Advanced Java Programming Lab Sheet
III Year /VI Part
Faculty: BCA

Lab sheet 6

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  calcultor = new SimpleCalculator();
			LocateRegistry.createRegistry(1900);
			Naming.rebind("rmi://localhost:1900/demo", calcultor);
			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.