Laborator 1

Problema 1:

Clasa Fibonacci:

L1_p1.Fibonacci

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

namespace L1_p1
{
    class Fibonacci
    {
        private int numarElemente;
        public Fibonacci(int numarElemente)
        {
            this.numarElemente = numarElemente;
        }
        public void afisareFibonacci()
        {
            int f0 = 0, f1 = 1, f2;
            switch(this.numarElemente)
            {
                case 0:
                    Console.WriteLine("Nu se genereaza niciun element");
                    break;
                case 1:
                    Console.WriteLine(f1);
                    break;
                default:
                    Console.Write(f1 + " ");
```

```
        {
            int f0 = 0, f1 = 1, f2;
            switch(this.numarElemente)
            {
                case 0:
                    Console.WriteLine("Nu se genereaza niciun element");
                    break;
                case 1:
                    Console.WriteLine(f1);
                    break;
                default:
                    Console.Write(f1 + " ");
                    int i;
                    for (i = 1; i < this.numarElemente; i++)
                    {
                        f2 = f0 + f1;
                        Console.Write(f2 + " ");
                        f0 = f1;
                        f1 = f2;
                    }
                    Console.WriteLine();
                    break;
            }
        }
    }
}
```

Main:

L1_p1.Program

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

namespace L1_p1
{
    class Program
    {
        static void Main(string[] args)
        {
            Fibonacci fibonacci1 = new Fibonacci(0);
            fibonacci1.afisareFibonacci();
            Fibonacci fibonacci2 = new Fibonacci(1);
            fibonacci2.afisareFibonacci();
            Fibonacci fibonacci3 = new Fibonacci(5);
            fibonacci3.afisareFibonacci();
            Console.ReadKey();
        }
    }
}
```

Output:

```
file:///C:/Users/rus_d/OneDrive/Documente/Visual Studio 2010/Projects/L1_p1/L1_p1/bin/Debug/L1_p1.EXE
Nu se genereaza niciun element
1
1 1 2 3 5
```

Problema 2:

Clasa OperatiiMatematice:

L1_p2.OperatiiMatematice

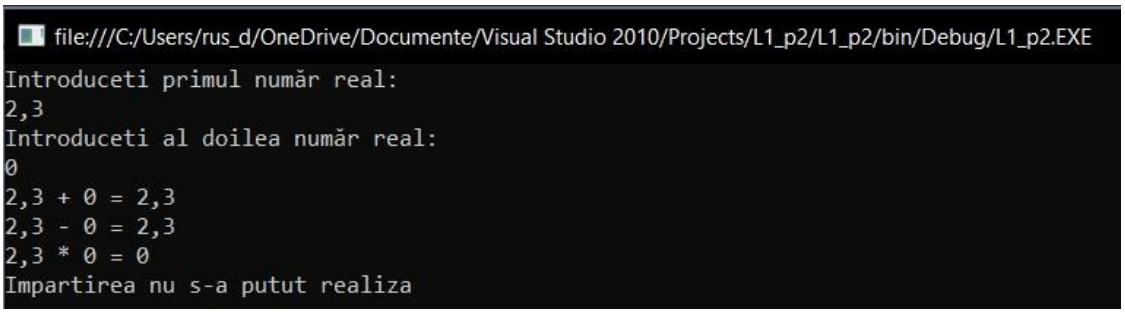
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace L1_p2
{
    class OperatiiMatematice
    {
        private float number1;
        private float number2;
        private float number3;
        private char sign;
        public OperatiiMatematice(float number1, float number2)
        {
            this.number1 = number1;
            this.number2 = number2;
        }
        public void adunare()
        {
            this.number3 = this.number1 + this.number2;
            this.sign = '+';
        }
        public void scadere()
        {
            this.number3 = this.number1 - this.number2;
            this.sign = '-';
```

```
            this.sign = '-';
        }
        public void inmultire()
        {
            this.number3 = this.number1 * this.number2;
            this.sign = '*';
        }
        public void impartire()
        {
            if (this.number2 == 0)
                this.number3 = 3.4E-38F;
            else
                this.number3 = number1 / number2;
            this.sign = '/';
        }
        public void afisare()
        {
            if (this.number3 == 3.4E-38F)
                Console.WriteLine("Impartirea nu s-a putut realiza");
            else
                Console.WriteLine(this.number1 + " " + this.sign + " " + this.number2 + " = " + this.number3);
        }
    }
}
```

Main:

```
L1_p2.Program                                   Main(string[] args)
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace L1_p2
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Introduceti primul număr real:");
            string input1 = Console.ReadLine();
            float number1;
            if (float.TryParse(input1, out number1))
            {
                Console.WriteLine("Introduceti al doilea număr real:");
                string input2 = Console.ReadLine();
                float number2;
                if (float.TryParse(input2, out number2))
                {
                    OperatiiMatematice operatiiMatematice = new OperatiiMatematice(number1, number2);
                    operatiiMatematice.adunare();
                    operatiiMatematice.afisare();
                    operatiiMatematice.scadere();
                    operatiiMatematice.afisare();
                    operatiiMatematice.inmultire();
                    operatiiMatematice.afisare();
                    operatiiMatematice.impartire();
                    operatiiMatematice.afisare();
                }
                else
                {
                    Console.WriteLine("Al doilea număr introdus nu este valid.");
                }
            }
            else
            {
                Console.WriteLine("Primul număr introdus nu este valid.");
            }
            Console.ReadKey();
        }
    }
}
```

Possible Outputs:



Problema 3:

Clasa ConversieGrade:

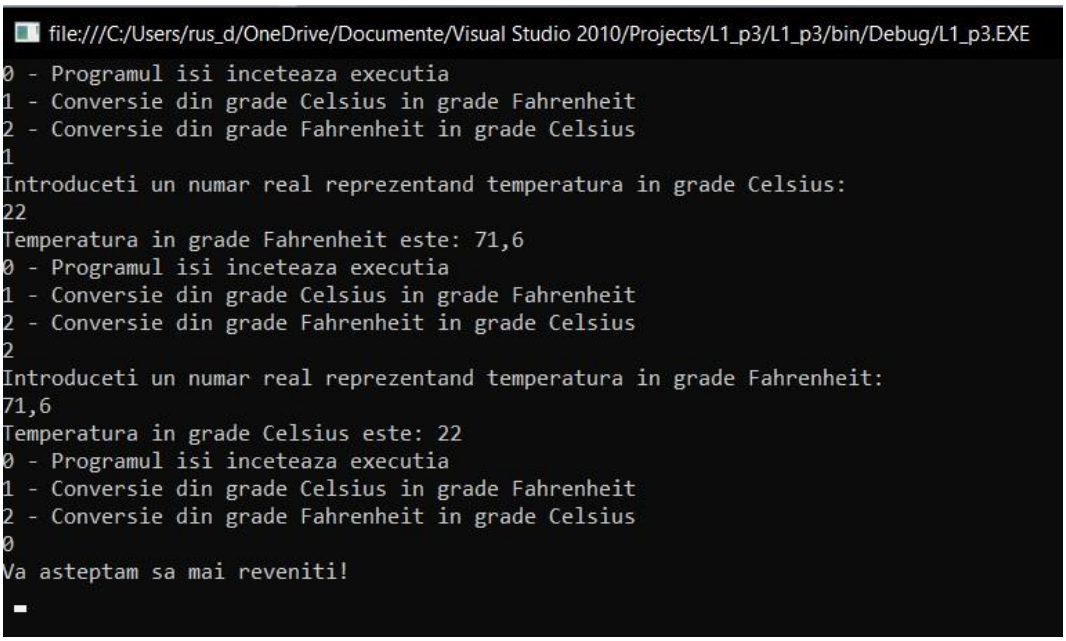
L1_p3.ConversieGrade

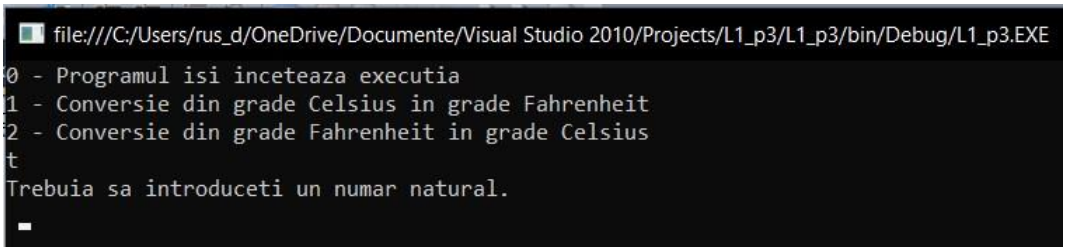
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace L1_p3
{
    class ConversieGrade
    {
        public double Grade { get; set; }
        public double dinCInF()
        {
            return Grade * 9 / 5 + 32;
        }
        public double dinFinC()
        {
            return (Grade - 32) * 5 / 9;
        }
    }
}
```

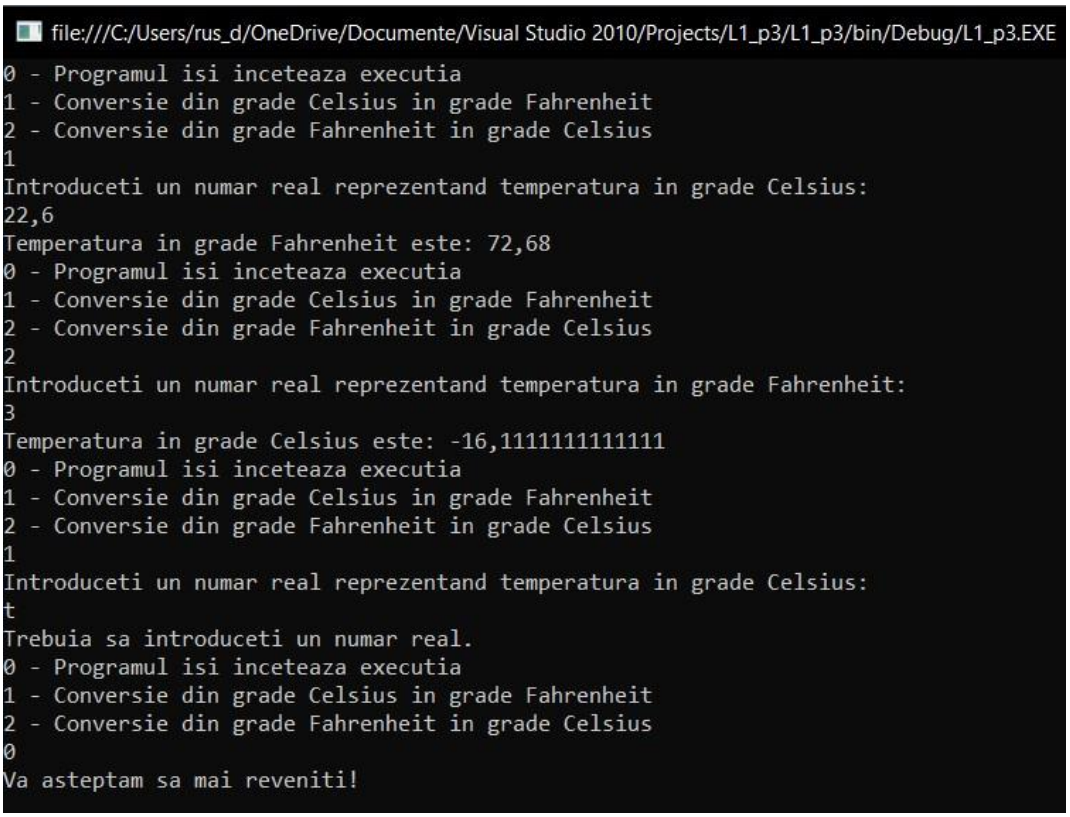
Main:

```
L1_p3.Program                                                    Main(
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace L1_p3
{
    class Program
    {
        static void Main(string[] args)
        {
            ConversieGrade conversieGrade = new ConversieGrade();
            string input;
            int caz;
            double temperaturaData;
            do
            {
                Console.WriteLine("0 - Programul isi inceteaza executia");
                Console.WriteLine("1 - Conversie din grade Celsius in grade Fahrenheit");
                Console.WriteLine("2 - Conversie din grade Fahrenheit in grade Celsius");
                input = Console.ReadLine();
                if (int.TryParse(input, out caz))
                {
                    switch (caz)
                    {
                        case 0:
                            Console.WriteLine("Va asteptam sa mai reveniti!");
                            break;
                        case 1:
                            Console.WriteLine("Introduceti un numar real reprezentand temperatura in grade Celsius: ");
                            input = Console.ReadLine();
                            if (double.TryParse(input, out temperaturaData))
                            {
                                conversieGrade.Grade = temperaturaData;
                                Console.WriteLine("Temperatura in grade Fahrenheit este: " + conversieGrade.dinCInF());
                            }
                            else
                            {
                                Console.WriteLine("Trebuia sa introduceti un numar real.");
                            }
                            break;
                        case 2:
                            Console.WriteLine("Introduceti un numar real reprezentand temperatura in grade Fahrenheit: ");
                            input = Console.ReadLine();
                            if (double.TryParse(input, out temperaturaData))
                            {
                                conversieGrade.Grade = temperaturaData;
                                Console.WriteLine("Temperatura in grade Celsius este: " + conversieGrade.dinFinC());
                            }
                            else
                            {
                                Console.WriteLine("Trebuia sa introduceti un numar real.");
                            }
                            break;
                        default:
                            Console.WriteLine("Numarul trebuie sa fie cuprins intre 0 si 2.");
                            break;
                    }
                }
                else
                {
                    Console.WriteLine("Trebuia sa introduceti un numar natural.");
                }
            } while(caz != 0);
            Console.ReadKey();
        }
    }
}
```

