Desktop C# project

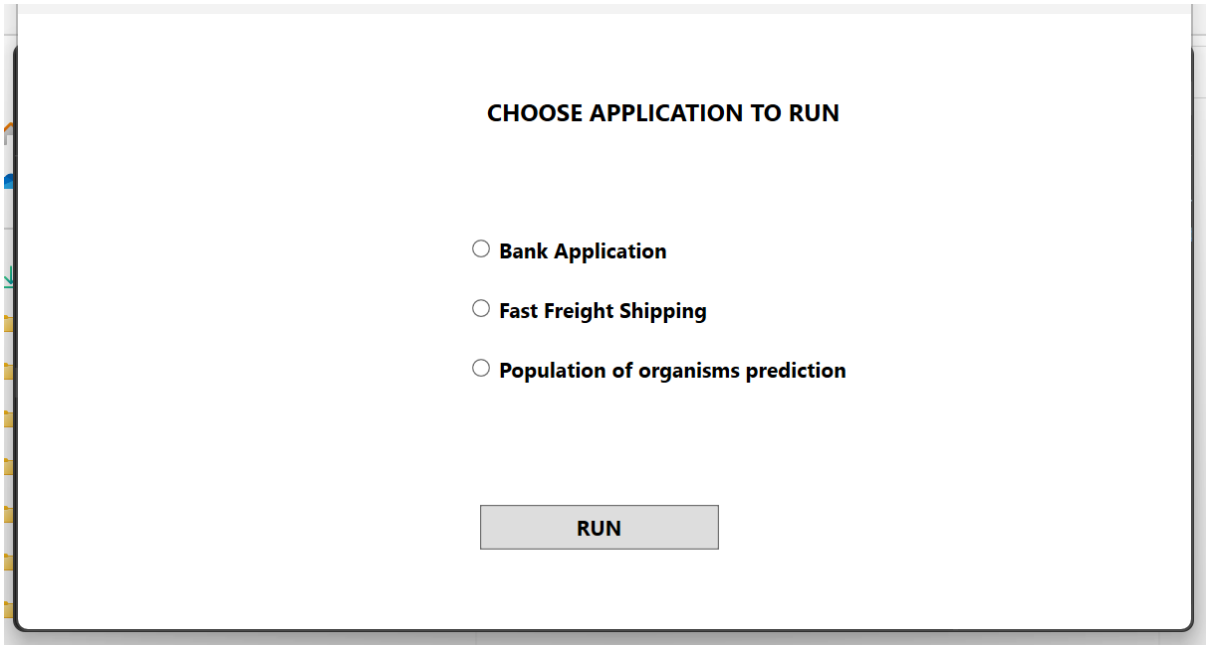
Problem solving and their testing with

NUnit Testing

CONTENT

Problems:

Main Page


CHOOSE APPLICATION TO RUN
Bank Application
Fast Freight Shipping
Population of organisms prediction
RUN

Bank Charges Calculation

Problem:

A bank charges $10 per month, plus the following check fees for a commercial checking account:

$.10 for each check if less than 20 checks were written

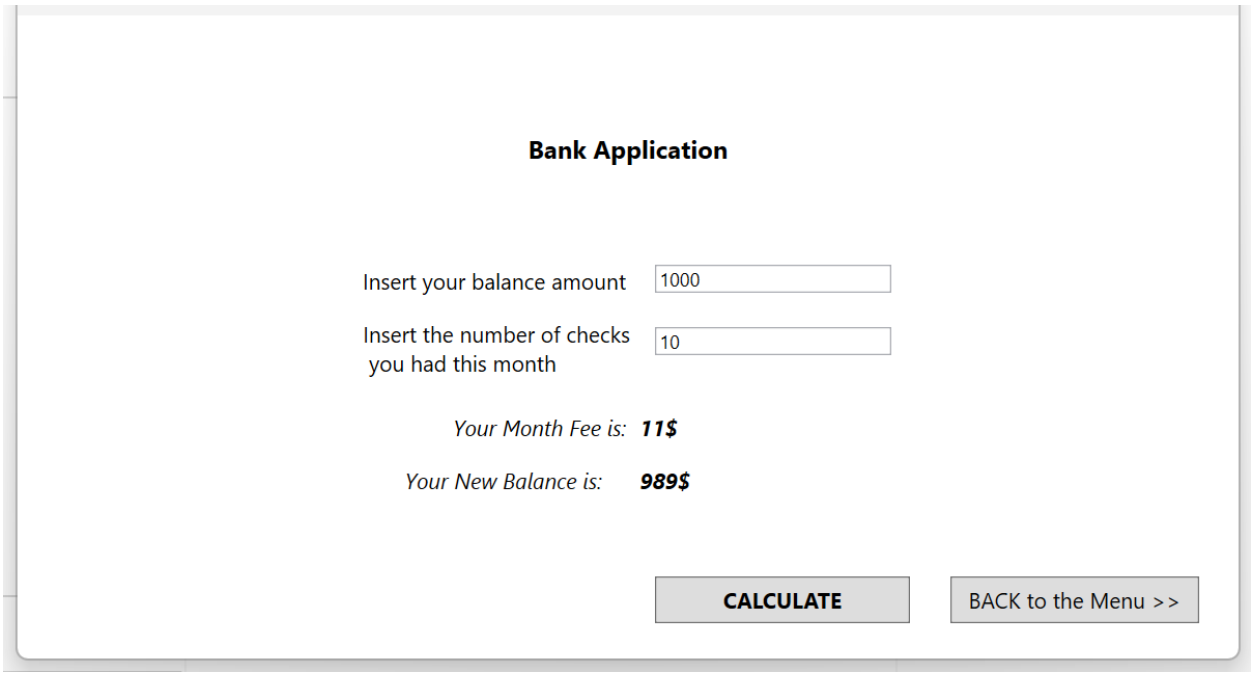
$.08 for each check if 20 through 39 checks were written

$.06 for each check if 40 through 59 checks were written

$.10 for each check if 60 or more checks were written

The bank also charges an extra $15 if the account balance falls below $400 (before any check fees

Bank Charges Interface



Tests result:

```
using Lab1_DesktopAppDev;

namespace TestProjectLab
{
    0 references
    public class Tests
    {
        [SetUp]
        0 references
        public void Setup()
        {
        }

        // BankCharges Testing
        [Test]
        | 0 references
        public void Test1_1GetCheckFeeRate()
        {
            BankCharges bc = new BankCharges(100, 10);

            double var = bc.getCheckFeeRate();

            Assert.That(var, Is.EqualTo(0.1));
        }


        [Test]
        | 0 references
        public void Test1_2getMonthServiceFee()
        {
            BankCharges bc = new BankCharges(1000, 10);

            double var = bc.getMonthServiceFee();

            Assert.That(var, Is.EqualTo(11));
        }

        [Test]
        | 0 references
        public void Test1_3setNewBalance()
        {
            BankCharges bc = new BankCharges(1000, 10);

            double var = bc.setNewBalance();

            Assert.That(var, Is.EqualTo(989));
        }
```

Shipping rate Calculation

Problem:

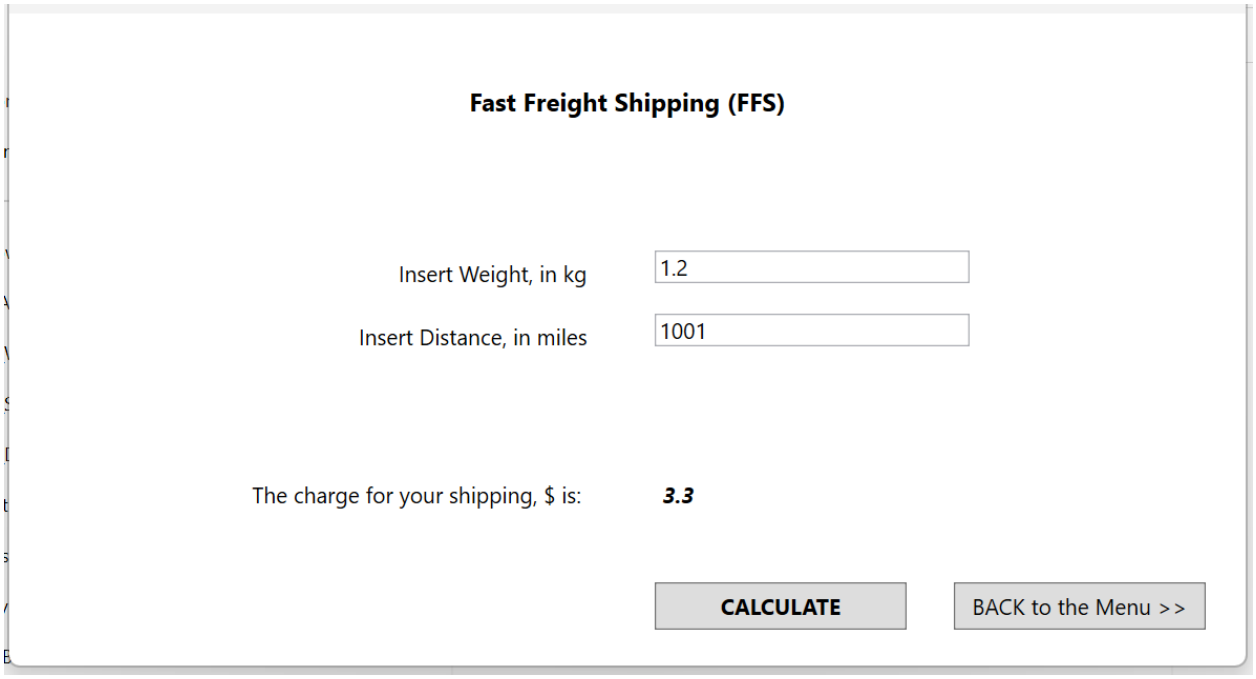
The Fast Freight Shipping (FFS) Company charges the following rates:

Weight of Package (in KG)	Rate per 500 Miles Shipped
2 kg or less	$1.10
Over 2kg but not more than 6 kg	$2.20
Over 6 kg but not more than 10kg	$3.70
Over 10 kg	$4.80

The shipping charges per 500 miles are not prorated. i.e. if a 2 kg package is shipped 550 miles, the charges would be $2.20.

Design a class with GUI controls that stores the weight of a package, and has a method that returns the shipping charges.

Shipping Rate Interface



Test results:

```
// ShippingCharge
[Test]
| 0 references
public void Test2_1CalcWeightRate()
{
    ShippingCharge sc = new ShippingCharge();
    sc.setWeight(1.2);
    double var = sc.calcWeightRate();

    Assert.That(var, Is.EqualTo(1.1));
}

[Test]
| 0 references
public void Test2_2CalcDistanceRate()
{
    ShippingCharge sc = new ShippingCharge();
    sc.setDistance(1001);
    int var = sc.calcDistanceRate();

    Assert.That(var, Is.EqualTo(3));
}
```

Daily Population Size Calculation

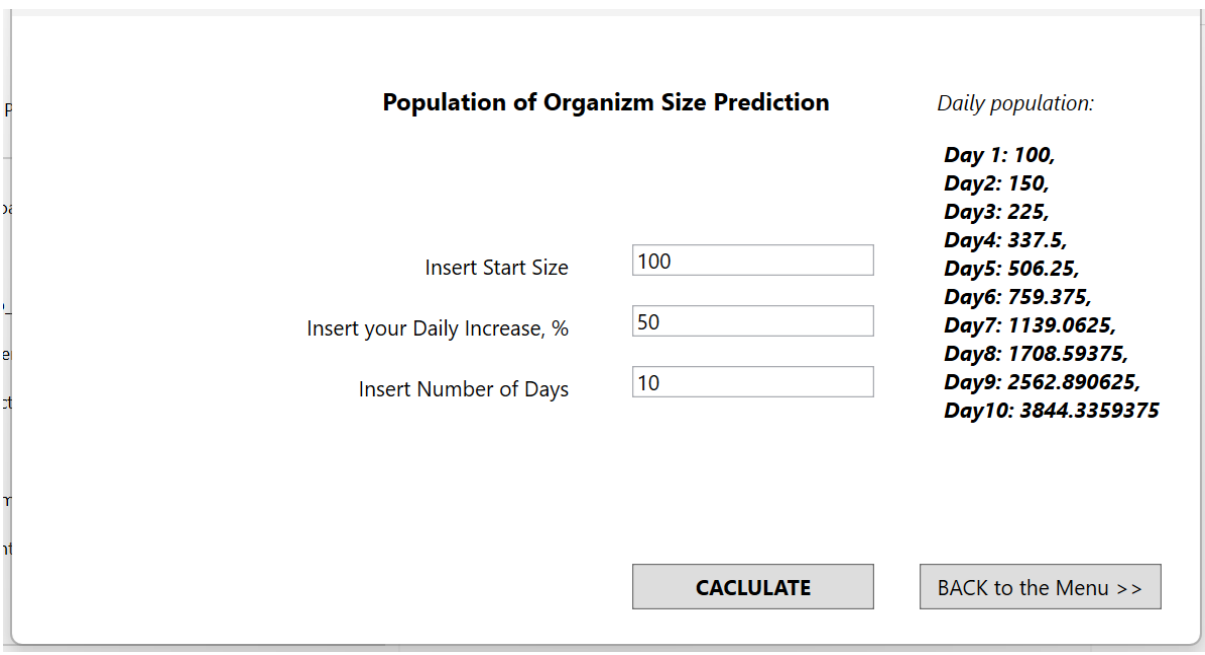
Problem:

Write a class that will predict the size of a population of organisms. The class should store the starting number of the organisms, their average daily population increase (as a percentage) and the number of days they will multiply. The class should have a method that uses a loop to display the size of the population for each day.

Test the class using a GUI program that asks the user for giving the input of the stating size of the population, their average daily increase and the number of days they will multiply. The program will output the daily population.

Input validation: Do not accept a number less than 2 for the staring size of the population. Do not accept a negative number for the average daily population increase. Do not accept a number less than 1 for the number of days they will multiply. Generate Message for the invalid input and show that to the users.

Population Size Interface



Test results:

```
// PopulationSize
[Test]
| 0 references
public void Test3_1NextDaySize()
{
    PopulationSize ps = new PopulationSize();
    ps.setDailyIncrease(50);
    double var = ps.nextDaySize(100);

    Assert.That(var, Is.EqualTo(150));

}
```