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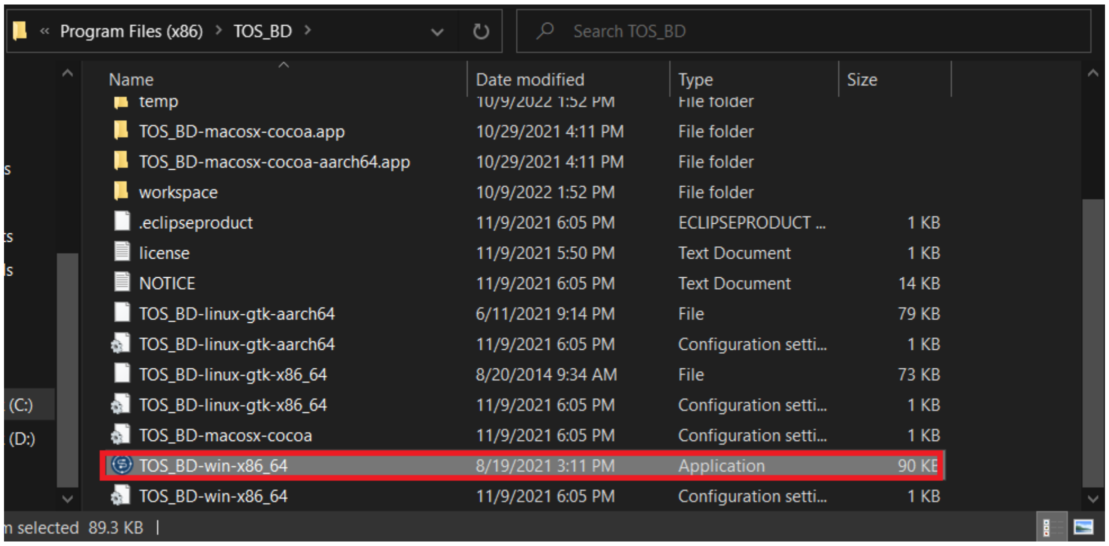
CS172

Module 2 Project (Part 2)

I. Opening Talend for Big Data

Once again, we will be using Talend for this part of the project. To open it, you simply navigate to the directory folder containing your Talend for Big Data.



« Program Files (x86) > TOS_BD >

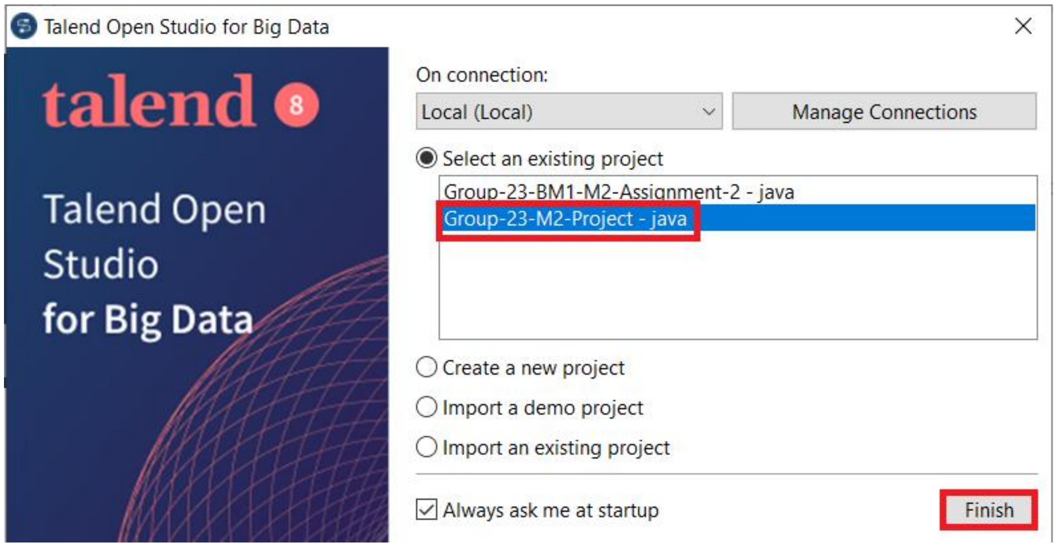
Search TOS_BD

Name	Date modified	Type	Size
temp	10/9/2022 1:52 PM	File folder	
TOS_BD-macosx-cocoa.app	10/29/2021 4:11 PM	File folder	
TOS_BD-macosx-cocoa-aarch64.app	10/29/2021 4:11 PM	File folder	
workspace	10/9/2022 1:52 PM	File folder	
.eclipseproduct	11/9/2021 6:05 PM	ECLIPSEPRODUCT ...	1 KB
license	11/9/2021 5:50 PM	Text Document	1 KB
NOTICE	11/9/2021 6:05 PM	Text Document	14 KB
TOS_BD-linux-gtk-aarch64	6/11/2021 9:14 PM	File	79 KB
TOS_BD-linux-gtk-aarch64	11/9/2021 6:05 PM	Configuration setti...	1 KB
TOS_BD-linux-gtk-x86_64	8/20/2014 9:34 AM	File	73 KB
TOS_BD-linux-gtk-x86_64	11/9/2021 6:05 PM	Configuration setti...	1 KB
TOS_BD-macosx-cocoa	11/9/2021 6:05 PM	Configuration setti...	1 KB
TOS_BD-win-x86_64	8/19/2021 3:11 PM	Application	90 KB
TOS_BD-win-x86_64	11/9/2021 6:05 PM	Configuration setti...	1 KB

n selected 89.3 KB

Note: If you continue to encounter issues such as "Incompatible JVM," you may need to update your system's environment variables or follow the previous steps from Module 2 Project Part 1.

