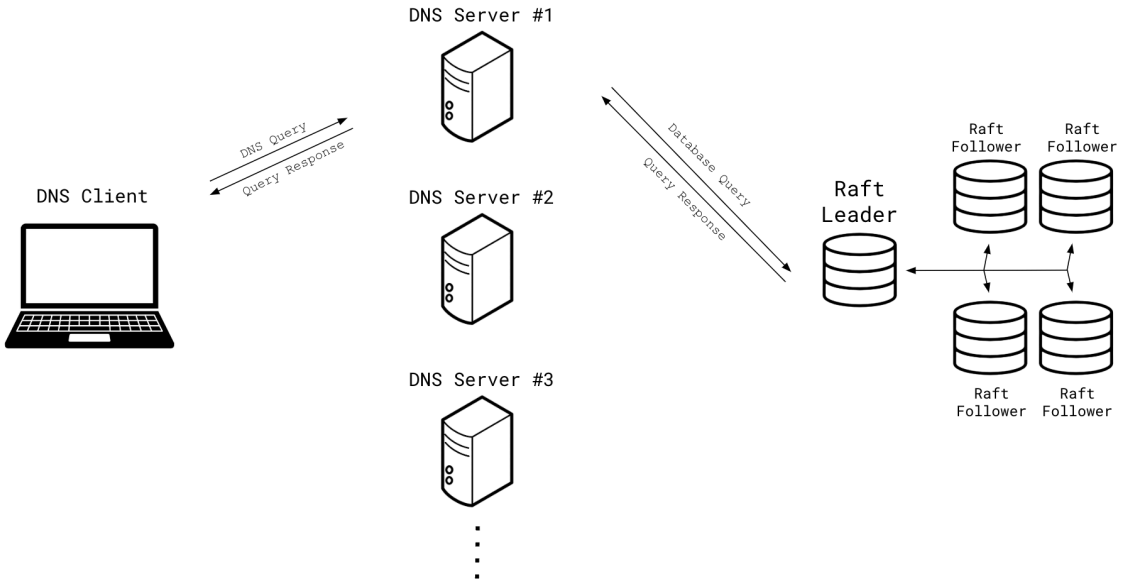
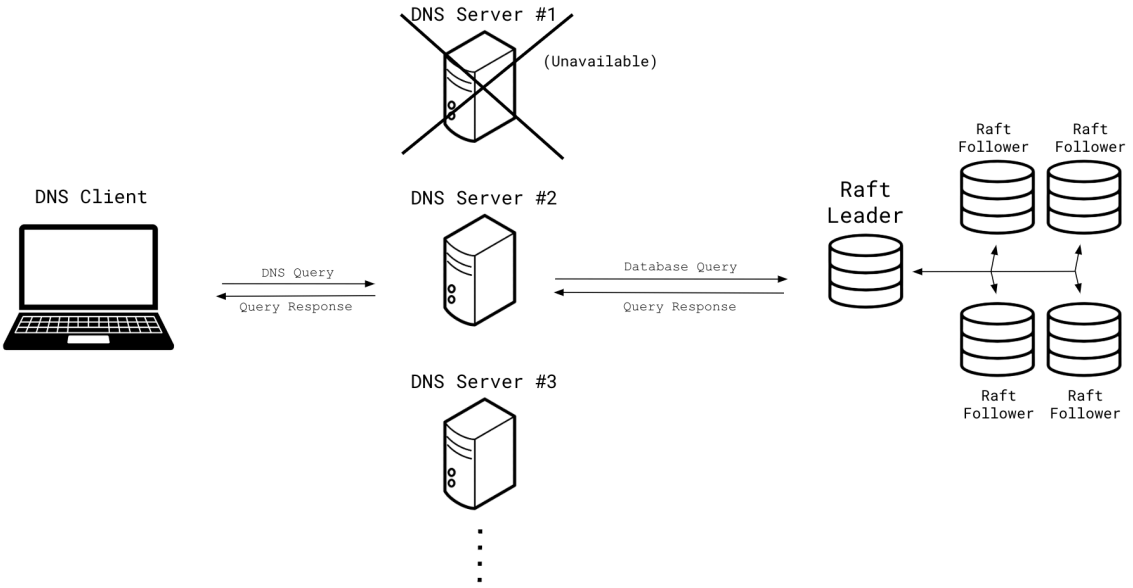
CS 244B Project Proposal
Group Rainbow Wombat
Aditya, Donovan, Kelechi, Yasmine

Our team proposed developing a stateless DNS service to enhance reliability and fault tolerance in network name resolution. The architecture is designed to support an arbitrary number of DNS servers, each interacting with a backend Raft cluster through a custom-built API. We utilized Go to implement the Raft consensus algorithm facilitating robust data synchronization across all servers. Each server maintains its own cache. This enables quick responses for previously resolved hostnames. If a hostname has not been previously cached by a server, it will query the distributed cache across the cluster. This distributed cache is synchronized using our Raft implementation, ensuring that even if a hostname resolution is new, the query can still be resolved efficiently and correctly across all nodes. Our dual-caching approach (individual server cache combined with a synchronized cluster cache) would significantly improve response times and reduce operational load, particularly in local networks. This project aims to demonstrate a highly scalable and reliable DNS infrastructure that could offer substantial improvements over traditional state-managed DNS systems.




DNS Server #1
(Unavailable)
DNS Client
DNS Server #2
DNS Query
Query Response
Database Query
Query Response
Raft Leader
Raft Follower
Raft Follower
Raft Follower
Raft Follower
DNS Server #3