Distributed Systems 2021/22 spring

Seminar 1: Remote Procedure Calls (RPC)

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1. Running a Server

```
utlab@DESKTOP-SO1IIEA:2022_seminar1$ python3 rpyc_classic.py
INFO:SLAVE/18812:server started on [127.0.0.1]:18812
```

2. Running a Client

In [ ]:

```python
import rpyc
import sys
import urllib

if __name__ == "__main__":
    if len(sys.argv) < 2:
        exit("Usage {} SERVER".format(sys.argv[0]))

    # Get address on which the server binds
    server = sys.argv[1]
    conn = rpyc.classic.connect(server)

    try:

        # Implementation of Bubble Sort
        def bubble_sort(elements):
            # Looping from size of array from last index[-1] to index [0]
            for n in range(len(elements)-1, 0, -1):
                for i in range(n):
                    if elements[i] > elements[i + 1]:
                        # swapping data if the element is less than next element in the array
                        elements[i], elements[i + 1] = elements[i + 1], elements[i]
            return elements

        # Transmit functions to the server sides
        conn.teleport(bubble_sort)
        # Execute arbitrary statements on the server
        conn.execute('elements = [39,12,18,85,72,10,2]')
        # Access attribute and implement task
        conn.namespace["elements"] += [13]

        # Show the result
        print("Unsorted list is:", conn.namespace["elements"])
        # Evaluate arbitrary expressions
        print("Sorted Array is:", conn.eval('bubble_sort(elements)'))

    except urllib.error.URLError:
        print('caught a URLError')
```

2.1 The result of Client side

```
utlab@DESKTOP-SO1IIEA:2022_seminar1$ python3 rpyc_client.py localhost
Unsorted list is: [39, 12, 18, 85, 72, 10, 2, 13]
Sorted Array is: [2, 10, 12, 13, 18, 39, 72, 85]
utlab@DESKTOP-SO1IIEA:2022_seminar1$
```

2.2 The result of Server side

```
utlab@DESKTOP-SO1IIEA:2022_seminar1$ python3 rpyc_classic.py
INFO:SLAVE/18812:server started on [127.0.0.1]:18812
INFO:SLAVE/18812:accepted ('127.0.0.1', 48786) with fd 4
INFO:SLAVE/18812:welcome ('127.0.0.1', 48786)
INFO:SLAVE/18812:goodbye ('127.0.0.1', 48786)
```