

LAB

Java RMI

We will create a Calculator Service that will provide some basic arithmetic functions to its client. We therefore, need to define an interface, its implementation, the server and the clients.

```
public interface Calculator
    extends java.rmi.Remote {
    public long add(long a, long b)
        throws java.rmi.RemoteException;

    public long sub(long a, long b)
        throws java.rmi.RemoteException;

    public long mul(long a, long b)
        throws java.rmi.RemoteException;

    public long div(long a, long b)
        throws java.rmi.RemoteException;
}

public class CalculatorImpl extends java.rmi.server.UnicastRemoteObject
    implements Calculator {
    // Implementations must have an
    //explicit constructor
    // in order to declare the
    //RemoteException exception
    public CalculatorImpl()
        throws java.rmi.RemoteException {
        super();
    }
    public long add(long a, long b)
        throws java.rmi.RemoteException {
        return a + b;
    }
    public long sub(long a, long b)
        throws java.rmi.RemoteException {
        return a - b;
    }
    public long mul(long a, long b)
        throws java.rmi.RemoteException {
        return a * b;
    }
    public long div(long a, long b)
        throws java.rmi.RemoteException {
        return a / b;
    }
}

import java.rmi.Naming;
```

```

import java.rmi.RemoteException;
import java.net.MalformedURLException;
import java.rmi.NotBoundException;

public class CalculatorClient {

    public static void main(String[] args) {
        try {
            Calculator c = (Calculator) Naming.lookup("rmi://localhost/CalculatorService");
            System.out.println( c.sub(4, 3) );
            System.out.println( c.add(4, 5) );
            System.out.println( c.mul(3, 6) );
            System.out.println( c.div(9, 3) );
        }

        catch (MalformedURLException malFurl) {
            System.out.println();
            System.out.println("Mal Formed URL");
            System.out.println(malFurl);
        }
        catch (RemoteException re) {
            System.out.println();
            System.out.println("RemoteException");
            System.out.println(re);
        }
        catch (NotBoundException nbe) {
            System.out.println();
            System.out.println("NotBoundException");
            System.out.println(nbe);
        }
        catch (java.lang.ArithmeticException ae) {
            System.out.println();
            System.out.println("java.lang.ArithmeticException");
            System.out.println(ae);
        }
    }
}

```

```

import java.rmi.Naming;
public class CalculatorServer {
    public static void main(String args[]) {
        System.out.println("Calculator Server Running ...");
        try {
            Calculator c = new CalculatorImpl();
            Naming.rebind("rmi://localhost:1099/CalculatorService", c);
        } catch (Exception e) {
            System.out.println("Trouble: " + e);
        }
    }
}

```