Federal Urdu University
of Arts, Science and Technology

FEDERAL URDU UNIVERSITY OF ARTS SCIENCE AND TECHNOLOGY

ELEMENTARY EXERCISES

"ASSIGNMENT NO 1"

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SEAT NO: 19122126

VISUAL PROGRAMMING

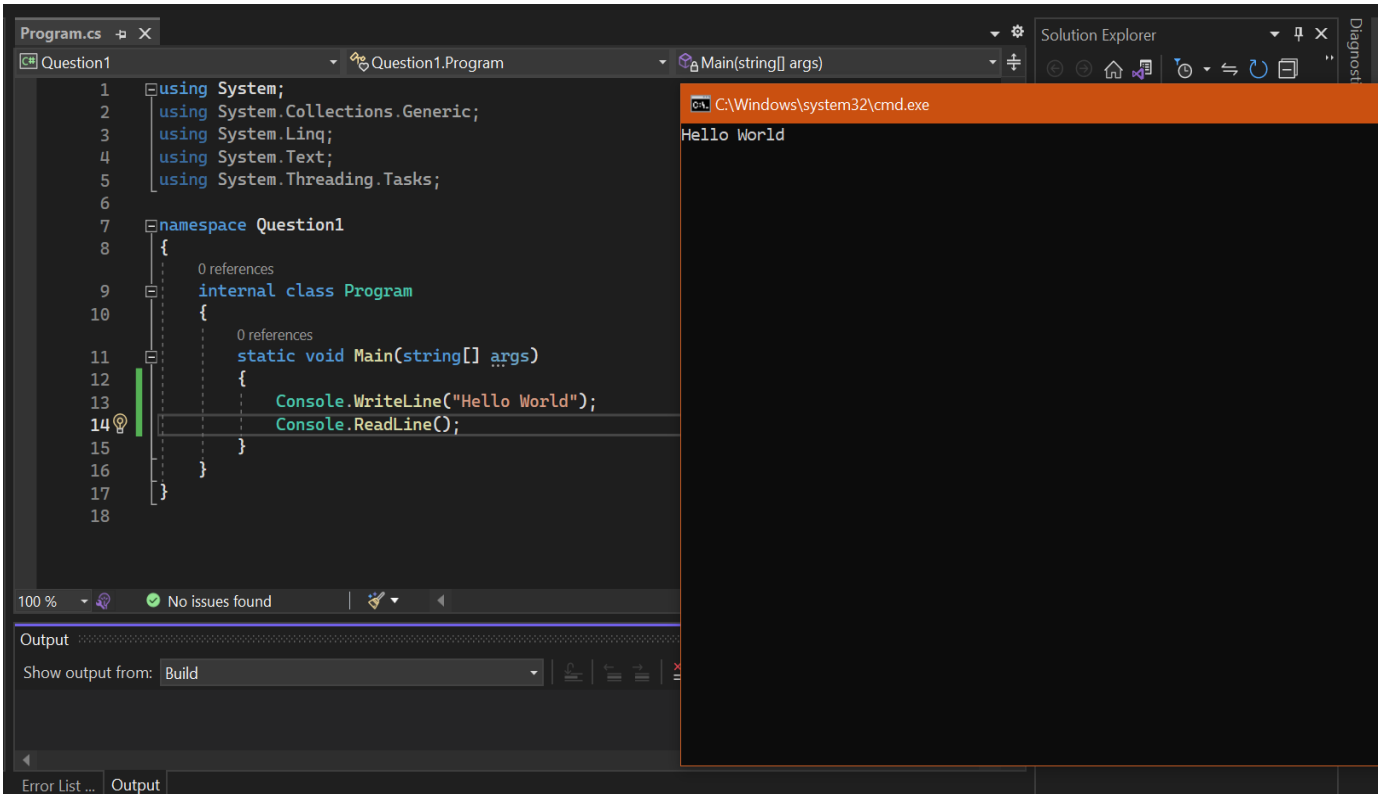
Professor Name: Mr. Muhammad Tauseef

Assignment Due Date

April 09, 2023

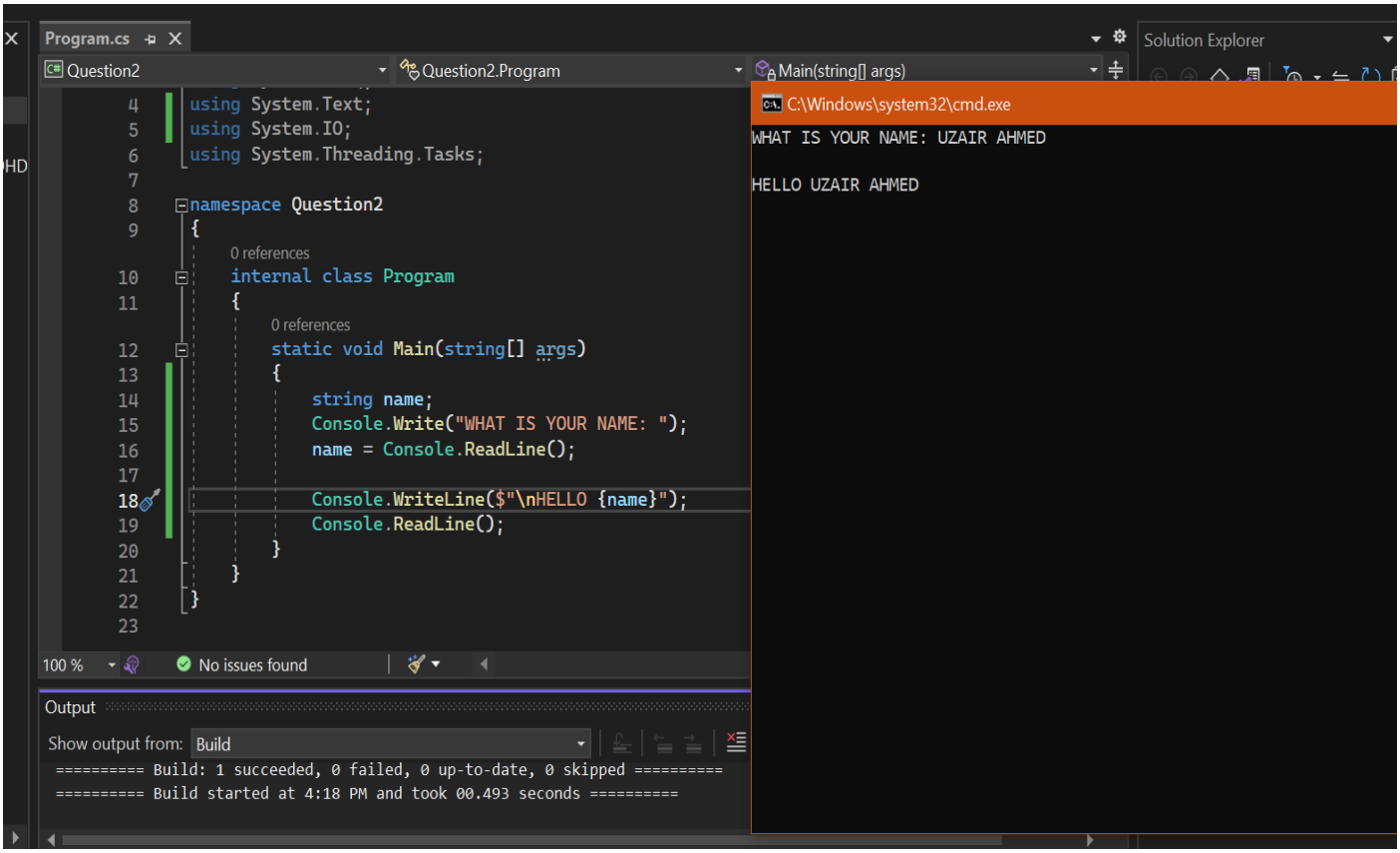
Q1. Write a program that prints ‘Hello World’ to the screen.

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.IO;
using System.Threading.Tasks;

namespace Question1
{
    internal class Program
    {
        static void Main(string[] args)
        {

            Console.WriteLine("HELLO WORLD");
            Console.ReadLine();
        }
    }
}
```



Q2. Write a program that asks the user for their name and greets them with their name.

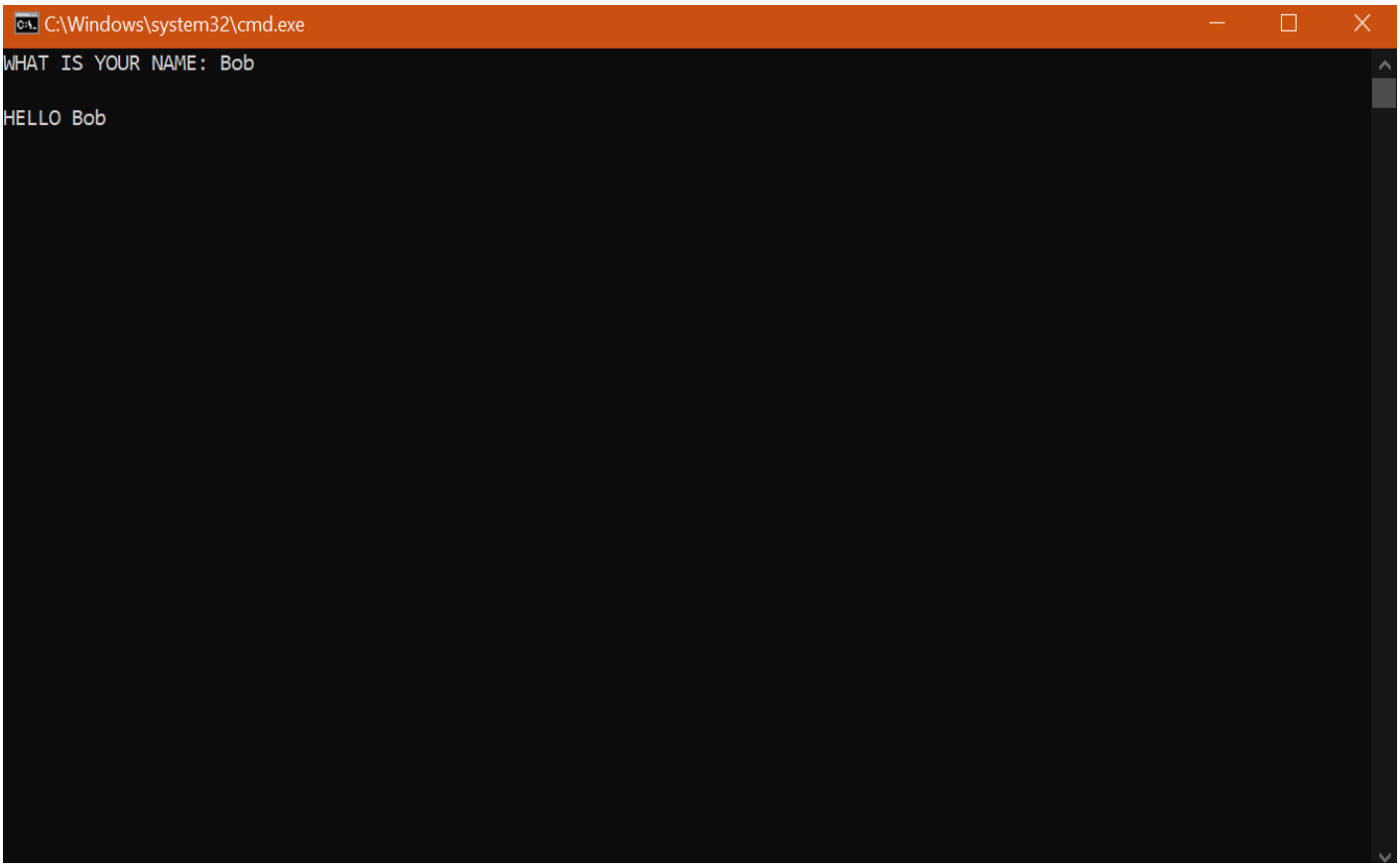
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.IO;
using System.Threading.Tasks;

namespace Question2
{
    internal class Program
    {
        static void Main(string[] args)
        {
            string name;
            Console.Write("WHAT IS YOUR NAME: ");
            name = Console.ReadLine();

            Console.WriteLine($"\nHELLO {name}");
            Console.ReadLine();
        }
    }
}
```



Q3. Modify the previous program such that only the users Alice and Bob are greeted with their names

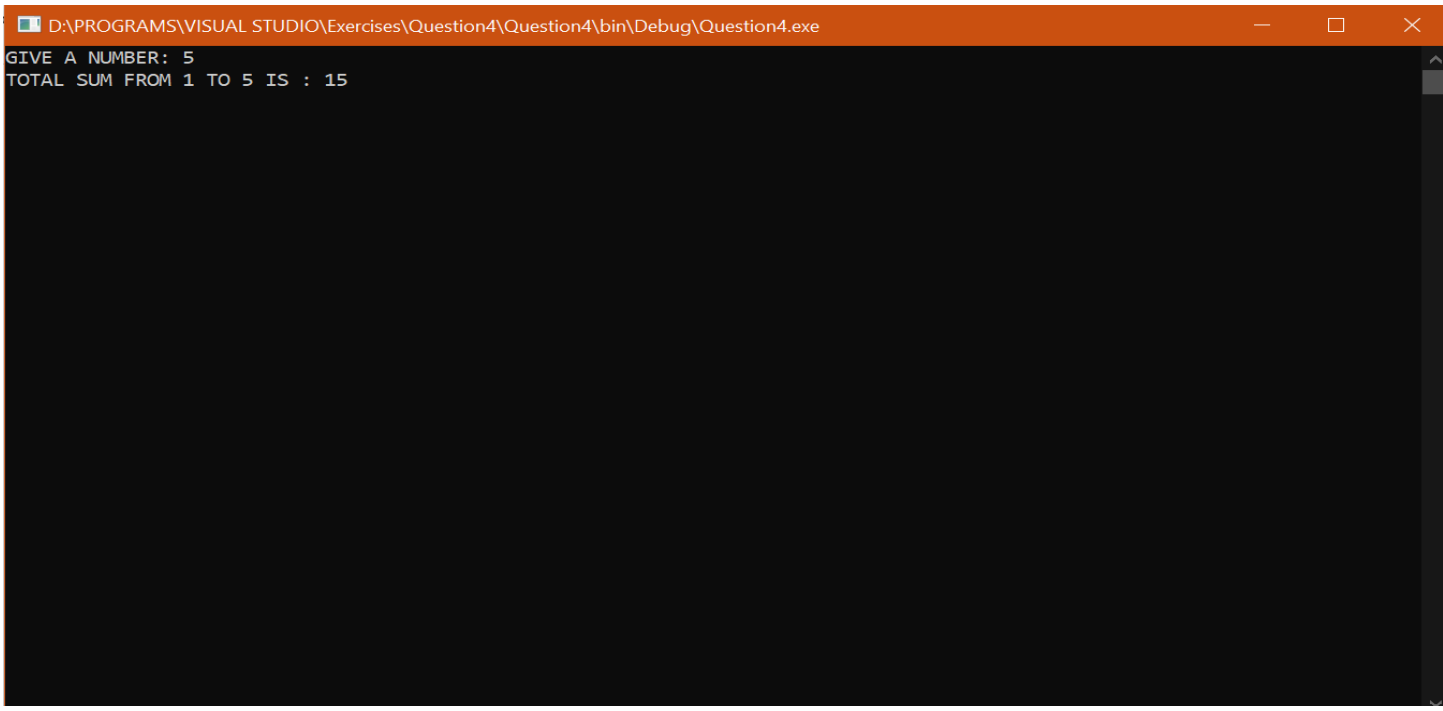
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.IO;
using System.Threading.Tasks;

namespace Question3
{
    internal class Program
    {
        static void Main(string[] args)
        {
            string name;
            Console.Write("WHAT IS YOUR NAME: ");
```

```
            name = Console.ReadLine();
            if(name == "Alice"||name=="Bob") {
                Console.WriteLine($"\nHELLO {name}");
                Console.ReadLine();
            }


        }
    }
}
```



Q4.Write a program that asks the user for a number n and prints the sum of the numbers 1 to n

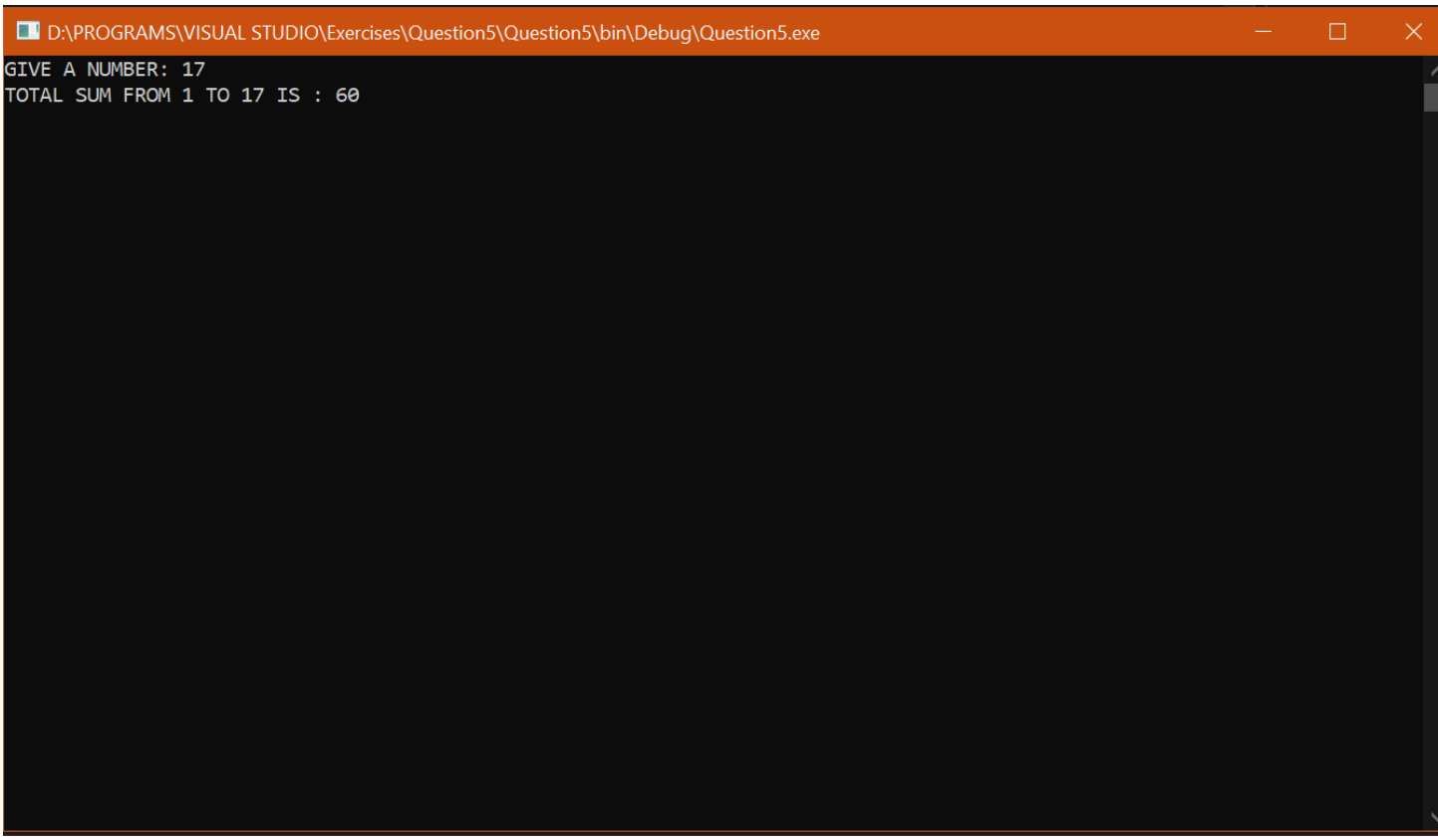
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.IO;
using System.Threading.Tasks;

namespace Question4
{
    internal class Program
    {
        static void Main(string[] args)
        {
            int num,sum=0;
            Console.Write("GIVE A NUMBER: ");
            num =Convert.ToInt32(Console.ReadLine());
            for(int i = 1; i <= num; i++)
            {
                sum += i;
            }
            Console.WriteLine($"TOTAL SUM FROM 1 TO {num} IS :
{sum}");
             Console.ReadLine();

        }
    }
}
```



Q5. Modify the previous program such that only multiples of three or five are considered in the sum, e.g. 3, 5, 6, 9, 10, 12, 15 for n=17.

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.IO;
using System.Threading.Tasks;

namespace Question5
{
    internal class Program
    {
        static void Main(string[] args)
        {
            int num, sum = 0;
            Console.Write("GIVE A NUMBER: ");
            num = Convert.ToInt32(Console.ReadLine());

             for (int i = 1; i <= num; i++)
                {
                if (i % 3 == 0 || i % 5 == 0)
                {
```

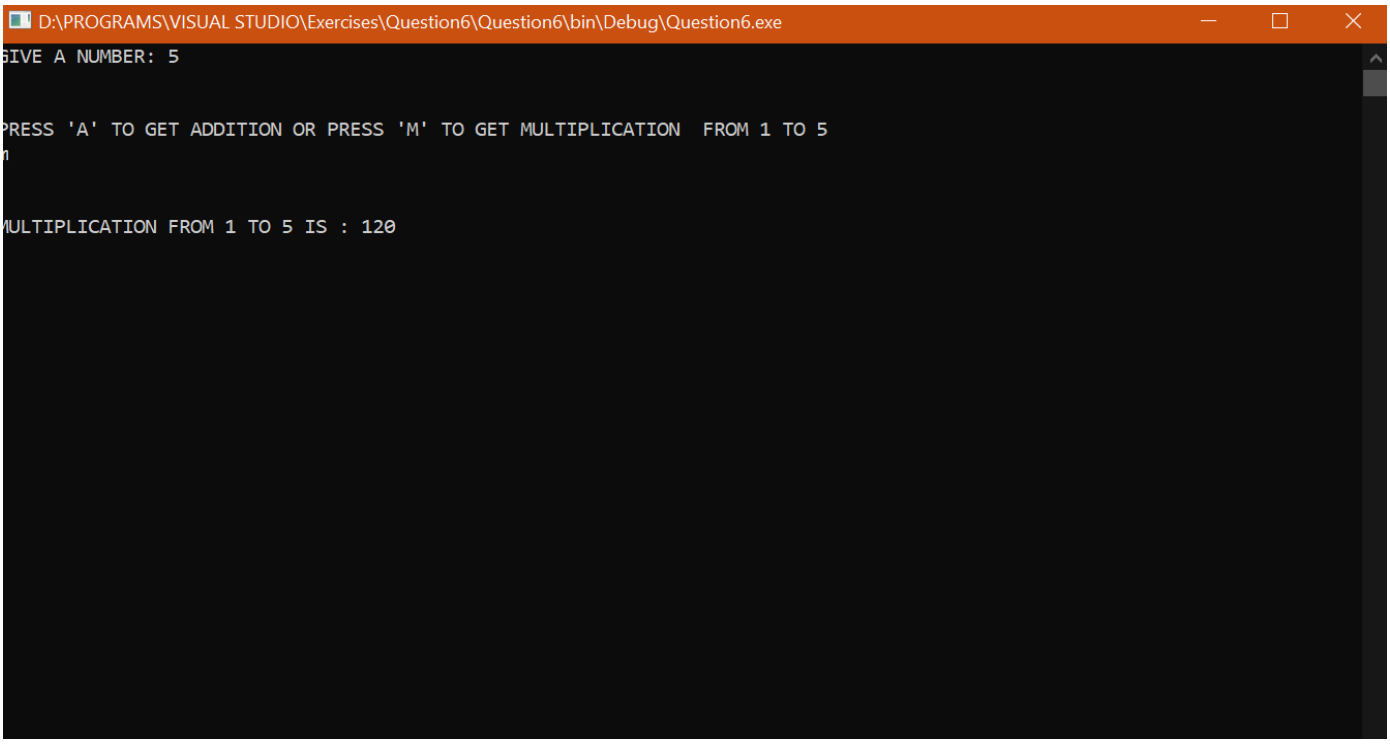
```
                sum += i;
            }
        }
        Console.WriteLine($"TOTAL SUM FROM 1 TO {num} IS :
{sum}");
        Console.ReadLine();

    }
}
}
```



Q6. Write a program that asks the user for a number n and gives them the possibility to choose between computing the sum and computing the product of 1,…,n.

```
using System;
```

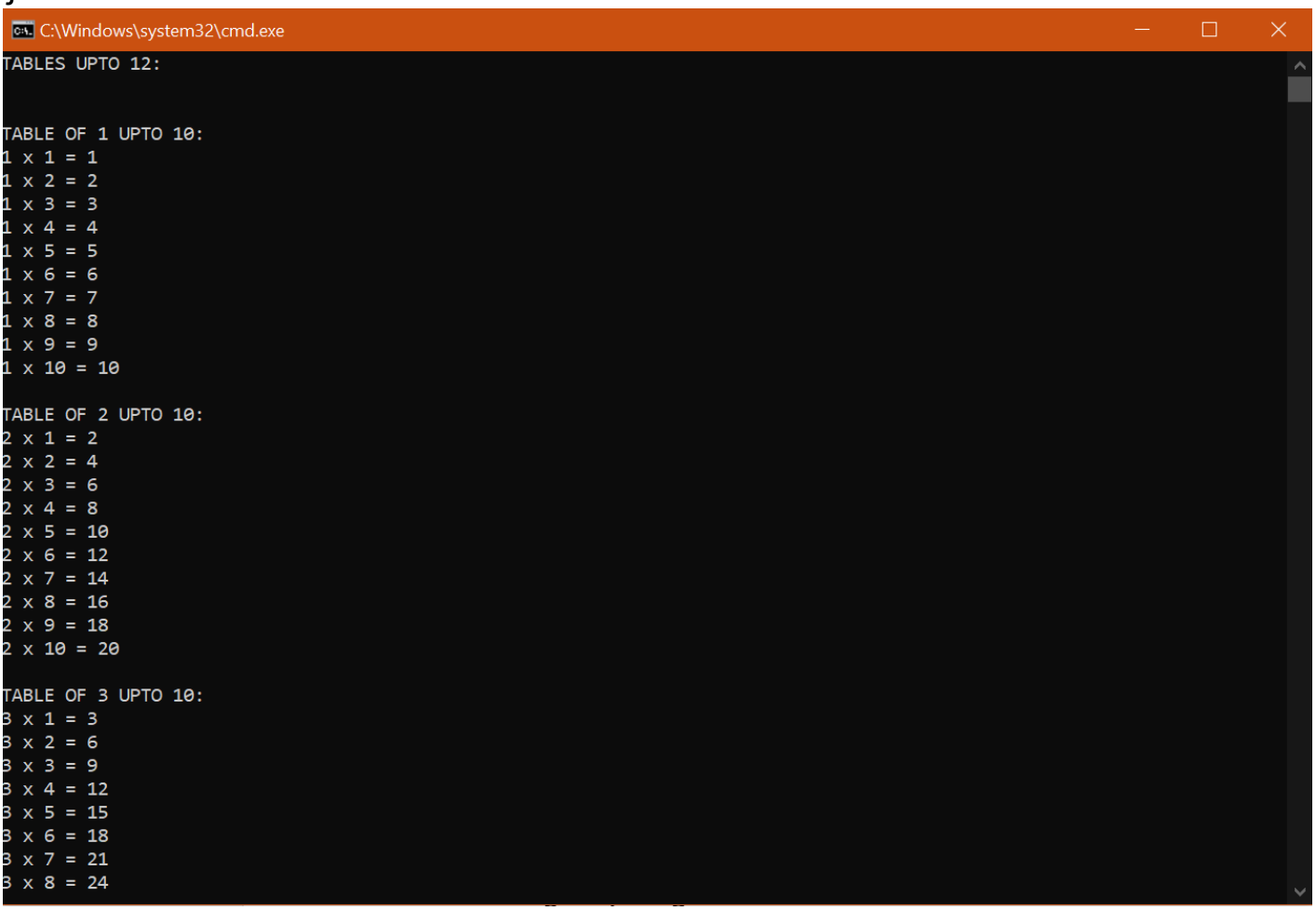
```
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace Question6
{
    internal class Program
    {
        static void Main(string[] args)
        {
            int num, sum = 0,mul =1;
            char sel;
            Console.Write("GIVE A NUMBER: ");
            num=Convert.ToInt32(Console.ReadLine());
            Console.WriteLine($"\n\nPRESS 'A' TO GET ADDITION OR
PRESS 'M' TO GET MULTIPLICATION  FROM 1 TO {num}");
            sel = (char) Console.Read();
            Console.ReadLine();
            if ( sel == 'A' || sel == 'a')
            {
                for (int i = 1; i <= num; i++)
                {
                    sum += i;
                }
                Console.WriteLine($"TOTAL SUM FROM 1 TO {num} IS :
{sum}");



            }
            else if (sel == 'M' || sel == 'm')
            {
                for (int i = 1; i <= num; i++)
                {
                    mul *= i;
                }
                Console.WriteLine($"\n\nMULTIPLICATION FROM 1 TO
{num} IS : {mul}");

            }

            Console.ReadLine();
        }
    }
}
```



Q7. Write a program that prints a multiplication table for numbers up to 12.

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

namespace Question7
{
    internal class Program
    {
        static void Main(string[] args)
        {

            Console.Write("TABLES UPTO 12: \n\n");
            for(int i = 1; i <= 12; i++) {
```

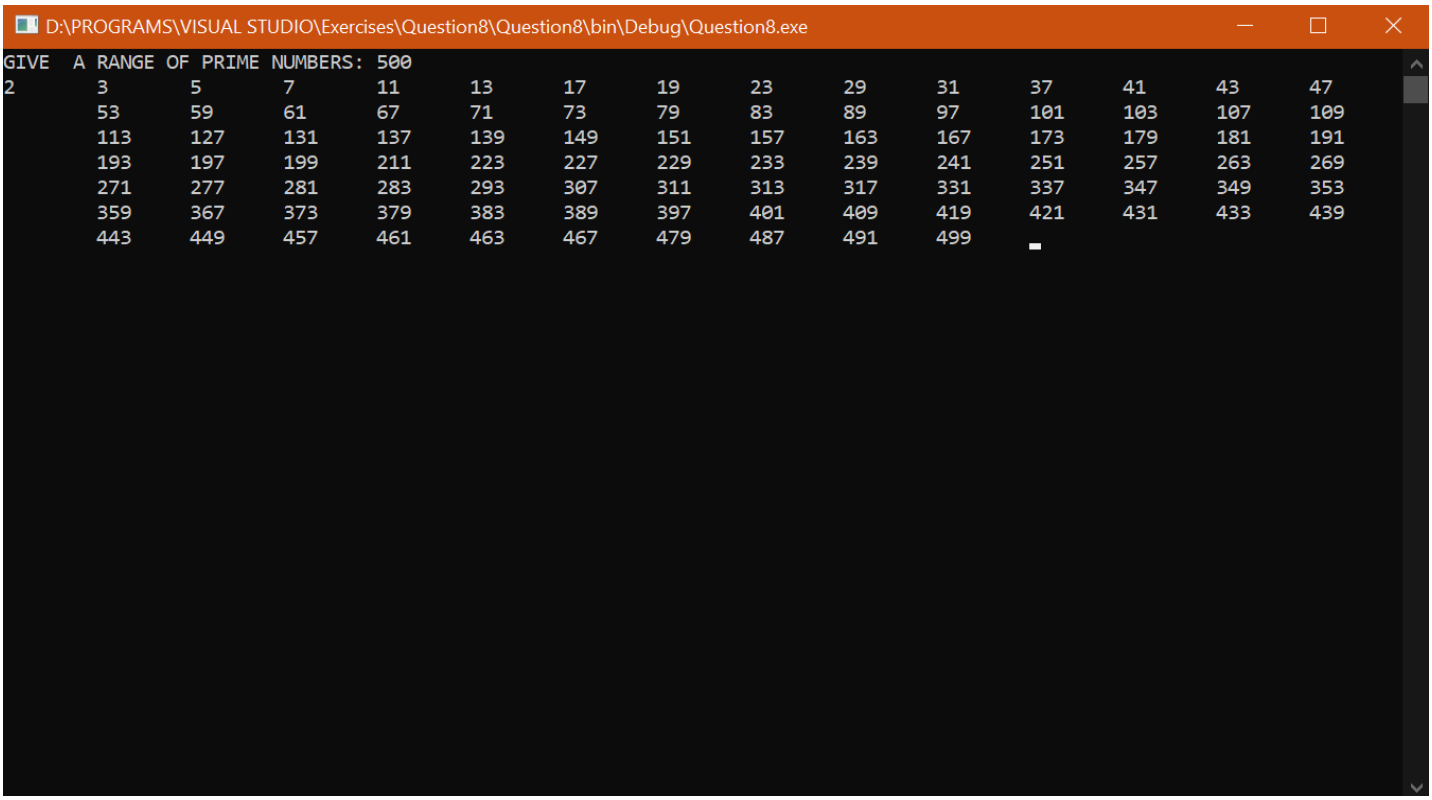
```
                Console.Write($"\nTABLE OF {i} UPTO 10: \n");
                for (int j = 1; j <= 10; j++) {
                Console.WriteLine($"{i} x {j} = {i*j}");
                }
            }
            Console.ReadLine();
        }
    }
}
```



Q8. Write a program that prints all prime numbers. (Note: if your programming language does not support arbitrary size numbers, printing all primes up to the largest number you can easily represent is fine too.)

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

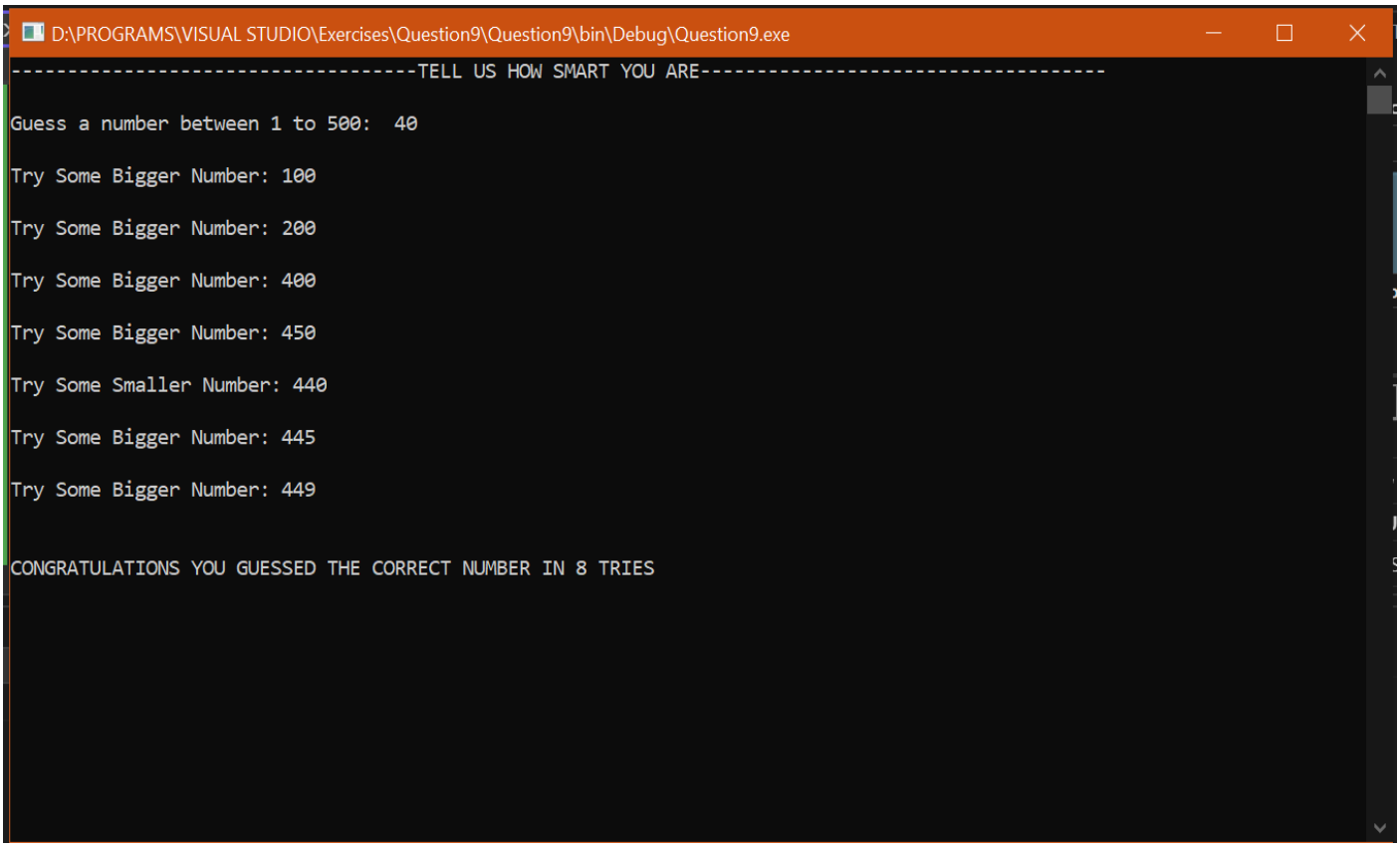
```
using System.Text;
using System.Threading.Tasks;

namespace Question8
{
    internal class Program
    {
        static void Main(string[] args)
        {
            long num;
            Console.Write("GIVE  A RANGE OF PRIME NUMBERS: ");
            num=Convert.ToInt64(Console.ReadLine());
            for(int i =2;i<num ;i++) {
                for (int j=2;j<i;j++)
                {
                    if (i % j == 0)
                    {
                        i++;
                        j = 2;
                    }

                }
                Console.Write($"{i}\t");
            }
            Console.ReadLine();
        }
    }
}
```



Q9. Write a guessing game where the user has to guess a secret number. After every guess the program tells the user whether their number was too large or too small. At the end the number of tries needed should be printed. It counts only as one try if they input the same number multiple times consecutively.

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

namespace Question9
{
    internal class Program
    {
        static void Main(string[] args)
        {
            int num,guess=0;
            Random rnd = new Random();
            num=rnd.Next(1,500);
```

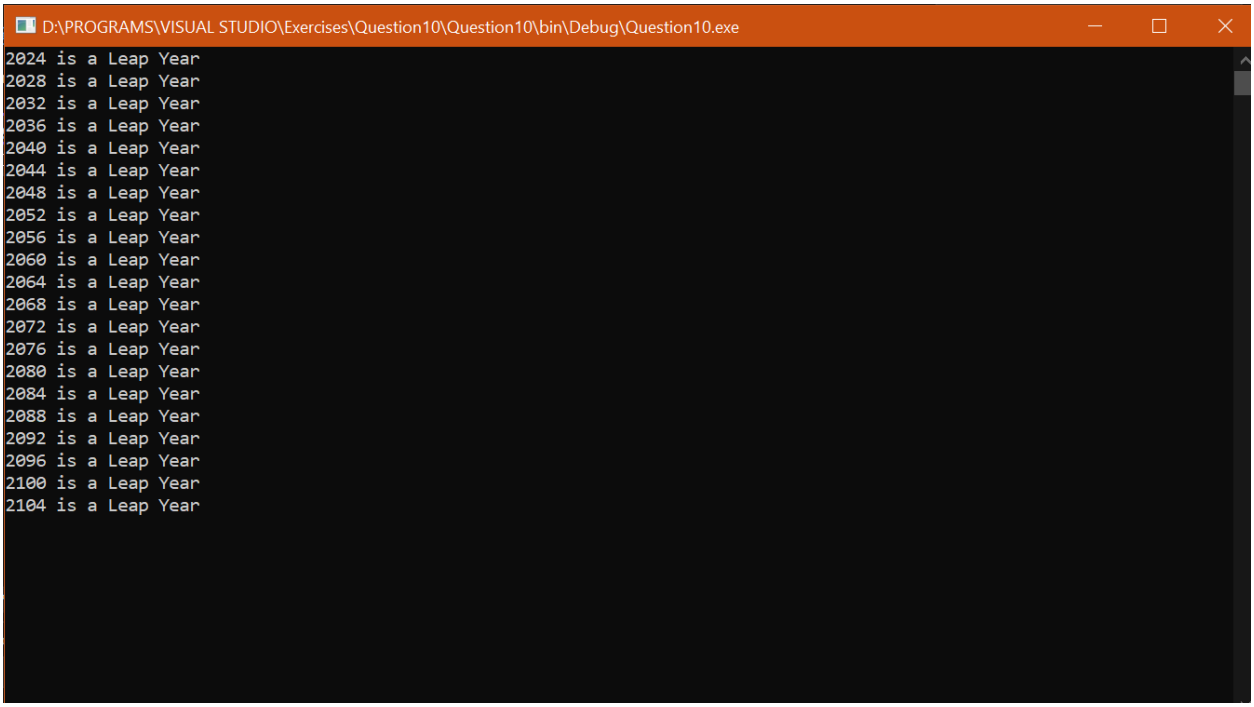
```
            Console.WriteLine("-----------------------------------
-TELL US HOW SMART YOU ARE-----------------------------------");
            Console.Write("\nGuess a number between 1 to 500:  ");
            int count = 0,prev;

            do
            {
                prev = guess;
                guess = Convert.ToInt32(Console.ReadLine());

                if (guess < num)
                {
                    Console.Write($"\nTry Some Bigger Number: ");
                }
                else if (guess > num)
                {
                    Console.Write("\nTry Some Smaller Number: ");
                }
                if (prev != guess) {
                    count++;
                }

            } while (guess != num);
            Console.WriteLine($"\n\nCONGRATULATIONS YOU GUESSED
THE CORRECT NUMBER IN {count} TRIES");
            Console.ReadLine();
        }
    }
}
```



Q10. Write a program that prints the next 20 leap years.