Once your Talend for Big Data is open, you can proceed to selecting or creating a new project. Since we already have a project (Group-23-M2-Project) made for our "Module 2 Project Part 1" we can use that. We selected that project and clicked on Finish to open Talend.



Talend Open Studio for Big Data

On connection: Local (Local)

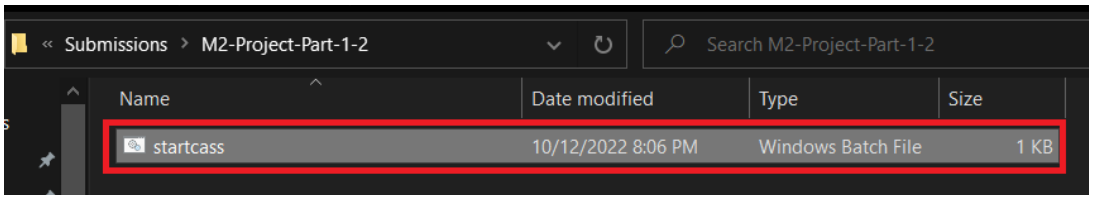
(●) Select an existing project
- Group-23-BM1-M2-Assignment-2 - java
- Group-23-M2-Project - java

( ) Create a new project
( ) Import a demo project
( ) Import an existing project

☑ Always ask me at startup

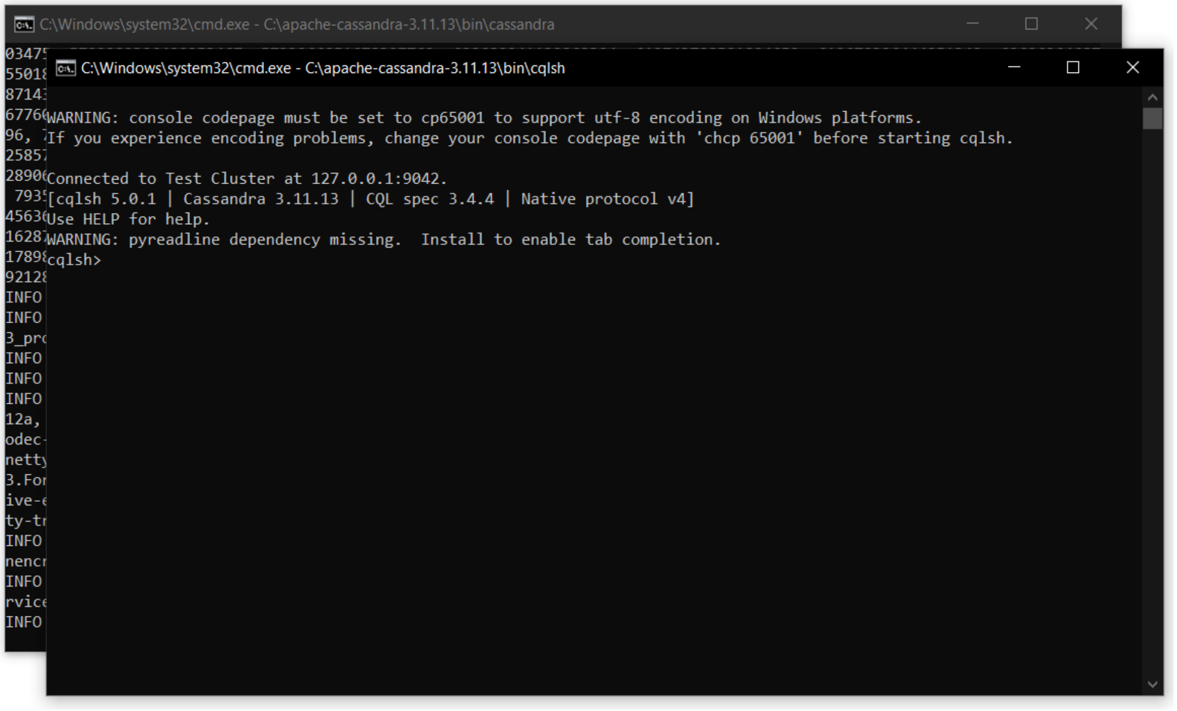
II. Initializing Cassandra

In our Module 2 Project Part 1, we created a file named **startcass.bat** that automated the process to opening Cassandra. Since we will be using Cassandra again, we need to execute the file.



Name	Date modified	Type	Size
startcass	10/12/2022 8:06 PM	Windows Batch File	1 KB

Following execution, two terminals were running in our background: one for the Cassandra database and one for the CQL shell.



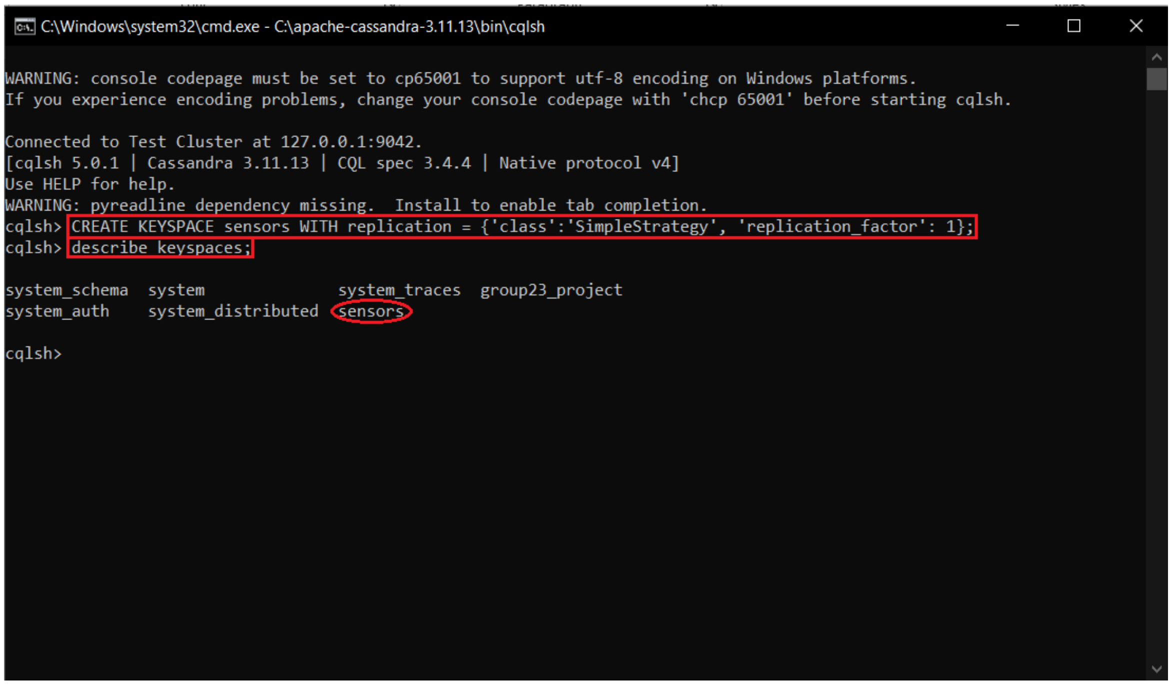
C:\Windows\system32\cmd.exe - C:\apache-cassandra-3.11.13\bin\cassandra
C:\Windows\system32\cmd.exe - C:\apache-cassandra-3.11.13\bin\cqlsh

```
WARNING: console codepage must be set to cp65001 to support utf-8 encoding on Windows platforms.
If you experience encoding problems, change your console codepage with 'chcp 65001' before starting cqlsh.

Connected to Test Cluster at 127.0.0.1:9042.
[cqlsh 5.0.1 | Cassandra 3.11.13 | CQL spec 3.4.4 | Native protocol v4]
Use HELP for help.
WARNING: pyreadline dependency missing.  Install to enable tab completion.
cqlsh>
```

In the terminal where the CQL shell was initialized, we ran the following command:

```
CREATE KEYSPACE sensors WITH replication = {'class':'SimpleStrategy', 'replication_factor': 1};
```

This command is used to create a keyspace named "sensors" where we will place the table that will contain data from the dim_sensors.xlxs that was given. To verify if the keyspace was created, we use the command "`describe keyspaces;`".

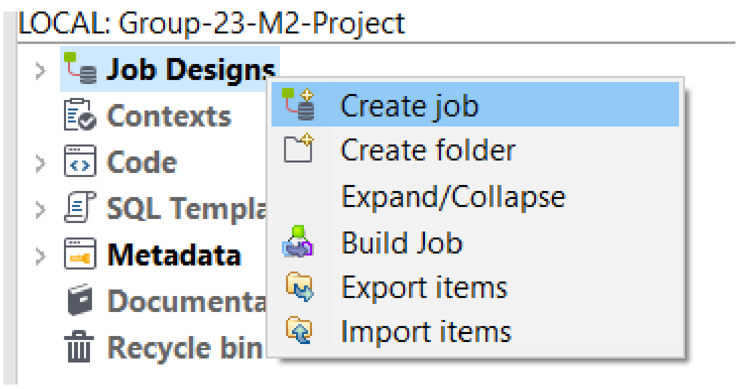

C:\Windows\system32\cmd.exe - C:\apache-cassandra-3.11.13\bin\cqlsh

```
WARNING: console codepage must be set to cp65001 to support utf-8 encoding on Windows platforms.
If you experience encoding problems, change your console codepage with 'chcp 65001' before starting cqlsh.

Connected to Test Cluster at 127.0.0.1:9042.
[cqlsh 5.0.1 | Cassandra 3.11.13 | CQL spec 3.4.4 | Native protocol v4]
Use HELP for help.
WARNING: pyreadline dependency missing.  Install to enable tab completion.
cqlsh> CREATE KEYSPACE sensors WITH replication = {'class':'SimpleStrategy', 'replication_factor': 1};
cqlsh> describe keyspaces;

system_schema  system              system_traces  group23_project
system_auth    system_distributed  sensors

cqlsh>
```

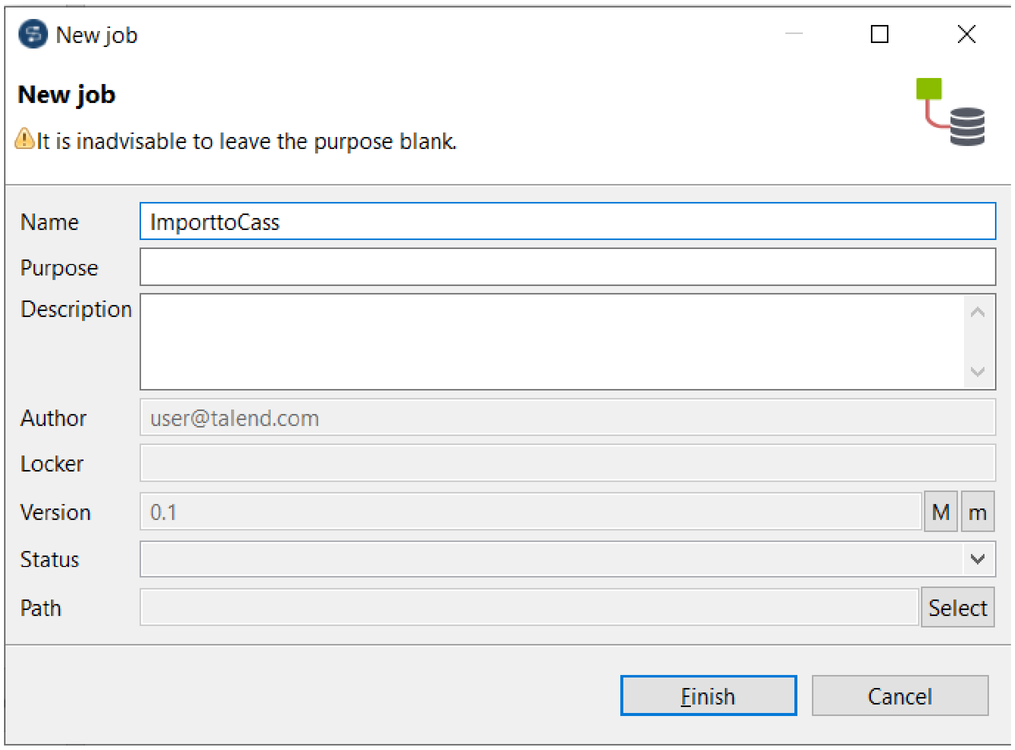
Cassandra is now ready for the next steps.

III. Creating a Job and Establishing a NoSql Connection

Go back to your open Talend Studio for Big Data. Under the Repository tab, right click *Job Designs* and click on *Create Job*.



In our example, we named our job *ImporttoCass* but you may name it however you wish.



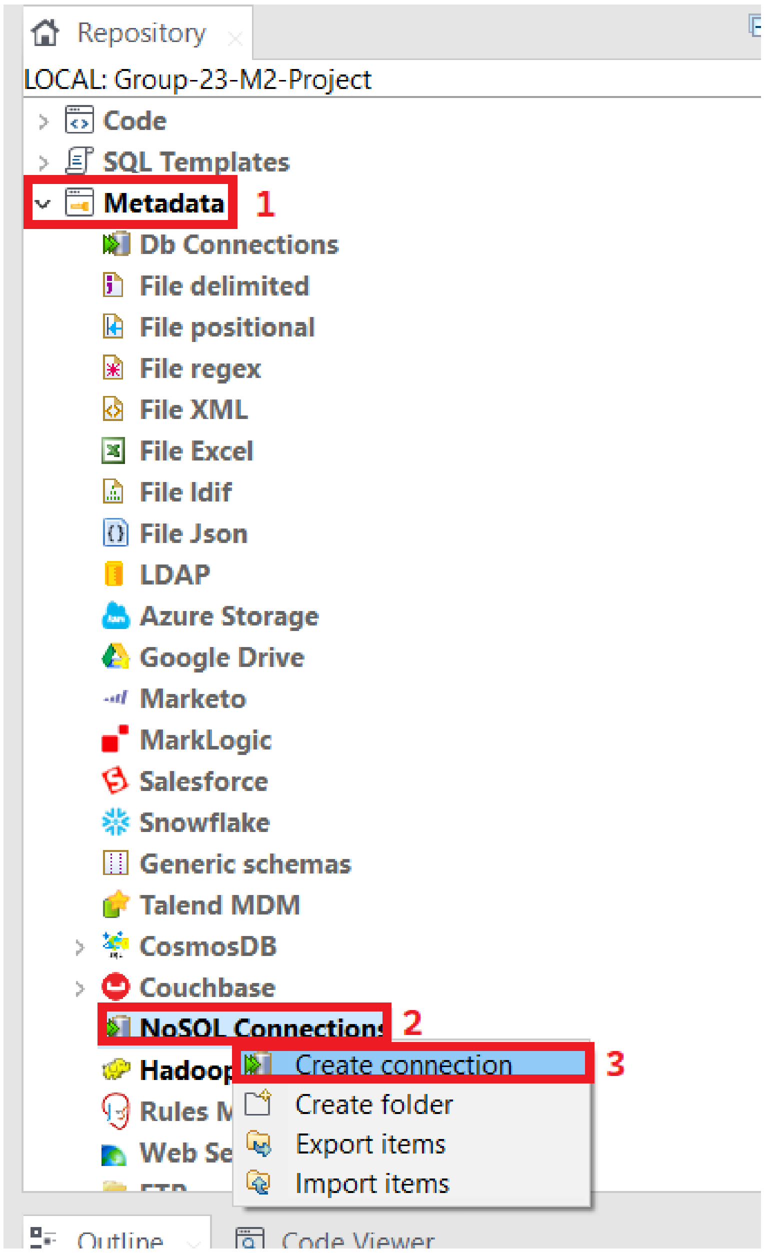
New job

New job

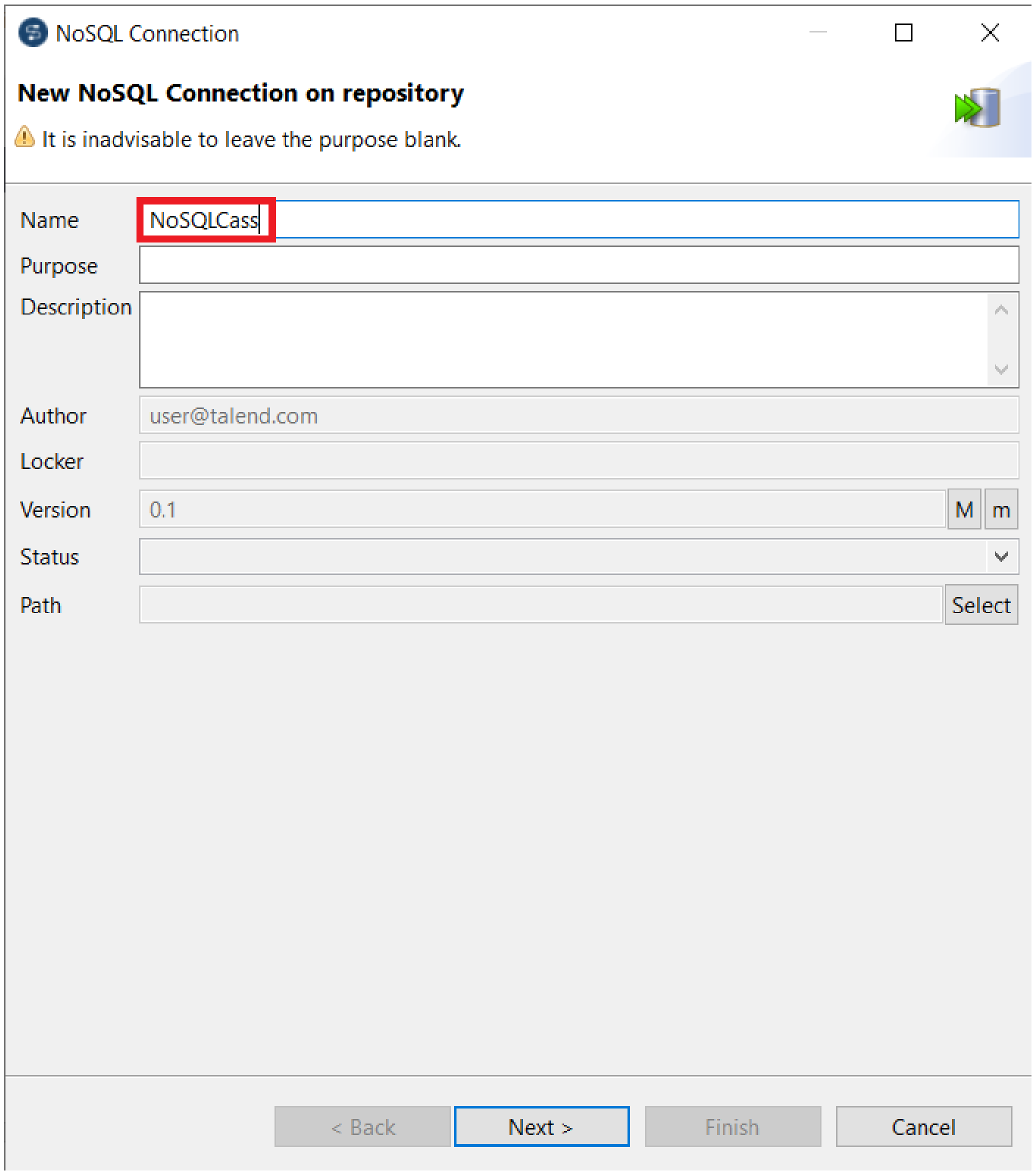
It is inadvisable to leave the purpose blank.

Name	ImporttoCass
Purpose	
Description	
Author	user@talend.com
Locker	
Version	0.1
Status	
Path	

Previously we made a NoSql Connection in this Talend project; however, for the sake of documentation, we will reinstate it again. To establish the connection between the Cassandra database and Talend, select *Metadata* > Right click *NoSQL Connections* > *Create connection*.



The new NoSQL Connection window should appear, prompting the user to enter a name, purpose, and description for the new NoSQL connection. After filling out all of the required fields, click "Next >." For this project, we named the connection *NoSQLCass* and left the remaining text field and area blank.

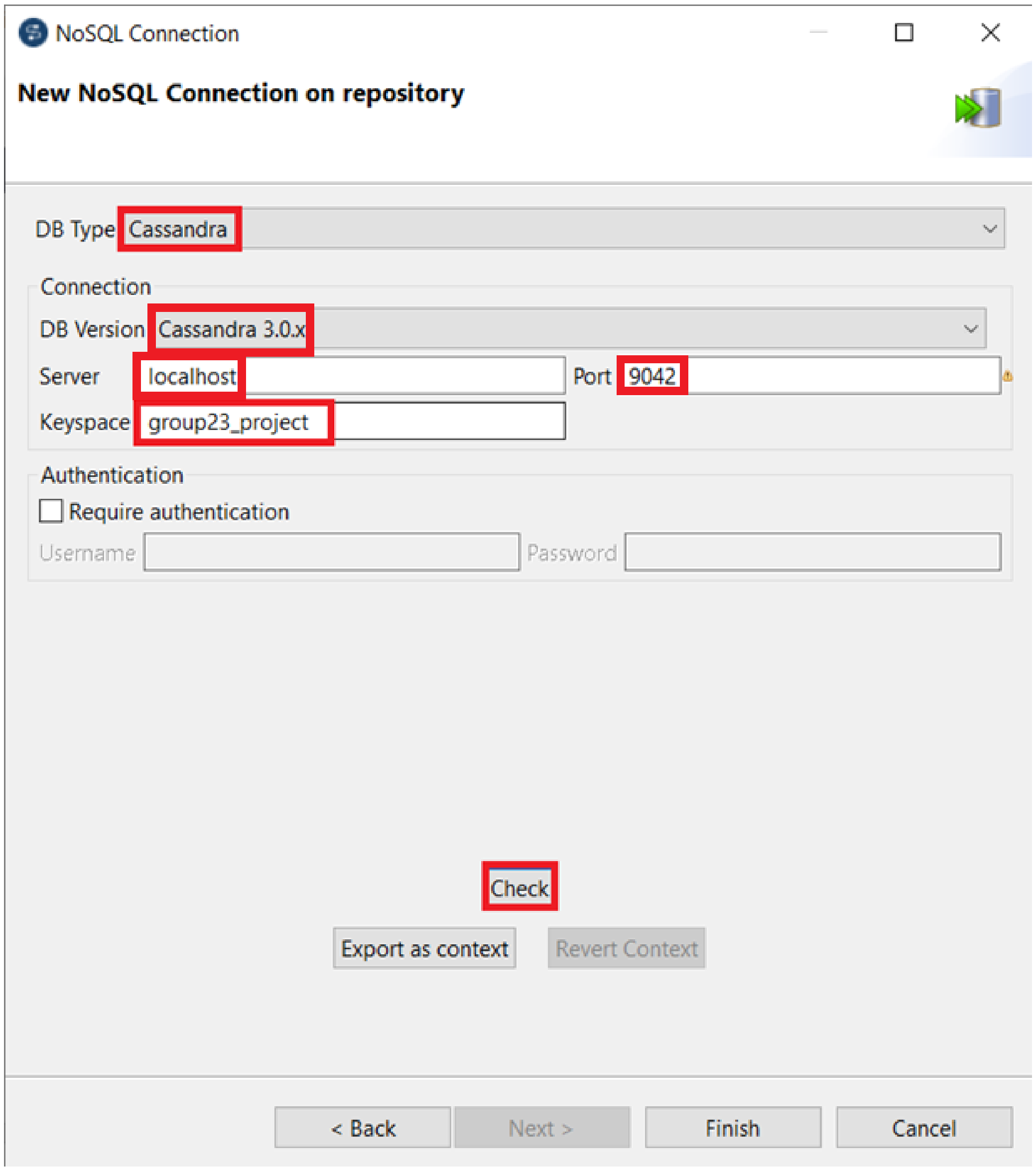

NoSQL Connection

New NoSQL Connection on repository

It is inadvisable to leave the purpose blank.

Name	NoSQLCass
Purpose	
Description	
Author	user@talend.com
Locker	
Version	0.1
Status	
Path	

The next step is to select the database (DB Type) that you wish to establish a Talend connection with. Select *Cassandra* as the **DB Type** and *Cassandra 3.0.x* as the **DB Version**. Specify *localhost* or *127.0.0.1* as the **Server** with *9042* as its **Port**. For the **Keyspace**, you may name it however you like. Once everything is finished, click on "Check" to test the connection.



