

Advanced Java Programming Lab Sheet
IV Year /I Part
Faculty: CSIT

Lab sheet 7

Objectives:

1. To create distributed application using RMI.

Objective 1:

For example, two numbers are provided by the client and he wants to perform the addition, subtraction, multiplication and division of that two numbers.

Step 1: Create remote interface

```
import java.rmi.Remote;
import java.rmi.RemoteException;

public interface CalculatorInterfaace extends Remote {
    public int addition(int num1, int num2) throws RemoteException;
    public int multiplictaion(int num1, int num2) throws RemoteException;
    public int division(int num1, int num2) throws RemoteException;
    public int subtrction(int num1, int num2) throws RemoteException;
}
```

Step 2: Implement the remote interface

```
package com.texas;
import java.rmi.RemoteException;
import java.rmi.server.UnicastRemoteObject;

public class SimpleCalculator extends UnicastRemoteObject implements
CalculatorInterfaace {

    SimpleCalculator() throws RemoteException {
        super();
    }
    public int addition(int num1, int num2) throws RemoteException {
        return num1+num2;
    }

    public int multiplictaion(int num1, int num2) throws RemoteException {
        return num1*num2;
    }
}
```

```

    public int division(int num1, int num2) throws RemoteException {
        return num1/num2;
    }

    public int subtrction(int num1, int num2) throws RemoteException {
        return num1-num2;
    }
}

```

Step 3 : Develop the Server Program :

```

package com.texas;
import java.rmi.Naming;
import java.rmi.registry.LocateRegistry;

public class ServerProgram {

    public static void main(String[] args) {
        try {
            SimpleCalculator calculator = new SimpleCalculator();
            LocateRegistry.createRegistry(1900);
            Naming.rebind("rmi://localhost:1900/demo", calculator);
            System.out.println("Server Started");
        } catch (Exception e) {
            e.printStackTrace();
        }
    }
}

```

Step 4 : Develop the Client Program :

```

package com.texas;
import java.rmi.Naming;
import java.util.Scanner;

public class ClientProgram {

    public static void main(String[] args) {
        try {
            CalculatorInterfaace calculatorInterface = (CalculatorInterfaace)
            Naming.lookup("rmi://localhost:1900/demo");
            Scanner scanner = new Scanner(System.in);
            System.out.println("Enter a first number : ");
            int num1 = scanner.nextInt();

            System.out.println("Enter a second number : ");
            int num2 = scanner.nextInt();
            int result1 = calculatorInterface.addition(num1, num2);
        }
    }
}

```

```
System.out.println("the sum of "+num1+" , "+num2+" = "+result1);

int result2 = calculatorInterface.multiplictaion(num1, num2);
System.out.println("the multiplictaion of "+num1+" , "+num2+" = 
"+result2);

int result3 = calculatorInterface.division(num1, num2);
System.out.println("the division of "+num1+" , "+num2+" = "+result3);
} catch (Exception e) {
    e.printStackTrace();
}
}
}
```

Assignment:

- 1.0 Create a RMI application such that a client sends an integer number to the server and the server return the factorial value of that integer. Give a clear specification for every step.
- 1.1 Create a RMI application such that a client sends an String to the server and the server return the reverse of that String.