

Section 4

Using MapReduce and Pig





In this Section, we are going to take a look at...

- Coding a "Word Count" application in MapReduce
- Coding a "Word Count" application in Pig
- Using Pig for common ETL (Extract, Transform, and Load) tasks
- Creating a User-defined Function (UDF) in Pig



1x

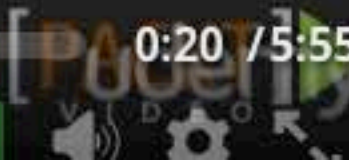


Browse O&A



Add Bookmark

Continue >



0:20 / 5:55

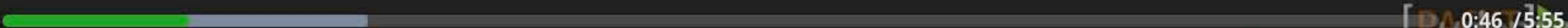


Learning Hadoop 2

Randal Scott King

Video 4.1

Coding "Word Count" in MapReduce



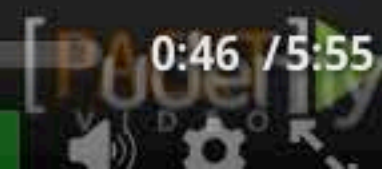
1x



[Browse O&A](#)

[Add Bookmark](#)

[Continue >](#)



0:46 / 5:55



In this Video, we are going to take a look at...

- The Eclipse IDE for Java
- Exporting a .jar
- Running jars in MapReduce



1x



Browse O&A



Add Bookmark

Continue >



Coding "Word Count" in MapReduce

Section 4, Lecture 12

ApplicationsPlacesSystem

Wed Sep 16, 10:33 AM

Go to Dashboard

Hue - File Browser - Mozilla Firefox

Hue - File Browser

WordCount - Hadoop ...

LearningHadoop2/Wo...

quickstart.cloudera:8888/filebrowser/view/user/cloudera

Search

☆

↓

🏠

😊

☰

Cloudera

Hue

Hadoop

HBase

Impala

Spark

Solr

Oozie

Cloudera Manager

Getting Started

HUE

🏠

Query Editors

Data Browsers

Workflows

Search

Security

File Browser

Job Browser

cloudera

🔔

🚩

➡

File Browser

Search for file name

⚙️ Actions

✖️ Move to trash

📶 Upload

➕ New

🏠 Home

/

user

/

cloudera

✎

▼ History

🗑️ Trash

| <input type="checkbox"/> | 🔍 Name | 🔍 Size | 🔍 User | 🔍 Group | Permissions | 🔍 Date |
|--------------------------|------------------------|-----------|----------|------------|-------------|-----------------------------|
| <input type="checkbox"/> | 📁 ↱ | | hdfs | supergroup | drwxr-xr-x | September 06, 2015 06:19 PM |
| <input type="checkbox"/> | 📁 . | | cloudera | cloudera | drwxr-xr-x | September 16, 2015 10:32 AM |
| <input type="checkbox"/> | 📁 .Trash | | cloudera | cloudera | drwxr-xr-x | September 05, 2015 05:21 PM |
| <input type="checkbox"/> | 📄 MoreTransactions.csv | 272 bytes | cloudera | cloudera | -rw-r--r-- | September 05, 2015 11:04 AM |
| <input type="checkbox"/> | 📄 Transactions.csv | 981 bytes | cloudera | cloudera | -rw-r--r-- | September 05, 2015 11:04 AM |

Show 45 of 2 items

Page 1 of 1

⏪ ⏩ ⏴ ⏵

1:06 / 5:55

Hue - File Browser

1x

15

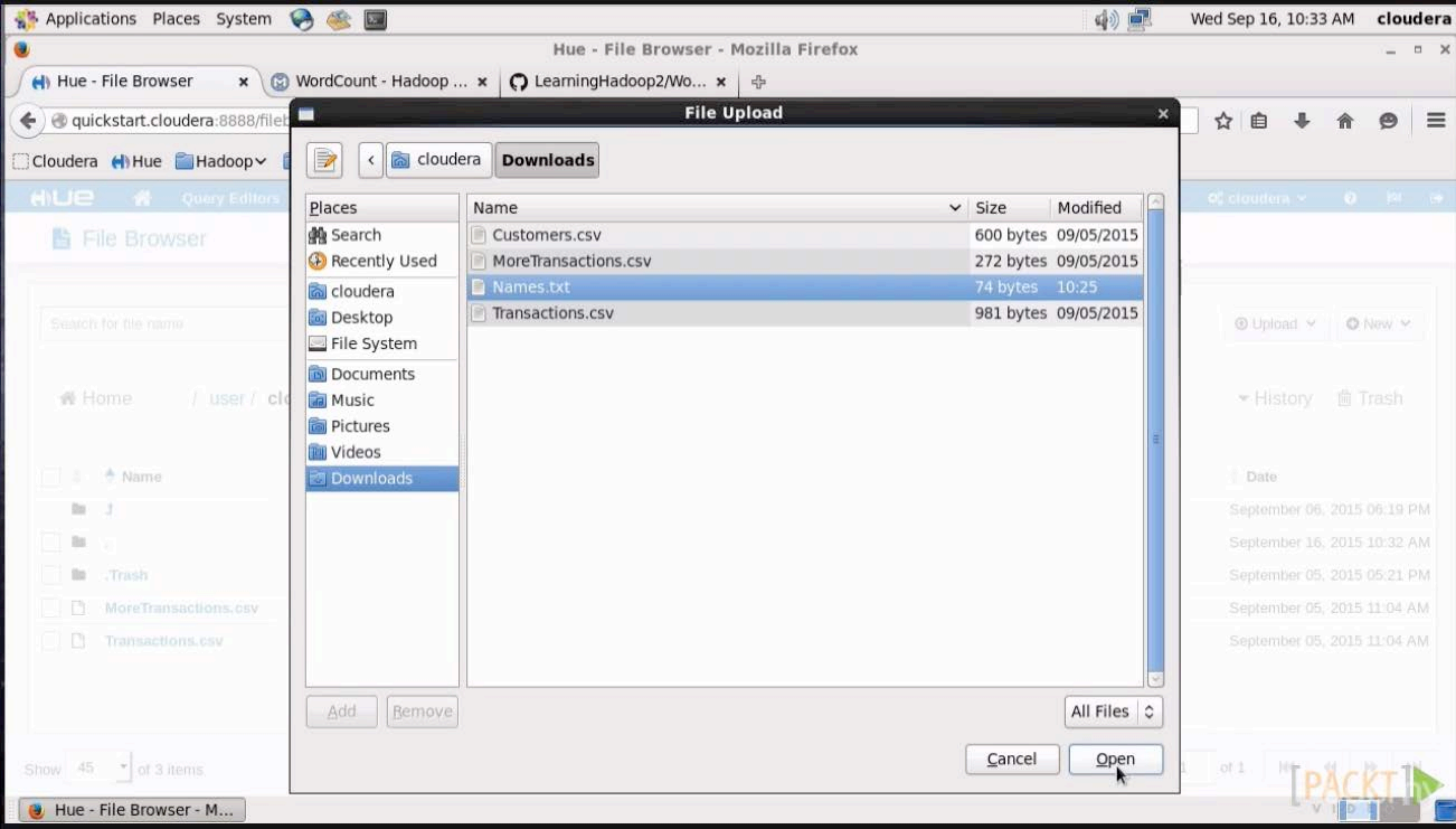
15

Browse O&A

Add Bookmark

Continue

| <input type="checkbox"/> | Name | Size | User | Group | Permissions | Date |
|--------------------------|----------------------|-----------|----------|------------|-------------|-----------------------------|
| <input type="checkbox"/> | ↓ | | hdfs | supergroup | drwxr-xr-x | September 06, 2015 06:19 PM |
| <input type="checkbox"/> | . | | cloudera | cloudera | drwxr-xr-x | September 16, 2015 10:32 AM |
| <input type="checkbox"/> | .Trash | | cloudera | cloudera | drwxr-xr-x | September 05, 2015 05:21 PM |
| <input type="checkbox"/> | MoreTransactions.csv | 272 bytes | cloudera | cloudera | -rw-r--r-- | September 05, 2015 11:04 AM |
| <input type="checkbox"/> | Transactions.csv | 981 bytes | cloudera | cloudera | -rw-r--r-- | September 05, 2015 11:04 AM |



