

## Assignment-1

### Question:

Write a program to calculate:

- a) Simple Interest
- b) Compound Interest
- c) Area of Circle
- d) Volume of Sphere
- e) Body Mass index
- f) Bill split per person
- g) Gravitational force
- h) Mass-energy equivalence

### Source Code:

```
using System;

namespace Assignment1
{
    class Program
    {
        static void Main(string[] args)
        {
            Main:
            Console.WriteLine("Choose your choice?");
            Console.WriteLine("1. To find Simple
interest");
            Console.WriteLine("2. To find Compound
Interest");
            Console.WriteLine("3. To find Area of
Circle");
            Console.WriteLine("4. To find Volume of
Sphere");
            Console.WriteLine("5. To find body
mass index");
            Console.WriteLine("6. To find bill split
value per person");
            Console.WriteLine("7. To find
Gravitaional force");
            Console.WriteLine("8. To find mass
energy equivalence");

            int s = int.Parse(Console.ReadLine());
```

```

        switch (s)
        {
            case 1:
                Console.WriteLine("Enter the value
of Principle");
                double p =
double.Parse(Console.ReadLine());
                Console.WriteLine("Enter the value
of time");
                double t =
double.Parse(Console.ReadLine());
                Console.WriteLine("Enter the value
of rate ");
                double r =
double.Parse(Console.ReadLine());

                double interest = (p * t * r) / 100;

                Console.WriteLine($"Simple Interest
is: {interest}");
                break;

            case 2:
                Console.WriteLine("Enter the value
of principle");
                double p1 =
double.Parse(Console.ReadLine());
                Console.WriteLine("Enter the value
of time");
                double t1 =
double.Parse(Console.ReadLine());
                Console.WriteLine("Enter the value
of rate");
                double r1 =
double.Parse(Console.ReadLine());
                Console.WriteLine("Enter the number
of times interest applied per time period");
                double n =
double.Parse(Console.ReadLine());

```

```

        double amount = p1 * (1 + (r1 / n))
* Math.Pow(n, t1);

        double cInterest = amount - p1;

        Console.WriteLine($"Compound
interest is: {cInterest}");
        break;

    case 3:
        const double pi = Math.PI;

        Console.WriteLine("Enter the radius
of the circle");
        double radius =
double.Parse(Console.ReadLine());

        double area = pi * Math.Pow(radius,
2);

        Console.WriteLine($"Area of circle
is: {area}");
        break;

    case 4:
        const double pi1 = Math.PI;

        Console.WriteLine("Enter the radius
of the sphere");
        double rad =
double.Parse(Console.ReadLine());

        double v = (4.0 / 3.0) * pi1 *
Math.Pow(rad, 3);

        Console.WriteLine($"Volume of sphere
is: {v}");
        break;

```

```

        case 5:

            Console.WriteLine("Enter your weight
in kg");

            double m =
double.Parse(Console.ReadLine());

            Console.WriteLine("Enter ur height
in meter");

            double h =
double.Parse(Console.ReadLine());

            double bmi = m / Math.Pow(h, 2);

            Console.WriteLine($"Your body-mass
index is: {bmi}");

            if (bmi >= 25.0)
                Console.WriteLine("You are
overweight");

            else if (bmi < 24.9 && bmi>=18)
                Console.WriteLine("You have good
weight");

            break;

        case 6:

            Console.WriteLine("Enter the total
bill amount");

            double total_bill =
double.Parse(Console.ReadLine());

            Console.WriteLine("Enter the number
of people");

            double number =
double.Parse(Console.ReadLine());

            double amount_per_person =
total_bill / number;

```

```

        Console.WriteLine($"Bill per person
is: {amount_per_person}");
        break;

    case 7:
        const double G = 6.67e-11;
        Console.WriteLine("Enter mass1:");
        double m1 =
double.Parse(Console.ReadLine());
        Console.WriteLine("Enter mass2");
        double m2 =
double.Parse(Console.ReadLine());
        Console.WriteLine("Enter the
radius");
        double R =
double.Parse(Console.ReadLine());

        double GF = G * (m1 * m2) /
Math.Pow(R, 2);

        Console.WriteLine($"Gravitational
Force is: {GF}");

        break;

    case 8:
        const double c = 3e8;
        Console.WriteLine("Enter the mass");
        double mass =
double.Parse(Console.ReadLine());
        double E = mass * c * c;
        Console.WriteLine($"Energy: {E}");
        break;
    default:
        Console.WriteLine("Invalid option
chosen");
        break;
}
Console.WriteLine("Do you want to continue
(Y/N)?");

```

```

        string opt = Console.ReadLine().ToUpper();
        if (opt == "Y")
            goto Main;
    }
}

```

## Assignment-2

### Question:

Write the program to:

- a) Display the multiplication table of given number
- b) Calculate mean and median of a list of number
- c) Calculate geometric average of a list of number
- d) Calculate sum and difference of two matrices
- e) Guessing game

