PART -1 CONSOLE APPLICATIONS

AIM 1:**Write a program by using Console applications (Use ReadLine() & WriteLine()functions):WAP to enter Employee Name, Age, Joining Date, BASIC, DA, HRA, PF, calculate Grosspay & Net Pay and display it with Employee information.**

Program :-

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace ConsoleApp
{
    class Practical_1
    {
        static void Main(string[] args)
        {
            int n;

            Console.WriteLine("ENTER NO. OF EMPLOYEES IN COMPANY :"); n =
Convert.ToInt32(Console.ReadLine());
            Employee[] e = new Employee[n];

            Console.WriteLine("\n");
            for (int i = 0; i < n; i++)
            {
                e[i] = new Employee();
                Console.WriteLine("EMPLOYEE NO :" + (i + 1));
                Console.WriteLine("\n");
                e[i].getdata();
            }
            Console.WriteLine("\n");
            for (int i = 0; i < n; i++)
            {
                Console.WriteLine("\n");

                Console.WriteLine("DETAILS OF " + (i + 1) + "th EMPLOYEE IS :");
e[i].display();

            }

        }

    }
    class Employee
    {
    String name,date;
    int age;
    double BASIC, HRA, PF, GROSS, NET,DA;

    internal void getdata()
    {

    Console.WriteLine("ENTER NAME OF EMPLOYEE :"); name = Console.ReadLine();
Console.WriteLine("ENTER AGE :");
```

```
    age = Convert.ToInt32(Console.ReadLine()); Console.WriteLine("ENTER JOINING DATE
:"); date =Console.ReadLine(); Console.WriteLine("ENTER BASIC SALARY :"); BASIC =
Convert.ToDouble(Console.ReadLine());

    }
    internal void display()
    {
    DA = 1.36 * BASIC;
    PF = 0.12 * BASIC;
    HRA = 0.2 * BASIC;
    GROSS = DA + HRA + BASIC;
    NET = GROSS - PF;

    Console.WriteLine("\n");
    Console.WriteLine("NAME :"+name);
    Console.WriteLine("AGE  :"+age);

    Console.WriteLine("DATE OF JOINING :"+ date); Console.WriteLine("BASIC SALARY :"+
BASIC); Console.WriteLine("DA :"+ DA); Console.WriteLine("HRA :"+ HRA);
Console.WriteLine("PF :"+ PF); Console.WriteLine("GROSS SALARY :"+ GROSS);
Console.WriteLine("NET SALARY :"+NET); Console.ReadKey();

    }
    }

}
```

Output :-

```
EMPLOYEE NO :1


ENTER NAME OF EMPLOYEE :
scet
ENTER AGE :
20
ENTER JOINING DATE :
27/08/1999
ENTER BASIC SALARY :
100000




DETAILS OF 1th EMPLOYEE IS :


NAME     :scet
AGE      :20
DATE OF JOINING :27/08/1999
BASIC SALARY :100000
DA :136000
HRA :20000
PF :12000
GROSS SALARY :256000
NET SALARY :244000
```

AIM 2:Write C# menu based program to do the following
Convert binary to decimal

1. **Convert decimal to hexadecimal**
2. **Convert decimal to binary**
3. **Convert decimal to octal.**

Create a separate class for each functionality and put each class in a separate namespace in the same program.

PROGRAM:

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace ConsoleApp
{
    class Practical_2
    {
        static void Main(string[] arg)
        {
            int opt;
string ch="y";

Console.Write("A MENU DRIVEN PROGRAM FOR NUMBER CONVERSION SYSTEM:\n");

while(ch.Equals("y"))
{

Console.Write("\nHERE ARE THE OPTIONS.. :\n");
    Console.Write("1-Convert binary to decimal.\n2-Convert decimal tohexadecimal.\n3-
Convertdecimal to binary.\n4-Convert decimal to octal.\n");
    Console.Write("\nENTER YOUR CHOICE :");
    opt = Convert.ToInt32(Console.ReadLine());

switch (opt)
{
case 1: Console.Write("Binary To Decimal\n");
binary_decimal.binary_decimal o1 = new binary_decimal.binary_decimal();
o1.b_d();
break;

case 2: Console.Write("Decimal To Hexadecimal\n");
decimal_hexadecimal.Program22 o2 = new decimal_hexadecimal.Program22();
o2.d_h();
break;

case 3: Console.Write("Decimal to Binary\n");
decimal_binary.Program23 o3 = new decimal_binary.Program23();
o3.d_b();
break;

case 4: Console.Write("Decimal to Octal\n");
decimal_octal.Program24 o4 = new decimal_octal.Program24();

o4.d_o();
```

```
break;
}

Console.Write("Do You Want To Repeat ??(Y/N)\n"); ch=Console.ReadLine();

}
Console.ReadLine();

        }
    }
}
namespace binary_decimal
{
    class binary_decimal
    {
        internal void b_d()
        {

            int num, binary_val, decimal_val = 0, base_val = 1, rem;
Console.Write("Enter a Binary Number(1s and 0s) : ");

            num = Convert.ToInt32(Console.ReadLine()); /* maximum five digits */
            binary_val = num;
            while (num > 0)
            {
                rem = num % 10;
                decimal_val = decimal_val + rem * base_val;
                num = num / 10;
                base_val = base_val * 2;
            }

            Console.Write("The Binary Number is : " + binary_val);
Console.Write("\nIts Decimal Equivalent is : " + decimal_val); Console.ReadLine();

        }

    }

}
namespace decimal_hexadecimal
{
class Program22
{
internal void d_h()
{

int decimalNumber, quotient;
int i = 1, j, temp = 0;
char[] hexadecimalNumber = new char[100];
char temp1;
Console.WriteLine("Enter a Decimal Number :");
decimalNumber = Convert.ToInt32(Console.ReadLine());
quotient = decimalNumber;
while (quotient != 0)

{
temp = quotient % 16;
if (temp < 10)
temp = temp + 48;
else
temp = temp + 55;
temp1 = Convert.ToChar(temp);
```

```
hexadecimalNumber[i++] = temp1;
quotient = quotient / 16;
}

Console.Write("The Decimal Number is : " + decimalNumber);

Console.Write("\nIts HexaDecimal Equivalent is : "); for (j = i - 1; j > 0; j--)

Console.Write(hexadecimalNumber[j]);

Console.Read();
}
}
}

namespace decimal_binary
{
class Program23
{
internal void d_b()
{
int num, no, i = 0,quot;
int[] bin= new int[100];
Console.Write("Enter a Decimal Number : ");

num = Convert.ToInt32(Console.ReadLine());
no = num;
float rem = 0;
while (num >= 1)
{
quot = num / 2;
rem = (num % 2);
num = quot;
bin[i] = Convert.ToInt32(rem);
i++;
}



Console.Write("The Decimal Number is : " + no);
Console.WriteLine("\nIts Binary Equivalent is :");
for (int j = i-1; j >= 0; j--)
{
Console.Write(+bin[j]);
}
Console.Read();

}
}
}

namespace decimal_octal
{
class Program24
{
internal void d_o()
{
int decimalNumber, quotient, i = 1, j;
int[] octalNumber = new int[100];
Console.WriteLine("Enter a Decimal Number :");
decimalNumber = Convert.ToInt32(Console.ReadLine());
```

```
quotient = decimalNumber;
while (quotient != 0)
{
octalNumber[i++] = quotient % 8;
quotient = quotient / 8;
}
Console.Write("The Decimal Number is : " + decimalNumber);
Console.Write("\nIts Octal Equivalent is : ");
for (j = i - 1; j > 0; j--)
Console.Write(octalNumber[j]);
Console.Read();
}
}
}
```

OUTPUT:

```
A MENU DRIVEN PROGRAM FOR NUMBER CONVERSION SYSTEM:

HERE ARE THE OPTIONS.. :
1-Convert binary to decimal.
2-Convert decimal tohexadecimal.
3-Convertdecimal to binary.
4-Convert decimal to octal.

ENTER YOUR CHOICE :1
Binary To Decimal
Enter a Binary Number(1s and 0s) : 1010
The Binary Number is : 1010
Its Decimal Equivalent is : 10y
```

AIM 3:Create console applications to implement following C# Concepts.

1. **Constructor & Destructor**
2. **Inheritance**
3. **Method Overloading**
4. **Operator Overloading**

PROGRAM:

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace ConsoleApp
{
    class Practical_3
    {
        static void Main(string[] args)
        {
            Console.WriteLine("---------------Demo of Constructor---------------\n");
            Prac_3_1.Complex_no c1 = new Prac_3_1.Complex_no(20, 25);
            c1.ShowXY();
            Console.WriteLine("\n---------------Demo of Inheritance---------------
\n");

            Prac_3_2.Triangle t1 = new Prac_3_2.Triangle();
            Prac_3_2.Triangle t2 = new Prac_3_2.Triangle();
            t1.Width = 4.0;

            t1.Height = 4.0;
            Console.WriteLine("Info for t1: ");
            t1.ShowDim();
            Console.WriteLine("Area is " + t1.Area() + "\n\n");

            t2.Width = 8.0;
            t2.Height = 12.0;
            Console.WriteLine("Info for t2: ");
            t2.ShowDim();
            Console.WriteLine("Area is " + t2.Area());

            Console.WriteLine("\n---------------Demo of Method Overloading------------
---\n");

            Prac_3_3.Method_overloading mthover = new Prac_3_3.Method_overloading();
            mthover.Area(2);
            mthover.Area(5, 40);

            mthover.Area(20.5);

            Console.WriteLine("\n---------------Demo of Operator Overloading----------
-----\n");


            Prac_3_4.overloadpgm d = new Prac_3_4.overloadpgm();
            d++;

            Console.WriteLine("The value of 1st variable after unary operation:
"+d.value);
            d++;
```

```
            Console.WriteLine("The value of 1st variable after unary operation: " +
d.value);
            Prac_3_4.overloadpgm g = new Prac_3_4.overloadpgm();
            g++;

            Console.WriteLine("The value of 2nd variable after unary operation: " +
g.value);
            Prac_3_4.overloadpgm t = d + g;

            Console.WriteLine("The value after addition of 1st and 2nd variable is :
"+t.value);
            Console.WriteLine("\n---------------Demo of Destructor---------------");
            GC.Collect();
            Console.ReadLine();

        }
    }
}
namespace Prac_3_1
{
    class Complex_no
    {
        private int x;

        private int y;
        public Complex_no(int i, int j)
        {
            x = i;
            y = j;
        }
        public void ShowXY()
        {
            Console.WriteLine(x + "i+" + y);
        }
        ~Complex_no()
        {
            Console.WriteLine("Deleted...");
            Console.Read();

        }

    }
}
namespace Prac_3_2
{
    class Shape
    {
        public double Width;
        public double Height;
        public void ShowDim()
        {
            Console.WriteLine("Width and height are " + Width + " and " + Height);
        }
    }

    class Triangle : Shape
    {
        public double Area()
        {
            return Width * Height / 2;
        }
```

```
    }
}

namespace Prac_3_3
{
    class Method_overloading
    {
        public void Area(int side)
        {

            int squarearea = side * side; Console.WriteLine("Area of Square :" +
squarearea);

        }
        public void Area(int length, int breadth)
        {

            int rectarea = length * breadth; Console.WriteLine("Area of Rectangle :" +
rectarea);

        }
        public void Area(double radius)
        {

            double circlearea = 3.14 * radius * radius; Console.WriteLine("Area of
Circle :" + circlearea);

        }
    }
}
namespace Prac_3_4
{
    class overloadpgm
    {
        public int value;
        public static overloadpgm operator +(overloadpgm a, overloadpgm b)
        {
            overloadpgm overloadpg = new overloadpgm();
            overloadpg.value = a.value + b.value;
            return overloadpg;
        }
        public static overloadpgm operator ++(overloadpgm c)
        {
            c.value++;
            return c;
        }
    }
}
```

OUTPUT:

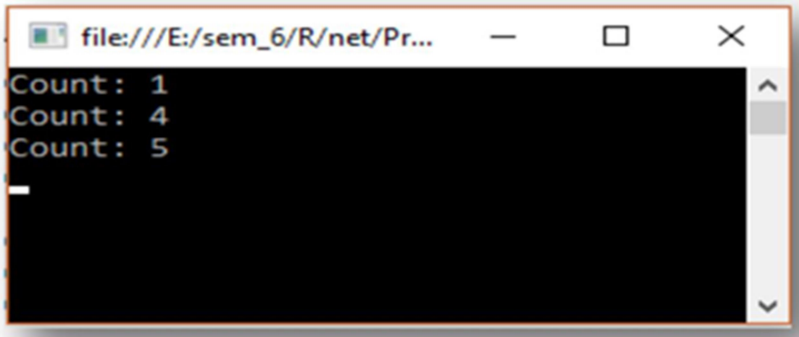
```
---------------Demo of Constructor---------------

20i+25

---------------Demo of Inheritance---------------

Info for t1:
Width and height are 4 and 4
Area is 8


Info for t2:
Width and height are 8 and 12
Area is 48

---------------Demo of Method Overloading---------------

Area of Square :4
Area of Rectangle :200
Area of Circle :1319.585

---------------Demo of Operator Overloading---------------

The value of 1st variable after unary operation: 1
The value of 1st variable after unary operation: 2
The value of 2nd variable after unary operation: 1
The value after addition of 1st and 2nd variable is : 3

---------------Demo of Destructor---------------
```

AIM 4:Create a class to demonstrate static property by counting numbering of objects created.

PROGRAM:

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace ConsoleApp
{
    class Program_4
    {
        Person s1 = new Person();
        Console.WriteLine("Count: "+Person.count);
        Person s2 = new Person();

        Person s3 = new Person();
        Person s4 = new Person();
        Console.WriteLine("Count: " + Person.count);
        Person s5 = new Person();
        Console.WriteLine("Count: " + Person.count);
        Console.ReadLine();

    }
    public class Person
    {
        static int count = 0;
        public Person()
        {
            count++;
        }

    }
}
```

OUTPUT:



AIM 5:Create a class MyStringIndexer with data members title, author, subject.

It should contain

1. **Constructor with arguments**
2. **Indexer with string index**

Create a class IndexerDemo for main function. Write code to get and set values of any data members of MyStringIndexer class.

Program :

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace ConsoleApp
{
    class Practical_5
    {
        static void Main(string[] args)
        {

            MyStringIndexer ind_demo = new MyStringIndexer("Developing Web
Applications", "Ralph Moseley", "Web Technology");

            Console.WriteLine("Title is: " + ind_demo[0]);
            Console.WriteLine("Auther Name: " + ind_demo[1]);

            Console.WriteLine("Subject: " + ind_demo[2]); ind_demo[0] = "Introduction
to dot net"; Console.WriteLine("Title is: " + ind_demo[0]); Console.ReadLine();
        }

    }

    class MyStringIndexer
    {
        string title,auther,subject;
        public MyStringIndexer(string title, string auther, string subject)
        {
        this.title = title;
        this.auther = auther;
        this.subject = subject;
        }
        public string this[int index]
        {
        get

        {
        if (index == 0)
        return title;
        else if (index == 1)
        return auther;
        else if (index == 2)
        return subject;
        return "";
        }
```

```
        set
        {
        if (index == 0)
        {
        title = value;
        }
        else if (index == 1)
        {
            auther = value;
        }
        else if (index == 2)
        {
            subject = value;
        }

        }
        }
    }

}
```

OUTPUT :

```
Title is: Developing Web Applications
Auther Name: Ralph Moseley
Subject: Web Technology
Title is: Introduction to dot net
```

AIM 6:Create a C# program to test Attributes and Reflection.

PROGRAM:

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace ConsoleApp
{


    class Program
    {
        static void Main(string[] args)
        {
            Type tpy = typeof(Developer);
            Console.WriteLine("Class Attribute");
            Attribute[] attr = Attribute.GetCustomAttributes(tpy);
            foreach (Attribute a in attr)
            {
                MyAttribute devloper = (MyAttribute)a;
                Console.WriteLine(devloper.getPublisherName() + "\t" +
devloper.version);
            }
            Console.WriteLine("Method Attribute");
            Type [] type=new Type[1];
            type[0]=typeof(Int32);

            Attribute[] attr_method =
Attribute.GetCustomAttributes(tpy.GetMethod("getData",type));
            foreach (Attribute a in attr_method)
            {
                MyAttribute devloper = (MyAttribute)a;
                Console.WriteLine(devloper.getPublisherName() + "\t" +
devloper.version);
            }
            Console.ReadLine();

        }
    }

    [MyAttribute("Parth Roy", version = 2.0f)]
    [MyAttribute("Royal Dreams")]
    class Developer
    {
        int x;
        [MyAttribute("Keval Navadiya", version = 5.12f)]
        public int getData()
        {
            return x;
        }
        [MyAttribute("Keval Navadiya", version = 5.12f)]
        public int getData(int a,int y)
        {
            return x;
        }
        [MyAttribute("Parth Roy", version = 1.20f)]
        public int getData(int x)
        {
            return x;
```

```
        }
        [MyAttribute("Darshit Akbari")]
        public void putData(int x)
        {
            this.x=x;
        }
    }

    [AttributeUsage
(AttributeTargets.Class|AttributeTargets.Method,AllowMultiple=true)]
    class MyAttribute : Attribute
    {
        public string publisher;
        public float version;
        public MyAttribute()
        {
            publisher = "Royal Dreams";
            version = 0.0f;
        }
        public MyAttribute(string str)
        {
            this.publisher = str;
        }
        public string getPublisherName() { return (string)publisher; }
    }
}
```

OUTPUT:

```
Class Attribute
Royal Dreams    0
Parth Roy       2
Method Attribute
Parth Roy       1.2
```