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BE IT

**Assignment 2**

**Instructions**:

**Note**: Use java 8 for this assignment.

1. Develop the interface code:

1. module CalcApp 2. {

3. interface Calc

4. {

1. exception DivisionByZero {};
2. float sum(in float a, in float b);
3. float div(in float a, in float b) raises (DivisionByZero);
4. float mul(in float a, in float b);
5. float sub(in float a, in float b); 10. };

11. };

12.

1. Compile the interface code with the following command:

idlj -fall CalcApp.idl

Note: This will create files stubs, and skeletons.

1. Develop the server side code:
2. import CalcApp.\*;
3. import CalcApp.CalcPackage.DivisionByZero; 3.
4. import org.omg.CosNaming.\*;
5. import org.omg.CosNaming.NamingContextPackage.\*;
6. import org.omg.CORBA.\*;
7. import org.omg.PortableServer.\*; 8.

9. import java.util.Properties; 10.

11. class CalcImpl extends CalcPOA { 12.

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@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;

}

41. } 42.

43. public class CalcServer { 44.

1. public static void main(String args[]) {
2. try {
3. // create and initialize the ORB
4. ORB orb = ORB.init(args, null); 49.
5. // get reference to rootpoa & activate the POAManager
6. POA rootpoa = POAHelper.narrow(orb.resolve\_initial\_references("RootPOA"));
7. rootpoa.the\_POAManager().activate(); 53.
8. // create servant and register it with the ORB
9. CalcImpl helloImpl = new CalcImpl();
10. helloImpl.setORB(orb); 57.
11. // get object reference from the servant
12. org.omg.CORBA.Object ref = rootpoa.servant\_to\_reference(helloImpl);
13. Calc href = CalcHelper.narrow(ref); 61.
14. // get the root naming context
15. // NameService invokes the name service
16. org.omg.CORBA.Object objRef = orb.resolve\_initial\_references("NameService");
17. // Use NamingContextExt which is part of the Interoperable
18. // Naming Service (INS) specification.
19. NamingContextExt ncRef = NamingContextExtHelper.narrow(objRef); 68.
20. // bind the Object Reference in Naming
21. String name = "Calc";
22. NameComponent path[] = ncRef.to\_name(name);
23. ncRef.rebind(path, href); 73.

74. System.out.println("Ready.."); 75.

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

81. }

82.

83. System.out.println("Exiting ..."); 84.

85. }

86. } 87.

4. Develop the client-side code:

1. import java.io.BufferedReader;
2. import java.io.IOException;
3. import java.io.InputStreamReader; 4.
4. import CalcApp.\*;
5. import CalcApp.CalcPackage.DivisionByZero; 7.
6. import org.omg.CosNaming.\*;
7. import org.omg.CosNaming.NamingContextPackage.\*;
8. import org.omg.CORBA.\*;
9. import static java.lang.System.out; 12.

13. public class CalcClient { 14.

15.

16.

17.

18.

static Calc calcImpl;

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

public static void main(String args[]) {

|  |  |  |
| --- | --- | --- |
| 19. |  | |
| 20. | try | { |
| 21. |  | // create and initialize the ORB |
| 22. |  | ORB orb = ORB.init(args, null); |
| 23. |  |  |
| 24. |  | // get the root naming context |
| 25. |  | org.omg.CORBA.Object objRef = orb.resolve\_initial\_references("NameService"); |
| 26. |  | // Use NamingContextExt instead of NamingContext. This is |
| 27. |  | // part of the Interoperable naming Service. |
| 28. |  | NamingContextExt ncRef = NamingContextExtHelper.narrow(objRef); |
| 29. |  |  |
| 30. |  | // resolve the Object Reference in Naming |
| 31. |  | String name = "Calc"; |
| 32. |  | calcImpl = CalcHelper.narrow(ncRef.resolve\_str(name)); |
| 33. |  |  |

34. // System.out.println(calcImpl); 35.

36.

1. while (true) {
2. out.println("1. Sum");
3. out.println("2. Sub");
4. out.println("3. Mul");
5. out.println("4. Div");
6. out.println("5. exit");
7. out.println("--");
8. out.println("choice: "); 45.
9. try {
10. String opt = br.readLine();
11. if (opt.equals("5")) {
12. break;
13. } else if (opt.equals("1")) {
14. out.println("a+b= " + calcImpl.sum(getFloat("a"), getFloat("b")));
15. } else if (opt.equals("2")) {
16. out.println("a-b= " + calcImpl.sub(getFloat("a"), getFloat("b")));
17. } else if (opt.equals("3")) {
18. out.println("a\*b= " + calcImpl.mul(getFloat("a"), getFloat("b")));
19. } else if (opt.equals("4")) {
20. try {
21. out.println("a/b= " + calcImpl.div(getFloat("a"),

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| getFloat("b")));  59. | | | |  | } catch (DivisionByZero de) { |
| 60. | | | |  | out.println("Division by zero!!!"); |
| 61. | | | |  | } |
| 62. | | | | } |  |
| 63. |  | | } catch (Exception e) { | | |
| 64. |  | | out.println("==="); | | |
| 65. |  | | out.println("Error with numbers"); | | |
| 66. |  | | out.println("==="); | | |
| 67. |  | | } | | |
| 68. |  | | out.println(""); | | |
| 69. |  | |  | | |
| 70. |  | | } | | |
| 71. |  | | //calcImpl.shutdown(); | | |
| 72. |  | | } catch (Exception e) { | | |
| 73. |  | | System.out.println("ERROR : " + e); | | |
| 74. |  | | e.printStackTrace(System.out); | | |
| 75. |  | | } | | |
| 76. | } | |  | | |
| 77. |  | |  | | |
| 78. |  | static float getFloat(String number) throws Exception { | | | |
| 79. |  | out.print(number + ": "); | | | |
| 80. |  | return Float.parseFloat(br.readLine()); | | | |
| 81. |  | } | | | |
| 82. | } |  | | | |
| 83. |  |  | | | |

* 1. Compile all the java files.

1. Javac \*.java CalcApp/\*.java 2.

* 1. Now start the ordb server though powershell.

1. orbd -ORBInitialPort 1050 2.

* 1. Now start the server program on new powershell window.

1. java CalcServer -ORBInitialPort 1050 -ORBInitialHost localhost 2.

* 1. Now start the client program on new powershell window.

java CalcClient -ORBInitialPort 1050 -ORBInitialHost localhost

* 1. Do the operations on the client end. Exit the program after usage.

**Output:**

Local 1:

PS C:\Users\Shard\workspace\Assignment No 02> cd .\src\

PS C:\Users\Shard\workspace\Assignment No 02\src> idlj --version java.io.FileNotFoundException: --version (The system cannot find the file specified)

PS C:\Users\ Shard\workspace\Assignment No 02\src> idlj -version IDL-to-Java compiler (portable), version "3.2"

PS C:\Users\Shard\workspace\Assignment No 02\src> idlj -fall .\calculator.idl PS C:\Users\Shard\workspace\Assignment No 02\src> cd ..

PS C:\Users\Shard\workspace\Assignment No 02> cd '.\out\production\Assignment No 02\'

PS C:\Users\Shard\workspace\Assignment No 02\out\production\Assignment No 02> ls

Directory: C:\Users\Shard\workspace\Assignment No 02\out\production\Assignment No 02

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|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| d----- | 23-05-2023 | 14:19 |  | CalcApp |
| -a---- | 23-05-2023 | 14:19 | 3380 | CalcClient.class |
| -a---- | 23-05-2023 | 14:19 | 895 | CalcImpl.class |
| -a---- | 23-05-2023 | 14:19 | 2557 | CalcServer.class |
| -a---- | 23-05-2023 | 12:45 | 265 | calculator.idl |
| -a---- | 23-05-2023 | 14:19 | 516 | Main.class |

PS C:\Users\Shard\workspace\Assignment No 02\out\production\Assignment No 02> orbd

-ORBInitialPort 1050

Local 2:

PS C:\Users\Shard\workspace\Assignment No 02> cd '.\out\production\Assignment No 02\'

PS C:\Users\Shard\workspace\Assignment No 02\out\production\Assignment No 02> java CalcServer -ORBInitialPort 1050 -ORBInitialHost localhost

Ready..

Local 3:

PS C:\Users\Shard\workspace\Assignment No 02> cd '.\out\production\Assignment No 02\'

PS C:\Users\Shard\workspace\Assignment No 02\out\production\Assignment No 02> java CalcClient -ORBInitialPort 1050 -ORBInitialHost localhost

1. Sum
2. Sub
3. Mul
4. Div
5. exit

--

choice:

1

a: 5

b: 6

a+b= 11.0

1. Sum
2. Sub
3. Mul
4. Div
5. exit

--

choice: