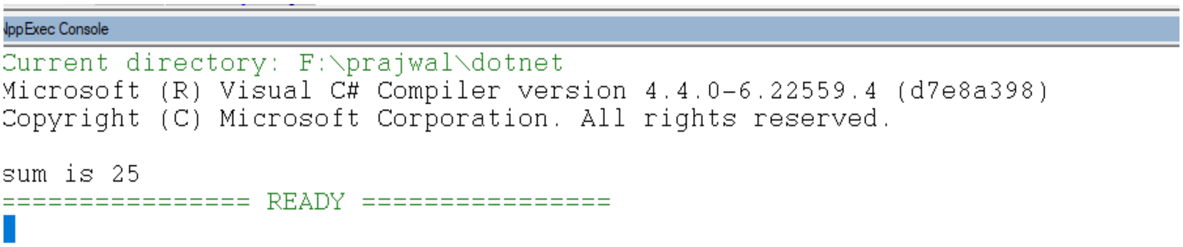
Default Constructor was called.
Parameterized Constructor was called.
Destructor was called.
Destructor was called.
================ READY ================
```

4 Write a program to demonstrate data encapsulation in c#.

4.1 Source Code

```
using System;
class Sum{
 private int a;
 private int b;
 public int A{
       set{
            A=value;
       }
       get{
            return A;
       }
 }
 public int B{
       get;
       set;
 }
 public void Add(){
       Console.WriteLine("sum is {0}",a+b);
 }
}
class Demo{
 public static void Main(){
       Sum s = new Sum();
       s.a=12;
       s.b=13;
       s.Add();
 }
}
```

4.2 Output Window



```
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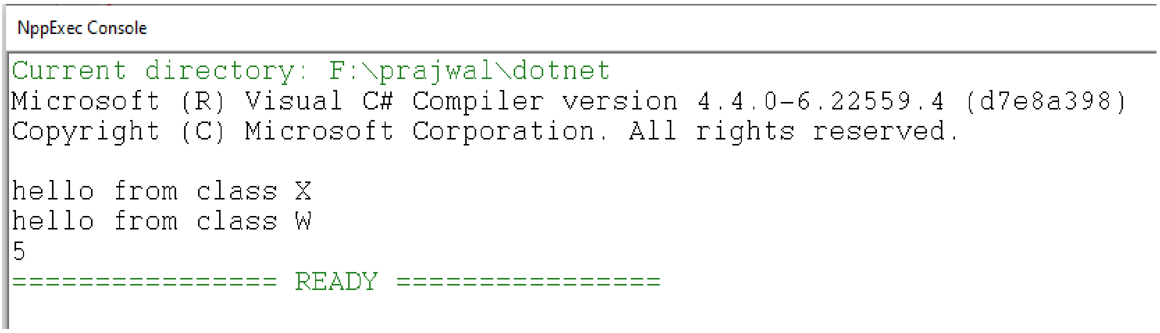
sum is 25
================ READY ================
```

5 Write a program to demonstrate inheritance in C#.

5.1 Source Code

```
using System;
class X{
 public X(){
      Console.WriteLine("hello from class X");
 }
 public void Sum(int a,int b){
      Console.WriteLine(a+b);
 }
}
class W:X{
 public W(){
      Console.WriteLine("hello from class W");
 }
 public static void Main(){
      W obj1=new W();
      obj1.Sum(2,3);
 }
}
```

5.2 Output Windows



```
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hello from class X
hello from class W
5
================ READY ================
```

6 Write a program to return multiple value from method using OUT keyword.

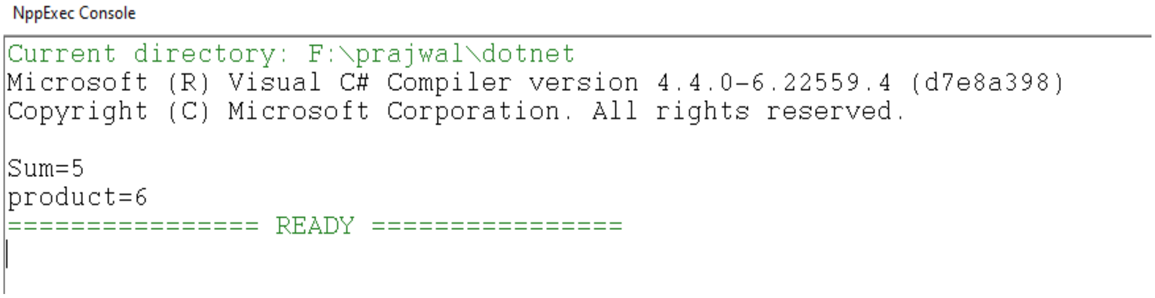
6.1 Source Code

