

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:

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### 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_concate(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_concate, "list_concate")
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_le
```

```
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.