

EX NO: 11.C  
231901010

Date:22.10.24  
Hemanth kumar.A

## **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`.
- 

### **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
```

### **RESULT:**

Procedure call for list operations - XMLRPC is remoted.