

Homework 2 (15 points)

Loops and functions (Fibonacci numbers)

Definition

The first two numbers x_0 and x_1 are set arbitrarily (but usually to 0 and 1). For the successive numbers the recurrence formula is used:

$$x_n \longleftarrow x_{n-1} + x_{n-2}.$$

Example

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, ...

Homework 1 (15 points)

Loops and functions (Fibonacci numbers)

```
#include <iostream>
using namespace std;

int main() {
    int x0, x1, x2, iter = 2;

    cout << "Input F(0) = ";
    cin >> x0;
    cout << "Input F(1) = ";
    cin >> x1;
    while (iter < 40) {
        x2 = x0 + x1;
        cout <<"F(" <<iter++ <<")\t=\t" <<x2 <<endl;
        x0 = x1;
        x1 = x2;
    }

    return 0;
}
```

Homework 1 (15 points)

Loops and functions (Fibonacci numbers)

1. (4 points) Rewrite the example to use the **do... while** loop.
2. (4 points) Rewrite the example to use the **for** loop.
3. (4 points) Write a function `fibo(int x0, int x1, int n)`; that would calculate and print first `n` Fibonacci numbers starting with `x0, x1`:
 - ▶ Take into account special cases such as `n==0` and `n==1`.
 - ▶ Modify the `main()` function to use your `fibo(...)` function.
4. (3 points) Start with 0 and 1, and print the first 50 numbers. What happens and why?

E-mail the answer and the source code to `ljank@ippt.pan.pl`.