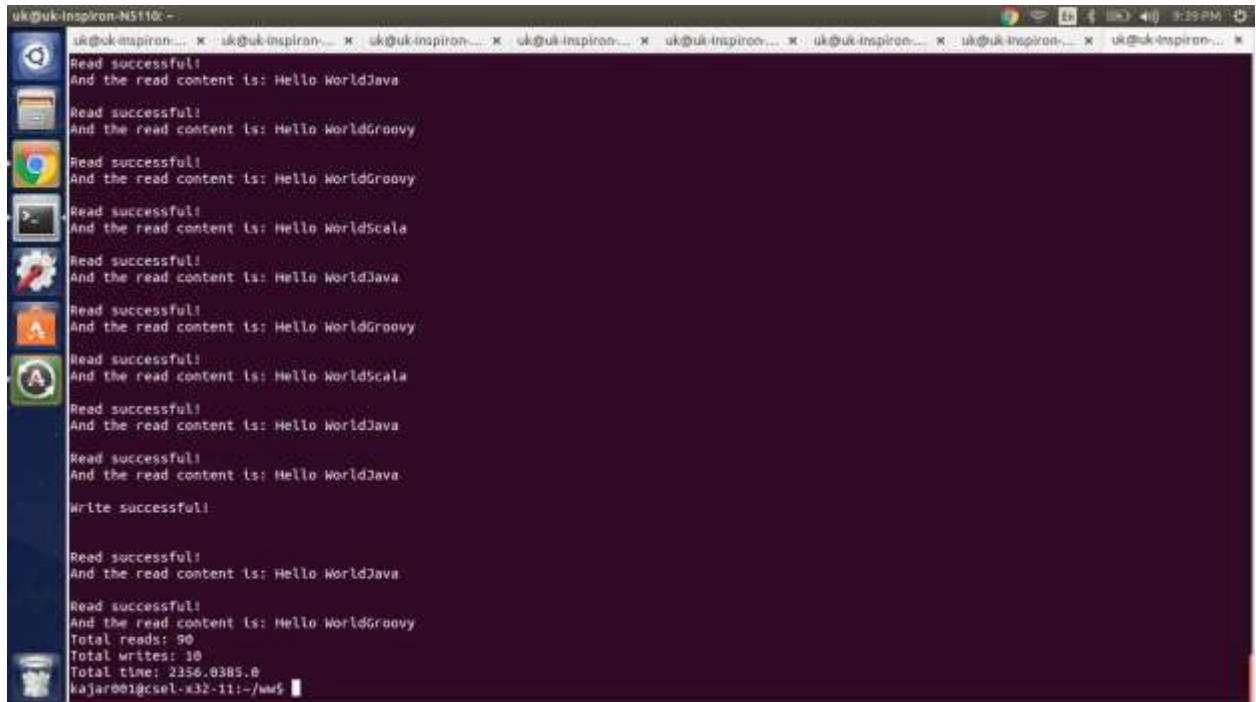


## Test Cases

**Utkarsh Kajaria: 5205243**

**Shruti Mahale: 5160832**

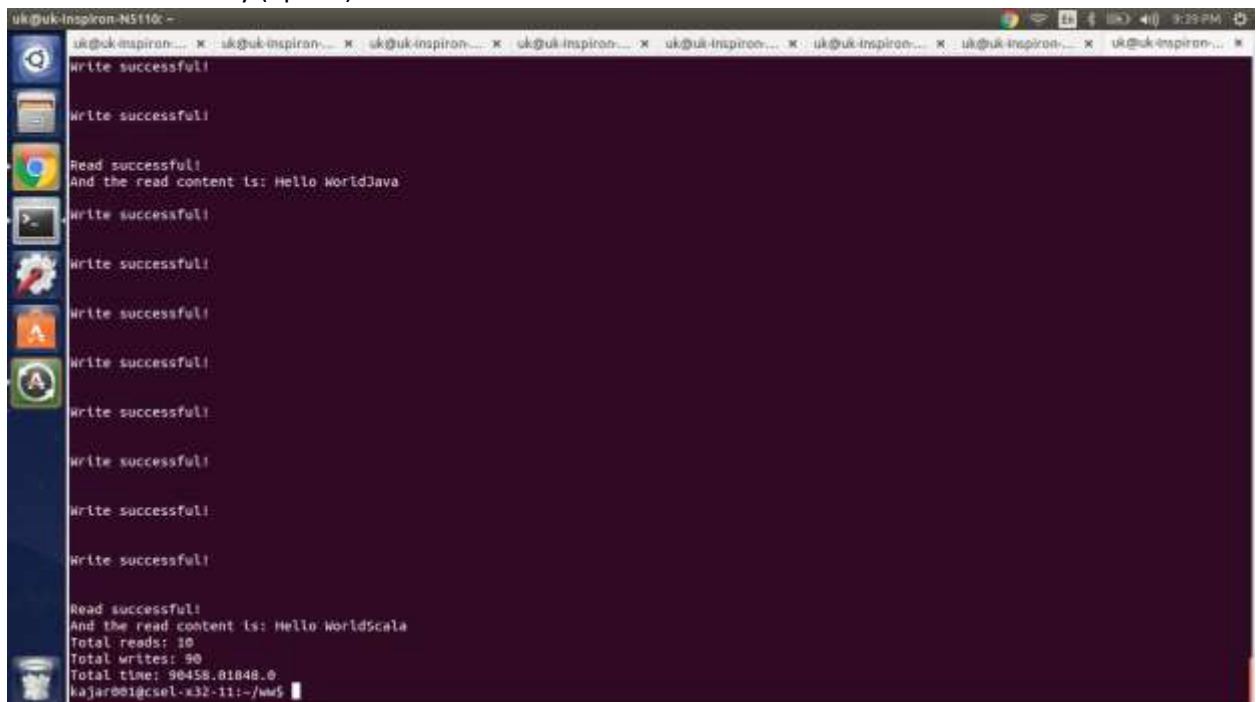
1. Client is Read heavy (op is 0)