```
using System;
class ABC{
 public static void ChangeValue(out int sum, out int product){

      int x=2;
      int y=3;
      sum=0;
      product=0;

      sum=x+y;
      product=x*y;
 }
 public static void Main(){
      int sum,product;
      ABC.ChangeValue(out sum,out product);
      Console.WriteLine("Sum={0}",sum);
      Console.WriteLine("product={0}",product);
 }
}
```

6.2 Output Window



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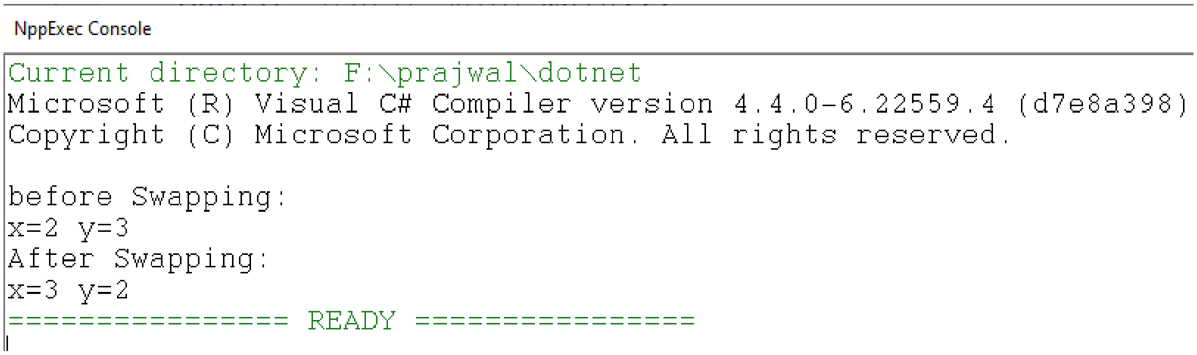
Sum=5
product=6
================ READY ================
```

7 Write a program to swap two variable using method ref keyword.

7.1 Source Code

```
using System;
class ABC{
 public static void swap(ref int x,ref int y){
       int temp;
       temp=x;
       x=y;
       y=temp;
 }
 public static void Main(){
       int x=2,y=3;
       Console.WriteLine("before Swapping:\nx={0} y={1}",x,y);
       ABC.swap(ref x,ref y);
       Console.WriteLine("After Swapping:\nx={0} y={1}",x,y);
 }
}
```

7.2 Output Window



```
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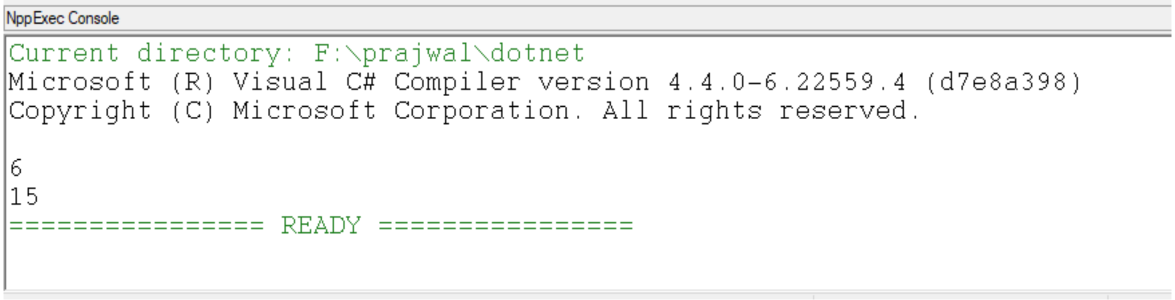
before Swapping:
x=2 y=3
After Swapping:
x=3 y=2
================ READY ================
```

8 Write a program to take variable number of parameter in method and calculate its sum.

8.1 Source Code

```
using System;
public class Demo{
 public static void Sum(params int[] num){
      int sum =0;
      for(int i=0;i<num.Length;i++){
            sum+=num[i];
      }
      Console.WriteLine(sum);
 }
 public static void Main(){
      Demo.Sum(1,2,3);
      Demo.Sum(1,2,3,4,5);
 }
}
```

