Exercise 3 – Blockchain Networking Reflection

In class we played a blockchain networking game and the reward was bonus points. We tried different network shapes and different rules to agree on the message. I just write what I saw.

First, about node types. I think we had people who just pass the message (like relayer), then sometimes one person is the final one who says the answer (like proposer/leader), and in some rounds we also had voting (validators). In the bridge round, there was also one bridge node connecting two groups.

About honesty, I feel most classmates were honest. When the message became wrong, it looked like mistakes because we were rushing and handwriting was not clear, not like someone wanted to attack. Also when there was punishment like slashing, people suddenly became more serious, so I think most people actually wanted to be correct.

Round 1 was the linear chain. It was really weak. We only had 5 seconds and 3 rounds, so many people never saw the message at all. If you don't receive information, you cannot really do consensus. And if one person writes wrong, the next person will also be wrong, so one mistake can break everything. We saw this kind of thing because of bad handwriting.

Rounds 2, 3 and 5 were more peer-to-peer, like gossip. This is more like real blockchain because messages spread to different peers. But there is a balance. In round 2 we had to write 5 copies in 45 seconds and it was too much. People wrote badly so the message was "corrupted". Round 3 with 3 copies felt better. Round 5 with only 2 copies felt too few. I didn't receive anything for many rounds, so the network was not synced. So for me too many messages makes overload/noise, too few makes slow spread.

Round 4 had two groups with one bridge node. This is risky because if the bridge is down, the network is dead (two groups don't connect). Also the bridge has too much power. Andres shared reward, which was nice, but if the bridge lies, it is hard to stop.

Round 6–8 looked more like PoS systems. Round 6 is like one proposer and others vote, kind of like Ethereum. But as a voter I had no strong incentive to be careful, because if I vote wrong nothing happens. Round 7 added slashing (rewards/punishment double), so wrong behavior becomes expensive. I staked 2 points and got 4 points because I was correct, so I felt this round was more "real" because incentives are clear. Round 8 felt like staking pool. We had 9 people to stake and answer, we got 6 points and shared it. Ibukun got 2 points because she got nothing before, Inès, Mehdi and Kylian got 1 point to help them reach 2 points, and I got 0 because I already had enough. It was more fair like group pooling.

Round 9 was like PoW. Push-ups are effort. More reward means more push-ups, so it's like higher difficulty. The difference is in Bitcoin many people do the effort at the same time, but in class usually only one person did it.

Finally, the key parameters I saw are: how many messages each node must send (too many = mistakes, too few = slow), time limit (node capacity), number of rounds (propagation), and

incentive rules (reward and slashing). If I was consultant I would ask: what is the weakest node capacity, how fast you need final result, how you avoid a bridge/single point, and how you make voters honest not only proposer.