Introduction to cryptocurrencies

crypto251.0 Cryptocurrency and the Smileycoin

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Introduction to the course

These slides and all the tutor-web content can be found under the two links

- `https://tutor-web.net/comp/crypto251.0`
- `https://beta.tutor-web.net/`
- Videos in English: `https://www.youtube.com/playlist?list=PLzTQcKBiNWB3E7nh5eg`
- Videos in Icelandic: See the Canvas course page

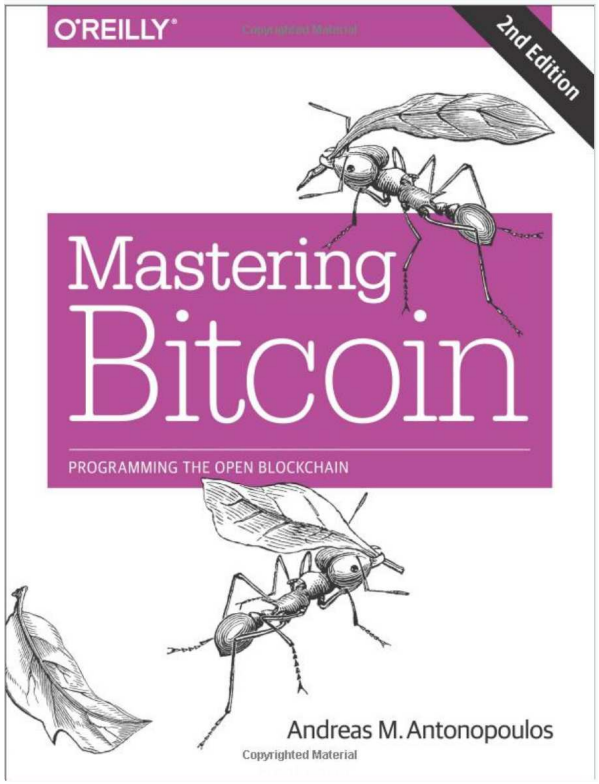
This content forms the basis for an on-line cryptocurrency course as well as a course, "Rafmyntir (STÆ 532M)" at the University of Iceland.
Only the beta version of tutor-web will be used in the actual course.
Only work done in the beta version will count towards completion of the course.
The slides and content are **open** so they are freely available and accessible to anyone, anywhere.
To receive **academic credit** for working through the material, a student

Enrollment, credits and Smileycoin rewards

To obtain credits for the course, a student needs to be registered at a university which provides that kind of accreditation.
However any student, anywhere, is free to take the open tutor-web version of the course, as a self-study course, with or without any association with an instructor or institution.
Students should note: If you are formally enrolled in a school anywhere, you should ask your instructor to contact any admin of the tutor-web to make the class a formal class in the tutor-web. This will ensure that the students in the class receive much higher Smileycoin rewards when completing tasks in the system. Students are free to use the system without being enrolled anywhere, but will then receive fewer SMLY.
For further information, see handouts and examples in the PDF version of these tutorial notes.
Video corresponding to this introduction: `https://bit.ly/3aPyIqj`

Reading material

The book



The SMLY paper (aka the Ledger article)
`http://ledgerjournal.org/ojs/index.php/ledger/article/view/103`
The paper Satoshi Nakamoto Bitcoin: A Peer-to-Peer Electronic Cash System `https://bitcoin.org/bitcoin.pdf`

Cryptocurrencies

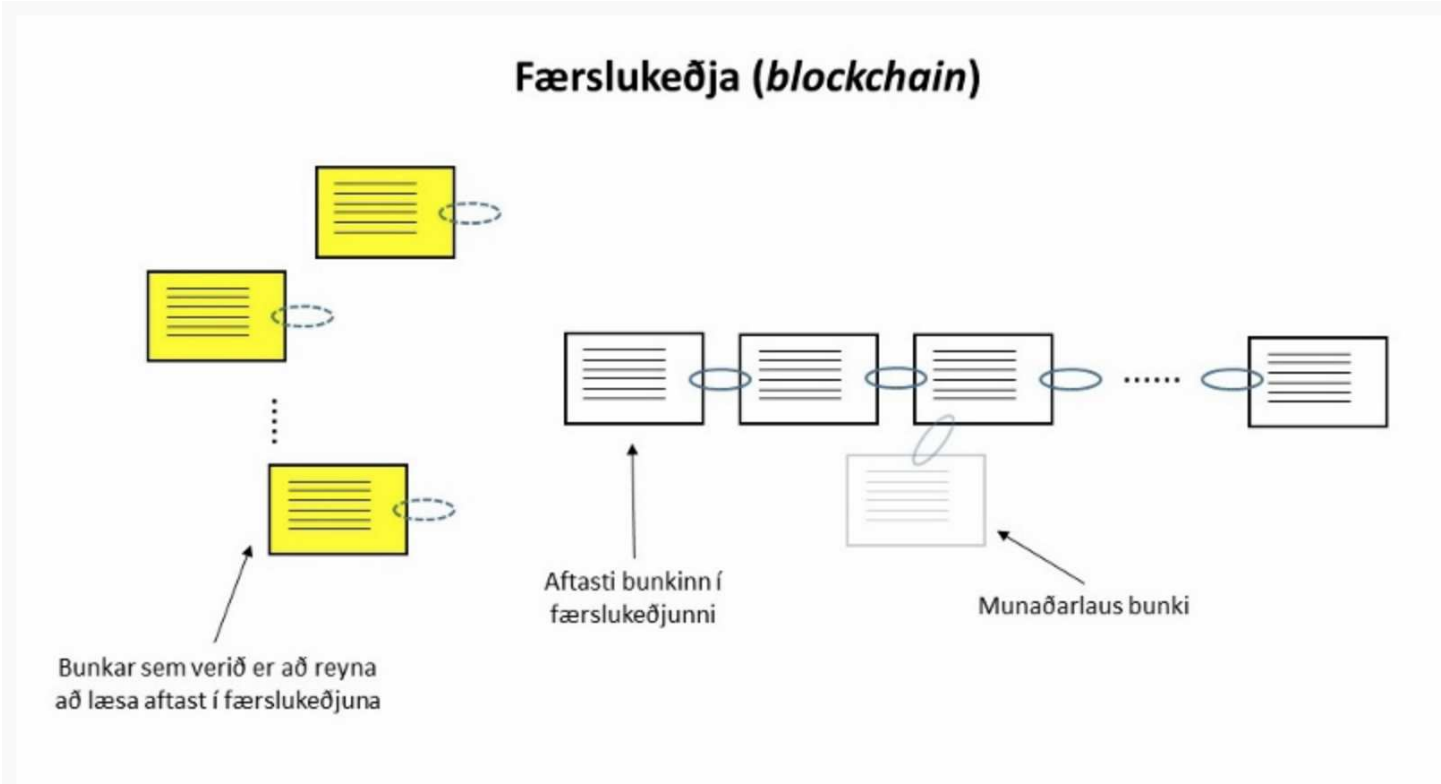
A cryptocurrency is an electronic solution to the task of securely storing and exchanging units of value without any need for trusted intermediaries such as banks or backing by physical objects such as gold, coins or notes. By taking this course the student will study in detail the technical aspects of cryptocurrencies, including how transfer of value is conducted and how they are made secure.
There are many, many cryptocurrencies:

- Bitcoin
- Litecoin
- Dogecoin
- Etherium
- Auroracoin
- ...
- Smileycoin (Broskallar) :-)

This course will use the Smileycoin as an example throughout

Behind the scenes (in Icelandic)

- *Bálkakeðja (Færslukeðja/Bunkakeðja – blockchain)*
- *Færslur (og grunnhugtakið, UTXO – transactions)*
- *Námugröftur (– mining)*
- *Satoshi Nakamoto*



(Hjálmtýr Hafsteinsson, Vísindavefurinn)

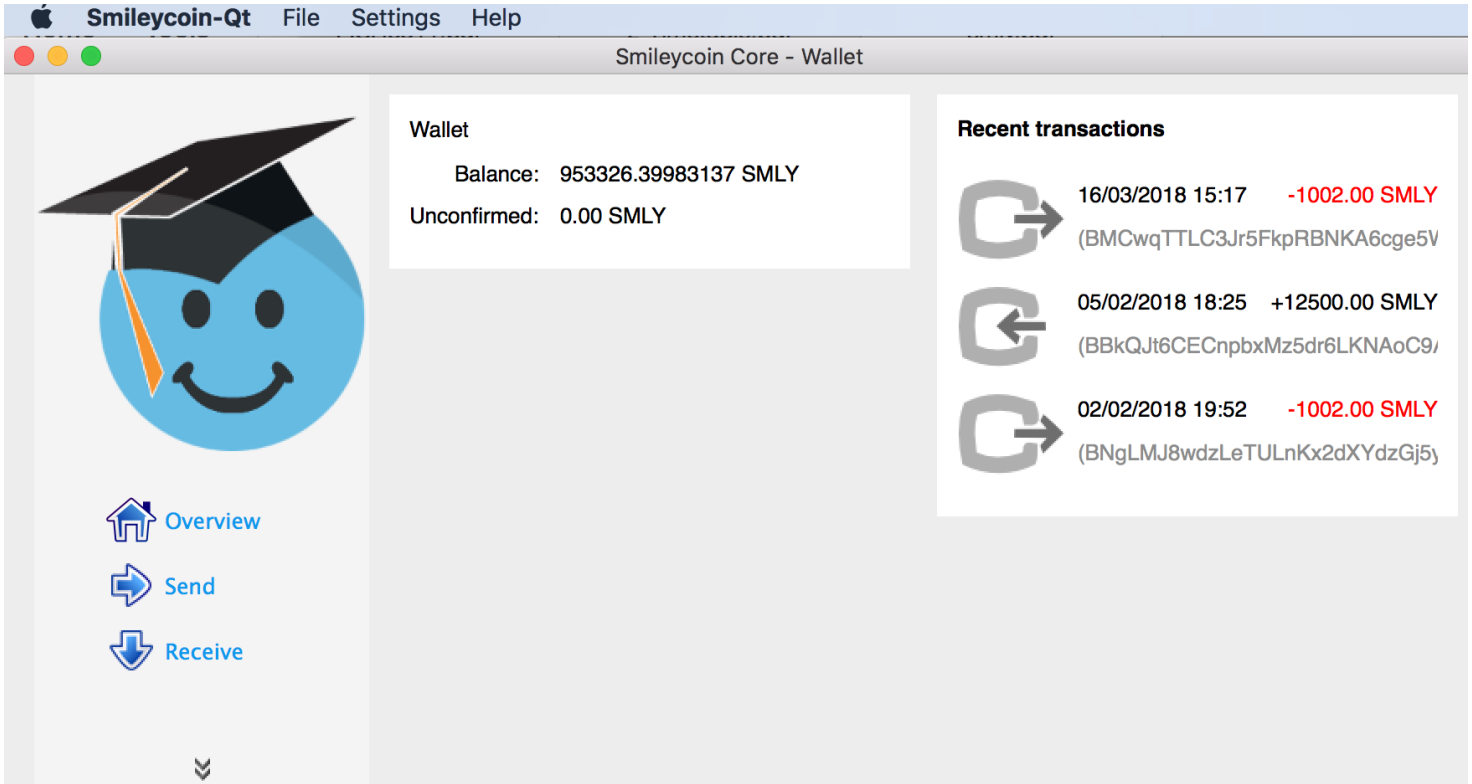
A useful allegory

- *The chain is like an old-fashioned ledger*
- *Each block is like a page in the ledger*
- *Each transaction is just like a traditional transaction "Alice pays/lends Bob 10 cents"*
- *The miner is the accountant:*
  - *collects transactions*
  - *records them into a new block - a page in the book*
  - *gets paid for doing this work*

A short video describing the same concepts:
`https://www.youtube.com/watch?v=LcpBlXHOZoc&index=3&list=PLzT(`

The user side

- *Download a "wallet" (a computer program/app) to a computer (e.g. desktop, laptop, tablet or phone)*
- ***Receive** cryptocurrency "to the wallet"*
- ***Send** to others*



MEMO Nothing actually gets sent anywhere :-)

Overview

This section has given a quick overview of the cryptocurrency course and basic concepts.
Your instructor will give more detail. At UI more detailed definitions of work are/will be given in Canvas.
This would be a good time to read chapter 1 of Mastering Bitcoin by Andreas Antonopoulos.

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