8.2 Output Window



```
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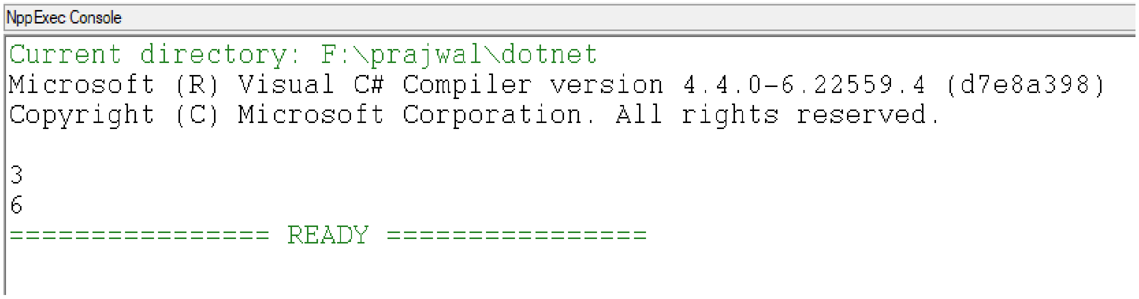
6
15
================ READY ================
```

9 Write a Program to demonstrate method overloading in C#.

9.1 Source Code

```
using System;
class Sum{
 public void add1(int a,int b){
       Console.WriteLine(a+b);
 }
 public void add1(int a,int b,int c){
       Console.WriteLine(a+b+c);
 }
 public static void Main(){
       Sum s = new Sum();
       s.add1(1,2);
       s.add1(1,2,3);
 }
}
```

9.2 Output Window



```
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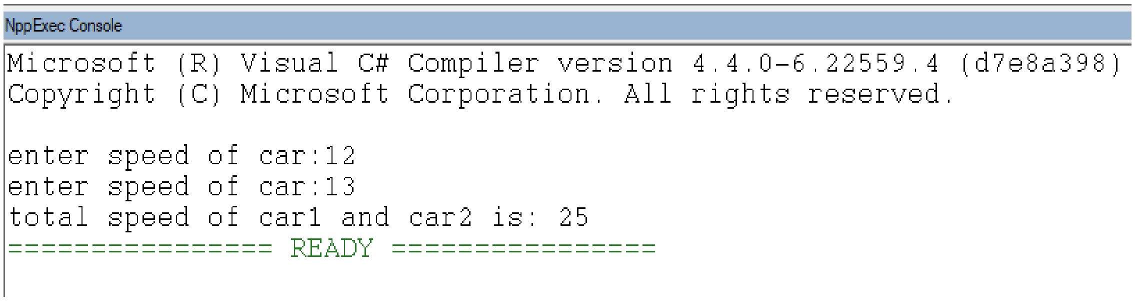
3
6
================ READY ================
```

10 Write a program to demonstrate operator overloading in C#.

10.1 Source Code

```
using System;
class Car{
 public int speed;
 public Car( bool x){
       if(x){
             Console.Write("enter speed of car:");
             speed=Convert.ToInt32(Console.ReadLine());
       }
 }
 public static Car operator+ (Car c, Car c2){
       Car c3 = new Car(false);
       c3.speed=c.speed+c2.speed;
       return c3;
 }
 public static void Main(){
       Car c = new Car(true);
       Car c2 = new Car(true);
       Car c3=c+c2;
           Console.WriteLine("total speed of car1 and car2 is:
           "+c3.speed);
 }
}
```

10.2 Output Window



```
Microsoft (R) Visual C# Compiler version 4.4.0-6.22559.4 (d7e8a398)
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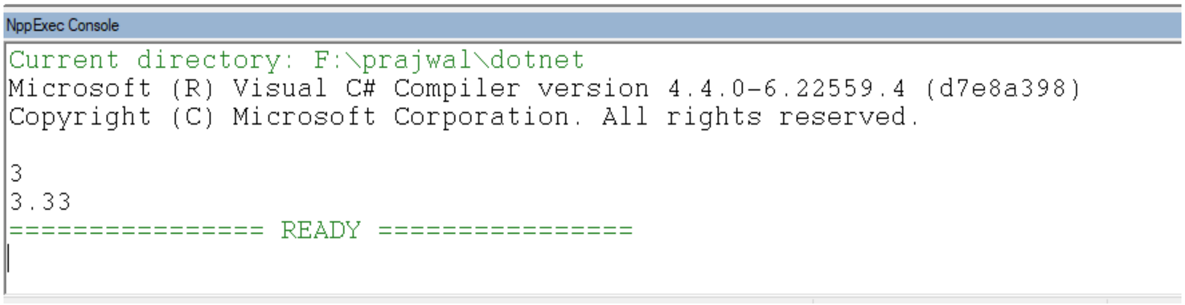
enter speed of car:12
enter speed of car:13
total speed of car1 and car2 is: 25
================ READY ================
```

11 Write a Program to demonstrate use of override, virtual and abstract keyword.

11.1 Source Code

```
using System;
abstract class Sum{
 public abstract void add1(int a,int b);
 public virtual void mul(int a,int b){
       Console.WriteLine(a+b);
 }
}
class A:Sum{
       public override void add1(int a,int b)
       {
            Console.WriteLine(a+b);
       }
       public override void mul(int a,int b)
       {
            Console.WriteLine((a/(float)b).ToString("0.00"));
       }
       public static void Main()
       {
            Sum s = new A();
            s.add1(1,2);
            s.mul(10,3);
       }
}
```

