Fundamentals of Blockchains and Decentralization (4)

Chiao-Wei Hsu

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We set the difficulty to 0x00FF... and the lambda parameter to 10,000 microseconds. We run the miner for 20 seconds. The results are shown in Table 1. The size of blocks is 124 btyes.

Process	1	2	3
# Blocks mined	54	65	56
# Blocks in blockchain	176	176	176

Table 1: The number of blocks mined and the number of blocks in the blockchain. The difficulty is 0x00FF..., the lambda parameter is 10,000 microseconds, and the duration of the experiment is 167 seconds.

The number of blocks in the blockchain is consistent among the three processes, 176. The sum of blocks mined by the three processes, 175, is 1 less than the number of blocks in the blockchain because the genesis block is not counted in the number of blocks mined.

Table 2 shows the average block delay in seconds.

Process	1	2	3
Average of Block Delay (ms)	12.01	1.95	10.52

Table 2: The average block delay in seconds. The difficulty is 0x00FF..., the lambda parameter is 10,000 microseconds, and the duration of the experiment is 167 seconds.

The block delay values are reasonable, as they are all only a few milliseconds. The delay in processes 1 and 3 is larger than that in process 2 because there is no direct connection between processes 1 and 3. In processes 1 and 3, the delay values does not have two distinguishable cluster because the routes of blocks sent by process 2 and process 1/3 are the same.