



Apache Hive

Part 1

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TRENDY TECH

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Apache Hive

Exercise 1

Basic Hive Queries



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To enter Hive shell:

hive

A terminal window titled 'cloudera@quickstart:~' with a menu bar (File, Edit, View, Search, Terminal, Help). The command '[cloudera@quickstart ~]\$ hive' has been executed. The output shows 'Logging initialized using configuration in file:/etc/hive/conf.dist/hive-log4j.properties' and a 'WARNING: Hive CLI is deprecated and migration to Beeline is recommended.' The prompt 'hive>' is shown. A dashed orange arrow points from the 'hive>' prompt to the text 'Hive prompt' in blue.

```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
[cloudera@quickstart ~]$ hive  
Logging initialized using configuration in file:/etc/hive/conf.dist/hive-log4j.properties  
WARNING: Hive CLI is deprecated and migration to Beeline is recommended.  
hive>
```

To display databases:

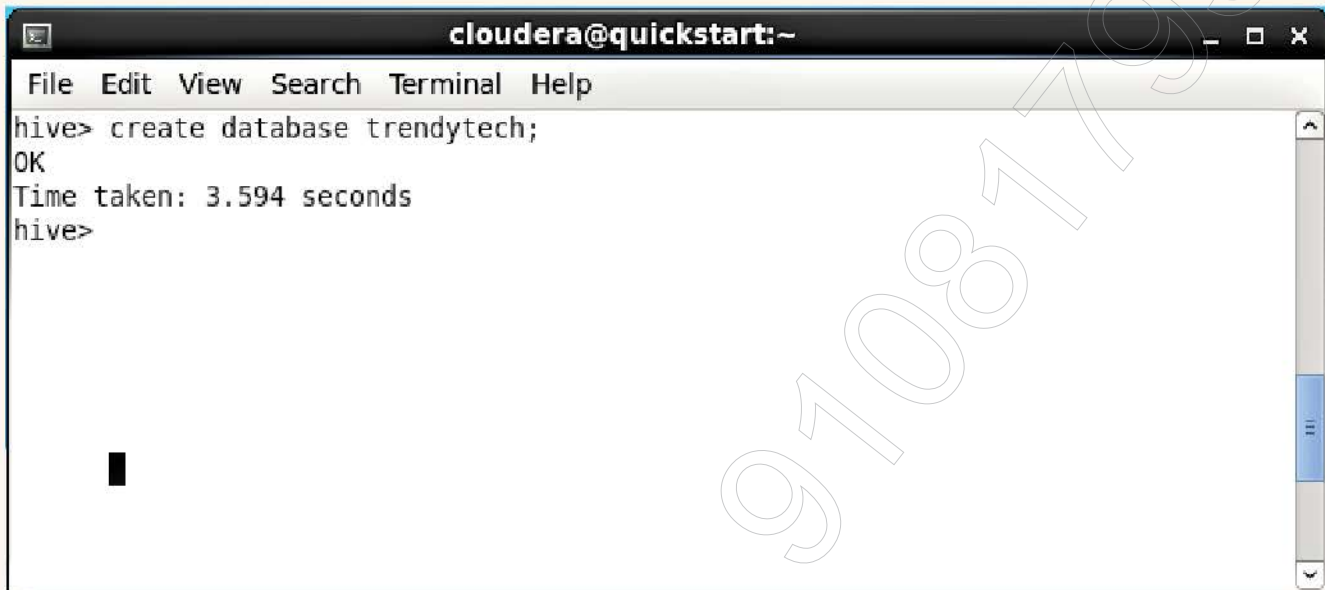
show databases;

A terminal window titled 'cloudera@quickstart:~' with a menu bar (File, Edit, View, Search, Terminal, Help). The command 'show databases;' has been executed in the Hive shell. The output shows 'OK' and 'default'. The word 'default' is highlighted with a red rectangle. Below it, the text 'Time taken: 5.557 seconds, Fetched: 1 row(s)' is displayed, followed by the 'hive>' prompt.

```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
hive>  
hive> show databases;  
OK  
default  
Time taken: 5.557 seconds, Fetched: 1 row(s)  
hive>
```

Create a new database:

create database trendytech;



A terminal window titled 'cloudera@quickstart:~' with a menu bar (File, Edit, View, Search, Terminal, Help). The command 'hive> create database trendytech;' has been executed, resulting in 'OK' and 'Time taken: 3.594 seconds'. The prompt 'hive>' is visible at the bottom.

```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
hive> create database trendytech;  
OK  
Time taken: 3.594 seconds  
hive>
```

To list databases:

show databases;

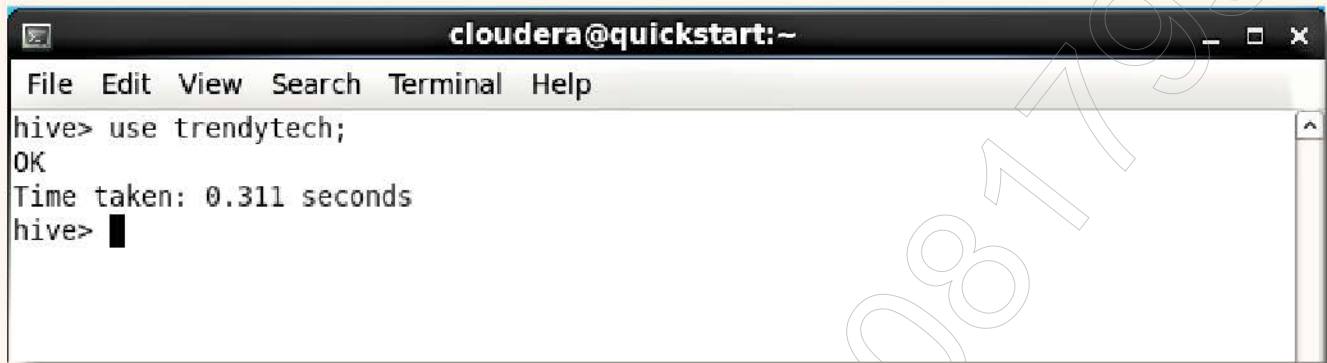


A terminal window titled 'cloudera@quickstart:~' with a menu bar (File, Edit, View, Search, Terminal, Help). The command 'hive> show databases;' has been executed, resulting in 'OK' and a list of databases: 'default' and 'trendytech'. The 'trendytech' entry is highlighted with a red box. The output also shows 'Time taken: 0.115 seconds, Fetched: 2 row(s)'. The prompt 'hive>' is visible at the bottom.

```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
hive> show databases;  
OK  
default  
trendytech  
Time taken: 0.115 seconds, Fetched: 2 row(s)  
hive>
```


Use a database:

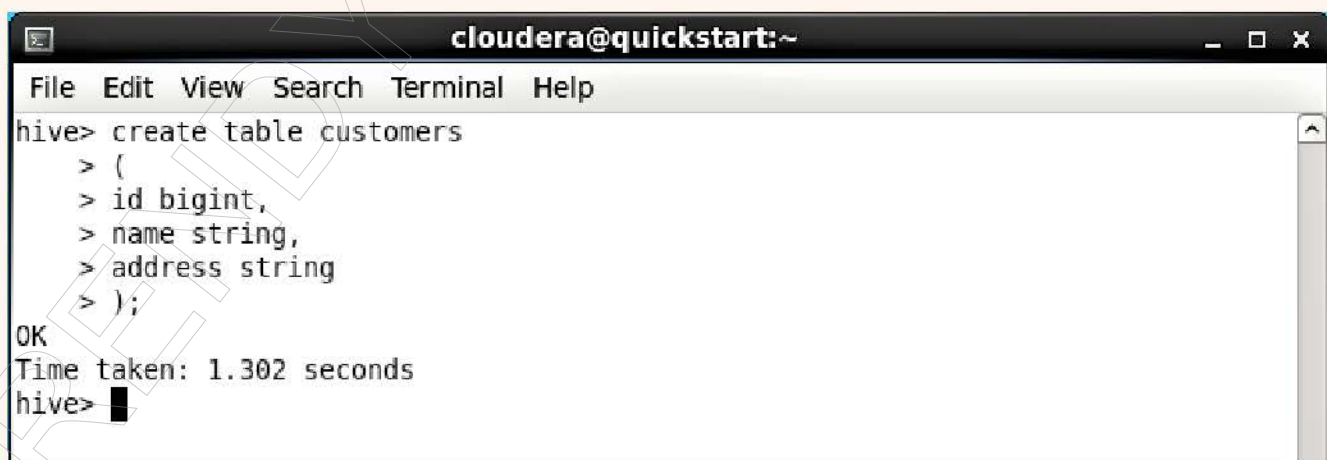
```
use trendytech;
```



```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
hive> use trendytech;  
OK  
Time taken: 0.311 seconds  
hive> █
```

Create a table:

```
create table customers (  
id bigint,  
name string,  
address string  
);
```



```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
hive> create table customers  
> (  
> id bigint,  
> name string,  
> address string  
> );  
OK  
Time taken: 1.302 seconds  
hive> █
```

List tables in a database:

`show tables;`

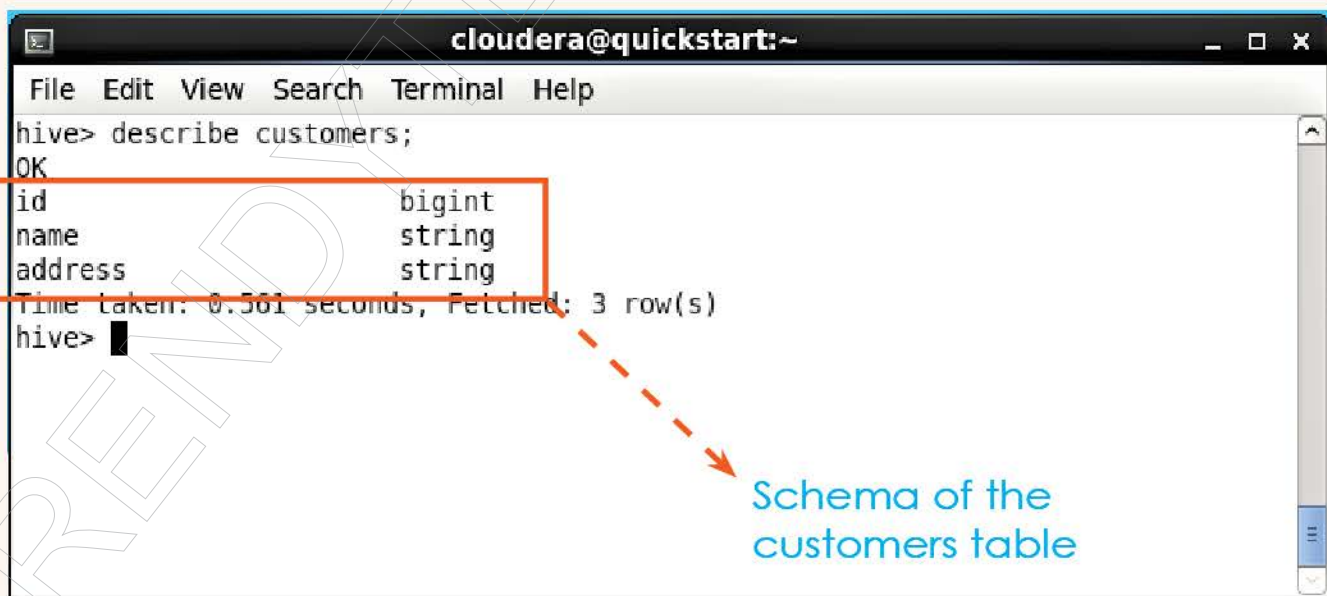


A terminal window titled 'cloudera@quickstart:~' with a menu bar (File, Edit, View, Search, Terminal, Help). The command 'hive> show tables;' has been entered. The output is 'OK' followed by 'customers' (which is highlighted with a red box), and 'Time taken: 0.324 seconds, Fetched: 1 row(s)'. The prompt 'hive>' is visible at the bottom.

```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
hive> show tables;  
OK  
customers  
Time taken: 0.324 seconds, Fetched: 1 row(s)  
hive>
```

Display schema of a hive table:

`describe customers;`



A terminal window titled 'cloudera@quickstart:~' with a menu bar (File, Edit, View, Search, Terminal, Help). The command 'hive> describe customers;' has been entered. The output is 'OK' followed by a table of schema information (which is highlighted with a red box): 'id' (bigint), 'name' (string), and 'address' (string). Below the table is 'Time taken: 0.501 seconds, Fetched: 3 row(s)'. The prompt 'hive>' is visible at the bottom. A red dashed arrow points from the table to the text 'Schema of the customers table'.

```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
hive> describe customers;  
OK  
id          bigint  
name        string  
address     string  
Time taken: 0.501 seconds, Fetched: 3 row(s)  
hive>
```

Schema of the customers table

Describe table with extra information:

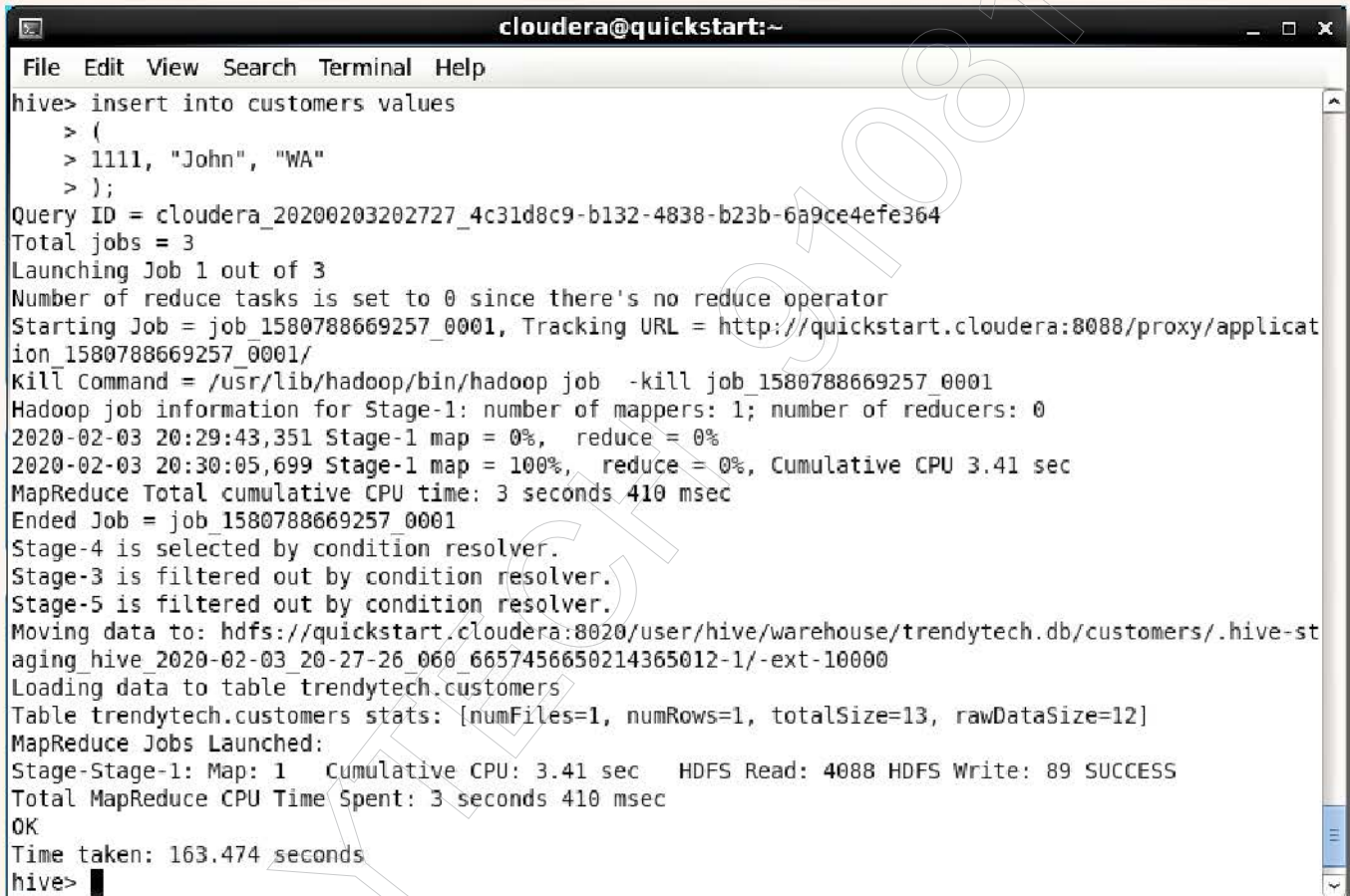
describe formatted customers;

```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
hive> describe formatted customers;  
OK  
# col_name          data_type          comment  
id                  bigint  
name                string  
address             string  
  
# Detailed Table Information  
Database:           trendytech  
Owner:               cloudera  
CreateTime:         Mon Feb 03 20:15:37 PST 2020  
LastAccessTime:     UNKNOWN  
Protect Mode:       None  
Retention:          0  
Location:           hdfs://quickstart.cloudera:8020/user/hive/warehouse/trendytech.db/customers  
Table Type:         MANAGED_TABLE  
Table Parameters:  
    transient_lastDdlTime 1580789737  
  
# Storage Information  
SerDe Library:      org.apache.hadoop.hive.serde2.lazy.LazySimpleSerDe  
InputFormat:        org.apache.hadoop.mapred.TextInputFormat  
OutputFormat:       org.apache.hadoop.hive.ql.io.HiveIgnoreKeyTextOutputFormat  
Compressed:         No  
Num Buckets:        -1  
Bucket Columns:     []  
Sort Columns:       []  
Storage Desc Params:  
    serialization.format 1  
Time taken: 0.187 seconds, Fetched: 28 row(s)  
hive>
```

More detailed informations

Insert record into Hive table:

```
insert into customers values  
(  
1111, "John", "WA"  
);
```

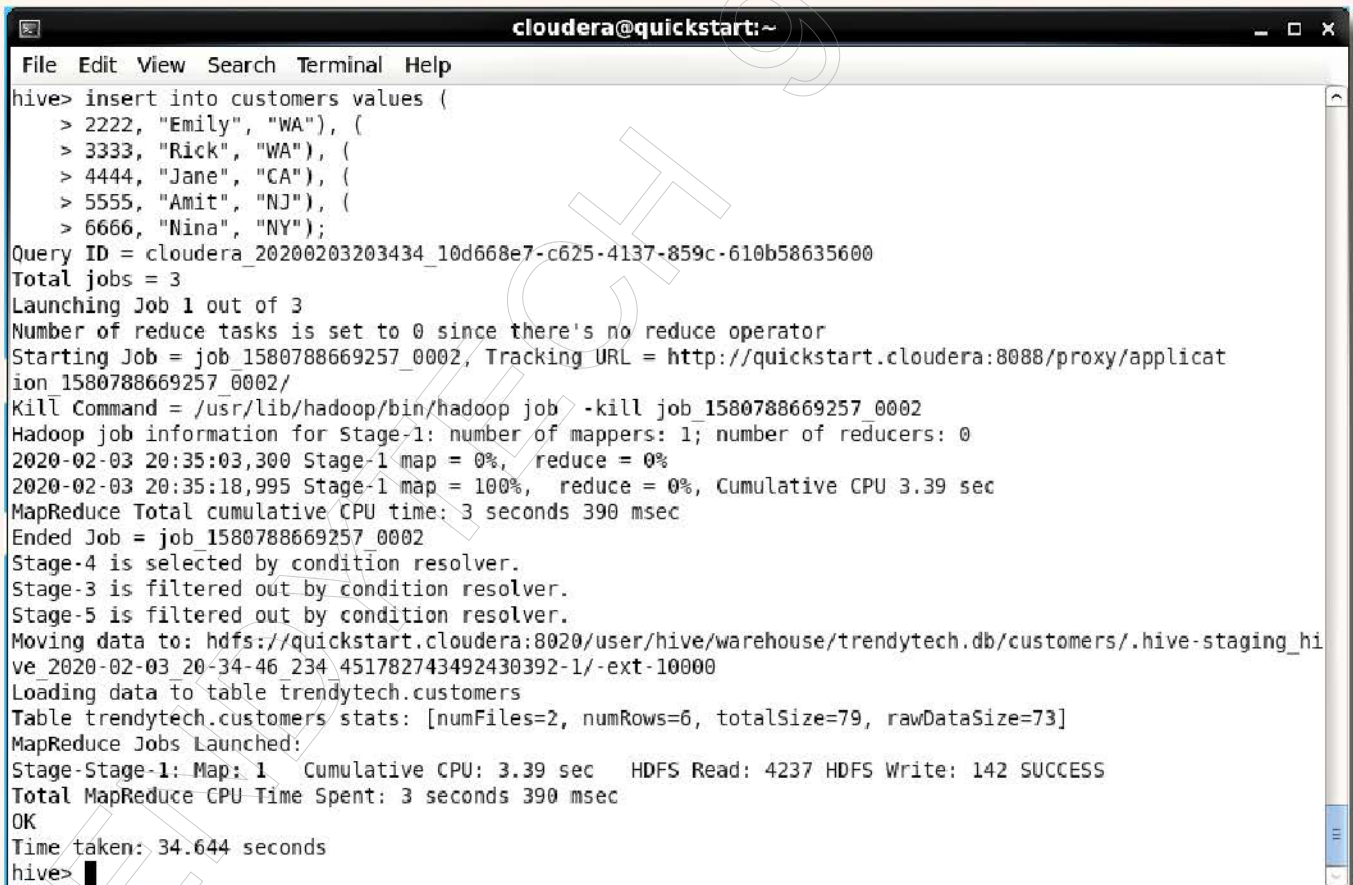


```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
hive> insert into customers values  
  > (  
  > 1111, "John", "WA"  
  > );  
Query ID = cloudera_20200203202727_4c31d8c9-b132-4838-b23b-6a9ce4efe364  
Total jobs = 3  
Launching Job 1 out of 3  
Number of reduce tasks is set to 0 since there's no reduce operator  
Starting Job = job_1580788669257_0001, Tracking URL = http://quickstart.cloudera:8088/proxy/application_1580788669257_0001/  
Kill Command = /usr/lib/hadoop/bin/hadoop job -kill job_1580788669257_0001  
Hadoop job information for Stage-1: number of mappers: 1; number of reducers: 0  
2020-02-03 20:29:43,351 Stage-1 map = 0%, reduce = 0%  
2020-02-03 20:30:05,699 Stage-1 map = 100%, reduce = 0%, Cumulative CPU 3.41 sec  
MapReduce Total cumulative CPU time: 3 seconds 410 msec  
Ended Job = job_1580788669257_0001  
Stage-4 is selected by condition resolver.  
Stage-3 is filtered out by condition resolver.  
Stage-5 is filtered out by condition resolver.  
Moving data to: hdfs://quickstart.cloudera:8020/user/hive/warehouse/trendytech.db/customers/.hive-staging_hive_2020-02-03_20-27-26_060_6657456650214365012-1/-ext-10000  
Loading data to table trendytech.customers  
Table trendytech.customers stats: [numFiles=1, numRows=1, totalSize=13, rawDataSize=12]  
MapReduce Jobs Launched:  
Stage-Stage-1: Map: 1 Cumulative CPU: 3.41 sec HDFS Read: 4088 HDFS Write: 89 SUCCESS  
Total MapReduce CPU Time Spent: 3 seconds 410 msec  
OK  
Time taken: 163.474 seconds  
hive>
```

Note: Insert will trigger a MapReduce job in background.

Insert multiple record into Hive table:

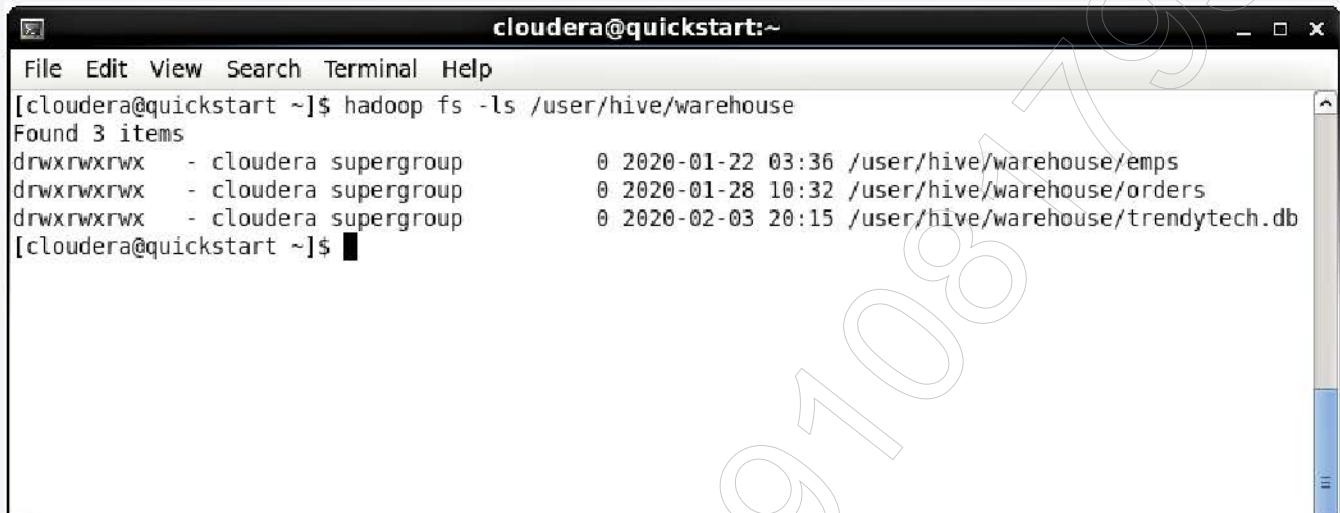
```
insert into customers values  
(  
2222, "Emily", "WA"), (  
3333, "Rick", "WA"), (  
4444, "Jane", "CA"), (  
5555, "Amit", "NJ"), (  
6666, "Nina", "NY"  
);
```



```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
hive> insert into customers values (  
  > 2222, "Emily", "WA"), (  
  > 3333, "Rick", "WA"), (  
  > 4444, "Jane", "CA"), (  
  > 5555, "Amit", "NJ"), (  
  > 6666, "Nina", "NY");  
Query ID = cloudera_20200203203434_10d668e7-c625-4137-859c-610b58635600  
Total jobs = 3  
Launching Job 1 out of 3  
Number of reduce tasks is set to 0 since there's no reduce operator  
Starting Job = job_1580788669257_0002, Tracking URL = http://quickstart.cloudera:8088/proxy/applicat  
ion_1580788669257_0002/  
Kill Command = /usr/lib/hadoop/bin/hadoop job -kill job_1580788669257_0002  
Hadoop job information for Stage-1: number of mappers: 1; number of reducers: 0  
2020-02-03 20:35:03,300 Stage-1 map = 0%, reduce = 0%  
2020-02-03 20:35:18,995 Stage-1 map = 100%, reduce = 0%, Cumulative CPU 3.39 sec  
MapReduce Total cumulative CPU time: 3 seconds 390 msec  
Ended Job = job_1580788669257_0002  
Stage-4 is selected by condition resolver.  
Stage-3 is filtered out by condition resolver.  
Stage-5 is filtered out by condition resolver.  
Moving data to: hdfs://quickstart.cloudera:8020/user/hive/warehouse/trendytech.db/customers/.hive-staging_hi  
ve_2020-02-03_20-34-46_234_451782743492430392-1/-ext-10000  
Loading data to table trendytech.customers  
Table trendytech.customers stats: [numFiles=2, numRows=6, totalSize=79, rawDataSize=73]  
MapReduce Jobs Launched:  
Stage-Stage-1: Map: 1 Cumulative CPU: 3.39 sec HDFS Read: 4237 HDFS Write: 142 SUCCESS  
Total MapReduce CPU Time Spent: 3 seconds 390 msec  
OK  
Time taken: 34.644 seconds  
hive>
```

To check the hive warehouse directory in terminal:

```
hadoop fs -ls /user/hive/warehouse
```



```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
[cloudera@quickstart ~]$ hadoop fs -ls /user/hive/warehouse  
Found 3 items  
drwxrwxrwx - cloudera supergroup 0 2020-01-22 03:36 /user/hive/warehouse/emp  
drwxrwxrwx - cloudera supergroup 0 2020-01-28 10:32 /user/hive/warehouse/orders  
drwxrwxrwx - cloudera supergroup 0 2020-02-03 20:15 /user/hive/warehouse/trendytech.db  
[cloudera@quickstart ~]$
```

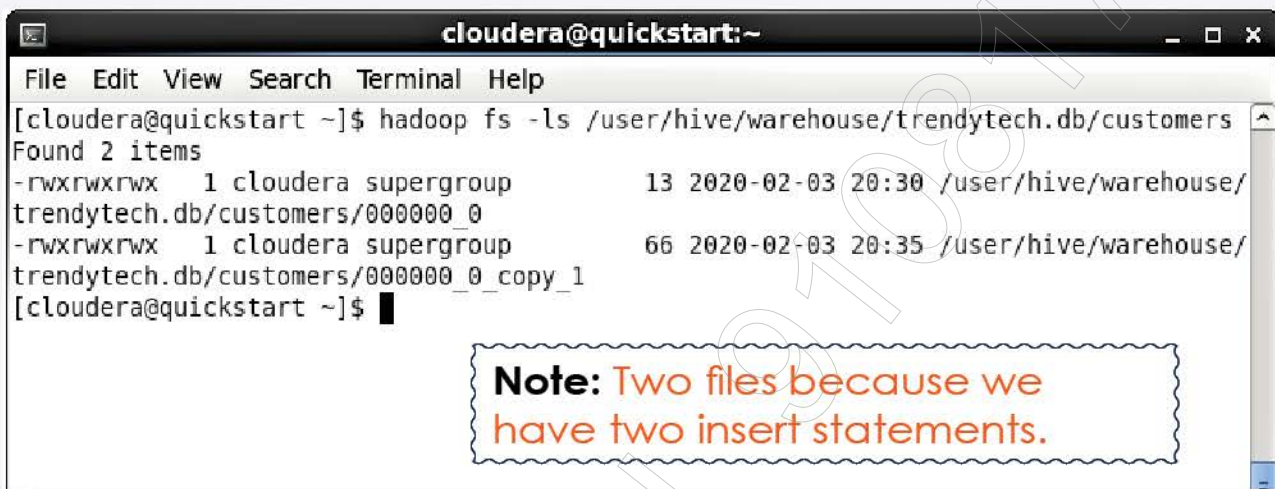
```
hadoop fs -ls /user/hive/warehouse/trendytech.db
```



```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
[cloudera@quickstart ~]$ hadoop fs -ls /user/hive/warehouse/trendytech.db  
Found 1 items  
drwxrwxrwx - cloudera supergroup 0 2020-02-03 20:35 /user/hive/warehouse/  
trendytech.db/customers  
[cloudera@quickstart ~]$
```


Check the folder structure of customers table in trendytech database from terminal:

```
hadoop fs -ls /user/hive/warehouse/  
trendytech.db/customers
```

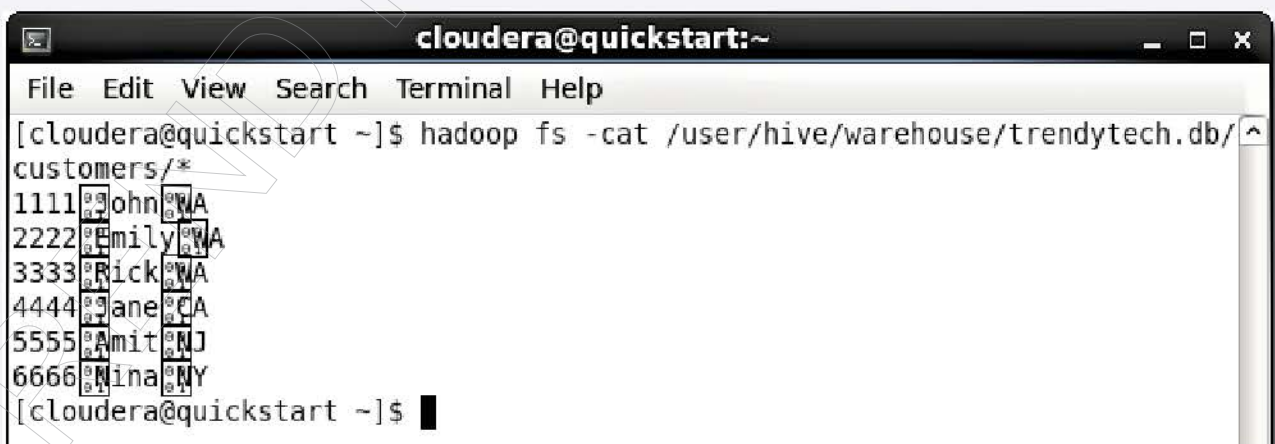


```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
[cloudera@quickstart ~]$ hadoop fs -ls /user/hive/warehouse/trendytech.db/customers  
Found 2 items  
-rwxrwxrwx 1 cloudera supergroup      13 2020-02-03 20:30 /user/hive/warehouse/  
trendytech.db/customers/000000_0  
-rwxrwxrwx 1 cloudera supergroup      66 2020-02-03 20:35 /user/hive/warehouse/  
trendytech.db/customers/000000_0_copy_1  
[cloudera@quickstart ~]$
```

Note: Two files because we have two insert statements.

Read the contents of customers table from terminal:

```
hadoop fs -cat /user/hive/warehouse/  
trendytech.db/customers/*
```



```
cloudera@quickstart:~  
File Edit View Search Terminal Help  
[cloudera@quickstart ~]$ hadoop fs -cat /user/hive/warehouse/trendytech.db/  
customers/*  
1111 John WA  
2222 Emily WA  
3333 Rick WA  
4444 Jane CA  
5555 Amit NJ  
6666 Nina NY  
[cloudera@quickstart ~]$
```



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