

CS5320: Distributed Computing

Theory Assignment 3: Solving Consensus using Byzantine Agreement

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Solution

Original Assumption: Majority of the processes are non-faulty.

On removing this assumption, the following changes are observed:

- Termination will still happen since the interactive consistency protocol will eventually terminate.
- The entries in all their vectors are the same, so even in this case they will all decide on the same value. **So, agreement holds when removing the assumption.**
- If a process P_i is non-faulty, then, since the majority of the processes are non-faulty it can be guaranteed that they will all decide V_i as the i^{th} component of their respective vectors. If we remove the assumption then the problem that occurs is, either by chance or collusion the faulty processes can have a majority for a value which is a different value than what is proposed. **So the algorithm loses its validity on removing the assumption.**