

EX NO: 11C

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REMOTE PROCEDURE CALL FOR LIST OPERATIONS-XMLRPC

AIM:

To Implement an XML RPC code for the following functions,

- a. No of items in a list
- b. Smallest element in a list
- c. Largest element in the list
- d. Converting a list to a set.

Algorithm:

Here's the algorithm for the XML-RPC server and client operations provided in your code:

Server-Side Algorithm

1. Define Server Functions:

- Define functions to perform the following operations on lists:
 - list_length: Returns the length of a given list.
 - list_maximum: Returns the maximum element in a given list.
 - list_minimum: Returns the minimum element in a given list.
 - list_to_set: Converts a list to a set (removing duplicates) and returns it as a list.
 - list_concat: Concatenates two lists and returns the result.

2. Initialize XML-RPC Server:

- Initialize the server on localhost with port 8000.

3. Register Functions:

- Register each function defined above to make them available to clients.

4. Start the Server:

- Begin listening for client requests using serve_forever.
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Client-Side Algorithm

1. Initialize XML-RPC Client:

- Establish a proxy connection to the XML-RPC server on `http://localhost:8000/`.

2. Display Options:

- Display options to the user:
 - **Option 1:** Start list operations.
 - **Option 2:** Exit the program.

3. Input Choice:

- Accept the user's choice:
 - If the choice is 2, exit the program.
 - If the choice is 1, proceed with list operations.

4. Create Lists:

- **Input First List:**
 - Prompt the user to enter elements for the first list.
 - Accept integers from the user and append them to list a.
 - Break out of the input loop when the user enters -1.
- **Input Second List:**
 - Prompt the user to enter elements for the second list.
 - Accept integers from the user and append them to list b.
 - Break out of the input loop when the user enters -2.

5. Display Lists:

- Print the contents of both lists a and b.

6. Call Server Functions:

- Invoke each server function using the proxy:
 - `list_length`: Pass list a and print the length.
 - `list_maximum`: Pass list a and print the maximum value.
 - `list_minimum`: Pass list a and print the minimum value.
 - `list_to_set`: Pass list a, remove duplicates, and print the result.
 - `list_concat`: Pass both lists a and b, concatenate them, and print the result.

7. Repeat or Exit:

- Repeat from Step 2 until the user chooses to exit.

Program**Server Side:**

```
from xmlrpc.server import SimpleXMLRPCServer
def list_length(a):
    return len(a)
```

```
def list_maximum(a):
    return max(a)
def list_minimum(a):
    return min(a)
def list_to_set(a):
    f=list(set(a))
    return f
def list_concat(a,b):
    return a+b
server = SimpleXMLRPCServer(("localhost", 8000))
print("Listening on port 8000...")
server.register_function(list_length,"list_length")
server.register_function(list_maximum, "list_maximum")
server.register_function(list_minimum, "list_minimum")
server.register_function(list_to_set, "list_to_set")
server.register_function(list_concat, "list_concat")
server.serve_forever()
```

Client Side:

```
import xmlrpc.client proxy=
xmlrpc.client.ServerProxy('http://localhost:8000/') while
True:
    print("PRESS 1-->STRAT || 2--> STOP ")
    c=int(input("ENTER YOUR CHOICE"))
    a=[]
    b=[] if
    c==1:
        print("ENTER THE ELEMENTS TO ADD FIRST
        LIST") print("PRESS -1 TO EXIT THIS LIST") while
        True: d=int(input("--->")) if d==-1:
            break
            a.append(d)
        print("ENTER THE ELEMENTS TO ADD SECOND
        LIST") print("PRESS -2 TO EXIT THIS LIST") while True:
            e=int(input("--->")) if e==-2:
                break
                b.append(e)
    if c==2:
        break
```

```
print(a) print(b)
print("list_length",proxy.list_length(a))
print("list_maximum",proxy.list_maximum(a)
)
print("list_minimum",proxy.list_minimum(a))
print("list_to_set",proxy.list_to_set(a))
print("list_concat",proxy.list_concat(a,b))
```

Output:

Server output:

Listening on port 8000...

Client output:

PRESS 1-->START || 2--> STOP

ENTER THE ELEMENTS TO ADD FIRST LIST

PRESS -1 TO EXIT THIS LIST

5

3

8

5

-1

ENTER THE ELEMENTS TO ADD SECOND LIST

PRESS -2 TO EXIT THIS LIST

7

2

3

-2

First list: [5, 3, 8, 5] Second list:

[7, 2, 3] list_length: 4

list_maximum: 8 list_minimum:

3 list_to_set: [3, 5, 8]

list_concat: [5, 3, 8, 5, 7, 2, 3]

PRESS 1--> START || 2-->

STOP ENTER YOUR CHOICE:

2

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RESULT:

Procedure call for list operations - XMLRPC is remoted.