



## **Practical File**



Year - 2018-2021

# C#.NET

#### **Submitted To:**

Mr. Chandrasekhar Patel Lecturer Department of Computer Science

### **Submitted By:**

Amit Singh Negi BCA (5<sup>th</sup> Semester)

Department of Computer Science,

Dev Sanskriti Vishwavidyalaya

Gayatrikunj-Shantikunj, Haridwar, U.K. -249411,

www.dsvv.ac.in

## **INDEX**

S. No.	Task	Page No
1	Write a program to print Armstrong Numbers	1
2	Write a program to print factorial of a number	2
3	Write a program to find the GCD of two numbers	3
4	Write a program to check if a number is prime number	4
5	Write a program to print the Fibonacci series	5
6	Write a program to print the half pyramid pattern	6
7	Write a program to print the half pyramid pattern with numbers	7
8	Write a program to print the half pyramid inverse pattern	8
9	Write a program to print the pyramid pattern	9
10	Write a program to print the inverse pyramid pattern	10
11	Write a program to print the diamond pattern	11
12	Write a program to print the Pascal's triangle	12
13	Write a program to compare two string	13
14	WAP to count alphabets, digits and special characters in a string	14
15	Write a program to copy one string to another string	15
16	Write a program to find maximum occurring character in a string	16
17	Write a program to check if a substring is present in the given string	17
18	Write a program for Encapsulation	18
19	Write a program for Abstraction	19
20	Write a program for single Inheritance	20
21	Write a program for Multilevel Inheritance	21
22	Write a program for multiple Inheritance	22
23	Write a program for method overloading	23
24	Write a program for method overriding	24
25	Write a program for Interface	25
26	Write a program for namespace	26
27	Write a program for exception handling through try and catch	26
28	Write a program for Properties	27
29	Write a program for constructor	28
30	Write a program for Threading	29
31	Write a program for indexer	30
32	Write a program to access data from database using ADO.NET	31

#### 1. Write a program to print Armstrong Numbers

```
using System;
namespace C {
    class Program{
        static int order(int n) {
            int c = 0;
            while (n > 0) {
                n /= 10;
                C++;
            }
            return c;
        public static void Main(string[] args){
            Console.WriteLine("Enter the number of iterations:");
            int t = int.Parse(Console.ReadLine());
            while (t-- > 0) {
                Console.WriteLine("Enter the number:");
                int n = int.Parse(Console.ReadLine());
                int noOfDigits = order(n);
                int sum = 0, temp = n;
                while(temp > 0){
                    sum += (int)Math.Pow(temp % 10, noOfDigits);
                    temp /= 10;
                if(sum == n)
                    Console.WriteLine(n + " is an Armstrong number
\n");
                else
                    Console.WriteLine(n + " isn't an Armstrong num
ber\n");
            }
        }
    }
}
        Enter the number of iterations:
        Enter the number:
        1 is an Armstrong number
        Enter the number:
        153
        153 is an Armstrong number
        Enter the number:
        123 isn't an Armstrong number
```

### 2. Write a program to print factorial of a number

```
using System;
namespace myproject
    public class Factorial
        public static void Main(string[] args)
            Console.WriteLine("A program to print factorial of the
given number n");
            int m, n, fact = 1;
            Console.WriteLine("Enter the value of n: ");
            n = int.Parse(Console.ReadLine());
            for (m = 1; m \le n; m++)
                 fact = fact * m;
            Console.WriteLine(fact);
            Console.ReadLine();
        }
    }
A program to print factorial of the given number n
Enter the value of n:
40320
```

### 3. Write a program to find the GCD of two numbers

```
using System;
namespace myproject
   public class GCD
       public static void Main(string[] args)
           int n, a, b, gcd = 1, temp;
           Console.WriteLine("A program to find out the GCD of
two numbers");
           Console.WriteLine("Enter the number of iterations: ");
           n = int.Parse(Console.ReadLine());
           for (int i = 0; i < n; i++)
               Console.WriteLine("Enter the no.:");
               a = int.Parse(Console.ReadLine());
               b = int.Parse(Console.ReadLine());
               while (b != 0)
                   temp = b;
                   b = a % b;
                   a = temp;
               gcd = a;
               Console.WriteLine("GCD = " + gcd);
               Console.ReadLine();
           }
       }
    }
A program to find out the GCD of two numbers
Enter the number of iterations:
Enter the no.:
14
46
GCD = 2
Enter the no.:
132
432
GCD = 12
```

