**DEMONSTRATION OF REMOTE PROCEDURE CALL LAB USING PYTHON**

To demonstrate a simple Remote Procedure Call (RPC) in a client-server environment using Python, we can create a basic server that offers a service (a simple function) and a client that calls this service remotely. We'll use Python's built-in **xmlrpc** library, which allows us to create a basic RPC setup easily.

First, let's set up the RPC server. This server will expose a function that, for example, adds two numbers.

**Server Code (save as rpc\_server.py):**

from xmlrpc.server import SimpleXMLRPCServer

def add\_numbers(x, y):

return x + y

def main():

server = SimpleXMLRPCServer(("localhost", 8000))

print("Listening on port 8000...")

server.register\_function(add\_numbers, "add")

server.serve\_forever()

if \_\_name\_\_ == "\_\_main\_\_":

main()

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This server listens on **localhost** on port **8000** and exposes the **add\_numbers** function under the name **"add"**.

*Now, let's create the client that calls this service.*

**Client Code (save as rpc\_client.py):**

import xmlrpc.client

def main():

proxy = xmlrpc.client.ServerProxy("http://localhost:8000/")

result = proxy.add(14, 99)

print(f"Result: {result}")

if \_\_name\_\_ == "\_\_main\_\_":

main()

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This client connects to the server at **localhost:8000** and calls the **add** method with two numbers.

**How to Run:**

1. First, run the server script: **python rpc\_server.py**.
2. In a separate CMD, run the client script: **python rpc\_client.py**.

When you run the client, it should display **Result: 113**, indicating that the server successfully processed the RPC.

**To run the server.py script in the command prompt, follow these steps:**

1. **Open Command Prompt:**
   * On Windows, press **Win + R**, type **cmd**, and press Enter.
   * On macOS or Linux, open the Terminal application.
2. **Navigate to the Script's Directory:**
   * Use the **cd** command to change to the directory where your **server.py** script is located.
   * For example, if your script is in **C:\Users\YourUsername\Documents**, type **cd C:\Users\YourUsername\Documents** and press Enter.
3. **Run the Script:**
   * Type **python server.py** and press Enter. This assumes that **python** is in your system's PATH variable. If you installed Python via the official installer, this should be set up automatically.
   * If you have multiple versions of Python installed, you may need to specify the version, like **python3 server.py**.

Make sure that Python is installed on your system. If it's not installed, you can download and install it from [python.org](https://www.python.org/).

After running the command, the server should start, and you'll typically see a message in the command prompt indicating that it's listening for connections (depending on your script). You can then run your client script in a similar way to connect to this server.

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To find the Version of Python: In the command prompt, type the command: **python -V;**

**My Python Version is 3.12.1;**