Phase-1

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Programming

Module-3

Aim: A simple Console application for Hello World program in C#.

```
using System;
namespace HelloWorldEx
{
   class Program
   {
      static void Main(string[] args)
      {
         Console.WriteLine("Hello World!");
      }
   }
}
```

Output:-

Aim: Example of namespace in C#.

```
using System;
namespace First
{
    public class Hello
    {
        public void sayHello()
        {
            Console.WriteLine("Hello First Namespace");
        }
    }
}
namespace Second
{
    public class Hello
    {
        public void sayHello() { Console.WriteLine("Hello Second Namespace"); }
    }
}
public class NamespaceEx
{
    public static void Main()
    {
        First.Hello h1 = new First.Hello();
        Second.Hello h2 = new Second.Hello();
        h1.sayHello();
        h2.sayHello();
    }
}
```

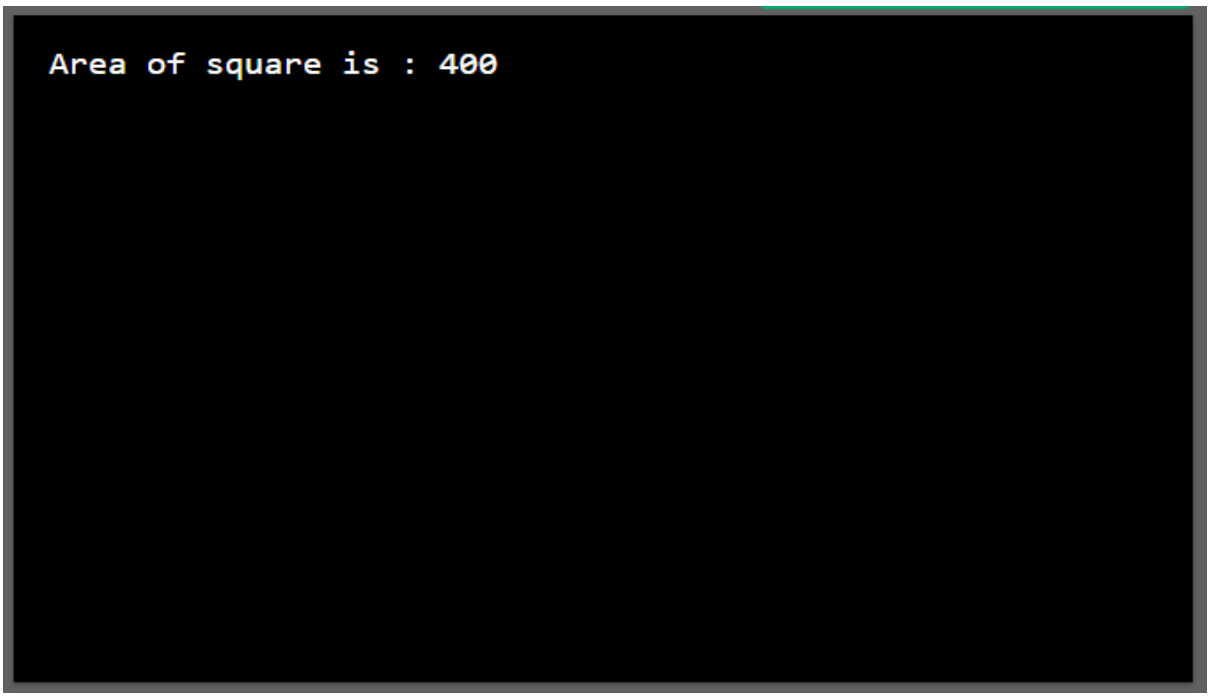
Output:-

```
Hello First Namespace
Hello Second Namespace
```

Aim: **Example of class in C#.**

```
using System;
namespace ClassEx
{
   class Program
   {
      static void Main(string[] args)
      {
         Square s = new Square();
         s.length = 20;
         int area = s.length * s.length;
         Console.WriteLine("Area of square is : {0}", area);
      }
   }
   class Square
   {
      public int length;
   }
}
```

Output:-



Aim: **Example of variable in C#.**

```
using System;
namespace VariableEx
{
   class Program
   {
      static void Main(string[] args)
      {
         int a = 17;
         float b = 09.15F;
         double sum;
         sum = a + b;
         Console.WriteLine("sum = {0} + {1}\n  = {2}", a,b,sum);
      }
   }
}
```

