EXP NO : 11.B **Develop a simple calculator using XMLRPC**
DATE:15.10.24

AIM:

To develop a simple calculator using XMLRPC.

ALGORITHM:

Server-Side Algorithm

1. Import XML-RPC Server Library
    - Import `SimpleXMLRPCServer` from `xmlrpc.server`.
2. Define Server Functions
    - Define the following functions to handle different operations:
        - `is_even(n)`: Checks if n is an even number.
        - `add(a, b)`: Adds two numbers.
        - `sub(a, b)`: Subtracts b from a.
        - `factorial(n)`: Calculates the factorial of n.
        - `multiply(x, y)`: Multiplies two numbers.
        - `divide(x, y)`: Divides x by y (integer division).
3. Initialize and Configure Server
    - Create an instance of `SimpleXMLRPCServer` bound to `localhost` on port `8000`.
    - Print a message indicating that the server is listening on the specified port.
4. Register Functions with the Server
    - Register each function with the server, optionally assigning them names for remote access.
5. Run Server's Main Loop
    - Start the server's main loop using `server.serve_forever()` to keep the server running and listening for client requests.

Client-Side Algorithm

1. Import XML-RPC Client Library
    - Import `ServerProxy` from `xmlrpc.client`.
2. Initialize Client Proxy
    - Create a `ServerProxy` instance pointing to `http://localhost:8000/` to connect to the server.

3. Repeat for 5 Iterations
    - For each iteration, perform the following steps:
        - Input: Prompt the user to enter two integer values, a and b.
        - Call Server Functions:
            - Use `proxy.is_even(a)` to check if a is even and display the result.
            - Use `proxy.add(a, b)` to calculate the sum and display the result.
            - Use `proxy.sub(a, b)` to calculate the difference and display the result.
            - Use `proxy.factorial(a)` and `proxy.factorial(b)` to calculate and display the factorial of a and b.
            - Use `proxy.multiply(a, b)` to calculate the product and display the result.
            - Use `proxy.divide(a, b)` to perform integer division and display the result.

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))
```

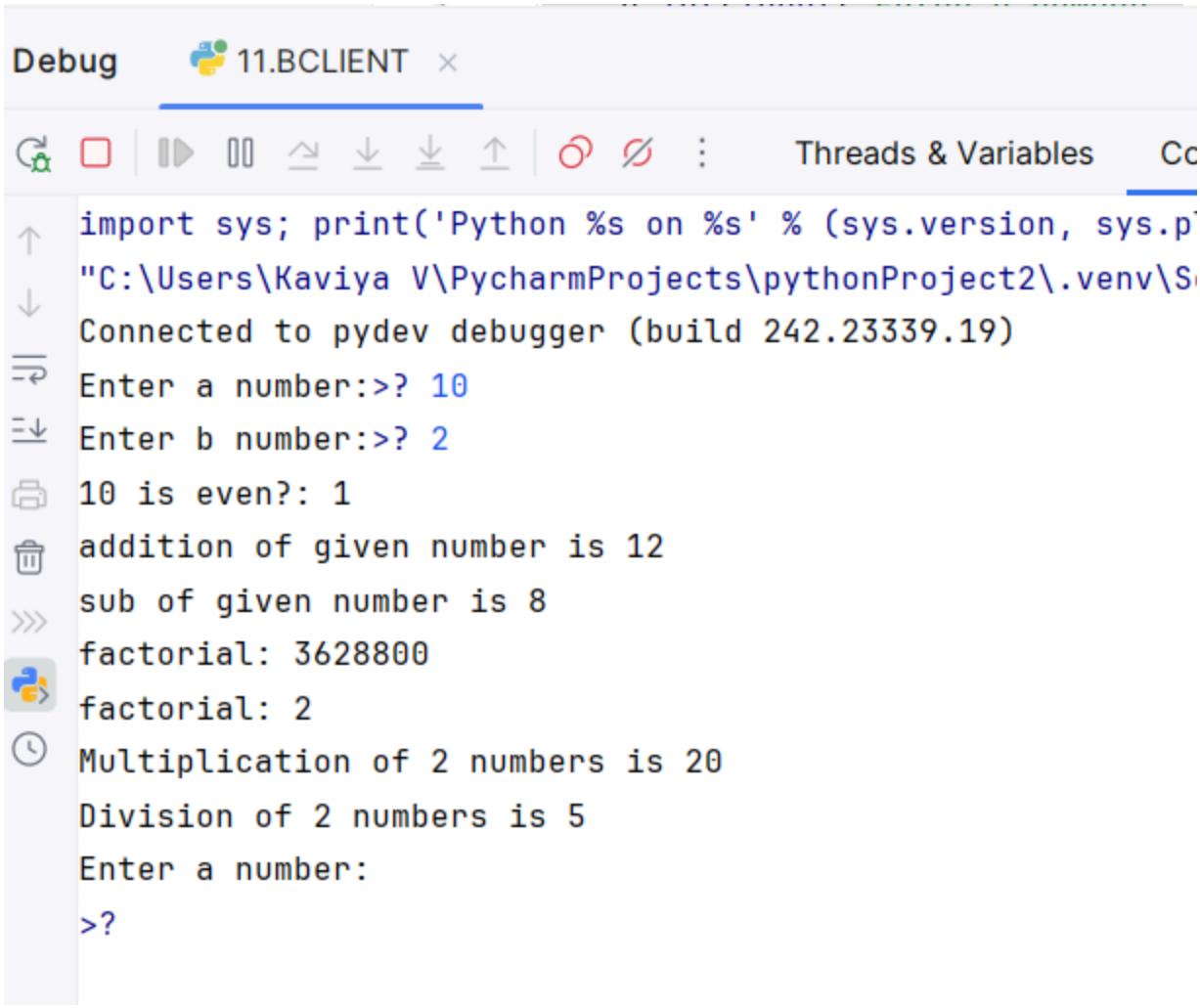
```
print("Listening on port 8000...")
# Register a function under a different name
server.register_function(is_even, "is_even")
server.register_function(add, "add")
server.register_function(sub, "sub")
server.register_function(factorial,"factorial")

#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- 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))
```

Output:

```
"C:\Users\Kaviya V\PycharmPro
Listening on port 8000...
```



Result:

A simple calculator using XMLRPC is developed.