SCHOOL OF INFORMATION TECHNOLOGYG AND ENGINEERING

WINTER SEMESTER 2022- 2023

SWE1009 .NET Programming

DIGITAL ASSIGNMENT 1

CYCLESHEET_1 C# PROGRAMMING

D K CHAI RAM

20MIS0341

chai.ram2020@vitstudent.ac.in

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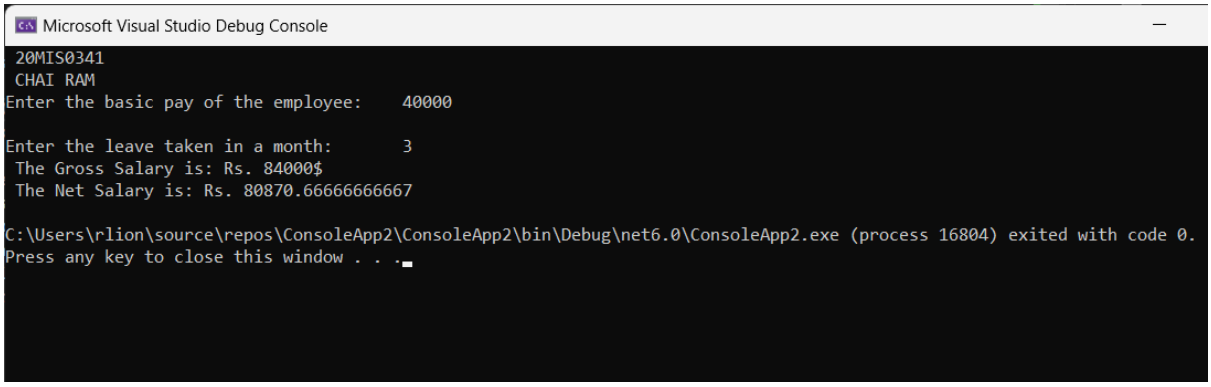
1. **Employee Salary**: Write a C# program for generating the pay slip of an employee working in XYZ Company. Input for the process will be the basic pay for the employee and the number of days leave taken. Gross salary is calculated as Basic Pay + HRA + DA. HRA is fixed as 30% of Basic pay and DA as 80% of Basic pay. Net salary includes deduction for PF and leave on loss of pay. An employee is eligible to take 1 day leave per month, leave taken more than a day in a month is considered as loss of pay and PF 1800 fixed. Calculate the gross and net salary.

Code:

```
namespace ConsoleApp2
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine(" 20MIS0341 \n CHAI RAM ");
            Console.Write("Enter the basic pay of the employee: \t");
            double basic_pay = double.Parse(Console.ReadLine());
            Console.Write("\nEnter the leave taken in a month: \t");
            int leave_taken = int.Parse(Console.ReadLine());
            double HRA = 0.3 * basic_pay;
            double DA = 0.8 * basic_pay;
            double gross_salary = basic_pay + HRA + DA;
            Console.WriteLine(" The Gross Salary is: Rs. {0}$ ", gross_salary);
            int pf = 1800;
            double lop = 0;
            if (leave_taken > 1)
            {
                lop = basic_pay / 30 - leave_taken - 1;
            };
            double net_salary = gross_salary - pf - lop;
            Console.WriteLine(" The Net Salary is: Rs. {0} ", net_salary);
        }
    }
}
```

Output: Fig. 1:

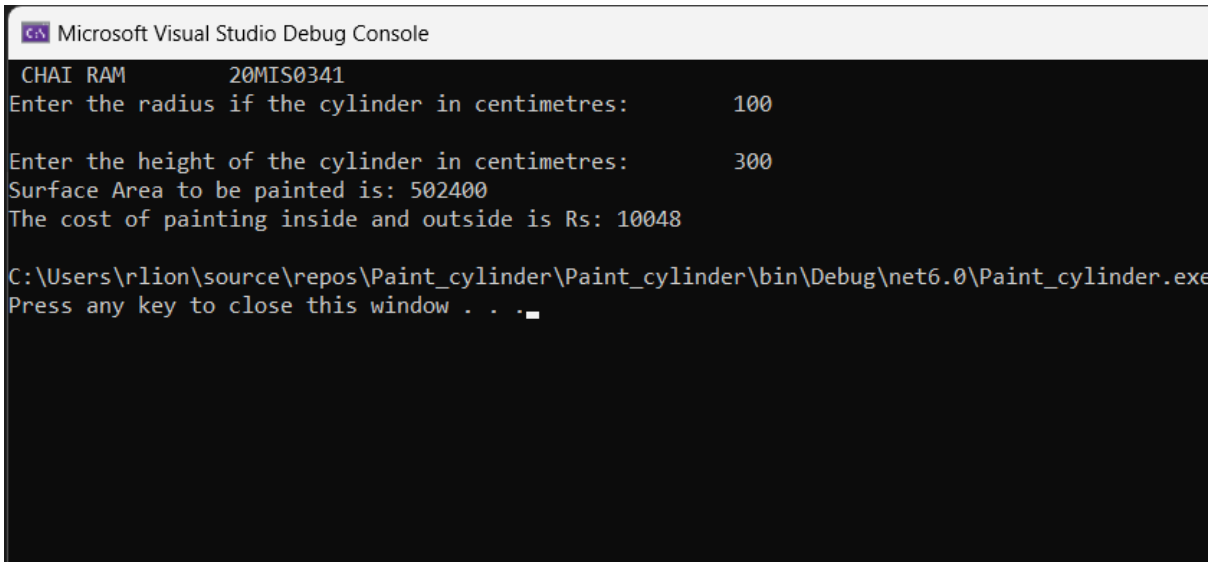


2. **Painting the Cylinder:** Imagine you have asked a painter to paint the water tank which is cylindrical in shape in your house. It should be painted both on inner and outer side. The painter says, he charges Rs 0.02/- per centimetre square which includes his wage and material. Given the water tank is in of 'x' cm radius and 'y' cm height. Write a C# program to determine the surface area and cost you should pay to the painter. Hint: The total surface area of one side of a cylinder is $2\pi r(r+h)$.

Code:

```
namespace Paint_cylinder
{
    internal class Program
    {
        static void Main(string[] args)
        {
            //get inputs radius, height
            Console.Write("Enter the radius if the cylinder in centimetres: \t");
            double x = double.Parse(Console.ReadLine());
            Console.Write("\nEnter the height of the cylinder in centimetres:
\t");
            int y = int.Parse(Console.ReadLine());

            //cost of painting rs = 0.02 per centimetre per square
            double rs = 0.02;
            const double pi = 3.14;
            double SA = 2 * pi * x * (x + y); // calculate surface area

            Console.WriteLine("Surface Area to be painted is: {0}", 2 * SA);
            double cost = 2 * SA * rs; //calculate cost of painting

            Console.WriteLine("The cost of painting inside and outside is Rs:
{0}", cost);
        }
    }
      }
```

Output: Fig. 2:



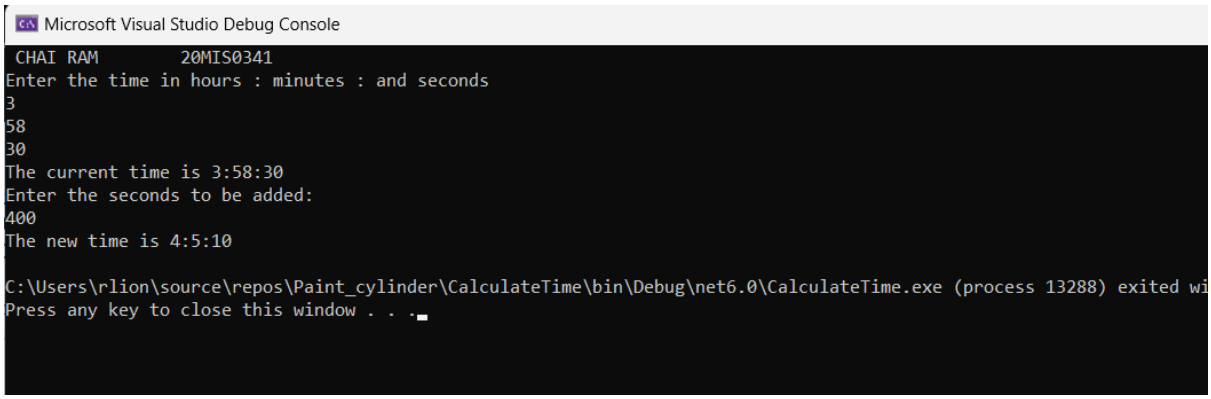
3. **Calculate Time**: Given the current time in hours (h), minutes (m) and seconds(s) and number of seconds (s1), write a C# program to determine hours, minutes, and seconds after s1 seconds. For example, if time is given as 2, 57, and 55 and seconds to add as 315 then new time will be 3 hours 03 minutes 10 seconds.

