RA1 Solution

2 receives a prepare request from 3 after promising to 1:

- When Node 2 receives Node 3's prepare request (43.3) after promising to Node 1 for proposal 41.1, it compares the proposal numbers. Since 43.3 is higher than 41.1, Node 2 will update its promise to favor Node 3. In Paxos, an acceptor always favors the highest-numbered proposal it has seen. Node 2 will break its promise to Node 1 because it hasn't accepted any value yet. Node 3, having received the promise, will proceed to send accept requests with its own value (33), which may eventually become the chosen value if it secures a majority.

2 receives an accept request from 1 first, then a prepare request from 3:

- If 2 receives an accept request from 1 and accepts it before receiving 3's prepare request, then the value associated with 41.1 i.e. 96 will be chosen, assuming no higher numbered proposals are received from other nodes. Later, when Node 3 sends a prepare request (43.3), Node 2 will respond, but with additional information that it previously accepted 41.1 with value 96. According to Paxos rules, Node 3 must adopt the already accepted value (96) for its proposal 43.3 to ensure consistency. Node 3 will then send accept requests for proposal 43.3 with value 96. If it secures a majority, the final chosen value will be 96 with proposal number 43.3.

Continuous sending of prepare requests by both 1 and 3:

- If both 1 and 3 keep sending prepare requests with incrementally increasing proposal numbers before any value is accepted, this could lead to a livelock situation where no proposal is ever accepted because the nodes keep overwriting each other's proposals with higher-numbered ones.