**EX NO: 11C**

**Date:22.10.24**

**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

1. Smallest element in a list
2. Largest element in the list
3. 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**:
     1. 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\_concate: Concatenates two lists and returns the result. |

* 1. **Initialize XML-RPC Server**:
     1. Initialize the server on localhost with port 8000.
  2. **Register Functions**:
     1. Register each function defined above to make them available to clients.
  3. **Start the Server**:
     1. 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.

* 1. **Display Lists**:
     1. Print the contents of both lists a and b.
  2. **Call Server Functions**:
     1. 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\_concate: Pass both lists a and b, concatenate them, and print the result. |

* 1. **Repeat or Exit**:
     1. 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\_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\_concate",proxy.list\_concate(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\_concate: [5, 3, 8, 5, 7, 2, 3]

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

STOP ENTER YOUR CHOICE:

2

**NAME: HARINI.D.S ROLL NO: 231901009**

**RESULT:**

Procedure call for list operations - XMLRPC is remoted.