Code:

```
namespace CalculateTime
{
    internal class Program
    {
        static void Main(string[] args)
        {
            int hr, min, sec, s1;
            Console.WriteLine("Enter the time in hours : minutes : and seconds");
            hr = int.Parse(Console.ReadLine());
            min = int.Parse(Console.ReadLine());
            sec = int.Parse(Console.ReadLine());

            Console.WriteLine("The current time is {0}:{1}:{2}", hr, min, sec);
            Console.WriteLine("Enter the seconds to be added: \t");
            s1 = int.Parse(Console.ReadLine());

            sec = sec + s1;
            if (sec >= 60)
            {
                min = min + sec / 60;
                sec = sec % 60;
            }
            if(min>=60)
            {
                hr = hr + min / 60;
                min = min % 60;
            }
            Console.WriteLine("The new time is {0}:{1}:{2}", hr, min, sec);
```

```
        }
    }
      }
```

Output: Fig. 3:



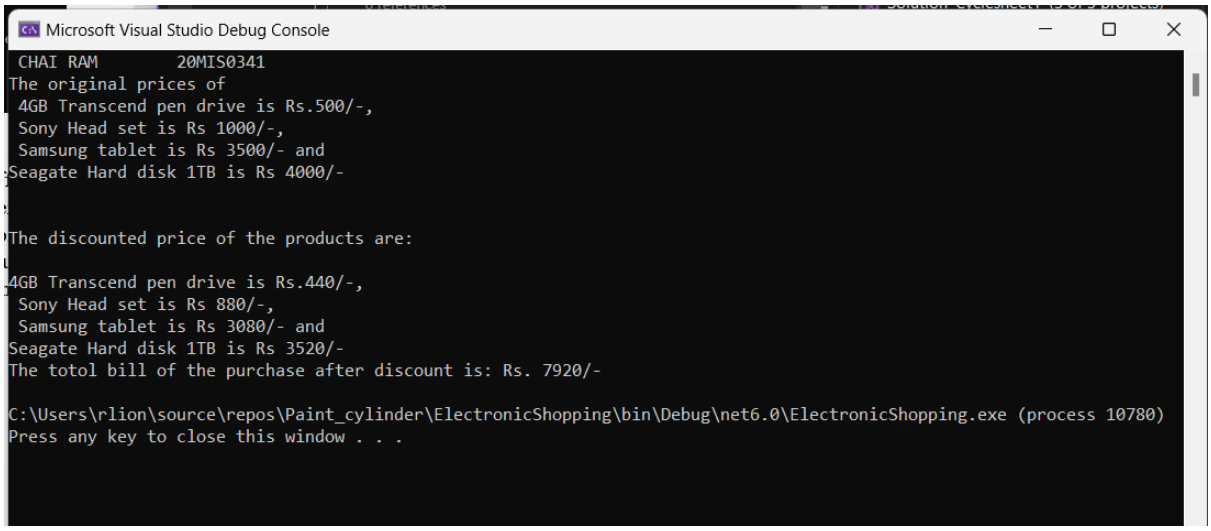
4. **Electronics shop Seasonal Offer**: Mercy electronics shop has given festival offer that is 12% off, on every purchase. Following are the prices of the electronic items. 4GB Transcend pen drive is Rs.500/-, Sony Head set is Rs 1000/-, Samsung tablet is Rs 3500/- and Seagate Hard disk 1TB is Rs 4000/-. Write a C# program to calculate the total bill amount to pay by doing a purchase in Mercy electronics shop. In this case, price of pen drive after discount is Rs. 440 (that is Rs.500-Rs.60).

Code:

```
using System;
namespace ElectronicShopping
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine(" CHAI RAM \t 20MIS0341  ");
            //mercy electronic shop, price of products
            double pd, HeadSet, tablet, hdd;
            pd = 500;
            HeadSet = 1000;
            tablet = 3500;
            hdd = 4000;

            Console.WriteLine("The original prices of \n 4GB Transcend pen drive
is Rs.{0}/-,\n Sony Head set is Rs {1}/-,\n Samsung tablet is Rs {2}/- and
\nSeagate Hard disk 1TB is Rs {3}/-", pd, HeadSet, tablet, hdd);
            double discount(double a)
            {
                return a - a * 0.12;
            }
            pd = discount(pd);
            HeadSet = discount(HeadSet);
            tablet = discount(tablet);
            hdd = discount(hdd);

            Console.WriteLine("\n\nThe discounted price of the products are: ");
```

```
            Console.WriteLine("\n4GB Transcend pen drive is Rs.{0}/-,\n Sony Head
set is Rs {1}/-,\n Samsung tablet is Rs {2}/- and \nSeagate Hard disk 1TB is Rs
{3}/-",pd, HeadSet, tablet, hdd);
            double bill = pd + HeadSet + tablet + hdd;

            Console.WriteLine("The totol bill of the purchase after discount is:
Rs. {0}/-", bill);
            /*
            double bill = pd + HeadSet + tablet + hdd;
            Console.WriteLine("Total bill of the products is: \t {0}", bill);
            double discount = bill + ( bill * 0.12);
            Console.WriteLine("The cost of the products after discount: \t{0}",
discount);
            */
        }
    }
}
```

Output:



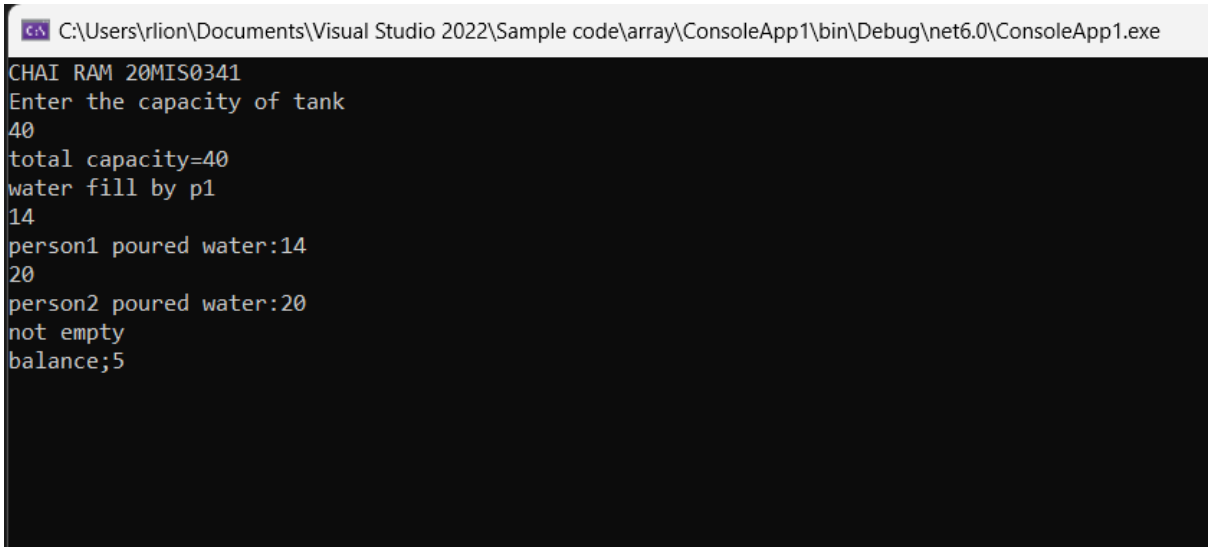
5. **Fill Water Tank**: Assume there is a water tank of capacity ‘c’ litres and it has initially ‘l’ litres of water. Two persons have put some water in the tank. Write a C# program to determine the total amount of water in tank after they fill water.

Code:

```
using System;

class Program

{

    static void Main()

    {

        Console.WriteLine("CHAI RAM 20MIS0341");

        int cap, init, p1, p2, b;

        cap = Convert.ToInt32(Console.ReadLine());
```

```
            Console.WriteLine("total capacity={0}" , cap);
            init = 1;

            p1 = Convert.ToInt32(Console.ReadLine());
            Console.WriteLine("person1 poured water:{0}", p1);
            p2 = Convert.ToInt32(Console.ReadLine());
            Console.WriteLine("person2 poured water:{0}", p2);

            b = cap - init - p1 - p2;

            if (cap - b == 0)
            {
                Console.WriteLine("overflow");
            }
            else
            {
                Console.WriteLine("not empty");
                Console.WriteLine("balance;" + b);
            }
            Console.ReadLine();
        }
    }
```

Output:

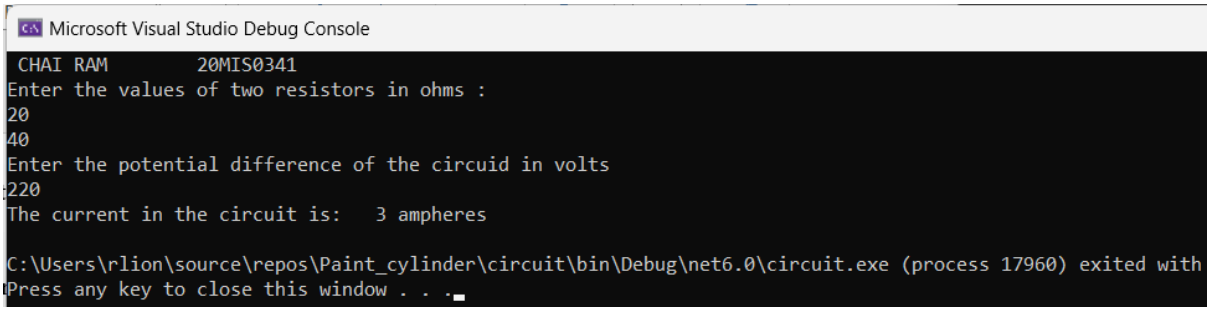


6. **Series Circuit**: Two resistors R1 and R2 are connected in series in a circuit. Given the value of R1, R2 and voltage of the circuit, write a C# program to determine the amount of current flowing through the circuit. When resistors are connected in series, total resistance is sum of resistance. For example, if two resistors 2ohms and 3 ohms are connected in series and voltage of the circuit is 5 Volts then using Ohms law, current passing through the circuit is 5/(2+3) = 1 amps.

Code:

```
namespace circuit
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine(" CHAI RAM \t 20MIS0341  ");
            int x, y, r, v;
            double i;
            Console.WriteLine("Enter the values of two resistors in ohms :");
            x = int.Parse(Console.ReadLine());
            y = int.Parse(Console.ReadLine());
            Console.WriteLine("Enter the potential difference of the circuid in
volts");
            v = int.Parse(Console.ReadLine());
            r = x + y;
            i = v / r;
            Console.WriteLine("The current in the circuit is: \t {0}
ampheres",i);
        }
    }
}
```

Output: Fig. 6:



7. **Family and Wheat check**: There are three members in a family and for each month they consume 8 Kg of wheat. The ratio of wheat consumed by father, mother and son is 4:3:2. Given 'n' months. Write a C# program to determine Kg of wheat consumed by father, mother and son in 'n' years.
   Code:

```
namespace food
{
    internal class Program
    {
```

```
        static void Main(string[] args)
        {
            int n;
            int s, f, m, t;
            int wheat;
            Console.WriteLine("D K CHAI RAM \t 20MIS0341 ");
            Console.Write("Enter The wheat consumed each month:\t");
            wheat = int.Parse(Console.ReadLine());
            Console.WriteLine("Enter the ratio of food consumed by
father:mother:son ");
            f = int.Parse(Console.ReadLine());
            m = int.Parse(Console.ReadLine());
            s = int.Parse(Console.ReadLine());
            t = f + s + m;

            Console.Write("Enter the number of years: \t");
            n = int.Parse(Console.ReadLine());
            Console.WriteLine("Food consumed by father in {0} years is {1:0.00}
kg" , n, n * (f * wheat / t));
            Console.WriteLine("Food consumed by mother in {0} years is {1:0.00}
kg", n, n * (m * wheat / t));
            Console.WriteLine("Food consumed by son in {0} years is {1:0.00} kg",
n, n * (s * wheat / t));
        }
    }
}
```

Output:

```
Microsoft Visual Studio Debug Console
D K CHAI RAM     20MIS0341
Enter The wheat consumed each month:    8
Enter the ratio of food consumed by father:mother:son
4
3
2
Enter the number of years:      6
Food consumed by father in 6 years is 18.00 kg
Food consumed by mother in 6 years is 12.00 kg
Food consumed by son in 6 years is 6.00 kg

C:\Users\rlion\source\repos\Paint_cylinder\food\bin\Debug\net6.0\food.exe (process 12656) exited with code 0.
Press any key to close this window . . .
```

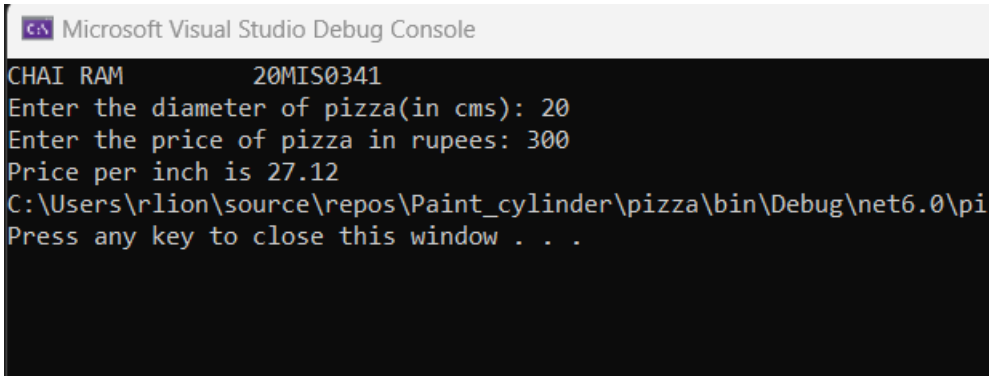
8. **Cost of Square inch of Pizza**: Given the diameter of a circular pizza in cms and price in rupees, write a C# program to calculate the cost per square inch of a pizza. The formula to calculate area is A= pi *r2 and 1cm=0.393inch. Display only two decimal places for floating point values.

Code:

```
namespace pizza
{
    internal class Program
    {
        static void Main(string[] args)
        {
            int r, price;
            Console.WriteLine("CHAI RAM \t 20MIS0341");
            Console.Write("Enter the diameter of pizza(in cms): ");
```

```
            r = int.Parse(Console.ReadLine());
            Console.Write("Enter the price of pizza in rupees: ");
            price= int.Parse(Console.ReadLine());
            double area;
            area = Math.PI * r * r;
            //area in inches
            area = area / (0.393 * 0.393);
            Console.Write("Price per inch is {0:0.00}", area/price);

        }
    }
}
```

Output:



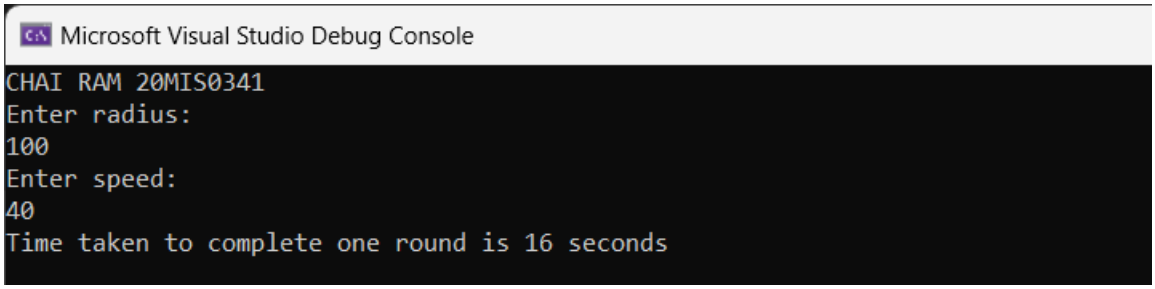
9. **Circular Ground**: Given the radius of a circular ground in meters and speed of a bike in m/s. Write a C# program to determine the approximate number of seconds that will be taken by the bike to go around the ground once. Formula to calculate circumference of a circular ground = 2*pi*r. Assume that the radius of ground and speed of bike are integers and bike will maintain a uniform speed. Round the number of seconds taken to upper bound. That is 10.1, 10.5, 10.9 etc should be 11. For example, if the radius of the ground is 100 m and speed of bike as 40m/s, then the time taken to go around once is approximately 16 seconds. Display only two decimal places for floating point values.

Code:

```
namespace Timetaken
{
    internal class Program
    {
        static void Main(string[] args)
        {
            double cir;
            int r, speed;
            Console.WriteLine("CHAI RAM 20MIS0341");
            Console.WriteLine("Enter radius:");
            r = int.Parse(Console.ReadLine());
            Console.WriteLine("Enter speed:");
            speed = int.Parse(Console.ReadLine());
            cir = 2 * Math.PI * r;
            double time;
```

```
            time = (cir / speed) + 0.5;
            Console.WriteLine("Time taken to complete one round is {0} seconds",
Math.Round(time));

        }
    }
}
```

Output:

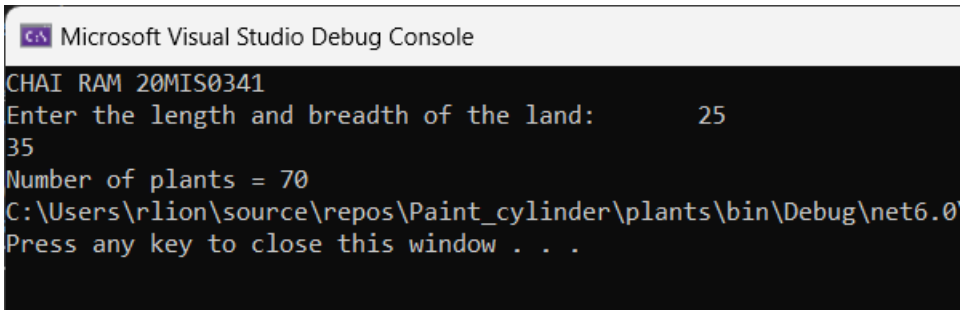


10. **Planting Grapes**: Murat has decided to plant grapes in the garden behind his house. His neighbour Volkan has grown grapes successfully for a long time and has given Murat advice about how to plant vines. Volkan told him to plant them three meters apart in rows that are three meters apart. He also told him to leave at least three meters between each vine and the edge of the garden. Murat has measured the size of his garden and learned that it is a rectangle with sides of 'l' meters and 'b' meters. Write a C# program to determine the number of vines (plants) that Murat should buy? For example, if 'l' is 25 and 'b' is 35 meters then he has leave 6 meters on either side along length and breadth so in the remaining rectangular area of dimension 19m X 29 m. So he can plant 7 X 10 = 70 plants. (Hint: Murat will plant vines at points 0, 3, 6, 9, 12, 15, 18m in a row)

Code:

```
using System;
namespace plants
{
    internal class Program
    {
        static void Main(string[] args)
        {
            int l, b;
            Console.WriteLine("CHAI RAM 20MIS0341");
            Console.Write("Enter the length and breadth of the land: \t");
            l = int.Parse(Console.ReadLine());
            b = int.Parse(Console.ReadLine());
            //the area cutoff by 3 meters on both side
            l = l - 6;
            b  = b- 6;
            Console.Write("Number of plants = {0}", ((l / 3) + 1) * ((b / 3) +
1));
            Console.ReadKey();
        }
    }
   }
```

Output:



11. **Greatest Number**: Write a C# program to find the greatest among four numbers using Elseif ladder and Conditional operator (?:)

Code:

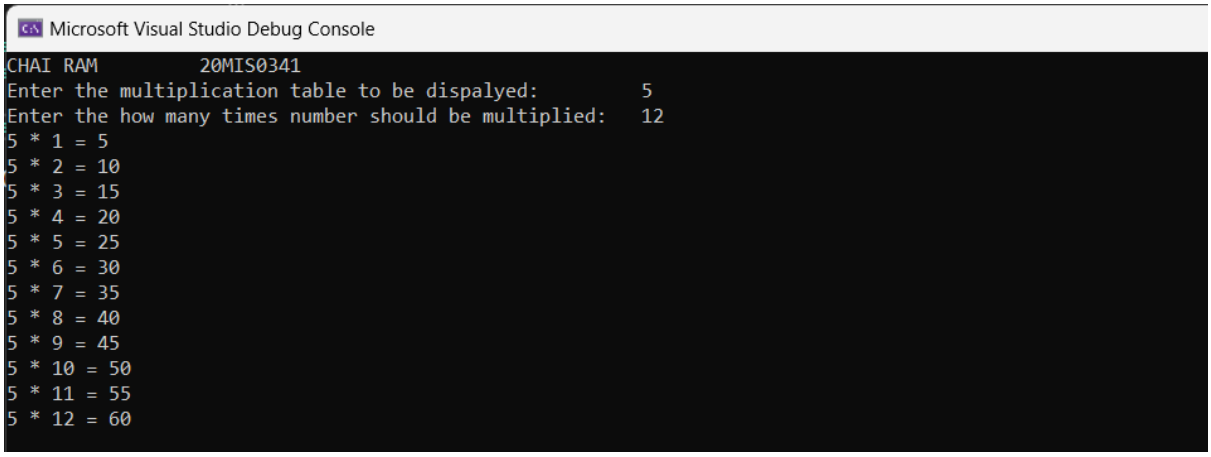
Output:

12. **Multiplication table**: Write a C# program to get student regno, name, 5 subject marks and find the total, average and grade.