Possible Outputs:







Problema 4:

Clasa GreutateaIdeala:

L1_p4.Greutatealdeala | afisareGreutate()

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

namespace L1_p4
{
    class GreutateaIdeala
    {
        public double Inaltime { set; get; }
        public double Varsta { set; get; }
        public char Sex { set; get; }
        private double greutateIdealaBarbati()
        { return (Inaltime - 100D - ((Inaltime - 150D) / 4D)) + ((Varsta - 20D) / 4D); }
        private double greutateIdealaFemei()
        { return (Inaltime - 100D - ((Inaltime - 150D) / 2.5D)) + ((Varsta - 20D) / 6D); }
        public void afisareGreutate()
        {
            if (Sex == 'm')
            { Console.WriteLine("Greutatea ideala a acestui barbat este: " + greutateIdealaBarbati()); }
            else
            { Console.WriteLine("Greutatea ideala a acestei femei este: " + greutateIdealaFemei()); }
        }
    }
}
```

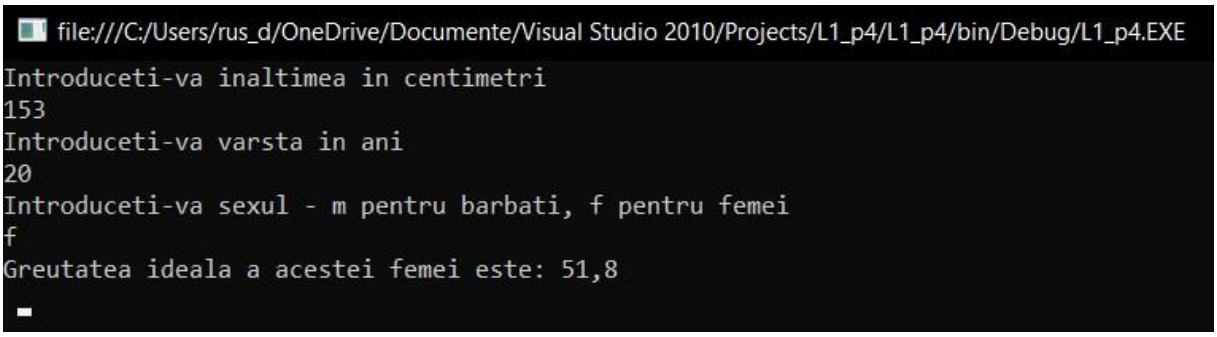
Main:

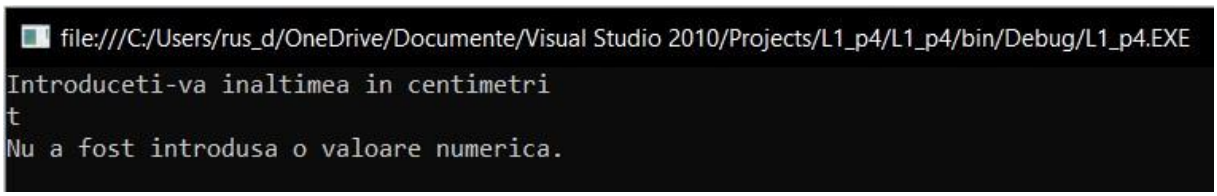
L1_p4.Program | Main(string[] a

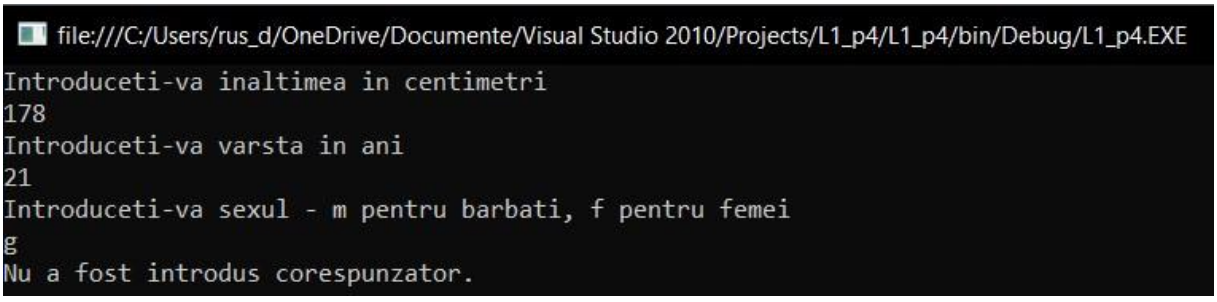
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;

namespace L1_p4
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Introduceti-va inaltimea in centimetri");
            string input = Console.ReadLine();
            double inaltime;
            if (double.TryParse(input, out inaltime))
            {
                Console.WriteLine("Introduceti-va varsta in ani");
                input = Console.ReadLine();
                double varsta;
                if (double.TryParse(input, out varsta))
                {
                    Console.WriteLine("Introduceti-va sexul - m pentru barbati, f pentru femei");
                    input = Console.ReadLine();
                    char sex;
                    if (char.TryParse(input, out sex))
                    {
                        if (sex == 'm' || sex == 'f')
```

```
                    {
                        GreutateaIdeala greutateaIdeala = new GreutateaIdeala();
                        greutateaIdeala.Inaltime = inaltime;
                        greutateaIdeala.Varsta = varsta;
                        greutateaIdeala.Sex = sex;
                        greutateaIdeala.afisareGreutate();
                    }
                    else
                    {
                        Console.WriteLine("Nu a fost introdus corespunzator.");
                    }
                }
                else
                {
                    Console.WriteLine("Nu a fost introdus corespunzator.");
                }
            }
            else
            {
                Console.WriteLine("Nu a fost introdusa o valoare numerica.");
            }
        }
        else
        {
            Console.WriteLine("Nu a fost introdusa o valoare numerica.");
        }
        Console.ReadKey(); } } }
```

Possible Outputs:







Problema 5:

Clasa CalculatorMedii:

L1_p5.CalculatorMedii

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

namespace L1_p5
{
    class CalculatorMedii
    {
        public List<int> Numbers {get; set;}
        public double medieAritmetica()
        {
            if (Numbers.Count == 0)
                return 5.0e-324D;
            double sum = 0;
            foreach (int number in Numbers)
            {
                sum = sum + number;
            }
            return sum / Numbers.Count;
        }
        public double medieGeometrica()
        {
            if (Numbers.Count == 0)
                return 5.0e-324D;
            double prod = 1;
            foreach (int number in Numbers)
            {
                prod = prod * number;
            }
            return Math.Pow(prod, 1D / Numbers.Count);
        }
    }
}
```

Main:

L1_p5.Program

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

namespace L1_p5
{
    class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine("Introduceti numere intregi, separate printr-un spatiu:");
            string input = Console.ReadLine();
            string[] numbersString = input.Split(' ');
            List<int> numbers = new List<int>();
            int number;
            foreach (string numberString in numbersString)
            {
                if (int.TryParse(numberString, out number))
                {
                    numbers.Add(number);
                }
                else
                {
                    Console.WriteLine(numberString + " nu este un numar intreg");
                }
            }
```

```
            CalculatorMedii calculatorMedii = new CalculatorMedii();
            calculatorMedii.Numbers = numbers;
            double mediaArirmetica = calculatorMedii.medieAritmetica();
            double mediaGeometrica = calculatorMedii.medieGeometrica();
            if(mediaArirmetica == 5.0e-324D)
            {
                Console.WriteLine("Nu a fost introdus niciun numar.");
            }
            else
            {
                Console.WriteLine("Media aritmetica este " + mediaArirmetica + " , iar media geometrica este " + mediaGeometrica);
            }
            Console.ReadKey();
        }
    }
}
```

Possible Outputs: