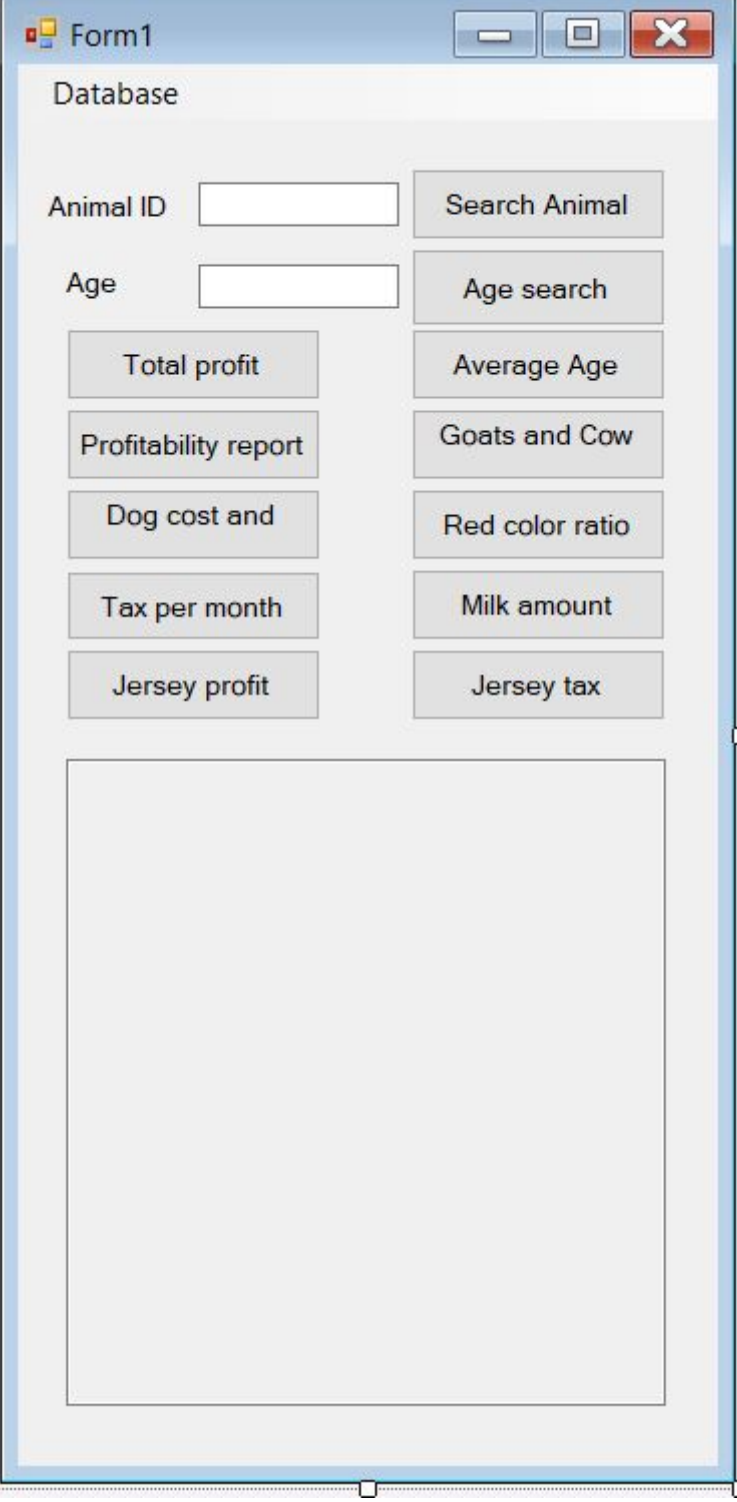


1. Function **From 1** testing screenshot:

The screenshot shows a Windows application window titled "Form1". The window contains a "Database" section with the following elements:

- Animal ID Search Animal
- Age Age search
- Total profit
- Average Age
- Profitability report
- Goats and Cow
- Dog cost and
- Red color ratio
- Tax per month
- Milk amount
- Jersey profit
- Jersey tax

Below these buttons is a large empty rectangular area, likely intended for displaying search results or reports.

Result: Start successfully

2. Function ***Connect to database*** screenshot:

The screenshot shows a Windows application window titled "Form1". A context menu is open over the "Database" label, showing "Connect" and "Disconnect" options. The "Connect" option is highlighted. The form contains several buttons arranged in two columns:

- Search Animal (highlighted with a blue border)
- Age search
- Age search
- Average Age
- Goats and Cow
- Red color ratio
- Milk amount
- Jersey tax
- Total profit
- Profitability report
- Dog cost and
- Tax per month
- Jersey profit

At the bottom of the form is a large, empty rectangular text area.

Test case **Disconnect** is disenabled by default: Pass

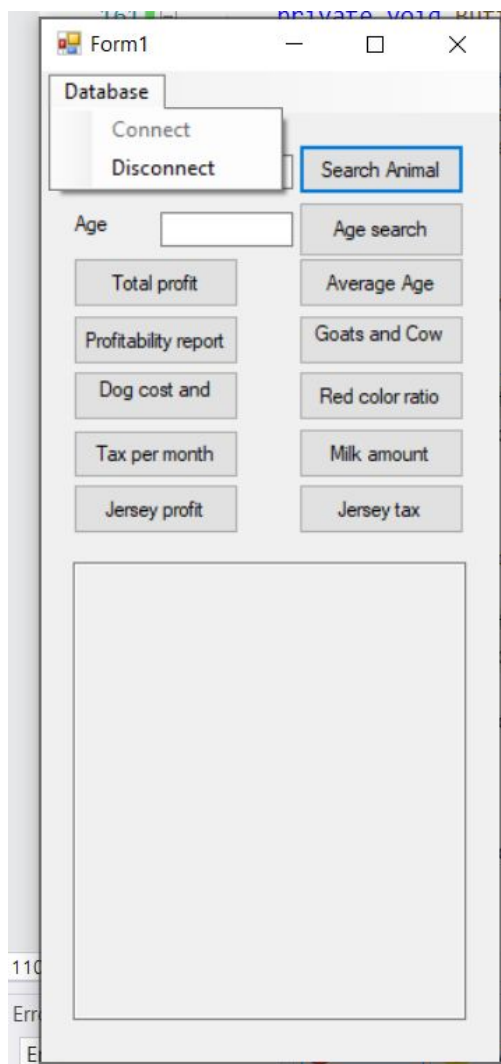
Test case *Connect to the database*: Pass

```
public partial class MainForm : Form
{
    private string _filepath = null;
    Dictionary<int, FarmAnimal> allAnimals = new Dictionary<int, FarmAnimal>();
    1 reference
    public MainForm()
    {
        InitializeComponent();
        LoadAnimals();
    }
}
```

allAnimals Count = 13

All animals correctly loaded to the dictionary

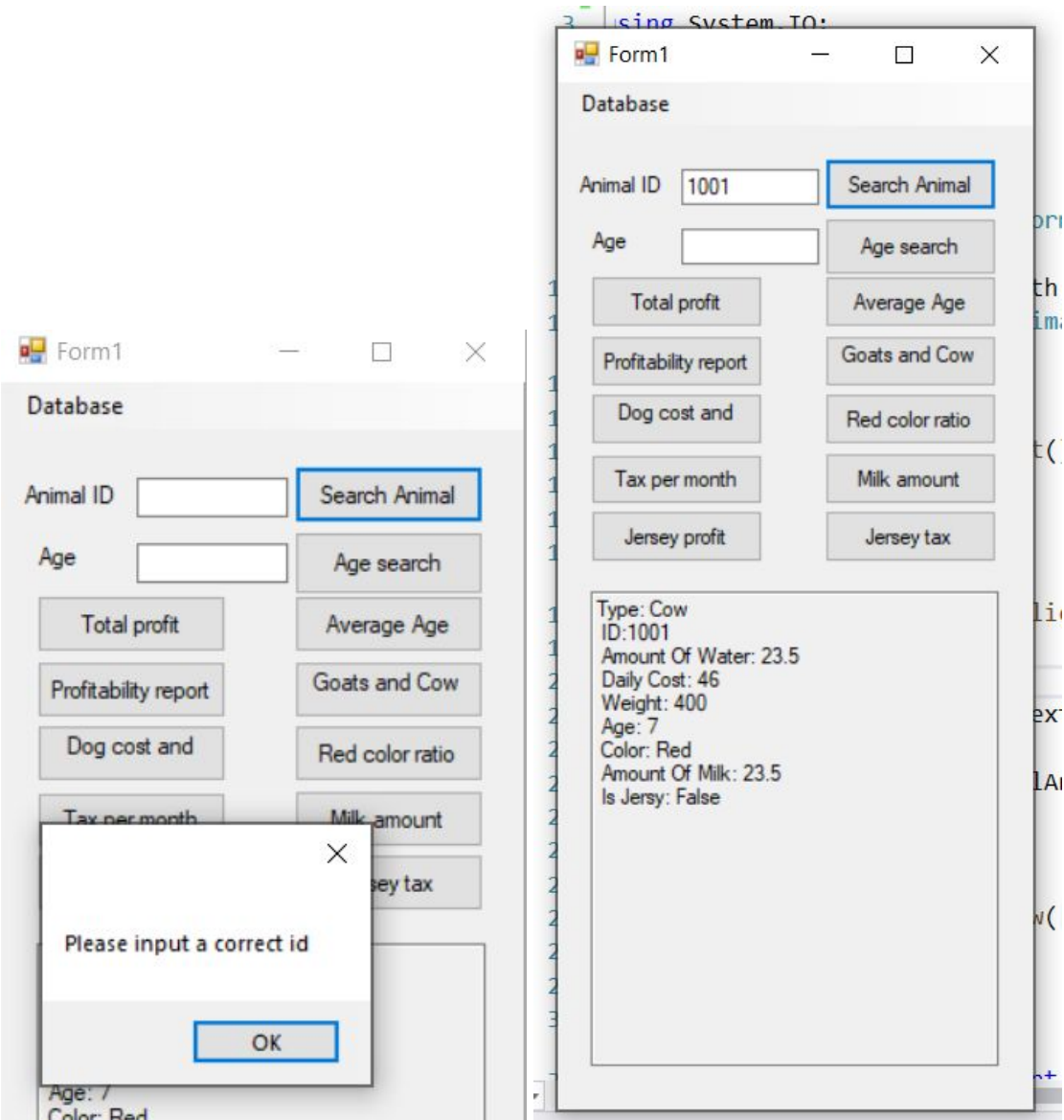
Test case after connected to the database disconnect button should be enabled: Pass

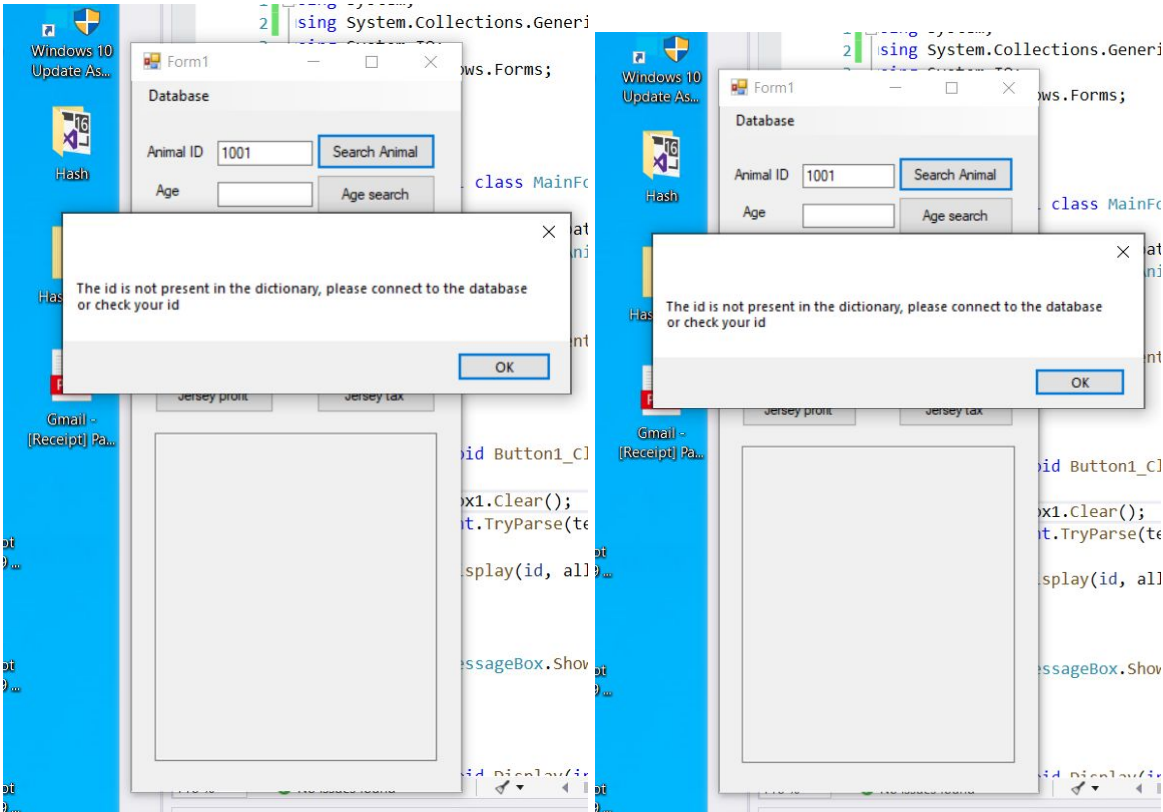


3. Function ***Search animal via ID*** testing process:

<i>ID identification</i>	<i>Database connection</i>	<i>Actual Result</i>	<i>Test Outcome</i>
1001	YES	Type: Cow ID:1001 Amount Of Water: 23.5 Daily Cost: 46 Weight: 400 Age: 7 Color: Red Amount Of Milk: 23.5 Is Jersey: False	PASS
1001	NO	The id is not present in the dictionary, please connect to the database or check your id	PASS
9993	YES	The id is not present in the dictionary, please connect to the database or check your id	PASS
null	YES	Please input a correct id	PASS

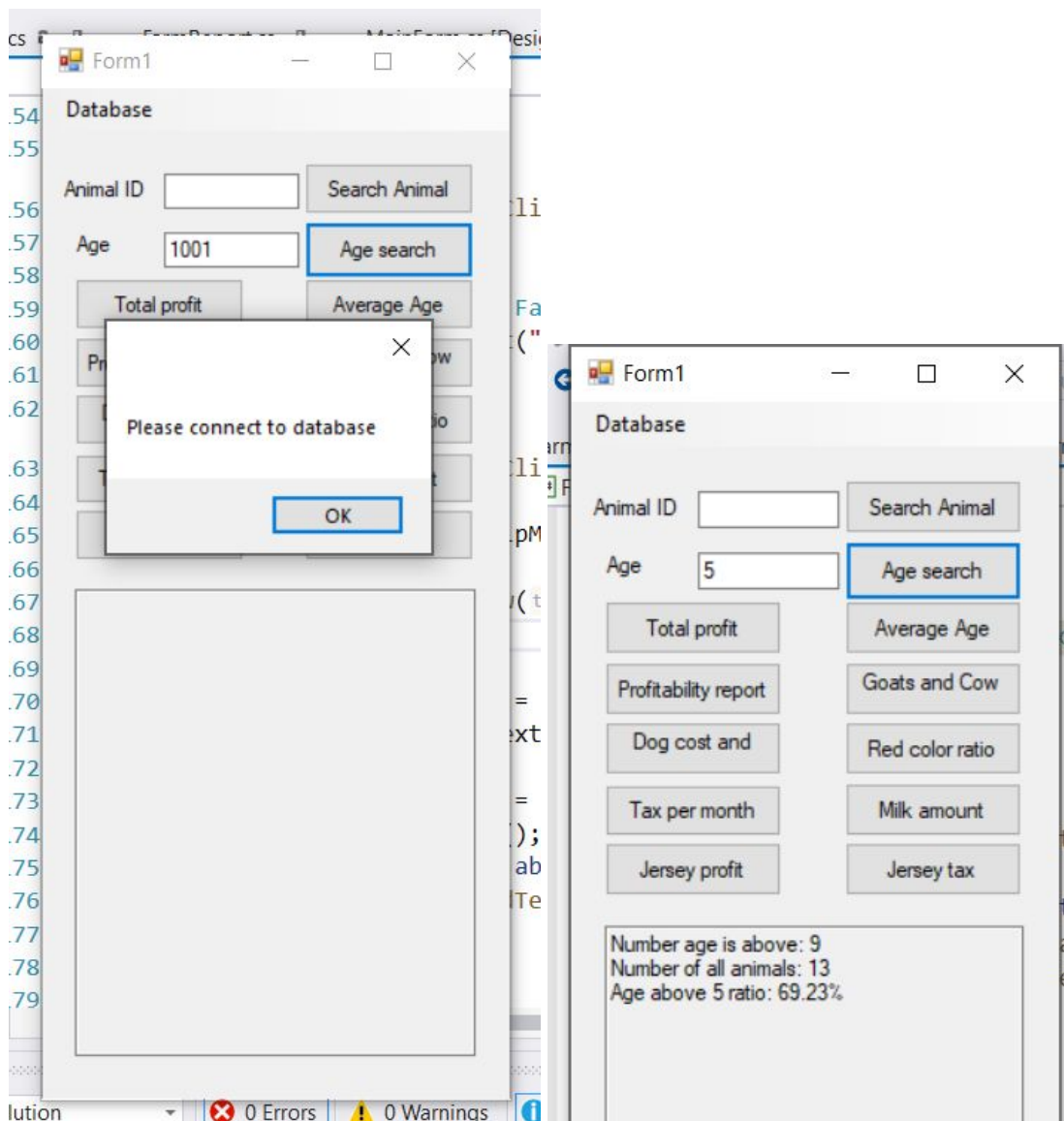
Screenshot:





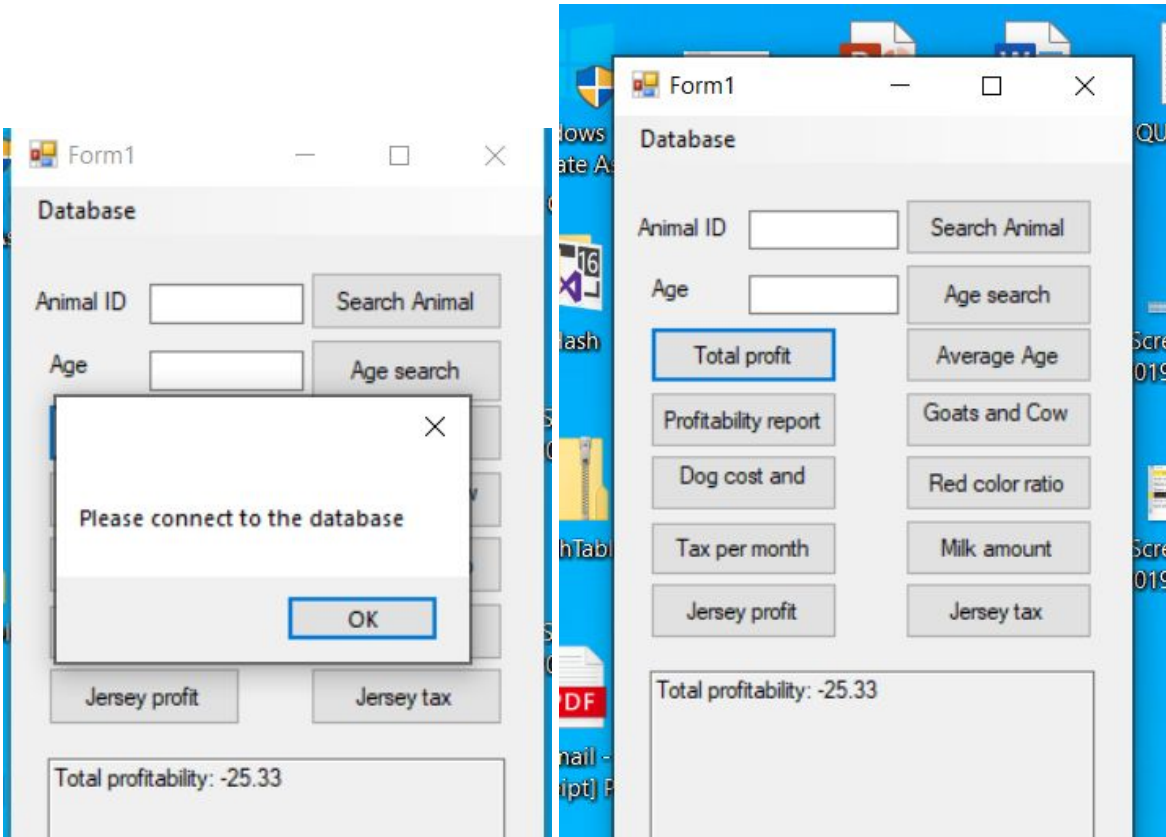
4. Function *Age search* testing process:

<i>Age identification</i>	<i>Database connection</i>	<i>Actual Result</i>	<i>Test Outcome</i>
1001	YES	Number age is above: 0 Number of all animals: 13 Age above 1001 ratio: 0.00%	PASS
1001	NO	Please connect to database	PASS
5	YES	Number age is above: 9 Number of all animals: 13 Age above 5ratio: 69.23%	PASS
null	YES	Please input a correct age	PASS



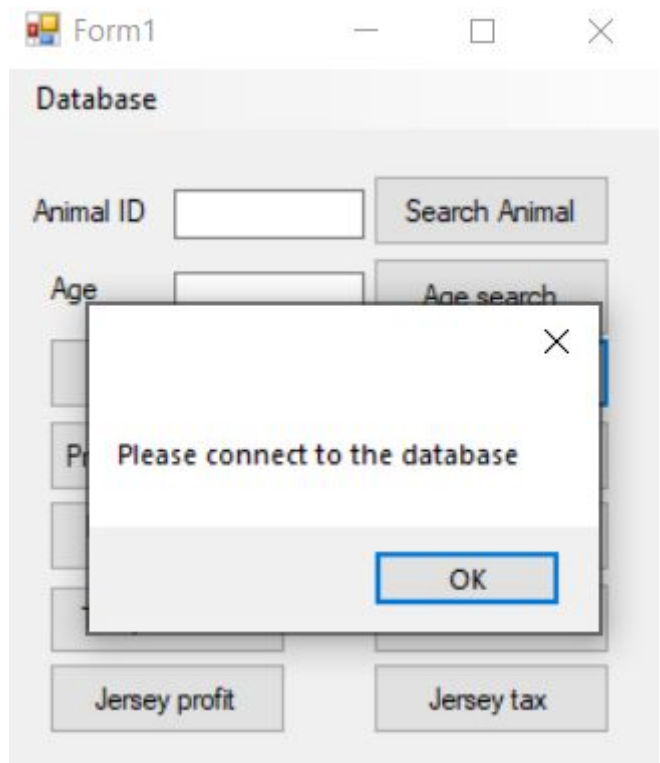
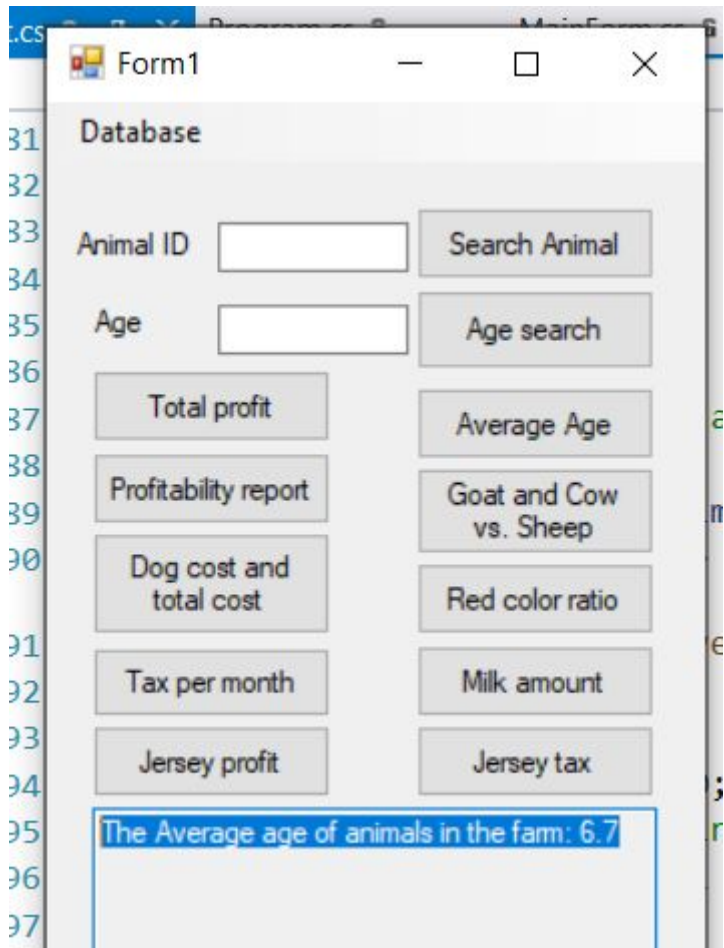
5. Function ***Total profit*** testing process:

Action	Database connection	Actual Result	Test Outcome
Click Total profit button	YES	Total profitability: -25.33	PASS
Click Total profit button	NO	Please connect to the database	PASS



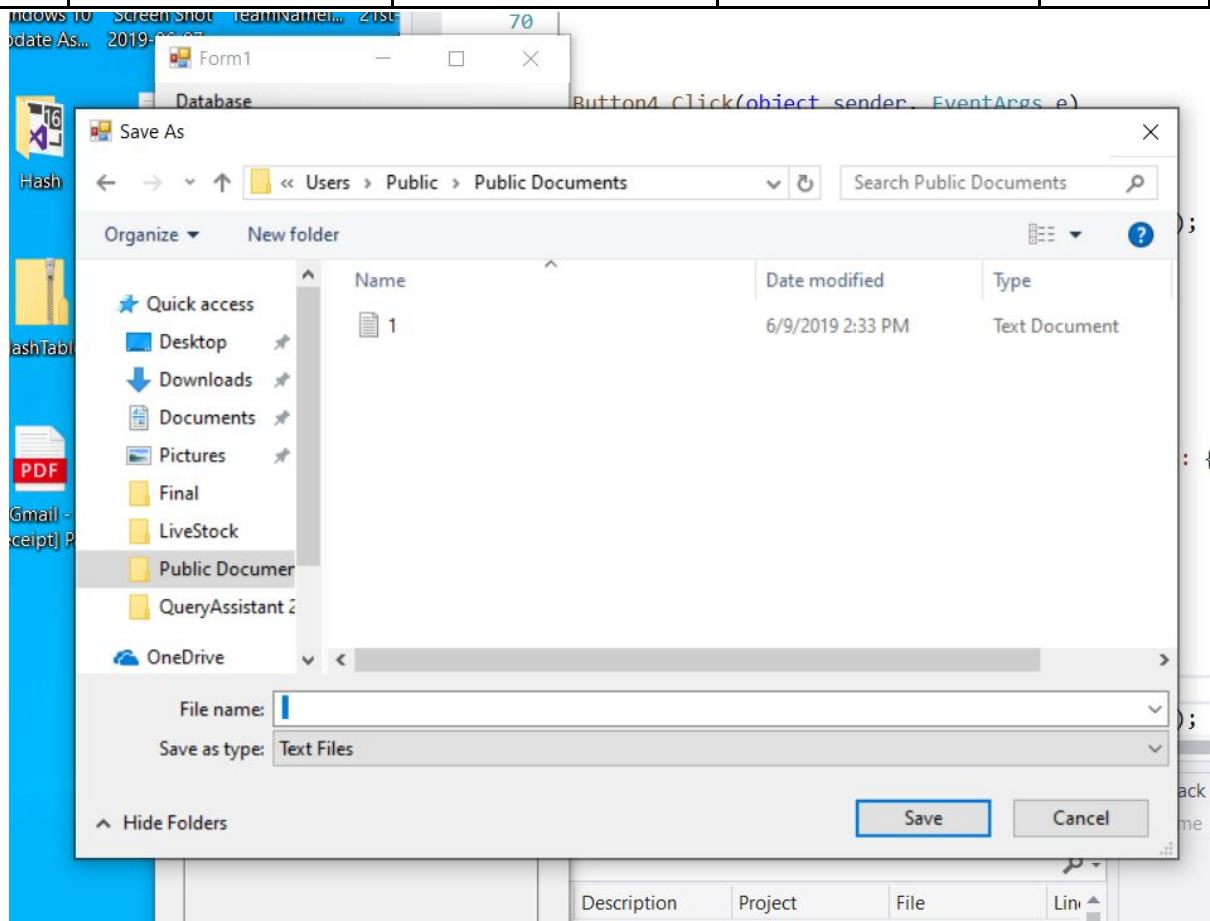
6. Function ***Average Age*** testing process:

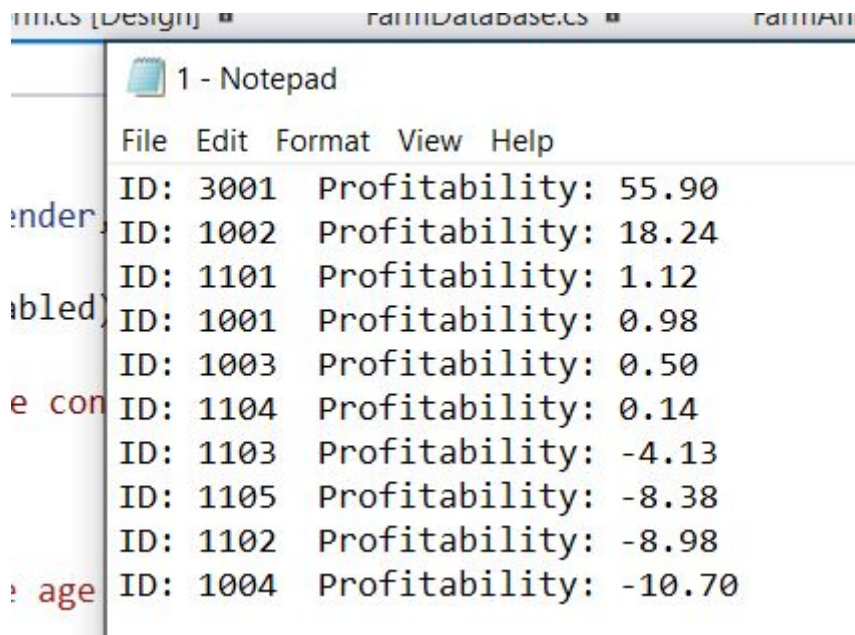
Action	Database connection	Actual Result	Test Outcome
Click Total Average age button	YES	The Average age of animals in the farm: 6.7	PASS
Click Total Average age button	NO	Please connect to the database	PASS



7. Function *Profitability report* testing process:

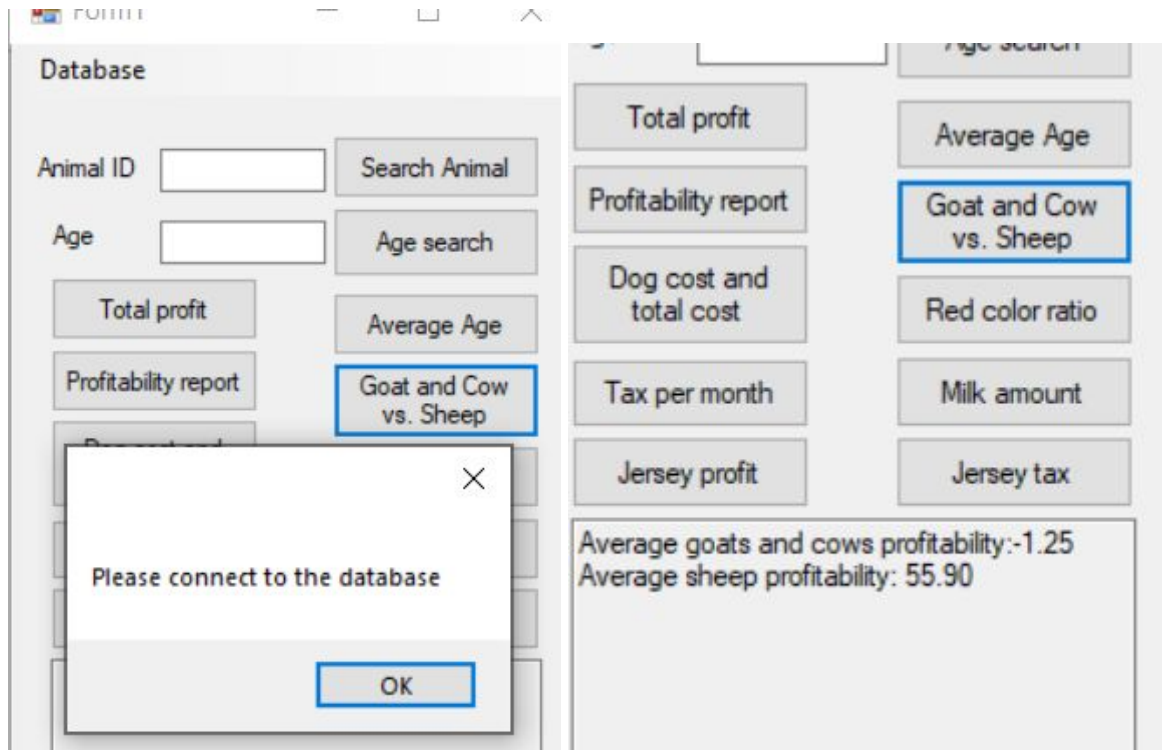
Action	File name	Database connection	Actual Result	Test Outcome
Click the Profitability report button	empty space	YES	Cannot create a file	PASS
Click Total Average age button	1	YES	File created, order correct	PASS





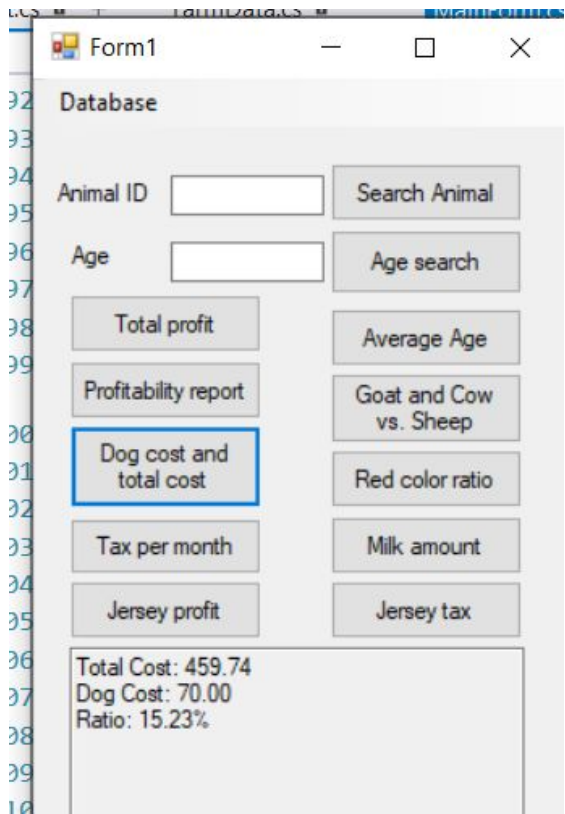
8. Function *Goat and Cow vs. Sheep* testing process:

Action	Database connection	Actual Result	Test Outcome
Click Goat and Cow vs. Sheep button	YES	Average goats and cows profitability:-1.25 Average sheep profitability: 55.90	PASS
Click Goat and Cow vs. Sheep button	NO	Please connect to the database	PASS



9. Function ***Dog cost and total cost*** testing process:

Action	Database connection	Actual Result	Test Outcome
Click Dog cost and total cost button	YES	Total Cost: 459.74 Dog Cost: 70.00 Ratio: 15.23%	PASS
Click Dog cost and total cost button	NO	Please connect to the database	PASS



10. Function *Red color ratio* testing process:

Action	Database connection	Actual Result	Test Outcome
Click Red color ratio button	YES	Total number of animal: 13 Number of red color animal: 4 Red color ratio is: 30.77%	PASS

Click Red color ratio button	NO	Please connect to the database	PASS

11. Function *Tax per month* testing process:

Action	Database connection	Actual Result	Test Outcome
Click Tax per month button	YES	Tax per month is: \$2.95	PASS
Click Red color ratio button	NO	Please connect to the database	PASS

