LPV Practical Code and Outputs

Assignment No 1

Servant.java

```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

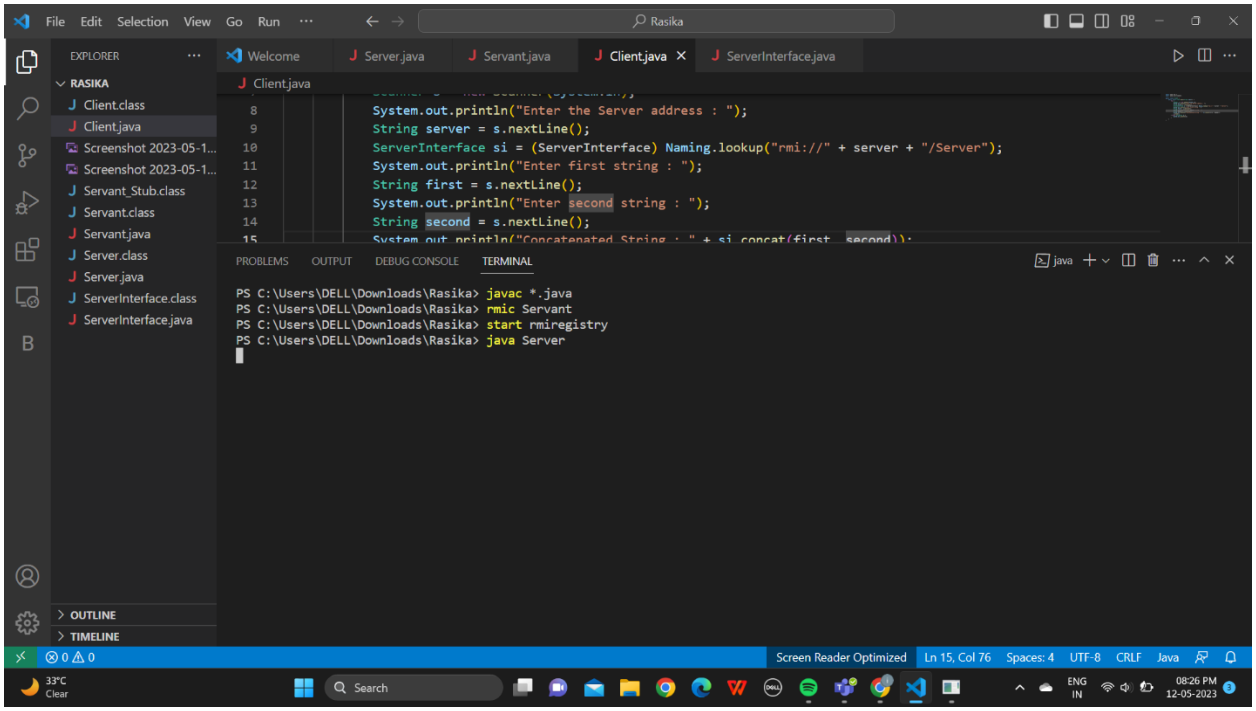
```java
import java.rmi.*;

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

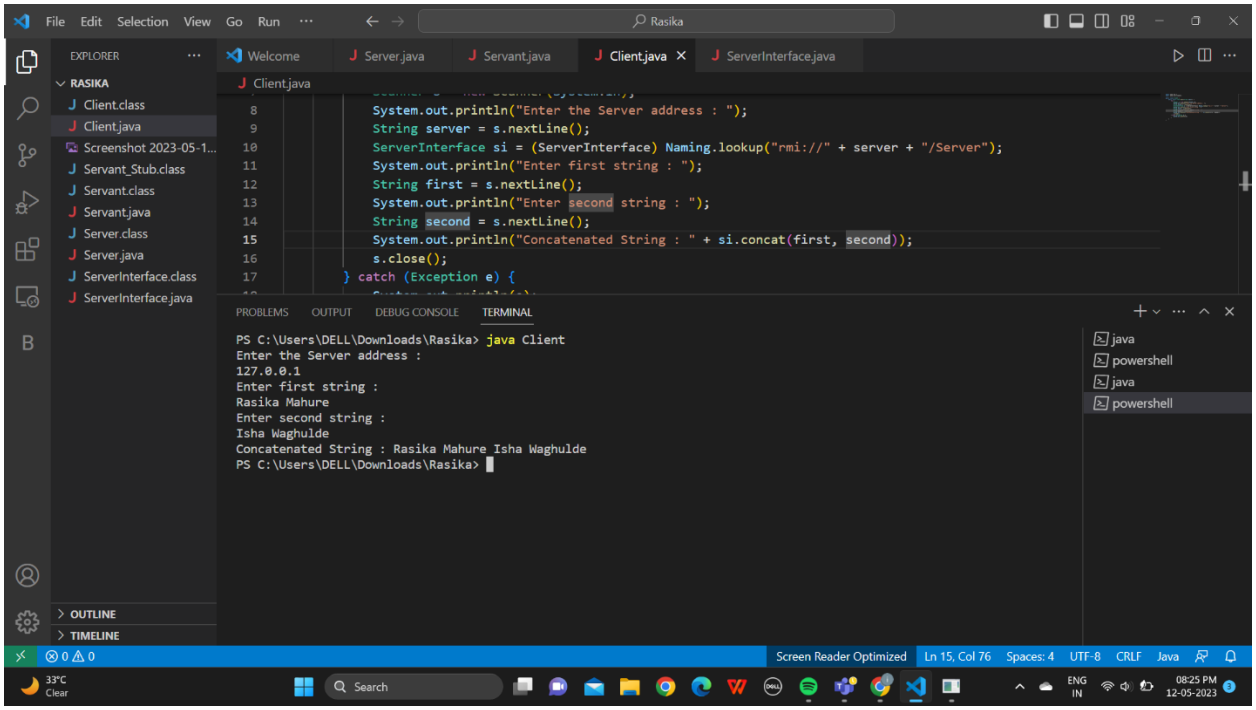
Server.java

```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);
        }
    }
}
```




File Edit Selection View Go Run
Rasika
EXPLORER
RASIKA
Client.class
Client.java
Screenshot 2023-05-1...
Servant_Stub.class
Servant.class
Servant.java
Server.class
Server.java
ServerInterface.class
ServerInterface.java
Welcome
Server.java
Servant.java
Client.java
ServerInterface.java
Client.java
8 System.out.println("Enter the Server address : ");
9 String server = s.nextLine();
10 ServerInterface si = (ServerInterface) Naming.lookup("rmi://" + server + "/Server");
11 System.out.println("Enter first string : ");
12 String first = s.nextLine();
13 System.out.println("Enter second string : ");
14 String second = s.nextLine();
15 System.out.println("Concatenated String : " + si.concat(first, second));
16 s.close();
17 } catch (Exception e) {
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
PS C:\Users\DELL\Downloads\Rasika> java Client
Enter the Server address :
127.0.0.1
Enter first string :
Rasika Mahure
Enter second string :
Isha Waghulde
Concatenated String : Rasika Mahure Isha Waghulde
PS C:\Users\DELL\Downloads\Rasika>
java
powershell
java
powershell
OUTLINE
TIMELINE
Screen Reader Optimized
Ln 15, Col 76
Spaces: 4
UTF-8
CRLF
Java
33°C
Clear
Search
ENG
IN
08:25 PM
12-05-2023

