Intro. to Network Programming 2022 Fall

Bonus 1: RPC

Description

In this part, you are asked to use **RPC(not limited to ONC RPC)** to implement the remote adder as described in the RMI lecture, you may need to redefine the interface of the remote adder.

We provide two types of implementation to do the bonus and different types have different bonus points. You should choose one to submit.

Note: It is not necessarily required to do this bonus.

Requirements

The 2 types of the implementation is described below (You should choose one type to implement):

1. **RPC in localhost (5%)**

   Your server and client can **run in the same container** and you should provide 2 things:

   - Docker image:

     It should be pushed to Docker Hub and contain your client and server code. (testcase is optional)

     Your image name should **mention your computer architecture** such as bonus_rpc_**x86**.
   - Report:

     You are asked to answer at least 3 questions:

     i. What is RPC?

     ii. How to run your code? (Include Docker operations)

     You **must mention your Docker image name** and the operation to run your code here. For example, `docker pull yuthomas/bonus_rpc_x86` or `python3 rpc_client.py -t testcase`.

     iii. Explain your client code and server code. How do they work?

     Other details you want to say can be put in your report.

     The report should be within 5 pages.

   In this type, you only need to submit the report to E3 and the total bonus points is 5 points.

2. **RPC with 2 containers (10%)**

   Your server and client should **run in the different container** and you should provide 2 things:

   - Docker image:
     It should be pushed to Docker Hub and contain your client code, server code and at least one testcase. Testcases should be the input of the client and you need to explain the details of the testcases and the output of the client in the report.
     Your image name should **mention your computer architecture** such as bonus_rpc_x86.

     The server and client images can be the same or different. It's up to you.

   - Report:
     You are asked to answer at least 3 questions:
     i. What is RPC?
     ii. How to run your code? (Include Docker operations)
     You **must mention your Docker image name** and the operation to run your code here. For example, `docker pull yuthomas/bonus_rpc_x86` or `python3 rpc_client.py -t testcase`.
     Note: It may involve docker network.
     iii. Explain your client code and server code. How do they work?
     Note: It may involve docker network.

     Other details you want to say can be put in your report.
     The report should be within 5 pages.

   In this type, you only need to submit the report to E3 and the total bonus points is 10 points.

General

- You should use RPC to implement the remote adder as described in the RMI lecture.
- **You must choose only one type of implementation to submit your report.**
- **In this bonus, you can use any computer language(except Java) to implement.**
- You can write the report in English or Chinese.
- It should be able to run your code successfully by your report. Otherwise, your bonus points will be halved.

- Basically, we will not allow any technical questions about the bonus. However, if you just want to clarify your understanding about the spec, you can ask in Teams General Channel.
- We allow any other files or scripts related to this bonus, but you should explain how to run them in the report. Besides, anything that we do not mention in the spec can be done freely; that is, you can do whatever you want. However, you should explain it in the report.
- We will run your code by reading your report to score your bonus points.

Timeline

- Submission Deadline 2023/1/6 23:59
- No late submission

Submission

Please upload a pdf file called "**Bonus_RPC_StudentID.pdf**" e.g., Bonus_RPC_310551077.pdf to **E3**.