11.2 Output Window



```
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3
3.33
================ READY ================
```

12 Write a program to demonstrate interface in c#.

12.1 Source Code

```
using System;

public interface Shape{

  void Area();

}

class Circle:Shape{

 public void Area(){

      int radius=8;

      Console.WriteLine(22/7*radius*radius);

 }

 public static void Main(){

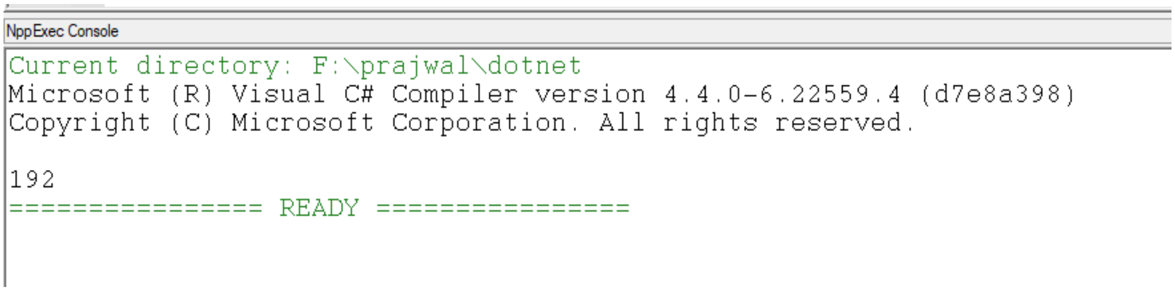
      Circle c = new Circle();

      c.Area();

 }

}
```

12.2 Output Window



```
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192
================ READY ================
```

13 Write a program to demonstrate enumeration in C#.

13.1 Source Code

```
using System;

class EnumDemo{

 enum level{

       expert,

       hard,

       medium,

       easy

 }

 public static void Main(){

       level l =  level.expert;

       Console.WriteLine(l);

       level z=(level)3;

       Console.WriteLine(z);

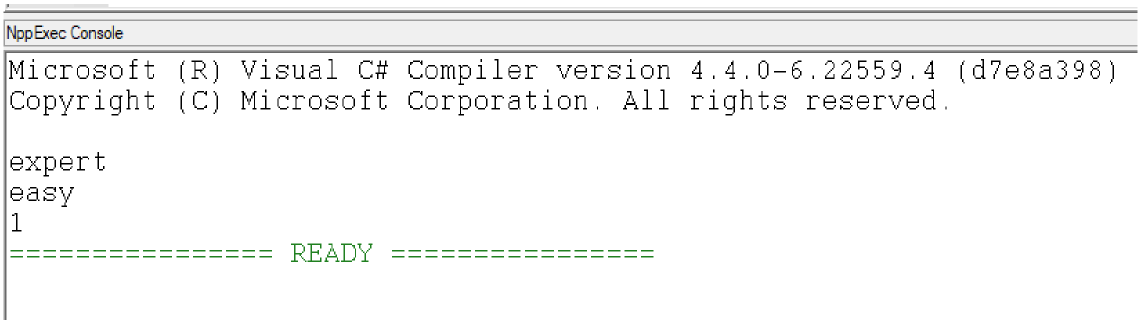
       int y=(int)level.hard;

       Console.WriteLine(y);

 }

}
```

13.2 Output Window



```
Microsoft (R) Visual C# Compiler version 4.4.0-6.22559.4 (d7e8a398)
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expert
easy
1
================ READY ================
```

