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:

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

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

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```cpp
#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;
  }
  system("pause");     //for Dev C++ users only
  return 0;
}
```

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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.