Programming Concepts

Exercise 1

October 1, 2016

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Internet Technologien & Anwendungen

What do do

We have seen in the lecture that the recursive algorithm to calculate the Fibonacci sequence is elegant but has an exponential run-time complexity $\mathcal{O}(2^n)$ We strongly suspect that an iterative version of the algorithm would be *much* faster.

Take the example `fib.c` from the lecture and modify it so that the computation occurs iteratively in a loop. For a reminder on how the sequence is calculated take a look at slides.

After you have implemented the algorithm you will notice that the output will become wrong for higher Fibonacci numbers. This is because the variable will overflow since the data type(s) used in the original example are not sufficient for larger numbers. Take a look at the slides about data types and try to find a more suitable one, remember Fibonacci numbers are can only be positive c

Keep the main function the same! The input should still be parsed via command line arguments.

Submission

Submit the exercise on the E-Learning platform. You will only need one source file therefore submit the file directly. **Do not zip it!** You will find there submission folder with the name **Exercise_1**.

Please use the following naming convention: `exercise_1_<lastname>.c`.