DNS-like System Project

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1. Team Details

Team members: Richard Li (rl902) and Wesley Zhou (wgz4).

2. Collaboration and Resources

Joint collaboration between Richard Li and Wesley Zhou. The four components of the project were the client, root server, domain server 1 for the .com domain, and domain server 2 for the .edu domain.

The following resources were consulted:

- Python Socket Library: `https://docs.python.org/3/library/socket.html`
- The recitation slides

3. Recursive and Iterative Query Functionality

The client sends queries to the RS with a flag, (either rd or it). For iterative queries, the client follows up with the TS if there is a "ns" response. The RS handles recursive queries by contacting the TS if needed, and if it is iterative, returns "ns" to the client. TS1 and TS2 resolve the queries for their respective domains and return answers.

4. Code Functionality

All of the code works as intended.

5. Difficulties Encountered

Using all four of the terminals at once was somewhat confusing (difficult to keep track of). Specific error handling was another obstacle. For example, if the RS could not connect to the TS during a recursive query, making sure the RS sent the right response (nx) to the client was important. If the client could not connect to the RS or the TS, it was a similar problem.

6. Lessons Learned

This project covered how to make a DNS-like system, so I learned how DNS works at a more in-depth level. This project continued with the last project on socket programming. I also learned more about protocol design, and how to implement things like communication protocols between client, RS, and any TS.