REPORT: ASSIGNMENT 2

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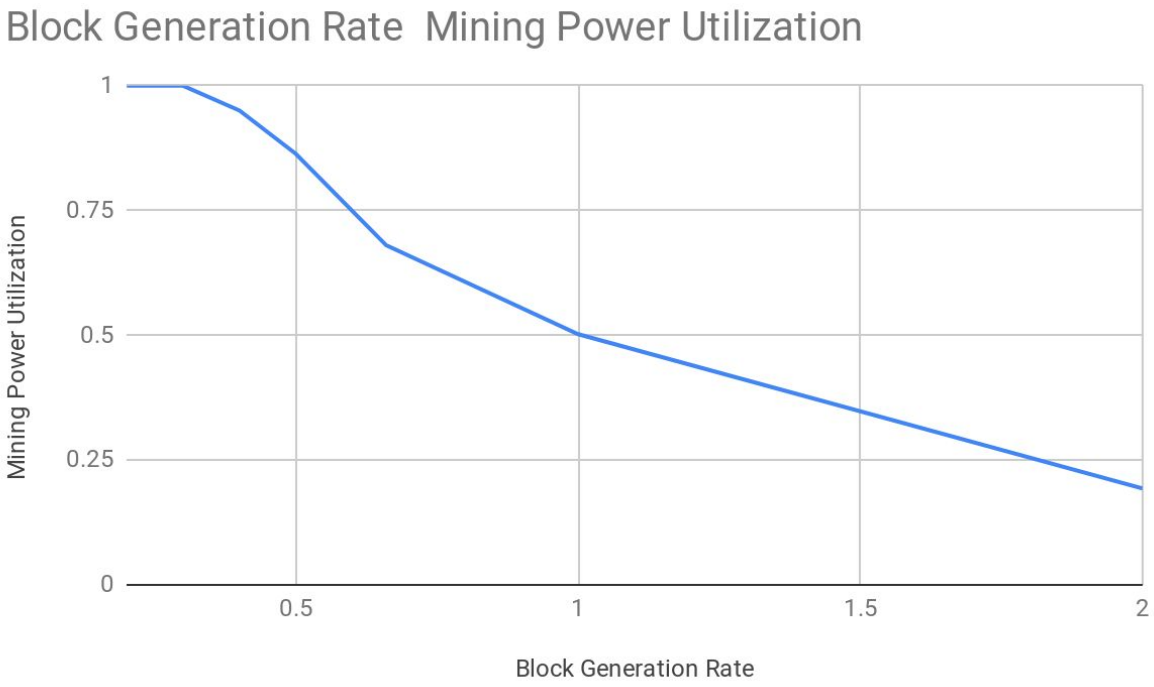
1. Mining power utilization Vs block generation rate

- Three miners have been used for each run: Hashpower among them being equal.
- The mining power utilization is on the y-axis and block generation rate = 1/interarrivaltime is on the x-axis.
- For each value of block interarrival time, the mining has been simulated for four different seed values and then average has been taken over all the results obtained.

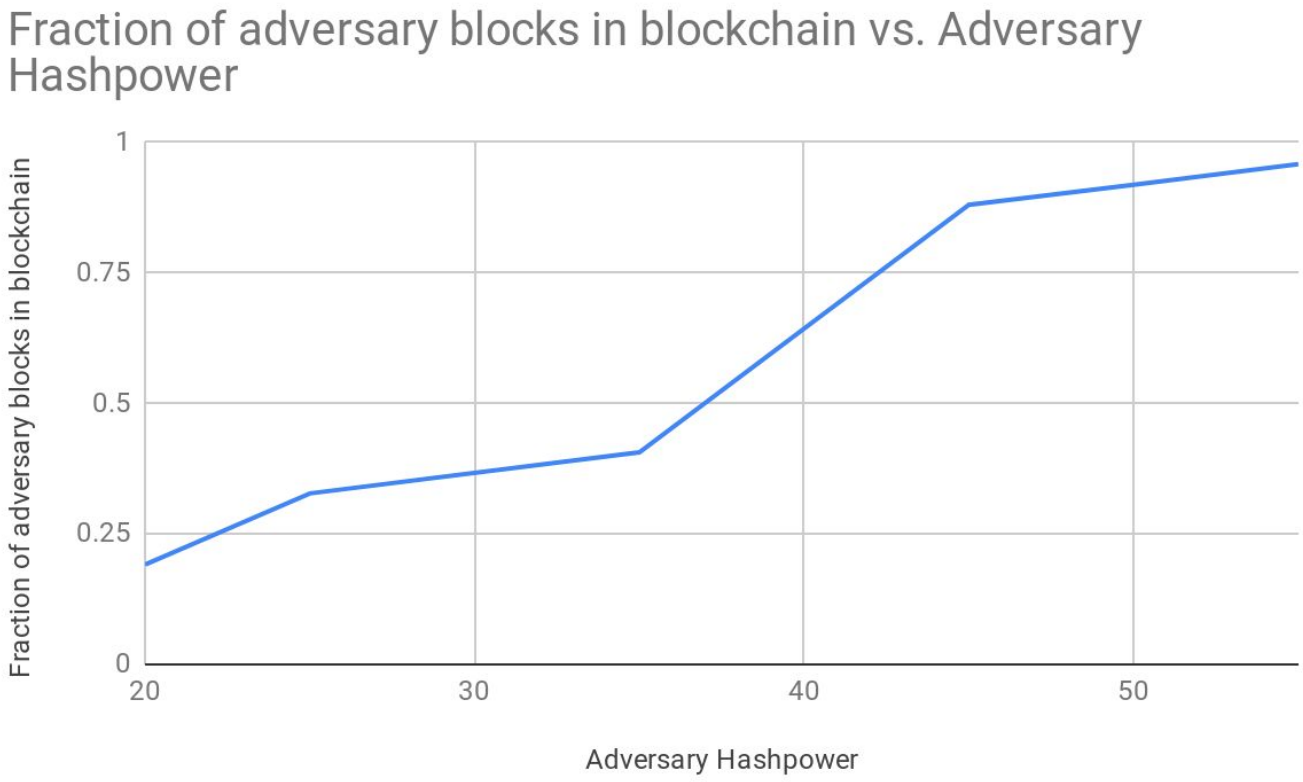


Raw data for the above graph:

Block Generation Rate	Mining power Utilization
0.2	1
0.3	1
0.4	0.9503387534
0.5	0.8632484946
0.66	0.680226635
1	0.5021880012
2	0.1930448631

2. Attacker mining power Vs fraction of blocks mined by it that appears in the longest chain

- Four miners have been used for each run: one being the adversary and rest being honest miners with interArrival time of 5 sec.
- Hashpower of adversary is in the x-axis and remaining hashpower is equally distributed among the honest miners.
- For each value of adversary hashpower, the mining has been simulated for four different seed values and then average has been taken over all the results obtained.



Raw data for the above graph:

Adversary Hashpower	Fraction of adversary blocks in blockchain
20	0.1912341359
25	0.327508149
35	0.40625
45	0.8806132225
50	0.9187997755
55	0.9582853794

3. A para clearly explaining your criterion determining the longest chain from the blocks stored in your database

- The longest chain in the blocks is the block sequence with maximum number of blocks.
- Since, the interArrival time is fixed during the simulation and is the same for each node, then there is no difference in PoW for creating the block.
- So, the block sequence whose length is the maximum is the chain on which the miners mine
- If there are multiple such sequence, then any random one is selected for mining which could hence may be different for each miner.

4. A sample graphical representation of blockchain