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EXP 5:   **Develop a simple calculator using XMLRPC**   **Date:26/8/25**

Aim

To develop a simple XML-RPC server in Python capable of performing basic arithmetic operations (addition, subtraction, multiplication, division, modulus) and providing these operations as remote callable services over a network port.server.jpg

Introduction

XML-RPC is a remote procedure call (RPC) protocol that uses XML to encode calls and HTTP as a transport mechanism. The Python xmlrpc.server module allows the creation of servers that can expose functions to be invoked remotely by clients. This server application demonstrates how to register multiple arithmetic operations as remotely callable functions using XML-RPC, facilitating basic distributed computing and learning foundational RPC concepts.

ALGORITHM

1. **Import Required Modules**

   o Import SimpleXMLRPCServer from xmlrpc.server to set up the server.

2. **Define Arithmetic Functions**

   o Implement functions for addition, subtraction, multiplication, division, and modulus.

   o Each function takes two parameters and returns the calculation result.

3. **Create and Configure the XML-RPC Server**

   o Instantiate SimpleXMLRPCServer to listen on localhost at port 8000.

   o Print a message indicating the server is listening.

4. **Register Functions**

   o Register each arithmetic function with the XML-RPC server using register_function, providing a remote-accessible name for each.

5. **Run Server**

   o Start the server with serve_forever(), allowing clients to connect and invoke registered operations.

Program:

SERVER

```
from xmlrpc.server import SimpleXMLRPCServer

def add(a, b):

    return a + b

def sub(a, b):

    return a - b
```

```python
def mul(a, b):

return a * b

def div(a, b):

    return a / b

def mod(a, b):

    return a % b

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

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

server.register_function(add, "add")

server.register_function(sub, "sub")

server.register_function(mul, "mul")

server.register_function(div, "div")

server.register_function(mod, "mod")

server.serve_forever()
```

CLIENT:

```python
import xmlrpc.client

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

for i in range(5):

    a = int(input("Enter a number: "))

    b = int(input("Enter b number: "))

    print("addition of given number is %d" % proxy.add(a, b))

    print("sub of given number is %d" % proxy.sub(a, b))

    print("mul of given number is %d" % proxy.mul(a, b))

    print("div of given number is %d" % proxy.div(a, b))

    print("mod of given number is %d" % proxy.mod(a, b))
```

OUTPUT

```
C:\Users\swarn\Documents>python y.py
Listening on port 8000...
127.0.0.1 - - [29/Sep/2025 12:33:36] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:33:38] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:33:40] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:33:42] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:33:44] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:33:59] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:01] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:03] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:05] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:07] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:14] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:16] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:18] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:20] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:22] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:27] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:30] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:32] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:34] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:36] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:43] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:45] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:47] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:49] "POST / HTTP/1.1" 200 -
127.0.0.1 - - [29/Sep/2025 12:34:52] "POST / HTTP/1.1" 200 -
```

```
C:\Users\swarn\Documents>python w.py
Enter a number: 7
Enter b number: 1
addition of given number is 8
sub of given number is 6
mul of given number is 7
div of given number is 7
mod of given number is 0
Enter a number: 5
Enter b number: 5
addition of given number is 10
sub of given number is 0
mul of given number is 25
div of given number is 1
mod of given number is 0
Enter a number: 6
Enter b number: 3
addition of given number is 9
sub of given number is 3
mul of given number is 18
div of given number is 2
mod of given number is 0
Enter a number: 1
Enter b number: 7
addition of given number is 8
sub of given number is -6
mul of given number is 7
div of given number is 0
mod of given number is 1
Enter a number: 9
Enter b number: 5
addition of given number is 14
sub of given number is 4
mul of given number is 45
div of given number is 1
mod of given number is 4

C:\Users\swarn\Documents>
```

Result:

We designed a simple calculator using Xmlrpc using python.