```
using System;

namespace Question10
{
    internal class Program
    {
        static void Main(string[] args)
        {
            int presentYear=2023,count=0;
            while (count<=20) {
                if (presentYear%4==0) {
                    Console.WriteLine($"{presentYear } is a Leap
Year");
                    count++;
                }
```

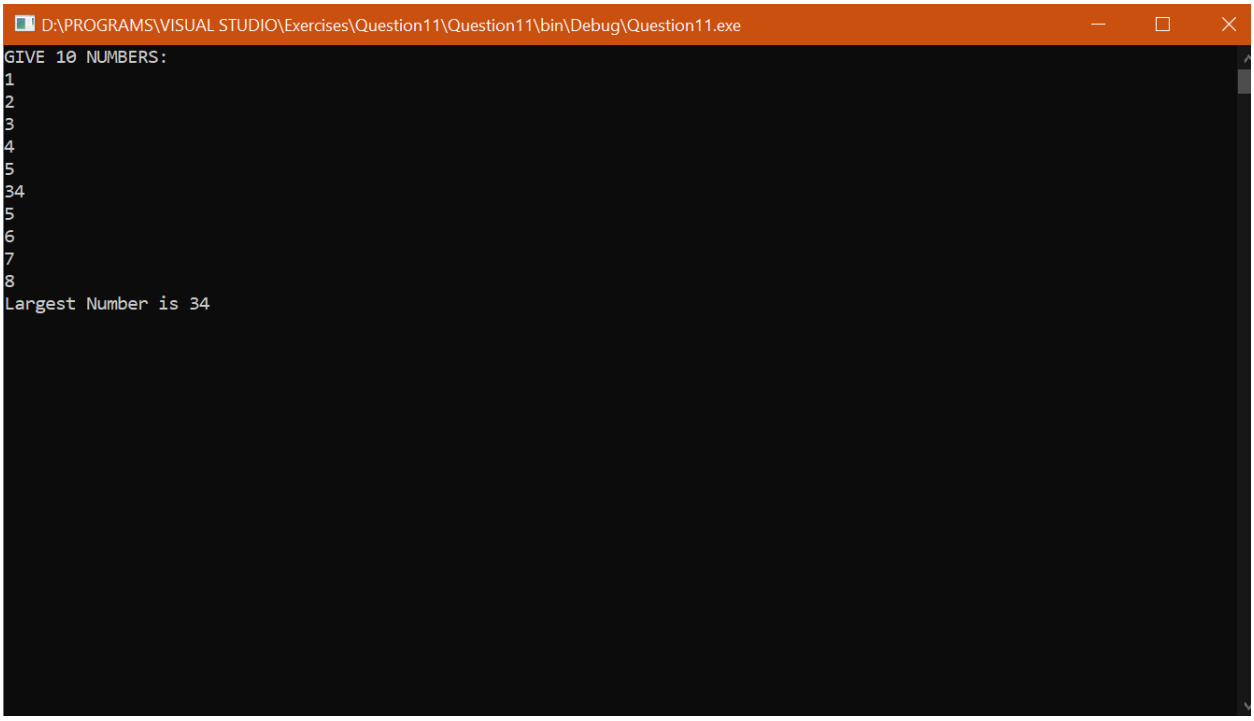
```
                presentYear++;
            }
            Console.ReadLine();
        }
    }
}
```



Q11. Write a function that returns the largest element in a list.

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

namespace Question11
{
    internal class Program
    {
        public static int maximumEle(int[] arr)
        {
            return arr.Max();
        }
```

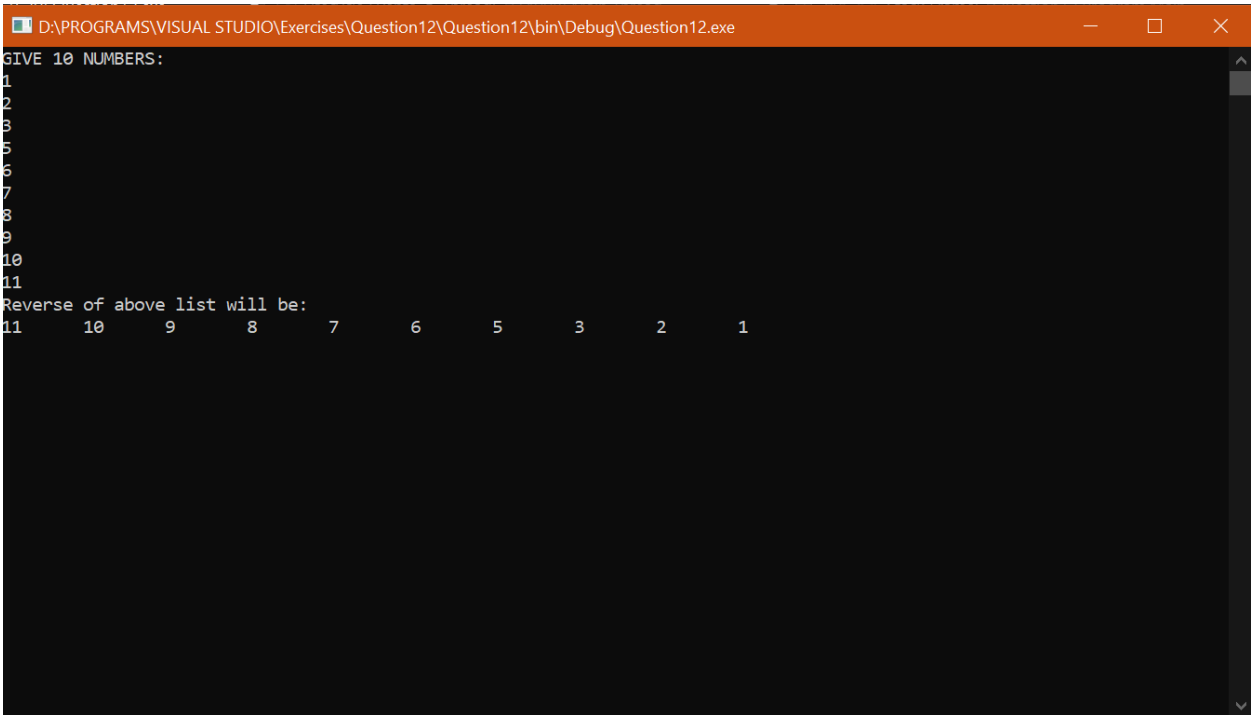
```
        static void Main(string[] args)
        {
           int[] arr = new int[10];
            Console.WriteLine("GIVE 10 NUMBERS:");
            for(int i =0; i < arr.Length; i++) {
                arr[i]=Convert.ToInt32(Console.ReadLine());
            }
            Console.WriteLine("Largest Number is
"+maximumEle(arr));
            Console.ReadLine();

        }
    }
}
```



Q12. Write function that reverses a list, preferably in place.

```
using System;
using System.Collections.Generic;
```

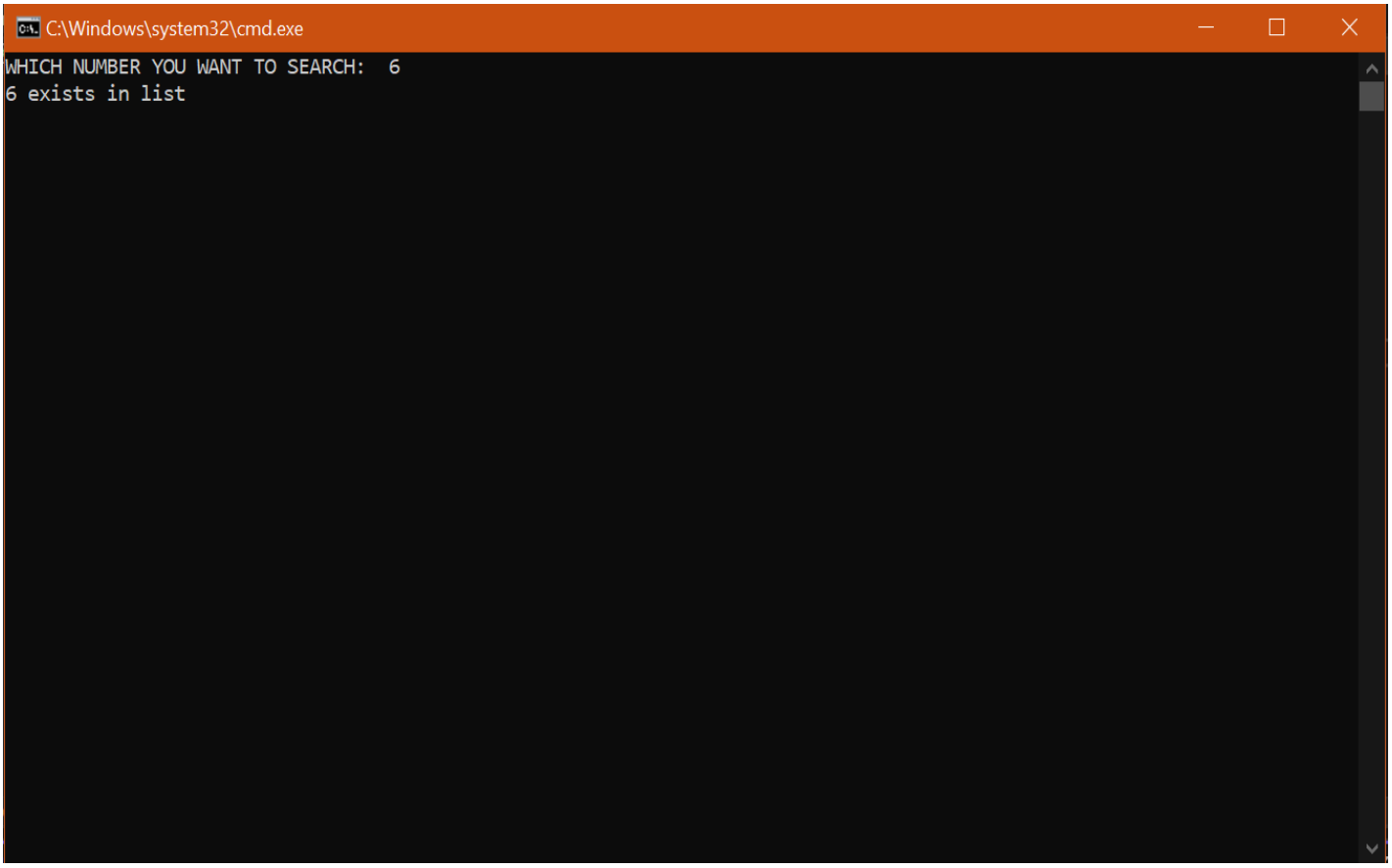
```
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace Question12
{
    internal class Program
    {
        public static int[] reverse(int[] arr, int[] lst)
        {
            int j = arr.Length - 1;
            for (int i = 0; i < arr.Length; i++)
            {
                lst[i] = arr[j];
                j--;

            }
            return lst;

        }

        static void Main(string[] args)
        {

            int[] lst = new int[10];
            int[] arr = new int[10];
            Console.WriteLine("GIVE 10 NUMBERS:");
            for (int i = 0; i < arr.Length; i++)
            {
                arr[i] = Convert.ToInt32(Console.ReadLine());
            }

            Console.WriteLine("Reverse of above list will be: ");
            lst = reverse(arr, lst);
            foreach(int i in lst)
            {
                Console.WriteLine(i);
            }
            Console.ReadLine();


        }
    }
}
```



Q13. Write a function that checks whether an element occurs in a list.

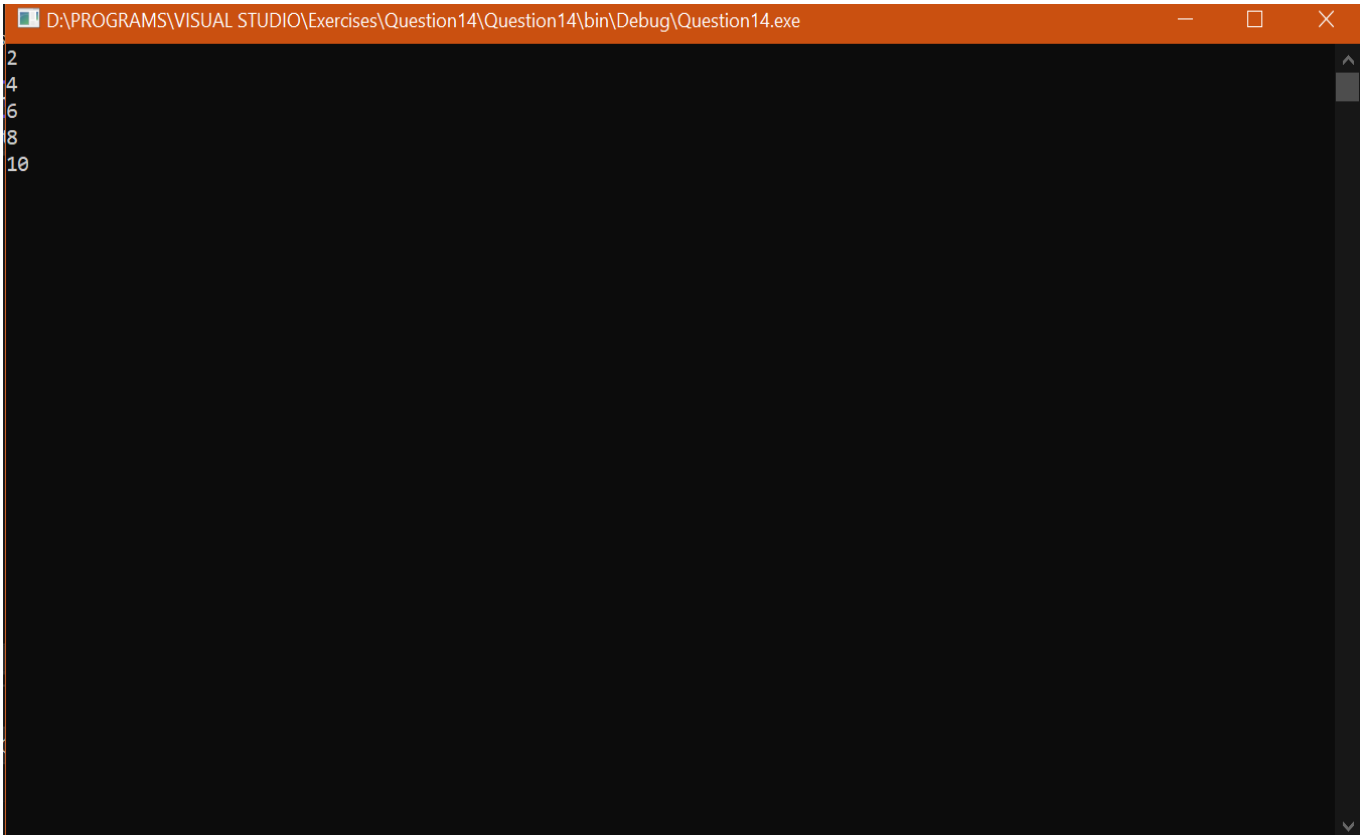
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace Question13
{
    internal class Program
    {
        public static bool checkEle(int[] list, int element)
        {
            return list.Contains(element);
        }

        static void Main(string[] args)
        {
            int[] arr = {1,2,3,4,5,6 };
```

```
            int num;
            Console.Write("WHICH NUMBER YOU WANT TO SEARCH:  ");
            num=Convert.ToInt32(Console.ReadLine());

            if(checkEle(arr,num)) {
                Console.WriteLine($"{num} exists in list");
            }
            else
            {
                Console.WriteLine("IT DOESN'T EXIST");
            }

            Console.ReadLine();


        }
    }
}
```



Q14. Write a function that returns the elements on odd positions in a list

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

namespace Question14
{
    internal class Program
    {
        public static int[] GetOddPositions(int[] lst)
        {
            return lst.Where((ind, val) => val % 2 ==
1).ToArray();
        }
        static void Main(string[] args)
        {
            int[] arr = {1,2,3,4,5,6,7,8,9,10};
            int[] oddArr = GetOddPositions(arr);
            for(int i = 0; i < oddArr.Length; i++)
            {
                Console.WriteLine(oddArr[i]);
            }
               Console.ReadLine();
        }
    }
}
```



Q15. Write a function that computes the running total of a list.

