

WALCHAND INSTITUTE OF TECHNOLOGY, SOLAPUR
INFORMATION TECHNOLOGY
2021-22 SEMESTER –I
Advanced Database System

Name: Alaikya S Yemul

Roll No: 62

ASSIGNMENT NO: 3

Title: Implement 2 PC protocol in distributed database

Theory :

Phase1: The co-ordinator asks from each participator whether they have successfully completed their responsibilities for that transaction and are ready to commit. Each participator responds 'yes |OK' or 'no|abort'.

Every participator writes its data records in a log. If it is unsuccessful to do, then it responds with a failure message; if it is successful, then it sends an OK message.

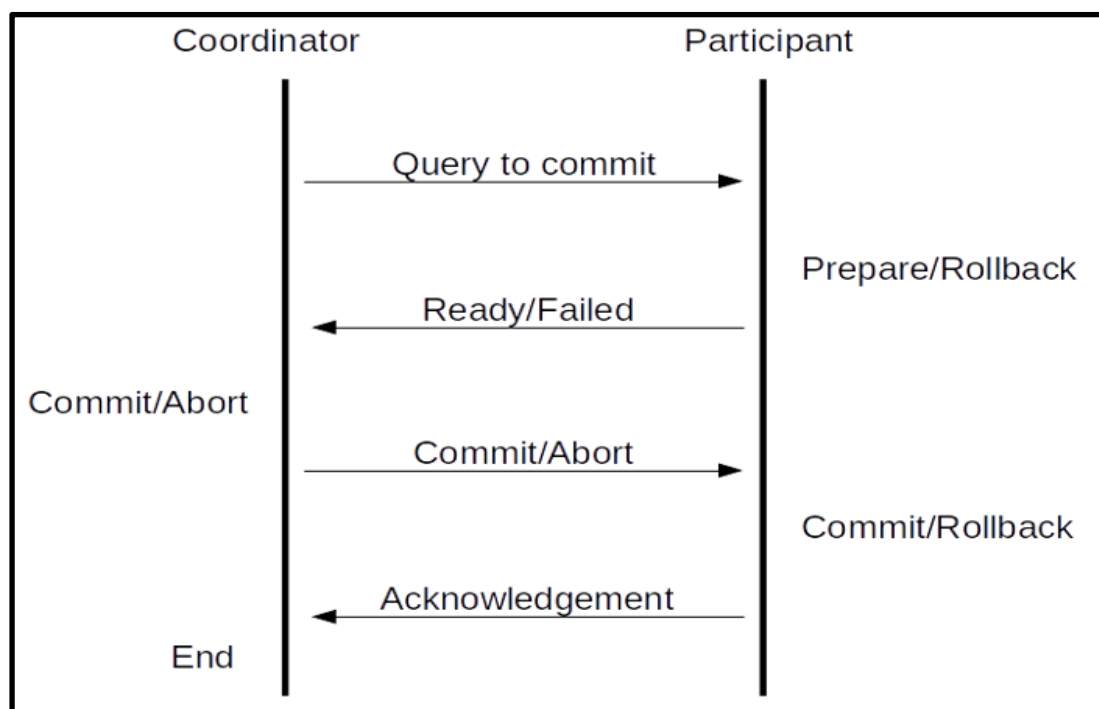
Phase2: This phase will start when Co-ordinator receive successful response in phase 1 from all participator.

Now Co-ordinator sends a commit request to all the participators.

Now participators write the commit as part of its log record.

Participants send a message that its commit has been successfully implemented.

If a server fails, the coordinator sends instructions to all servers to roll back the transaction.



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Program Code :

Serverside

```
import java.io.*;
import java.net.*;
import java.lang.Thread;
import java.text.*;
import java.util.*;

public class serverside {
    public static ArrayList<Thread> clients;
    public static void main(String args[])throws Exception{
        ServerSocket ss=new ServerSocket(5050);
        int clientcount=1;
        clients = new ArrayList<Thread>();
        while(clientcount<=2){
            Socket s=ss.accept();
            System.out.println(clientcount+"connected");
            DataInputStream din=new DataInputStream(s.getInputStream());
            DataOutputStream dout=new DataOutputStream(s.getOutputStream());
            ClientHandler ch = new ClientHandler(s,din,dout);
            Thread t = new Thread(ch);
            clients.add(t);
            clientcount++;
        }
        for(int i=0;i<clients.size();i++) {
            clients.get(i).start();
        }
    }
    public static void abortall() {
        int i=0;
        System.out.println("Recieved a not ready signal \nAborting all processes");
    }
}

class ClientHandler extends Thread {
    static int i=0;
    Socket s=null;
    DataInputStream din;
    DataOutputStream dout;
    public ClientHandler(Socket s,DataInputStream din,DataOutputStream dout){
        this.s = s;
```

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```
this.din = din;

this.dout = dout;
}
public void run(){
try {
dout.writeUTF("<PREPARE T>");
String message = din.readUTF();
System.out.println(message);
if (message.equals("<NOT>")) {
//System.out.println("Alaikya");
new serverside().abortall();
}
} catch (IOException e) {
// TODO Auto-generated catch block
e.printStackTrace();
}
}
}
```

Clientside

```
import java.net.*;
import java.io.*;
import java.util.*;
public class clientside {
public static void main(String args[])throws Exception{
Socket s=new Socket("localhost",5050);
DataInputStream din=new DataInputStream(s.getInputStream());
DataOutputStream dout=new DataOutputStream(s.getOutputStream());
String message = "";
message = din.readUTF();
System.out.println("Server sent "+message+"\n Press 1 to ready\n Press 0 to
Not ready");
int flag = new Scanner(System.in).nextInt();
if (flag == 1) {
dout.writeUTF("<Ready T>");
}
else {
dout.writeUTF("<NOT>");
}
```

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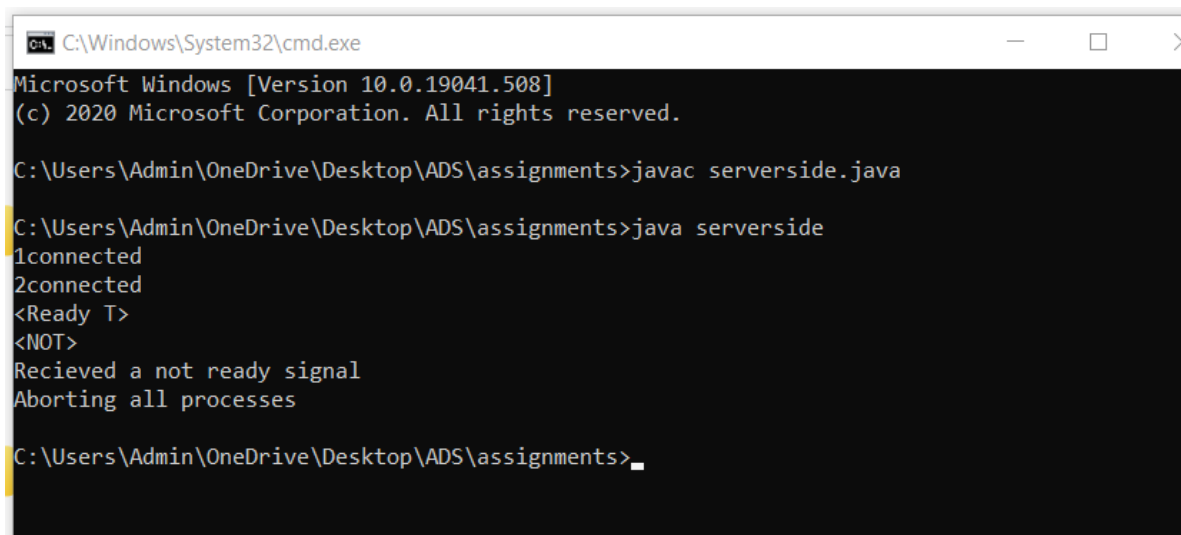
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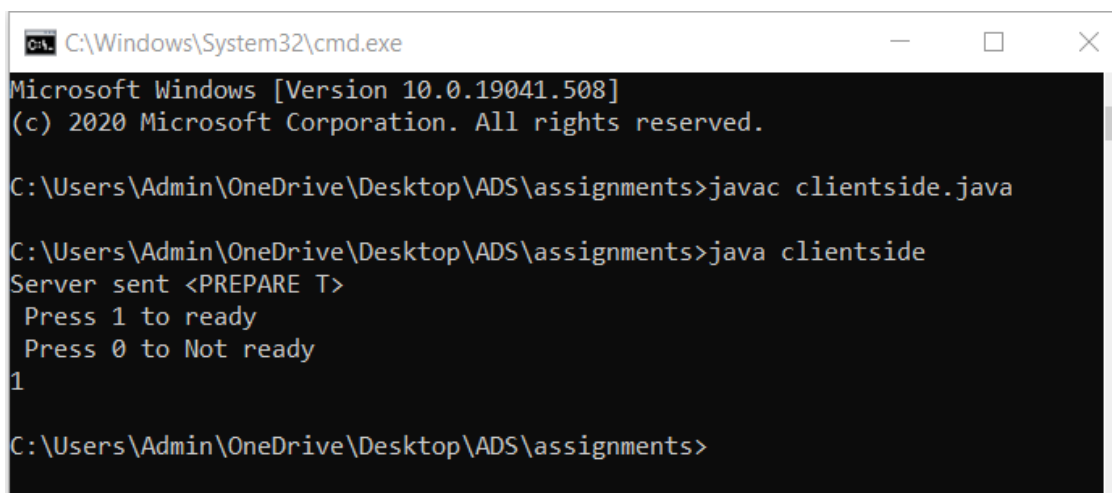
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```
}  
  
dout.close();  
s.close();  
}  
}
```

Screenshots:



```
C:\Windows\System32\cmd.exe  
Microsoft Windows [Version 10.0.19041.508]  
(c) 2020 Microsoft Corporation. All rights reserved.  
  
C:\Users\Admin\OneDrive\Desktop\ADS\assignments>javac serverside.java  
  
C:\Users\Admin\OneDrive\Desktop\ADS\assignments>java serverside  
1connected  
2connected  
<Ready T>  
<NOT>  
Recieved a not ready signal  
Aborting all processes  
  
C:\Users\Admin\OneDrive\Desktop\ADS\assignments>_
```



```
C:\Windows\System32\cmd.exe  
Microsoft Windows [Version 10.0.19041.508]  
(c) 2020 Microsoft Corporation. All rights reserved.  
  
C:\Users\Admin\OneDrive\Desktop\ADS\assignments>javac clientside.java  
  
C:\Users\Admin\OneDrive\Desktop\ADS\assignments>java clientside  
Server sent <PREPARE T>  
Press 1 to ready  
Press 0 to Not ready  
1  
  
C:\Users\Admin\OneDrive\Desktop\ADS\assignments>
```

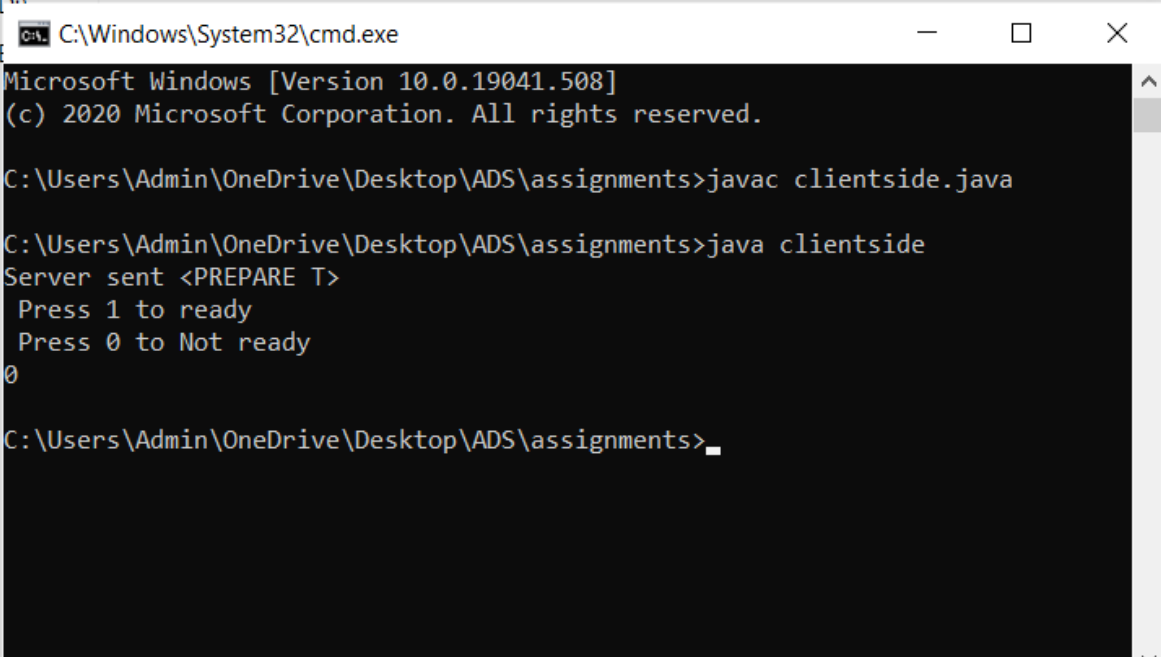
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C:\Users\Admin\OneDrive\Desktop\ADS\assignments>javac clientside.java

C:\Users\Admin\OneDrive\Desktop\ADS\assignments>java clientside
Server sent <PREPARE T>
Press 1 to ready
Press 0 to Not ready
0

C:\Users\Admin\OneDrive\Desktop\ADS\assignments>_
```