Form1

Database

Animal ID Search Animal

Age Age search

Total profit

Profitability report

Dog cost and total cost

Tax per month

Jersey profit

Average Age

Goat and Cow vs. Sheep

Red color ratio

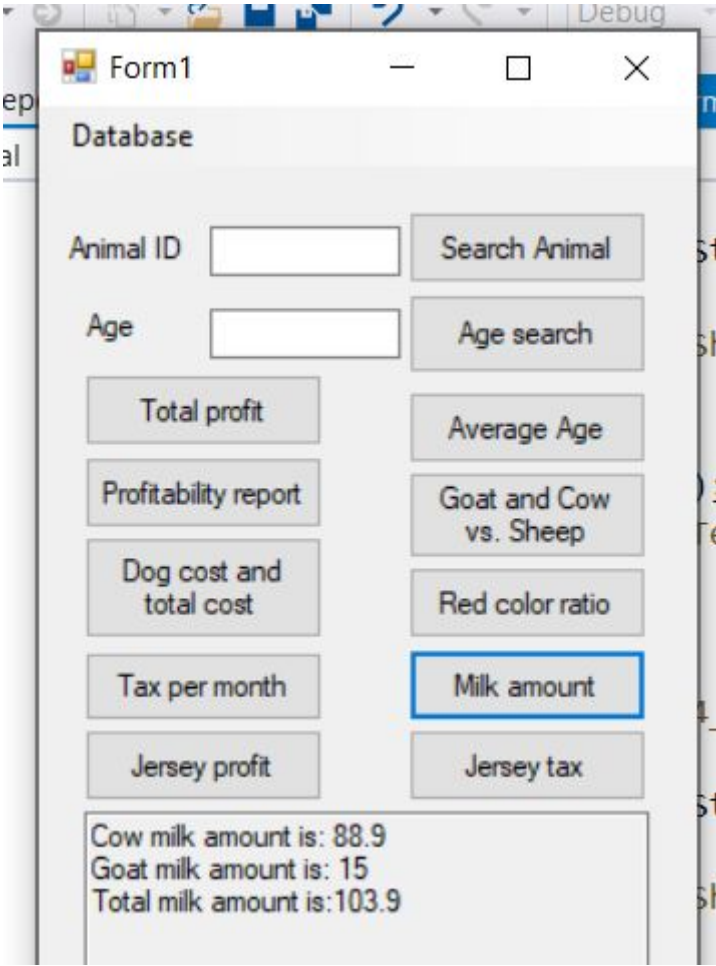
Milk amount

Jersey tax

Tax per month is: \$2.95

12. Function *Milk amount* testing process:

Action	Database connection	Actual Result	Test Outcome
Click Milk amount button	YES	Cow milk amount is: 88.9 Goat milk amount is: 15 Total milk amount is:103.9	PASS
Click Milk amount button	NO	Please connect to the database	PASS



13. Function *Jersey profit* testing process:

Action	Database connection	Actual Result	Test Outcome
Click Milk amount button	YES	Total Jersey profitability is: \$18.73	PASS
Click Milk amount button	NO	Please connect to the database	PASS

The screenshot shows a Windows application window titled "Form1". Inside the window, there is a section labeled "Database". Below this label, there are several input fields and buttons:

- An "Animal ID" input field followed by a "Search Animal" button.
- An "Age" input field followed by an "Age search" button.
- A grid of buttons including "Total profit", "Average Age", "Profitability report", "Goat and Cow vs. Sheep", "Dog cost and total cost", "Red color ratio", "Tax per month", "Milk amount", "Jersey profit", and "Jersey tax".
- At the bottom, a text box displays the result: "Total Jersey profitability is: \$18.73".

14. Function *Jersey tax* testing process:

Action	Database connection	Actual Result	Test Outcome
Click Milk amount button	YES	Total tax paid for Jersey Cows per year is: \$17.62	PASS
Click Milk amount button	NO	Please connect to the database	PASS

The screenshot shows a Windows application window titled "Form1". Inside the window, there is a section labeled "Database". Below this label, there are two input fields: "Animal ID" and "Age", each followed by a button labeled "Search Animal" and "Age search" respectively. Below these are two columns of buttons. The left column contains: "Total profit", "Profitability report", "Dog cost and total cost", "Tax per month", and "Jersey profit". The right column contains: "Average Age", "Goat and Cow vs. Sheep", "Red color ratio", "Milk amount", and "Jersey tax". At the bottom of the window, there is a text box containing the text: "Total tax paid for Jersey Cows per year is: \$17.62".

The self mark is:99

REPORT #	DESCRIPTION	MARKS	Self Check
1	The user enter an ID and the program displays the information associated with this animal farm. In addition to the basic information, a string will be added to state the type of the animal (Dog, Cow, Jersey Cow, Sheep or Goat)	7	Done
2	Display the total profitability/loose of the farm per day	5	Done
3	Display the total tax paid to the government per month	5	Done
4	Display the total amount of milk per day for goats and cows	5	Done
5	Display the average age of all animal farms (dog excluded)	4	Done
6	Display the average profitability of "Goats and Cow" vs. Sheep	5	Done
7	Display the ratio of Dogs' cost compared to the total cost	6	Done
8	Generate a file that contains the ID of all animals ordered by their profitability (you are not allowed to use built-in sorting algorithm – your code must do the sorting). Dogs are excluded	7	Done
9	Display the ratio of livestock with the color red	4	Done
10	Display the total tax paid for Jersey Cows	5	Done
11	The user enters a threshold (number of years), and the program displays the ratio of the number of animal farms where the age is above this threshold	4	Done
12	Display the total profitability of all Jersey Cows	4	Done

MARKING CRITERIA

	DESCRIPTION	MARKS	Self mark
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1	Reports as listed in Table 4	60	Done
2	Demonstration of inheritance	2	Done
3	Demonstration of polymorphism	3	Done
4	Error handling	3	Done
5	Comments and indentation	2	Done
6	Short methods	2	Done
7	Good object oriented practice	4	
8	Efficient algorithms (use of hash table and sorting algorithm)	8	Done
9	Appropriate number of classes	3	Done
10	Evidence of testing all functions of the program – show screenshots	3	Done
11	Self-marking	2	Done
12	Demonstration of Multithreading	8	Done