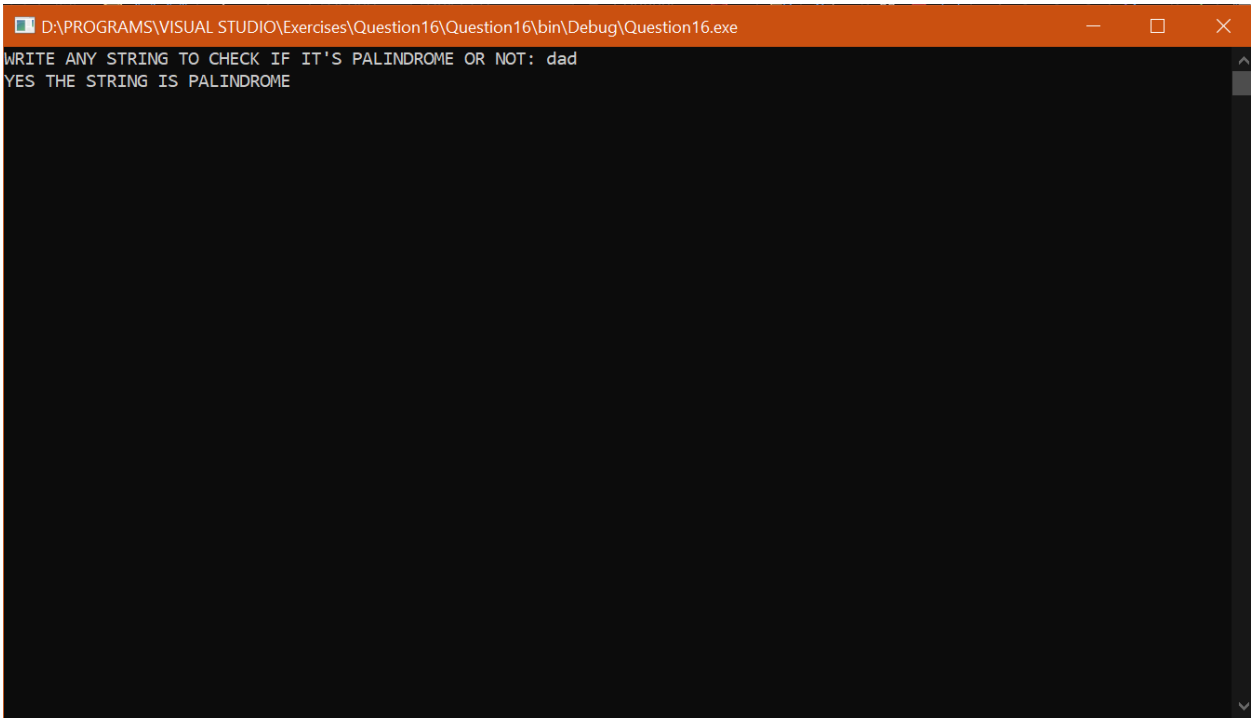
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace Question15
{
    internal class Program
    {

        public static int runningTotal(int[] numbers)
        {

            int sum=0;
            for (int n = 0; n < numbers.Length; n++)
            {
                sum += numbers[n];
            }
            return sum;
```

```
        }
        static void Main(string[] args)
        {
            int[] numbers = new int[10];
            int res ;

            Console.WriteLine("GIVE 10 NUMBERS:");
            for (int i = 0; i < numbers.Length; i++)
            {
                numbers[i] = Convert.ToInt32(Console.ReadLine());
            }
            res = runningTotal(numbers);


            Console.Write($"\nTHE RUNNING TOTAL IS: {res}");

            Console.ReadLine();
        }
    }
}
```

Q16. Write a function that tests whether a string is a palindrome.

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

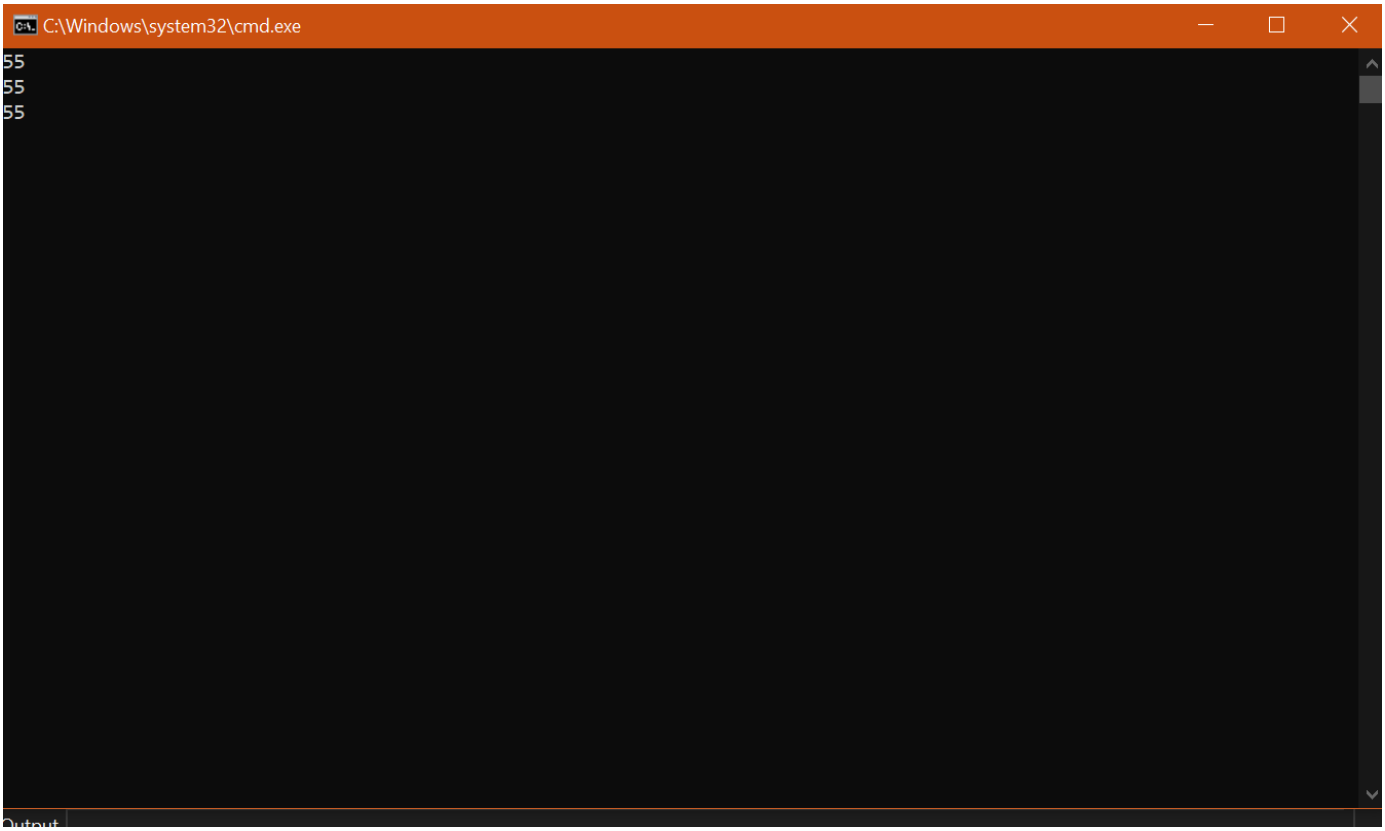
```
namespace Question16
{
    internal class Program
    {
        public static string checkPalindrome(char[] str)
        {
            string rev = new string(str.Reverse().ToArray());
            string toStr = new string(str);
            if (rev == toStr)
            {
                return "YES THE STRING IS PALINDROME";
            }
            else
            {
                return "NO THE STRING IS NOT PALINDROME";
            }
        }
        static void Main(string[] args)
        {
            char[] str;
            Console.Write("WRITE ANY STRING TO CHECK IF IT'S
PALINDROME OR NOT: ");
            str = Console.ReadLine().ToCharArray();
            Console.WriteLine(checkPalindrome(str));
            Console.ReadLine();


        }
    }
}
```



Q17. Write three functions that compute the sum of the numbers in a list: using a for-loop, a while-loop and recursion. (Subject to availability of these constructs in your language of choice.)

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

namespace Question17
{

    internal class Program
    {

        public static int sumFor(int[] arrNum)
        {
            int sum = 0;
            for (int i = 0; i < arrNum.Length; i++)
            {
                sum += arrNum[i];
            }
            return sum;
        }
```

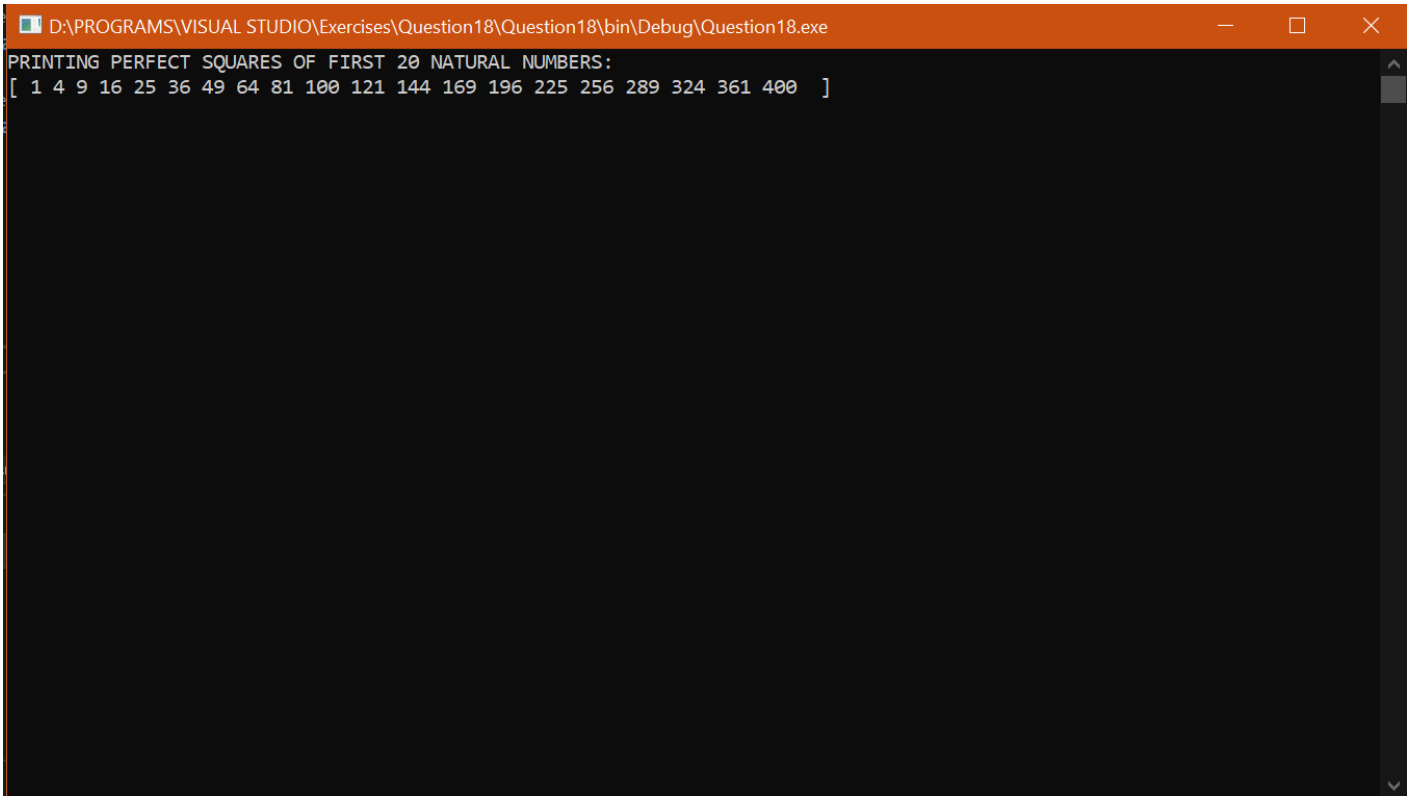
```
        public static int sumWhile(int[] arrNum)
        {
            int sum = 0;
            int i = 0;
            while (i < arrNum.Length)
            {
                sum += arrNum[i];
                i++;
            }
            return sum;
        }


        public static int sumRec(int[] arrNum, int ind)
        {
            if (ind == arrNum.Length)
            {
                return 0;
            }
            else
            {
                return arrNum[ind] + sumRec(arrNum, ind + 1);
            }
        }

        public static void Main()
        {

            int[] arrNum =  { 1, 2, 3, 4, 5,6,7,8,9,10 };


            Console.WriteLine(sumFor(arrNum));
            Console.WriteLine(sumWhile(arrNum));
            Console.WriteLine(sumRec(arrNum, 0));
            Console.ReadLine();
        }
    }
}
```



Q18. Write a function on_all that applies a function to every element of a list. Use it to print the first twenty perfect squares. The perfect squares can be found by multiplying each natural number with itself. The first few perfect squares are 1*1= 1, 2*2=4, 3*3=9, 4*4=16. Twelve for example is not a perfect square because there is no natural number m so that m*m=12. (This question is tricky if your programming language makes it difficult to pass functions as arguments.)