Output:-

```
sum = 17 + 9.15
   = 26.1499996185303
```

Aim: **Example of method in C#.**

```
using System;

namespace MethodDemo
{
   class Program
   {
      static void Main(string[] args)
      {
         Rectangle r = new Rectangle();
         int l = 4;
         int b = 7;
         int area = r.Area(l, b);

         Console.WriteLine("Area of rectangle = length {0} and breadth {1} \n \t\t
          = {2}", l,b,area);
         Console.Read();
      }
   }
   class Rectangle
   {
      public int Area (int length, int breadth)
      {
         int ans = length * breadth;
         return ans;
      }
   }
}
```

Output:-

```
Area of rectangle = length 4 and breadth 7
                  = 28
```

Module-4

Aim: Example of program flow in C#.

```
/* This is a simple program in C# */
using System;
namespace ProgramFlow
{
class Program
{
   public static void Main()
   {
      Console.WriteLine("My simple program in C#");
   }
}
}
```

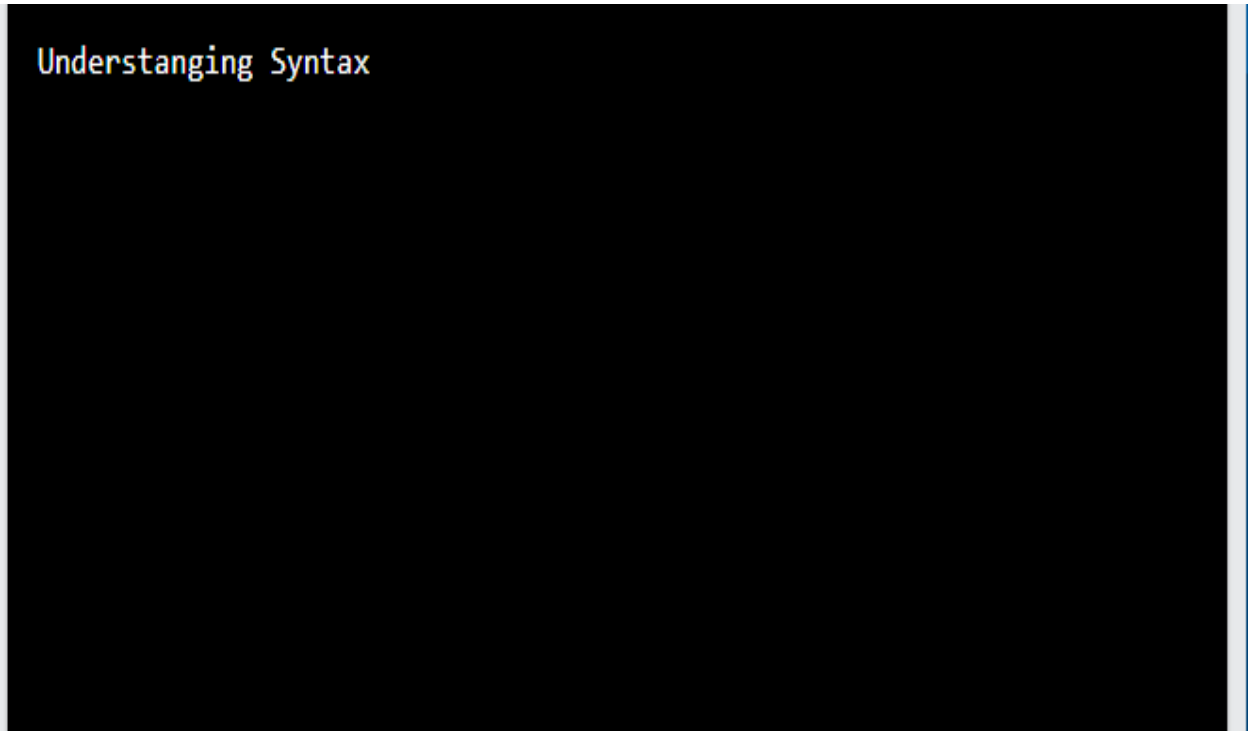
Output:-

```
Mysimple program in C#
```

Aim: Example of understanding syntax in C#.

```
/* This is a simple program in C# */
using System;
namespace SyntaxUnderstand
{
class Program
{
   /* this
     is multiline
     comment */
   public static void Main()
   {
      Console.WriteLine("Understanging Syntax");
   }
}
}
```

Output:-



Module-6

Aim: Example of value datatype in C#.

```
using System;

namespace ValueDatatype
{
  class Program
  {
    static void Main(string[] args)
    {
      // declaring character
       char a = 'G';

       // Integer data type is generally used for numeric values
       int i = 89;
       short s = 56;

       // long uses Integer values which may signed or unsigned
       long l = 4564;

       // UInt data type is generally used for unsigned integer values
       uint ui = 95;
       ushort us = 76;

       // ulong data type is generally used for unsigned integer values
       ulong ul = 3624573;

       // by default fraction value is double in C#
       double d = 8.358674532;

       // for float use 'f' as suffix
       float f = 3.7330645f;

       // for decimal use 'm' as suffix
       decimal dec = 389.5m;
```

```
        Console.WriteLine("char: " + a);
        Console.WriteLine("integer: " + i);
        Console.WriteLine("short: " + s);
        Console.WriteLine("long: " + l);
        Console.WriteLine("float: " + f);
        Console.WriteLine("double: " + d);
        Console.WriteLine("decimal: " + dec);
        Console.WriteLine("Unsinged integer: " + ui);
        Console.WriteLine("Unsinged short: " + us);
        Console.WriteLine("Unsinged long: " + ul);
    }
  }
}
```

Output:-

```
char: G
integer: 89
short: 56
long: 4564
float: 3.733064
double: 8.358674532
decimal: 389.5
Unsinged integer: 95
Unsinged short: 76
Unsinged long: 3624573
```

Aim: Example of value datatype in C#.

```
using System;

namespace ValueDatatype1
{
  class Program
  {
    static void Main(string[] args)
    {

        sbyte a = 126;

        // sbyte is 8 bit
        // singned value
        Console.WriteLine(a);

        a++;
        Console.WriteLine(a);

        // It overflows here because
        // byte can hold values
        // from -128 to 127
        a++;
        Console.WriteLine(a);

        // Looping back within
        // the range
        a++;
        Console.WriteLine(a);

        byte b = 0;

        // byte is 8 bit
        // unsigned value
        Console.WriteLine(b);

        b++;
        Console.WriteLine(b);
```

```
        b = 254;

        // It overflows here because
        // byte can hold values from
        // 0 to 255
        b++;
        Console.WriteLine(b);

        // Looping back within the range
        b++;
        Console.WriteLine(b);
    }
  }
}
```

Output:-

```
126
127
-128
-127
0
1
255
0
```

Aim: **Example of reference datatype in C#.**

```
using System;

namespace ReferenceDatatype
{
  class Program
  {
    static void Main(string[] args)
    {

      // declaring string
       string a = "Kotadiya ";

       //append in a
       a+="Amisha";
       a = a+" Kishorbhai";
       Console.WriteLine(a);

       // declare object obj
       object obj;
       obj = 17;
       Console.WriteLine(obj);

       // to show type of object
       // using GetType()
       Console.WriteLine(obj.GetType());
    }
  }
}
```

Output:-

```
Kotadiya Amisha Kishorbhai
17
System.Int32
```

Aim: **Example of pointer datatype in C#.**

```
using System;

namespace PointerDatatype
{
  class Pogram
  {
    static void Main(string[] args)
    {
      unsafe
      {
          // declare variable
          int n = 17;

          // store variable n address
          // location in pointer variable p
          int* p = &n;
          Console.WriteLine("Value :{0}", n);
          Console.WriteLine("Address :{0}", (int)p);
      }
    }
  }
}
```

Output:-

```
Value :17
Address :1764744000
```

Aim: **Example of implicit type conversion in C#.**

```
using System;
namespace ImplicitConversion
{
  class Program
  {
    static void Main(string[] args)
    {
          char a = 'A';
          // automatic type conversion
          int i = a;

          // automatic type conversion
          long l = i;

          // automatic type conversion
          float f = l;
          double d = f;

          // Display Result
          Console.WriteLine("Char value "  +a);
          Console.WriteLine("Int value "  +i);
          Console.WriteLine("Long value "  +l);
          Console.WriteLine("Float value "  +f);
          Console.WriteLine("Double value "  +d);
    }
  }
}
```

