LAB 2

Aim: To implement Remote Procedure Call

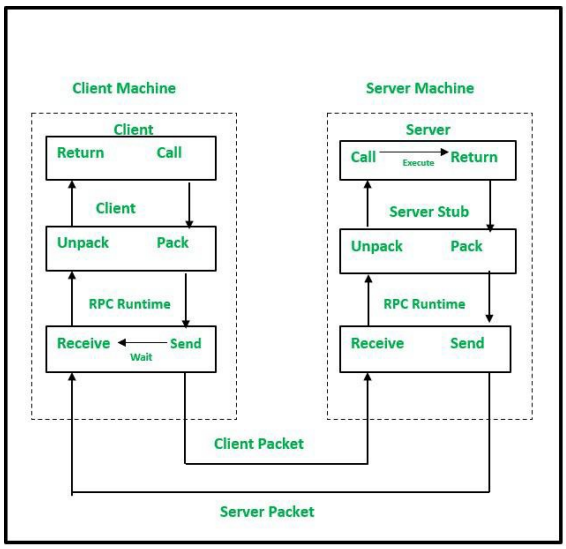
Lab Outcome:
Develop test and debug using Message-Oriented Communication or RPC/RMI based client-server programs

Theory:

RPC is an effective mechanism for building client-server systems that are distributed. RPC enhances the power and ease of programming of the client/server computing concept. It is a protocol that allows one software to seek a service from another program on another computer in a network without having to know about the network. The software that makes the request is called a client, and the program that provides the service is called a server.

There are 5 elements used in the working of RPC:

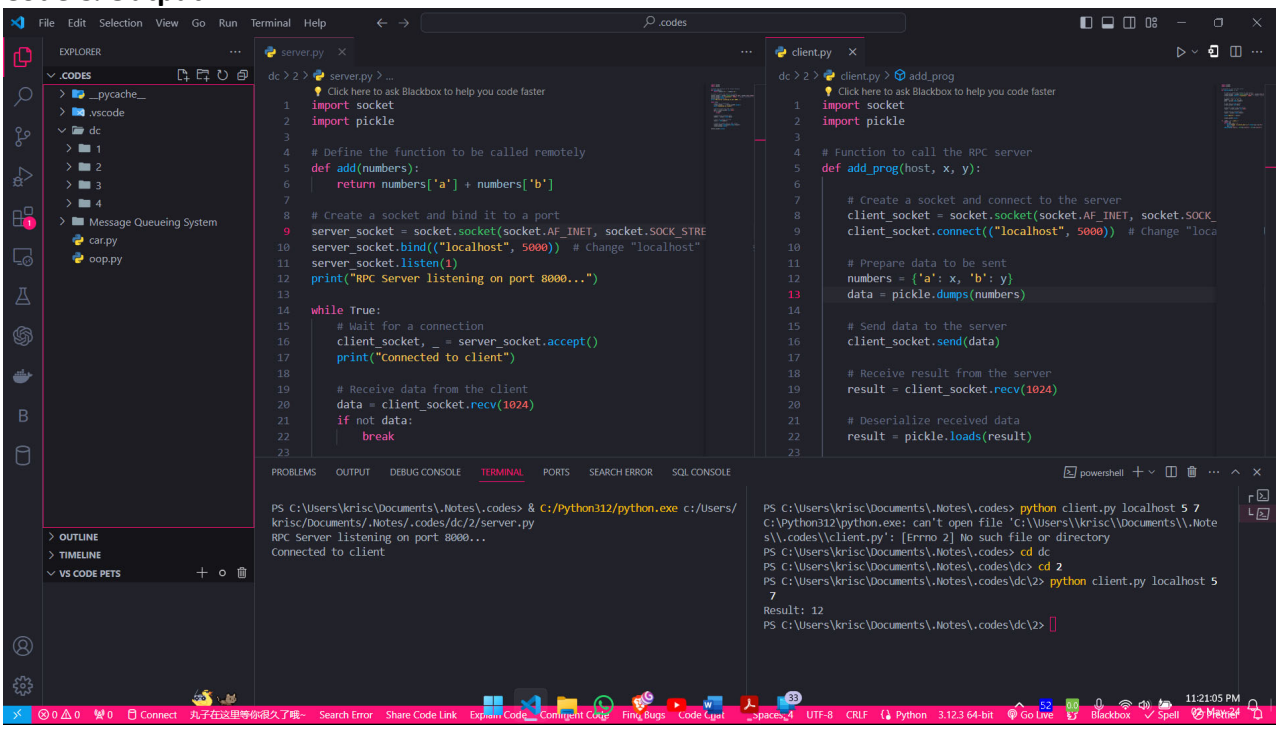
- Client
- Client Stub
- RPC Runtime
- Server Stub
- Server



- The client, the client stub, and one instance of RPC Runtime are all running on the client machine.

- A client initiates a client stub process by giving parameters as normal. The client stub acquires storage in the address space of the client.
- At this point, the user can access RPC by using a normal Local Procedural Call. The RPC runtime oversees message transmission between client and server via the network. Retransmission, acknowledgment, routing, and encryption are all tasks performed by it.
- On the server-side, values are returned to the server stub, after the completion of server operation, which then packs (which is also known as marshalling) the return values into a message. The transport layer receives a message from the server stub.
- The resulting message is transmitted by the transport layer to the client transport layer, which then sends a message back to the client stub.
- The client stub unpacks (which is also known as unmarshalling) the return arguments in the resulting packet, and the execution process returns to the caller at this point.

Code & Output:



Conclusions:

In conclusion, the remote procedure call (RPC) is a powerful technology that enables communication between processes running on different machines in a networked environment. The experiment performed on RPC in C language has demonstrated its ability to enable distributed computing across different machines.

Postlab Questions:

1. In which category of communication, RPC be included?
2. What are stubs? What are the different ways of stub generation?
3. What is binding?
4. Name the transparencies achieved through stubs