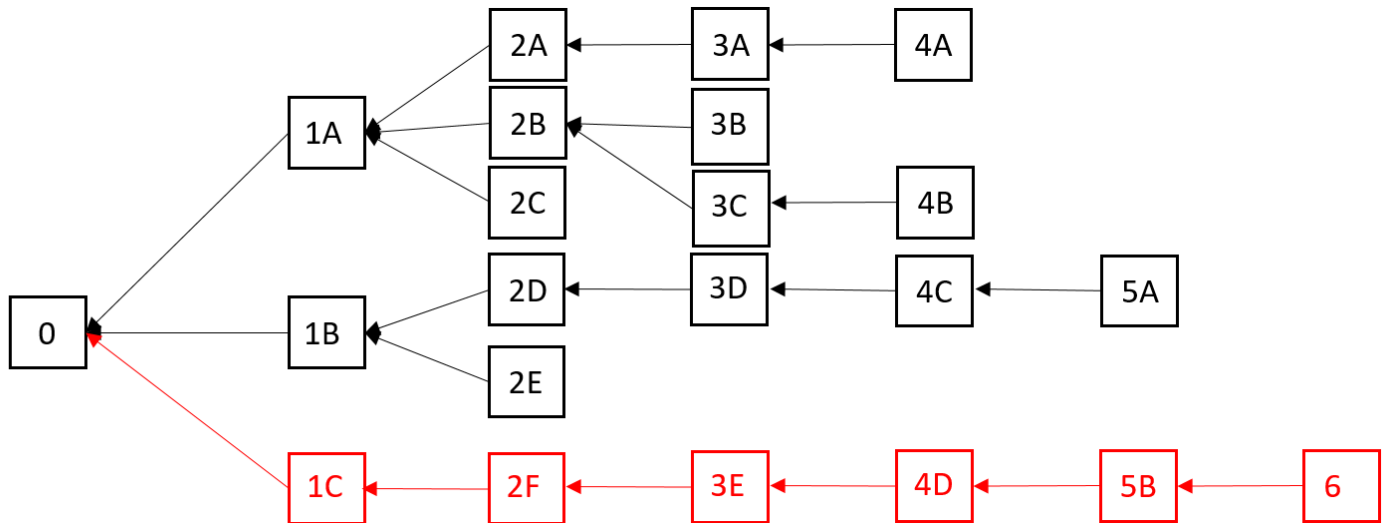


Quiz 6

- Honor Code: You must work completely independently on this assignment. Do not discuss the questions or answers with each other before the assignment is due. Any breach of the honor code will be handled per the University's policy on academic honesty.
- Follow the instructions very careful. Answers that do not conform to the instructions will not be given credit.
- Submit your answers through Blackboard as a PDF file
- A question may have multiple correct answers. You must select all possible correct answers.



1. Refer to the block tree above when answering the following questions. The red blocks are mined by the attacker. The black blocks are mined by the honest nodes. Assume the term "block tree" refers to the entire set of blocks above including the attacker chain.
 - a. If the protocol follows the longest chain rule (e.g. Bitcoin), what is the main chain in the block tree?
 - b. If the protocol follows the GHOST rule (e.g. Ethereum), what is the main chain in the block tree?
 - c. What percent of the total mining power of the network is controlled by the honest nodes? Ignore the genesis block in your calculations.
 - d. What percent of the total mining power of the network is controlled by the attacker nodes? Ignore the genesis block in your calculations.
 - e. Why is the attacker able to set up his chain without any forks, but the honest nodes produce many forks?
2. If Bitcoin increased its maximum block size limit to 10MB and decreased its block creation rate to 5 minutes, what would its maximum throughput be in terms of transactions processed by the network per second? Assume the average transaction size is 250 bytes.