Code:

```
namespace table
{
    internal class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("CHAI RAM \t 20MIS0341");
            Console.Write("Enter the multiplication table to be dispalyed: \t");
            int n = Convert.ToInt32 (Console.ReadLine());
            Console.Write("Enter the how many times number should be multiplied:
\t");
            int i = Convert.ToInt32 (Console.ReadLine());
            for(int j = 1; j <= i; j++)
            {
                Console.WriteLine("{0} * {1} = {2}", n , j, n*j);
            }
        }
    }
}
```

Output:



13. Write the C# program for the following using Conditional Control Statements and looping Statements:

a) Find Sum of the digit
b) Reversing a digit c)
c) Find factorial of the given number
d) Display prime numbers from 1 to 100
e) Check the given number is Armstrong number or not.
f) Check the given number is automorphic number or not (is a number whose square "ends" in the same digits as the number itself. For example, 52 = 25, 62 = 36, 762 = 5776)

Code question a) to f)

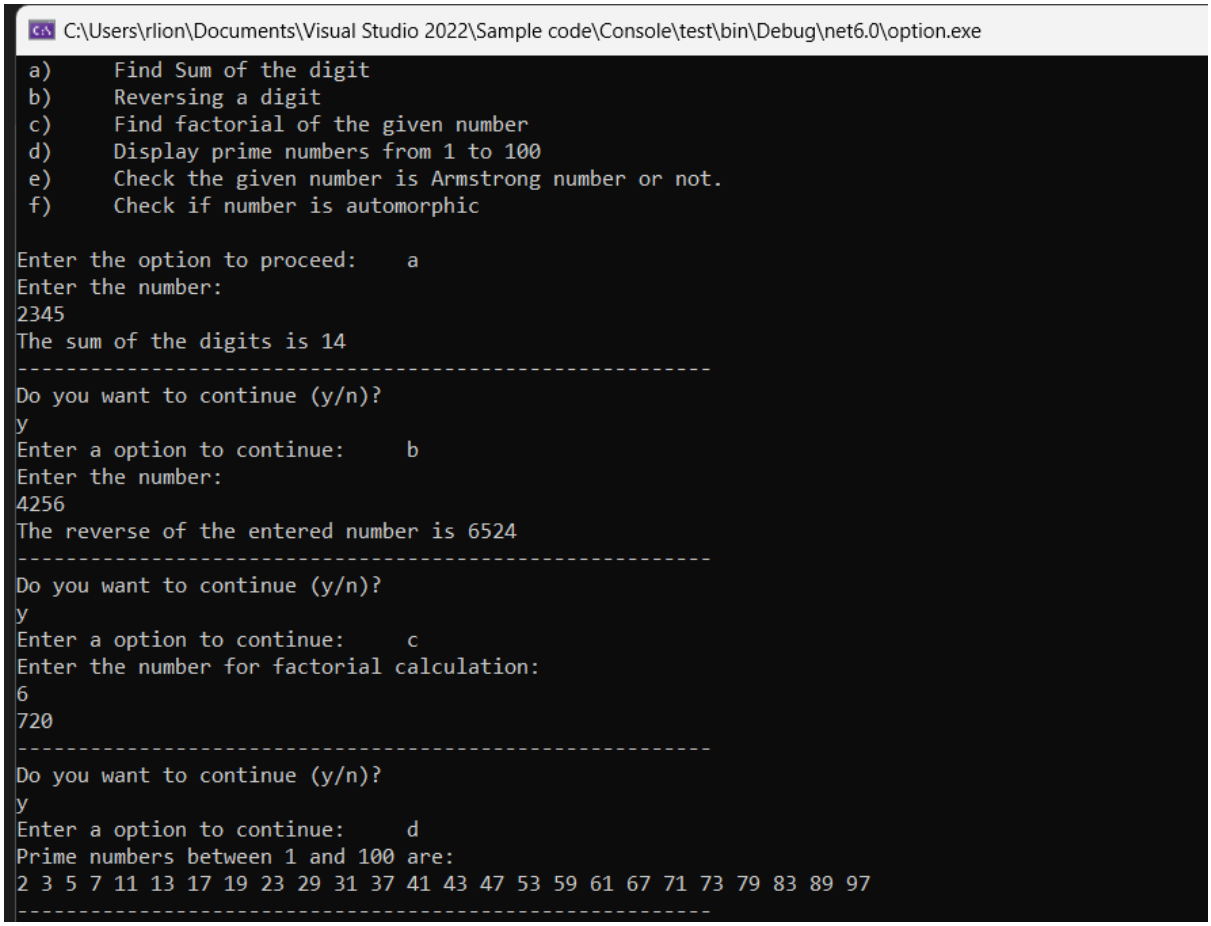
```
using System.Runtime.CompilerServices;
using System.Globalization;
using System;

namespace test
{
    internal class Program
    {
        static void Main(string[] args)
        {
Console.WriteLine("CHAI RAM \t 20MIS0341");
            bool flag = true;

            char c;
            Console.WriteLine(" a)\tFind Sum of the digit \r\n b)\tReversing a
digit  \r\n c)\tFind factorial of the given number  \r\n d)\tDisplay prime
numbers from 1 to 100  \r\n e)\tCheck the given number is Armstrong number or
not. \r\n f)\tCheck if number is automorphic \r\n");
            Console.Write("Enter the option to proceed: \t");
            while(flag)
            {
            c = char.Parse(Console.ReadLine());
                c = Char.ToLower(c);
                switch (c)
                {
                    case 'a':
```

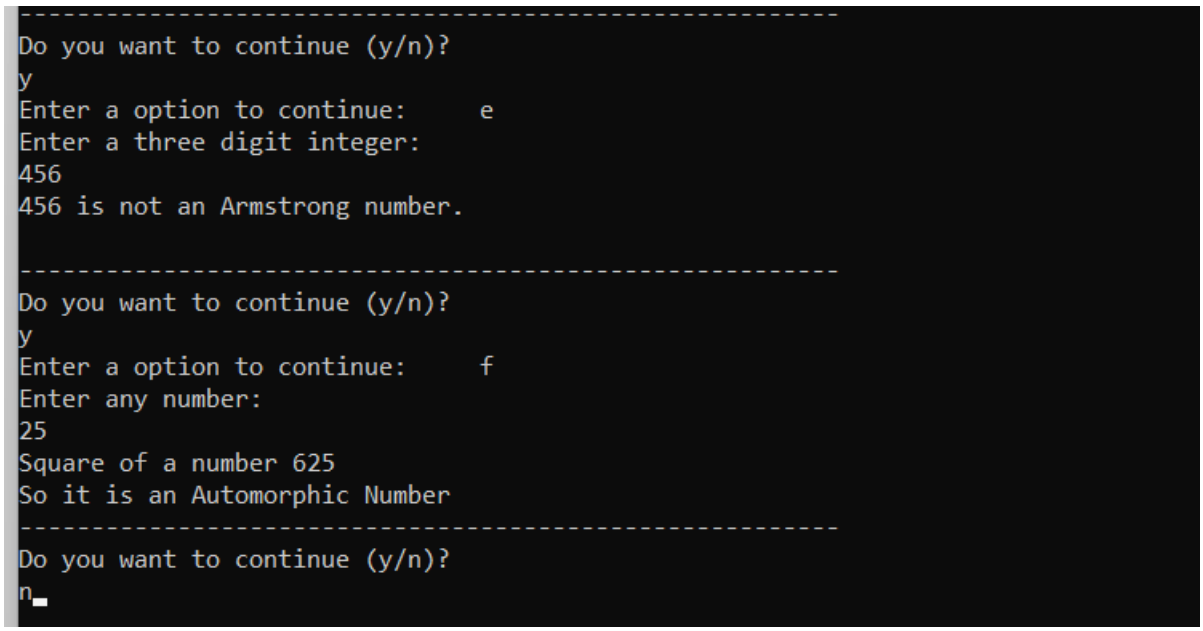
```
                        {
                            int a, sum = 0, remainder = 0;
                            Console.WriteLine("Enter the number: ");
                            a = int.Parse(Console.ReadLine());
                            while(a != 0)
                            {
                                remainder = a % 10;
                                sum += remainder;
                                a /=  10;
                            }
                            Console.WriteLine("The sum of the digits is " +sum);
                            Console.WriteLine("----------------------------------
----------------------");

                        }
                        break;
                    case 'b':
                        {
                            int n, rn =0 , temp;
                            Console.WriteLine("Enter the number: ");
                            n = int.Parse(Console.ReadLine());

                            while(n != 0)
                            {
                                temp = n % 10;

                                rn = rn * 10 + temp;
                                n /= 10;

                            }
                            Console.WriteLine("The reverse of the entered number
is " + rn);

                            Console.WriteLine("----------------------------------
----------------------");
                        }

                        break;
                    case 'c':
                        {
                            Console.WriteLine("Enter the number for factorial
calculation: ");
                            int f = int.Parse(Console.ReadLine());
                            int fact =1 ;
                            for (int i = 1;i<= f;i++)
                                fact *= i;

                            Console.WriteLine(fact);
                            Console.WriteLine("----------------------------------
----------------------");
                        }

                        break;
                    case 'd':
                        {
                            Console.WriteLine("Prime numbers between 1 and 100
are: ");

                            for (int i = 2; i <= 100; i++)
                            {
                                bool isPrime = true;

                                for (int j = 2; j <= Math.Sqrt(i); j++)
```

```
                {
                    if (i % j == 0)
                    {
                        isPrime = false;
                        break;
                    }
                }

                if (isPrime)
                {
                    Console.Write("{0} ", i);
                }
            }
            Console.WriteLine("\n------------------------------
------------------------");
        }

        break;
    case 'e':
        {
            int num, on, r, result = 0, n = 0;

            Console.WriteLine("Enter a three digit integer: ");
            num = int.Parse(Console.ReadLine());

            on = num;

            while (on != 0)
            {
                on /= 10;
                ++n;
            }

            on = num;

            while (on != 0)
            {
                r = on % 10;
                result += (int)Math.Pow(r, n);
                on /= 10;
            }

            if (result == num)
            {
                Console.WriteLine("{0} is an Armstrong number.",
num);
            }
            else
            {
                Console.WriteLine("{0} is not an Armstrong
number.", num);
            }

            Console.WriteLine("\n------------------------------
------------------------");
        }


        break;
    case 'f':
        {
            int temp, square, count = 1, number;
```

```
                            Console.WriteLine("Enter any number: ");
                            number = Convert.ToInt32(Console.ReadLine());

                            temp = number;

                            square = number * number;

                            Console.WriteLine("Square of a number {0}", square);

                            while (number != 0)
                            {
                                count = count * 10;
                                number = number / 10;
                            }

                            if (square % count == temp)
                                Console.WriteLine("So it is an Automorphic
Number");
                            else
                                Console.WriteLine("It is not an Automorphic
Number");
                            Console.WriteLine("-----------------------------------
----------------------");
                           }
                           break;

                }
                Console.WriteLine("Do you want to continue (y/n)?  ");
                char ch = char.Parse(Console.ReadLine());
                if (ch == 'y')
                    Console.Write("Enter a option to continue: \t");
                if (ch == 'n' || ch == 'N')
                    flag = false;

            }

        }
    }
}
```

Output:



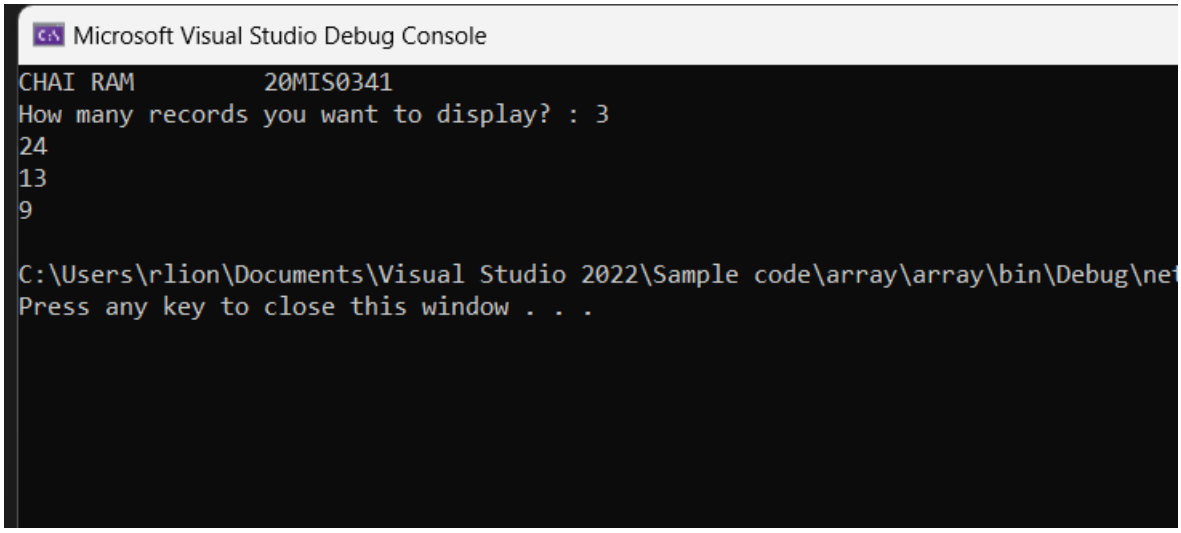


g) Write a C# program to display the top n-th records.
Test Data: The members of the list are: 5 7 13 24 6 9 8 7
How many records you want to display? : 3
Expected Output: The top 3 records from the list are: 24 13 9

Code:

```
using System.Transactions;

namespace array
{
    internal class Program
    {
        static void Main(string[] args)
        {
Console.WriteLine("CHAI RAM \t 20MIS0341");
            int n= 0 ;
            Console.Write("How many records you want to display? : ");
            n = int.Parse(Console.ReadLine());
            List<int> b = new List<int>{5, 7, 13, 24, 6, 9, 8, 7};
            b.Sort();
            b.Reverse();
            for(int i = 0 ; i < n; i++)
            {
                Console.WriteLine(b[i]);
            }
        }
    }
}
```

Output:



h) Count Student's grade: Given marks secured by 'n' students in a subject, write a C# program to count the number of students obtained 'S', 'A', 'B', 'C', 'D' grades. Also calculate the number of students failed in the subject. Grades are assigned based on the following Conditions. Check for boundary conditions and print Invalid input if not satisfied. Use jagged array to store the marks for

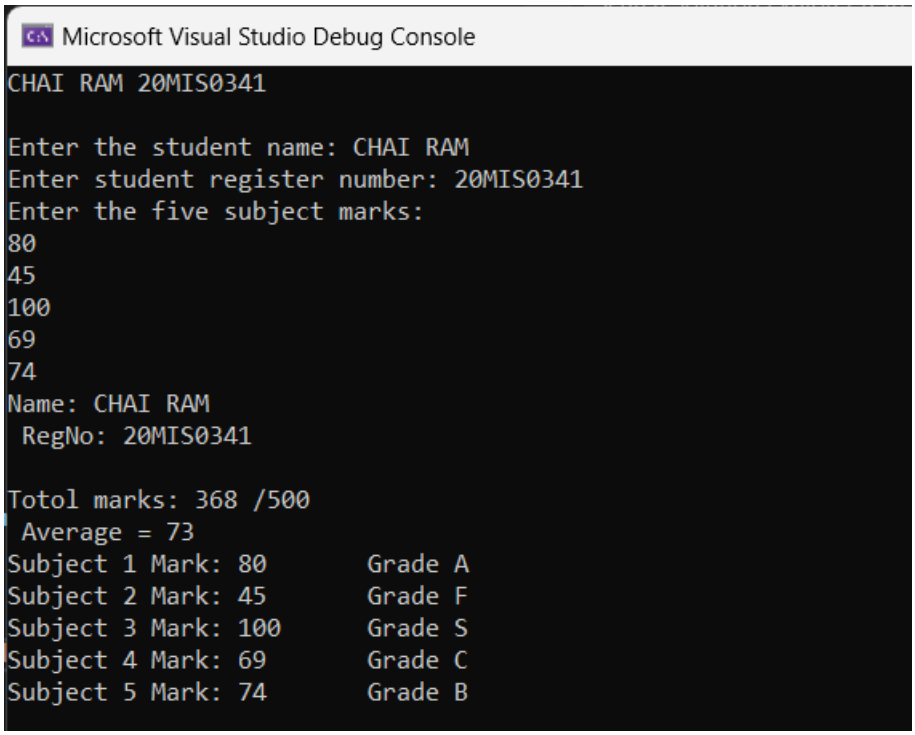
different number of subjects. >=90 assign S Grade. 80 -89 assign A grade. 70 -79 assign B grade. 60 -69 assign C grade. 50 -59 assign D grade. < 50 assign FAIL

Code:

```
using System;
namespace GreatestNumber
{
    internal class Program
    {
        static void Main(string[] args)
        {
            String name, reg;
            int[] marks = new int [5];
            Console.WriteLine("CHAI RAM 20MIS0341\n");
            Console.Write("Enter the student name: ");
            name = Console.ReadLine();
            Console.Write("Enter student register number: ");
            reg = Console.ReadLine();
            Console.WriteLine("Enter the five subject marks: ");
            for(int i= 0; i < 5;i++) {
                marks[i] = int.Parse(Console.ReadLine());
            }
            //Total, average, grade
            int total =0 , average;
            for (int i=0;i<5;i++)
            {
                total = marks[i] + total;
            }
            char [] grade = new char[5];
            average = total / 5;
            for (int i = 0;i<5;i++)
            {
                if (marks[i] >= 90)
                {
                    grade[i] = 'S';
                }
                else if ((marks[i] >= 80) && (marks[i] <= 89))
                {
                    grade[i] = 'A';
                }
                else if ((marks[i] >= 70) && (marks[i] <= 79))
                {
                    grade[i] = 'B';
                }
                else if ((marks[i] >= 60) && (marks[i] <= 69))
                {
                    grade[i] = 'C';
                }
                else if ((marks[i] >= 50) && (marks[i] <= 59))
                {
                    grade[i] = 'D';
                }
                else
                    grade[i] = 'F';
            }
            Console.WriteLine("Name: {0} \n RegNo: {1} \n ", name, reg);
            Console.WriteLine("Totol marks: {0} /500 \n Average = {1}", total,
average);
```

```
            for(int j =0;j<5;j++)
            {
                Console.WriteLine("Subject {0} Mark: {1} \t Grade {2}",j+1 ,
marks[j], grade[j]);
            }
            Console.ReadKey();
        }
    }
}
```