File Upload



Downloads

Places

Search

Recently Used

cloudera

Desktop

File System

Documents

Music

Pictures

Videos

Downloads

Name

Customers.csv

MoreTransactions.csv

Names.txt

Transactions.csv



Size

Modified

600 bytes 09/05/2015

272 bytes 09/05/2015

74 bytes 10:25

981 bytes 09/05/2015

Add

Remove

All Files

Cancel

Open

Upload

New

History

Trash

Date

September 06, 2015 06:19 PM

September 16, 2015 10:32 AM

September 05, 2015 05:21 PM

September 05, 2015 11:04 AM

September 05, 2015 11:04 AM

1 of 1

File Browser

Search for file name Actions Move to trash Upload New

Home / user / cloudera History Trash

| <input type="checkbox"/> | Name | Size | User | Group | Permissions | Date |
|--------------------------|--------------------------------------|-----------|----------|------------|-------------|-----------------------------|
| <input type="checkbox"/> | j | | hdfs | supergroup | drwxr-xr-x | September 06, 2015 06:19 PM |
| <input type="checkbox"/> | . | | cloudera | cloudera | drwxr-xr-x | September 16, 2015 10:33 AM |
| <input type="checkbox"/> | .Trash | | cloudera | cloudera | drwxr-xr-x | September 05, 2015 05:21 PM |
| <input type="checkbox"/> | MoreTransactions.csv | 272 bytes | cloudera | cloudera | -rw-r--r-- | September 05, 2015 11:04 AM |
| <input type="checkbox"/> | Names.txt | 74 bytes | cloudera | cloudera | -rw-r--r-- | September 16, 2015 10:33 AM |
| <input type="checkbox"/> | Transactions.csv | 981 bytes | cloudera | cloudera | -rw-r--r-- | September 05, 2015 11:04 AM |



File Browser

Search for file name Actions Move to trash Upload New

Home / user / cloudera History Trash

| <input type="checkbox"/> | Name | Size | User | Group | Permissions | Date |
|--------------------------|--------------------------------------|-----------|----------|------------|-------------|-----------------------------|
| <input type="checkbox"/> | f | | hdfs | supergroup | drwxr-xr-x | September 06, 2015 06:19 PM |
| <input type="checkbox"/> | . | | cloudera | cloudera | drwxr-xr-x | September 16, 2015 10:33 AM |
| <input type="checkbox"/> | .Trash | | cloudera | cloudera | drwxr-xr-x | September 05, 2015 05:21 PM |
| <input type="checkbox"/> | MoreTransactions.csv | 272 bytes | cloudera | cloudera | -rw-r--r-- | September 05, 2015 11:04 AM |
| <input type="checkbox"/> | Names.txt | 74 bytes | cloudera | cloudera | -rw-r--r-- | September 16, 2015 10:33 AM |
| <input type="checkbox"/> | Transactions.csv | 981 bytes | cloudera | cloudera | -rw-r--r-- | September 05, 2015 11:04 AM |



Computer



cloudera's Home



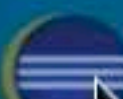
Trash



Launch Cloudera
Enterprise (trial)



Launch Cloudera
Express



Eclipse



cloudera®
Ask Bigger Questions

Java - training/src/StubDriver.java - Eclipse

File

Edit

Source

Refactor

Navigate

Search

Project

Run

Window

Help

New

Open File...

Close

Close All

Save

Save As...

Save All

Revert

Move...

Rename...

Refresh

Convert Line Delimiters To

Print...

Switch Workspace

Restart

Import...

Export...

Properties

1 StubDriver.java [training/src]

2 WordCount.java [WordCount/src]

Exit

Shift+Alt+N

Ctrl+W

Shift+Ctrl+W

Ctrl+S

Shift+Ctrl+S

F2

F5

Ctrl+P

Alt+Enter

Ctrl+N

Java Project

Project...

Package

Class

Interface

Enum

Annotation

Source Folder

Java Working Set

Folder

File

Untitled Text File

JUnit Test Case

Task

Example...

Other...

Quick Access

Java

b;

gs) throws Exception {

re passed from the command line.

river <input dir> <output dir>\n");

our job's configuration.

@ Javadoc

Declaration

Console

o display at this time.

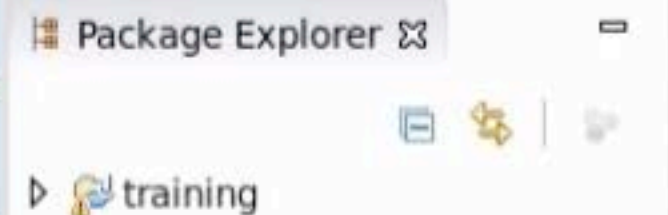
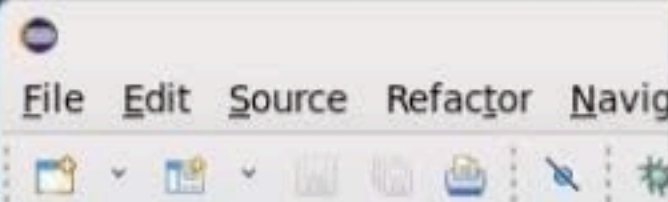
Writable

Smart Insert

1 : 1

[Hue - File Browser - ...]

Java - training/src/Stub...



New Java Project

Create a Java project in the workspace or in an external location.

Project name:

☒ Use default location

Location: [Browse...](#)

JRE

☒ Use an execution environment JRE:

☐ Use a project specific JRE:

☐ Use default JRE (currently 'jdk1.7.0_67-cloudera') [Configure JREs...](#)

Project layout

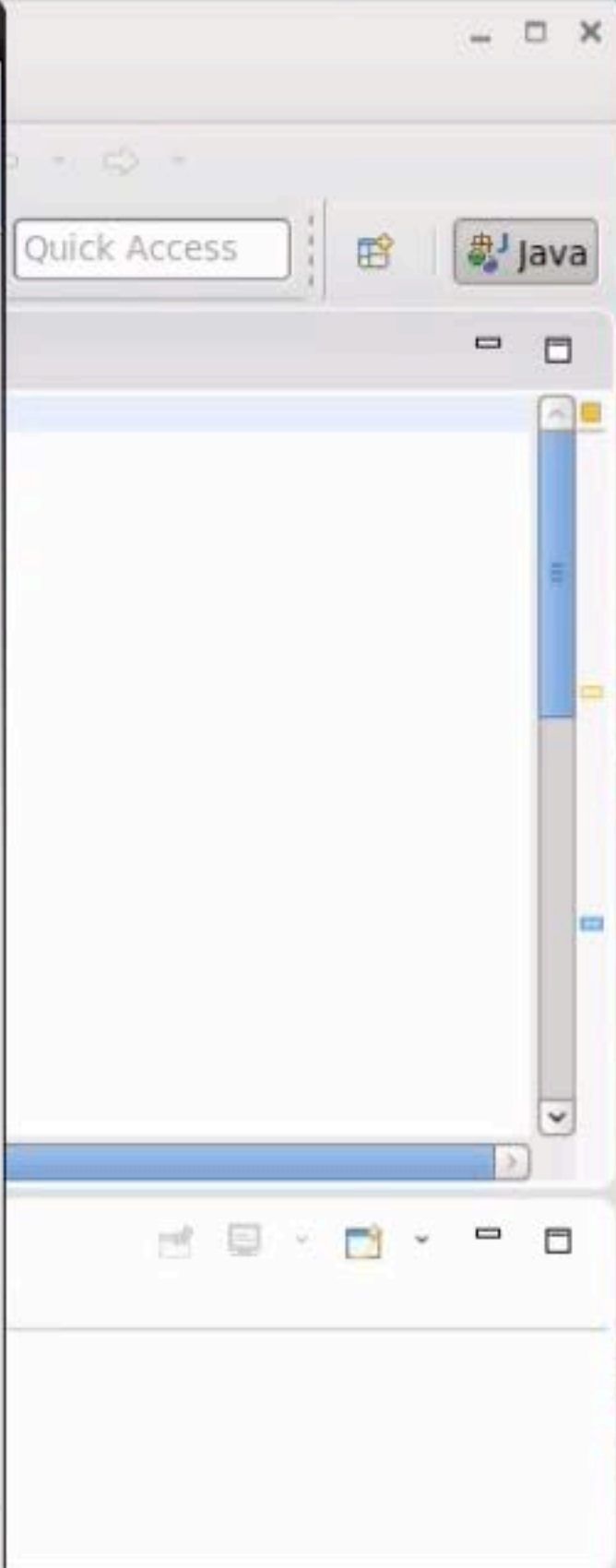
☐ Use project folder as root for sources and class files

☒ Create separate folders for sources and class files [Configure default...](#)

Working sets

☐ Add project to working sets

[?](#) [< Back](#) [Next >](#) [Cancel](#) [Finish](#)



- File
- Edit
- Source
- New
 - Go Into
 - Open in New Window
 - Open Type Hierarchy F4
 - Show In Shift+Alt+W
- Package Explorer
 - training
 - WordCount
- Copy Ctrl+C
- Copy Qualified Name
- Paste Ctrl+V
- Delete Delete
- Remove from Context Shift+Ctrl+Alt+Down
- Build Path
- Source Shift+Alt+S
- Refactor Shift+Alt+T
- Import...
- Export...
- Refresh F5
- Close Project
- Close Unrelated Projects
- Assign Working Sets...
- Debug As
- Run As
- Validate
- Team
- Compare With
- Restore from Local History...

Quick Access

Java

Declaration Console

time.

Properties for WordCount

Java Build Path

Source Projects Libraries Order and Export

JARs and class folders on the build path:

JRE System Library [JavaSE-1.7]

Add JARs...

Add External JARs...

Add Variable...

Add Library...

Add Class Folder...

Add External Class Folder...

Edit...

Remove

Migrate JAR File...

Cancel

OK

Section 4, Lecture 12

File Edit Sour

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Package Expl

Package Expl

training

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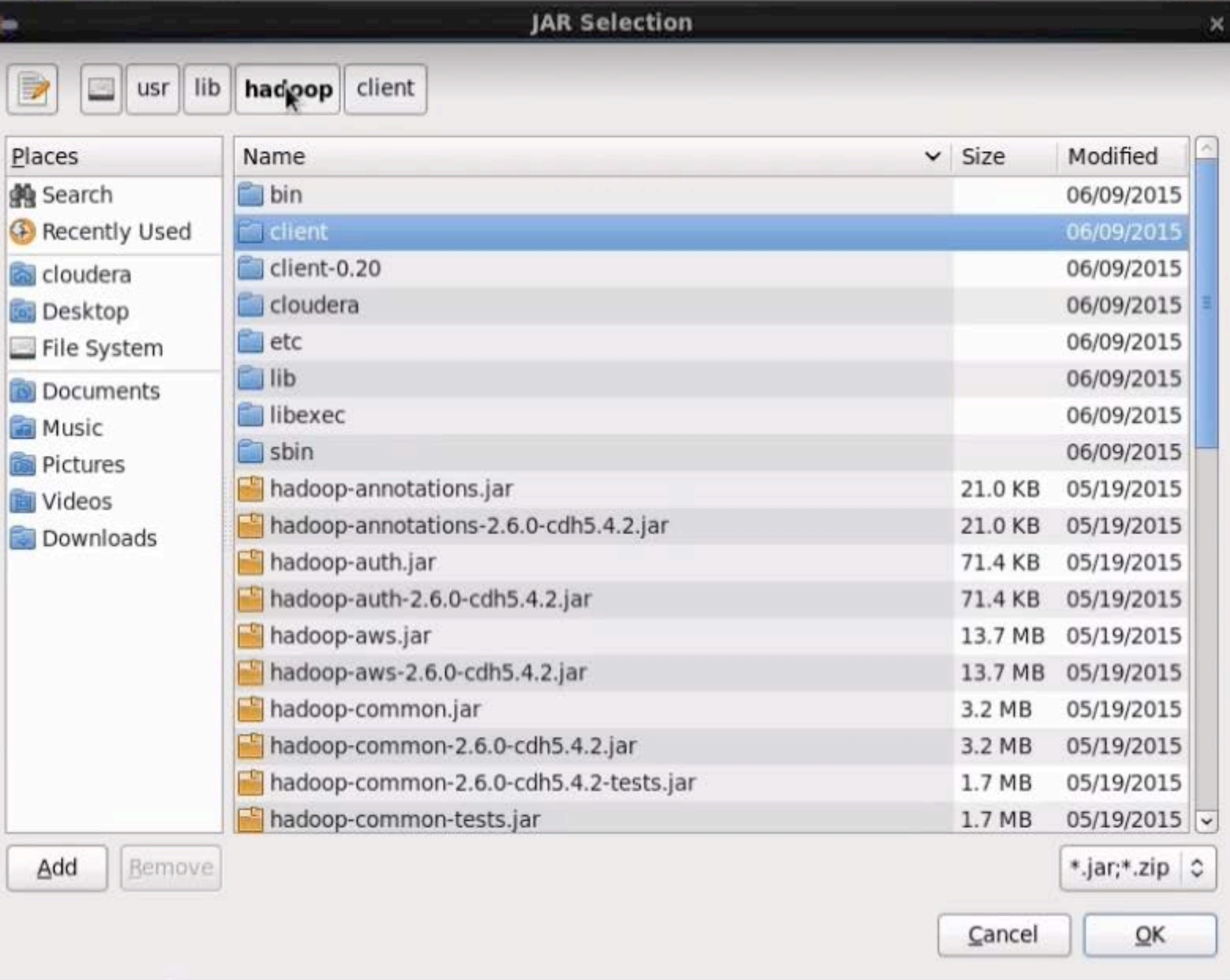
Tas

Tas

Val

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Java

Java

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Java

Java

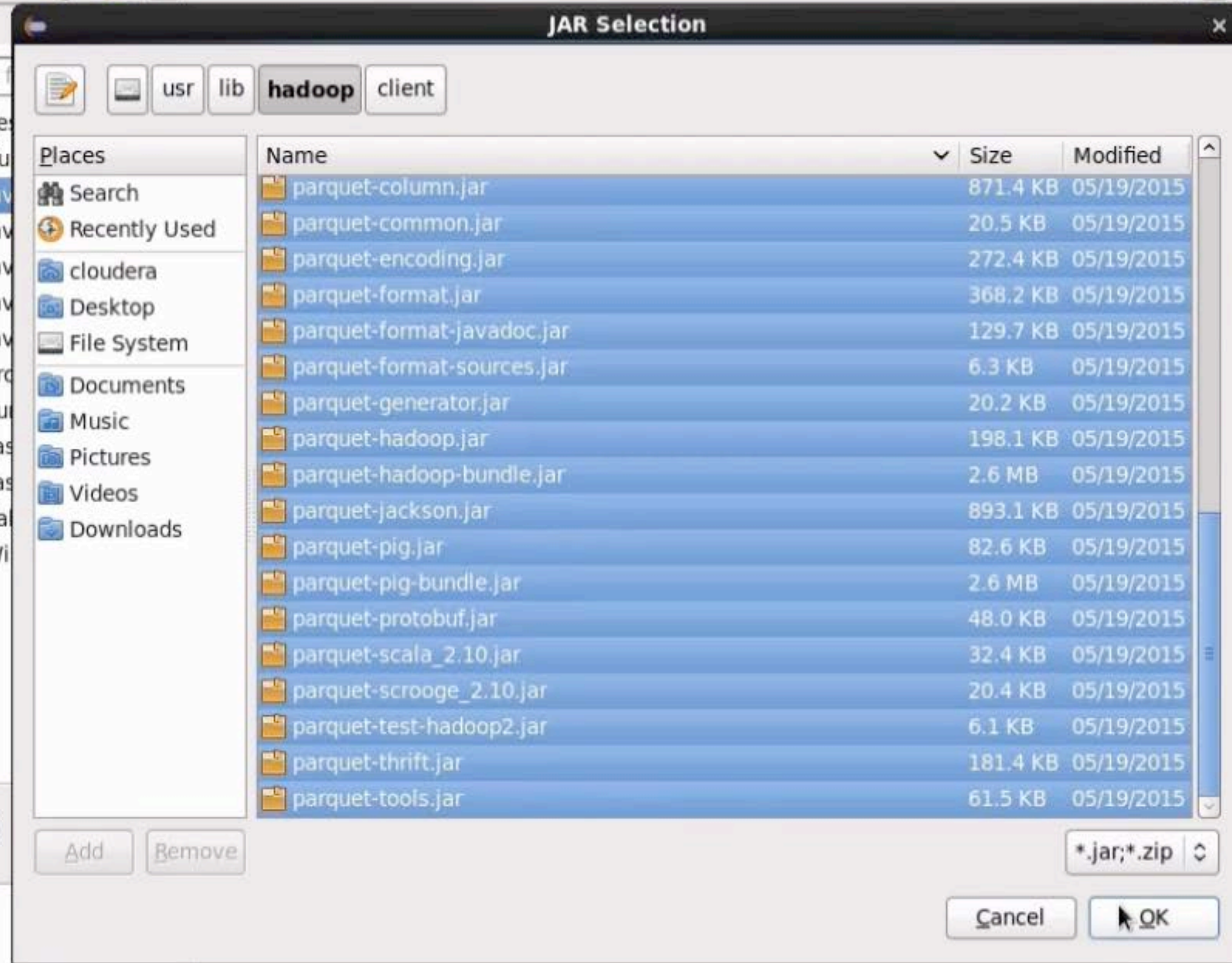
Java

Java

Java

Java

Java



type filter text

- Resource Builders
- Java Build Path
- Java Code Style
- Java Compiler
- Java Editor
- Javadoc Location
- Project References
- Run/Debug Settings
- Task Repository
- Task Tags
- Validation
- WikiText

Properties for WordCount

Java Build Path

Source Projects Libraries Order and Export

JARs and class folders on the build path:

- hadoop-annotations-2.6.0-cdh5.4.2.jar - /usr/lib/hadoop
- hadoop-annotations.jar - /usr/lib/hadoop
- hadoop-auth-2.6.0-cdh5.4.2.jar - /usr/lib/hadoop
- hadoop-auth.jar - /usr/lib/hadoop
- hadoop-aws-2.6.0-cdh5.4.2.jar - /usr/lib/hadoop
- hadoop-aws.jar - /usr/lib/hadoop
- hadoop-common-2.6.0-cdh5.4.2-tests.jar - /usr/lib/hadoop
- hadoop-common-2.6.0-cdh5.4.2.jar - /usr/lib/hadoop
- hadoop-common-tests.jar - /usr/lib/hadoop
- hadoop-common.jar - /usr/lib/hadoop
- hadoop-nfs-2.6.0-cdh5.4.2.jar - /usr/lib/hadoop
- hadoop-nfs.jar - /usr/lib/hadoop
- parquet-avro.jar - /usr/lib/hadoop
- parquet-cascading.jar - /usr/lib/hadoop
- parquet-column.jar - /usr/lib/hadoop

Add JARs...

Add External JARs...

Add Variable...

Add Library...

Add Class Folder...

Add External Class Folder...

Edit...

Remove

Migrate JAR File...



Cancel

OK

JAR Selection

usr lib **hadoop** **client**

Places

- Search
- Recently Used
- cloudera
- Desktop
- File System
- Documents
- Music
- Pictures
- Videos
- Downloads

| Name | Size | Modified |
|-------------------------|----------|------------|
| paranamer.jar | 28.9 KB | 05/19/2015 |
| paranamer-2.3.jar | 28.9 KB | 05/19/2015 |
| protobuf-java.jar | 521.0 KB | 05/19/2015 |
| protobuf-java-2.5.0.jar | 521.0 KB | 05/19/2015 |
| servlet-api.jar | 102.6 KB | 05/19/2015 |
| servlet-api-2.5.jar | 102.6 KB | 05/19/2015 |
| slf4j-api.jar | 25.5 KB | 05/19/2015 |
| slf4j-api-1.7.5.jar | 25.5 KB | 05/19/2015 |
| slf4j-log4j12.jar | 8.7 KB | 05/19/2015 |
| snappy-java.jar | 972.6 KB | 05/19/2015 |
| snappy-java-1.0.4.1.jar | 972.6 KB | 05/19/2015 |
| stax-api.jar | 22.8 KB | 05/19/2015 |
| stax-api-1.0-2.jar | 22.8 KB | 05/19/2015 |
| xmlenc.jar | 14.7 KB | 05/19/2015 |
| xmlenc-0.52.jar | 14.7 KB | 05/19/2015 |
| xz.jar | 92.5 KB | 05/19/2015 |
| xz-1.0.jar | 92.5 KB | 05/19/2015 |
| zookeeper.jar | 1.3 MB | 05/19/2015 |

Add Remove

.jar;.zip

Cancel

Java - Eclipse

File

Edit

Source

Refactor

Navigate

Search

Project

Run

Window

Help

New

Open File...

Close

Close All

Save

Save As...

Save All

Revert

Move...

Rename...

Refresh

Convert Line Delimiters To

Print...

Switch Workspace

Restart

Import...

Export...

Properties

1 StubDriver.java [training/src]

2 WordCount.java [WordCount/src]

Exit

Shift+Alt+N

Ctrl+W

Shift+Ctrl+W

Ctrl+S

Shift+Ctrl+S

F2

F5

Ctrl+P

Alt+Enter

Java Project

Project...

Package

Class

Interface

Enum

Annotation

Source Folder

Java Working Set

Folder

File

Untitled Text File

JUnit Test Case

Task

Example...

Other...

Ctrl+N

Quick Access

Java

@ Javadoc

Declaration

Console

o display at this time.

WordCount

[Hue - File Browser - ...]

Java - Eclipse

PADETH

File Edit Source Refactor Navig



Package Explorer

training
WordCount

New Java Class

The use of the default package is discouraged.

Source folder: WordCount/src Browse...

Package: (default) Browse...

☐ Enclosing type: Browse...

Name: WordCount

Modifiers: ☒ public ☐ package ☐ private ☐ protected
☐ abstract ☐ final ☐ static

Superclass: java.lang.Object Browse...

Interfaces: Add...

Which method stubs would you like to create?

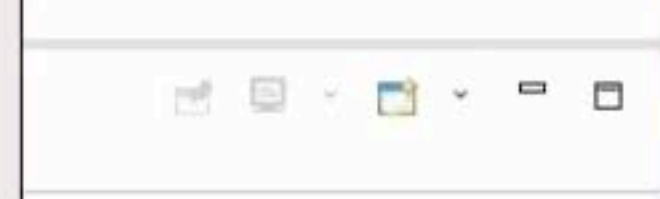
☐ public static void main(String[] args)
☐ Constructors from superclass
☒ Inherited abstract methods

Do you want to add comments? (Configure templates and default value [here](#))
☐ Generate comments

? Cancel Finish

Quick Access

Java



Java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access Java

Package Explorer

- training
- WordCount
 - src
 - (default package)
 - WordCount.java
 - JRE System Library [JavaSE-1.7]
 - Referenced Libraries

Problems @ Javadoc Declaration Console

No consoles to display at this time.

WordCount.java - WordCount/src

Java - WordCount/src/WordCount.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access Java

Package Explorer

- training
- WordCount
 - src
 - (default package)
 - WordCount.java
 - JRE System Library [JavaSE-1.7]
 - Referenced Libraries

WordCount.java

```
1 |
2 public class WordCount {
3
4 }
5
```

Problems @ Javadoc Declaration Console

No consoles to display at this time.

Writable Smart Insert 1 : 1

File Browser

Search for file name Actions Move to trash Upload New

Home / user / cloudera History Trash

| | Name | Size | User | Group | Permissions | Date |
|--|----------------------|-----------|----------|------------|-------------|-----------------------------|
| | ↑ | | hdfs | supergroup | drwxr-xr-x | September 06, 2015 06:19 PM |
| | . | | cloudera | cloudera | drwxr-xr-x | September 16, 2015 10:33 AM |
| | .Trash | | cloudera | cloudera | drwxr-xr-x | September 05, 2015 05:21 PM |
| | MoreTransactions.csv | 272 bytes | cloudera | cloudera | -rw-r--r-- | September 05, 2015 11:04 AM |
| | Names.txt | 74 bytes | cloudera | cloudera | -rw-r--r-- | September 16, 2015 10:33 AM |
| | Transactions.csv | 981 bytes | cloudera | cloudera | -rw-r--r-- | September 05, 2015 11:04 AM |

WordCount Example

WordCount example reads text files and counts how often words occur. The input is text files and the output is text files, each line of which contains a word and the count of how often it occurred, separated by a tab.

Each mapper takes a line as input and breaks it into words. It then emits a key/value pair of the word and 1. Each reducer sums the counts for each word and emits a single key/value with the word and sum.

As an optimization, the reducer is also used as a combiner on the map outputs. This reduces the amount of data sent across the network by combining each word into a single record.

To run the example, the command syntax is

```
bin/hadoop jar hadoop-*-examples.jar wordcount [-m <#maps>] [-r <#reducers>] <in-dir> <out-dir>
```

All of the files in the input directory (called in-dir in the command line above) are read and the counts of words in the input are written to the output directory (called out-dir above). It is assumed that both inputs and outputs are stored in HDFS (see [Important Concepts](#)). If your input is not already in HDFS, but is rather in a local file system somewhere, you need to copy the data into HDFS using a command like this:

```
bin/hadoop dfs -mkdir <hdfs-dir>
```

```
bin/hadoop dfs -copyFromLocal <local-dir> <hdfs-dir>
```


each word into a single record.

To run the example, the command syntax is

```
bin/hadoop jar hadoop-*-examples.jar wordcount [-m <#maps>] [-r <#reducers>] <in-dir> <out-dir>
```

All of the files in the input directory (called in-dir in the command line above) are read and the counts of words in the input are written to the output directory (called out-dir above). It is assumed that both inputs and outputs are stored in HDFS (see [Important Concepts](#)). If your input is not already in HDFS, but is rather in a local file system somewhere, you need to copy the data into HDFS using a command like this:

```
bin/hadoop dfs -mkdir <hdfs-dir>
```

```
bin/hadoop dfs -copyFromLocal <local-dir> <hdfs-dir>
```

As of version 0.17.2.1, you only need to run a command like this:

```
bin/hadoop dfs -copyFromLocal <local-dir> <hdfs-dir>
```

Word count supports generic options : see [DevelopmentCommandLineOptions](#)

Below is the standard wordcount example implemented in Java:

[Toggle line numbers](#)

```
1 package org.myorg;
2
3 import java.io.IOException;
4 import java.util.*;
5
6 import org.apache.hadoop.fs.Path;
7 import org.apache.hadoop.conf.*;
8 import org.apache.hadoop.io.*;
9 import org.apache.hadoop.mapreduce.*;
```



```
1 package org.myorg;
2
3 import java.io.IOException;
4 import java.util.*;
5
6 import org.apache.hadoop.fs.Path;
7 import org.apache.hadoop.conf.*;
8 import org.apache.hadoop.io.*;
9 import org.apache.hadoop.mapreduce.*;
10 import org.apache.hadoop.mapreduce.lib.input.FileInputFormat;
11 import org.apache.hadoop.mapreduce.lib.input.TextInputFormat;
12 import org.apache.hadoop.mapreduce.lib.output.FileOutputFormat;
13 import org.apache.hadoop.mapreduce.lib.output.TextOutputFormat;
14
15 public class WordCount {
16
17     public static class Map extends Mapper<LongWritable, Text, Text, IntWritable> {
18         private final static IntWritable one = new IntWritable(1);
19         private Text word = new Text();
20
21         public void map(LongWritable key, Text value, Context context) throws IOException, InterruptedException {
22             String line = value.toString();
23             StringTokenizer tokenizer = new StringTokenizer(line);
24             while (tokenizer.hasMoreTokens()) {
25                 word.set(tokenizer.nextToken());
26                 context.write(word, one);
27             }
28         }
29     }
30 }
```



```
25 private final static IntWritable one = new IntWritable(1);
26 private Text word = new Text();
27
28 public void map(LongWritable key, Text value, Context context) throws IOException, InterruptedException {
29     String line = value.toString();
30     StringTokenizer tokenizer = new StringTokenizer(line);
31     while (tokenizer.hasMoreTokens()) {
32         word.set(tokenizer.nextToken());
33         context.write(word, one);
34     }
35 }
36
37 public void run (Context context) throws IOException, InterruptedException {
38     setup(context);
39     while (context.nextKeyValue()) {
40         map(context.getCurrentKey(), context.getCurrentValue(), context);
41     }
42     cleanup(context);
43 }
44
45
46 public static class Reduce extends Reducer<Text, IntWritable, Text, IntWritable> {
47
48     public void reduce(Text key, Iterable<IntWritable> values, Context context)
49         throws IOException, InterruptedException {
50         int sum = 0;
51         for (IntWritable val : values) {
52             sum += val.get();
53         }
54         context.write(key, new IntWritable(sum));
55 }
```



```
50     int sum = 0;
51     for (IntWritable val : values) {
52         sum += val.get();
53     }
54     context.write(key, new IntWritable(sum));
55 }
56 }
57
58 public int run(String[] args) throws Exception {
59
60     Job job = Job.getInstance(new Configuration());
61
62     job.setOutputKeyClass(Text.class);
63     job.setOutputValueClass(IntWritable.class);
64
65     job.setMapperClass(Map.class);
66     job.setReducerClass(Reduce.class);
67
68     job.setInputFormatClass(TextInputFormat.class);
69     job.setOutputFormatClass(TextOutputFormat.class);
70
71     FileInputFormat.setInputPaths(job, new Path(args[0]));
72     FileOutputFormat.setOutputPath(job, new Path(args[1]));
73
74     job.setJarByClass(WordCount.class);
75
76     job.submit();
77     return 0;
78 }
79
```

Java - WordCount/src/WordCount.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access Java

Package Explorer

- training
- WordCount
 - src
 - (default package)
 - WordCount.java
 - JRE System Library [JavaSE-1.7]
 - Referenced Libraries

WordCount.java

```
1 |
2 public class WordCount {
3
4 }
5 |
```

Problems @ Javadoc Declaration Console

No consoles to display at this time.

Writable Smart Insert 1 : 1

The screenshot shows the Eclipse IDE interface. The Package Explorer on the left displays the project structure: training > WordCount > src > (default package) > WordCount.java. The main editor window shows the code for WordCount.java. The code includes a `main` method that configures a Hadoop job, sets input and output paths, and submits it. The console at the bottom indicates that there are no consoles to display at this time.

```
66 job.setReducerClass(Reduce.class);
67
68 job.setInputFormatClass(TextInputFormat.class);
69 job.setOutputFormatClass(TextOutputFormat.class);
70
71 FileInputFormat.setInputPaths(job, new Path(args[0]));
72 FileOutputFormat.setOutputPath(job, new Path(args[1]));
73
74 job.setJarByClass(WordCount.class);
75
76 job.submit();
77 return 0;
78 }
79
80 public static void main(String[] args) throws Exception {
81     Configuration conf = new Configuration();
82     String[] otherArgs = new GenericOptionsParser(conf, args).getRemainingArgs();
83     ToolRunner.run(new WordCount(), otherArgs);
84 }
85 }
```

Problems @ Javadoc Declaration Console

No consoles to display at this time.

Writable Smart Insert 85 : 2

Java - WordCount/src/WordCount.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access Java

Package Explorer

- training
- WordCount
 - src
 - (default package)
 - WordCount.java
 - JRE System Library [JavaSE-1.7]
 - Referenced Libraries

```
27
28 public void map(LongWritable key, Text value, Context context) throws IOException, InterruptedException {
29     String line = value.toString();
30     StringTokenizer tokenizer = new StringTokenizer(line);
31     while (tokenizer.hasMoreTokens()) {
32         word.set(tokenizer.nextToken());
33         context.write(word, one);
34     }
35 }
36
37 public void run (Context context) throws IOException, InterruptedException {
38     setup(context);
39     while (context.nextKeyValue()) {
40         map(context.getCurrentKey(), context.getCurrentValue(), context);
41     }
42     cleanup(context);
43 }
44 }
45
46 public static class Reduce extends Reducer<Text, IntWritable, Text, IntWritable> {
```

Problems @ Javadoc Declaration Console

No consoles to display at this time.

Writable Smart Insert 35 : 6

Java - WordCount/src/WordCount.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access Java

Package Explorer

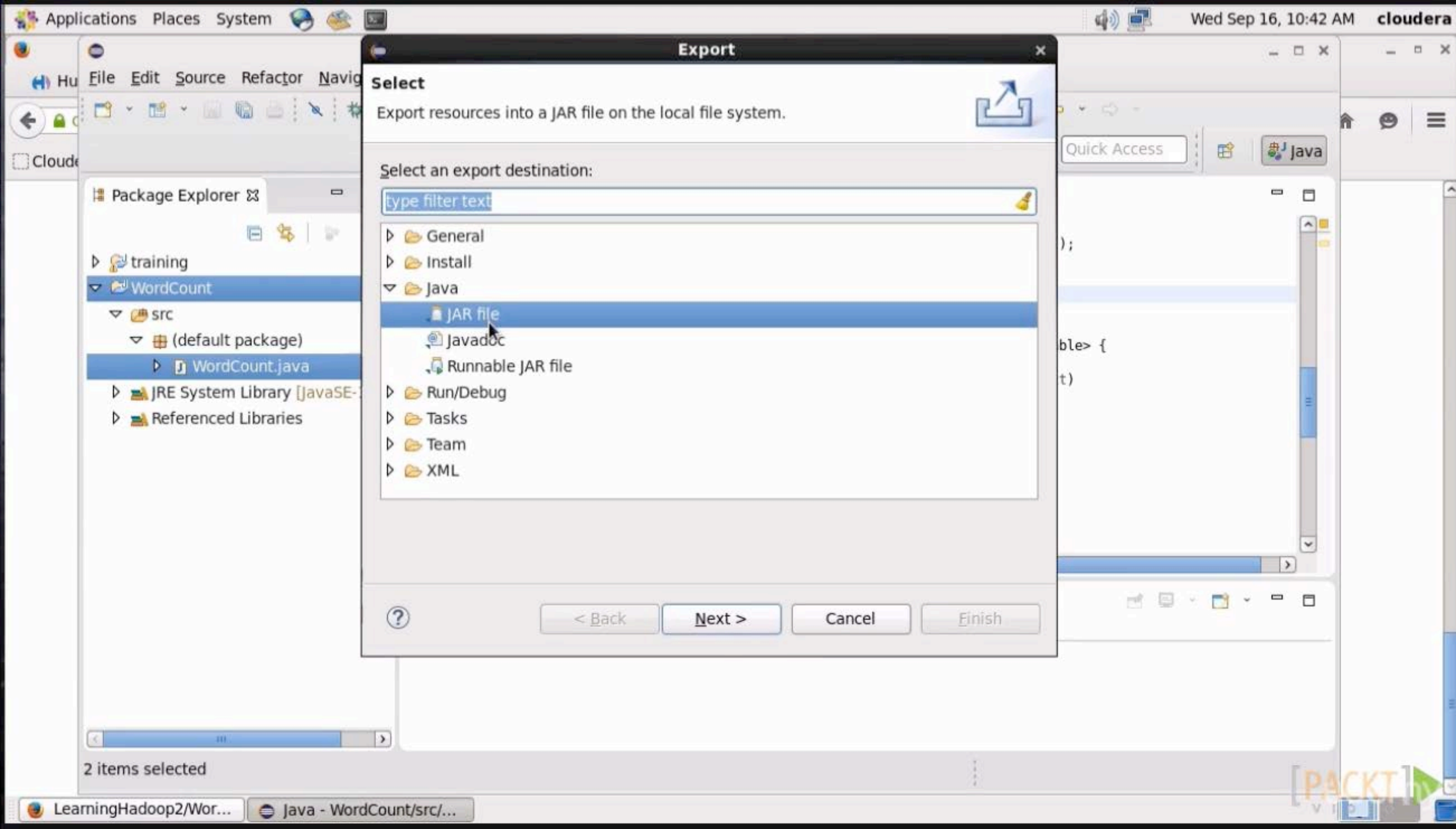
- training
- WordCount
 - src
 - (default package)
 - WordCount.java
- JRE System Library [JavaSE-1.7]
- Referenced Libraries

```
39     while (context.nextKeyValue()) {
40         map(context.getCurrentKey(), context.getCurrentValue(), context);
41     }
42     cleanup(context);
43 }
44 }
45
46 public static class Reduce extends Reducer<Text, IntWritable, Text, IntWritable> {
47
48     public void reduce(Text key, Iterable<IntWritable> values, Context context)
49         throws IOException, InterruptedException {
50         int sum = 0;
51         for (IntWritable val : values) {
52             sum += val.get();
53         }
54         context.write(key, new IntWritable(sum));
55     }
56 }
57
58 public int run(String[] args) throws Exception {
```

Problems @ Javadoc Declaration Console

No consoles to display at this time.

Writable Smart Insert 35 : 6



File Edit Source Refactor Navig

Package Explorer

- training
- WordCount
 - src
 - (default package)
 - WordCount.java
 - JRE System Library [JavaSE-...]
 - Referenced Libraries

2 items selected

JAR Export

JAR File Specification

Define which resources should be exported into the JAR.

Select the resources to export:

| | |
|---|--|
| <input type="checkbox"/> training | <input checked="" type="checkbox"/> .classpath |
| <input checked="" type="checkbox"/> WordCount | <input checked="" type="checkbox"/> .project |

☒ Export generated class files and resources

☐ Export all output folders for checked projects

☐ Export Java source files and resources

☐ Export refactorings for checked projects. [Select refactorings...](#)

Select the export destination:

JAR file:

Options:

☒ Compress the contents of the JAR file

☐ Add directory entries

☐ Overwrite existing files without warning

Quick Access

Java

```
);
```

```
ble> {
```

```
t)
```

File Edit Source Refactor Navig

Package Explorer

- training
- WordCount
 - src
 - (default package)
 - WordCount.java
 - JRE System Library [JavaSE-7]
 - Referenced Libraries

2 items selected

JAR Export

JAR File Specification

Define which resources should be exported into the JAR.

Select the resources to export:

| | |
|---|--|
| <input type="checkbox"/> training | <input checked="" type="checkbox"/> .classpath |
| <input checked="" type="checkbox"/> WordCount | <input checked="" type="checkbox"/> .project |

☒ Export generated class files and resources

☐ Export all output folders for checked projects

☐ Export Java source files and resources

☐ Export refactorings for checked projects. [Select refactorings...](#)

Select the export destination:

JAR file:

Options:

☒ Compress the contents of the JAR file

☐ Add directory entries

☐ Overwrite existing files without warning

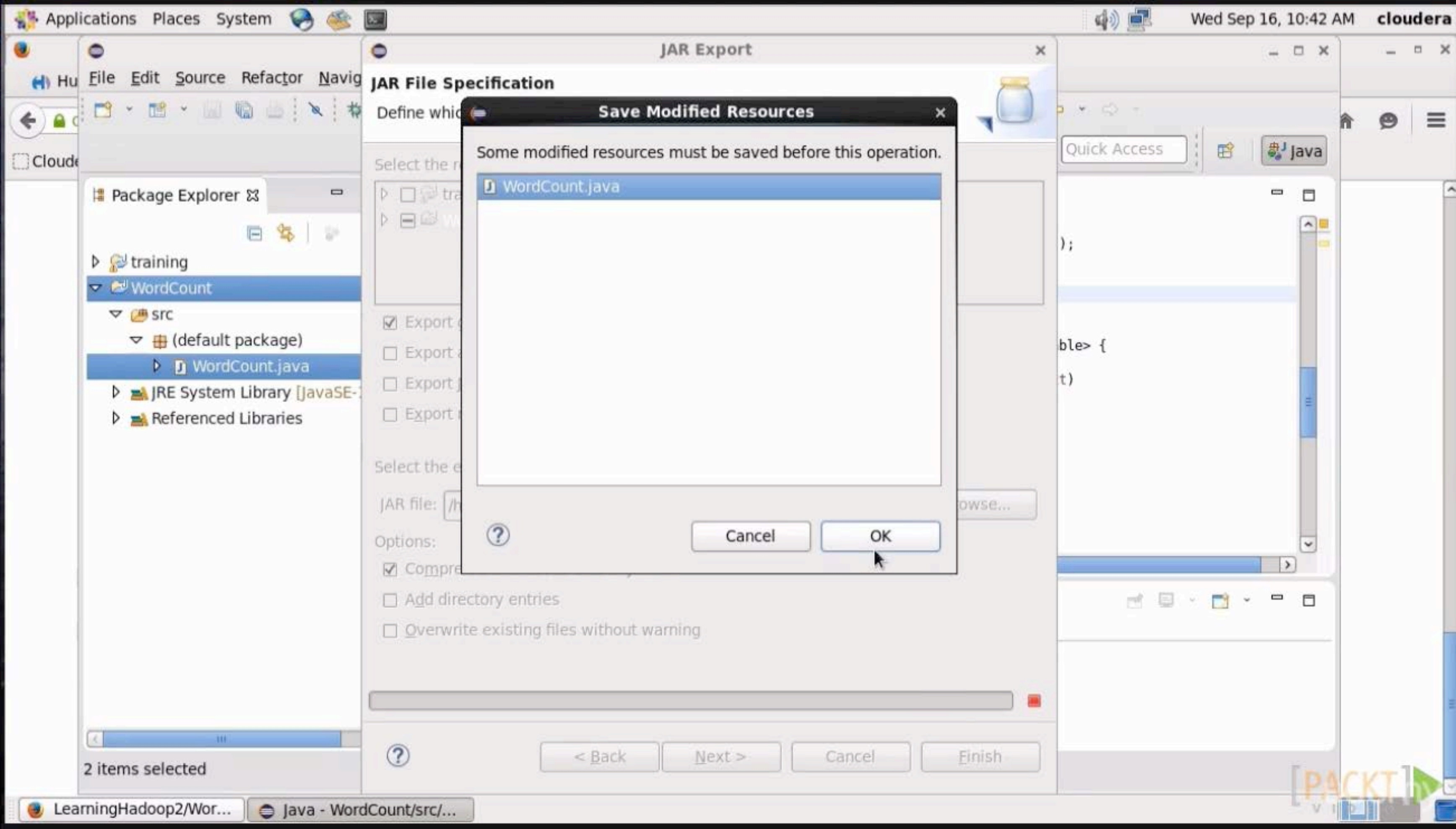
Quick Access

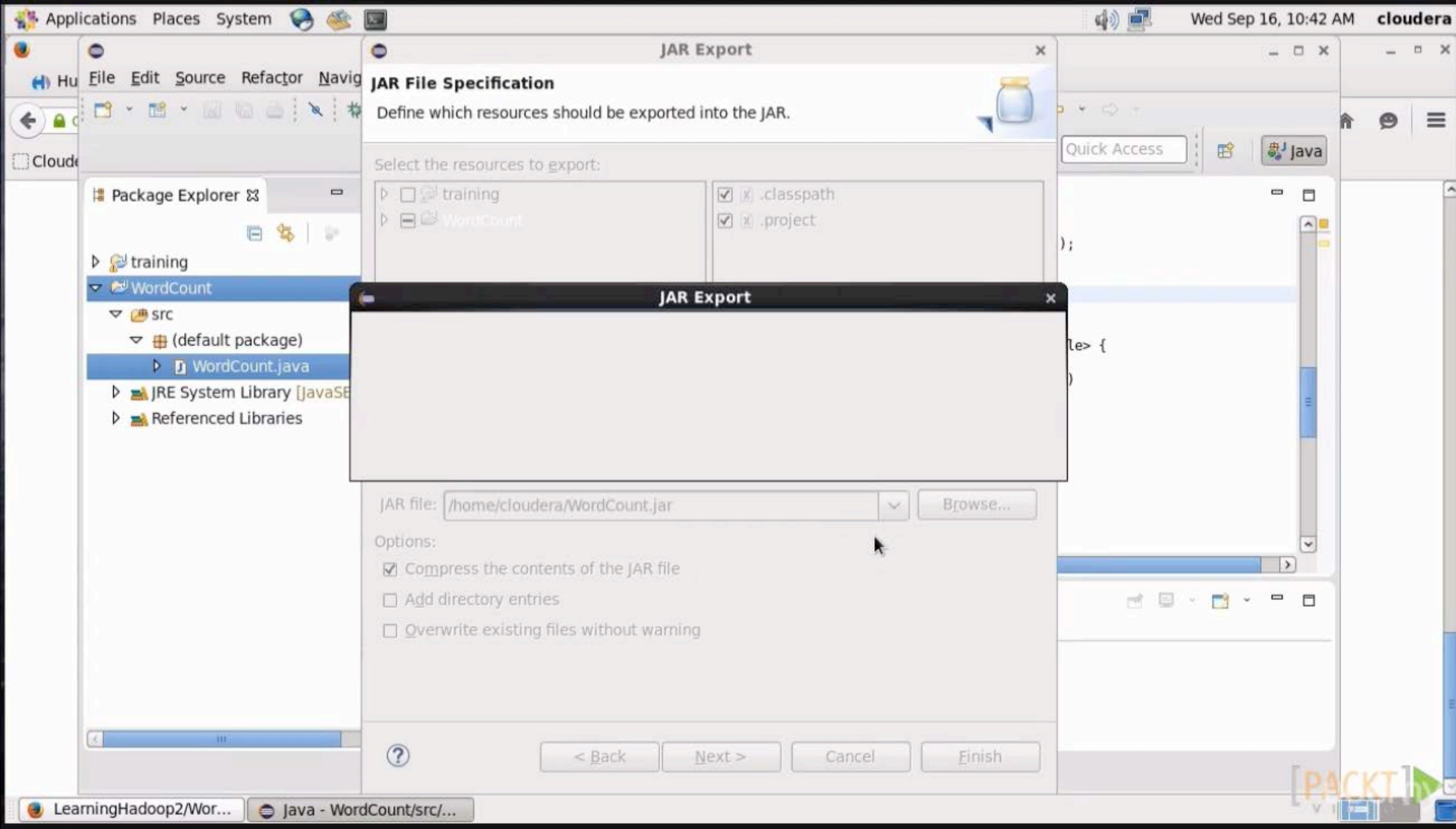
Java

```
);
```

```
ble> {
```

```
t)
```



File Edit Source Refactor Navig

Package Explorer

training

WordCount

src

(default package)

WordCount.java

JRE System Library [JavaSE

Referenced Libraries

JAR Export

JAR File Specification

Define which resources should be exported into the JAR.

Select the resources to export:

training

WordCount

☒ .classpath

☒ .project

JAR export finished with warnings. See details for additional information.

Details >>

OK

JAR file: /home/cloudera/WordCount.jar

Browse...

Options:

☒ Compress the contents of the JAR file

☐ Add directory entries

☐ Overwrite existing files without warning

< Back

Next >

Cancel

Finish

Java - WordCount/src/WordCount.java - Eclipse

File Edit Source Refactor Navigate Search Project Run Window Help

Package Explorer

- training
- WordCount
 - src
 - (default package)
 - WordCount.java
- JRE System Library [JavaSE-1.7]
- Referenced Libraries

WordCount.java

```
39     while (context.nextKeyValue()) {
40         map(context.getCurrentKey(), context.getCurrentValue(), context);
41     }
42     cleanup(context);
43 }
44 }
45
46 public static class Reduce extends Reducer<Text, IntWritable, Text, IntWritable> {
47
48     public void reduce(Text key, Iterable<IntWritable> values, Context context)
49         throws IOException, InterruptedException {
50         int sum = 0;
51         for (IntWritable val : values) {
52             sum += val.get();
53         }
54         context.write(key, new IntWritable(sum));
55     }
56 }
57
58 public int run(String[] args) throws Exception {
```

Problems @ Javadoc Declaration Console

No consoles to display at this time.



Computer



cloudera's Home



Trash



Launch Cloudera
Enterprise (trial)



Launch Cloudera
Express



Eclipse

```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
[cloudera@quickstart ~]$ hadoop jar
```

cloudera®
Ask Bigger Questions



Computer



cloudera's Home



Trash

Launch Cloudera
Enterprise (trial)Launch Cloudera
Express

Eclipse

```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
[cloudera@quickstart ~]$ hadoop jar /home/cloudera/WordCount.jar W
```

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Trash

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Eclipse

```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
[cloudera@quickstart ~]$ hadoop jar /home/cloudera/WordCount.jar WordCount Names  
.txt output
```

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Computer



cloudera's Home



Trash

Launch Cloudera
Enterprise (trial)Launch Cloudera
Express

Eclipse

```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
[cloudera@quickstart ~]$ hadoop jar /home/cloudera/WordCount.jar WordCount Names  
.txt output  
15/09/16 10:46:05 INFO client.RMProxy: Connecting to ResourceManager at /0.0.0.0  
:8032  
15/09/16 10:46:06 WARN mapreduce.JobSubmitter: Hadoop command-line option parsin  
g not performed. Implement the Tool interface and execute your application with  
ToolRunner to remedy this.  
15/09/16 10:46:06 INFO input.FileInputFormat: Total input paths to process : 1  
15/09/16 10:46:06 INFO mapreduce.JobSubmitter: number of splits:1  
15/09/16 10:46:07 INFO mapreduce.JobSubmitter: Submitting tokens for job: job_14  
42364086378_0007  
15/09/16 10:46:07 INFO impl.YarnClientImpl: Submitted application application_14  
42364086378_0007  
15/09/16 10:46:07 INFO mapreduce.Job: The url to track the job: http://quickstar  
t.cloudera:8088/proxy/application_1442364086378_0007/  
[cloudera@quickstart ~]$
```

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Ask Bigger Questions


```
65 job.setMapperClass(Map.class);
66 job.setReducerClass(Reduce.class);
67
68 job.setInputFormatClass(TextInputFormat.class);
69 job.setOutputFormatClass(TextOutputFormat.class);
70
71 FileInputFormat.setInputPaths(job, new Path(args[0]));
72 FileOutputFormat.setOutputPath(job, new Path(args[1]));
73
74 job.setJarByClass(WordCount.class);
75
76 job.submit();
77 return 0;
78 }
79
80 public static void main(String[] args) throws Exception {
81     Configuration conf = new Configuration();
82     String[] otherArgs = new GenericOptionsParser(conf, args).getRemainingArgs();
83     ToolRunner.run(new WordCount(), otherArgs);
84 }
85 }
```

File Browser

Search for file name Actions Move to trash Upload New

Home / user / cloudera History Trash

| <input type="checkbox"/> | Name | Size | User | Group | Permissions | Date |
|--------------------------|--------------------------------------|-----------|----------|------------|-------------|-----------------------------|
| <input type="checkbox"/> | j | | hdfs | supergroup | drwxr-xr-x | September 06, 2015 06:19 PM |
| <input type="checkbox"/> | . | | cloudera | cloudera | drwxr-xr-x | September 16, 2015 10:33 AM |
| <input type="checkbox"/> | .Trash | | cloudera | cloudera | drwxr-xr-x | September 05, 2015 05:21 PM |
| <input type="checkbox"/> | MoreTransactions.csv | 272 bytes | cloudera | cloudera | -rw-r--r-- | September 05, 2015 11:04 AM |
| <input type="checkbox"/> | Names.txt | 74 bytes | cloudera | cloudera | -rw-r--r-- | September 16, 2015 10:33 AM |
| <input type="checkbox"/> | Transactions.csv | 981 bytes | cloudera | cloudera | -rw-r--r-- | September 05, 2015 11:04 AM |

Actions

Move to trash

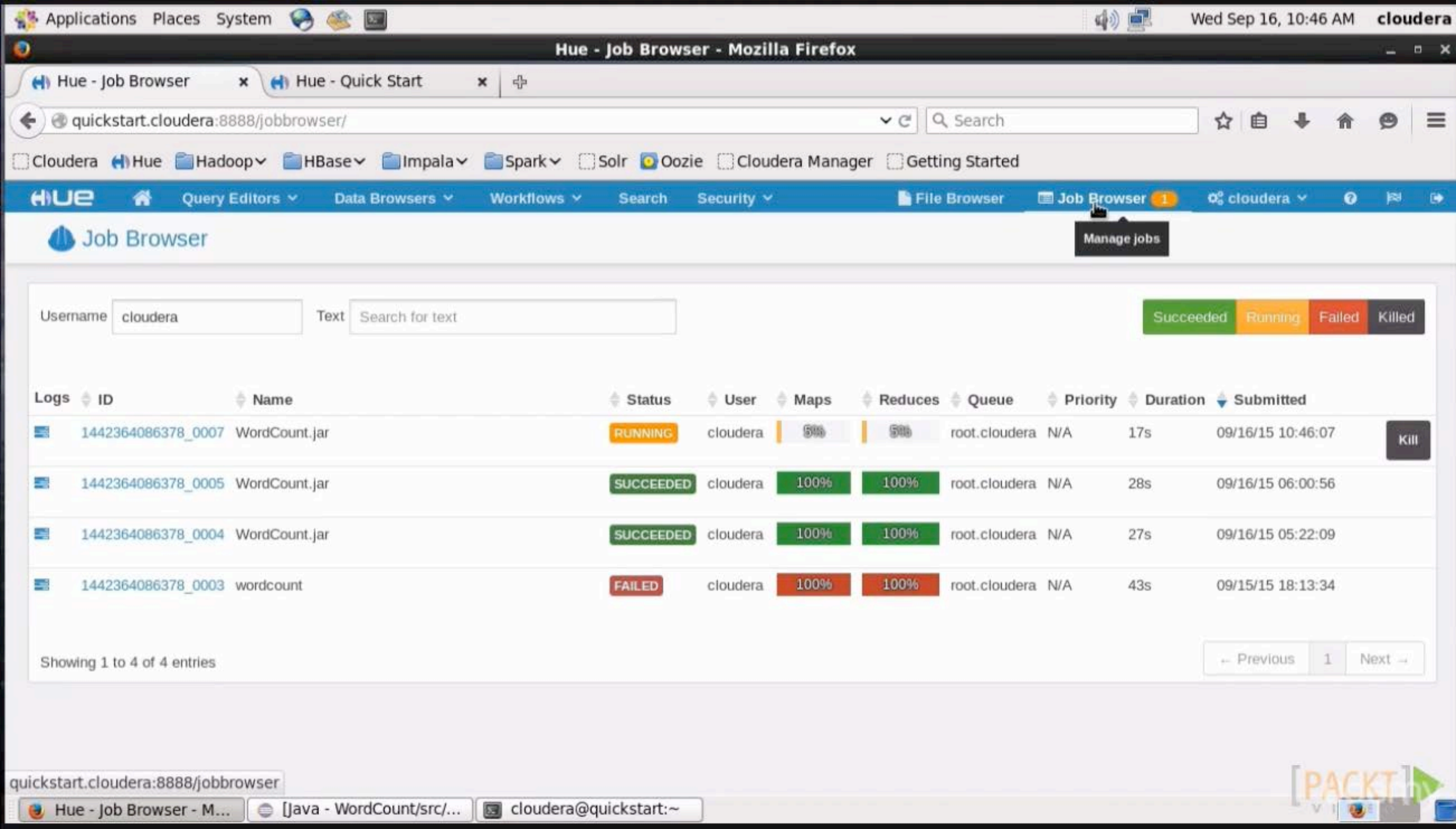
Upload

New

Home / user / cloudera

History Trash

| <input type="checkbox"/> | Name | Size | User | Group | Permissions | Date |
|--------------------------|--------------------------------------|-----------|----------|------------|-------------|-----------------------------|
| <input type="checkbox"/> | f | | hdfs | supergroup | drwxr-xr-x | September 06, 2015 06:19 PM |
| <input type="checkbox"/> | . | | cloudera | cloudera | drwxr-xr-x | September 16, 2015 10:33 AM |
| <input type="checkbox"/> | .Trash | | cloudera | cloudera | drwxr-xr-x | September 05, 2015 05:21 PM |
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| <input type="checkbox"/> | Names.txt | 74 bytes | cloudera | cloudera | -rw-r--r-- | September 16, 2015 10:33 AM |
| <input type="checkbox"/> | Transactions.csv | 981 bytes | cloudera | cloudera | -rw-r--r-- | September 05, 2015 11:04 AM |



Job Browser

Manage jobs

Username cloudera Text Search for text

Succeeded Running Failed Killed

| Logs | ID | Name | Status | User | Maps | Reduces | Queue | Priority | Duration | Submitted | |
|------|--------------------|---------------|-----------|----------|------|---------|---------------|----------|----------|-------------------|------|
| | 1442364086378_0007 | WordCount.jar | RUNNING | cloudera | 5% | 5% | root.cloudera | N/A | 17s | 09/16/15 10:46:07 | Kill |
| | 1442364086378_0005 | WordCount.jar | SUCCEEDED | cloudera | 100% | 100% | root.cloudera | N/A | 28s | 09/16/15 06:00:56 | |
| | 1442364086378_0004 | WordCount.jar | SUCCEEDED | cloudera | 100% | 100% | root.cloudera | N/A | 27s | 09/16/15 05:22:09 | |
| | 1442364086378_0003 | wordcount | FAILED | cloudera | 100% | 100% | root.cloudera | N/A | 43s | 09/15/15 18:13:34 | |

Showing 1 to 4 of 4 entries

Applications

Places

System

Wed Sep 16, 10:46 AM

cloudera

Hue - Job Browser - Mozilla Firefox

Hue - Job Browser

Hue - Quick Start

quickstart.cloudera:8888/jobbrowser/

Search

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Cloudera

Hue

Hadoop

HBase

Impala

Spark

Solr

Oozie

Cloudera Manager

Getting Started

HUE

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Query Editors

Data Browsers

Workflows

Search

Security

File Browser

Job Browser

cloudera

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Job Browser

Username

cloudera

Text

Search for text

Succeeded

Running

Failed

Killed

Logs

ID

Name

Status

User

Maps

Reduces

Queue

Priority

Duration

Submitted

1442364086378_0007

WordCount.jar

RUNNING

cloudera

5%

5%

root.cloudera

N/A

21s

09/16/15 10:46:07

Kill

1442364086378_0005

WordCount.jar

SUCCEEDED

cloudera

100%

100%

root.cloudera

N/A

28s

09/16/15 06:00:56

1442364086378_0004

WordCount.jar

SUCCEEDED

cloudera

100%

100%

root.cloudera

N/A

27s

09/16/15 05:22:09

1442364086378_0003

wordcount

FAILED

cloudera

100%

100%

root.cloudera

N/A

43s

09/15/15 18:13:34

Showing 1 to 4 of 4 entries

← Previous

1

Next →

Hue - Job Browser - M...

[Java - WordCount/src/...

cloudera@quickstart:~

PACKT

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| Logs | ID | Name | Status | User | Maps | Reduces | Queue | Priority | Duration | Submitted |
|--|--------------------|---------------|-----------|----------|------|---------|---------------|----------|----------|-------------------|
|  | 1442364086378_0007 | WordCount.jar | SUCCEEDED | cloudera | 100% | 100% | root.cloudera | N/A | 35s | 09/16/15 10:46:07 |
|  | 1442364086378_0005 | WordCount.jar | SUCCEEDED | cloudera | 100% | 100% | root.cloudera | N/A | 28s | 09/16/15 06:00:56 |
|  | 1442364086378_0004 | WordCount.jar | SUCCEEDED | cloudera | 100% | 100% | root.cloudera | N/A | 27s | 09/16/15 05:22:09 |
|  | 1442364086378_0003 | wordcount | FAILED | cloudera | 100% | 100% | root.cloudera | N/A | 43s | 09/15/15 18:13:34 |

Applications

Places

System

Wed Sep 16, 10:47 AM

cloudera

Hue - Job Browser - Mozilla Firefox

Hue - Job Browser

Hue - Quick Start

quickstart.cloudera:8888/jobbrowser/

Search

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Cloudera

Hue

Hadoop

HBase

Impala

Spark

Solr

Oozie

Cloudera Manager

Getting Started

HUE

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Query Editors

Data Browsers

Workflows

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Job Browser

Manage HDFS

Username

cloudera

Text

Search for text

Succeeded

Running

Failed

Killed

Logs

ID

Name

Status

User

Maps

Reduces

Queue

Priority

Duration

Submitted

1442364086378_0007

WordCount.jar

SUCCEEDED

cloudera

100%

100%

root.cloudera

N/A

35s

09/16/15 10:46:07

1442364086378_0005

WordCount.jar

SUCCEEDED

cloudera

100%

100%

root.cloudera

N/A

28s

09/16/15 06:00:56

1442364086378_0004

WordCount.jar

SUCCEEDED

cloudera

100%

100%

root.cloudera

N/A

27s

09/16/15 05:22:09

1442364086378_0003

wordcount

FAILED

cloudera

100%

100%

root.cloudera

N/A

43s

09/15/15 18:13:34

Showing 1 to 4 of 4 entries

← Previous

1

Next →

quickstart.cloudera:8888/filebrowser

Hue - Job Browser - M...

Java - WordCount/src/...

cloudera@quickstart:~

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File Browser

Search for file name Actions Move to trash Upload New

Home / user / cloudera History Trash

| <input type="checkbox"/> | Name | Size | User | Group | Permissions | Date |
|--------------------------|--|-----------|----------|------------|-------------|-----------------------------|
| <input type="checkbox"/> |  j | | hdfs | supergroup | drwxr-xr-x | September 06, 2015 06:19 PM |
| <input type="checkbox"/> |  . | | cloudera | cloudera | drwxr-xr-x | September 16, 2015 10:46 AM |
| <input type="checkbox"/> |  .Trash | | cloudera | cloudera | drwxr-xr-x | September 05, 2015 05:21 PM |
| <input type="checkbox"/> |  MoreTransactions.csv | 272 bytes | cloudera | cloudera | -rw-r--r-- | September 05, 2015 11:04 AM |
| <input type="checkbox"/> |  Names.txt | 74 bytes | cloudera | cloudera | -rw-r--r-- | September 16, 2015 10:33 AM |
| <input type="checkbox"/> |  Transactions.csv | 981 bytes | cloudera | cloudera | -rw-r--r-- | September 05, 2015 11:04 AM |
| <input type="checkbox"/> |  output | | cloudera | cloudera | drwxr-xr-x | September 16, 2015 10:46 AM |

File Browser

Actions

Move to trash

UploadNew

Home / user / cloudera / output

HistoryTrash

| <input type="checkbox"/> | Name | Size | User | Group | Permissions | Date |
|--------------------------|------------------------------|----------|----------|----------|-------------|-----------------------------|
| <input type="checkbox"/> | j | | cloudera | cloudera | drwxr-xr-x | September 16, 2015 10:46 AM |
| <input type="checkbox"/> | . | | cloudera | cloudera | drwxr-xr-x | September 16, 2015 10:46 AM |
| <input type="checkbox"/> | _SUCCESS | 0 bytes | cloudera | cloudera | -rw-r--r-- | September 16, 2015 10:46 AM |
| <input type="checkbox"/> | part-r-00000 | 35 bytes | cloudera | cloudera | -rw-r--r-- | September 16, 2015 10:46 AM |

Home / user / cloudera / output / part-r-00000

Page 1 of 1

Aaron 4
Laura 1
Meredith 3
Sarah 3

Next Video

Coding "Word Count" in Pig