



Addis Ababa Institute of Technology

School of Information Technology and Engineering

Department of Software Engineering (Information Technology Stream)

Fundamentals of Distributed Systems

Lab 5: Answers to reflection questions

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Answers to Reflection Questions

1. Discuss how RPC simplifies communication compared with socket programming.

Answer:

RPC's ease in communication: RPC has the ability to abstract some of the details regarding the network communications which make it easier for us to focus more on the logic rather than socket management.

Socket programming doesn't abstract some of the network communication details which make it harder, tiresome with high possibility to get an error while setting up connections to use when compared to RPC allowing.

RPC's error handling: RPC frameworks usually provide built-in mechanisms for error handling, including retries and error codes. In socket programming, developers must implement their own error handling logic for connection issues, data integrity, and timeouts.

2. Describe challenges encountered

Answer:

1. Maintaining Persistent State:

- To preserve persistent state, such as the most recent calculation result, over several requests or sessions. The state might be lost if the server restarts.
- To address this issue, a file system enables the server to store and retrieve state data in between requests for consistency and integrity.

2. Error Handling and Recovery:

- When issues, such as server crashes, network outages, or application-level faults, arise at different stages of the RPC process. Addressing these mistakes in the most important and effective manner possible.
- To guarantee that the application can recover gracefully from unforeseen problems, it is helpful to implement thorough error handling and recovery mechanisms, such as retries, fallbacks, and logging.