1)

Aim:

To develop the C# program to initialize the 2D array and print all the elements .

Program:

```
using System;
class Program
{
   static void Main()
   {
      int[,] array = { { 10,20,30 }, { 40,50,60 }, { 70,80,90 } };
      for (int i = 0; i < array.GetLength(0); i++)
      {
         for (int j = 0; j < array.GetLength(1); j++)
         {
            Console.Write(array[i, j] + " ");
         }
      }
   }
}
```

Output:

```
10 20 30 40 50 60 70 80 90
```

2)

Aim:

To develop the C# program to check the eligibility of the person to apply for the competitive exams .

Program:

```
using System;


class EligibilityCheck
{
   static void Main()
   {
      Console.Write("Enter your age: ");
      int age = int.Parse(Console.ReadLine());


      Console.Write("Enter your 10th std percentage: ");
      double passPercentage = double.Parse(Console.ReadLine());


      if (age > 18 && age <= 30 && passPercentage >= 65)
      {
         Console.WriteLine("He is eligible");
      }
      else
      {
         Console.WriteLine("He is not eligible");
      }
   }
}
```

Output:

```
Enter your age: 25
Enter your 10th std percentage: 75
He is eligible
```

3)

Aim:

To develop the C# program to design the console for mobile number validation .

Program:

```
using System;
using System.Text.RegularExpressions;

class Validation
{
   static void Main()
   {
      Console.Write("Enter the mobile number: ");
      string mobileNumber = Console.ReadLine();

      if (Regex.IsMatch(mobileNumber, @"^[98]\d{3}-\d{6}$"))
      {
         Console.WriteLine("Valid mobile number");
      }
      else
      {
         Console.WriteLine("Invalid mobile number");
      }
   }
}
```

Output:

```
Enter the mobile number: 9842-673142
Valid mobile number
```

4)

Aim:

To develop the C# program to print the personal details(name,age,weight) of the person .

Program:

```
using System;
class Person
{
   public string Name { get; set; }
   public int Age { get; set; }
   public double Weight { get; set; }
   public void PrintPerson()
   {
      Console.WriteLine($"Name: {Name}, Age: {Age}, Weight: {Weight}");
   }
}
class PersonData
{
   static void Main(string[] args)
   {
      Person person = new Person();
      Console.Write("Enter Name: ");
      person.Name = Console.ReadLine();
      Console.Write("Enter Age: ");
      person.Age = int.Parse(Console.ReadLine());
      Console.Write("Enter Weight: ");
      person.Weight = double.Parse(Console.ReadLine());
      person.PrintPerson();
   }
}
```

Output:

```
Enter Name: Nithish
Enter Age: 19
Enter Weight: 61
Name: Nithish, Age: 19, Weight: 61
```

5)

Aim:

To develop the C# program to get details about patients and generate the receipt .

Program:

```
using System;


class Patient
{
   public string Name { get; set; }
   public DateTime DateOfAdmission { get; set; }
   public int Age { get; set; }
   public string Disease { get; set; }
   public DateTime DateOfDischarge { get; set; }
   public double TotalBillsPaid { get; set; }


   public void GetPatientInfo()
   {
      Console.WriteLine($"Name: {Name}, Age: {Age}, Disease: {Disease}, Total Bills Paid: {TotalBillsPaid}");
   }


   public void DisplayInfo()
   {
      Console.WriteLine($"Patient: {Name}, Admission: {DateOfAdmission.ToShortDateString()}, Discharge:
{DateOfDischarge.ToShortDateString()}");
   }
}
class Hospital
{
   static void Main(string[] args)
   {
      Patient patient = new Patient();


      Console.Write("Enter Patient Name: ");
      patient.Name = Console.ReadLine();
```

```
        Console.Write("Enter Age: ");
        patient.Age = int.Parse(Console.ReadLine());

        Console.Write("Enter Disease: ");
        patient.Disease = Console.ReadLine();

        Console.Write("Enter Date of Admission (yyyy-mm-dd): ");
        patient.DateOfAdmission = DateTime.Parse(Console.ReadLine());

        Console.Write("Enter Date of Discharge (yyyy-mm-dd): ");
        patient.DateOfDischarge = DateTime.Parse(Console.ReadLine());

        Console.Write("Enter Total Bills Paid: ");
        patient.TotalBillsPaid = double.Parse(Console.ReadLine());

        patient.GetPatientInfo();
        patient.DisplayInfo();
    }
}
```

Output:

```
Enter Patient Name: Nithish
Enter Age: 19
Enter Disease: Dengue
Enter Date of Admission (yyyy-mm-dd): 2024-08-21
Enter Date of Discharge (yyyy-mm-dd): 2024-08-27
Enter Total Bills Paid: 10000
Name: Nithish, Age: 19, Disease: Dengue, Total Bills Paid: 10000
Patient: Nithish, Admission: 08/21/2024, Discharge: 08/27/2024
```

6)

Aim:

To develop the C# program to get two vector numbers from user and print the sum of vector numbers as output in the form of vector number .

Program:

```
using System;
class Vector
{
   public int X { get; set; }
   public int Y { get; set; }
   public Vector(int x, int y)
   {
      X = x;
      Y = y;
   }
   public static Vector operator +(Vector a, Vector b)
   {
      return new Vector(a.X + b.X, a.Y + b.Y);
   }
   public void Display()
   {
      Console.WriteLine($"Vector: ({X}, {Y})");
   }
}
class Program
{
   static void Main(string[] args)
   {
      Console.Write("Enter X coordinate for first vector: ");
      int x1 = int.Parse(Console.ReadLine());

      Console.Write("Enter Y coordinate for first vector: ");
      int y1 = int.Parse(Console.ReadLine());
```

```
            Vector v1 = new Vector(x1, y1);

            Console.Write("Enter X coordinate for second vector: ");
            int x2 = int.Parse(Console.ReadLine());

            Console.Write("Enter Y coordinate for second vector: ");
            int y2 = int.Parse(Console.ReadLine());

            Vector v2 = new Vector(x2, y2);
            Vector v3 = v1 + v2;
            v3.Display();
        }
    }
```

Output:

```
Enter X coordinate for first vector: 10
Enter Y coordinate for first vector: 20
Enter X coordinate for second vector: 30
Enter Y coordinate for second vector: 40
Vector: (40, 60)
```

7)

Aim:

To develop the C# program to maintain the basic details of students as main class and to maintain the student mark details as sub class and inherit the main class into sub class and print the student details .

Program:

```
using System;

class Student

{

   public string Name { get; set; }

   public int Age { get; set; }

   public string Address { get; set; }

   public string MobileNumber { get; set; }


   public virtual void GetData()

   {

      Console.WriteLine($"Name: {Name}, Age: {Age}, Address: {Address}, Mobile Number:
{MobileNumber}");

   }

   public virtual void PrintData()

   {

      Console.WriteLine($"Student Information:\nName: {Name}, Age: {Age}, Address: {Address}, Mobile
Number: {MobileNumber}");

   }

}

class StudentMark : Student

{

   public int Marks { get; set; }

   public override void GetData()

   {

      base.GetData();

      Console.WriteLine($"Marks: {Marks}");

   }

   public override void PrintData()

   {
```

```
        base.PrintData();
        Console.WriteLine($"Marks: {Marks}");
    }
    public char CalculateGrade()
    {
        if (Marks >= 90) return 'O';
        else if (Marks >= 80) return 'A';
        else if (Marks >= 70) return 'B';
        else if (Marks >= 60) return 'C';
        else if (Marks >= 50) return 'D';
        else return 'F';
    }
}
class Program
{
    static void Main(string[] args)
    {
        StudentMark student = new StudentMark();

        Console.Write("Enter the student's name: ");
        student.Name = Console.ReadLine();

        Console.Write("Enter the student's age: ");
        student.Age = int.Parse(Console.ReadLine());

        Console.Write("Enter the student's address: ");
        student.Address = Console.ReadLine();

        Console.Write("Enter the student's mobile number: ");
        student.MobileNumber = Console.ReadLine();

        Console.Write("Enter the student's marks: ");
        student.Marks = int.Parse(Console.ReadLine());
```

```
            student.GetData();
            student.PrintData();
            Console.WriteLine($"Grade: {student.CalculateGrade()}");
        }
    }
```

Output:

```
Enter the student's name: Nithish
Enter the student's age: 19
Enter the student's address: 123 Echangadu Ariyalur
Enter the student's mobile number: 9472346751
Enter the student's marks: 97
Name: Nithish, Age: 19, Address: 123 Echangadu Ariyalur, Mobile Number: 9472346751
Marks: 97
Student Information:
Name: Nithish, Age: 19, Address: 123 Echangadu Ariyalur, Mobile Number: 9472346751
Marks: 97
Grade: O
```

8)

Aim:

To develop the C# program to calculate the netsalary of the employee by using the basic salary and print the details as output .

Program:

```
using System;
class Employee
{
   public int JobCategory { get; set; }
   public int EmpNo { get; set; }
   public string EmpName { get; set; }
   public double BasicSalary { get; set; }
   public double HRA { get; set; }
   public double DA { get; set; }
   public double Loan { get; set; }
   public double PF { get; set; }

   public Employee(int jobCategory)
   {
      JobCategory = jobCategory;
      if (JobCategory == 1)
      {
         BasicSalary = 8000;
         HRA = 0.1 * BasicSalary;
         DA = 0.2 * BasicSalary;
         Loan = 300;
         PF = 500;
      }
      else if (JobCategory == 2)
      {
         BasicSalary = 15000;
         HRA = 0.2 * BasicSalary;
         DA = 0.3 * BasicSalary;
         Loan = 600;
```

```
            PF = 1000;
        }
    }
    public void InputDetails(int empNo, string empName)
    {
        EmpNo = empNo;
        EmpName = empName;
    }
    public double CalculateSalary()
    {
        return BasicSalary + HRA + DA - (Loan + PF);
    }
    public void Display()
    {
        Console.WriteLine($"\nEmployee No: {EmpNo}");
        Console.WriteLine($"Employee Name: {EmpName}");
        Console.WriteLine($"Job Category: {JobCategory}");
        Console.WriteLine($"Basic Salary: {BasicSalary}");
        Console.WriteLine($"HRA: {HRA}");
        Console.WriteLine($"DA: {DA}");
        Console.WriteLine($"Loan Deduction: {Loan}");
        Console.WriteLine($"PF Deduction: {PF}");
        Console.WriteLine($"Net Salary: {CalculateSalary()}");
    }
}
class Program
{
    static void Main(string[] args)
    {
        Console.Write("Enter Job Category (1 or 2): ");
        int jobCategory = int.Parse(Console.ReadLine());

        Employee emp = new Employee(jobCategory);
```

```
            Console.Write("Enter Employee Number: ");
            int empNo = int.Parse(Console.ReadLine());

            Console.Write("Enter Employee Name: ");
            string empName = Console.ReadLine();

            emp.InputDetails(empNo, empName);

            emp.Display();
        }
    }
```

Output:

```
Enter Job Category (1 or 2): 2
Enter Employee Number: 100
Enter Employee Name: Nithish

Employee No: 100
Employee Name: Nithish
Job Category: 2
Basic Salary: 15000
HRA: 3000
DA: 4500
Loan Deduction: 600
PF Deduction: 1000
Net Salary: 20900
```