A terminal window titled 'uk@uk-inspiron-N5110: ~' showing the output of a read-heavy test. The terminal displays a series of 'Read successful!' messages followed by 'And the read content is: Hello WorldJava' or 'Hello WorldGroovy' or 'Hello WorldScala'. The test concludes with a 'Write successful!' message and a summary: 'Total reads: 90', 'Total writes: 10', and 'Total time: 2356.0385.0'. The prompt 'kajar001@csel-xx32-11:~/ww\$' is visible at the bottom.

```
uk@uk-inspiron-N5110: ~
Read successful!
And the read content is: Hello WorldJava
Read successful!
And the read content is: Hello WorldGroovy
Read successful!
And the read content is: Hello WorldGroovy
Read successful!
And the read content is: Hello WorldScala
Read successful!
And the read content is: Hello WorldJava
Read successful!
And the read content is: Hello WorldGroovy
Read successful!
And the read content is: Hello WorldScala
Read successful!
And the read content is: Hello WorldJava
Read successful!
And the read content is: Hello WorldJava
Write successful!
Read successful!
And the read content is: Hello WorldJava
Read successful!
And the read content is: Hello WorldGroovy
Total reads: 90
Total writes: 10
Total time: 2356.0385.0
kajar001@csel-xx32-11:~/ww$
```

2. Client is Write heavy (op is 1)



A terminal window titled 'uk@uk-inspiron-N5110: ~' showing the output of a write-heavy test. The terminal displays a series of 'Write successful!' messages. After several writes, it shows a 'Read successful!' message followed by 'And the read content is: Hello WorldScala'. The test concludes with a summary: 'Total reads: 10', 'Total writes: 90', and 'Total time: 90458.01848.0'. The prompt 'kajar001@csel-xx32-11:~/ww\$' is visible at the bottom.

```
uk@uk-inspiron-N5110: ~
Write successful!
Write successful!
Read successful!
And the read content is: Hello WorldJava
Write successful!
Write successful!
Write successful!
Write successful!
Write successful!
Write successful!
Write successful!
Write successful!
Write successful!
Write successful!
Read successful!
And the read content is: Hello WorldScala
Total reads: 10
Total writes: 90
Total time: 90458.01848.0
kajar001@csel-xx32-11:~/ww$
```

3. Client has equal number of reads and write (op is 2)

```
uk@uk-inspiron-N5110:~$
Read successful!
And the read content is: Hello WorldScala
Read successful!
And the read content is: Hello WorldScala
Read successful!
And the read content is: Hello WorldScala
Read successful!
And the read content is: Hello WorldGroovy
Read successful!
And the read content is: Hello WorldGroovy
Read successful!
And the read content is: Hello WorldScala
Write successful!
Write successful!
Write successful!
Write successful!
Write successful!
Total reads: 50
Total writes: 50
Total time: 30399.01061.0
kajar001@cse1-x32-11:~/ww$
```

4. Client shows the list of files (op is 3)

```
uk@uk-inspiron-N5110:~$
SLF4J: Failed to load class "org.slf4j.impl.StaticLoggerBinder".
SLF4J: Defaulting to no-operation (NOP) logger implementation
SLF4J: See http://www.slf4j.org/codes.html#StaticLoggerBinder for further details.
The files on the node 0 are:
Scala.3639 Groovy.3619 Java.3636
The files on the node 1 are:
Java.3636 Scala.3639 Groovy.3619
The files on the node 2 are:
Java.3636 Scala.3639 Groovy.3619
The files on the node 3 are:
Java.3636 Groovy.3619 Scala.3639
The files on the node 4 are:
Groovy.3619 Scala.3639 Java.3636
The files on the node 6 are:
Java.3636 Scala.3639 Groovy.3619
The files on the node 7 are:
Java.3636 Groovy.3619 Scala.3639
kajar001@cse1-x32-11:~/ww$
```

The screenshot shows a Kali Linux desktop with a dark purple background. On the left is a vertical dock containing icons for a web browser, file manager, terminal, and other applications. The terminal window is open, displaying the output of a file transfer operation. The top of the terminal shows the title bar with multiple tabs labeled 'ukituk-inspiron-N5110c'. The main content of the terminal is a series of 'Read Unsuccessful' messages, indicating that the file transfer failed. At the bottom of the terminal, the following statistics are shown:

```
Total reads: 100
Total writes: 0
Total time: 0.0256.8
kajaro01@csel-x32-11:~/wds
```

## 7. Example of concurrent reads

```
uk@uk-inspiron-N5110:~$
Read lock released
Read operation completed!
Requesting a read lock
Acquired a read lock
Nodes in quorum for this op: 0 are: 6 0 4 2
Nodes in quorum for this op: 0 are: 2 0 7 3
Requesting a read lock
Acquired a read lock
Nodes in quorum for this op: 0 are: 3 7 0 1
Requesting a read lock
Acquired a read lock
Nodes in quorum for this op: 0 are: 3 7 0 1
Requesting a read lock
Acquired a read lock
Nodes in quorum for this op: 0 are: 0 3 4 1
Requesting a read lock
Acquired a read lock
Nodes in quorum for this op: 0 are: 3 7 1 0
Read lock released
Read operation completed!
Read lock released
Read operation completed!
Read lock released
Read operation completed!
Read lock released
Read operation completed!
Requesting a read lock
Nodes in quorum for this op: 0 are: Requesting a read lock
Acquired a read lock
```

## 8. Example of sequential writes

```
uk@uk-inspiron-N5110:~$
~[[A*[[B*[[AWaiting to get a write lock
Acquired a write lock
Nodes in quorum for this op: 1 are: 0 3 2 1
Waiting to get a write lock
Waiting to get a write lock
Waiting to get a write lock
Waiting to get a write lock
Waiting to get a write lock
Waiting to get a write lock
Waiting to get a write lock
Waiting to get a write lock
Calling dowrite on 0for filename: bnm.250
bnm.250 is written successfully to this node
List of files on this node:
vyi.2 Groovy.3652 we.3 qGroovyvi.35 Scala.3673 Java.3669 qwe.2 qJava1.35 bnm.250 qScala1.37
Calling dowrite on 3for filename: bnm.250
Calling dowrite on 2for filename: bnm.250
Calling dowrite on 1for filename: bnm.250
Released the write lock
Acquired a write lock
Write operation completed!
Nodes in quorum for this op: 1 are: 4 2 0 1
Calling dowrite on 4for filename: bnm.251
Calling dowrite on 2for filename: bnm.251
Calling dowrite on 0for filename: bnm.251
bnm.251 is written successfully to this node
List of files on this node:
bnm.251 vyi.2 Groovy.3652 we.3 qGroovyvi.35 Scala.3673 Java.3669 qwe.2 qJava1.35 qScala1.37
```

## 9. Example of sequential read and write

```
uk@uk-inspiron-N5110:~$ ./...
Waiting to get a write lock
Acquired a write lock
Waiting to get a write lock
Waiting to get a write lock
Nodes in quorum for this op: 1 are: 1 2 5 6
Waiting to get a write lock
Waiting to get a write lock
Calling dowrite on 1for filename: bnm.260
Calling dowrite on 2for filename: bnm.260
Calling dowrite on 5for filename: bnm.260
Requesting a read lock
Requesting a read lock
Requesting a read lock
Calling dowrite on 6for filename: bnm.260
Requesting a read lock
Requesting a read lock
Released the write lock
=====
Write operation completed!
=====
Acquired a write lock
Nodes in quorum for this op: 1 are: 4 1 2 5
Calling dowrite on 4for filename: bnm.261
Calling dowrite on 1for filename: bnm.261
Calling dowrite on 2for filename: bnm.261
Calling dowrite on 5for filename: bnm.261
Acquired a write lock
Nodes in quorum for this op: 1 are: 4 3 1 6
Released the write lock
=====
Write operation completed!
```

## 10. Example of eventual consistency

```
uk@uk-inspiron-N5110:~$ ./...
Acquired a read lock
Acquired a read lock
Nodes in quorum for this op: 0 are: 3 1 2 4
Nodes in quorum for this op: 0 are: 0 5 2 1
Nodes in quorum for this op: 0 are: 5 4 2 3
Acquired a read lock
Nodes in quorum for this op: 0 are: 2 1 4 0
Latest copy of requested file is present at node 5
Latest copy of requested file is present at node 0
Latest copy of requested file is present at node 0
Latest copy of requested file is present at node 5
Latest copy of requested file is present at node 3
Read lock released
=====
Read operation completed!
=====
Read lock released
=====
Read operation completed!
=====
Read lock released
=====
Read operation completed!
=====
Read lock released
=====
Read operation completed!
=====
Read lock released
=====
Read operation completed!
=====
Replicating changes for file bnm
Successfully replicated bnm.264 at node 1
Successfully replicated bnm.264 at node 2
Successfully replicated bnm.264 at node 4
```