

Iteration assignments

When creating the program code, you must apply the following basic principles:

- create a separate project for each assignment;
- use name 'assignment1', 'assignment2', etcetera for the projects;
- create one solution for each week containing the projects for that week;
- make sure the output of your programs is the same as the given screenshots;

Note: for assignment 1, your output must contain a dot (.) as a decimal separator, and not a comma (,), see screenshots of these assignments. To make sure your program uses a dot, add the following code to your program (2 using-statements and the code at the start of your Main-method):

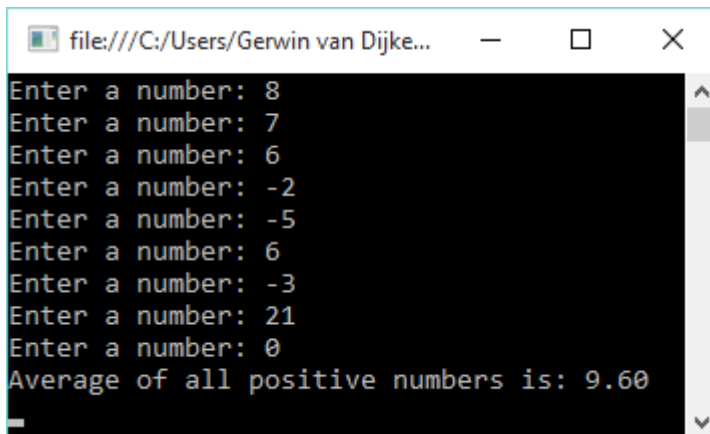
```
using System;
using System.Globalization;
using System.Threading;

static void Main(string[] args)
{
    // set culture of program
    CultureInfo ci = new CultureInfo("en-US");
    Thread.CurrentThread.CurrentUICulture = ci;
    Thread.CurrentThread.CurrentCulture = ci;

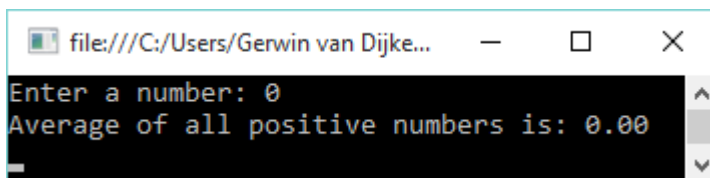
    // your code here...
}
```

Assignment 1 (Console App)

Several numbers are entered until number 0 is stated. Calculate and print the average of the positive numbers.



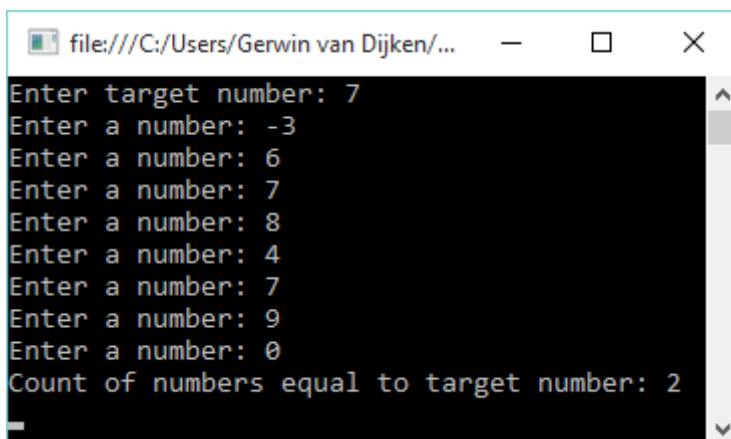
```
file:///C:/Users/Gerwin van Dijke...
Enter a number: 8
Enter a number: 7
Enter a number: 6
Enter a number: -2
Enter a number: -5
Enter a number: 6
Enter a number: -3
Enter a number: 21
Enter a number: 0
Average of all positive numbers is: 9.60
```



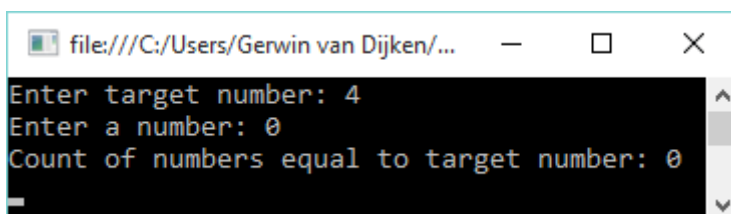
```
file:///C:/Users/Gerwin van Dijke...
Enter a number: 0
Average of all positive numbers is: 0.00
```

Assignment 2 (Console App)

First, a target number is entered and then several numbers (the input again ends with 0). Determine and print the number of numbers that are equal to the target number.



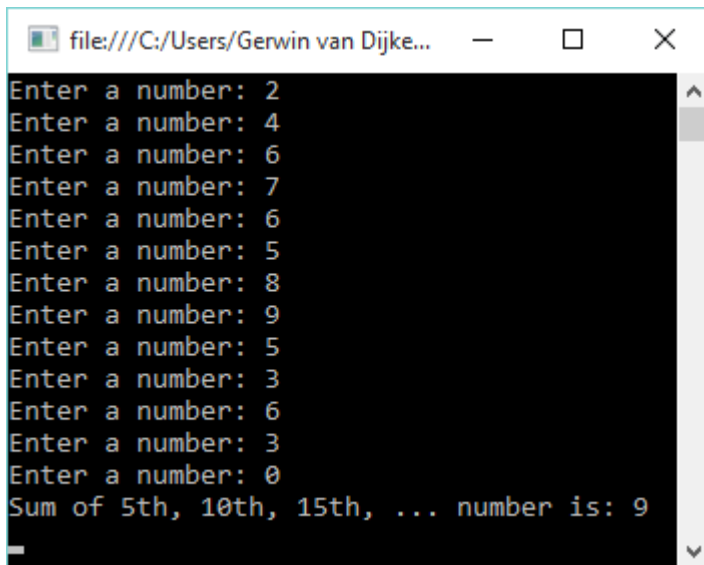
```
file:///C:/Users/Gerwin van Dijken/...
Enter target number: 7
Enter a number: -3
Enter a number: 6
Enter a number: 7
Enter a number: 8
Enter a number: 4
Enter a number: 7
Enter a number: 9
Enter a number: 0
Count of numbers equal to target number: 2
```



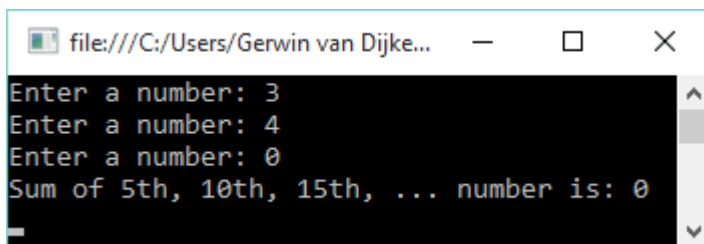
```
file:///C:/Users/Gerwin van Dijken/...
Enter target number: 4
Enter a number: 0
Count of numbers equal to target number: 0
```

Assignment 3 (Console App)

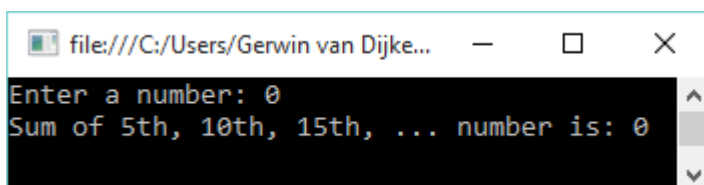
Several numbers are entered (the input again ends with 0). Determine and print the sum of the 5th, 10th, 15th number, etc.



```
file:///C:/Users/Gerwin van Dijke...  
Enter a number: 2  
Enter a number: 4  
Enter a number: 6  
Enter a number: 7  
Enter a number: 6  
Enter a number: 5  
Enter a number: 8  
Enter a number: 9  
Enter a number: 5  
Enter a number: 3  
Enter a number: 6  
Enter a number: 3  
Enter a number: 0  
Sum of 5th, 10th, 15th, ... number is: 9
```



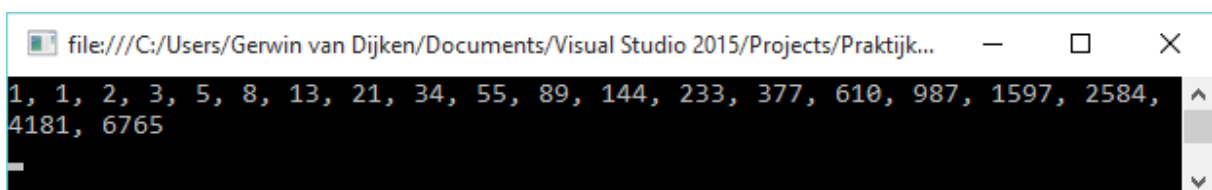
```
file:///C:/Users/Gerwin van Dijke...  
Enter a number: 3  
Enter a number: 4  
Enter a number: 0  
Sum of 5th, 10th, 15th, ... number is: 0
```



```
file:///C:/Users/Gerwin van Dijke...  
Enter a number: 0  
Sum of 5th, 10th, 15th, ... number is: 0
```

Assignment 4 (Console App)

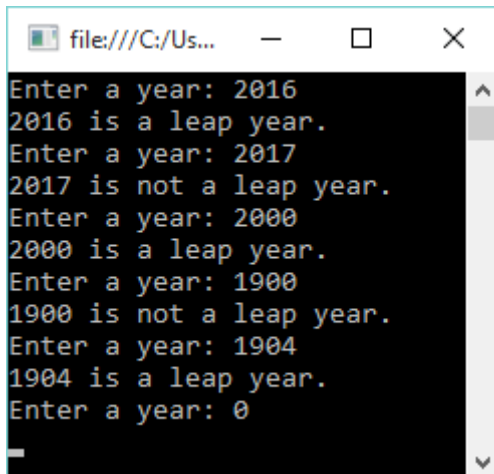
Determine the first 20 numbers in the (Fibonacci) series: 1 1 2 3 5 8 13
(starting from the third element, the element is the sum of the preceding two).



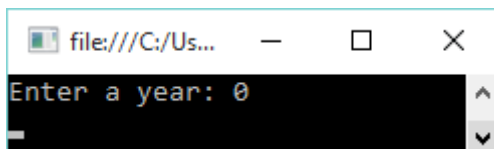
```
file:///C:/Users/Gerwin van Dijken/Documents/Visual Studio 2015/Projects/Praktijk...  
1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987, 1597, 2584,  
4181, 6765
```

Assignment 5 (Console App)

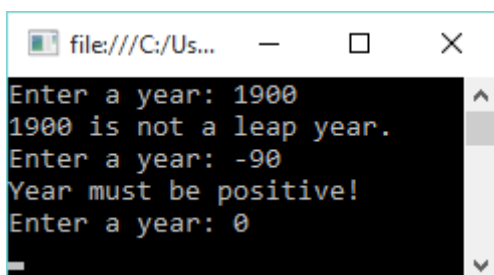
Enter a year. Show whether that year is a leap year. Reject non-positive numbers with an appropriate text. (A year is a leap year if it can be divided either by 400 or by 4, but not by 100). Keep repeating all of the above steps until 0 is entered as the year.



```
file:///C:/Us...
Enter a year: 2016
2016 is a leap year.
Enter a year: 2017
2017 is not a leap year.
Enter a year: 2000
2000 is a leap year.
Enter a year: 1900
1900 is not a leap year.
Enter a year: 1904
1904 is a leap year.
Enter a year: 0
```



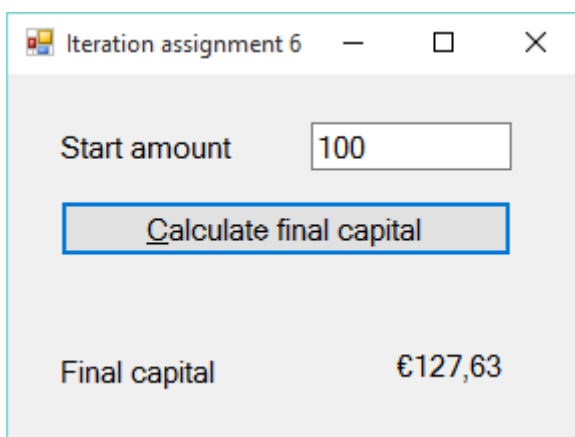
```
file:///C:/Us...
Enter a year: 0
```



```
file:///C:/Us...
Enter a year: 1900
1900 is not a leap year.
Enter a year: -90
Year must be positive!
Enter a year: 0
```

Assignment 6 (Windows Forms App)

I go to the bank on 1 January and put a sum of money on a fixed deposit with an annual interest rate of 5%. I would like to receive the deposit back after five years; no withdrawals have been made in the interim period. Enter the starting amount; calculate the final capital and print it.

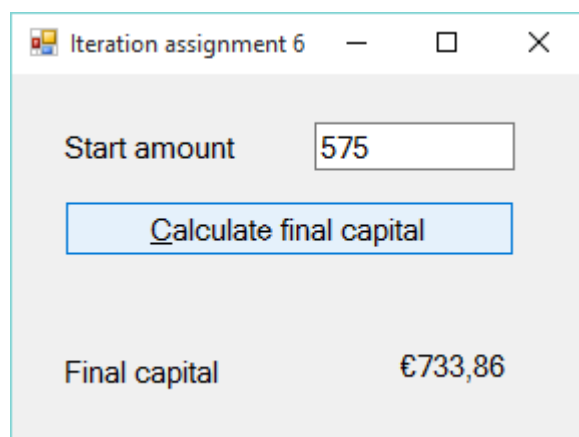


Iteration assignment 6

Start amount: 100

Calculate final capital

Final capital: €127,63



Iteration assignment 6

Start amount: 575

Calculate final capital

Final capital: €733,86

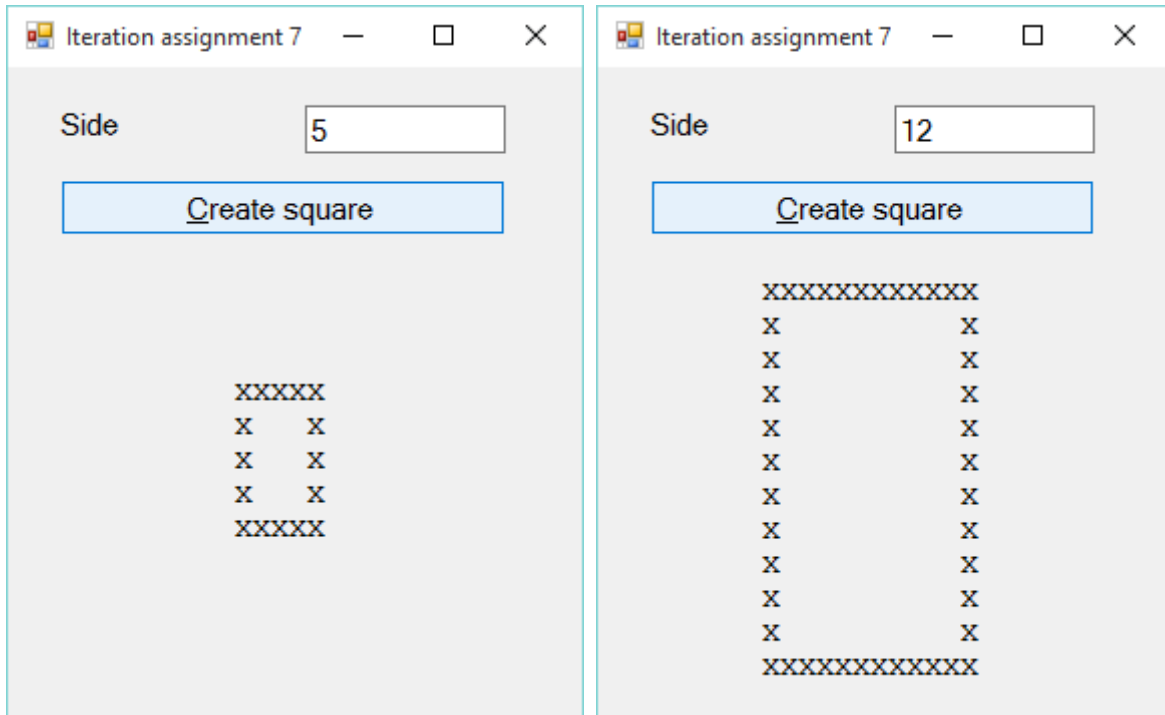
Assignment 7 (Windows Forms App)

Draw the following pattern, a square border with side n.
For example, $n = 5$ produces the following result.

NB:

- Use New Courier as the font for the label in which the square is shown.
- Use a font size that stands out for X, such as font size 14 in bold.
- Centre the text in the label of the square.
- To go to the next line with a `string` (text), use character code `'\n'`.

Tip: Do this assignment with a square completely filled with Xs first.

**Assignment 8 (Windows Forms App)**

Determine the following: $\text{sum} = 0 + 1 + 2 + \dots + n$.
Check the result using the formula: $\text{sum} = n \times (n + 1) / 2$.

State whether or not these sums are equal to each other.