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

namespace Question18
{

    internal class Program
    {
```

```
        delegate int fun(int x);
        // Function that applies a function to every element of a
list
        static List<int> On_All(List<int> list, fun func)
        {
            List<int> result = new List<int>();
            foreach (int item in list)
            {
                result.Add(func(item));
            }
            return result;
        }

        // Function that prints the first twenty perfect squares
        static int PerfectSquares(int n) => n * n;

        static void Main()
        {
            // Call the function and print the first twenty
perfect squares
            List<int> numbers= new List<int>(20);
            for (int i=1;i <= 20;i++) {
                numbers.Add(i);
            }
            List<int> res = On_All(numbers,PerfectSquares);
            Console.WriteLine("PRINTING PERFECT SQUARES OF FIRST
20 NATURAL NUMBERS: ");
            Console.Write("[ ");
            foreach (int i in res)
            {
                Console.Write(i+" ");
            }
            Console.WriteLine(" ]");
            Console.ReadLine();
        }
    }
}
```



Q19. Write a function that computes the list of the first 100 Fibonacci numbers. The first two Fibonacci numbers are 1 and 1. The n+1-st Fibonacci number can be computed by adding the n-th and the n-1-th Fibonacci number. The first few are therefore 1, 1, 1+1=2, 1+2=3, 2+3=5, 3+5=8.

LOGIC FILTERATION:

i=0

(i==1 or i==0)=> add 1 into array

arr[i-1]+arr[i-2] add into array

i.e; i=2

arr[2-1]=>arr[1]=1

arr[2-2]=>arr[0]=1

1+1=2>=when I =2 fiboancci will produce 2 but,

i=3

arr[3-1]=>arr[2]=2 ,arr[3-2]=arr[1]=1

2+1=3> when i =3 fibonacci will produce 3 but when it becomes 4

arr[4-1] => arr[3] = 3 ,

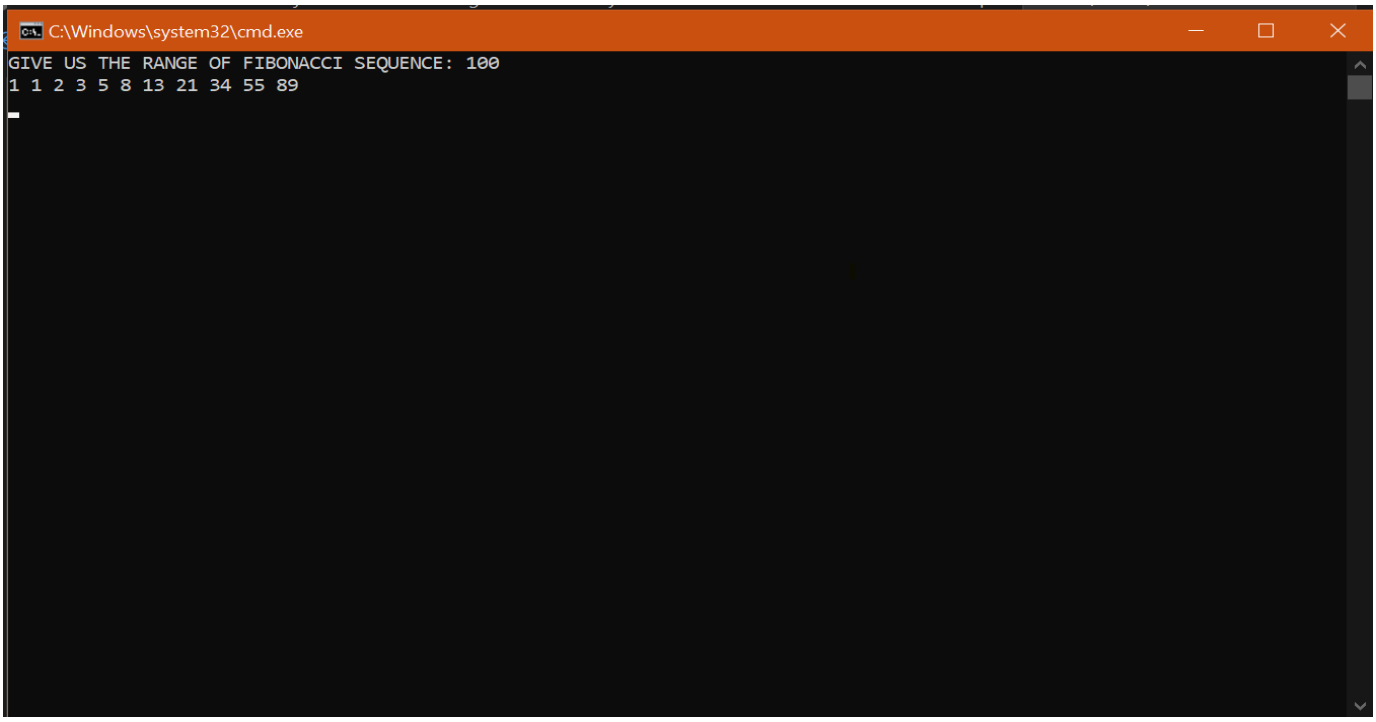
arr[4-2]=>arr[2]=2

3+2=5>= similary it will be producing sequence by adding up two previous numbers.

CODE:

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Security.Cryptography;
using System.Text;
using System.Threading.Tasks;
using static System.Net.Mime.MediaTypeNames;

namespace Question19
{
    internal class Program
    {
        static void FibonacciSeq(int n) {
            int i = 0;
            List<int> arrRes = new List<int>();
            while(true)
            {

                if (i == 0 || i == 1)
                {
                    arrRes.Add(1);
                }
                else
                {
                    arrRes.Add(arrRes[i - 1] + arrRes[i - 2]);
                    if (arrRes[i] > n)break;
                }
                Console.Write(arrRes[i] + " ");

                i++;
            }
            Console.WriteLine("");
        }
        static void Main(string[] args)
        {
```

```
            Console.Write("GIVE US THE RANGE OF FIBONACCI
SEQUENCE: ");
            int range=Convert.ToInt32(Console.ReadLine());
            FibonacciSeq(range);
            Console.ReadLine();
        }
    }
}
```



Q20. Write a function that takes a number and returns a list of its digits. So for 2342 it should return [2,3,4,2].

LOGIC FILTERATION:

Num=2342 >=convert into string str="2342"

arr[0]=str[0]=2

.

.

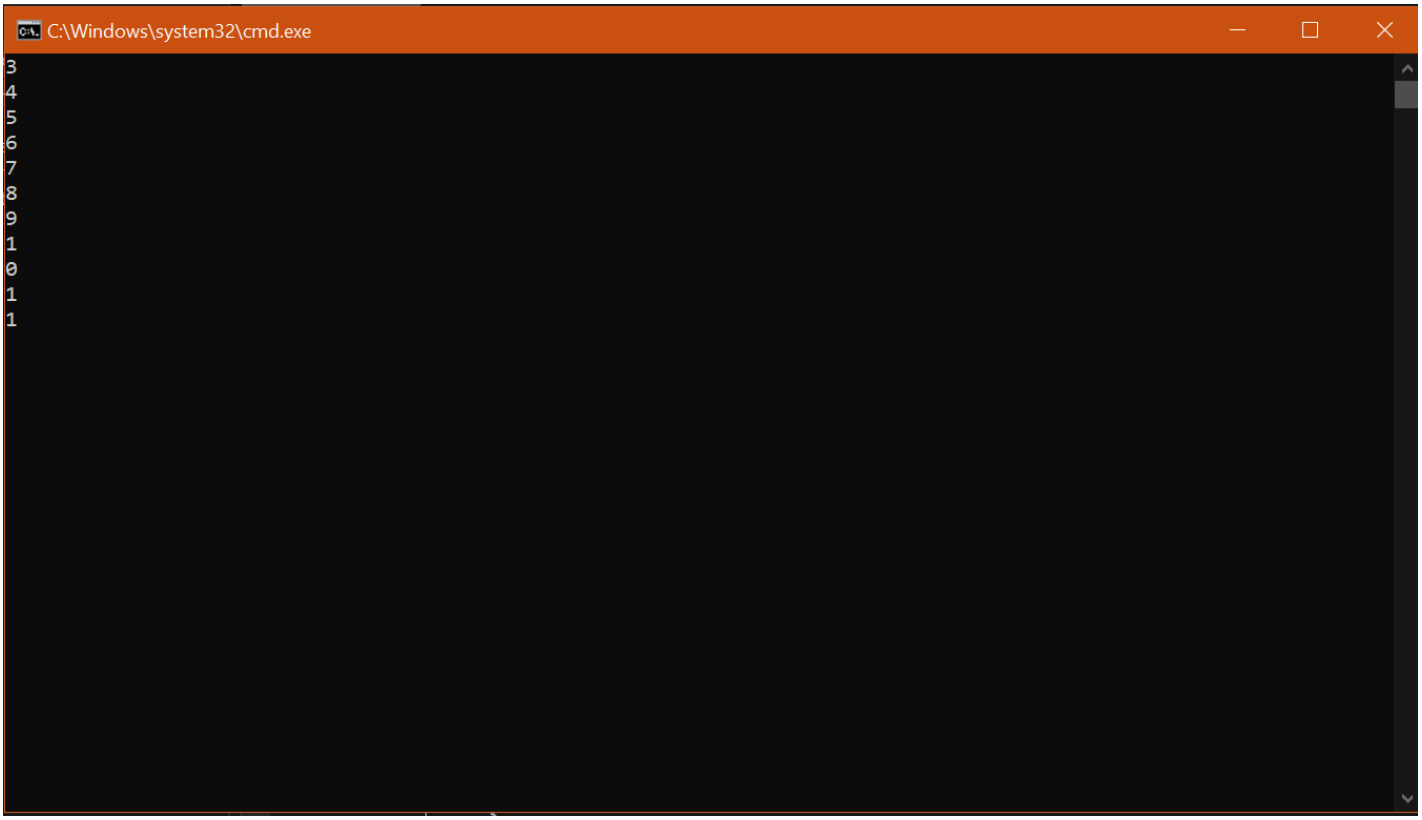
.

arr[n-1]=str[n-1]=2

arr=[2,3,4,2]

CODE:

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

namespace Question20
{
    internal class Program
    {

        static List<int> splitter(long num) {

            string str = num.ToString();

            List<int> digits = new List<int>();

            for(int s = 0; s < str.Length; s++)
            {
                digits.Add(Convert.ToInt32(str[s].ToString()));
            }
           return digits;

        }
        static void Main(string[] args)
        {
           List<int> digits= splitter(34567891011);
            foreach (int i in digits) {
               Console.WriteLine(i);
            }
            Console.ReadLine();
        }
    }
}
```



21. Write a function that takes a list of strings an prints them, one per line, in a rectangular frame. For example the list ["Hello", "World", "in", "a", "frame"] gets printed as:

****

* Hello *

* World *

* in   *

* a   *

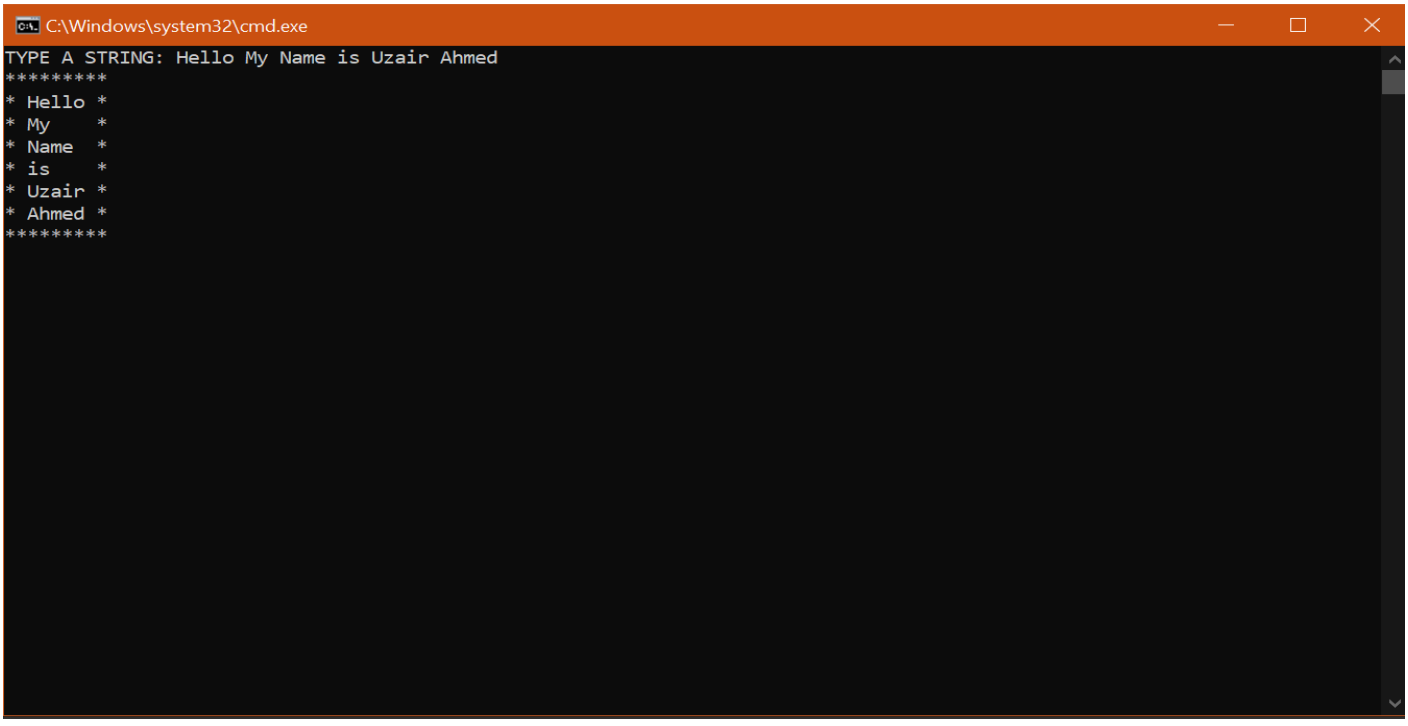
* frame *

****

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

```
namespace Question21
{
    internal class Program
    {
        public static void PrintPattern(List<string> lst,int
maxLen)
        {

            int k = 0;
            for(int i = 0; i < (lst.Count()+2); i++)
            {
                Console.Write("*");
                for (int j=0;j<maxLen+2;j++)
                {

                    if (i != 0 && i != lst.Count() + 1)
                    {

                        if (k < lst.Count())
                        {
                            int r = maxLen - lst[k].Length;

                            Console.Write($" {lst[k]} ");
                            for (int l = 0; l < r; l++)
                            {
                                Console.Write(" ");
                            }
                            k++;
                        }
                        break;
                    }
                    else {
                        Console.Write("*");
                    }

                }

                Console.WriteLine("*");
            }

        }
        static void Main(string[] args)
        {

            string str ;
```

```
            Console.Write("TYPE A STRING: ");
            str=Console.ReadLine();
            List<string> strArr = str.Split(' ').ToList();
            // find the length of the longest string
            int maxLen = 0;
            foreach (string s in strArr)
            {
                if (s.Length > maxLen)
                {
                    maxLen = s.Length;
                }
            }
            PrintPattern(strArr,maxLen);
            Console.Read();
        }
    }
}
```

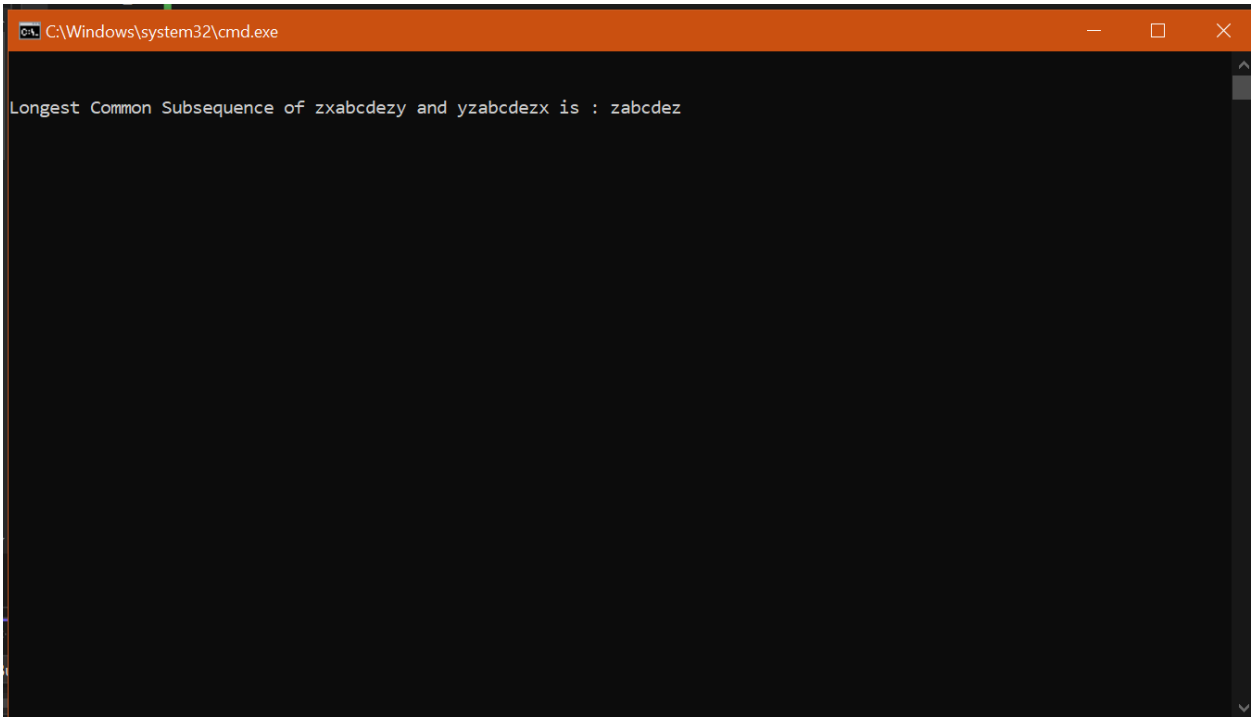


Q22. Given two strings, write a program that efficiently finds the longest common subsequence.

:

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

namespace Question20
{

internal class Program
{
    static void Main(string[] args)
    {
        string str1 = "zxabcdezy";
        string str2 = "yzabcdezx";
        int[,] LCS = LcsTable(str1, str2);
        string lcs = FindLCS(str1, str2, LCS);
        Console.WriteLine($"\n\nLongest Common Subsequence of
{str1} and {str2} is : {lcs}");
        Console.Read();
    }

    static int[,] LcsTable(string str1, string str2)
    {
        int[,] LCS = new int[str1.Length + 1, str2.Length + 1];

        for (int i = 0; i <= str1.Length; i++)
        {
            for (int j = 0; j <= str2.Length; j++)
            {
                if (i == 0 || j == 0)
                {
                    LCS[i, j] = 0;
                }
                else if (str1[i - 1] == str2[j - 1])
                {
                    LCS[i, j] = LCS[i - 1, j - 1] + 1;
                }
                else
                {
                    LCS[i, j] = Math.Max(LCS[i - 1, j], LCS[i, j -
1]);
                }
            }
        }
```

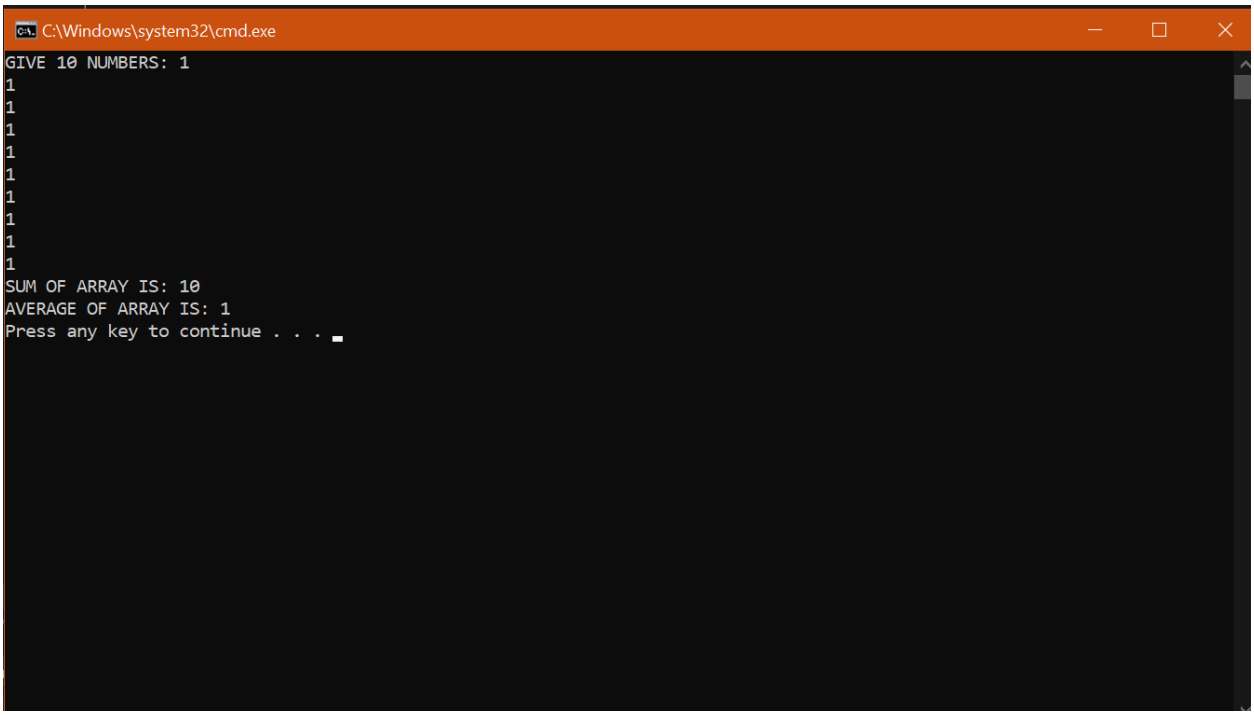
```
        return LCS;
    }


    static string FindLCS(string str1, string str2, int[,] LCS)
    {
        string finalLcs = "";
        int row = str1.Length;
        int col = str2.Length;

        while (row > 0 && col > 0)
        {
            if (str1[row - 1] == str2[col - 1])
            {
                finalLcs = str1[row - 1] + finalLcs;
                row--;
                col--;
            }
            else if (LCS[row - 1, col] > LCS[row, col - 1])
            {
                row--;
            }
            else
            {
                col--;
            }
        }

        return finalLcs;
    }
}
}
```



Q23. Write a program in C to read 10 numbers from the keyboard and find their sum and average.

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

namespace Question23
{
    internal class Program
    {
        static void Main(string[] args)
        {
            List<int> nums = new List<int>(10);
            Console.Write("GIVE 10 NUMBERS: ");
            for(int i=0;i<10;i++) {
                nums.Add(Convert.ToInt32(Console.ReadLine()));
            }
            int sumOfArr=nums.Sum();
            double avgOfArr=nums.Average();
            Console.WriteLine($"SUM OF ARRAY IS: {sumOfArr}");
            Console.WriteLine($"AVERAGE OF ARRAY IS: {avgOfArr}");
        }
```

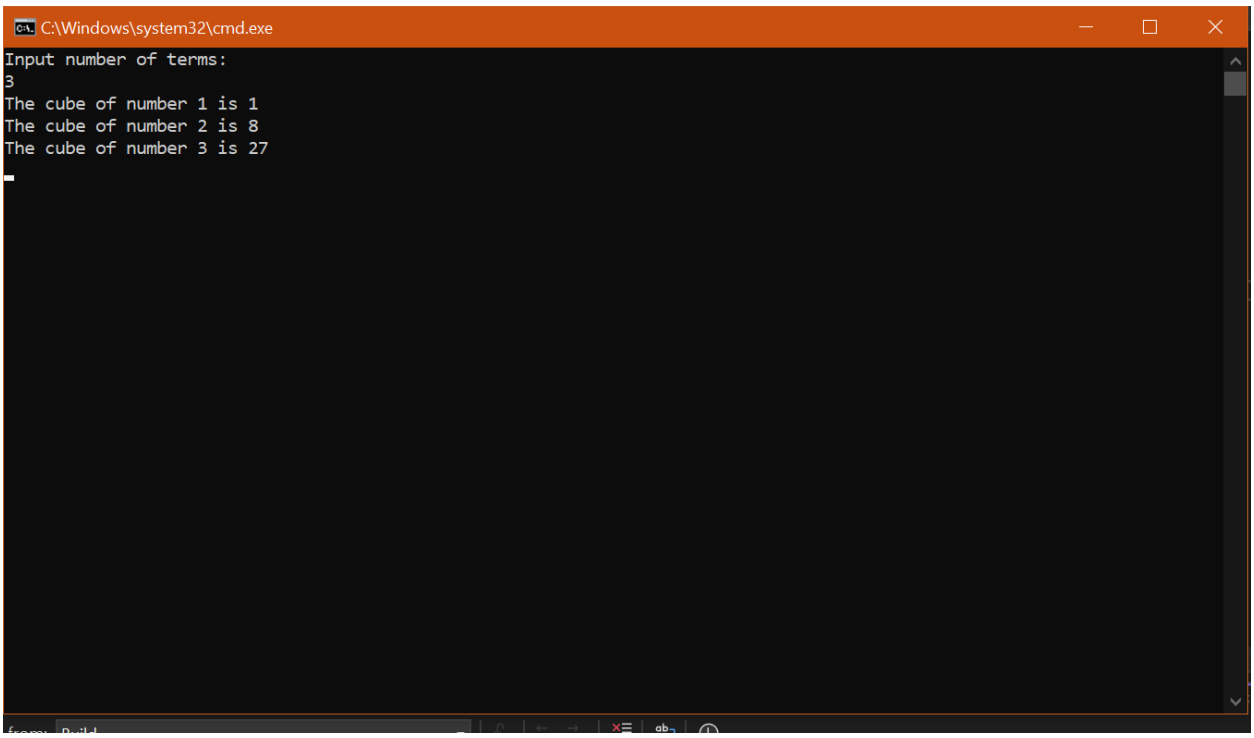
```
    }
}
```



Q24. Write a program in C to display the cube of the number up to an integer

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

namespace Question24
{
    internal class Program
    {
        static void Main(string[] args)
        {
```