#### 4. Write a program to check a number if prime or not.

```
using System;
namespace myproject
   public class Prime
       public static void Main(string[] args)
           Console.WriteLine("A program to check the number is
prime or not.");
           int m, n, count = 0, i, j;
           Console.WriteLine("Enter the number of iterations: ");
           j = int.Parse(Console.ReadLine());
           for (i = 0; i < j; i++)
               Console.WriteLine("Enter the number: ");
               n = int.Parse(Console.ReadLine());
               for (m = 2; m \le n / 2; m++) \{
                   if (n % m == 0)
                      count = count + 1;
               if (count == 0)
                   Console.WriteLine("This number " + n + " is a
prime number");
               else
                   Console.WriteLine("This number " + n + " is
NOT a prime number");
                   count = 0;
               }
           }
        }
Enter the number:
This number 32 is NOT a prime number
Enter the number:
This number 2 is a prime number
Enter the number:
```

## 5. Write a program to print Fibonacci Series

```
using System;
namespace myproject
    public class Fibonacci
        public static void Main(string[] args)
            Console.WriteLine("A program to print Fibonacci series
of n terms");
            int m, n, a = 0, b = 1;
            Console.WriteLine("Enter the value: ");
            n = int.Parse(Console.ReadLine());
            Console.WriteLine("Fibonacci Series: ");
            for (m = 1; m \le n; m++)
                Console.Write(a + " ");
                int next = a + b;
                a = b;
                b = next;
            }
        }
}
```

```
A program to print Fibonacci series of n terms
Enter the value:
8
Fibonacci Series:
0 1 1 2 3 5 8 13
```

## 6. Write a program to print the half pyramid pattern

```
using System;
namespace myproject
    public class Pattern HalfPyramid
        public static void Main(string[] args)
            int space, rows;
            Console.WriteLine("A program to print half pyramid
pattern");
            Console.WriteLine("Enter the number of rows:");
            rows = int.Parse(Console.ReadLine());
            for (int i = 0; i <= rows; i++)
                 for (int star = 0; star < i; star++)</pre>
                     Console.Write("*");
                 for (space = i; space < rows; space++)</pre>
                     Console.Write(" ");
                Console.WriteLine();
                Console.ReadLine();
            }
        }
    }
}
A program to print half pyramid pattern
Enter the number of rows:
```

#### 7. Write a program to print the half pyramid pattern with numbers

using System;

```
namespace myproject
    public class Pattern HalfPyramidNum
        public static void Main(string[] args)
            int space, rows;
            Console.WriteLine("A program to print half pyramid
pattern of numbers:");
            Console.WriteLine("Enter the number of rows:");
            rows = int.Parse(Console.ReadLine());
            Console.WriteLine();
            for (int i = 1; i <= rows; i++)
                 for (int num = 1; num <= i; num++)</pre>
                     Console.Write(num);
                 for (space = i; space < rows; space++)</pre>
                     Console.Write(" ");
                Console.WriteLine();
                Console.ReadLine();
    }
}
```

```
A program to print half pyramid pattern of numbers:
Enter the number of rows:

1

12

123

1234
```

### 8. Write a program to print the half pyramid inverse pattern

```
using System;
namespace myproject
    public class Pattern HalfInversePyramid
        public static void Main(string[] args)
            int space, rows;
            Console.WriteLine("A program to print half pyramid
inverse pattern");
            Console.WriteLine("Enter the number of rows:");
            rows = int.Parse(Console.ReadLine());
            Console.WriteLine();
            for (int i = 0; i \le rows; i++)
                for (int star = rows; star > i; star--)
                    Console.Write("*");
                for (space = i; space < rows; space++)</pre>
                    Console.Write(" ");
                Console.WriteLine();
                Console.ReadLine();
            }
    }
}
```

