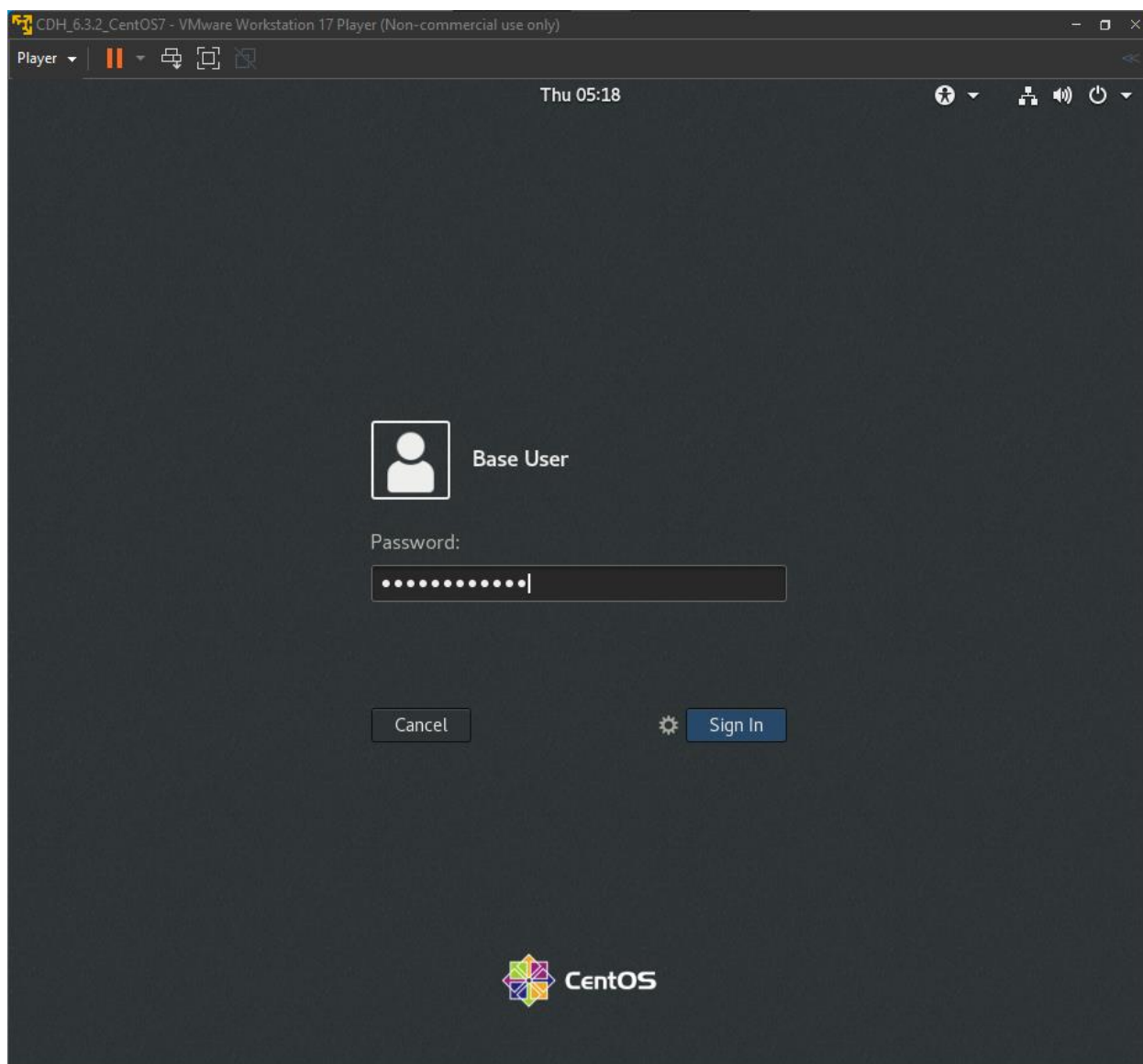
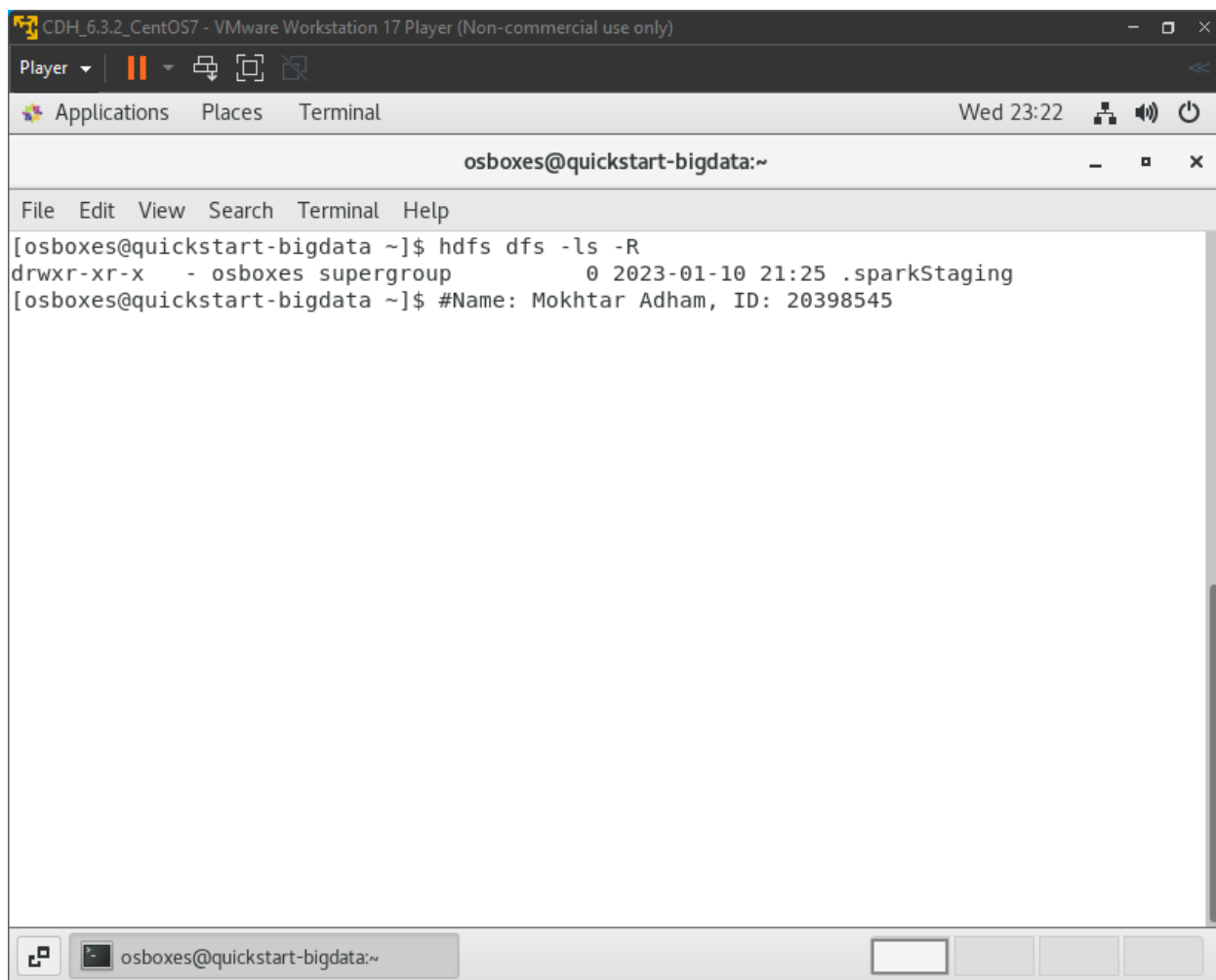
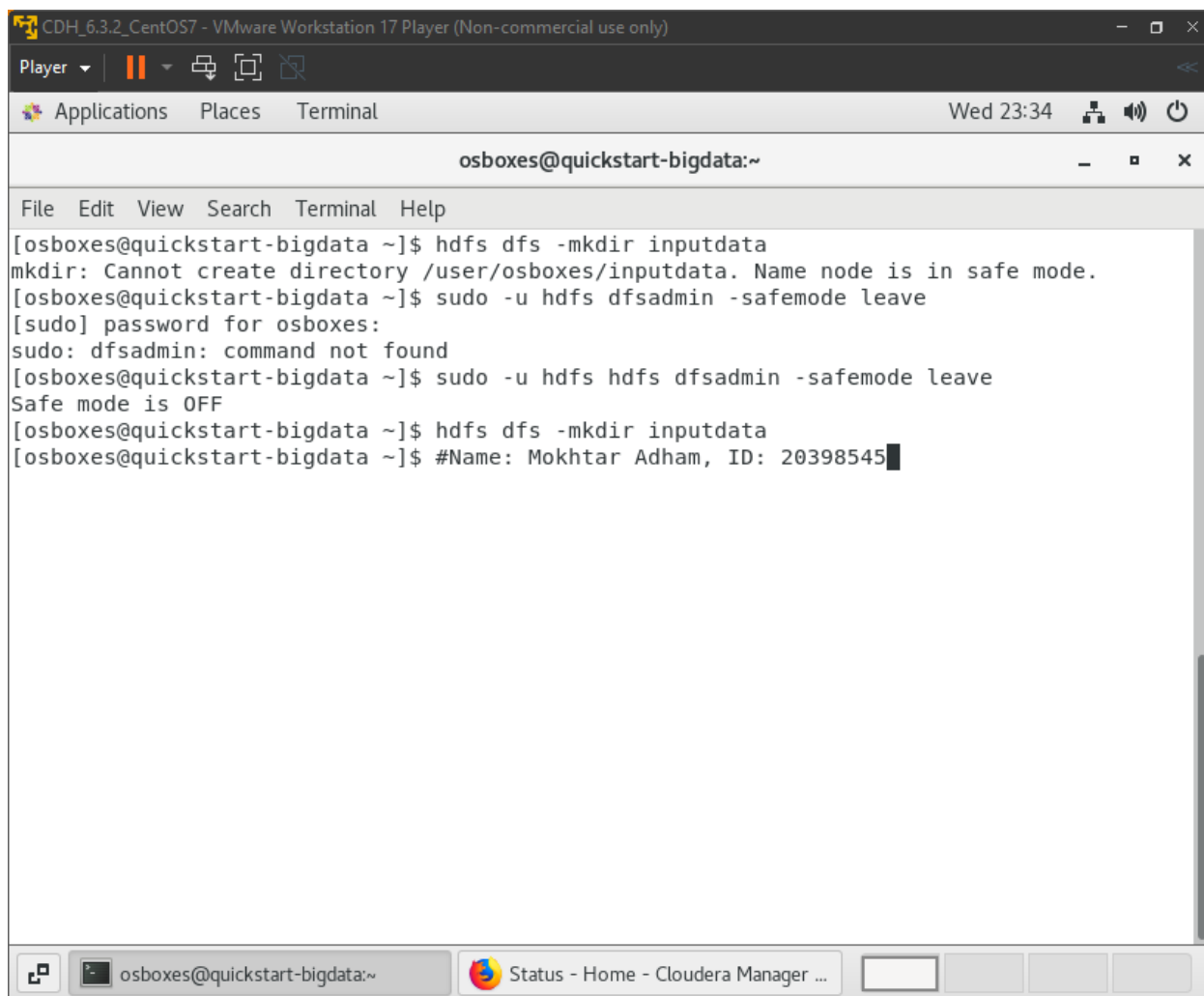


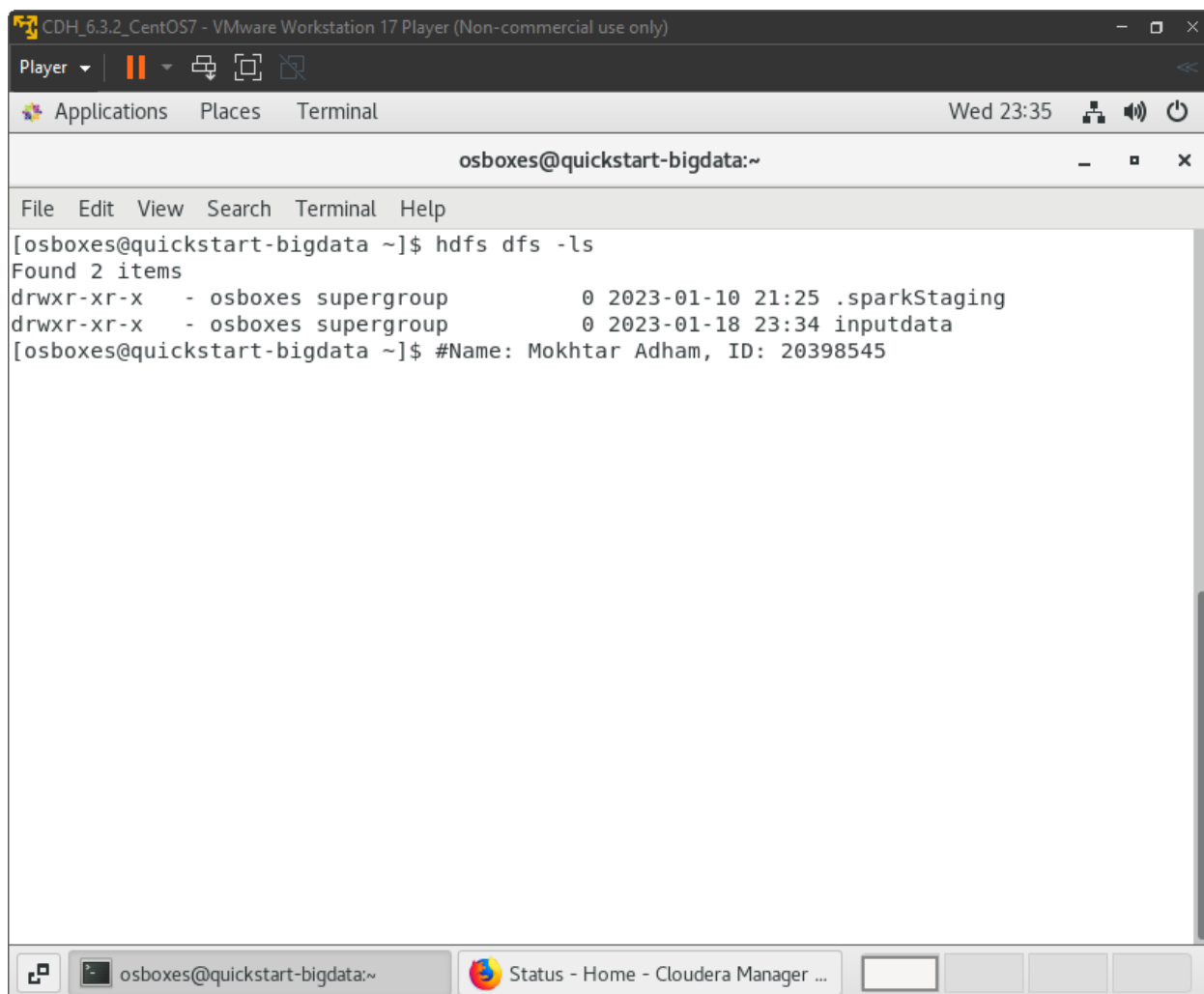
Student Name: Mokhtar, Adham

Student ID: 20398545









stocks.csv - Excel (Product Acti... Sign in

File Home Insert Page Layout Formulas Data Review View Help Tell me Share

Paste Font Alignment Number Conditional Formatting Format as Table Cell Styles Cells Editing

A1 X ✓ fx Ticker

	A	B	C	D	E	F	G	H	I
1	Ticker	Date	Open	High	Low	Close	Adj Close	Volume	
2	NVDA	#####	262.6	266.38	257.7	259.03	258.79	42427000	
3	NVDA	#####	260.79	265.43	250.52	250.67	250.44	48831500	
4	NVDA	#####	253.04	255.79	240.78	241.5	241.27	43518100	
5	NVDA	#####	235.07	248.23	232.63	233.74	233.52	71895800	
6	NVDA	#####	223.3	233.8	208.88	233.72	233.5	91398200	
7	NVDA	#####	225.46	229.43	220	223.24	223.03	66461600	
8	NVDA	#####	232.4	240.57	223	227.72	227.51	75595900	
9	NVDA	#####	235.68	239.95	216.75	219.44	219.24	57335300	
10	NVDA	#####	220.12	228.58	212.96	228.4	228.19	54377400	
11	NVDA	#####	231.82	245.09	230.52	244.86	244.63	56468000	
12	NVDA	2/1/2022	251.04	251.45	238.9	246.38	246.15	51892500	
13	NVDA	2/2/2022	257.94	258.17	245.53	252.42	252.18	54341900	
14	NVDA	2/3/2022	244.58	250.77	237.8	239.48	239.26	41017800	
15	NVDA	2/4/2022	239.72	246.35	236.32	243.19	242.96	35482900	
16	NVDA	2/7/2022	243.72	251.82	242.02	247.28	247.05	37686800	
17	NVDA	2/8/2022	243.59	252.3	239.8	251.08	250.85	41035900	
18	NVDA	2/9/2022	256.22	267.25	253.53	267.05	266.8	52428200	
19	NVDA	#####	259.95	269.25	256	258.24	258	51320000	
20	NVDA	#####	259.16	261.52	237.73	239.49	239.27	60547200	
21	NVDA	#####	239.34	248.75	237.55	242.67	242.44	44042400	
22	NVDA	#####	249.49	265.45	247.84	264.95	264.7	69986900	
23	NVDA	#####	262.59	265.82	255.52	265.11	264.86	73267600	

Ready stocks + 100%

Desktop - osboxes@192.168.45.130 - WinSCP

Local Mark Files Commands Session Options Remote Help

Synchronize Queue Transfer Settings Default

osboxes@192.168.45.130 X New Session

Desktop data

Upload Edit Properties New Download Edit Properties New

C:\Users\LAB\Desktop/ /home/osboxes/data/

Name	Size	Type	Changed	Name	Size	Changed	Rights	Owner
..		Parent directory	1/18/2023 8:07:29 PM	..		1/18/2023 8:10:38 PM	rwx-----	osboxes
01.png	60 KB	PNG File	1/18/2023 7:53:05 PM					
02.png	61 KB	PNG File	1/18/2023 8:04:47 PM					
03.png	48 KB	PNG File	1/18/2023 8:05:53 PM					
04.png	75 KB	PNG File	1/18/2023 8:07:29 PM					
debi.txt	2 KB	Text Document	1/18/2023 7:44:16 PM					
libs.txt	5 KB	Text Document	12/18/2022 5:58:54 PM					
PeaZip.lnk	1 KB	Shortcut	1/10/2023 2:51:37 PM					
stocks.csv	69 KB	Microsoft Excel C...	1/18/2023 12:34:25 PM					
WinSCP.lnk	2 KB	Shortcut	1/10/2023 2:59:30 PM					

68.3 KB of 317 KB in 1 of 9 1 hidden 0 B of 0 B in 0 of 0

SFTP-3 0:01:51

Desktop - osboxes@192.168.45.130 - WinSCP

Local Mark Files Commands Session Options Remote Help

Synchronize Queue Transfer Settings Default

osboxes@192.168.45.130 X New Session

Desktop data

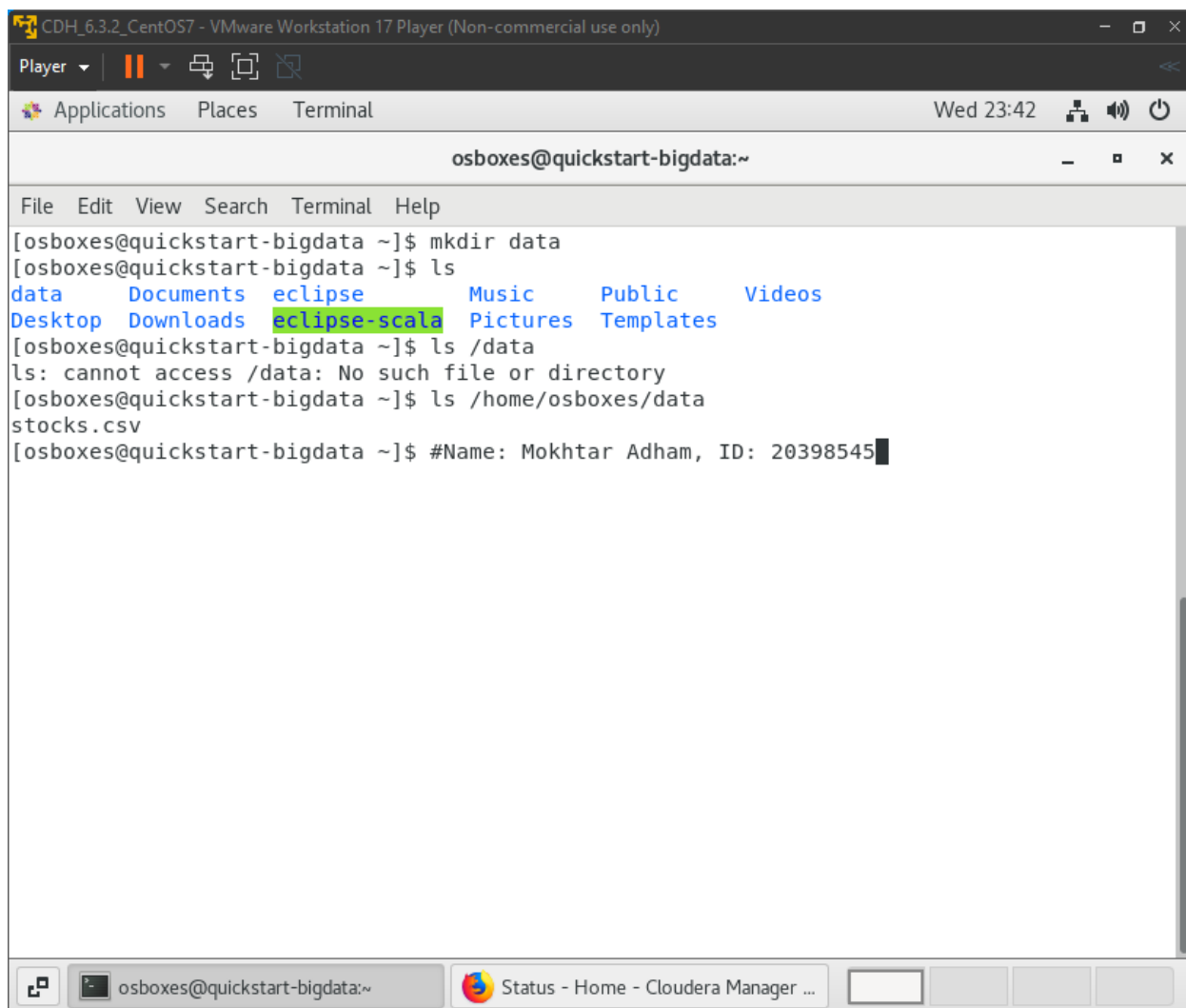
Upload Edit Properties New Download Edit Properties New

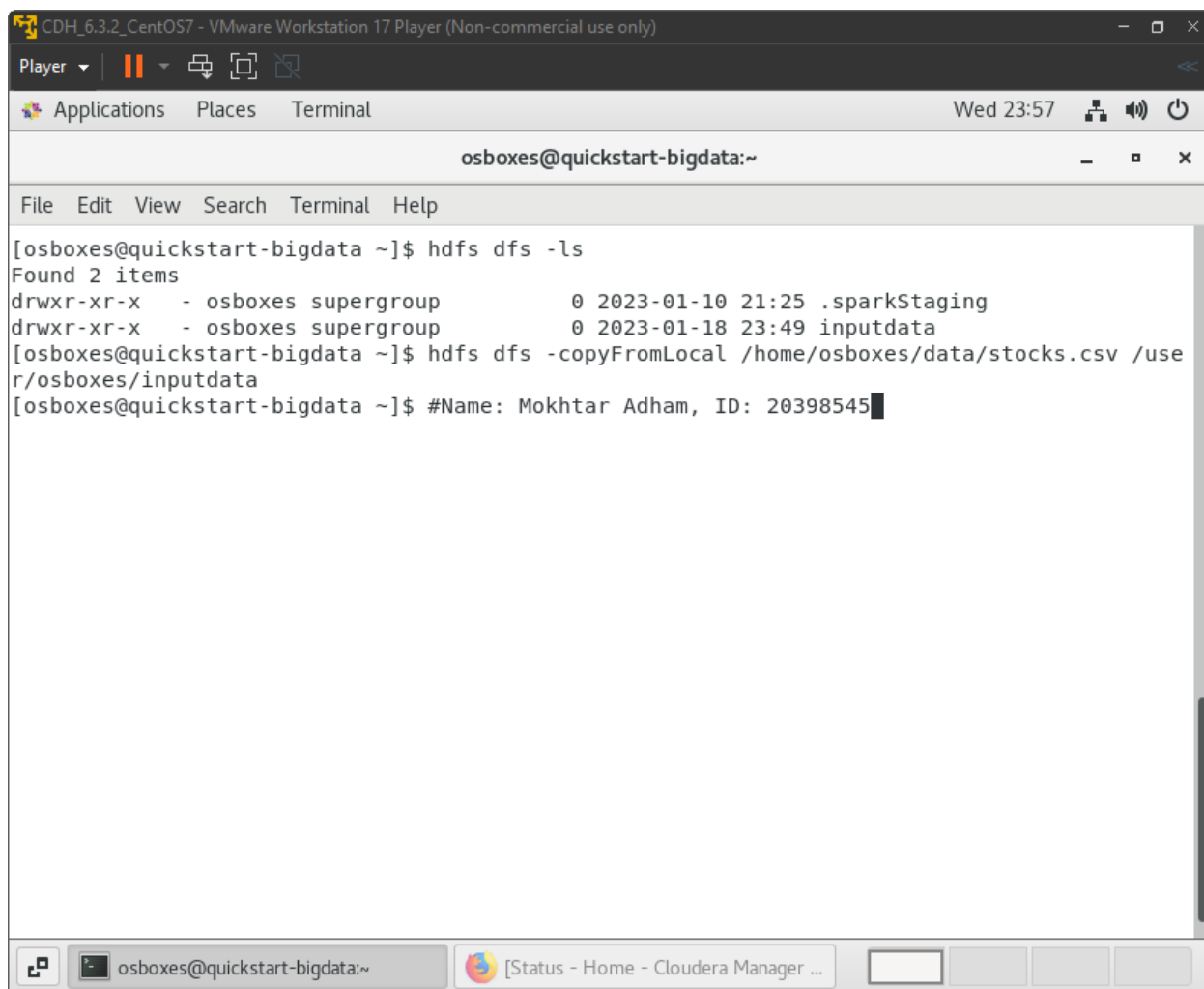
C:\Users\LAB\Desktop/ /home/osboxes/data/

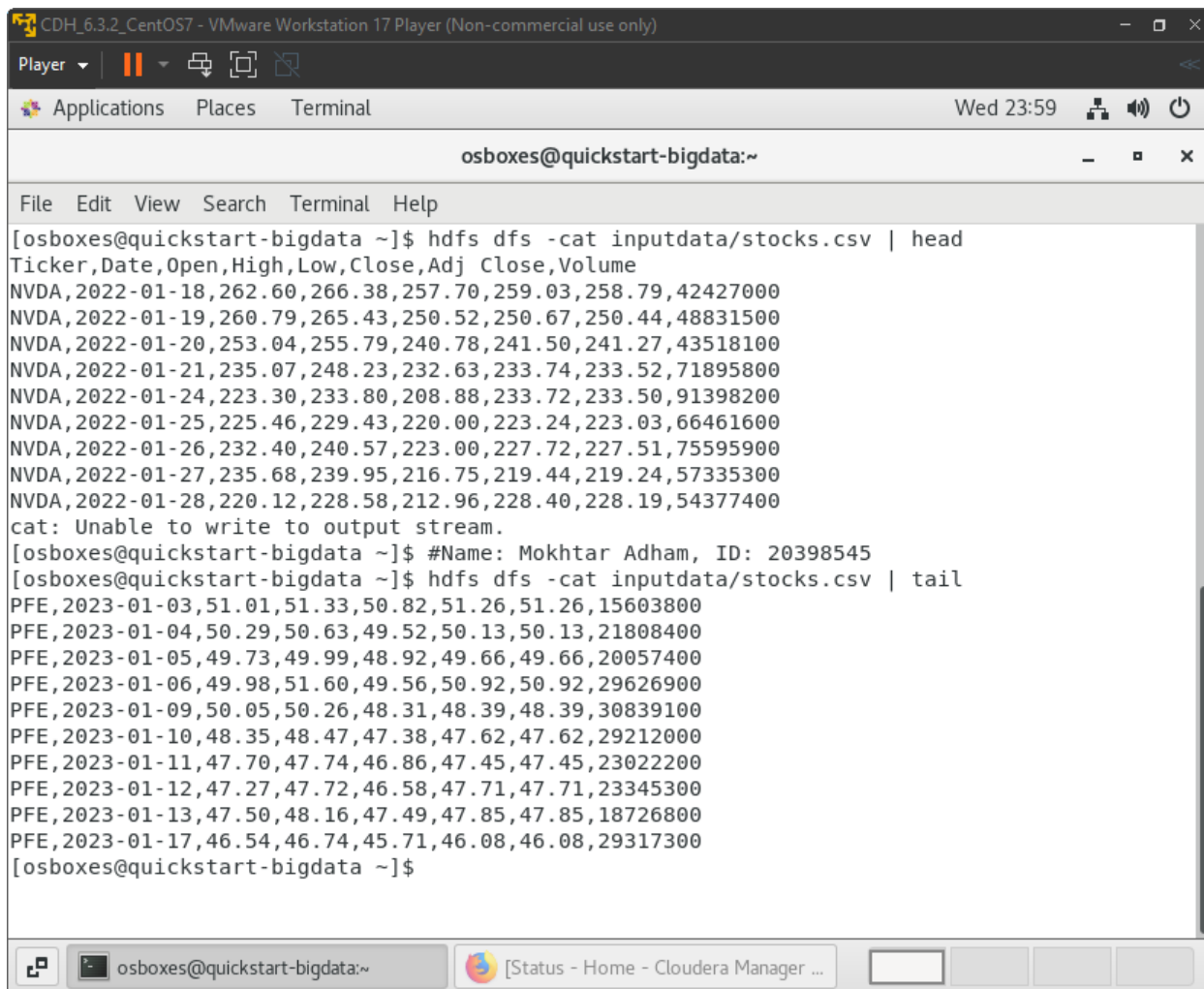
Name	Size	Type	Changed	Name	Size	Changed	Rights	Owner
..		Parent directory	1/18/2023 8:07:29 PM	..		1/18/2023 8:10:38 PM	rwx-----	osboxes
01.png	60 KB	PNG File	1/18/2023 7:53:05 PM	stocks.csv	69 KB	1/18/2023 12:34:25 PM	rw-rw-r--	osboxes
02.png	61 KB	PNG File	1/18/2023 8:04:47 PM					
03.png	48 KB	PNG File	1/18/2023 8:05:53 PM					
04.png	75 KB	PNG File	1/18/2023 8:07:29 PM					
05.png	68 KB	PNG File	1/18/2023 8:11:23 PM					
debi.txt	2 KB	Text Document	1/18/2023 7:44:16 PM					
libs.txt	5 KB	Text Document	12/18/2022 5:58:54 PM					
PeaZip.lnk	1 KB	Shortcut	1/10/2023 2:51:37 PM					
stocks.csv	69 KB	Microsoft Excel C...	1/18/2023 12:34:25 PM					
WinSCP.lnk	2 KB	Shortcut	1/10/2023 2:59:30 PM					

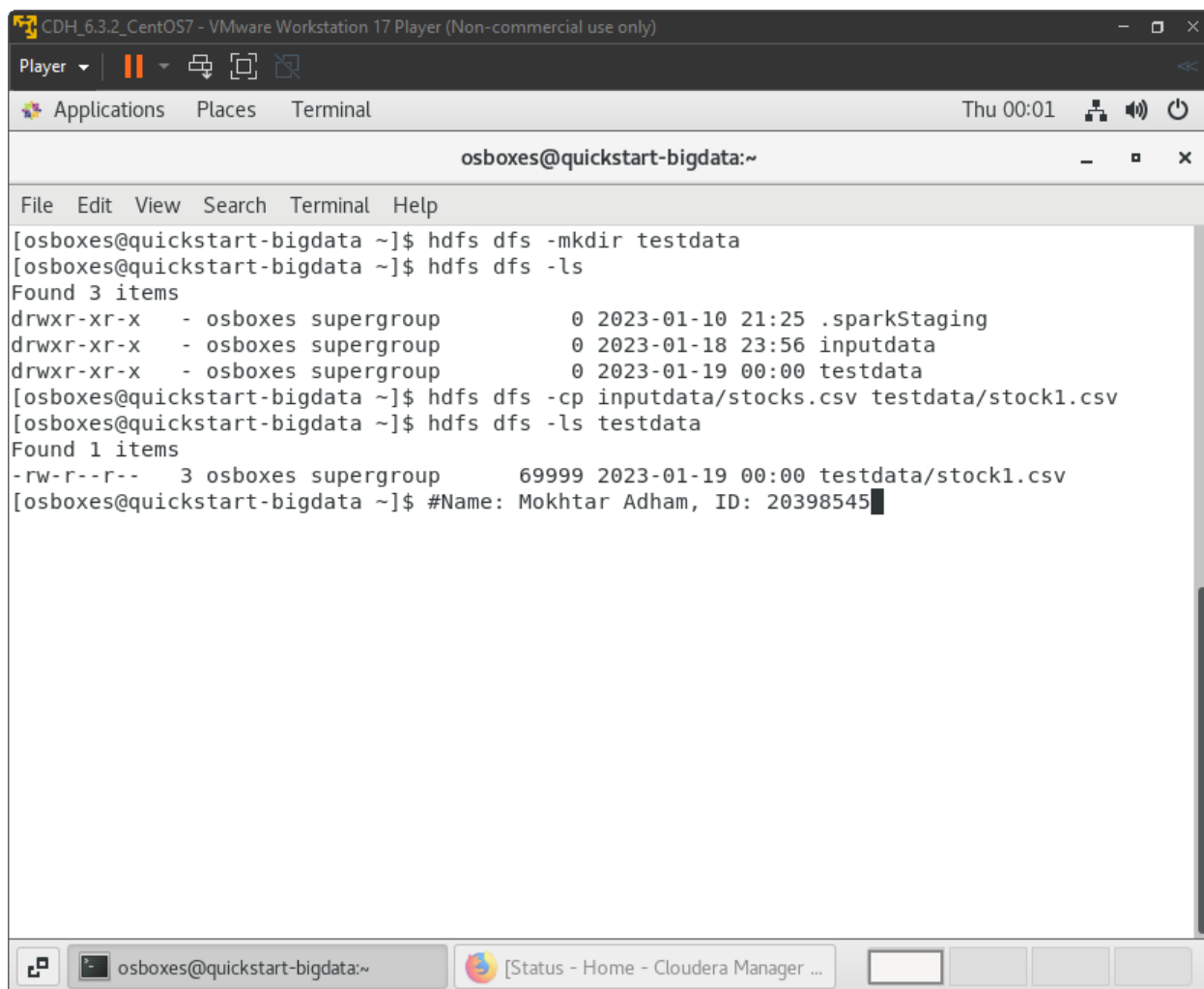
0 B of 385 KB in 0 of 10 1 hidden 0 B of 68.3 KB in 0 of 1

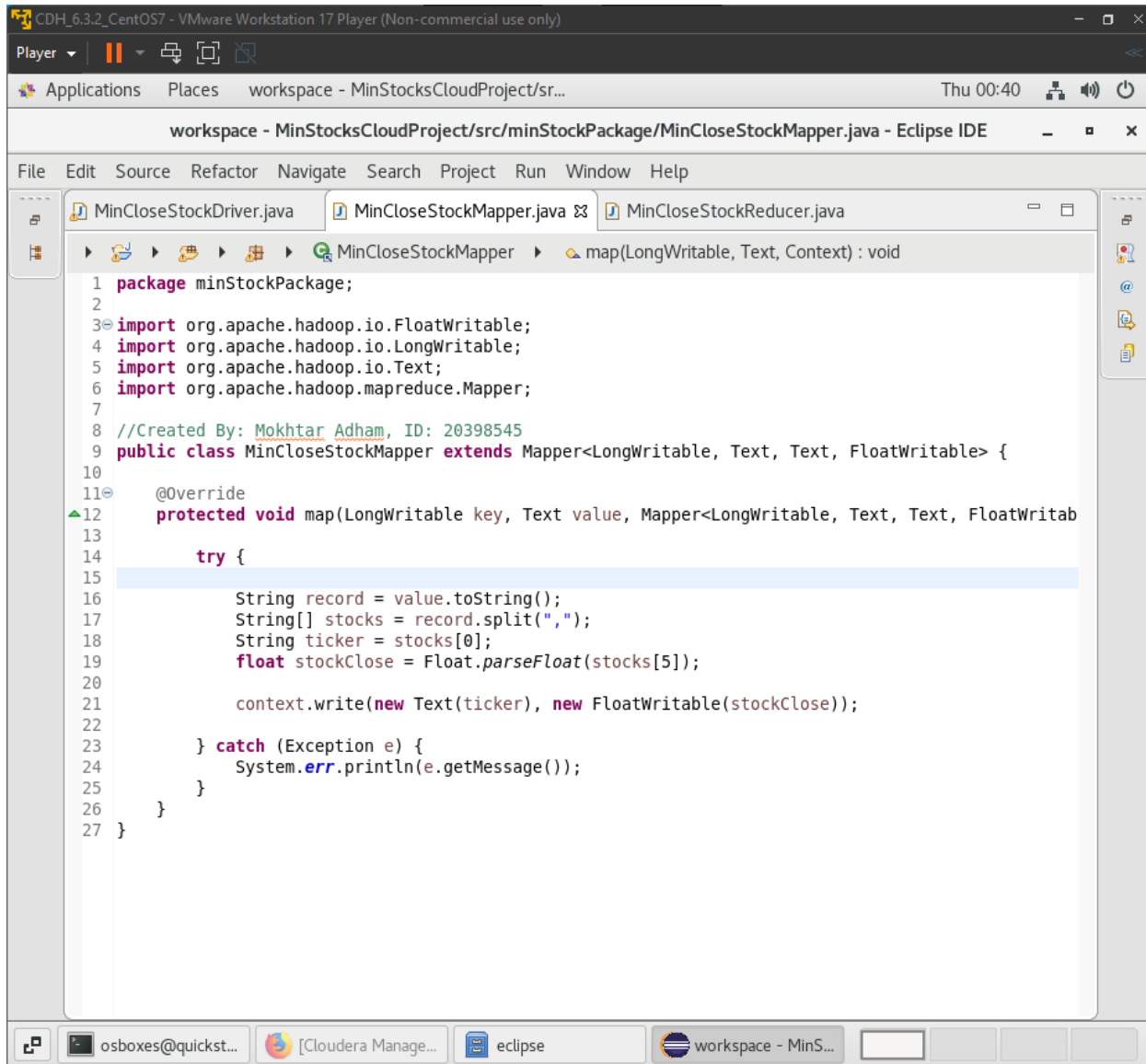
SFTP-3 0:02:07











CDH_6.3.2_CentOS7 - VMware Workstation 17 Player (Non-commercial use only)

Player | Applications | Places | workspace - MinStocksCloudProject/sr... | Thu 00:40

workspace - MinStocksCloudProject/src/minStockPackage/MinCloseStockReducer.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

MinCloseStockDriver.java | MinCloseStockMapper.java | MinCloseStockReducer.java

MinStocksCloudProject | src | minStockPackage | MinCloseStockReducer

```
1 package minStockPackage;
2
3 import org.apache.hadoop.io.FloatWritable;
4 import org.apache.hadoop.io.Text;
5 import org.apache.hadoop.mapreduce.Reducer;
6
7 //Created By: Mokhtar Adham, ID: 20398545
8 public class MinCloseStockReducer extends Reducer<Text, FloatWritable, Text, FloatWritable> {
9
10     @Override
11     protected void reduce(Text key, Iterable<FloatWritable> values,
12         Reducer<Text, FloatWritable, Text, FloatWritable>.Context context) {
13
14         try {
15
16             float minStockClose = Float.MAX_VALUE;
17
18             for (FloatWritable stockClose : values) {
19                 minStockClose = Math.min(minStockClose, stockClose.get());
20             }
21
22             context.write(key, new FloatWritable(minStockClose));
23
24         } catch (Exception e) {
25             System.err.println(e.getMessage());
26         }
27     }
28 }
29
```

osboxes@quickst... | [Cloudera Manage... | eclipse | workspace - MinS...

CDH_6.3.2_CentOS7 - VMware Workstation 17 Player (Non-commercial use only)

Player ▾ | [Icons] | workspace - MinStocksCloudProject/src/... Thu 00:43 [Icons]

workspace - MinStocksCloudProject/src/minStockPackage/MinCloseStockDriver.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

*MinCloseStockDriver.java ▹ MinCloseStockMapper.java ▹ MinCloseStockReducer.java

MinStocksCloudProject ▸ src ▸ minStockPackage ▸ MinCloseStockDriver ▸

```
1 //Created By: Mokhtar Adham, ID: 20398545
2 import org.apache.hadoop.conf.Configuration;
3 import org.apache.hadoop.fs.FileSystem;
4 import org.apache.hadoop.fs.Path;
5 import org.apache.hadoop.io.FloatWritable;
6 import org.apache.hadoop.io.Text;
7 import org.apache.hadoop.mapreduce.Job;
8 import org.apache.hadoop.mapreduce.lib.input.FileInputFormat;
9 import org.apache.hadoop.mapreduce.lib.output.FileOutputFormat;
10
11
12 //Created By: Mokhtar Adham, ID: 20398545
13 public class MinCloseStockDriver {
14     public static void main(String[] args) {
15         try {
16             Configuration jobConf = new Configuration();
17             Job hadoopJob = new Job(jobConf);
18
19             FileSystem fileSystem = FileSystem.get(jobConf);
20             fileSystem.delete(new Path(args[1]));
21
22             hadoopJob.setJarByClass(MinCloseStockDriver.class);
23             hadoopJob.setMapperClass(MinCloseStockMapper.class);
24             hadoopJob.setNumReduceTasks(1);
25             hadoopJob.setReducerClass(MinCloseStockReducer.class);
26             hadoopJob.setOutputKeyClass(Text.class);
27             hadoopJob.setOutputValueClass(FloatWritable.class);
28
29             FileInputFormat.addInputPath(hadoopJob, new Path(args[0]));
30             FileOutputFormat.setOutputPath(hadoopJob, new Path(args[1]));
31
32             hadoopJob.waitForCompletion(true);
33         } catch (Exception e) {
34             System.err.println(e.getMessage());
35         }
36     }
37 }
38 }
```

osboxes@quickst... [Cludera Manage... eclipse workspace - MinS...

CDH_6.3.2_CentOS7 - VMware Workstation 17 Player (Non-commercial use only)

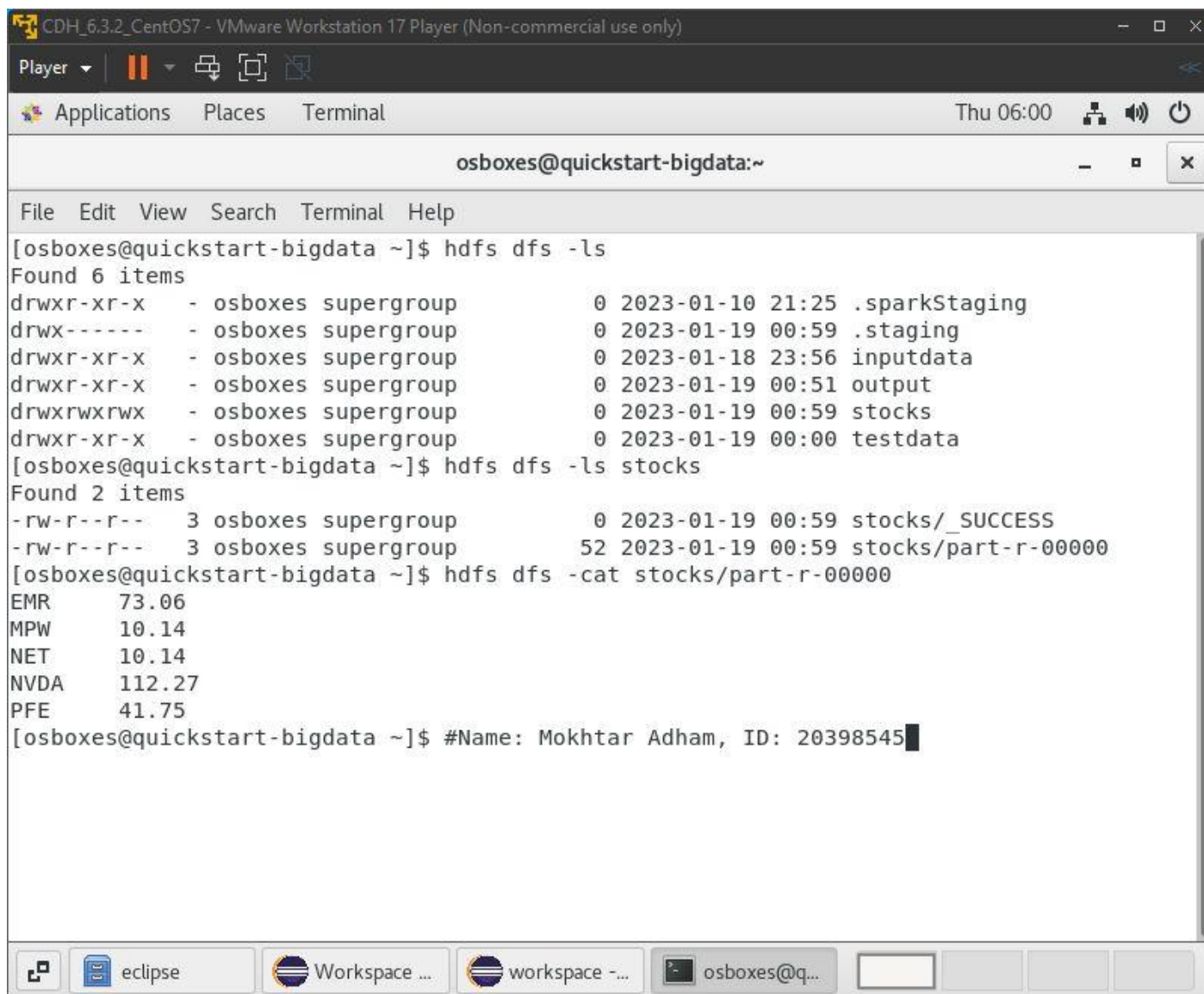
Player ▾ | [Icons] Thu 05:03 [Icons]

osboxes@quickstart-bigdata:~

File Edit View Search Terminal Help

```
[osboxes@quickstart-bigdata ~]$ #Name: Mokhtar Adham, ID: 20398545
[osboxes@quickstart-bigdata ~]$ hadoop jar output/minStockOutput.jar minStockPackage.MinCloseStockDriver testdata/stock1.csv stocks
WARNING: Use "yarn jar" to launch YARN applications.
23/01/19 00:59:15 INFO client.RMProxy: Connecting to ResourceManager at quickstart-bigdata/192.168.45.130:8032
23/01/19 00:59:16 WARN mapreduce.JobResourceUploader: Hadoop command-line option parsing not performed. Implement the Tool interface and execute your application with ToolRunner to remedy this.
23/01/19 00:59:16 INFO mapreduce.JobResourceUploader: Disabling Erasure Coding for path: /user/osboxes/.staging/job_1674066196971_0005
23/01/19 00:59:16 INFO input.FileInputFormat: Total input files to process : 1
23/01/19 00:59:17 INFO mapreduce.JobSubmitter: number of splits:1
23/01/19 00:59:17 INFO Configuration.deprecation: yarn.resourcemanager.system-metrics-publisher.enabled is deprecated. Instead, use yarn.system-metrics-publisher.enabled
23/01/19 00:59:18 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_1674066196971_0005
23/01/19 00:59:18 INFO mapreduce.JobSubmitter: Executing with tokens: []
23/01/19 00:59:18 INFO conf.Configuration: resource-types.xml not found
23/01/19 00:59:18 INFO resource.ResourceUtils: Unable to find 'resource-types.xml'.
23/01/19 00:59:18 INFO impl.YarnClientImpl: Submitted application application_1674066196971_0005
23/01/19 00:59:18 INFO mapreduce.Job: The url to track the job: http://quickstart-bigdata:8088/proxy/application_1674066196971_0005/
23/01/19 00:59:18 INFO mapreduce.Job: Running job: job_1674066196971_0005
23/01/19 00:59:30 INFO mapreduce.Job: Job job_1674066196971_0005 running in uber mode : false
23/01/19 00:59:30 INFO mapreduce.Job:  map 0% reduce 0%
23/01/19 00:59:37 INFO mapreduce.Job:  map 100% reduce 0%
23/01/19 00:59:46 INFO mapreduce.Job:  map 100% reduce 100%
23/01/19 00:59:47 INFO mapreduce.Job: Job job_1674066196971_0005 completed successfully
23/01/19 00:59:47 INFO mapreduce.Job: Counters: 54
    File System Counters
        FILE: Number of bytes read=5446
        FILE: Number of bytes written=450565
        FILE: Number of read operations=0
        FILE: Number of large read operations=0
        FILE: Number of write operations=0
        HDFS: Number of bytes read=70127
        HDFS: Number of bytes written=52
        HDFS: Number of read operations=8
```

osboxes@quickst... [Cloudera Manage... output [workspace - Min...



CDH_6.3.2_CentOS7 - VMware Workstation 17 Player (Non-commercial use only)

Player ▾ | [Icons] [Icons] [Icons]

Applications Places Terminal Thu 05:11 [Icons]

osboxes@quickstart-bigdata:~

File Edit View Search Terminal Help

```
[osboxes@quickstart-bigdata ~]$ hdfs dfs -get stocks/part-r-00000 stocks
[osboxes@quickstart-bigdata ~]$ ls
data      Documents eclipse      Music  Pictures  Public  Templates
Desktop Downloads eclipse-scala output  Project Files  stocks  Videos
[osboxes@quickstart-bigdata ~]$ cat stocks
EMR      73.06
MPW      10.14
NET      10.14
NVDA     112.27
PFE      41.75
[osboxes@quickstart-bigdata ~]$ #Name: Mokhtar Adham, ID: 20398545
```

[Icons] osboxes@quickst... [Cloudera Manage... output [workspace - Min... [Icons]

Reducer:

```
package minStockPackage;
import org.apache.hadoop.io.FloatWritable;
import org.apache.hadoop.io.Text;
import org.apache.hadoop.mapreduce.Reducer;

//Created By: Mokhtar Adham, ID: 20398545

public class MinCloseStockReducer extends Reducer < Text, FloatWritable, Text,
FloatWritable > {

    @Override
    protected void reduce(Text key, Iterable < FloatWritable > values,

        Reducer < Text, FloatWritable, Text, FloatWritable > .Context context) {

        try {

            float minStockClose = Float.MAX_VALUE;

            for (FloatWritable stockClose: values) {
                minStockClose = Math.min(minStockClose, stockClose.get());
            }

            context.write(key, new FloatWritable(minStockClose));

        } catch (Exception e) {

            System.err.println(e.getMessage());

        }

    }

}
```

Driver:

```
package minStockPackage;

import org.apache.hadoop.conf.Configuration;
import org.apache.hadoop.fs.FileSystem;
import org.apache.hadoop.fs.Path;
import org.apache.hadoop.io.FloatWritable;
import org.apache.hadoop.io.Text;
import org.apache.hadoop.mapreduce.Job;
import org.apache.hadoop.mapreduce.lib.input.FileInputFormat;
import org.apache.hadoop.mapreduce.lib.output.FileOutputFormat;

//Created By: Mokhtar Adham, ID: 20398545
public class MinCloseStockDriver {

    public static void main(String[] args) {
        try {
            Configuration jobConf = new Configuration();

            Job hadoopJob = new Job(jobConf);

            FileSystem fileSystem = FileSystem.get(jobConf);

            fileSystem.delete(new Path(args[1]));

            hadoopJob.setJarByClass(MinCloseStockDriver.class);
            hadoopJob.setMapperClass(MinCloseStockMapper.class);
            hadoopJob.setNumReduceTasks(1);
            hadoopJob.setReducerClass(MinCloseStockReducer.class);
            hadoopJob.setOutputKeyClass(Text.class);
            hadoopJob.setOutputValueClass(FloatWritable.class);

            FileInputFormat.addInputPath(hadoopJob, new Path(args[0]));
            FileOutputFormat.setOutputPath(hadoopJob, new Path(args[1]));

            hadoopJob.waitForCompletion(true);
        } catch (Exception e) {
            System.err.println(e.getMessage());
        }
    }
}
```

Mapper:

```
package minStockPackage;

import org.apache.hadoop.io.FloatWritable;
import org.apache.hadoop.io.LongWritable;
import org.apache.hadoop.io.Text;
import org.apache.hadoop.mapreduce.Mapper;

//Created By: Mokhtar Adham, ID: 20398545
public class MinCloseStockMapper extends Mapper<LongWritable, Text, Text, FloatWritable>
{
    @Override
    protected void map(LongWritable key, Text value, Mapper<LongWritable, Text, Text,
FloatWritable>.Context context) {

        try {

            String record = value.toString();

            String[] stocks = record.split(",");

            String ticker = stocks[0];

            float stockClose = Float.parseFloat(stocks[5]);

            context.write(new Text(ticker), new FloatWritable(stockClose));

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

Application results:

EMR 73.06

MPW 10.14

NET 10.14

NVDA 112.27

PFE 41.75