14 Write a Program to show difference between struct and class.

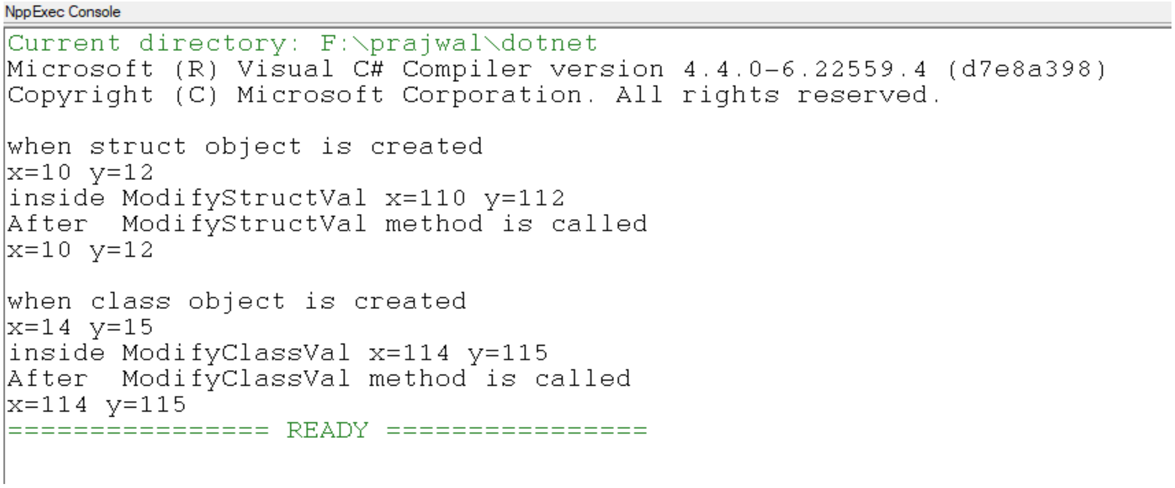
14.1 Source Code

```
using System;
struct  coordinate{
 public int x;
 public int y;
 public coordinate(int x,int y){
       this.x=x;
       this.y=y;
 }

 public void Show(){
       Console.WriteLine("x={0} y={1}",x,y);
 }
}
class A{
 public int x;
 public int y;
 public A(int x,int y){
       this.x=x;
       this.y=y;
 }

 public void Show(){
       Console.WriteLine("x={0} y={1}",x,y);
 }
}
class Demo{
 public static void Main(){
       coordinate c = new coordinate(10,12);
       Console.WriteLine("when struct object is created");
       c.Show();
       ModifyStructVal(c);
           Console.WriteLine("After  ModifyStructVal method is
           called");
       c.Show();
       Console.WriteLine(" ");
       A obj = new A(14,15);
       Console.WriteLine("when class object is created");
       obj.Show();
       ModifyClassVal(obj);
           Console.WriteLine("After  ModifyClassVal method is
           called");
       obj.Show();
 }
 public static void ModifyStructVal(coordinate c){
       c.x+=100;
       c.y+=100;
           Console.WriteLine("inside ModifyStructVal x={0}
           y={1}",c.x,c.y);
 }
 public static void ModifyClassVal(A a){
       a.x+=100;
       a.y+=100;
           Console.WriteLine("inside ModifyClassVal x={0}
           y={1}",a.x,a.y);
 }
}
```

14.2 Output Window



```
Current directory: F:\prajwal\dotnet
Microsoft (R) Visual C# Compiler version 4.4.0-6.22559.4 (d7e8a398)
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when struct object is created
x=10 y=12
inside ModifyStructVal x=110 y=112
After  ModifyStructVal method is called
x=10 y=12

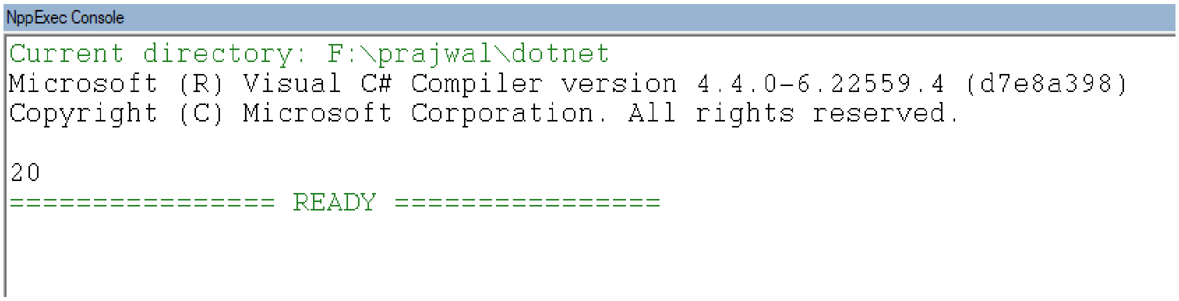
when class object is created
x=14 y=15
inside ModifyClassVal x=114 y=115
After  ModifyClassVal method is called
x=114 y=115
================ READY ================
```

15 Write a Program to demonstrate use of generics.

15.1 Source Code

```
using System;
public class Stack<T>{
 int index=0;
 T []data= new T[5];
 public void push(T val){
       data[index]=val;
       index++;
 }
 public T pop(){
       return data[--index];
 }
}
class Demo{
 public static void Main(){
       Stack<int> s= new Stack<int>();
       s.push(10);
       s.push(20);
       Console.WriteLine(s.pop());
 }
}
```

15.2 Output Windows



```
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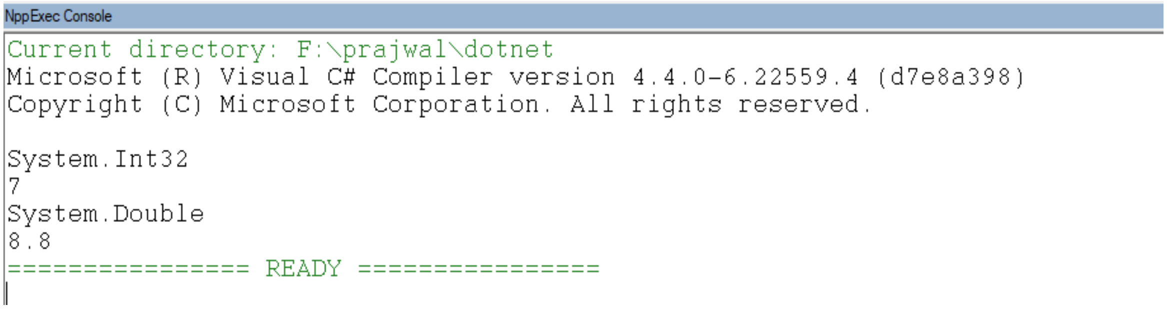
20
================ READY ================
```

16 Write a Program to demonstrate dynamic binding.

16.1 Source Code

```
using System;
class DynamicBinding{
 public static int Sum(int a,int  b){
      return a+b;
 }
 public static double Sum(double a,double b){
      return a+b;
 }
 public static void Main(){
      dynamic a=Sum(3,4);
      dynamic b =Sum(3.9,4.9);
      Console.WriteLine(a.GetType());
      Console.WriteLine(a);
      Console.WriteLine(b.GetType());
      Console.WriteLine(b);
 }
}
```

16.2 Output Window



```
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System.Int32
7
System.Double
8.8
================ READY ================
```

17 Write a program to return total length of two string using Lambda Expression

17.1 Source code

```
using System;

using static System.Console;

class LambdaExoressionDemo{

 public static void Main(){

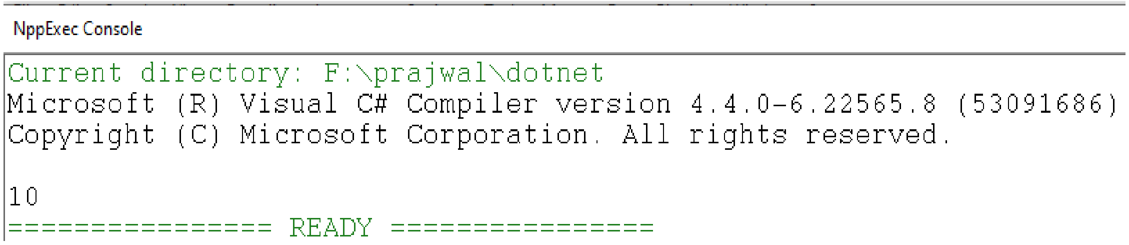
      Func<string,string,int>
      TotalLength=(s1,s2)=>s1.Length+s2.Length;

      WriteLine(TotalLength("hello","world"));

 }

}
```

17.2 Output Window



```
Current directory: F:\prajwal\dotnet
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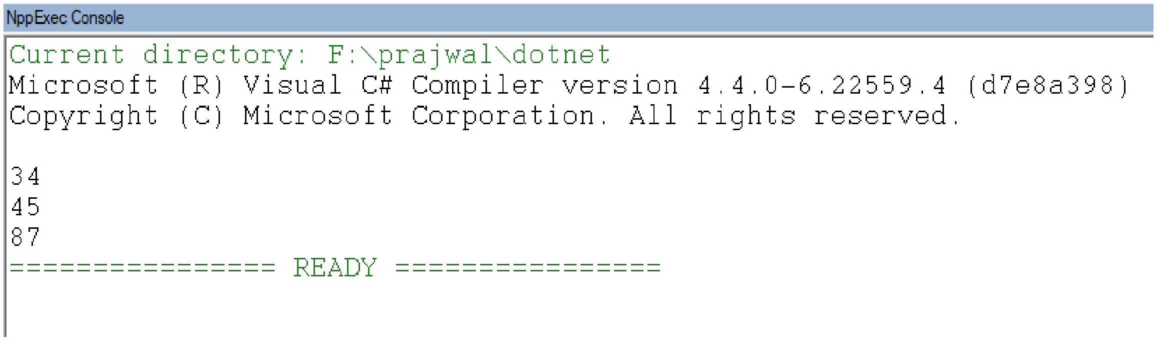
10
================ READY ================
```

18 Write a Program to create an array to store number and display number greater than 3 in ascending order using LINQ.

18.1 Source Code

```
using System.Linq;
using System;
class LinqTest{
 public static void Main(){
      int []a={45,2,1,87,34};
      var ResultQS=(from num in a
                           where num > 3
                           orderby num ascending
                           select num );
      foreach(int n in ResultQS){
           Console.WriteLine("{0}",n);
      }
 }
}
```

18.2 Output Window



```
Current directory: F:\prajwal\dotnet
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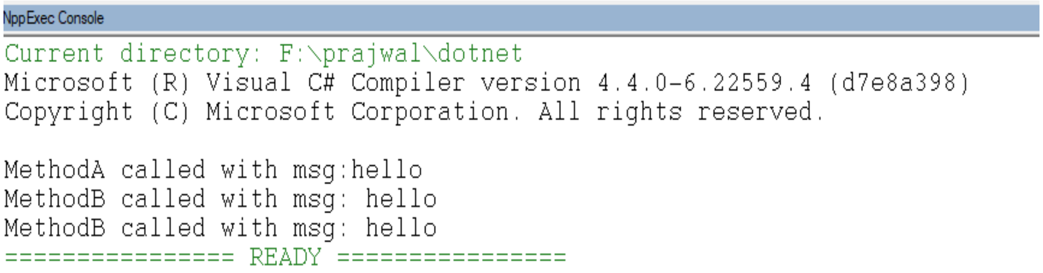
34
45
87
================ READY ================
```

19 Write a Program to declare delegate and show multicast delegates.

19.1 Source Code

```
using System;
public delegate void MyDelegate(String msg);
public class ClassA{
 public static void MethodA(String message){
      Console.WriteLine("MethodA called with msg:"+message);
 }
}
public class ClassB{
 public static void MethodB(String message){
      Console.WriteLine("MethodB called with msg: "+message);
 }
}
class test{
 public static void Main(){
      MyDelegate del1 = new MyDelegate(ClassA.MethodA);
      MyDelegate del2 = new MyDelegate(ClassB.MethodB);
      MyDelegate del = del1+del2;
      del("hello");
      del=del2-del1;
      del("hello");
 }
}
```

19.2 Output Windows



```
Current directory: F:\prajwal\dotnet
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MethodA called with msg:hello
MethodB called with msg: hello
MethodB called with msg: hello
================ READY ================
```

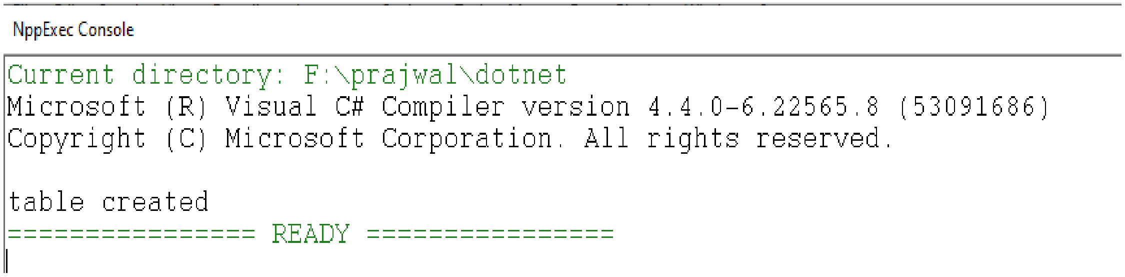
20 Write a Program to show database connection.

20.1 Source Code

```
using System;
using System.Data;
using System.Data.SqlClient;
class program
{
    public static void Main()
    {
      SqlConnectionStringBuilder sb = new
     SqlConnectionStringBuilder();
        sb.DataSource = @"(localdb)\MSSQLLocalDB";
        sb.InitialCatalog="dotnet";
       sb.IntegratedSecurity = true;
        using (SqlConnection con = new
     SqlConnection(sb.ConnectionString))
        {
           con.Open();
           string createDB = @"create table customer(id int
           primary key,name varchar(20))";
            SqlCommand cmd = new SqlCommand(createDB, con);
            try
            {
                cmd.ExecuteNonQuery();
                 Console.WriteLine("table created");
            }
            catch (Exception e)
            {
                Console.WriteLine(e);
```

```
                    }
                }
            }
        }
```

20.2 Output Window



```
Current directory: F:\prajwal\dotnet
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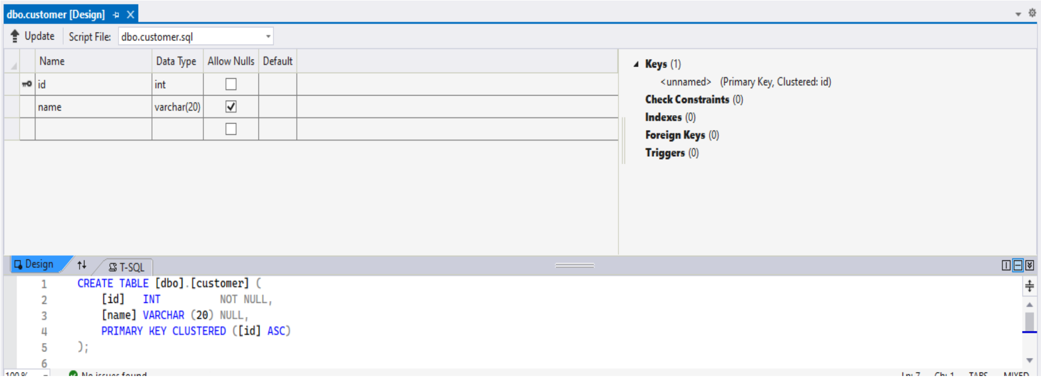
table created
================ READY ================
```



Name	Data Type	Allow Nulls	Default
id	int	□	
name	varchar(20)	☑	
		□	

Keys (1)
<unnamed> (Primary Key, Clustered: id)
Check Constraints (0)
Indexes (0)
Foreign Keys (0)
Triggers (0)

```
CREATE TABLE [dbo].[customer] (
    [id]   INT          NOT NULL,
    [name] VARCHAR (20) NULL,
    PRIMARY KEY CLUSTERED ([id] ASC)
);
```

21 Write a program to insert a record on the table and retrieve it.

21.1 Source Code

```
using System;

using System.Data;

using System.Data.SqlClient;

class program

{

    public static void Main()

    {

       SqlDataReader reader;

         SqlConnectionStringBuilder sb = new
         SqlConnectionStringBuilder();

         sb.DataSource = @"(localdb)\MSSQLLocalDB";
         sb.InitialCatalog="dotnet";

         sb.IntegratedSecurity = true;

        using (SqlConnection con = new
       SqlConnection(sb.ConnectionString))

         {

             con.Open();

             string insertDB = @"insert into customer
             values(3,'roshan kumar sunwar'),(4,'padam raj
             joshi')";

             SqlCommand cmd = new SqlCommand(insertDB, con);


             string retrieveDB=@"select * from customer";

             SqlCommand cmd1 = new SqlCommand(retrieveDB, con);

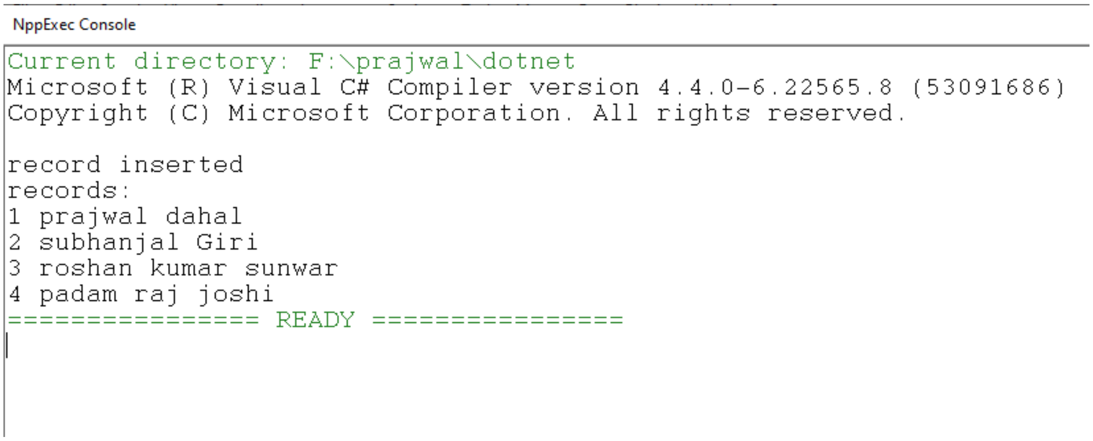

             try

             {
                 cmd.ExecuteNonQuery();
                 Console.WriteLine("record inserted");


                  Console.WriteLine("records: ");
                  reader=cmd1.ExecuteReader();
                  while(reader.Read())
                  {
                        int x=Convert.ToInt32(reader["id"]);
                        string name=reader["name"].ToString();
                        Console.Write("{0} {1}\n",x,name);


                  }
             }
             catch (Exception e)
             {
                 Console.WriteLine(e);
             }
         }
     }
 }
```

21.2 Output Window



```
Current directory: F:\prajwal\dotnet
Microsoft (R) Visual C# Compiler version 4.4.0-6.22565.8 (53091686)
Copyright (C) Microsoft Corporation. All rights reserved.

record inserted
records:
1 prajwal dahal
2 subhanjal Giri
3 roshan kumar sunwar
4 padam raj joshi
================ READY ================
```