Algorithm Engineering

Exercise No. 2

Tuesday 28th October, 2014

Submission

(1) Submit your solution with `$ git request-pull` (or similar) to jkm@informatik.uni-jena.de.

1 Create a new repository

Initialize an empty repository and use it for any further exercises. Push your changes to an accessible remote repository.

2 Compute Fibonacci numbers

Implement different algorithms to compute Fibonacci numbers. You should implement the following three algorithm from the lecture.

(1) Algorithm derived from the definition (very inefficient, but obviously correct).

(2) Algorithm using linear memory in n and running in linear time in n.

(3) Algorithm using constant memory and running in linear time in n.

n denotes the number of the Fibonacci number to compute. That is $n \in \mathbb{N}$ starting with 0 for the first Fibonacci number.

Follow the style presented in the lecture.

3 Unittest your implementations

Write unit tests for your implementation with googletest. Familiarize yourself with googletest. Getting started is warmly recommended.

Do the algorithms always return the correct Fibonacci number?

4 Building with make

Add a `Makefile` to your repository. It should contain the targets `all`, `build`, and `tests` and ease building and testing of the algorithms.