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DATE:18/10/24

EXP NO:11B ARITHMETIC OPERATION USING RPC

AIM:

To develop a simple calculator using XMLRPC.

ALGORITHM:

Server.py

1. Import XMLRPCServer package

2. Define functions for addition, subtraction, multiplication, division and modulus

3. Initialize simple XMLRPCServer with IP address (or localhost) and port number

4. Register the functions add, sub, mul, div and mod with the server

5. Handle the request

6. Close the connection.

Client.py

1. Import XMLRPC Client package

2. Define functions for addition, subtraction, multiplication, division and modulus

3. Initialize simple XMLRPC Client with Server IP address (or localhost) and port number

4. Get two numbers a and b for arithmetic operations

5. Call add() function and print the result

6. Call sub() function and print the result

7. Call mul() function and print the result

8. Call div() function and print the result

9. Call mod() function and print the result

10. Close the connection

Sample Code for Arithmetic operations using RPC

XML RPC PROGRAM- SERVER SIDE:

```
from xmlrpc.server import SimpleXMLRPCServer
# Define a function
def is_even(n):
 return n % 2 == 0
def add(a,b):
 return a+b
def sub(a,b):
 return a-b
def factorial(n):
 factorial=1
 for i in range(1,n+1):
 factorial = factorial*i
 return factorial
def multiply(x, y):
 return x * y
def divide(x, y):
return x // y
# Create server
server = SimpleXMLRPCServer(("localhost", 8000))
print("Listening on port 8000...")
# Register a function under a different name
server.register_function(is_even, "is_even")
server.register_function(add, "add")
```

```
server.register_function(sub, "sub")
server.register_function(factorial,"factorial")
#server.register_function(factorial,"factorial")
server.register_function(multiply, 'multiply')
server.register_function(divide, 'divide')
# Run the server's main loop
server.serve_forever()
```

XML RPC PROGRAM- SERVER SIDE.py × XML RPC PROGRAM- CLIENT SIDE.py

```python
from xmlrpc.server import SimpleXMLRPCServer
# Define a function
def is_even(n):  1 usage
 return n % 2 == 0
def add(a,b):  1 usage
 return a+b
def sub(a,b):  1 usage
 return a-b
def factorial(n):  1 usage
 factorial=1
 for i in range(1,n+1):
     factorial = factorial*i
 return factorial
def multiply(x, y):  1 usage
 return x * y
def divide(x, y):  1 usage
    return x // y
# Create server
server = SimpleXMLRPCServer(("localhost", 8000))
print("Listening on port 8000...")
# Register a function under a different name
server.register_function(is_even, name: "is_even")
server.register_function(add, name: "add")
server.register_function(sub, name: "sub")
server.register_function(factorial, name: "factorial")
#server.register_function(factorial,"factorial")
server.register_function(multiply, name: 'multiply')
server.register_function(divide, name: 'divide')
# Run the server's main loop
server.serve_forever()

```

XML RPC PROGRAM- CLIENT SIDE:

import xmlrpc.client

proxy= xmlrpc.client.ServerProxy('http://localhost:8000/') # *local server* for i in range(5):

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

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

print("%d is even?: %d" % (a, (proxy.is_even(a)))) #access XML-RPC server through proxy

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

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

print("factorial: %d" %((proxy.factorial(a))))

print("factorial: %d" %((proxy.factorial(b))))

print("Multiplication of 2 numbers is %d" %(proxy.multiply(a,b)))

print("Division of 2 numbers is %d" %(proxy.divide(a,b)))

XML RPC PROGRAM- SERVER SIDE.py | XML RPC PROGRAM- CLIENT SIDE.py

```
import xmlrpc.client
proxy= xmlrpc.client.ServerProxy('http://localhost:8000/') # local server for i in range(5):
a=int(input("Enter a number:"))
b=int(input("Enter b number:"))
print("%d is even?: %d" % (a, (proxy.is_even(a)))) #access XML-RPC server through proxy
print("addition of given number is %d "%((proxy.add(a,b))))
print("sub of given number is %d "%((proxy.sub(a,b))))
print("factorial: %d" %((proxy.factorial(a))))
print("factorial: %d" %((proxy.factorial(b))))
print("Multiplication of 2 numbers is %d"%(proxy.multiply(a,b)))
print("Division of 2 numbers is %d"%(proxy.divide(a,b)))
```

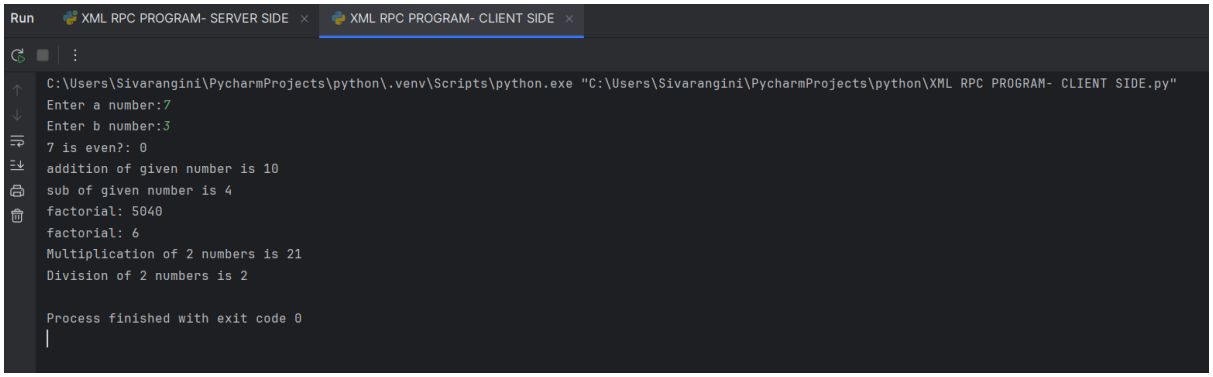
OUTPUT:

For server:

Run | XML RPC PROGRAM- SERVER SIDE | XML RPC PROGRAM- CLIENT SIDE

```
C:\Users\Sivarangini\PycharmProjects\python\.venv\Scripts\python.exe "C:\Users\Sivarangini\PycharmProjects\python\XML RPC PROGRAM- SERVER SIDE.py"
Listening on port 8000...
```

For client:



RESULT:

A simple calculator was designed using XMLRPC.