### Source Code:

```

using System;

namespace Assignment2
{
    class Program
    {
        static void Main(string[] args)
        {
            Main:
            Console.WriteLine("Choose from the following
option");
            Console.WriteLine("1. Calculate the multiplication
table of given number");
            Console.WriteLine("2. Calculate mean and median");
            Console.WriteLine("3. Calculate the geometric average
of the list of number");
            Console.WriteLine("4. Sum and difference of two
matrices");
            Console.WriteLine("5. Guessing game");

            int x = int.Parse(Console.ReadLine());
            switch(x)
            {
                case 1:
                    //Multiplication table

```

```

        Console.WriteLine("Enter the number to find
its multiplication");
        double                number                =
double.Parse(Console.ReadLine());
        double i;
        for (i = 1; i <= 10; i++)
        {
            double product = number * i;
            Console.WriteLine($"{number}      *      {i}=
{product}");
        }
        break;

case 2:
    //Mean and median
    int[] data = new int[100];
    Console.WriteLine("How many numbers?");
    double n = double.Parse(Console.ReadLine());
    for(int w=0; w < n; w++)
    {
        data[w] = int.Parse(Console.ReadLine());
    }
    int sum = data.Sum();
    double mean = sum / n;
    double median = data.Average();
    Console.WriteLine($"Mean: {mean} and median:
{median}");
    break;

case 3:
    //Geometric average of list of numbers
    int[] list = new int[100];
    Console.WriteLine("Enter how many numbers are
in the list");
    double                numbers                =
double.Parse(Console.ReadLine());
    Console.WriteLine("Enter each numbers of the
list");
    for(int j = 0; j < numbers; j++)
    {
        list[j]                =
Convert.ToInt32(Console.ReadLine());
    }
    int mul = 1;
    for(int k = 0; k < numbers; k++)
    {
        mul = mul * list[k];
    }

```

```

    }
    double geometric_average = Math.Pow(mul, 1 /
numbers);
    Console.WriteLine($"Geometric          average:
{geometric_average}");
    break;
case 4:
    //add and subtract of two matrices
    Console.WriteLine("size of square matrices");
    int s = int.Parse(Console.ReadLine());

    int[,] matrix1 = new int[s, s];
    int[,] matrix2 = new int[s, s];
    int[,] add = new int[s, s];
    int[,] sub = new int[s, s];

    Console.WriteLine("Elements          of          first
matrix");
    for(int a = 0; a < s; a++)
    {
        for(int b=0; b < s; b++)
        {
            Console.WriteLine("for " + a + "," +
b);
            matrix1[a,          b]          =
Convert.ToInt32(Console.ReadLine());
        }
    }
    Console.WriteLine("Elements          of          second
matrix");
    for(int a = 0; a < s; a++)
    {
        for(int b=0; b < s; b++)
        {
            Console.WriteLine("for " + a + "," +
b);
            matrix2[a,          b]          =
Convert.ToInt32(Console.ReadLine());
        }
    }
    for(int a=0; a < s; a++)
    {
        for(int b = 0; b < s; b++)
        {
            add[a, b] = matrix1[a, b] + matrix2[a,
b];

```



```

        sub[a, b] = matrix1[a, b] - matrix2[a,
b];
    }
}
matrices:\n");
    Console.WriteLine("Addition      of      two
matrices:\n");
    for (int a = 0; a < s; a++)
    {
        Console.Write("\n");
        for (int b = 0; b < s; b++)
            Console.Write("{0}\t", add[a, b]);
    }
    Console.Write("\n\n");
    Console.WriteLine("Subtraction      of      two
matrices:\n");
    for (int a = 0; a < s; a++)
    {
        Console.Write("\n");
        for (int b = 0; b < s; b++)
            Console.Write("{0}\t", sub[a, b]);
    }
    Console.Write("\n\n");
    break;

case 5:
    string choice;
    do
    {
        Random random = new Random();
        int random_number = random.Next(1, 101);
        Console.WriteLine("Guess      the      number
between (1-100)");

        bool user_guess = false;
        for (int a = 1; a <= 5; a++)
        {
            int          guessed_number          =
int.Parse(Console.ReadLine());
            if (guessed_number == random_number)
            {
                Console.WriteLine("hooray!      You
won...");

                user_guess = true;
                break;
            }
            else      if      (guessed_number      >
random_number)

```

```

        Console.WriteLine("Your number is
greater than my number");
    else
        Console.WriteLine("Your number is
less than my number");
    }
    if (!user_guess)
    {
        Console.WriteLine("Oops!           You
lost..");
        Console.WriteLine($"My   number   was:
{random_number}");
    }
    Console.WriteLine("Wanna   play   again
(Y/N)?");

    choice = Console.ReadLine().ToUpper();
    } while (choice == "Y");
    break;
}
Console.WriteLine("Do you want to continue (y/n)?");
string opt = Console.ReadLine().ToLower();
if (opt == "y")
    goto Main;
}
}
}

```