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) {
```

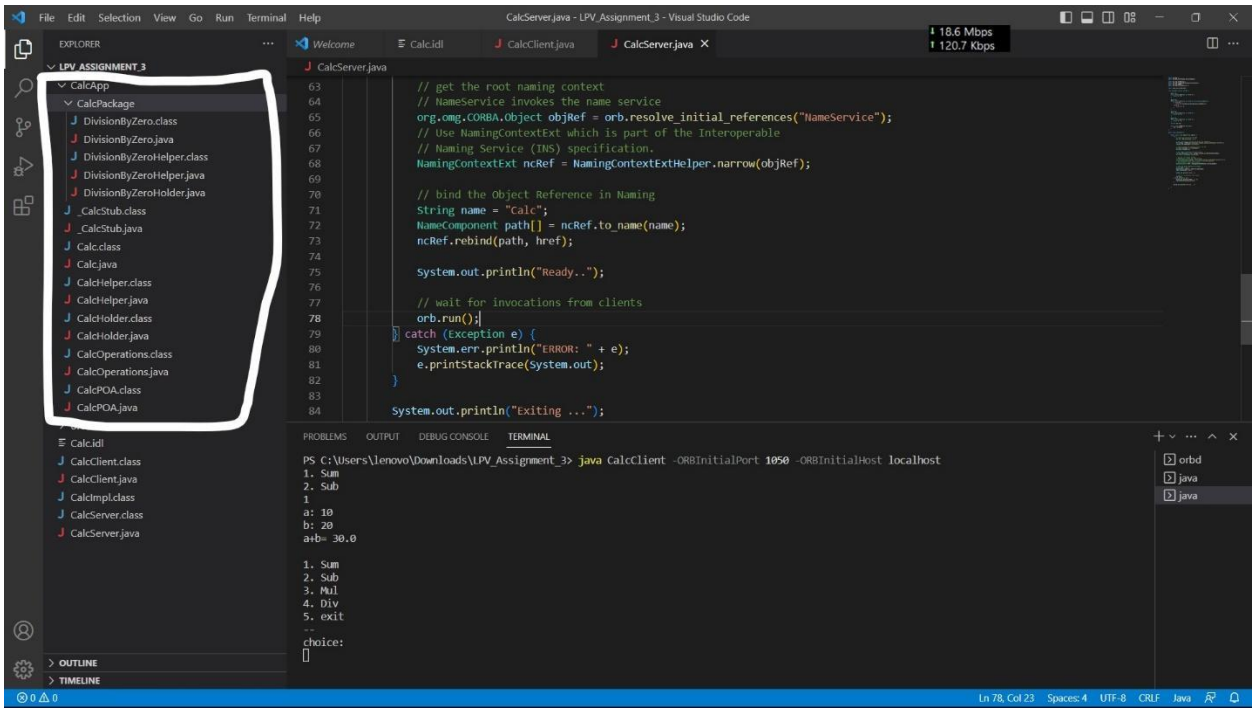
```
                    out.println("===");
                    out.println("Error with numbers");
                    out.println("===");
                }
                out.println("");

            }
            //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());
    }
}
```

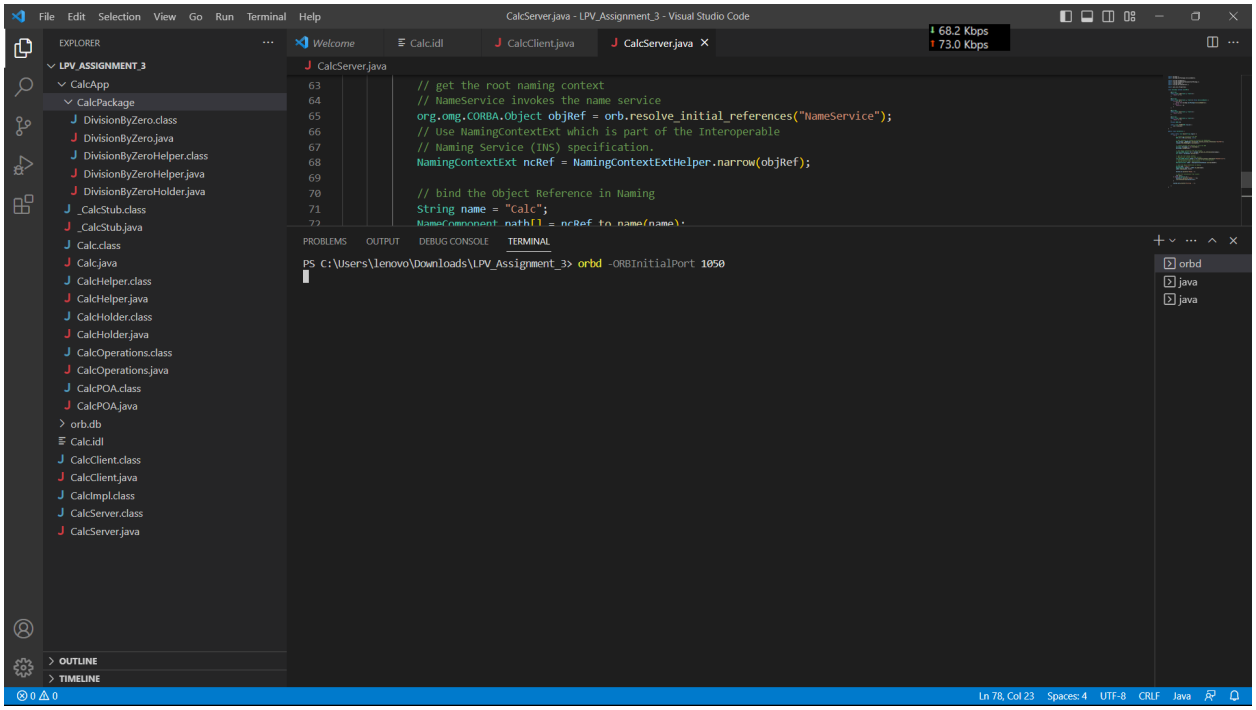
c) CalcServer.java

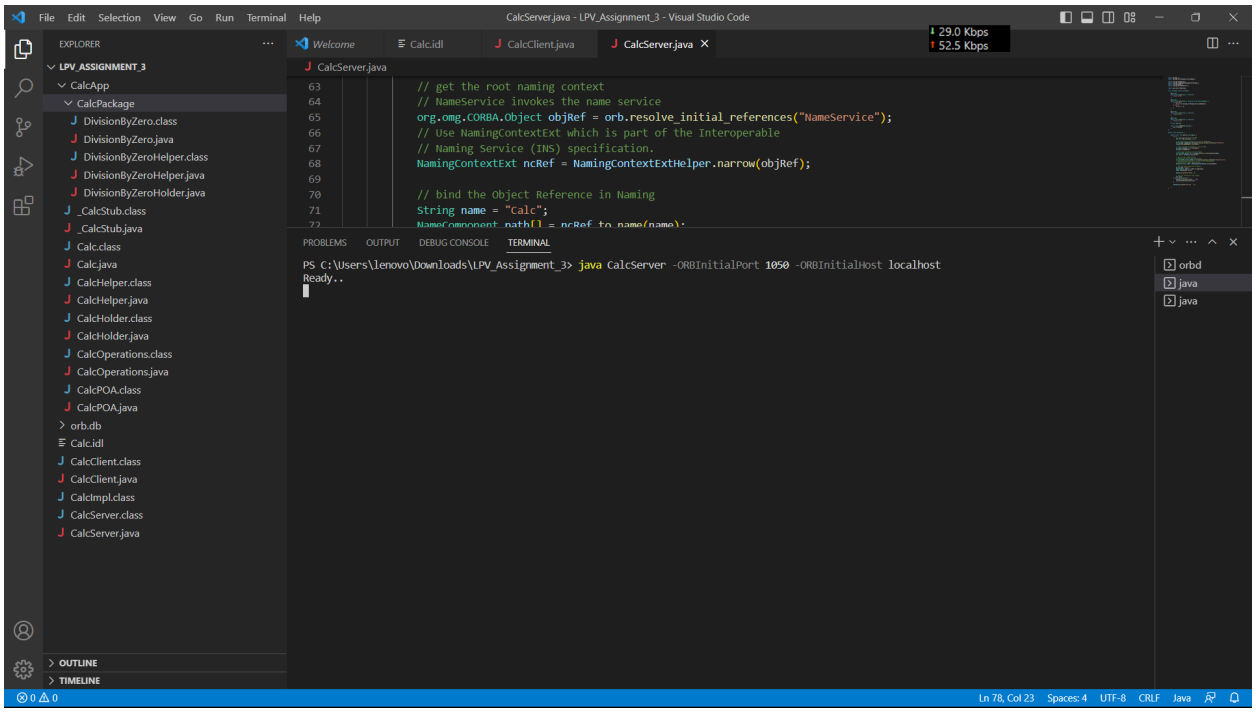
```
import CalcApp.*;
import CalcApp.CalcPackage.DivisionByZero;

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;
        }
```

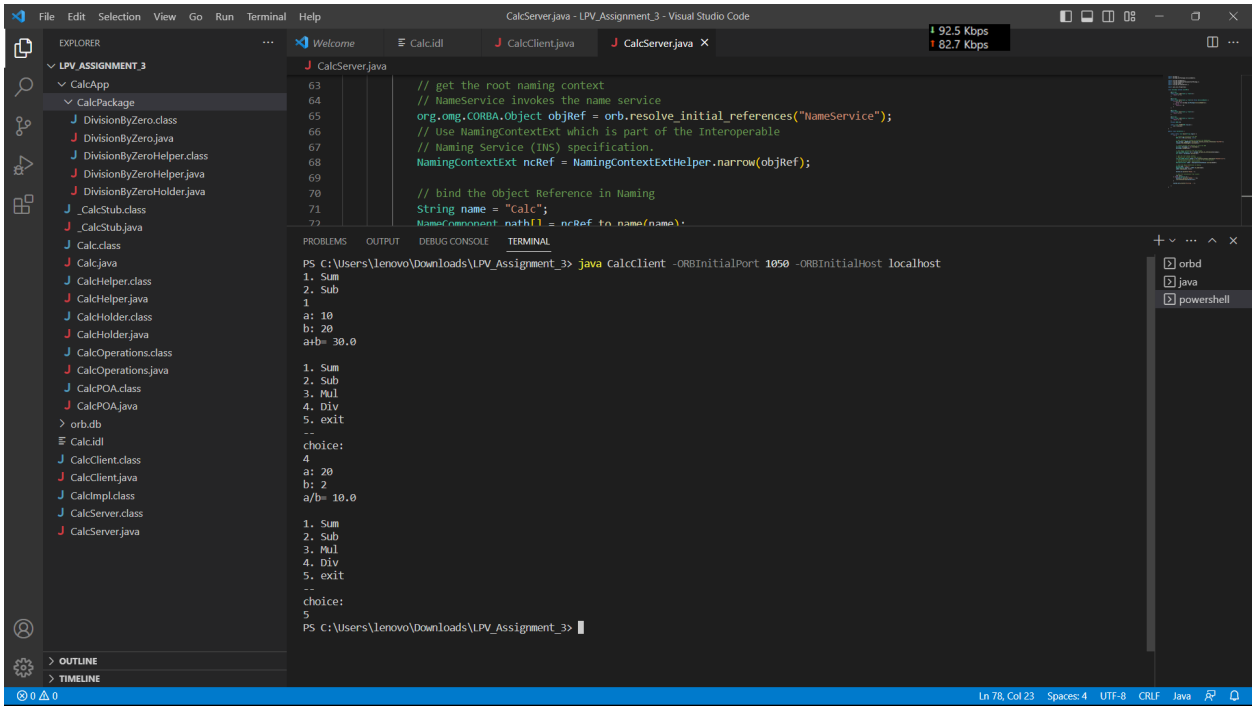
```
    }

    @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 ...");

    }
}
```




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
CalcClient.java
CalcImpl.class
CalcServer.class
CalcServer.java
Welcome
Calc.idl
CalcClient.java
CalcServer.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";
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
CalcHelper.class
CalcHelper.java
CalcHolder.class
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
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";
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
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
CalcClient.java
CalcImpl.class
CalcServer.class
CalcServer.java
OUTLINE
TIMELINE
Welcome
Calc.idl
CalcClient.java
CalcServer.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";
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
0 0
Ln 78, Col 23 Spaces: 4 UTF-8 CRLF Java

Assignment No 4

Code

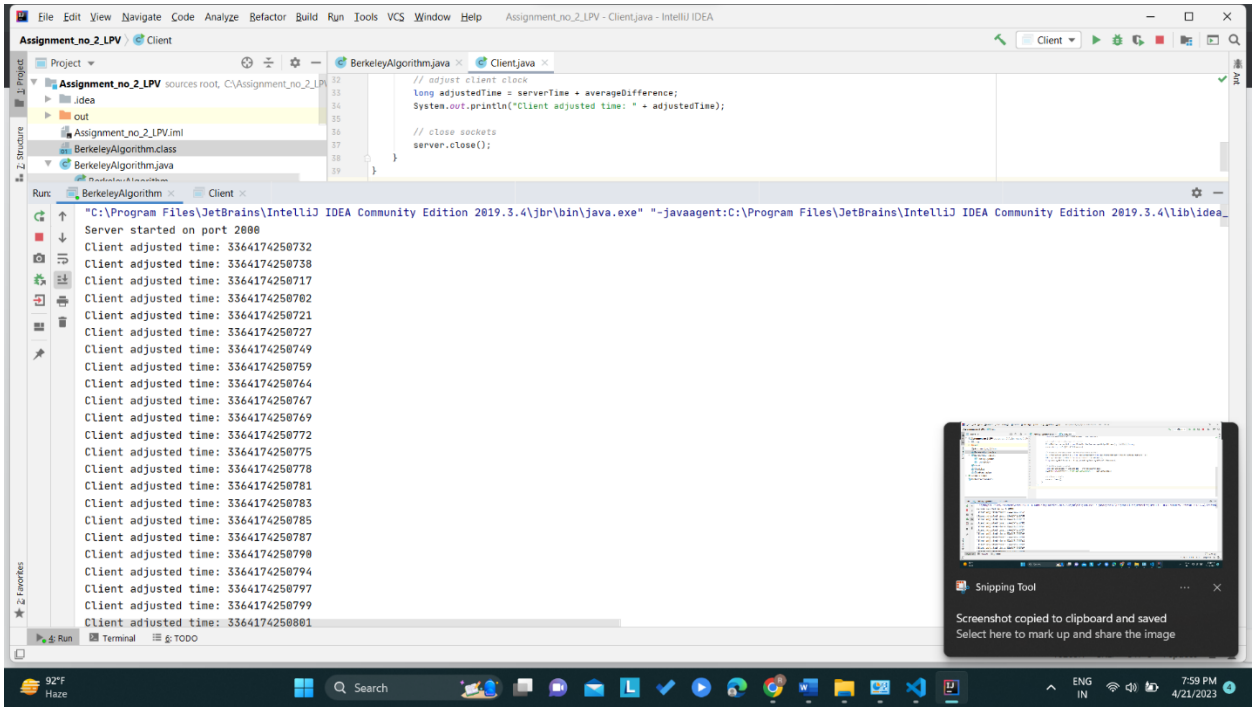
```
import java.net.*;
import java.io.*;

public class BerkeleyAlgorithm {
   public static void main(String[] args) throws Exception {
      int port = 2000; // port number
      ServerSocket server = new ServerSocket(port);
      System.out.println("Server started on port " + port);

      while (true) {
         Socket client = server.accept();
         new Thread(new ClientHandler(client)).start();
      }
   }
}

class ClientHandler implements Runnable {
   private Socket client;

   public ClientHandler(Socket client) {
      this.client = client;
   }

   public void run() {
      try {
         // receive time request from client
         BufferedReader in = new BufferedReader(new
InputStreamReader(client.getInputStream()));
         String request = in.readLine();
         long requestTime = Long.parseLong(request);

         // send current time to client
         long currentTime = System.currentTimeMillis();
         PrintWriter out = new PrintWriter(client.getOutputStream(), true);
         out.println(currentTime);

         // calculate clock difference
         long clockDifference = currentTime - requestTime;

         // send clock difference to server
         Socket server = new Socket("localhost", 2000);
         PrintWriter serverOut = new PrintWriter(server.getOutputStream(),
true);
         serverOut.println(clockDifference);
```

```
            // receive average clock difference from server
            BufferedReader serverIn = new BufferedReader(new
InputStreamReader(server.getInputStream()));
            String averageClockDifference = serverIn.readLine();
            long averageDifference = Long.parseLong(averageClockDifference);

            // adjust client clock
            long adjustedTime = currentTime + averageDifference;
            System.out.println("Client adjusted time: " + adjustedTime);

            // close sockets
            server.close();
            client.close();
        } catch (Exception e) {
            e.printStackTrace();
        }
    }
}
```

Client

```
import java.net.*;
import java.io.*;

public class Client {
    public static void main(String[] args) throws Exception {
        Socket server = new Socket("localhost", 2000);

        // get current time
        long currentTime = System.currentTimeMillis();

        // send time request to server
        PrintWriter out = new PrintWriter(server.getOutputStream(), true);
        out.println(currentTime);

        // receive current time from server
        BufferedReader in = new BufferedReader(new
InputStreamReader(server.getInputStream()));
        String response = in.readLine();
        long serverTime = Long.parseLong(response);

        // calculate clock difference
        long clockDifference = serverTime - currentTime;

        // send clock difference to server
        PrintWriter serverOut = new PrintWriter(server.getOutputStream(),
true);
        serverOut.println(clockDifference);
```

```
        // receive average clock difference from server
        BufferedReader serverIn = new BufferedReader(new
InputStreamReader(server.getInputStream()));
        String averageClockDifference = serverIn.readLine();
        long averageDifference = Long.parseLong(averageClockDifference);

        // adjust client clock
        long adjustedTime = serverTime + averageDifference;
        System.out.println("Client adjusted time: " + adjustedTime);

        // close sockets
        server.close();
    }
}
```



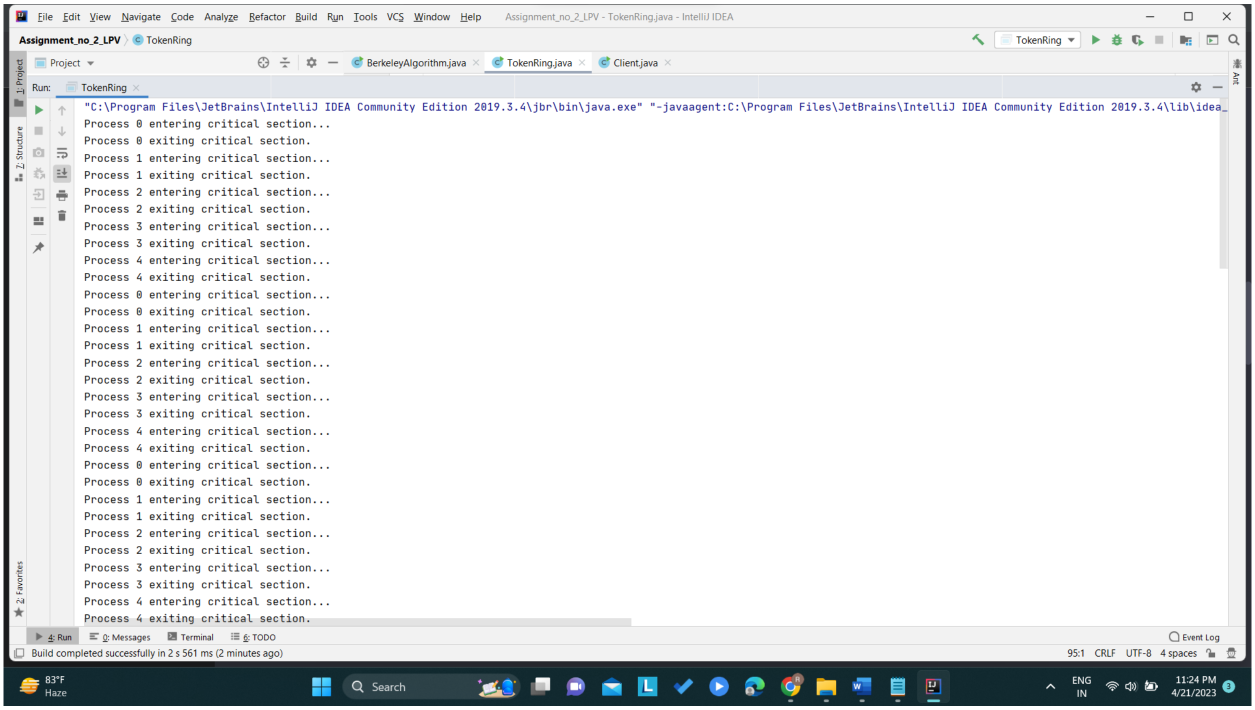
Assignment No 5

Code

```
import java.util.*;

public class TokenRing {
    private static final int N = 5; // Number of processes
    private static final int TOKEN = -1; // Token value
    private static final int CS_TIME = 1000; // Critical section time

    private static boolean[] hasToken = new boolean[N]; // Whether process i
has the token
    private static boolean[] inCS = new boolean[N]; // Whether process i is in
the critical section
    private static int tokenHolder = -1; // Current token holder

    private static void process(int id) throws InterruptedException {
        while (true) {
            if (hasToken[id]) {
                // Enter critical section
                inCS[id] = true;
                System.out.println("Process " + id + " entering critical
section...");
                Thread.sleep(CS_TIME);
                System.out.println("Process " + id + " exiting critical
section.");

                // Release token
                hasToken[id] = false;
                int nextId = (id + 1) % N;
                hasToken[nextId] = true;
```

```
                tokenHolder = nextId;
            } else {
                // Wait for token
                Thread.sleep(100);
            }
        }
    }

    public static void main(String[] args) throws InterruptedException {
        // Initialize token holder
        hasToken[0] = true;
        tokenHolder = 0;

        // Start processes
        List<Thread> threads = new ArrayList<>();
        for (int i = 0; i < N; i++) {
            int id = i;
            Thread thread = new Thread(() -> {
                try {
                    process(id);
                } catch (InterruptedException e) {
                    e.printStackTrace();
                }
            });
            threads.add(thread);
            thread.start();
        }

        // Wait for processes to finish
        for (Thread thread : threads) {
            thread.join();
        }
    }
}
```

Output


File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
Assignment_no_2_LPV - TokenRing.java - IntelliJ IDEA
Assignment_no_2_LPV
TokenRing
BerkeleyAlgorithm.java
TokenRing.java
Client.java
Run:
TokenRing
"C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2019.3.4\jbr\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2019.3.4\lib\idea_
Process 0 entering critical section...
Process 0 exiting critical section.
Process 1 entering critical section...
Process 1 exiting critical section.
Process 2 entering critical section...
Process 2 exiting critical section.
Process 3 entering critical section...
Process 3 exiting critical section.
Process 4 entering critical section...
Process 4 exiting critical section.
Process 0 entering critical section...
Process 0 exiting critical section.
Process 1 entering critical section...
Process 1 exiting critical section.
Process 2 entering critical section...
Process 2 exiting critical section.
Process 3 entering critical section...
Process 3 exiting critical section.
Process 4 entering critical section...
Process 4 exiting critical section.
Process 0 entering critical section...
Process 0 exiting critical section.
Process 1 entering critical section...
Process 1 exiting critical section.
Process 2 entering critical section...
Process 2 exiting critical section.
Process 3 entering critical section...
Process 3 exiting critical section.
Process 4 entering critical section...
Process 4 exiting critical section.
4: Run
0: Messages
Terminal
6: TODO
Event Log
Build completed successfully in 2 s 561 ms (2 minutes ago)
95:1 CRLF UTF-8 4 spaces
83°F
Haze
Search
ENG
IN
11:24 PM
4/21/2023

Assignment No 6

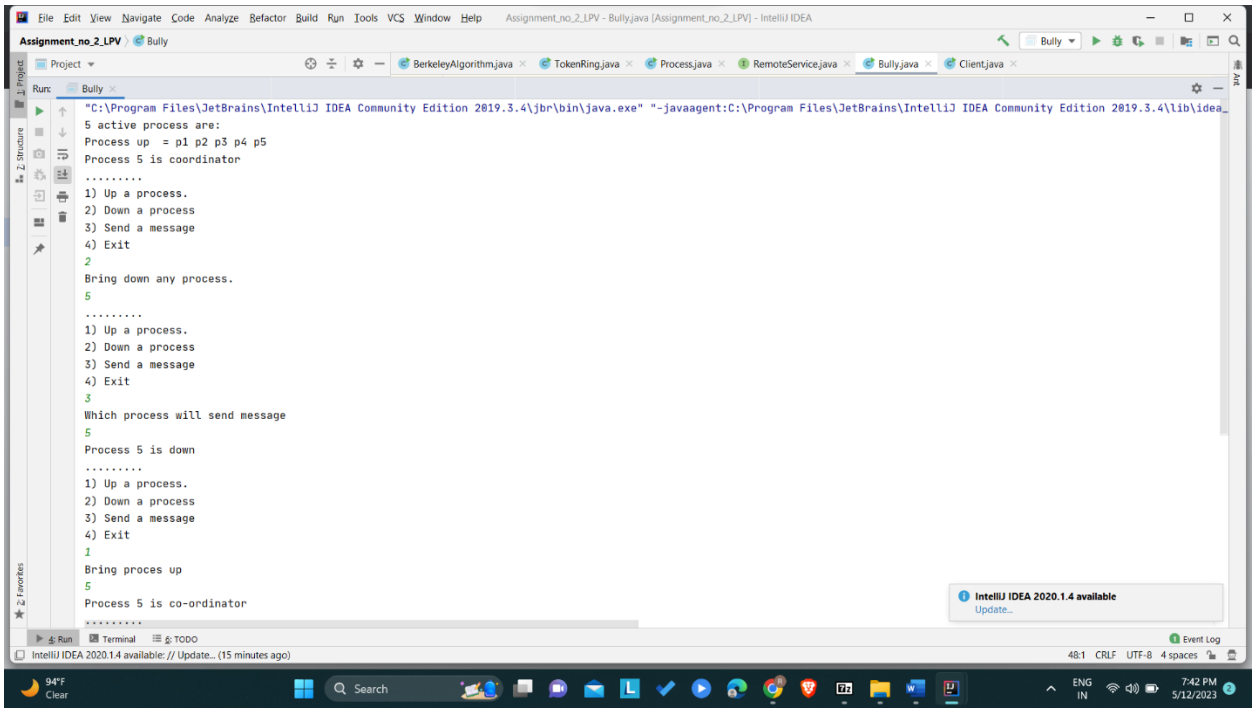
Code

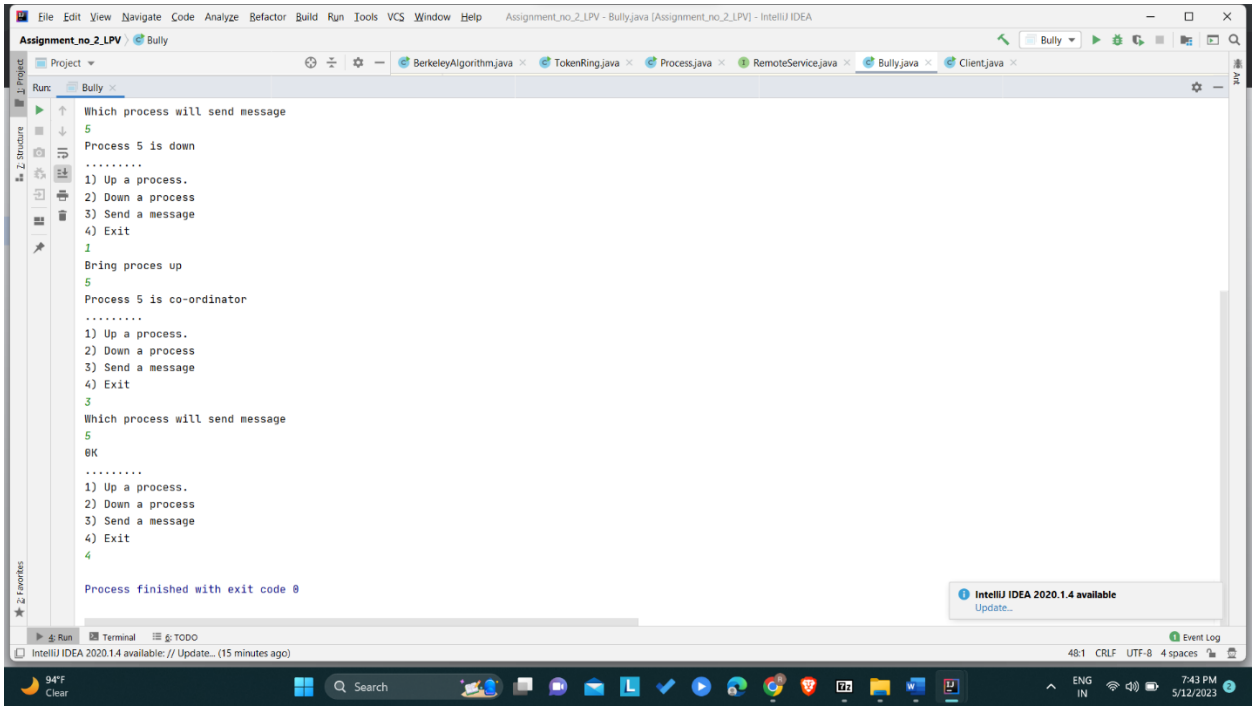
A) Bully Algorithm

```
import java.io.InputStream;
        import java.io.PrintStream;
        import java.util.Scanner;

public class Bully {
    static boolean[] state = new boolean[5];
    int coordinator;

    public static void up(int up) {
        if (state[up - 1]) {
            System.out.println("Process " + up + " is already up");
        } else {
            int i;
            Bully.state[up - 1] = true;
            System.out.println("Process " + up + " held election");
            for (i = up; i < 5; ++i) {
                System.out.println("Election message sent from process " + up
+ " to process " + (i + 1));
            }
            for (i = up + 1; i ⩽ 5; ++i) {
                if (!state[i - 1]) continue;
                System.out.println("Alive message send from process " + i + "
to process " + up);
                break;
            }
        }
    }

    public static void down(int down) {
        if (!state[down - 1]) {
            System.out.println("Process " + down + " is already dowm.");
        } else {
            Bully.state[down - 1] = false;
        }
    }

    public static void mess(int mess) {
        if (state[mess - 1]) {
            if (state[4]) {
                System.out.println("OK");
            } else if (!state[4]) {
                int i;
```

```
                System.out.println("Process " + mess + " election");
                for (i = mess; i < 5; ++i) {
                    System.out.println("Election send from process " + mess +
" to process " + (i + 1));
                }
                for (i = 5; i >= mess; --i) {
                    if (!state[i - 1]) continue;
                    System.out.println("Coordinator message send from process
" + i + " to all");
                    break;
                }
            }
        } else {
            System.out.println("Process " + mess + " is down");
        }
    }

    public static void main(String[] args) {
        int choice;
        Scanner sc = new Scanner(System.in);
        for (int i = 0; i < 5; ++i) {
            Bully.state[i] = true;
        }
        System.out.println("5 active process are:");
        System.out.println("Process up  = p1 p2 p3 p4 p5");
        System.out.println("Process 5 is coordinator");
        do {
            System.out.println(".........");
            System.out.println("1) Up a process.");
            System.out.println("2) Down a process");
            System.out.println("3) Send a message");
            System.out.println("4) Exit");
            choice = sc.nextInt();
            switch (choice) {
                case 1: {
                    System.out.println("Bring proces up");
                    int up = sc.nextInt();
                    if (up == 5) {
                        System.out.println("Process 5 is co-ordinator");
                        Bully.state[4] = true;
                        break;
                    }
                    Bully.up(up);
                    break;
                }
                case 2: {
                    System.out.println("Bring down any process.");
                    int down = sc.nextInt();
                    Bully.down(down);
```

```
                    break;
                }
                case 3: {
                    System.out.println("Which process will send message");
                    int mess = sc.nextInt();
                    Bully.mess(mess);
                }
            }
        } while (choice != 4);
        sc.close();

    }
}
```





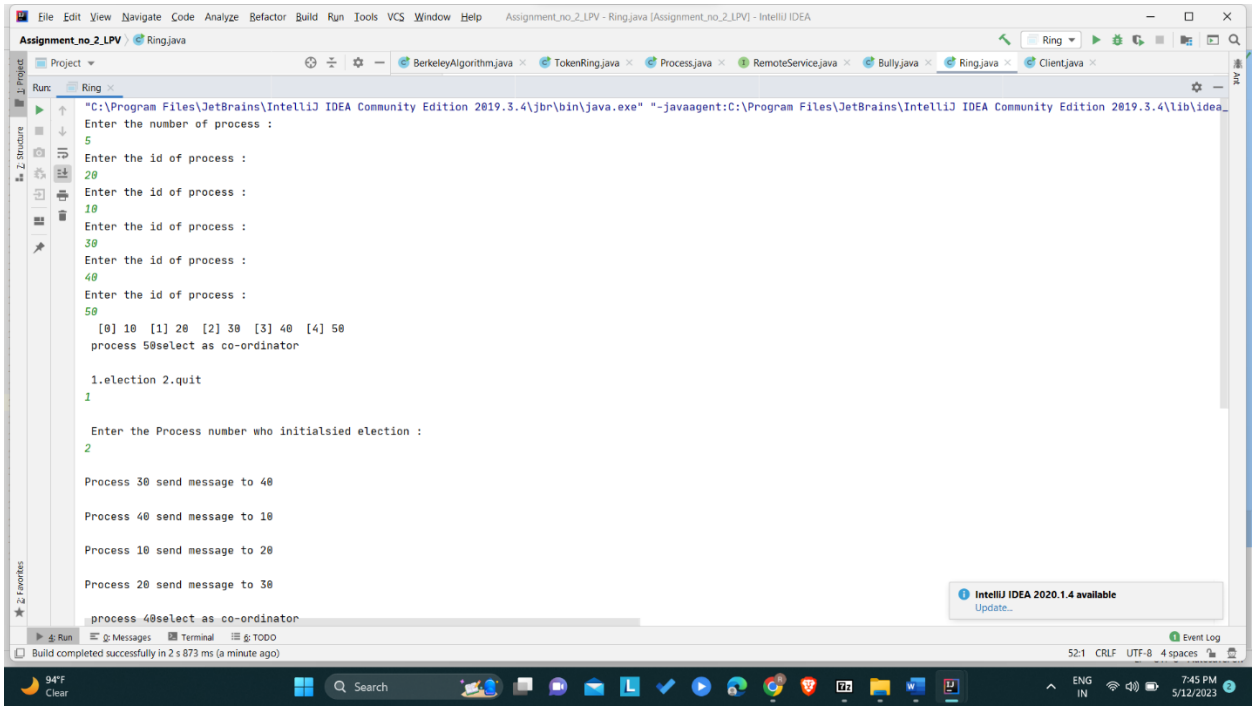
B) Ring Algorithm

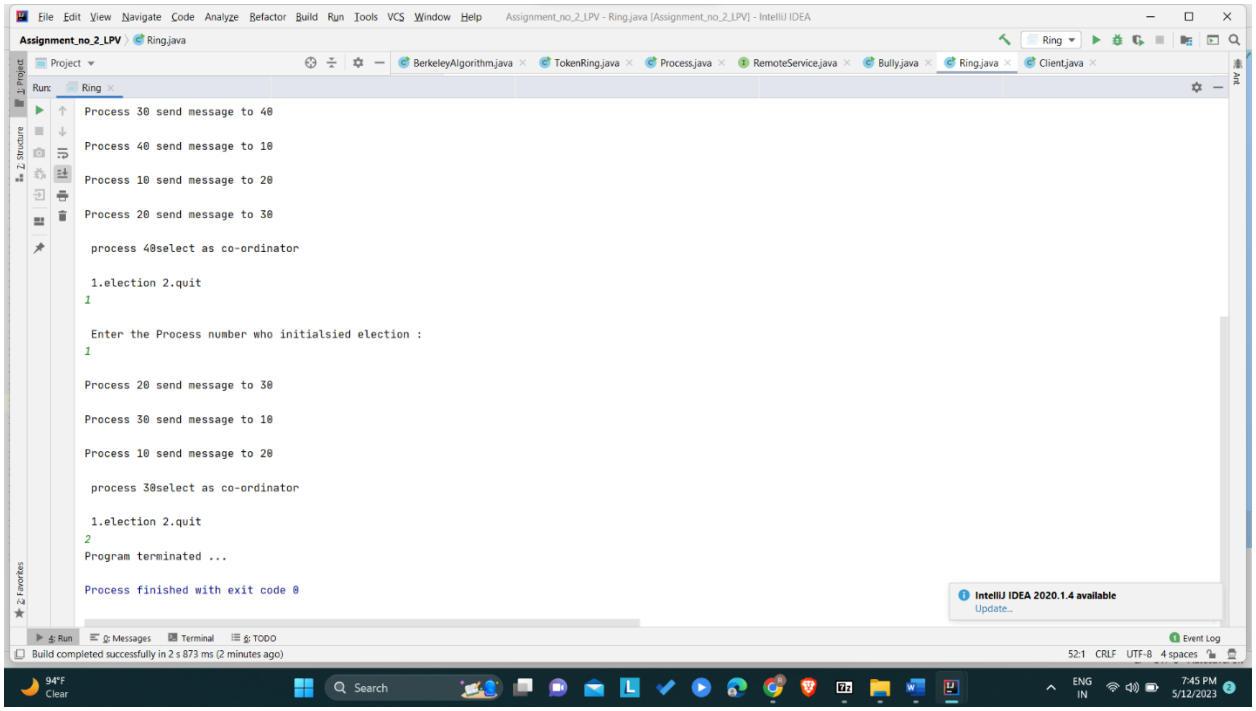
C)
```
import java.util.Scanner;

   public class Ring {

      public static void main(String[] args) {

         // TODO Auto-generated method stub

         int temp, i, j;
         char str[] = new char[10];
         Rr proc[] = new Rr[10];

   // object initialisation
         for (i = 0; i < proc.length; i++)
            proc[i] = new Rr();

   // scanner used for getting input from console
         Scanner in = new Scanner(System.in);
```

```
      System.out.println("Enter the number of process : ");
      int num = in.nextInt();

// getting input from users
      for (i = 0; i < num; i++) {
         proc[i].index = i;
         System.out.println("Enter the id of process : ");
         proc[i].id = in.nextInt();
         proc[i].state = "active";
         proc[i].f = 0;
      }


// sorting the processes from on the basis of id
      for (i = 0; i < num - 1; i++) {
         for (j = 0; j < num - 1; j++) {
            if (proc[j].id > proc[j + 1].id) {
               temp = proc[j].id;
               proc[j].id = proc[j + 1].id;
               proc[j + 1].id = temp;
            }
         }
      }


      for (i = 0; i < num; i++) {
         System.out.print("  [" + i + "]" + " " + proc[i].id);
      }




      int init;
      int ch;
      int temp1;
      int temp2;
      int ch1;
      int arr[] = new int[10];

      proc[num - 1].state = "inactive";

      System.out.println("\n process " + proc[num - 1].id + "select as
co-ordinator");

      while (true) {
         System.out.println("\n 1.election 2.quit ");
         ch = in.nextInt();

         for (i = 0; i < num; i++) {
```

```
            proc[i].f = 0;
         }

         switch (ch) {
         case 1:
            System.out.println("\n Enter the Process number who
initialsied election : ");
            init = in.nextInt();
            temp2 = init;
            temp1 = init + 1;

            i = 0;

            while (temp2 != temp1) {
               if ("active".equals(proc[temp1].state) && proc[temp1].f
== 0) {

                  System.out.println("\nProcess " + proc[init].id + "
send message to " + proc[temp1].id);
                  proc[temp1].f = 1;
                  init = temp1;
                  arr[i] = proc[temp1].id;
                  i++;
               }
               if (temp1 == num) {
                  temp1 = 0;
               } else {
                  temp1++;
               }
            }

            System.out.println("\nProcess " + proc[init].id + " send
message to " + proc[temp1].id);
            arr[i] = proc[temp1].id;
            i++;
            int max = -1;


// finding maximum for co-ordinator selection
            for (j = 0; j < i; j++) {
               if (max < arr[j]) {
                  max = arr[j];
               }
            }

// co-ordinator is found then printing on console
            System.out.println("\n process " + max + "select as
co-ordinator");
```

```
            for (i = 0; i < num; i++) {

               if (proc[i].id == max) {
                  proc[i].state = "inactive";
               }
            }
            break;
         case 2:
            System.out.println("Program terminated ...");
            return ;
         default:
            System.out.println("\n invalid response \n");
            break;
         }


      }
   }

}

class Rr {

   public int index;   // to store the index of process
   public int id;      // to store id/name of process
   public int f;
   String state;       // indiactes whether active or inactive state of
node

}
```


File Edit View Navigate Code Analyze Refactor Build Run Tools VCS Window Help
Assignment_no_2_LPV - Ring.java [Assignment_no_2_LPV] - IntelliJ IDEA
Assignment_no_2_LPV > Ring.java
Ring
Project
BerkeleyAlgorithm.java
TokenRing.java
Process.java
RemoteService.java
Bully.java
Ring.java
Client.java
Run: Ring
"C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2019.3.4\jbr\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2019.3.4\lib\idea_
Enter the number of process :
5
Enter the id of process :
20
Enter the id of process :
10
Enter the id of process :
30
Enter the id of process :
40
Enter the id of process :
50
[0] 10 [1] 20 [2] 30 [3] 40 [4] 50
process 50select as co-ordinator
1.election 2.quit
1
Enter the Process number who initialsied election :
2
Process 30 send message to 40
Process 40 send message to 10
Process 10 send message to 20
Process 20 send message to 30
process 40select as co-ordinator
IntelliJ IDEA 2020.1.4 available
Update...
4: Run
0: Messages
Terminal
6: TODO
Event Log
Build completed successfully in 2 s 873 ms (a minute ago)
52:1 CRLF UTF-8 4 spaces
94°F Clear
Search
ENG IN
7:45 PM 5/12/2023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Assignment_no_2_LPV - Ring.java [Assignment_no_2_LPV] - IntelliJ IDEA
Assignment_no_2_LPV > Ring.java
Ring
Project
BerkeleyAlgorithm.java
TokenRing.java
Process.java
RemoteService.java
Bully.java
Ring.java
Client.java
Run: Ring
Process 30 send message to 40
Process 40 send message to 10
Process 10 send message to 20
Process 20 send message to 30
process 40select as co-ordinator
1.election 2.quit
1
Enter the Process number who initialsied election :
1
Process 20 send message to 30
Process 30 send message to 10
Process 10 send message to 20
process 30select as co-ordinator
1.election 2.quit
2
Program terminated ...
Process finished with exit code 0
IntelliJ IDEA 2020.1.4 available
Update...
4: Run
0: Messages
Terminal
6: TODO
Event Log
Build completed successfully in 2 s 873 ms (2 minutes ago)
52:1 CRLF UTF-8 4 spaces
94°F Clear
Search
ENG IN
7:45 PM 5/12/2023

assignment 3

server

```
import HelloModule.Hello;

import org.omg.CosNaming.*;

import org.omg.CosNaming.NamingContextPackage.*;

import org.omg.CORBA.*;

import org.omg.PortableServer.*;



public class Server {

    public static void main(String[] args) {

        try {



            // create and initialize ORB

            org.omg.CORBA.ORB orb = org.omg.CORBA.ORB.init(args,null);



            //Getting reference of ROOTPOA

            POA rootPOA =
POAHelper.narrow(orb.resolve_initial_references("RootPOA"));



            //Activating ROOTPOA

            rootPOA.the_POAManager().activate();
```

```
            //Create Object of Interface implementation which will act as servant
            HelloImpl helloImpl = new HelloImpl();

            //Registering the servant object reference in the rootPOA
            org.omg.CORBA.Object ref = rootPOA.servant_to_reference(helloImpl);

            //narrowing the ROOTPOA reference object to propertype which in this
case is of type Hello
            System.out.println("Step 1");
            Hello h_ref = HelloModule.HelloHelper.narrow(ref);

            //obtaining the ORB object references for initial services
            System.out.println("Step 2");
            org.omg.CORBA.Object objRef =
orb.resolve_initial_references("NameService");

            //Afain narrowing the ORB object reference to NamingContext type to
bin it with server
            System.out.println("Step 3");
            NamingContextExt ncRef = NamingContextExtHelper.narrow(objRef);

            //passing path and the servant object to the naming service, binding
the servant object to the "Hello"
            System.out.println("Step 4");
```

```
            String name = "Hello";

            NameComponent path[] = ncRef.to_name(name);

            ncRef.rebind(path,h_ref);



            //Enbaling ORB to run on main thread and waiting till invocation
comes for ORB. Since it is in main method after invocation it will wait again

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

            orb.run();



        } catch (Exception e) {

            System.out.println(e);

        }

    }

}
```

client

```
import HelloModule.*;

import org.omg.CosNaming.*;

import org.omg.CosNaming.NamingContextPackage.*;

import org.omg.CORBA.*;

import org.omg.CORBA.ORB.*;

import java.util.Scanner;
```

```
public class Client {

    public static void main(String[] args) {

        Hello HelloImpl = null;

        try {


            // create and initialize ORB

            org.omg.CORBA.ORB orb = org.omg.CORBA.ORB.init(args,null);


            //obtaining the ORB object references for initial services

            org.omg.CORBA.Object objRef =
orb.resolve_initial_references("NameService");


            //Naming ContextExt contains set of name bindings of Interoperable
Naming services

            NamingContextExt ncRef = NamingContextExtHelper.narrow(objRef);


            //We have binded the name Hello from server so using same name for
lookup

            String name = "Hello";


            //Getting reference of server name hello and then we are narrowing it
down to Hello type
```

```
            HelloImpl = HelloHelper.narrow(ncRef.resolve_str(name));

            //Taking user Input
            System.out.println("Enter your name: ");
            Scanner sc = new Scanner(System.in);
            String userName = sc.nextLine();

            //Invoking the print_hello
            System.out.println(HelloImpl.print_hello(userName));

        } catch (Exception e) {
            System.out.println(e);
        }
    }
}
```

```
import HelloModule.HelloPOA;

class HelloImpl extends HelloPOA{
    HelloImpl()
    {
```

```
        super();
        System.out.println("Ready");
    }

    public String print_hello(String s)
    {
        return("Hello "+s);
```

output: