EXERCISE 5

AIM:

   To develop a simple XML-RPC client-server application in Python that performs basic arithmetic operations (addition, subtraction, multiplication, and division) remotely.

ALGORITHM:

   SERVER:

1. Import SimpleXMLRPCServer.
2. Define functions: add, subtract, multiply, and divide.
3. Create an XML-RPC server on "localhost" and port 8000.
4. Register the arithmetic functions with the server.
5. Run the server using serve_forever ().

   CLIENT:

1. Import `xmlrpc.client` and create a `ServerProxy` to connect to the server.
2. Get two numbers from the user.
3. Ask the user to choose an operation (add, subtract, multiply, divide).
4. Call the corresponding remote function on the server using the proxy.
5. Display the result returned from the server.

CODE:

SERVER:

from xmlrpc.server import SimpleXMLRPCServer

def add(x, y):

   return x + y

def subtract(x, y):

   return x - y

def multiply(x, y):

```python
        return x * y

def divide(x, y):

    if y == 0:

        return "Error: Division by zero"

    return x / y

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

print("XML-RPC Server is listening on port 8000...")

server.register_function(add, "add")

server.register_function(subtract, "subtract")

server.register_function(multiply, "multiply")

server.register_function(divide, "divide")

server.serve_forever()
```

CLIENT:

```python
import xmlrpc.client

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

def get_number(prompt):

    while True:

        try:

            return float(input(prompt))

        except ValueError:

            print("Please enter a valid number.")

def get_operation():

    operations = {"add", "subtract", "multiply", "divide"}

    while True:
```

```python
        op = input("Enter operation (add, subtract, multiply, divide): ").strip().lower()
        if op in operations:
            return op
        print("Invalid operation. Try again.")
def main():
    print("Simple XML-RPC Calculator")
    x = get_number("Enter first number: ")
    y = get_number("Enter second number: ")
    op = get_operation()
    try:
        result = getattr(proxy, op)(x, y)
        print(f"Result of {op}({x}, {y}) = {result}")
    except Exception as e:
        print("Error:", e)
if __name__ == "__main__":
    main()
```
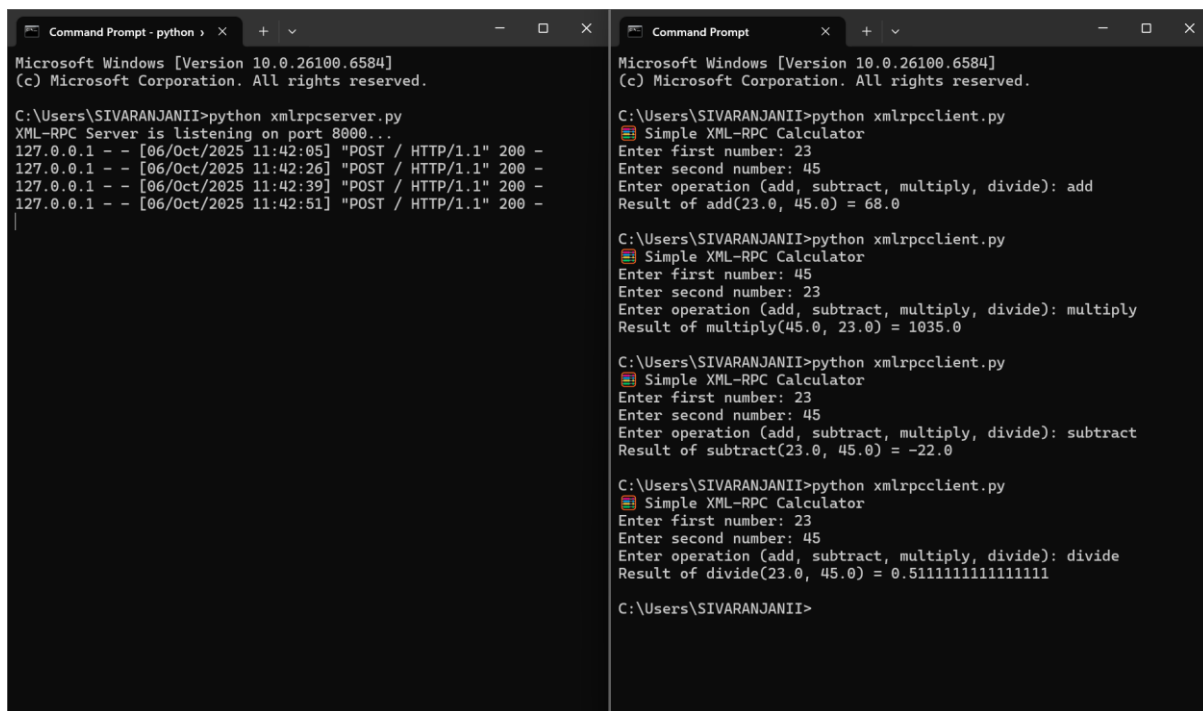
OUTPUT:


```
Microsoft Windows [Version 10.0.26100.6584]
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C:\Users\SIVARANJANII>python xmlrpcserver.py
XML-RPC Server is listening on port 8000...
127.0.0.1 - - [06/Oct/2025 11:42:05] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [06/Oct/2025 11:42:26] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [06/Oct/2025 11:42:39] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [06/Oct/2025 11:42:51] "POST / HTTP/1.1" 200 -
```

```
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.

C:\Users\SIVARANJANII>python xmlrpcclient.py
 Simple XML-RPC Calculator
Enter first number: 23
Enter second number: 45
Enter operation (add, subtract, multiply, divide): add
Result of add(23.0, 45.0) = 68.0

C:\Users\SIVARANJANII>python xmlrpcclient.py
 Simple XML-RPC Calculator
Enter first number: 45
Enter second number: 23
Enter operation (add, subtract, multiply, divide): multiply
Result of multiply(45.0, 23.0) = 1035.0

C:\Users\SIVARANJANII>python xmlrpcclient.py
 Simple XML-RPC Calculator
Enter first number: 23
Enter second number: 45
Enter operation (add, subtract, multiply, divide): subtract
Result of subtract(23.0, 45.0) = -22.0

C:\Users\SIVARANJANII>python xmlrpcclient.py
 Simple XML-RPC Calculator
Enter first number: 23
Enter second number: 45
Enter operation (add, subtract, multiply, divide): divide
Result of divide(23.0, 45.0) = 0.5111111111111111

C:\Users\SIVARANJANII>
```

RESULT:

The program successfully implements an XML-RPC-based calculator, where the server provides arithmetic operations and the client performs remote function calls to compute results.