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2. Yes, the nodes are synchronized. However, if a node goes offline while running the `generate_example_pow_chain.py` file and then comes back online, its database will be out of sync with the rest of the network. To address this, the protocol should include a mechanism for synchronizing new or rejoining nodes. This could be achieved by either:

- When a node rejoins, it should ask peers for missing blocks such as using `getblocks` message
- Having existing nodes broadcast the current state to the new node.
- Allowing the new node to fetch the latest blockchain state from other nodes in the network.

3. The use of a hardcoded peer list indicates that the blockchain lacks a dynamic peer discovery mechanism. This means that if some nodes go offline, new nodes might not be able to connect. Peer discovery is essential for a permissionless blockchain, as it enables nodes to connect to the network without prior knowledge or manual setup, which is opposite to the current manual configuration**.**

The closest analogous message mechanism in Bitcoin's P2P protocol is the `addr` message. This message allows nodes to share information about active peers**,** ensuring that new nodes can discover and connect to others dynamically. By exchanging `addr` messages, Bitcoin maintains a decentralized and self-sustaining network, where nodes can join or leave freely without requiring a central authority to manage peer connections.