NoSQL Connection

New NoSQL Connection on repository

DB Type: Cassandra

Connection

DB Version: Cassandra 3.0.x

Server: localhost

Port: 9042

Keyspace: group23_project

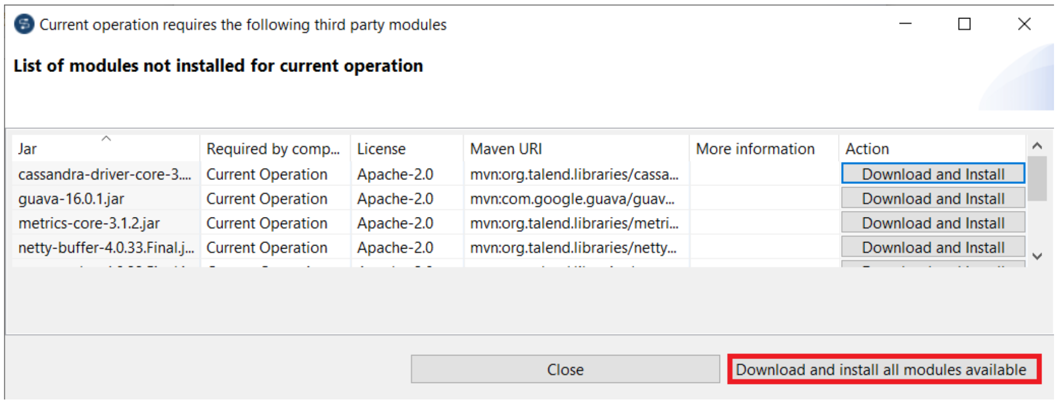
Authentication

☐ Require authentication

Username

Password

You will then encounter a message that states that some list of modules should be downloaded for you to continue. Just click on "Download and install all modules available".

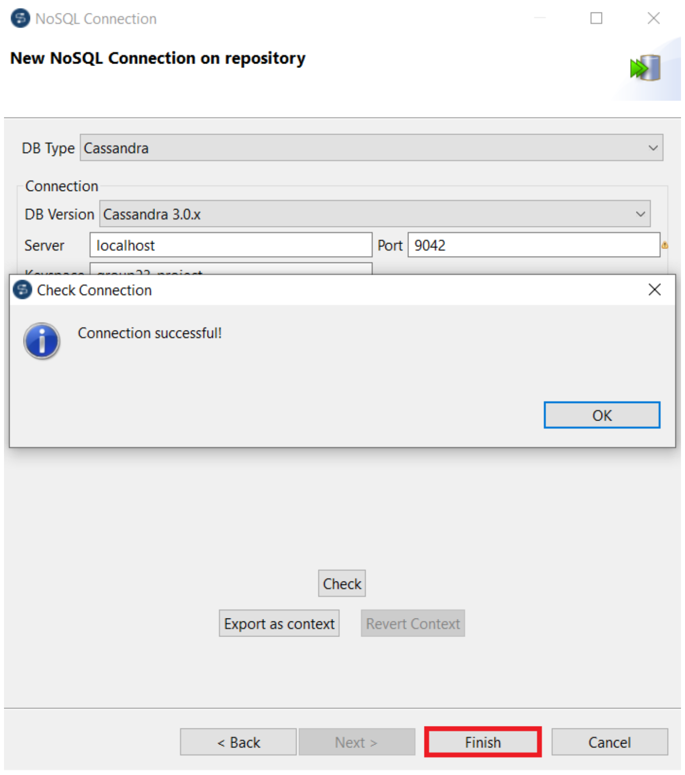


Current operation requires the following third party modules

List of modules not installed for current operation

Jar	Required by comp...	License	Maven URI	More information	Action
cassandra-driver-core-3....	Current Operation	Apache-2.0	mvn:org.talend.libraries/cassa...		Download and Install
guava-16.0.1.jar	Current Operation	Apache-2.0	mvn:com.google.guava/guav...		Download and Install
metrics-core-3.1.2.jar	Current Operation	Apache-2.0	mvn:org.talend.libraries/metri...		Download and Install
netty-buffer-4.0.33.Final.j...	Current Operation	Apache-2.0	mvn:org.talend.libraries/netty...		Download and Install

After downloading the modules needed, your connection should be successful. Click "Finish" once everything is all set.



