

CMPE 444 Midterm Exam, 16/11/17

Questions (Questions 1 to 8 are 10 pts each, questions 8 and 9 are 20 pts each)

1) What does it mean to send money P2P? Please explain using a few sentences.

2) What is the closest analogy to blockchain in Turkey?

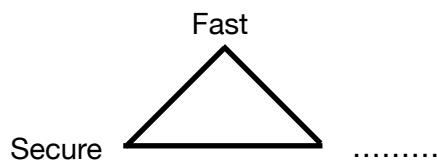
- a. Vadedi çek,
- b. Bank mobile apps
- c. Hopi and Bonus
- d. BKM express.

3) Why are governments planning to issue their own crypto-currency?

4) Could any institution, for example the Chinese government effect the mining of bitcoin by using millions of computers? If yes how? Please elaborate.

5) We can not buy bread from “bakkal” using bitcoin. Give at least two reasons for this.

6) Supply the missing word:



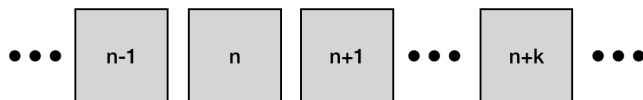
7) What did humanity need to develop before the Bitcoin article to appear in 2009?

- a. Bit torrent
- b. Public Key Cryptology
- c. Digicash ecash etc
- d. Smart contracts
- e. All of the above.

- 8) In a blockchain network, suppose that;
- Network consists of 5 peers.
 - All nodes are mining.
 - Internal currency of this blockchain is called **Koin**
 - All nodes have only one address, which are AA, BB, CC, DD & EE.
 - Mining reward is 2 Koins.

At the state of **n**th block:
EE has 100 Koin while other peers have none.

At the state of **(n+k)**th block, balances are,
AA : 10 Koins, BB : 50 Koins, CC : 30 Koins, DD : 10 Koins, EE: 6 Koins



DD CC 20

Transaction notation

from: DD,
to: CC,
amount: 20

Block Number: 178899
DD CC 20
AA BB 900
BB CC 56
Miner EE

Example Block
Do not use

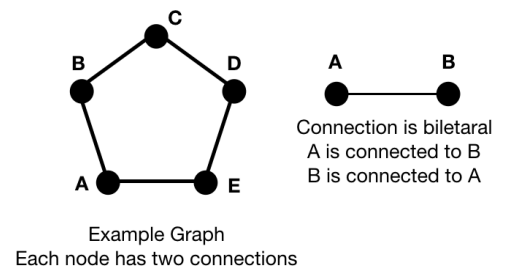
A. What is **k**?

B. It is known that DD sent 20 Koins to CC and this transaction is recorded at **(n+1)**th block. Construct all blocks from **n** to **(n+k)**. Specify a miner for each block. (Note: There are infinitely many solutions).

C. Draw a graph of a network where;

- DD is only connected to AA.
- CC, BB, EE have exactly two connected two nodes.

Which peer is at the most disadvantageous position in terms of being vulnerable to fraud. Explain why?



D. Draw a graph of the network where;
EE is connected to all nodes and other nodes have single connection.
Why such a network cannot be considered as a peer-to-peer network?