Contents

Opdracht

Recreate this document as good as possible.

- Add the appendix in a seperate `.tex`-file.

- Refer correctly to all elements in the text and make them clickable.

- Use the supplied `.bib`-file for your citations. You need to add one reference yourself.

- Use the `natbib`-package

Bonus

- Change the bibliography style to APA.

Chapter 1

The Fibonacci Numbers

You are writing a thesis about the Fibonacci numbers, as described in his book *Liber abaci* [Sigler, 2002]. An algorithm that outputs the list can be found in appendix A.

1.1 Definities

Definition 1 *The Fibonacci Numbers are a sequence where each subsequent number equals the sum of the previous two. By definition, the first two elements are 0 and 1.*

Definition 2 *The sum of two elements is the same as the first element added to the second.*

Now we prove Definition 2 in Proof 1.

Proof 1 *Just because.*

1.2 Applications

The Fibonacci sequence is used in the so-called *Fibonacci Heaps*, as described in Fredman and Tarjan [1987].

1.3 More applications

Another paper which uses the Fibonacci numbers can be found here[1]. This paper is not accessible at the university, byt we can download the BibTeX source by clicking on "Download Citations".

Add the reference to the `.bib`-file and correctly cite the paper: Zou et al. [2004].

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[1]The full link is `http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?arnumber=1328909`

Bibliography

Michael L Fredman and Robert Endre Tarjan. Fibonacci heaps and their uses in improved network optimization algorithms. *Journal of the ACM (JACM)*, 34(3):596–615, 1987.

Python Software Foundation. Modules, October 2014. URL `https://docs.python.org/3/tutorial/modules.html`.

L. E. Sigler, editor. *Fibonacci's Liber abaci : a translation into modern English of Leonardo Pisano's Book of calculation.* Sources and studies in the history of mathematics and physical sciences. Springer-Verlag, New York, 2002.

Jiancheng Zou, R.K. Ward, and Dongxu Qi. A new digital image scrambling method based on fibonacci numbers. In *Circuits and Systems, 2004. ISCAS '04. Proceedings of the 2004 International Symposium on*, volume 3, pages III–965–8 Vol.3, May 2004. doi: 10.1109/ISCAS.2004.1328909.

Appendix A

Implementation

Implementing the Fibonacci Numbers in Python can be done as follows [Python Software Foundation, 2014]:

```python
def fib(n): # write Fibonacci series up to n
    a, b = 0, 1
    while b < n:
        print(b, end=' ')
        a, b = b, a+b
    print()
```