Output:

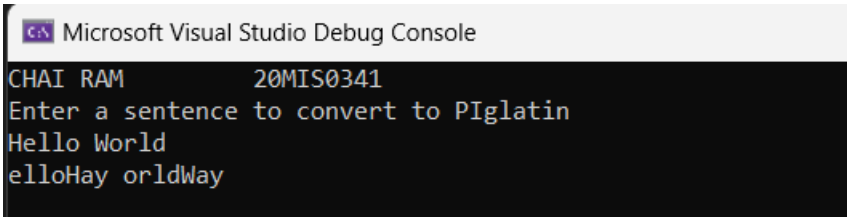


14. Write a web service to convert English to piglatin.Call this web service in console application or web application.
    *Hint
    If the word starts with a vowel, then "way" is appended to the word. If the word starts with a consonant, then the first character of the word is put at the end and "ay" is appended
    i/p ant – antway
    computer – omputercay
    The web service function
    string eng2Piglatin(string)
    {
    }
    Code:

```
using System.Diagnostics.Tracing;
```

```
namespace webserv
{
    internal class Program
    {
        public static string Piglatin(string sen)
        {

            string vowels = "AEIOUaeiou";
            List<String> list = new List<String>();
            foreach (string s in sen.Split(' '))
            {
                if (s.Length == 1)
                    list.Add(s + "way");
                if (s.Length == 2 && vowels.Contains(s[0]))
                    list.Add(s + "ay");
                if (s.Length == 2 && !vowels.Contains(s[1]) &&
!vowels.Contains(s[0]))
                    list.Add(s.Substring(1) + s.Substring(0, 1) + "ay");
                if (s.Length == 2 && !vowels.Contains(s[1]) &&
!vowels.Contains(s[0]))
                {
                    list.Add(s + "ay");
                }

                for (int i = 1; i < s.Length; i++)
                {
                    if (vowels.Contains(s[i]) && (vowels.Contains(s[0])))
                    {
                        list.Add(s.Substring(i) + s.Substring(0, i) + "ay");
                        break;
                    }
                }

                for (int i = 0; i < s.Length; i++)
                {
                    if (vowels.Contains(s[i]) && !(vowels.Contains(s[0])) &&
s.Length > 2)
                    {
                        list.Add(s.Substring(i) + s.Substring(0, i) + "ay");
                        break;
                    }

                }
            }
            return string.Join(" ", list);



        }

        static void Main(string[] args)
        {
            Console.WriteLine("CHAI RAM \t 20MIS0341");
            Console.WriteLine("Enter a sentence to convert to PIglatin");
            string sen = Console.ReadLine();
            string piglatin = Piglatin(sen);
            Console.WriteLine(piglatin);
        }
    }
   }
```

Output:

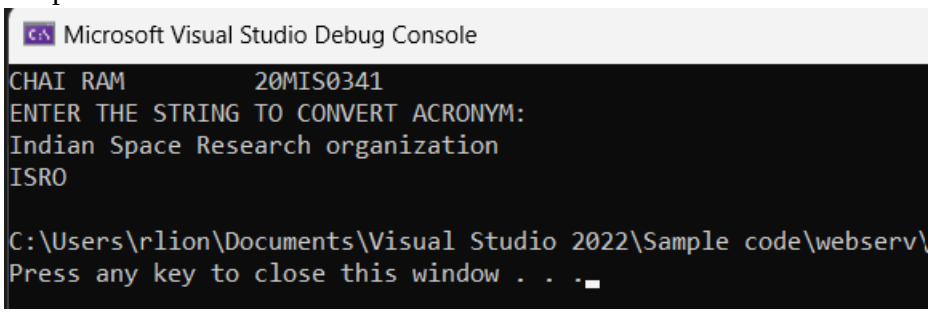


15. Write a web service to find acronym of an organization/college/university/school. Call this web service in console application or web application
*Hint
Remove the words - "of for, the, in, on, a, an, is " from the input while finding the acronym
i/p Vellore institute of technology – VIT
Indian space research organization – ISRO
Dayananda Anglo Vedic School - DAV
The web service function
string acGen(string)
{
}

Code:

```
using System.Text;

namespace ConsoleApplication15
{
    class abbr
    {
        public string acGen(string input)
        {
            string[] ignore = { "of", "for", "the", "in", "on", "a", "an", "is"
};
            string[] words = input.Split(' ');

            StringBuilder acronymBuilder = new StringBuilder();

            foreach (string word in words)
            {
                if (!ignore.Contains(word.ToLower()))
                {
                    acronymBuilder.Append(char.ToUpper(word[0]));
                }
            }

            return acronymBuilder.ToString();
        }
        public static void Main()
        {
            Console.WriteLine("CHAI RAM \t 20MIS0341");
            abbr obj = new abbr();
            Console.WriteLine("ENTER THE STRING TO CONVERT ACRONYM:");
            string input = Console.ReadLine();
            string acronym = obj.acGen(input);
            Console.WriteLine(acronym);
            Console.ReadKey();
        }
```

}
}
Output:

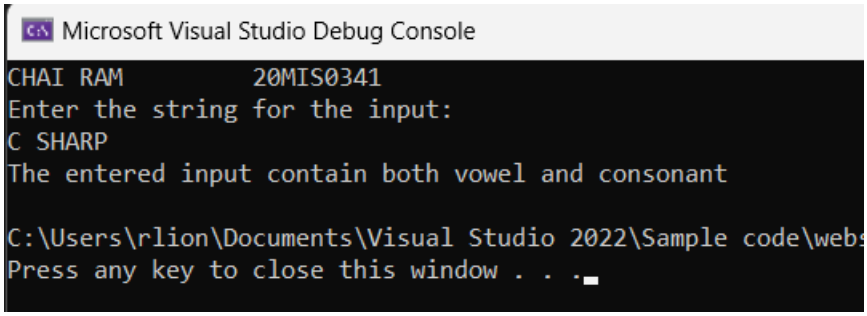


16. Write a web service to check if a word contains a. All the vowels b. No vowels/only consonants c. Only vowels Call this web service in console application or web application. Use regular expression for finding any of the sub division (a,b,c)
*Hint
The function returns the value 1 for All the vowels ,2 for no vowels/only consonants and 3 for only vowels
i/o Spy – No Vowels, only consonants
The web service function
int VowConsChecker(string)
{
}

```
namespace websev
{
    class vowelchecker
    {
        public int VowConsChecker(string word)
        {
            Regex vowelRegex = new Regex("[aeiou]", RegexOptions.IgnoreCase);
            Regex consonantRegex = new Regex("[bcdfghjklmnpqrstvwxyz]",
RegexOptions.IgnoreCase);
            if (vowelRegex.IsMatch(word) && !consonantRegex.IsMatch(word))
            {
                return 1;
            }
            if (!vowelRegex.IsMatch(word) && consonantRegex.IsMatch(word))
            {
                return 2;
            }
```

```
            if (vowelRegex.IsMatch(word) && !consonantRegex.IsMatch(word))
            {
                return 3;
            }
            return 0;
        }
        public static void Main(string[] args)
        {
            Console.WriteLine("CHAI RAM \t 20MIS0341”);

            vowelchecker obj = new vowelchecker();
            Console.WriteLine("Enter the string for the input:");
            string s = Console.ReadLine();
            int result = obj.VowConsChecker(s);
            switch (result)
            {
                case 1:
                    Console.WriteLine("All the vowels");
                    break;
                case 2:
                    Console.WriteLine("No vowels/only consonants");
                    break;
                case 3:
                    Console.WriteLine("Only vowels");
                    break;
                default:
                    Console.WriteLine("The entered input contain both vowel and
consonant");
                    break;
            }
            Console.ReadKey();
        }
    }
}
```

Output:



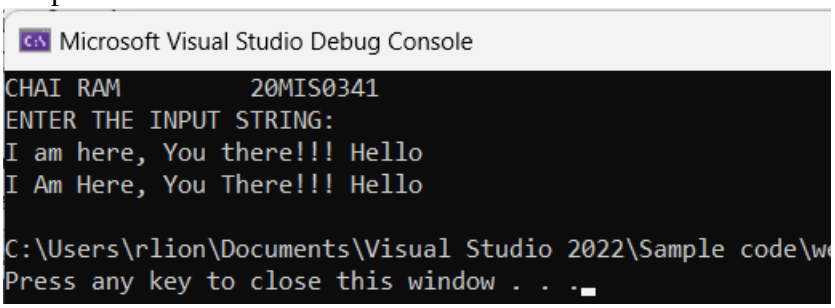
17. Write a web service to convert every first word of a string to title case. Call this web service in console application or web application.
    i/o
    I am here, you are threre!!!hello- I Am Here, You Are There!!!Hello
    The web service function
    string titleCaseChanger(string)
    {
    }

