ELEC 477

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2024-03-18

kvService.cpp

The kvService constructor has now been modified to accept a few new arguments such as the list of replicas, primary server information and a Boolean status of whether the service belongs to the primary server or not. Additionally, the kvService now implements a new method that called “kvPutReplica” which is used to forward the kvPut request from the Primary Server to the Replica servers. This method will ensure that all primary servers are updated before sending back the response to the client. By sending the put requests to the replica servers, this solution solves the issue of data replication. Furthermore, the kvservice has also introduced a few more instance variables which are used for identifying which service belongs to the primary server and which belongs to the replica server. How the kvService works now in this assignment is that when a put request is sent, the service checks to see if it is part of the primary server and if it is, it will forward the put request to each of its replicas. However, if the service is part of the replica server, any message that is received from the replica server will be verified through the source IP address and the primary address that the replica server stores in state. If the source IP address doesn’t’ match the primary server address the message is ignored by the service.

serverData.h

The serverData.h file is used to define the data structure that the kvService uses to keep track of the list of replica servers as well as the primary server information for each of the replica servers.

main.cpp

The main.cpp instantiates a few new servers “kvserver2” and “kvserver3” which will be used as the replica servers for the primary server. These replica servers are configured with different server names, ip addresses, port numbers and database file names. Although they still have service directory functionality, these functions will be ignored and not utilized by the replica servers. Additionally, the main.cpp file will also store a list of replica servers (where each replica server struct will have the server name and port) that the primary server will use in a variable called “*replicas” and the replica servers will store the primary server name and port number in a variable called “*primaryServer”.