## 9. Write a program to print the pyramid pattern

```
using System;
namespace myproject
   public class Pattern pyramid
        public static void Main(string[] args)
            int space, rows;
           Console.WriteLine("A program to print pyramid
pattern");
            Console.WriteLine("Enter the number of rows:");
            rows = int.Parse(Console.ReadLine());
            for (int i = 1; i <= rows; i++)
                for (space = i; space < rows; space++)</pre>
                   Console.Write(" ");
                for (int star = 1; star < (i * 2); star++)</pre>
                   Console.Write("*");
                Console.WriteLine();
                Console.ReadLine();
            }
        }
    }
A program to print pyramid pattern
Enter the number of rows:
```

```
10. Write a program to print the inverse pyramid pattern
```

```
using System;
namespace myproject
{
    public class Pattern PyramidInverse
       public static void Main(string[] args)
            int space, rows;
            Console.WriteLine("A program to print inverse pyramid
pattern");
            Console.WriteLine("Enter the number of rows:");
            rows = int.Parse(Console.ReadLine());
            for (int i = rows; i >= 1; i--)
                for (space = i; space <= rows; space++)</pre>
                   Console.Write(" ");
                for (int star = (i * 2); star > 1; star--)
                   Console.Write("*");
               Console.WriteLine();
               Console.ReadLine();
            }
        }
    }
}
A program to print inverse pyramid pattern
Enter the number of rows:
  *******
   ******
    *****
     ****
      ***
```

## 11. Write a program to print the diamond pattern

using System;

```
namespace C {
    class Program{
        public static void Main(string[] args) {
           int rows, i, j, space;
            Console.Write("Enter the number of rows: ");
            rows = int.Parse(Console.ReadLine());
            for (i = 0; i \le rows / 2; i++)
                 for (space = i; space < rows / 2; space++)</pre>
                     Console.Write(" ");
                 for (j = 0; j \le i * 2; j++)
                     Console.Write("* ");
                 Console.WriteLine();
            for (i = rows / 2 + 1; i > 0; i--)
                 for (space = i; space <= rows / 2 + 1; space++)</pre>
                     Console.Write(" ");
                 for (j = i * 2 - 4; j >= 0; j--)
                     Console.Write("* ");
                 Console.WriteLine();
            }
    }
}
 Enter the number of rows: 7
```

#### 12. Write a program to print the Pascal's triangle

```
using System;
namespace myproject{
    public class Pascal Triangle{
        public static int Factorial(int fact){
            int m, f = 1;
            for (m = 1; m <= fact; m++)
                f = f * m;
            return f;
        }
        public static int Ncr(int a, int b) {
            return Factorial(a) / (Factorial(b) * Factorial(a -
b));
        }
        public static void Main(string[] args){
            int space, rows, c;
            Console.WriteLine("A program to print the Pascal
triangle.");
            Console.WriteLine("Enter the number of rows:");
            rows = int.Parse(Console.ReadLine());
            for (int i = 0; i \le rows; i++) {
                for (space = i; space < rows; space++)</pre>
                    Console.Write(" ");
                for (int j = 0; j \le i; j++) {
                    c = Ncr(i, j);
                    Console.Write(c + " ");
                Console.WriteLine();
                Console.ReadLine();
   A program to print the Pascal triangle.
Enter the number of rows:
6
      1
    1 1
    1 2 1
   1 3 3 1
  14641
 1 5 10 10 5 1
```

## 13. Write a program to compare two string without using string library functions

```
using System;
namespace C {
    class Program{
        public static void Main(string[] args) {
             string str1, str2;
             int flag = 0;
            Console.WriteLine("A program to compare two strings.")
;
            Console.WriteLine("Enter string 1: ");
             str1 = Console.ReadLine();
             Console.WriteLine("Enter string 2: ");
             str2 = Console.ReadLine();
             for(int i=0; i<str1.Length; i++){</pre>
                 if(str1[i]!=str2[i]){
                     flag = 0;
                     break;
                 }
                 else{
                     flag = 1;
                 }
             }
             if(flag==0)
                 Console.WriteLine(str1 + " and " + str2 + " are NO
T equal");
             else
            Console.WriteLine(str1 + " and " + str2 + " are Equal"
);
        }
    }
A program to compare two strings.
Enter string 1:
amit
Enter string 2:
 amit
amit and amit are Equal
```

## 14. Write a program to count a total number of alphabets, digits and special characters in a string

```
using System;
namespace String
    public class StringCount
        public static void Main(string[] args)
             string str;
             int alpha = 0, digit = 0, sym = 0;
             Console.WriteLine("Enter the main string: ");
             str = Console.ReadLine();
             foreach (char s in str)
                 if (s \ge 65 \&\& s \le 90 \mid | s \ge 97 \&\& s \le 122)
                     alpha += 1;
                 else if (s >= 48 \&\& s <= 57)
                     digit += 1;
                 else
                     sym += 1;
             Console.WriteLine();
             Console.WriteLine("Number of Alphabets: " + alpha);
             Console.WriteLine("Number of Digits: " + digit);
             Console.WriteLine("Number of Special Characters: " +
sym);
            Console.ReadLine();
        }
    }
Enter the main string:
crsgj469bvkmnfdd#$$#^*%*&@
Number of Alphabets: 13
Number of Digits: 3
Number of Special Characters: 10
```

#### 15. Write a program to copy one string to another string

```
using System;
namespace C
    class Program
       public static void Main(string[] args)
            string s1, s2 = "";
           Console.WriteLine("A program to copy one string to ano
ther string");
           Console.WriteLine("Enter the string: ");
            s1 = Console.ReadLine();
            foreach (char c in s1)
               s2 += c;
            }
            Console.WriteLine("\nString Copied\n");
           Console.WriteLine("Copied String is: " + s2);
    }
 A program to copy one string to another string
 Enter the string:
 Hello!!!
 String Copied
 Copied String is: Hello!!!
```

### 16. Write a program to find maximum occurring character in a string

```
using System;
namespace Strings
    public class StringMax
        public static void Main(string[] args)
            string str;
            int[] count = new int[256];
            Console.WriteLine("Enter the string: ");
            str = Console.ReadLine();
            for (int i = 0; i < str.Length; i++)
                count[str[i]]++;
            int max = -1;
            char result = ' ';
            for (int i = 0; i < str.Length; i++)
                if (max < count[str[i]])</pre>
                    max = count[str[i]];
                    result = str[i];
            Console.WriteLine("Maximum occuring character in
string: " + result);
    }
Enter the string:
console
Maximum occuring character in string: o
```

## 17. Write a program to check whether a given substring is present in the given string

```
using System;
namespace C {
    class Program{
        public static void Main(string[] args){
          string str, substr;
          Console.WriteLine("\nEnter the string: ");
          str = Console.ReadLine();
          Console.WriteLine("\nEnter the Sub-string");
          substr = Console.ReadLine();
          int flag = 0;
          for (int i = 0; i <= str.Length - substr.Length; i++) {</pre>
               for (int j = i; j < i + substr.Length; j++) {
                   flag = 1;
                   if (str[j] != substr[j - i]) {
                       flag = 0;
                       break;
                   }
               }
               if (flag == 1)
                   break;
            }
            if (flag == 1)
                Console.WriteLine("\nThe substring is present in gi
ven String");
           else
                Console.WriteLine("The substring is NOT present in
given String");
        }
    }
 Enter the string:
 Hello
 Enter the Sub-string
 Hell
 The substring is present in given String
```

### 18. Write a program for Encapsulation

```
using System;
namespace test
{
    class Student
        private int roll;
        private string name;
        public int Roll
            get
                return roll;
            }
            set
               roll = value;
        }
        public string Name
            get
            {
               return name;
            set
            {
               name = value;
            }
        }
    }
    class Program
        static void Main(string[] args)
            Student A = new Student();
            A.Roll = 14;
            A.Name = "Pranav";
            Console.WriteLine("\nRoll: " + A.Roll);
            Console.WriteLine("\nName: " + A.Name);
        }
    }
 Roll: 1
 Name: Abhi
```

#### 19. Write a program for Abstraction

```
using System;
namespace OOPs{
    public class Abstraction{
        abstract class Cs{
            public abstract void Fun();
        private class Good : Cs{
            public override void Fun(){
                Console.WriteLine("C# is Good");
        }
        private class Best : Cs{
            public override void Fun(){
                Console.WriteLine("C# is Best");
        }
        private class Better : Cs{
            public override void Fun(){
                Console.WriteLine("C# is Better");
            }
        }
        public class MyClass
            public static void Main()
                Cs c;
                c = new Good();
                c.Fun();
                c = new Best();
                c.Fun();
                c = new Better();
                c.Fun();
                Console.ReadLine();
            }
        }
    }
```

## 20. Write a program for single Inheritance

```
using System;
namespace OOPs
    public class Inheritence
        class MainClass
            public void Print()
                Console.WriteLine("Print");
        class Subclass : MainClass
            void Print1()
                Console.WriteLine("Print 2");
            static void Main(string[] args)
                Subclass s = new Subclass();
                s.Print();
                s.Print1();
                Console.ReadLine();
            }
        }
   }
}
```

```
Print
Print 2
```

## 21. Write a program for Multilevel Inheritance

```
using System;
namespace OOPs
{
    public class MultiInheritence
    {
        class MainClass
            public void Print()
                Console.WriteLine("Print");
        class Subclass : MainClass
            public void Print1()
                Console.WriteLine("Print 1");
            }
        class Subclass2 : Subclass
            public void Print2()
            {
                Console.WriteLine("Print 2");
            static void Main(string[] args)
                Subclass2 s = new Subclass2();
                s.Print();
                s.Print1();
                s.Print2();
                Console.ReadLine();
            }
        }
    }
}
```

## 22. Write a program for Multiple Inheritance

```
using System;
namespace OOPs
    public class MultipleInheritence
        class MainClass
            public void Print()
                Console.WriteLine("Print");
        interface MainClass1
            void Print1();
        class Subclass : MainClass, MainClass1
            void Print2()
                Console.WriteLine("Print 2");
            public void Print1()
                Console.WriteLine("Print 1");
            static void Main(string[] args)
                Subclass s = new Subclass();
                s.Print();
                s.Print1();
                s.Print2();
                Console.ReadLine();
            }
        }
    }
```

```
Print 1
Print 2
```

## 23. Write a program for Method Overloading

```
using System;
namespace OOPs
{
    public class MethodOverloading
    {
        static int Sum(int a, int b)
        {
            return a + b;
        }
        static double Sum(double a, double b)
        {
            return a + b;
        }
        public static void Main()
        {
            int sum1 = Sum(54, 74);
            double sum2 = Sum(34.84, 65.16);
            Console.WriteLine(sum1);
            Console.WriteLine(sum2);
        }
    }
}
```

128

100

## 24. Write a program for Method Overriding

```
using System;
namespace OOPs
    public class MethodOverriding
        public class Cs
            public virtual void Fun()
                Console.WriteLine("B.Sc");
        }
        public class MCA : Cs
            public override void Fun()
                Console.WriteLine("M.Sc");
            }
        }
        private class BCA : Cs
            public override void Fun()
                Console.WriteLine("B.Sc");
            }
        }
        public static void Main()
            Cs c;
            c = new BCA();
            c.Fun();
            c = new MCA();
            c.Fun();
        }
   }
}
```

```
B.Sc
M.Sc
```

## 25. Write a program for Interface

```
using System;
namespace OOPs
    public class Interface
        public interface Cs
            void Fun();
        private class Bca : Cs
            public void Fun()
                Console.WriteLine("BCA");
        private class Mca : Cs
            public void Fun()
                Console.WriteLine("MCA");
        }
        public class MyClass
            public static void Main(string[] args)
                Cs c;
                c = new Bca();
                c.Fun();
                c = new Mca();
                c.Fun();
                Console.ReadLine();
            }
        }
    }
```

BCA MCA

#### 26. Write a program to demonstrate namespace

```
using System;
namespace ConsoleApp1
{
    class Program
    {
        static void Main(string[] args)
        {
            A.B test = new A.B();
            test.C();
        }
    }
}
namespace A
{
    public class B {
        public void C() {
            Console.WriteLine("Hi");
        }
    }
}
```

## 27. Write a program for exception handling through try and catch

Index was outside the bounds of the array.

#### 28. Write a program to demonstrate properties

```
using System;
namespace OOPBasics
{
    public class Properties
        public class CSharp
            public int roll;
            public string name;
            private string Result;
            public CSharp(int a, string b, string c){
                roll = a;
                name = b;
                Result1 = c;
            public string Result1{
                get{
                    return Result;
                set{
                    if (value == "good" || value == "average" ||
value == "bad") {
                         Result = value;
                     }else{
                         Result = "Not Valid";
                }
            }
        }
    }
    class Program{
        static void Main(string[] args){
            Properties.CSharp c1 = new Properties.CSharp(1, "Xyz",
"good");
            Properties.CSharp c2 = new Properties.CSharp(2, "Ijk",
"5");
            Console.WriteLine(c1.roll + " " + c1.name + " " +
c1.Result1);
            Console.WriteLine(c2.roll + " " + c2.name + " " +
c2.Result1);
            Console.ReadLine();
        }
    }
1 Xyz good
2 Ijk Not Valid
```

#### 29. Write a program to demonstrate constructor

```
using System;
using OOPBasics;
namespace OOPBasics
    class Constructor
        public class CSharp
            public int roll;
            public string name;
            public int marks;
            public CSharp(int a, string b, int c)
                roll = a;
                name = b;
                marks = c;
            }
    }
    public class MyClass
        public static void Main(string[] args)
            Constructor.CSharp a = new Constructor.CSharp(14,
"Pranav", 7);
            Console.WriteLine("Roll: " + a.roll + "\nName: " +
a.name + "\nMarks: " + a.marks);
            Console.ReadLine();
        }
    }
}
```

```
Enter your details:

Roll: 1

Name: XYZ

Marks: 70
```

#### 30. Write a program to demonstrate threading.

```
using System;
using System. Threading;
namespace Threading
    class Program
        static void T1()
            Console.WriteLine("Thread1 Started");
            Thread.Sleep (5000);
            Console.WriteLine("Thread1 executing");
            Thread.Sleep (5000);
            Console.WriteLine("Thread1 executing");
        }
        static void T2()
            Console.WriteLine("Thread2 Started");
            Thread.Sleep (5000);
            Console.WriteLine("Thread2 executing");
            Thread.Sleep (5000);
            Console.WriteLine("Thread2 executing");
        }
        public static void Main()
            Thread t1 = new Thread(T1);
            Thread t2 = new Thread(T2);
            t1.Start();
            t2.Start();
        }
   }
}
```

```
Thread2 Started
Thread1 Started
Thread1 executing
Thread2 executing
Thread1 executing
Thread1 executing
Thread1 executing
Thread2 executing
```

```
31. Write a program to demonstrate indexer
```

```
using System;
class IndexerCreation
   private string[] val = new string[4];
   public string this[int index]
       get
           return val[index];
        }
       set
           val[index] = value;
    }
}
class MyClass
   public static void Main()
       IndexerCreation ic = new IndexerCreation();
       ic[0] = "Hardik";
       ic[1] = "Harsh";
       ic[2] = "Kshitiz";
       ic[3] = "Neeraj";
       Console.Write("Printing values stored in objects used as
arrays\n");
       Console.WriteLine(ic[0] + "\n" + ic[1] + "\n" + ic[2] +
"\n" + ic[3]);
       Console.ReadLine();
   }
Printing values stored in objects used as arrays
Hardik
Harsh
Kshitiz
Neerai
```

#### 32. Write a program to access data from database using ADO.NET

```
using System;
using MySqlConnector;
namespace test {
     class Program
                   {
           public static void Main(string[] args)
               string connectionString;
               MySqlConnection conn;
               connectionString = @"Data Source=localhost; Initial
               Catalog=test;User ID=myuser;Password=password";
               conn = new MySqlConnection(connectionString);
          conn.Open();
               Console.WriteLine("Connected to Database!");
               string query = "select * from student";
               MySqlCommand cmd = new MySqlCommand(query, conn);
               MySqlDataReader dataReader = cmd.ExecuteReader();
               Console.WriteLine(dataReader.GetName(0)+"
               "+dataReader.GetName(1)+"
               "+dataReader.GetName(2));
               while(dataReader.Read()){
                         Console.WriteLine(dataReader.GetValue(0)+"
                         "+ dataReader.GetValue(1)+"
                         "+dataReader.GetValue(2));
               }
               conn.Close();
               }
     }
 Connected to Database!
 Roll
         Name
                 Marks
 1824001 Abhijeet 7
 1824003 Aman 7
 1824004 Amisha 7
 1824005 Amit 8
 1824006 Aniket 8
```