Output:-

```
Char value A
Int value 65
Long value 65
Float value 65
Double value 65
```

Aim: **Example of explicit type conversion C#.**

```
using System;
namespace ExplicitConversion
{
  class Program
  {
    static void Main(string[] args)
    {
          double d = 65.01;

          // Explicit Type Casting
          float f = (float)d;

          // Explicit Type Casting
          long l = (long)f;

          // Explicit Type Casting
          int i = (int)l;

          // Explicit Type Casting
          char c = (char)i;

          // Display Result
          Console.WriteLine("Value of double is " +d);
          Console.WriteLine("Value of float is " +f);
          Console.WriteLine("Value of long is " +l);
          Console.WriteLine("Value of integer is " +i);
          Console.WriteLine("Value of char is " +c);
    }
  }
}
```

Output:-

```
Value of double is 65.01
Value of float is 65.01
Value of long is 65
Value of integer is 65
Value of char is A
```

Aim: **Example of boxing in C#.**

```
using System;

namespace Boxing
{
  class Program
  {
    static void Main(string[] args)
    {
       // assigned int value
       // 2020 to num
       int num = 2021;

       // boxing
       object obj = num;

       // value of num to be change
       num = 100;

       System.Console.WriteLine
       ("Value - type value of num is : {0}", num);
       System.Console.WriteLine
       ("Object - type value of obj is : {0}", obj);
    }
  }
}
```

Output:-

```
Value - type value of num is : 100
Object - type value of obj is : 2021
```

Aim: **Example of unboxing in C#.**

```
using System;

namespace Unboxing
{
  class Program
  {
    static void Main(string[] args)
    {
       // assigned int value
       // 23 to num
       int num = 17;

       // boxing
       object obj = num;

       // unboxing
       int i = (int)obj;

       // Display result
       Console.WriteLine("Value of ob object is : " + obj);
       Console.WriteLine("Value of i is : " + i);
    }
  }
}
```

Output:-

```
Value of ob object is : 17
Value of i is : 17
```

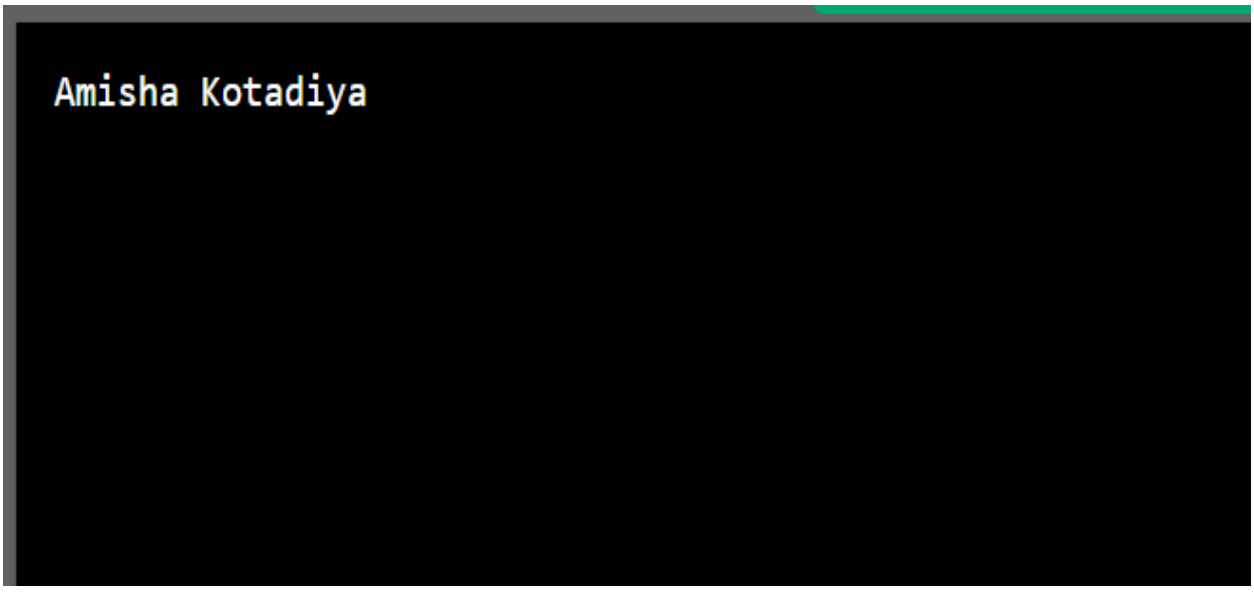
Module-7

Aim: Example IF statement in C#.

```
using System;

namespace IfStatement
{
  class Program
  {
    static void Main(string[] args)
    {
        string name = "Amisha";
        if (name == "Amisha") {
            Console.WriteLine("Amisha Kotadiya");
        }
    }
  }
}
```

Output:-

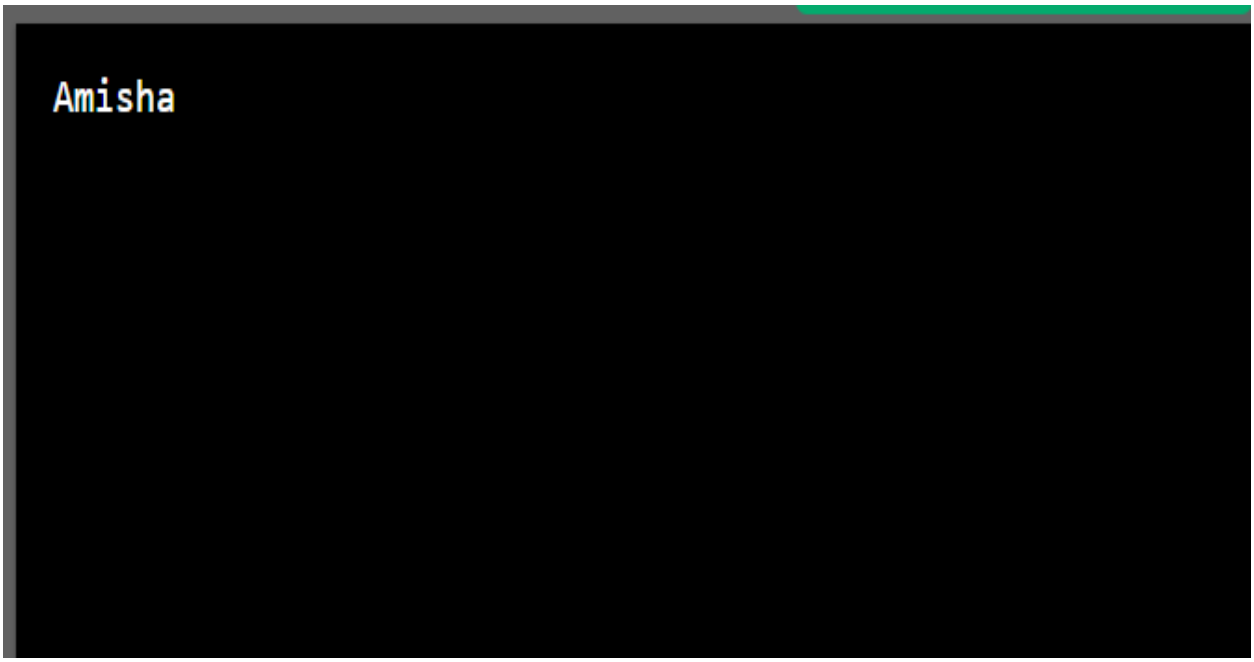


Aim: **Example IF-ELSE statement in C#.**

```
using System;

namespace IfelseStatement
{
  class Program
  {
    static void Main(string[] args)
    {
       string name = "Amisha";
       if (name == "Amisa") {
          Console.WriteLine("Amisha Kotadiya");
       }
       else {
          Console.WriteLine("Amisha");
       }
    }
  }
}
```

Output:-



Aim: **Example IF-ELSE-IF statement in C#.**

```
using System;

namespace IfelseifStatement
{
  class Program
  {
    static void Main(string[] args)
    {
       int i = 20;

       if (i == 10)
          Console.WriteLine("i is 10");
       else if (i == 15)
          Console.WriteLine("i is 15");
       else if (i == 20)
          Console.WriteLine("i is 20");
       else
          Console.WriteLine("i is not present");
    }
  }
}
```

Output:-

```
i is 20
```

Aim: **Example NESTED IF statement in C#.**

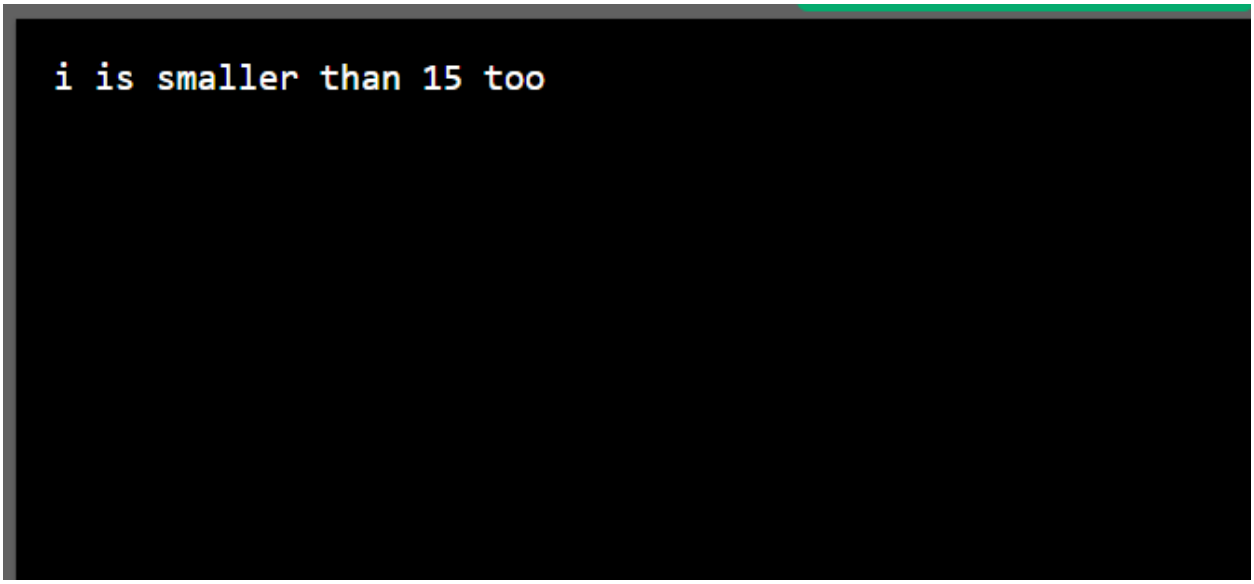
```
using System;

namespace NestedifStatement
{
  class Program
  {
    static void Main(string[] args)
    {
       int i = 10;

       if (i == 10) {

          // Nested - if statement
          if (i < 15)
             Console.WriteLine("i is smaller than 15 too");
          else
             Console.WriteLine("i is greater than 15");
       }
    }
  }
}
```

Output:-



Aim: **Example SWITCH statement in C#.**

```
using System;

namespace SwitchStatement
{
  class Program
  {
    static void Main(string[] args)
    {
       char letter = 'C';
       switch(number)
       {
       case 'A': Console.WriteLine("Apple");
                 break;
       case 'B': Console.WriteLine("Box");
                 break;
       case 'C': Console.WriteLine("Cat");
                 break;
       default: Console.WriteLine("None matches");
                 break;
        }
    }
  }
}
```

Output:-

```
Cat
```

Aim: **Example NESTED SWITCH statement in C#.**

```
using System;
namespace NestedswitchStatement
{
  class Program
  {
    static void Main(string[] args)
    {
       int j = 5;
       switch (j)
       {
          case 5: Console.WriteLine(5);
                  switch (j - 1){
                    case 4: Console.WriteLine(4);
                            switch (j - 2){
                            case 3: Console.WriteLine(3);
                               break;
                            }
                        break;
                   }
              break;
          case 10: Console.WriteLine(10);
                   break;
          case 15: Console.WriteLine(15);
                   break;
          default: Console.WriteLine(100);
                   break;
       }
    }
  }
}
```

Output:-

```
5
4
3
```