Assignment No 1

Servant.java

```
import java.rmi.RemoteException;
import java.rmi.server.UnicastRemoteObject;
import java.rmi.*;
import java.rmi.server.*;

public class Servant extends UnicastRemoteObject implements ServerInterface {
   protected Servant() throws RemoteException {
      super();
   }

   @Override
   public String concat(String a, String b) throws RemoteException {
      return a + b;
   }
}
```

ServerInterface.java

```
import java.rmi.*;

public interface ServerInterface extends Remote {
   String concat(String a, String b) throws RemoteException;
}
```

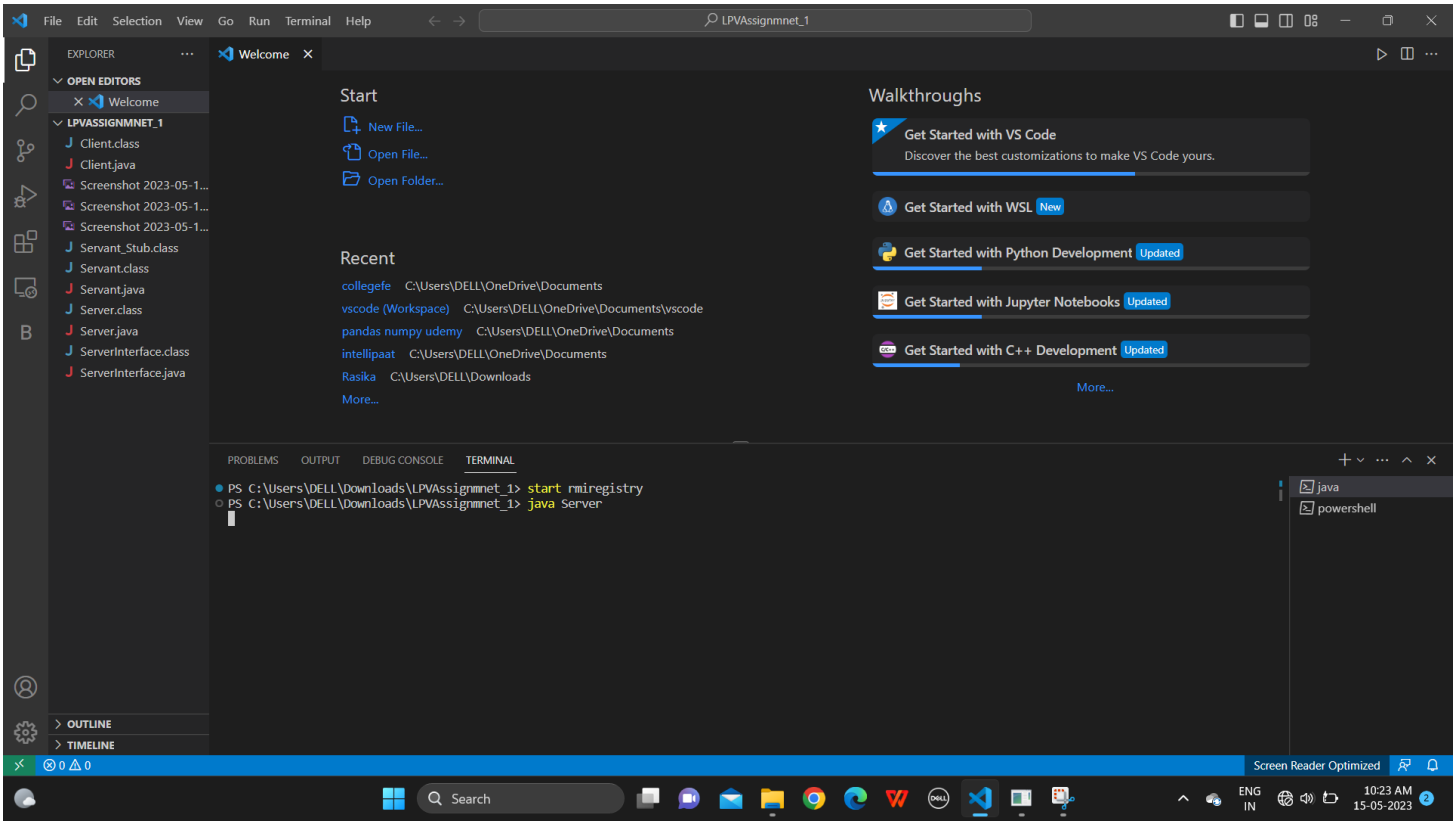
Server.java

```
import java.rmi.*;
import java.net.*;

public class Server {
   public static void main(String[] args) {
      try {
         Servant s = new Servant();
         Naming.rebind("Server", s);
      } catch (Exception e) {
         System.out.println(e);
      }
   }
}
```

Client.java

```
import java.rmi.*;
import java.util.Scanner;

public class Client {
   public static void main(String args[]) {
      try {
         Scanner s = new Scanner(System.in);
         System.out.println("Enter the Server address : ");
         String server = s.nextLine();
         ServerInterface si = (ServerInterface) Naming.lookup("rmi://" + server + "/Server");
         System.out.println("Enter first string : ");
         String first = s.nextLine();
         System.out.println("Enter second string : ");
         String second = s.nextLine();
         System.out.println("Concatenated String : " + si.concat(first, second));
         s.close();
      } catch (Exception e) {
         System.out.println(e);
      }
   }
}
```

Output


File Edit Selection View Go Run Terminal Help
LPVAssignmnet_1
EXPLORER
OPEN EDITORS
Welcome
LPVASSIGNMNET_1
Client.class
Client.java
Screenshot 2023-05-1...
Screenshot 2023-05-1...
Screenshot 2023-05-1...
Servant_Stub.class
Servant.class
Servant.java
Server.class
Server.java
ServerInterface.class
ServerInterface.java
Welcome
Start
New File...
Open File...
Open Folder...
Recent
collegefe C:\Users\DELL\OneDrive\Documents
vscode (Workspace) C:\Users\DELL\OneDrive\Documents\vscode
pandas numpy udemy C:\Users\DELL\OneDrive\Documents
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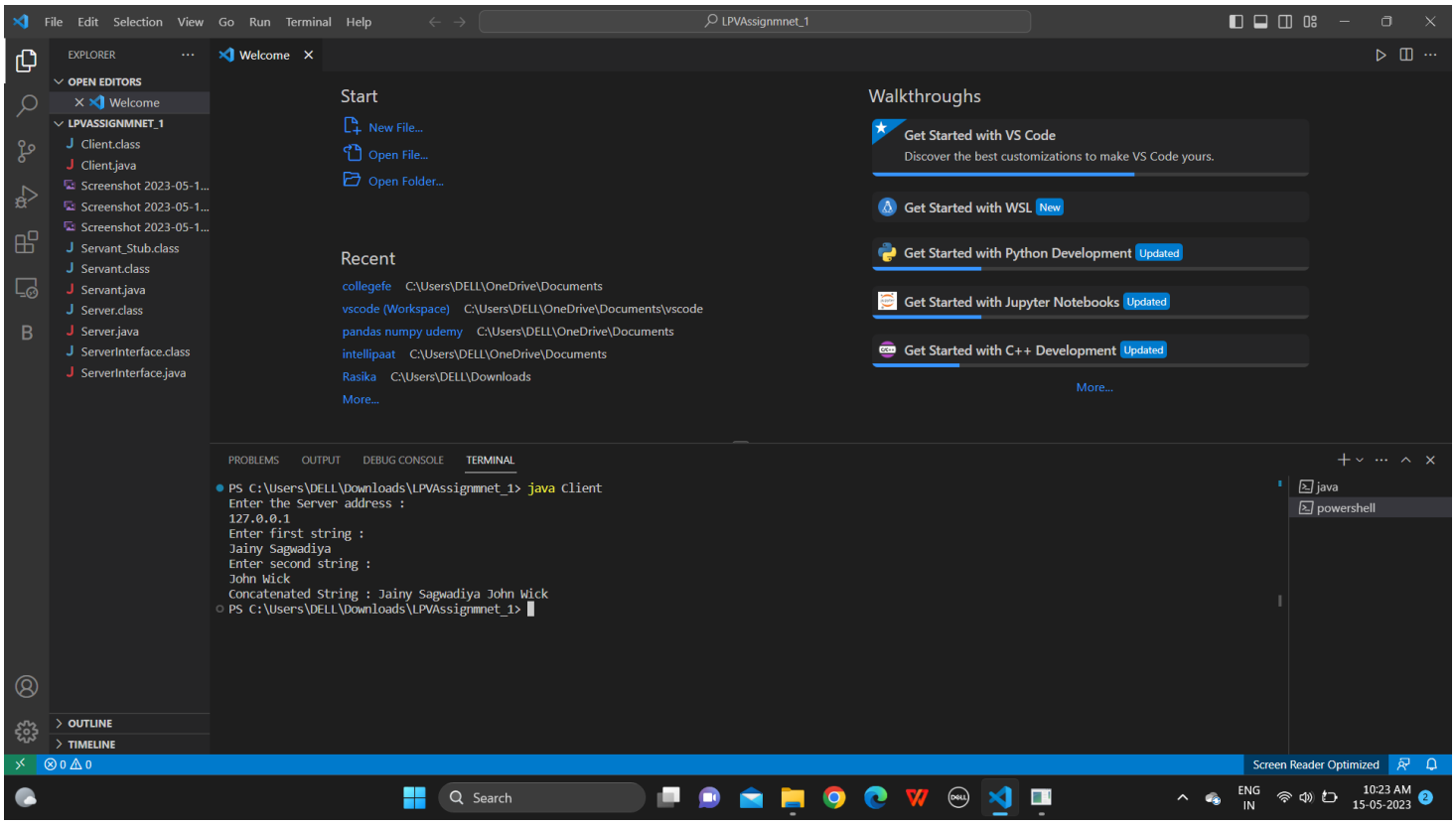
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
PS C:\Users\DELL\Downloads\LPVAssignmnet_1> start rmiregistry
PS C:\Users\DELL\Downloads\LPVAssignmnet_1> java Server
java
powershell
OUTLINE
TIMELINE
Screen Reader Optimized
Search
ENG IN
10:23 AM 15-05-2023


File Edit Selection View Go Run Terminal Help
LPVAssignmnet_1
EXPLORER
OPEN EDITORS
Welcome
LPVASSIGNMNET_1
Client.class
Client.java
Screenshot 2023-05-1...
Screenshot 2023-05-1...
Screenshot 2023-05-1...
Servant_Stub.class
Servant.class
Servant.java
Server.class
Server.java
ServerInterface.class
ServerInterface.java
Welcome
Start
New File...
Open File...
Open Folder...
Recent
collegefe C:\Users\DELL\OneDrive\Documents
vscode (Workspace) C:\Users\DELL\OneDrive\Documents\vscode
pandas numpy udemy C:\Users\DELL\OneDrive\Documents
intellipaat C:\Users\DELL\OneDrive\Documents
Rasika C:\Users\DELL\Downloads
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Get Started with Jupyter Notebooks Updated
Get Started with C++ Development Updated
More...
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
PS C:\Users\DELL\Downloads\LPVAssignmnet_1> java Client
Enter the Server address :
127.0.0.1
Enter first string :
Jainy Sagwadiya
Enter second string :
John Wick
Concatenated String : Jainy Sagwadiya John Wick
PS C:\Users\DELL\Downloads\LPVAssignmnet_1>
java
powershell
OUTLINE
TIMELINE
Screen Reader Optimized
Search
ENG IN
10:23 AM 15-05-2023

Assignment No 2

a) For example Calc.idl
Include the following code in the idl file

```
module CalcApp
{
    interface Calc
    {
            exception DivisionByZero {};

            float sum(in float a, in float b);
            float div(in float a, in float b) raises (DivisionByZero);
            float mul(in float a, in float b);
            float sub(in float a, in float b);
    };
};
```

b) CalcClient.java

```
import java.io.BufferedReader;
import java.io.IOException;
import java.io.InputStreamReader;

import CalcApp.*;
import CalcApp.CalcPackage.DivisionByZero;

import org.omg.CosNaming.*;
import org.omg.CosNaming.NamingContextPackage.*;
import org.omg.CORBA.*;
import static java.lang.System.out;
```

```
public class CalcClient {

    static Calc calcImpl;
    static BufferedReader br = new BufferedReader(new InputStreamReader(System.in));

    public static void main(String args[]) {

        try {
            // create and initialize the ORB
            ORB orb = ORB.init(args, null);

            // get the root naming context
            org.omg.CORBA.Object objRef = orb.resolve_initial_references("NameService");
            // Use NamingContextExt instead of NamingContext. This is
            // part of the Interoperable naming Service.
            NamingContextExt ncRef = NamingContextExtHelper.narrow(objRef);

            // resolve the Object Reference in Naming
            String name = "Calc";
            calcImpl = CalcHelper.narrow(ncRef.resolve_str(name));
            System.out.println("Hello From the server");

            while (true) {
                out.println("1. Sum");
                out.println("2. Sub");
                out.println("3. Mul");
                out.println("4. Div");
                out.println("5. exit");
```

```
        out.println("--");
        out.println("choice: ");

        try {
            String opt = br.readLine();
            if (opt.equals("5")) {
                break;
            } else if (opt.equals("1")) {
                out.println("a+b= " + calcImpl.sum(getFloat("a"), getFloat("b")));
            } else if (opt.equals("2")) {
                out.println("a-b= " + calcImpl.sub(getFloat("a"), getFloat("b")));
            } else if (opt.equals("3")) {
                out.println("a*b= " + calcImpl.mul(getFloat("a"), getFloat("b")));
            } else if (opt.equals("4")) {
                try {
                    out.println("a/b= " + calcImpl.div(getFloat("a"), getFloat("b")));
                } catch (DivisionByZero de) {
                    out.println("Division by zero!!!");
                }
            }
        } catch (Exception e) {
            out.println("===");
            out.println("Error with numbers");
            out.println("===");
        }
        out.println("");

    }
```

```
            //calcImpl.shutdown();
        } catch (Exception e) {
            System.out.println("ERROR : " + e);
            e.printStackTrace(System.out);
        }
    }

    static float getFloat(String number) throws Exception {
        out.print(number + ": ");
        return Float.parseFloat(br.readLine());
    }
}
```

c) CalcServer.java

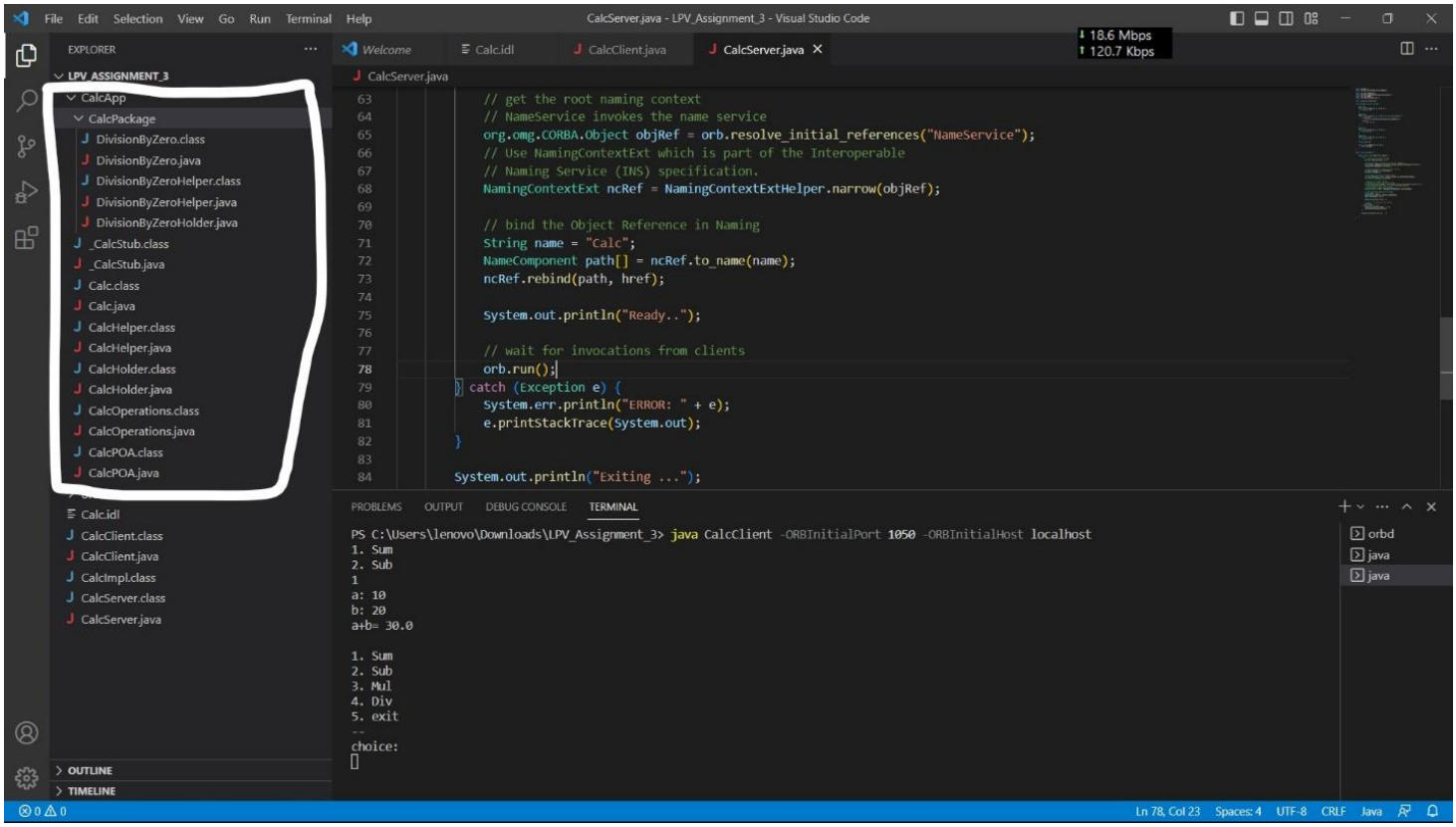
```
import CalcApp.*;
import CalcApp.CalcPackage.DivisionByZero;

import org.omg.CosNaming.*;
import org.omg.CosNaming.NamingContextPackage.*;
import org.omg.CORBA.*;
import org.omg.PortableServer.*;

import java.util.Properties;

class CalcImpl extends CalcPOA {

    @Override
```

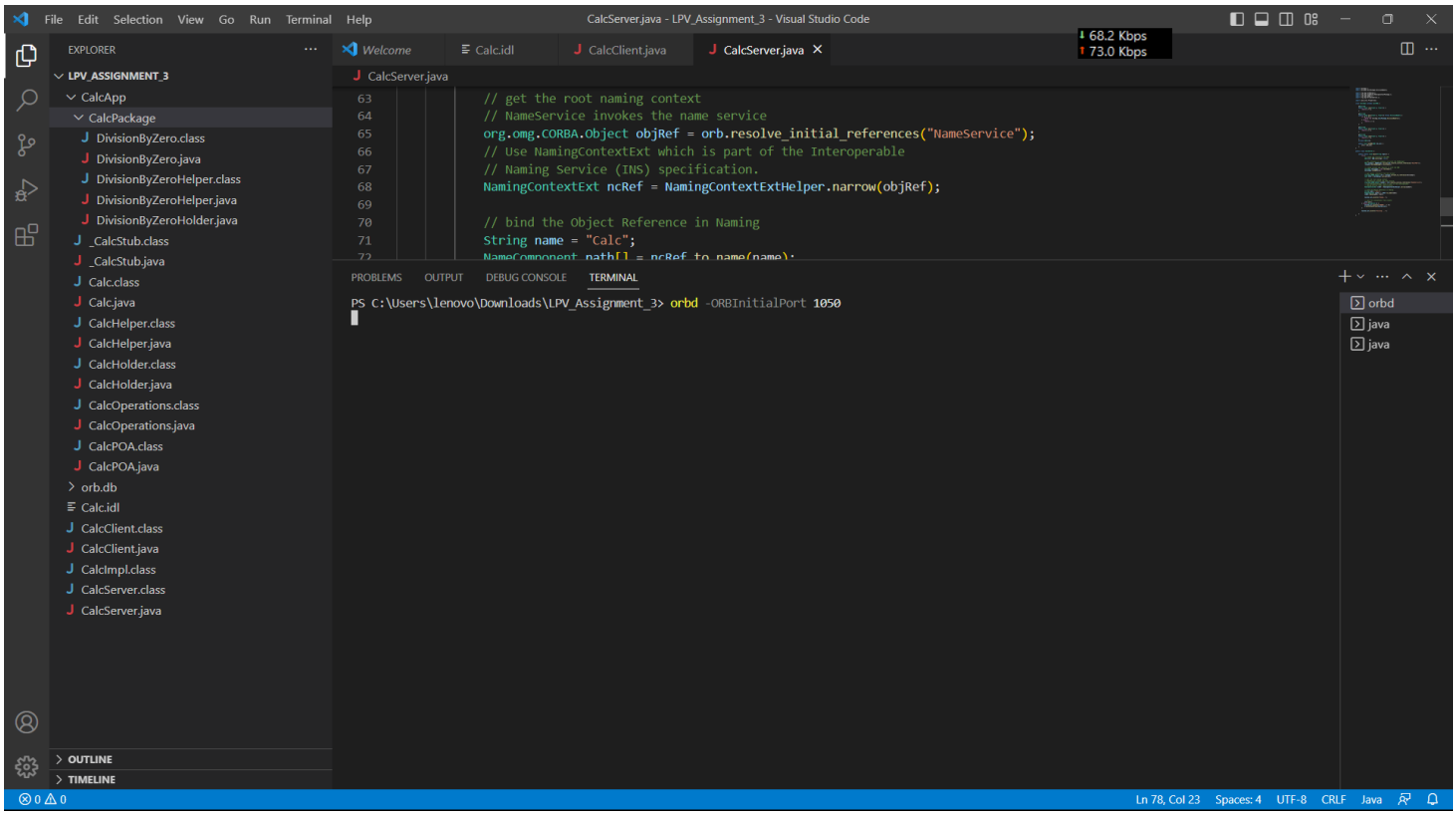
```
    public float sum(float a, float b) {
        return a + b;
    }

    @Override
    public float div(float a, float b) throws DivisionByZero {
        if (b == 0) {
            throw new CalcApp.CalcPackage.DivisionByZero();
        } else {
            return a / b;
        }
    }

    @Override
    public float mul(float a, float b) {
        return a * b;
    }

    @Override
    public float sub(float a, float b) {
        return a - b;
    }
    private ORB orb;

    public void setORB(ORB orb_val) {
        orb = orb_val;
    }
}
```

```
public class CalcServer {

    public static void main(String args[]) {
        try {
            // create and initialize the ORB
            ORB orb = ORB.init(args, null);

            // get reference to rootpoa & activate the POAManager
            POA rootpoa = POAHelper.narrow(orb.resolve_initial_references("RootPOA"));
            rootpoa.the_POAManager().activate();

            // create servant and register it with the ORB
            CalcImpl helloImpl = new CalcImpl();
            helloImpl.setORB(orb);

            // get object reference from the servant
            org.omg.CORBA.Object ref = rootpoa.servant_to_reference(helloImpl);
            Calc href = CalcHelper.narrow(ref);

            // get the root naming context
            // NameService invokes the name service
            org.omg.CORBA.Object objRef = orb.resolve_initial_references("NameService");
            // Use NamingContextExt which is part of the Interoperable
            // Naming Service (INS) specification.
            NamingContextExt ncRef = NamingContextExtHelper.narrow(objRef);

            // bind the Object Reference in Naming
```

```
            String name = "Calc";
            NameComponent path[] = ncRef.to_name(name);
            ncRef.rebind(path, href);

            System.out.println("Ready..");

            // wait for invocations from clients
            orb.run();
        } catch (Exception e) {
            System.err.println("ERROR: " + e);
            e.printStackTrace(System.out);
        }

        System.out.println("Exiting ...");

    }
}
```

Output


File Edit Selection View Go Run Terminal Help
CalcServer.java - LPV_Assignment_3 - Visual Studio Code
18.6 Mbps
120.7 Kbps
EXPLORER
LPV_ASSIGNMENT_3
CalcApp
CalcPackage
DivisionByZero.class
DivisionByZero.java
DivisionByZeroHelper.class
DivisionByZeroHelper.java
DivisionByZeroHolder.java
_CalcStub.class
_CalcStub.java
Calc.class
Calc.java
CalcHelper.class
CalcHelper.java
CalcHolder.class
CalcHolder.java
CalcOperations.class
CalcOperations.java
CalcPOA.class
CalcPOA.java
Calc.idl
CalcClient.class
CalcClient.java
CalcImpl.class
CalcServer.class
CalcServer.java
Welcome
Calc.idl
CalcClient.java
CalcServer.java
// get the root naming context
// NameService invokes the name service
org.omg.CORBA.Object objRef = orb.resolve_initial_references("NameService");
// Use NamingContextExt which is part of the Interoperable
// Naming Service (INS) specification.
NamingContextExt ncRef = NamingContextExtHelper.narrow(objRef);
// bind the Object Reference in Naming
String name = "Calc";
NameComponent path[] = ncRef.to_name(name);
ncRef.rebind(path, href);
System.out.println("Ready..");
// wait for invocations from clients
orb.run();
} catch (Exception e) {
System.err.println("ERROR: " + e);
e.printStackTrace(System.out);
}
System.out.println("Exiting ...");
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
PS C:\Users\lenovo\Downloads\LPV_Assignment_3> java CalcClient -ORBInitialPort 1050 -ORBInitialHost localhost
1. Sum
2. Sub
1
a: 10
b: 20
a+b= 30.0
1. Sum
2. Sub
3. Mul
4. Div
5. exit
--
choice:
orbd
java
java
OUTLINE
TIMELINE
Ln 78, Col 23 Spaces: 4 UTF-8 CRLF Java


File Edit Selection View Go Run Terminal Help
CalcServer.java - LPV_Assignment_3 - Visual Studio Code
68.2 Kbps
73.0 Kbps
EXPLORER
LPV_ASSIGNMENT_3
CalcApp
CalcPackage
DivisionByZero.class
DivisionByZero.java
DivisionByZeroHelper.class
DivisionByZeroHelper.java
DivisionByZeroHolder.java
_CalcStub.class
_CalcStub.java
Calc.class
Calc.java
CalcHelper.class
CalcHelper.java
CalcHolder.class
CalcHolder.java
CalcOperations.class
CalcOperations.java
CalcPOA.class
CalcPOA.java
orb.db
Calc.idl
CalcClient.class
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CalcImpl.class
CalcServer.class
CalcServer.java
Welcome
Calc.idl
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CalcServer.java
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org.omg.CORBA.Object objRef = orb.resolve_initial_references("NameService");
// Use NamingContextExt which is part of the Interoperable
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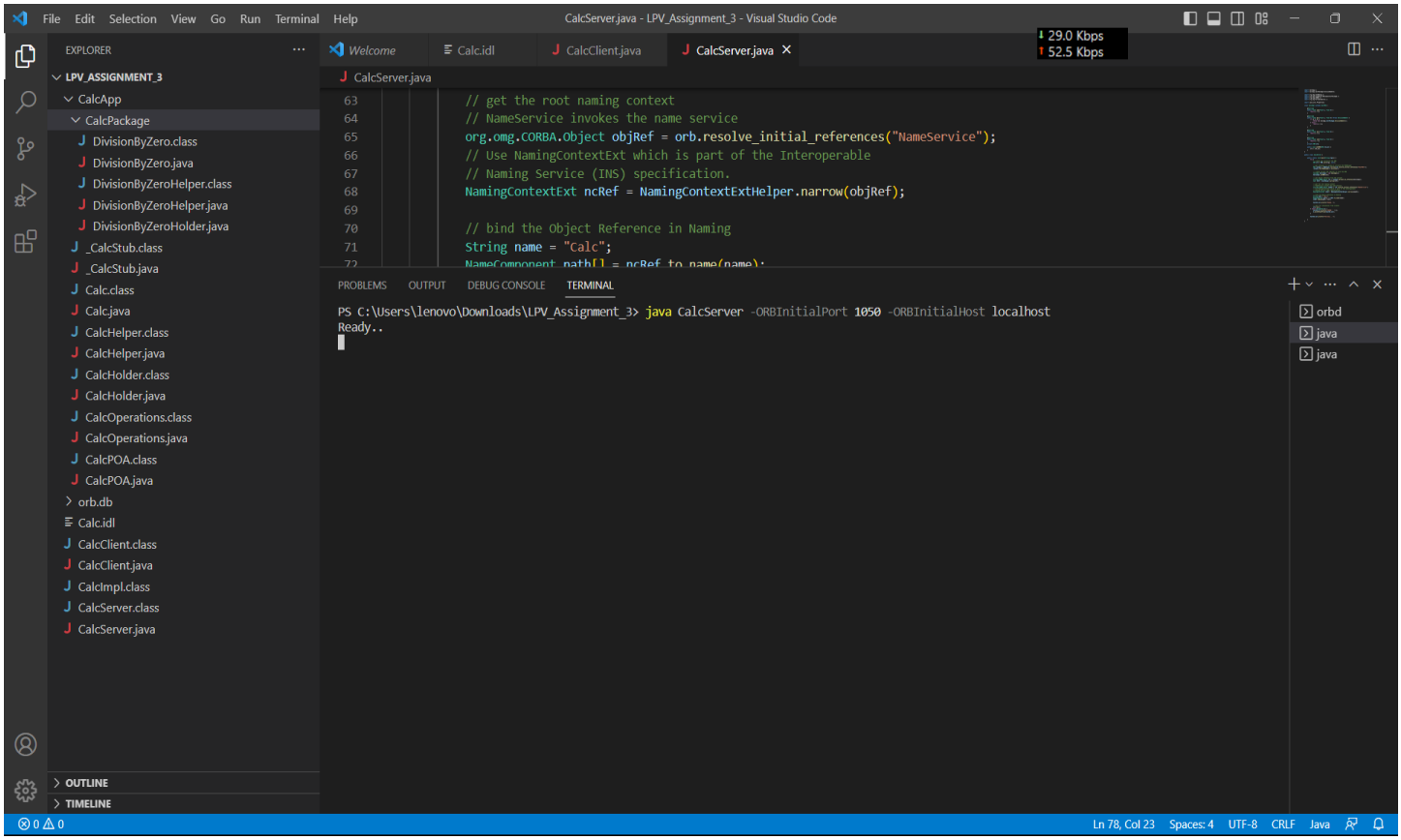
NamingContextExt ncRef = NamingContextExtHelper.narrow(objRef);
// bind the Object Reference in Naming
String name = "Calc";
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
PS C:\Users\lenovo\Downloads\LPV_Assignment_3> orbd -ORBInitialPort 1050
orbd
java
java
OUTLINE
TIMELINE
Ln 78, Col 23 Spaces: 4 UTF-8 CRLF Java


File Edit Selection View Go Run Terminal Help
CalcServer.java - LPV_Assignment_3 - Visual Studio Code
29.0 Kbps
52.5 Kbps
EXPLORER
LPV_ASSIGNMENT_3
CalcApp
CalcPackage
DivisionByZero.class
DivisionByZero.java
DivisionByZeroHelper.class
DivisionByZeroHelper.java
DivisionByZeroHolder.java
_CalcStub.class
_CalcStub.java
Calc.class
Calc.java
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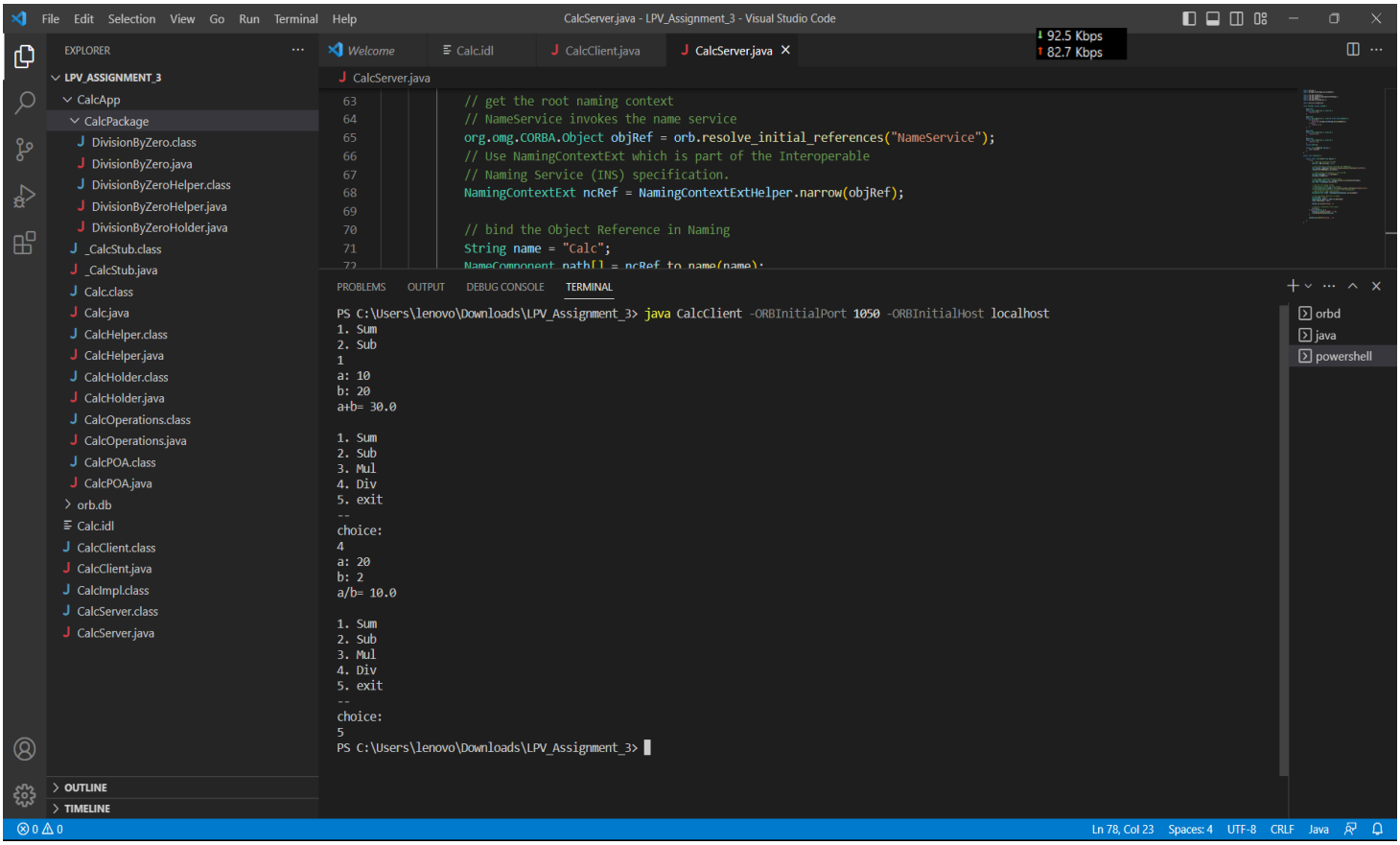
CalcHolder.java
CalcOperations.class
CalcOperations.java
CalcPOA.class
CalcPOA.java
orb.db
Calc.idl
CalcClient.class
CalcClient.java
CalcImpl.class
CalcServer.class
CalcServer.java
Welcome
Calc.idl
CalcClient.java
CalcServer.java
63 // get the root naming context
64 // NameService invokes the name service
65 org.omg.CORBA.Object objRef = orb.resolve_initial_references("NameService");
66 // Use NamingContextExt which is part of the Interoperable
67 // Naming Service (INS) specification.
68 NamingContextExt ncRef = NamingContextExtHelper.narrow(objRef);
69
70 // bind the Object Reference in Naming
71 String name = "Calc";
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
PS C:\Users\lenovo\Downloads\LPV_Assignment_3> java CalcServer -ORBInitialPort 1050 -ORBInitialHost localhost
Ready..
orbd
java
java
OUTLINE
TIMELINE
Ln 78, Col 23 Spaces: 4 UTF-8 CRLF Java


File Edit Selection View Go Run Terminal Help
CalcServer.java - LPV_Assignment_3 - Visual Studio Code
92.5 Kbps
82.7 Kbps
EXPLORER
LPV_ASSIGNMENT_3
CalcApp
CalcPackage
DivisionByZero.class
DivisionByZero.java
DivisionByZeroHelper.class
DivisionByZeroHelper.java
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PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
PS C:\Users\lenovo\Downloads\LPV_Assignment_3> java CalcClient -ORBInitialPort 1050 -ORBInitialHost localhost
1. Sum
2. Sub
1
a: 10
b: 20
a+b= 30.0
1. Sum
2. Sub
3. Mul
4. Div
5. exit
--
choice:
4
a: 20
b: 2
a/b= 10.0
1. Sum
2. Sub
3. Mul
4. Div
5. exit
--
choice:
5
PS C:\Users\lenovo\Downloads\LPV_Assignment_3>
orbd
java
powershell
OUTLINE
TIMELINE
Ln 78, Col 23 Spaces: 4 UTF-8 CRLF Java