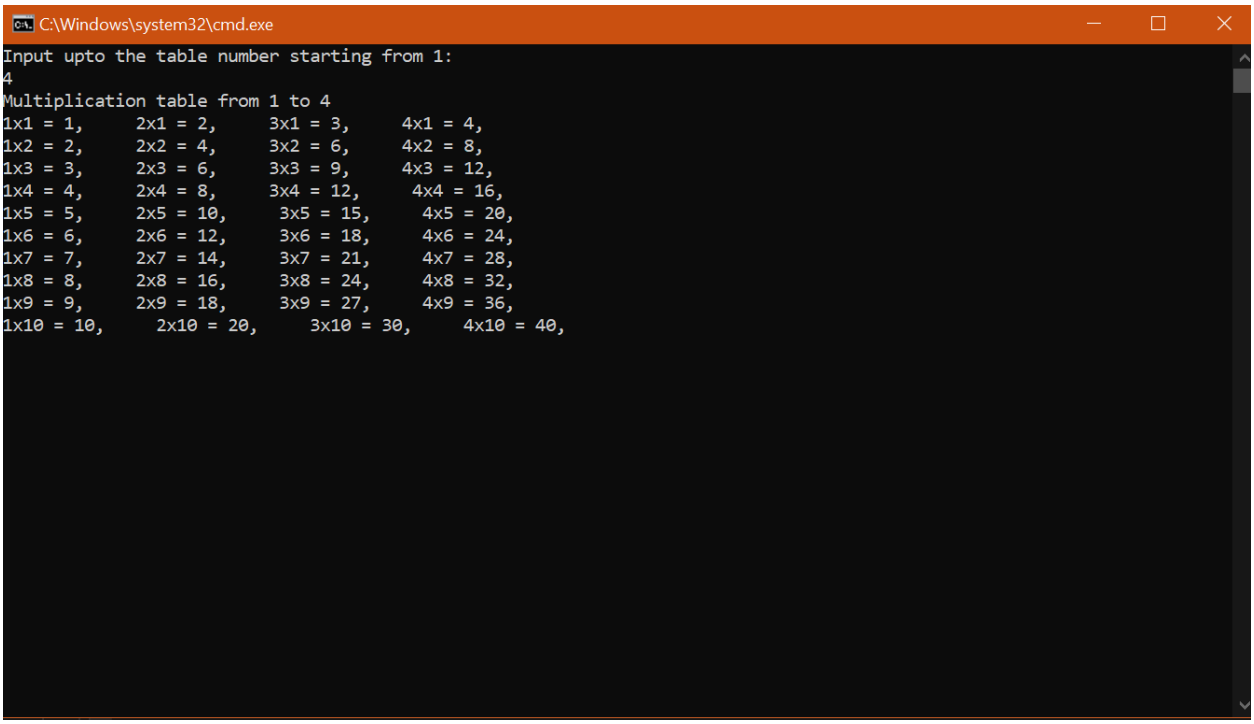
```
            Console.WriteLine("Input number of terms: ");
            int n = Convert.ToInt32(Console.ReadLine());
            int cube;
            for (int i = 1; i <= n; i++)
            {
                cube = i * i * i;
                Console.WriteLine($"The cube of number {i} is
{cube}");
            }
            Console.ReadLine();
        }
    }
}
```



25. Write a program in C to display the multiplier table vertically from 1 to n.

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

```
namespace Question25
{
    internal class Program
    {
        static void Main(string[] args)
        {

            Console.WriteLine("Input upto the table number
starting from 1: ");
            int n = Convert.ToInt32(Console.ReadLine());
            Console.WriteLine("Multiplication table from 1 to
{0}", n);
            for (int i = 1; i <= 10; i++)
            {
                for (int j = 1; j <= n; j++)
                {
                    Console.Write($"{j}x{i} = {i*j}");
                }
                Console.WriteLine();
            }
            Console.ReadLine();
        }
    }
}
```



Q26.Write a C program to check whether a given number is an Armstrong number or not.

LOGIC FILTERATION:

num=153 =>will separate all digits

a=153%10=3

b=(153/10)%10=5

c=153/100=1,

Now every digit will get power upto the total number of digits

e=a^3=3^3=27

f=b^3=5^3=125

g=c^3=1^3=1

After giving power to them they will be added to each other.

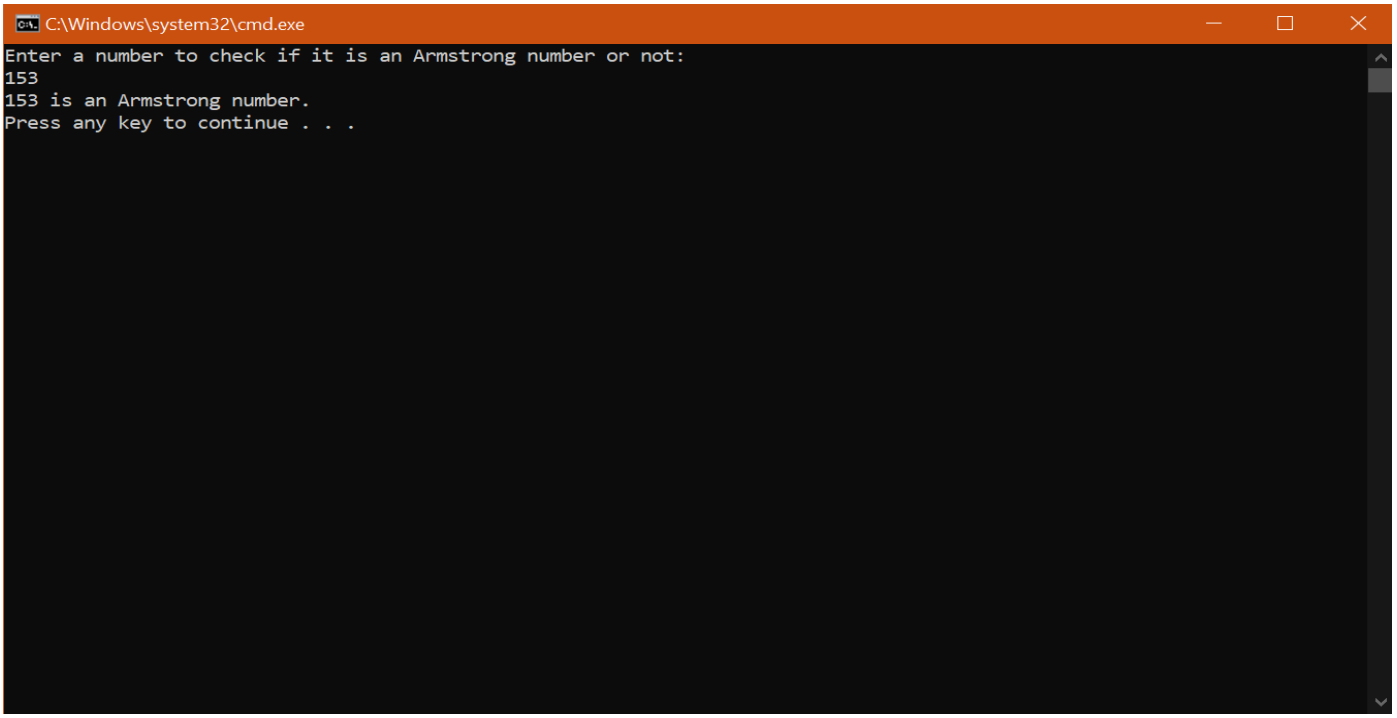
total=e+f+g=>27+125+1

total==num =>NUM IS AN ARMSTRONG NUMBER.

CODE:

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

namespace Question26
{

internal class Program
{
    static void Main(string[] args)
    {
```

```
        Console.WriteLine("Enter a number to check if it is an
Armstrong number or not: ");
        int n = int.Parse(Console.ReadLine());
        int temp = n;
        int sum = 0;
        int digits = countDigits(n);
        while (n > 0)
        {
            int rem = n % 10;
            sum += (int)Math.Pow(rem, digits);
            n /= 10;
        }
        if (sum == temp)
            Console.WriteLine("{0} is an Armstrong number.",
temp);
        else
            Console.WriteLine("{0} is not an Armstrong number.",
temp);
    }

    static int countDigits(int x)
    {
        int count = 0;
        while (x > 0)
        {
            count++;
            x /= 10;
        }
        return count;
    }
}
}
```



Q27. Write a C program to determine whether a given number is prime or not

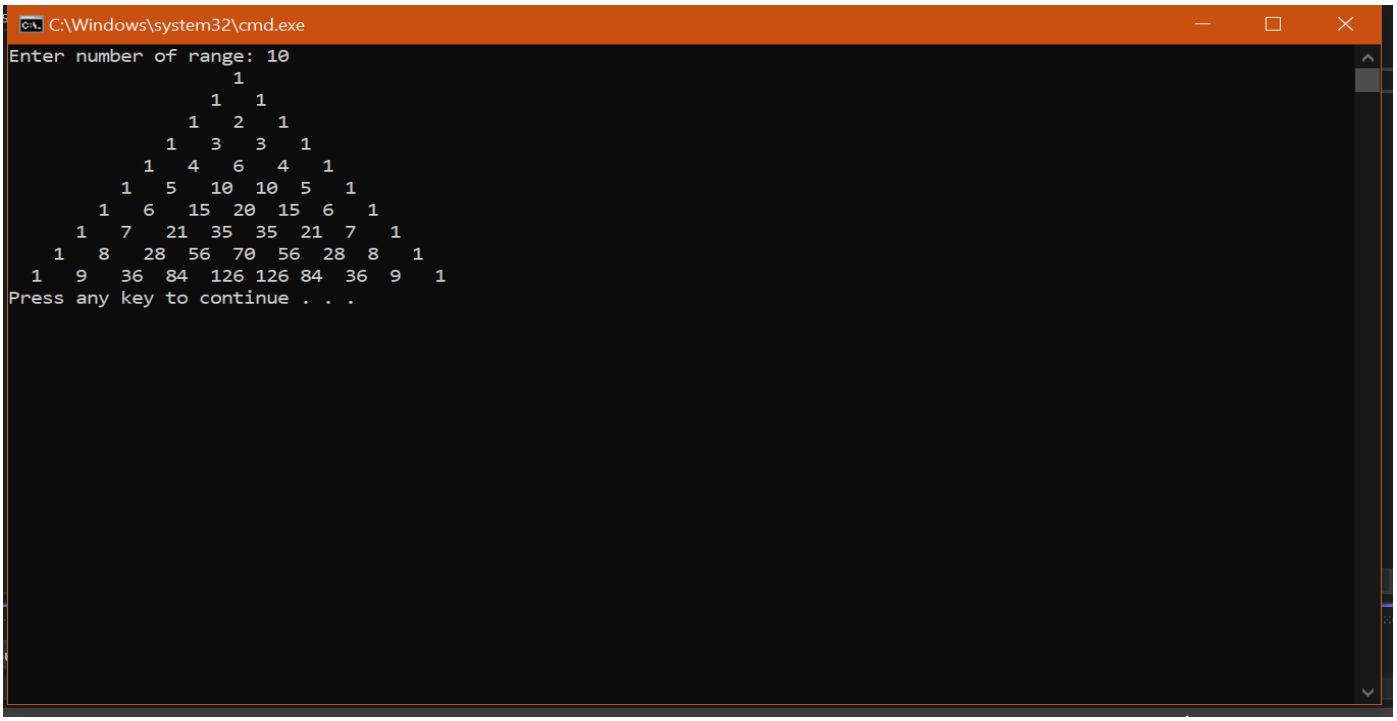
```
using System;
using System.Collections.Generic;
using System.Data;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace Question27
{
    internal class Program
    {
        static string checkPrime(int n)
        {
            if (n == 1 || n == 0)
            {
                return($"{n} is not a prime number.");

            }

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

```
                if (n % i == 0)
                {
                    return ($"{n} is not a prime number.");

                }
            }

                return ($"{n} is a prime number.");

        }

        static void Main(string[] args)
        {
            int num;
            Console.WriteLine("GIVE A NUMBER TO CHECK");
            num=Convert.ToInt32(Console.ReadLine());
            string res= checkPrime(num);
            Console.WriteLine(res);
            Console.Read();

        }
    }
}
```

Q28. Write a C program to display Pascal's triangle 1 1 1 1 2 1 1 3 3 1 1 4 6 4 1

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

namespace Question28
{
    internal class Program
    {
        static int pascalTriangle(int i, int j)
        {
            if (j == 0 || j == i)
            {
                return 1;
            }
            else
            {
                return pascalTriangle(i - 1, j - 1) +
pascalTriangle(i - 1, j);
            }
        }
        static void Main(string[] args)
        {
            int range;
            Console.Write("Enter number of range: ");
            range = Convert.ToInt32(Console.ReadLine());

            for (int i = 0; i < range; i++)
            {
                for (int j = 0; j < range - i; j++)
                {
                    Console.Write("  ");
                }

                for (int j = 0; j <= i; j++)
                {
                    Console.Write("{0,-4}", pascalTriangle(i, j));
                }

                Console.WriteLine();
            }
        }
```

```
    }
}
```



Q29. Write a C program to check whether a number is a Strong Number or not

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

namespace Question29
{
    internal class Program
    {
        static int factorial(int x)
        {
            int fact=1;
            for(int i = 1; i <= x; i++)
            {
                fact *= i;
```

```
            }
            return fact;
        }
        static List<int> splitter(long num)
        {

            string str = num.ToString();

            List<int> digits = new List<int>();

            for (int s = 0; s < str.Length; s++)
            {
                digits.Add(Convert.ToInt32(str[s].ToString()));
            }
            return digits;

        }

        static void checkStrong(int num)
        {
           List<int> digits= splitter(num);
            int sum = 0;
            foreach(int s in digits)
            {
                sum += factorial(s);
            }
            if (sum == num)
            {
                Console.WriteLine($"{num} IS A STRONG
NUMBER....");
            }
            else
            {
                Console.WriteLine($"{num} IS NOT A STRONG
NUMBER....");
            }
        }
        static void Main(string[] args)
        {
            Console.Write("GIVE NUMBER TO CHECK: ");
            int num = Convert.ToInt32(Console.ReadLine());
            checkStrong(num);
            Console.ReadKey();
        }
    }
}
```

30. Write a program in C to get the largest element of an array using the function.

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

namespace Question30
{
    internal class Program
    {
        static int maxEle(int[] arr)
        {
            int max = arr[0];
            foreach(int ele in arr)
            {
                if (ele > max)
                {
                    max = ele;
                }
            }
            return max;
```

```
        }



        static void Main(string[] args)
        {
            int[] arr = new int[10];
            Console.WriteLine("GIVE TEN NUMBERS ONE BY ONE: ");
            for (int i =0;i<arr.Length;i++)
            {
                arr[i] = Convert.ToInt32(Console.ReadLine());
            }
            Console.WriteLine($"THE LARGEST ELEMENT IS:
{maxEle(arr)}");
            Console.Read();
        }
    }
}
```