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1.) Briefly discuss how you implemented your recursive client functionality.

As instructed, python2.7 was used. To discuss how the recursive client functionality was implemented, the project can be split into 3 parts: rs.py, ts.py and client.py.

client.py

client.py accepts 3 arguments: PROJI-HNS.txt, the port number of rs.py and the port number of ts.py. On the terminal, the following would be typed: *$ python2.7 client.py PROJI-HNS.txt <rs_port_number> <ts_port_number>*. It is assumed that a test file with a list of hostnames will be passed as an argument to client.py. With each execution of client.py, the contents of RESOLVED.txt will be overwritten.

Once ran, client.py will send each hostname in the test file to rs.py first by using the *rs_port_number* to connect to it, and for each hostname a response from rs.py is received. If the hostname has been found in the RS DNS table, the response will be the hostname's corresponding entry in the RS DNS table, and this is written to RESOLVED.txt.

If the hostname hasn't been found, <TS_host_name> - NS is the response, and client.py would then connect to ts.py using the *ts_port_number*. If the hostname is in the TS DNS table, its entry will be sent back to client, and then be written to RESOLVED.txt. If the hostname is not in the TS DNS table, the hostname along with " - ERROR:HOST NOT FOUND" is sent back to client, and this is written to RESOLVED.txt.

rs.py

Once the server is set up using the specified port number, it forever listens for incoming messages, and each message is assumed to be a hostname from client. Once the message is received, the DNS table from PROJI-DNSRS.txt is checked to see if the hostname exists in it. If it does, the entry in PROJI-DNSRS.txt is sent back to client. If not, <TS_host_name> - NS is sent to client.

ts.py

Once the server is set up using the specified port number, it forever listens for incoming messages, and each message is assumed to be a hostname from client. Once the message is received, the DNS table from PROJI-DNSTS.txt is checked to see if the hostname exists in it. If it does, the entry in PROJI-DNSTS.txt is sent back to client. If not, the hostname along with "- ERROR:HOST NOT FOUND" is sent back to client.

2.) Are there known issues or functions that aren't working currently in your attached code? If so, explain.

There are no known issues or functions that aren't working.

3.) What problems did you face developing code for this project?

The assignment description was a bit unclear in some parts, like whether an entire test file would be given when running client.py or just a hostname. But questions and answers on piazza helped clear confusion.

4.) What did you learn by working on this project?

It gave a glimpse into the complexities behind the communication and functionality of Recursive DNS clients and DNS servers, which is a valuable insight to have.