

Assignment 2

CSCI E-118 Introduction to Blockchain and Bitcoin

Below is a list of questions. All questions relate to the Bitcoin Blockchain. Research the questions, and provide the answers with 1-2 short paragraphs per question. Do not provide long-form, extensive answers. I've included some relevant sections from Mastering Bitcoin. You may read them, or you may ignore them and find your own resources.

You **MUST** submit either a `.txt` (text), `.md` (markdown) file or a `.pdf` (PDF) file. **DO NOT** submit any other file format (`.docx`, `.tex`, etc.).

1) What is the difference between "Bitcoin" and "Bitcoin Core"?

<https://github.com/bitcoinbook/bitcoinbook/blob/develop/ch03.asciidoc#bitcoin-core-the-reference-implementation>

2) What is the difference between a UTXO model and an Account model?

3) What is the UTXO set? How/where is it stored in Bitcoin Core?

4) What is bitcoin dust?

5) Describe what a blockchain fork is. What is the difference between a soft and hard fork?

<https://github.com/bitcoinbook/bitcoinbook/blob/develop/ch10.asciidoc#blockchain-forks>

<https://github.com/bitcoinbook/bitcoinbook/blob/develop/ch10.asciidoc#changing-the-consensus-rules>

6) What is a testnet?

<https://github.com/bitcoinbook/bitcoinbook/blob/develop/ch09.asciidoc#bitcoins-test-blockchains>

7) What is SPV?

<https://github.com/bitcoinbook/bitcoinbook/blob/develop/ch08.asciidoc#node-types-and-roles>

<https://github.com/bitcoinbook/bitcoinbook/blob/develop/ch09.asciidoc#merkle-trees-and-simplified-payment-verification-spv>

8) What are bloom filters used for in Bitcoin?

<https://github.com/bitcoinbook/bitcoinbook/blob/develop/ch08.asciidoc#bloom-filters>

9) There four functions of a Bitcoin Node: routing, full blockchain database, mining, and wallet services. Describe each of these functions. Which of these functions must a full node implement? Which must a solo miner implement? Which must a lightweight (simplified payment verification) wallet implement?

<https://github.com/bitcoinbook/bitcoinbook/blob/develop/ch08.asciidoc#node-types-and-roles>

<https://github.com/bitcoinbook/bitcoinbook/blob/develop/ch08.asciidoc#full-nodes>

<https://github.com/bitcoinbook/bitcoinbook/blob/develop/ch08.asciidoc#simplified-payment-verification-spv-nodes>

10) Describe what a mining pool is.

<https://github.com/bitcoinbook/bitcoinbook/blob/develop/ch10.asciidoc#mining-pools>

11) What is segwit?

<https://github.com/bitcoinbook/bitcoinbook/blob/develop/ch07.asciidoc#segregated-witness>

12) What is a transaction pool?

<https://github.com/bitcoinbook/bitcoinbook/blob/develop/ch08.asciidoc#transaction-pools>

13) Describe the coinbase transaction.

<https://github.com/bitcoinbook/bitcoinbook/blob/develop/ch10.asciidoc#the-coinbase-transaction>