EX NO 11D: **Date:28/10/2024**

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REMOTE PROCEDURE CALL FOR SORTING AN ARRAY - XMLRPC

Aim:

To Implement an XML RPC code for sorting array

Algorithm:

Server side:

1. Import `SimpleXMLRPCServer` and `SimpleXMLRPCRequestHandler` from the `xmlrpc.server` module.

2. Create a custom `RequestHandler` class that extends `SimpleXMLRPCRequestHandler` and set `rpc_paths` to `('/RPC2',)`.

3. Instantiate the server with `localhost` and port `8000`, using the custom `RequestHandler`.

4. Register introspection functions to allow clients to discover available methods.

5. Define the `sort_array` function that checks if all elements in the array are numbers and sorts the array.

6. Register the `sort_array` function with the server, associating it with the name `'sort_array'`.

7. Start the server with `serve_forever()`, making it listen for and handle incoming XML-RPC requests.

Client side:

1. Import `xmlrpc.client` to interact with the XML-RPC server.

2. Define the server URL (`http://localhost:8000`) and create a `ServerProxy` object to communicate with the server.

3. Prompt the user to input a list of numbers separated by spaces.

4. Attempt to convert the input string into a list of floating-point numbers, and handle any `ValueError` if the input is invalid.

5. If the input is invalid, print an error message and exit the program.

6. Call the `sort_array` function on the server proxy with the list of numbers.

7. Print the sorted array returned from the server.

Program:

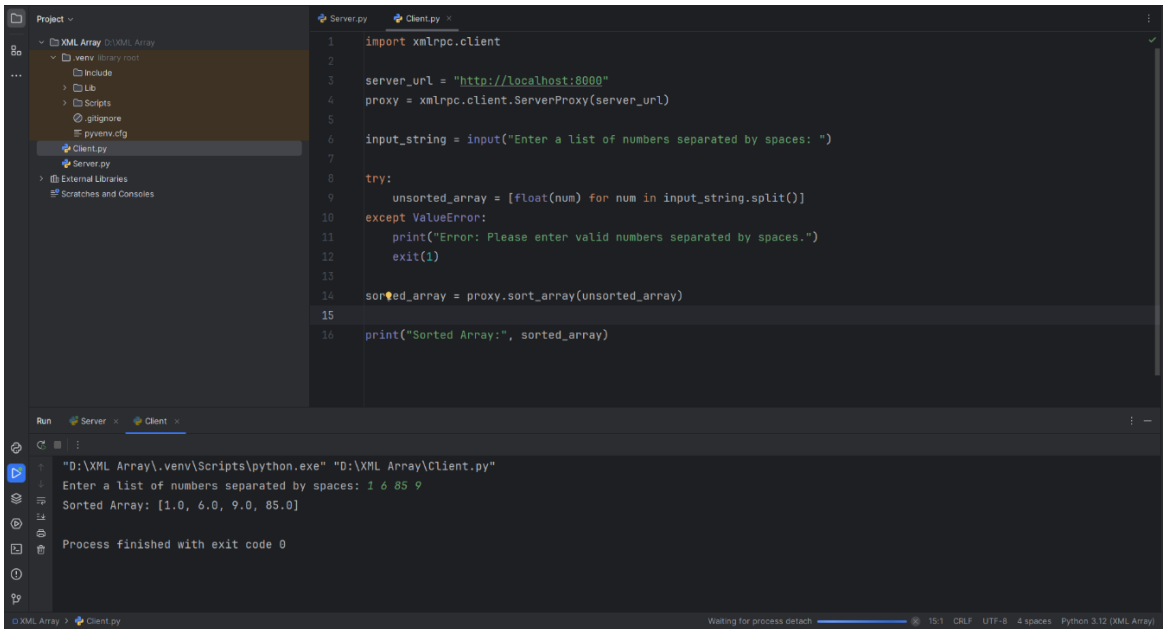
Server side:

```
from xmlrpc.server import SimpleXMLRPCServer
from xmlrpc.server import SimpleXMLRPCRequestHandler
class RequestHandler(SimpleXMLRPCRequestHandler):
    rpc_paths = ('/RPC2',)
server = SimpleXMLRPCServer(('localhost', 8000), requestHandler=RequestHandler)
server.register_introspection_functions()
def sort_array(arr):
    if not all(isinstance(i, (int, float)) for i in arr):
        raise ValueError("All elements of the array must be numbers.")
    return sorted(arr)
server.register_function(sort_array, 'sort_array')
print("Server is running on http://localhost:8000")
server.serve_forever()
```

Client side:

```
import xmlrpc.client
server_url = "http://localhost:8000"
proxy = xmlrpc.client.ServerProxy(server_url)
input_string = input("Enter a list of numbers separated by spaces: ")
try:
    unsorted_array = [float(num) for num in input_string.split()]
except ValueError:
    print("Error: Please enter valid numbers separated by spaces.")
    exit(1)
sorted_array = proxy.sort_array(unsorted_array)
print("Sorted Array:", sorted_array)
```

Output:



Result:

Thus, the soting of array using Remote Procedure Call was executed.