    Code:

```
namespace websev


{
    class titlecase
    {
        public string casechange(string input)
        {

            string[] words = input.Split(new char[] { ' ' },
StringSplitOptions.RemoveEmptyEntries);


            for (int i = 0; i < words.Length; i++)
            {
                string word = words[i];
                if (word.Length > 0)
                {
                    char[] ch = word.ToCharArray();
                    ch[0] = char.ToUpper(ch[0]);
                    words[i] = new string(ch);
                }
            }


            string result = string.Join(" ", words);
            result = Regex.Replace(result, @"\b([A-Z]{2,})\b", match =>
match.Value.ToUpper());
            return result;
        }
        static void Main(string[] args)
        {
            Console.WriteLine("CHAI RAM \t 20MIS0341");
            titlecase obj1 = new titlecase();
            Console.WriteLine("ENTER THE INPUT STRING:");
            string input = Console.ReadLine();
```

```
            string output = obj1.casechange(input);
            Console.WriteLine(output);
            Console.ReadKey();
        }
    }
    }
```

Output:



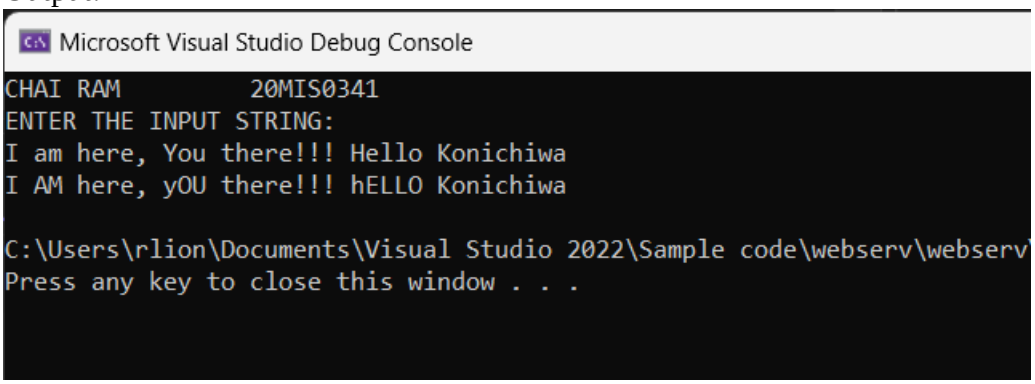
18. Write a web service to toggle the characters of every odd word of a string. Call this web service in console application or web application.
    i/o I am here, You are there!!! Hello- I AM here, yOU are THERE!!! hello
    The web service function
    string toggleCase(string) { }

    Code:

```
namespace websev

{
    class toggle
    {
        public string togglemethod(string input)
        {
            string[] words = input.Split(new char[] { ' ' },
StringSplitOptions.RemoveEmptyEntries);
            for (int i = 0; i < words.Length; i++)
            {
                if (i % 2 == 1)
                {
                    char[] chars = words[i].ToCharArray();
                    for (int j = 0; j < chars.Length; j++)
                    {
                        chars[j] = char.IsUpper(chars[j]) ?
char.ToLower(chars[j]) : char.ToUpper(chars[j]);
                    }
                    words[i] = new string(chars);
                }
            }
            string result = string.Join(" ", words);
            return result;
        }

        static void Main(string[] args)
        {
            Console.WriteLine("CHAI RAM \t 20MIS0341");

            toggle obj1 = new toggle();
```

```
            Console.WriteLine("ENTER THE INPUT STRING:");
            string input = Console.ReadLine();
            string output = obj1.togglemethod(input);
            Console.WriteLine(output);
            Console.ReadKey();
        }
    }
    }
```

Output:



19. Write a C# program to check whether the given matrix is
    a. Sparse Matrix
    b. Unit Matrix
    c. Symmetric

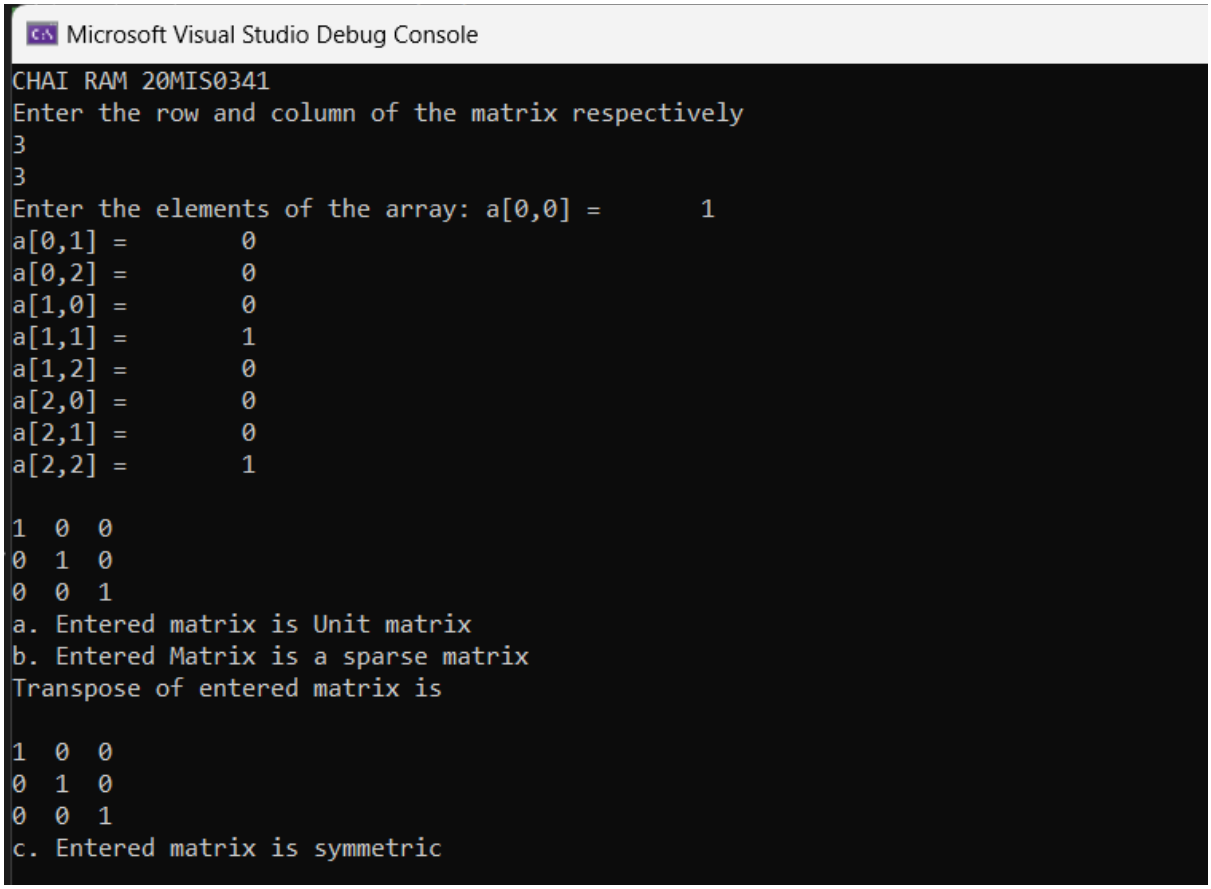
Code:

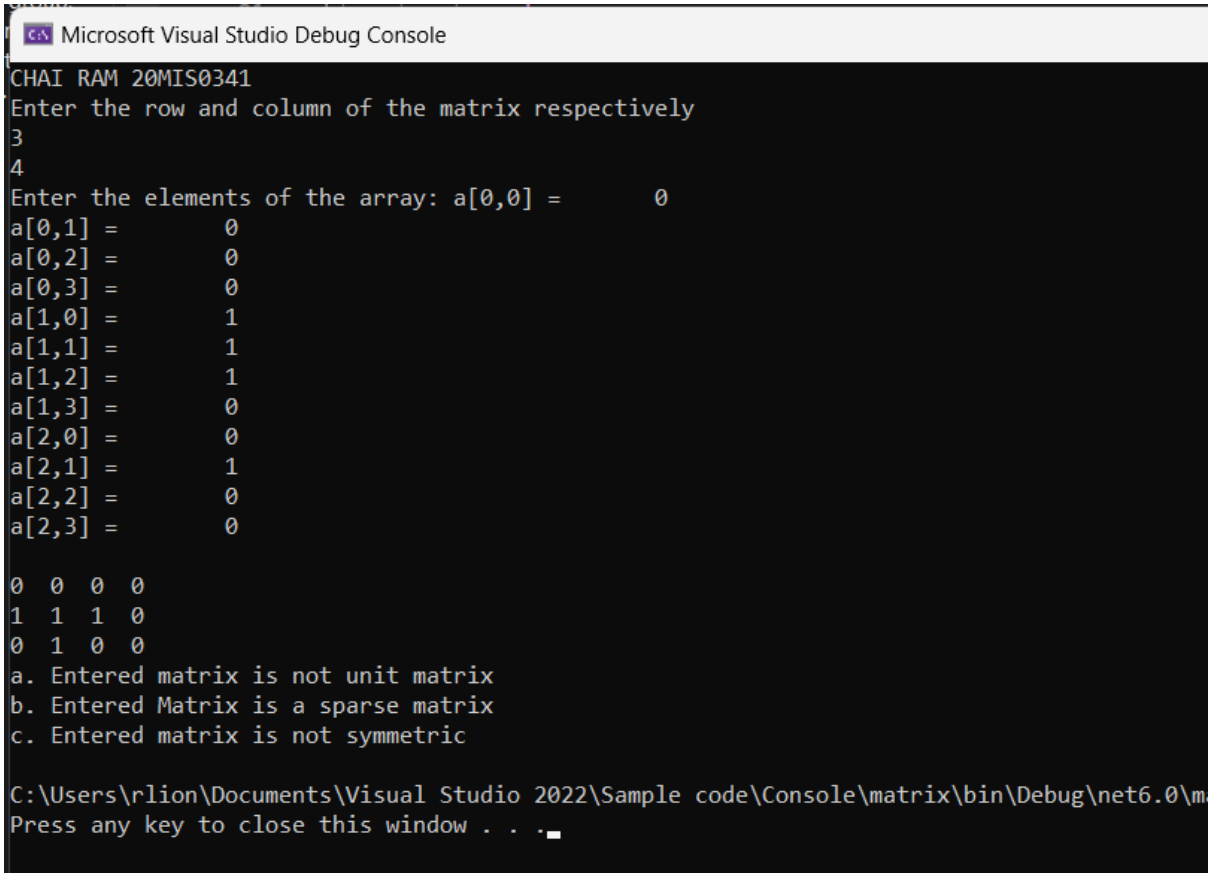
```
using System;



namespace matrix
{
    internal class Program

    {
        static public void display(int[,] x, int r, int c)
        {
            for (int i = 0; i < r; i++)
            {
                Console.WriteLine();
                for (int j = 0; j < c; j++)
                {
                    Console.Write("{0}  ", x[i, j]);
                }
            }
            Console.WriteLine();
        }
        static public Boolean isUnit(int [,] a ,  int r, int c)
        {

            int i, j;
            for (i = 0; i < r; i++)
            {
                for (j = 0; j < r; j++)
                {
                    // If i == j, then check if arr[i,j] == 1
                    if (i == j && a[i,j] != 1)
```

```
                    {
                        return false;
                    }
                    // If i != j, then check if arr[i,j] == 0
                    else if (i != j && a[i,j] != 0)
                    {
                        return false;
                    }
                }
            }
            return true;
        }
        static void Main(string[] args)
        {
            Boolean IsTranspose = true;

            Console.WriteLine("CHAI RAM 20MIS0341");
            int r, c, i = 0, j = 0;
            Console.WriteLine("Enter the row and column of the matrix
respectively");
            r = int.Parse(Console.ReadLine());
            c = int.Parse(Console.ReadLine());


            int[,] a = new int[r, c];
            int[,] transpose = new int[r, c];
            Console.Write("Enter the elements of the array: ");
            for (i = 0; i < r; i++)
            {
                for (j = 0; j < c; j++)
                {
                    Console.Write("a[{0},{1}] = \t", i, j);
                    a[i, j] = int.Parse(Console.ReadLine());
                }
            }
            display(a, r,c);

            int count = 0;
            for (i = 0; i < r; i++)
            {
                for (j = 0; j < c; j++)
                {
                    if (a[i, j] == 0)
                        count++;
                    if(r==c)
                        transpose[i, j] = a[j, i];
                }
            }
            for (i = 0; i < r; i++)
            {
                for (j = 0; j < c; j++)
                {
                    if (transpose[i, j] != a[i, j])
                        IsTranspose = false;
                }
            }

            //?unit matrix
            if (isUnit(a, r, c))
                Console.WriteLine("a. Entered matrix is Unit matrix");
            else
                Console.WriteLine("a. Entered matrix is not unit matrix");
            //Sparse matrix
```

```
            if ((count > (r * c) / 2))
                Console.WriteLine("b. Entered Matrix is a sparse matrix");
            else
                Console.WriteLine("b. Entered Matrix is not a sparse matrix");
            //?symmetric
            if ((r == c) && IsTranspose)
            {
                Console.WriteLine("Transpose of entered matrix is ");
                display(transpose, r, c);
                Console.WriteLine("c. Entered matrix is symmetric");
            }
            else
                Console.WriteLine("c. Entered matrix is not symmetric");


        }
    }
}
```

Output:





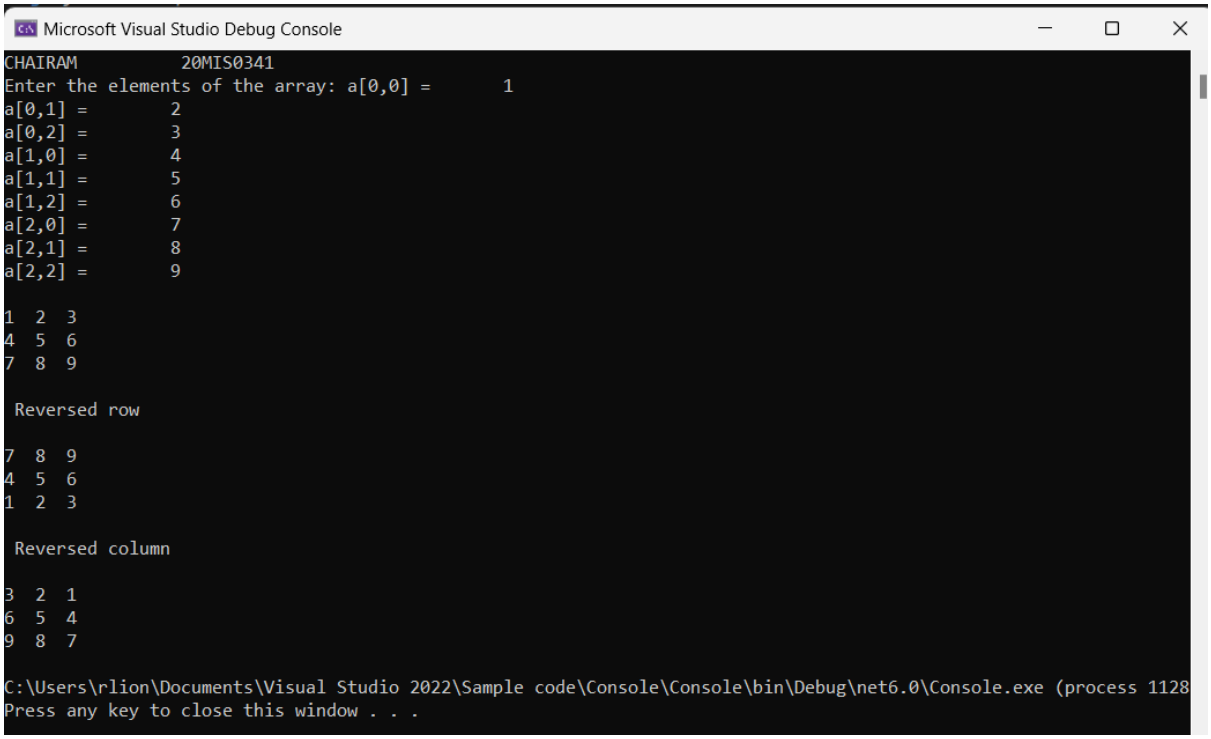
20. i) Write a C# program to get 3*3 matrix, reverse each row and store it in ReverseRowMatrix and each column and store it in ReverseColumMatrix and display it.

Code:

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

namespace ConsoleApplication2
{
    class Program
    {
        static public void display(int[,] x)
        {
            for (int i = 0; i < 3; i++)
            {
                Console.WriteLine();
                for (int j = 0; j < 3; j++)
                {
                    Console.Write("{0}  ", x[i, j]);
                }
            }
            Console.WriteLine();
        }
```

```
        static void Main(string[] args)
        {
            Console.WriteLine("CHAIRAM \t 20MIS0341");
            int i = 3;
            int j = 3;
            int[,] a = new int[3, 3];
            int[,] rr = new int[3, 3];
            int[,] rc = new int[3, 3];
            Console.Write("Enter the elements of the array: ");
            for (i = 0; i < 3; i++)
            {
                for (j = 0; j < 3; j++)
                {
                    Console.Write("a[{0},{1}] = \t", i, j);
                    a[i, j] = int.Parse(Console.ReadLine());
                }
            }
            // reverse row
            for (i = 0; i < 3; i++)
            {

                for (j = 0; j < 3; j++)
                {
                    rr[2 - i, j] = a[i, j];
                    rc[i, 2 - j] = a[i, j];
                }
            }
            display(a);
            Console.WriteLine("\n Reversed row");
            display(rr);
            Console.WriteLine("\n Reversed column");
            display(rc);


        }
    }
}
```

Output:



ii) Write a C# program to get 3*3 matrix, find row sum, column sum and two diagonal's sum and display it.

Code:

```
namespace sum
{
    internal class Program
    {
        static public void display(int[,] x)
        {
            for (int i = 0; i < 3; i++)
            {
                Console.WriteLine();
                for (int j = 0; j < 3; j++)
                {
                    Console.Write("{0}  ", x[i, j]);
                }
            }
            Console.WriteLine();
        }
        static void Main(string[] args)
        {
            Console.WriteLine("CHAIRAM \t 20MIS0341");
            int i = 3;
            int j = 3;
            int[,] a = new int[3, 3];
            Console.Write("Enter the elements of the array: ");
            for (i = 0; i < 3; i++)
            {
                for (j = 0; j < 3; j++)
                {
                    Console.Write("a[{0},{1}] = \t", i, j);
                    a[i, j] = int.Parse(Console.ReadLine());
                }
            }
```

```
            display(a);
            int dsum1 =0 , dsum2 =0 ;
            int [] rsum = new int [3];
            int [] csum = new int [3];
            for (i = 0; i < 3; i++)
            {
                for (j = 0; j < 3; j++)
                {
                    rsum[i] = rsum[i] + a[i, j];
                    csum[i] = csum[i] + a[j, i];
                }
                Console.WriteLine("SUM OF ROW {0} IS \t {1}", i + 1, rsum[i]);
            }
            Console.WriteLine();
            for (i =0; i<3;i++)
            {
                dsum1 += + a[i, i];
                dsum2 += a[i, 2 - i];
                Console.WriteLine("SUM OF COLUMN {0} IS \t {1}", i + 1, csum[i]);
            }

            Console.WriteLine("\nSum of first diagonal: \t {0}", dsum1);
            Console.WriteLine("Sum of second diagonal: \t{0}", dsum2);

        }
    }
}
```

Output: