Delegates in C#.NET

Delegates

- Delegate is a reference variable that contains reference of one or more methods that have same signature.
    - **Single Cast Delegates:** Contains reference of only one method.
    - **Multi Cast Delegates:** Contains reference of multiple methods.
- We can call the target method using delegate.
- We don't use delegates individually; we use delegates only in events.
- The "delegate type" is used to specify signature of the target method.

Steps for development of delegates:

- Create a target method:

```
accessmodifier returntype methodname(arguments)
{
}
```

- Create delegate type (in the namespace):

```
public delegate returntype delegatetypename(arguments);
```

- Create a delegate (in the class or method);

```
delegatetypename delegatename;
```

- Store the address of target method in the delegate:

```
delegatename = methodname;
```

- Call the method indirectly using delegate:

```
delegatename(value1, value2, ..);
```

Single Cast Delegates – Example

Creating Project

- Open Visual Studio 2015.
- Go to "File" – "New" – "Project".
- Select ".NET Framework 4.6".
- Select "Visual C#".
- Select "Console Application".
- Type the project name as "SingleCastDelegatesExample".
- Type the location as "C:\CSharp".
- Type the solution name as "SingleCastDelegatesExample". Click on OK.

Program.cs

```
using System;

namespace SingleCastDelegatesExample
{
  class Class1
  {
    //create target method
    public void Add(int a, int b)
    {
      int c = a + b;
      Console.WriteLine("Sum is " + c);
    }
  }

  //create a delegate type
  public delegate void MyDelegateType(int a, int b);
```

```
class Program
{
    static void Main()
    {
        //create a delegate
        MyDelegateType d;

        //create object
        Class1 c1 = new Class1();

        //store the address of Add method into delegate
        d = c1.Add;

        //call the Add method using delegate
        d(10, 20);
        Console.ReadKey();
    }
}
}
```

Running the Project

- Go to "Debug" menu and click on "Start without Debugging".

Output