NoSQL Connection

New NoSQL Connection on repository

DB Type: Cassandra

Connection

DB Version: Cassandra 3.0.x

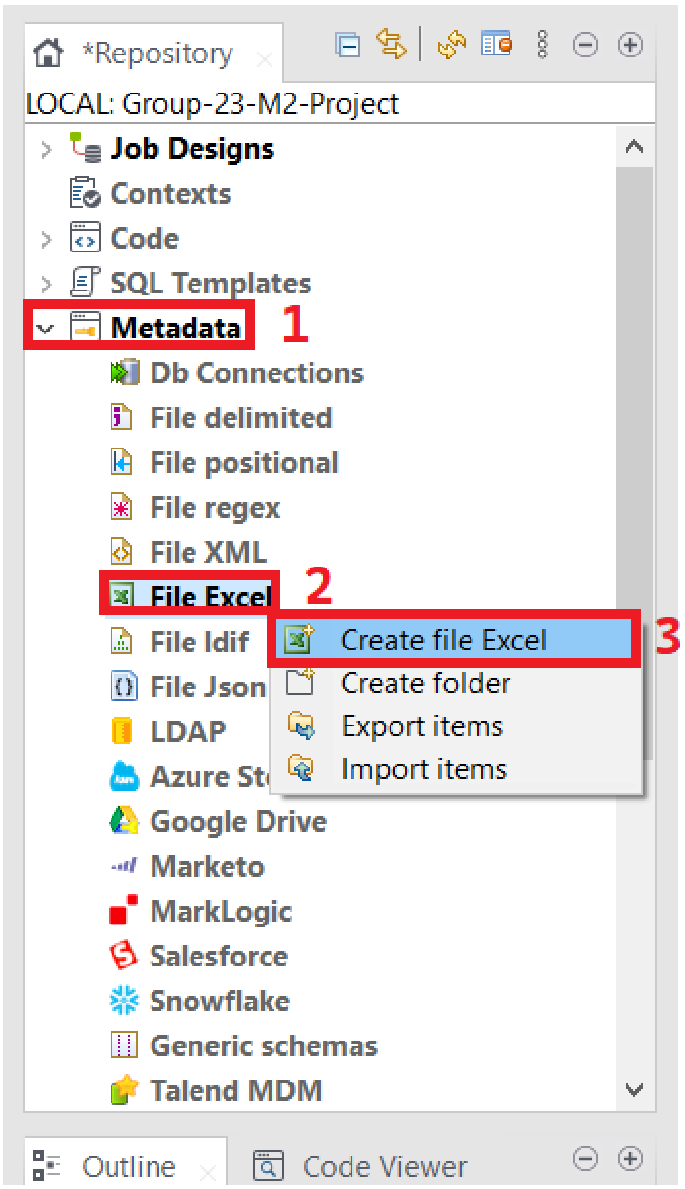
Server: localhost Port: 9042

Check Connection

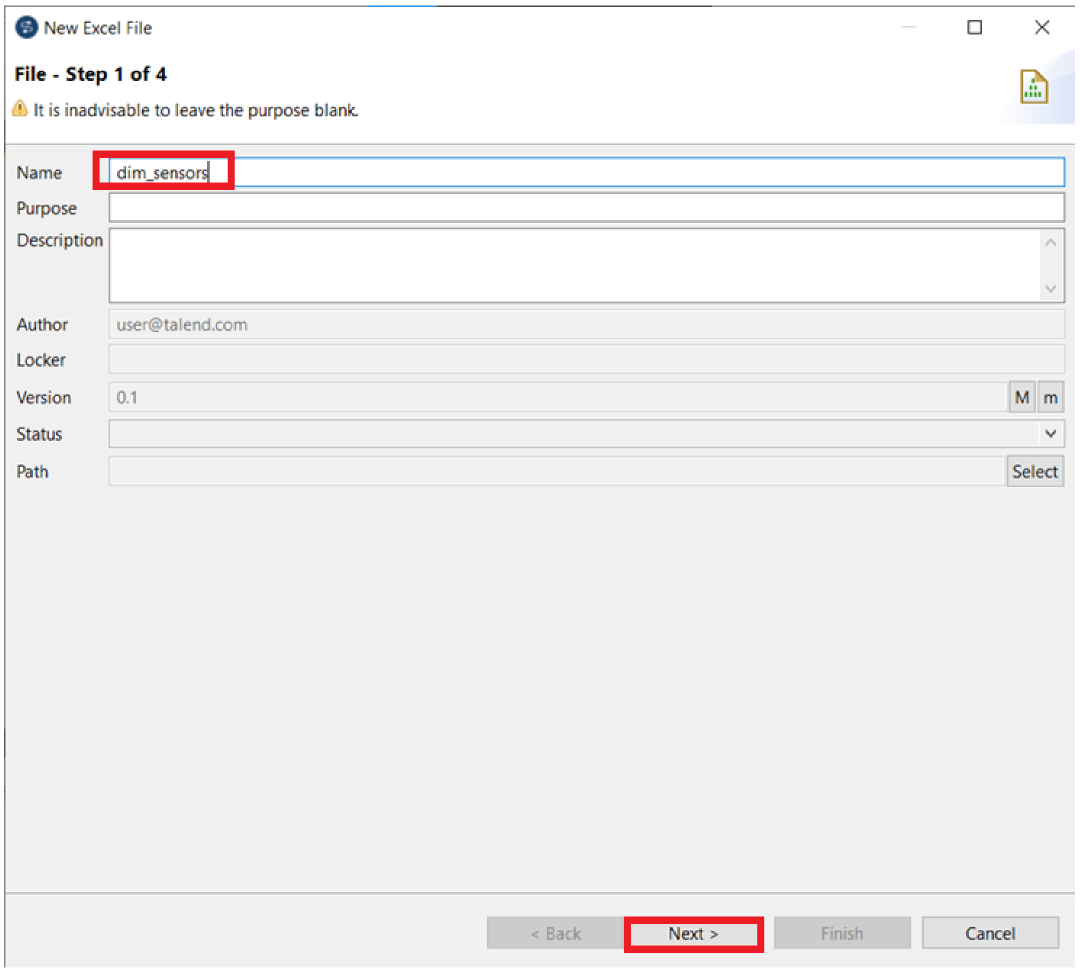
Connection successful!

IV. Importing Data to Cassandra using Talend

To import the provided dataset into Cassandra using Talend, select the “>” next to **Metadata**, then right click on **File Excel** > **Create file Excel**.



The *New Excel File* window should appear. Here we specified “dim_sensors” as the **Name**, however, you may choose a different one. Then, click *Next >*.

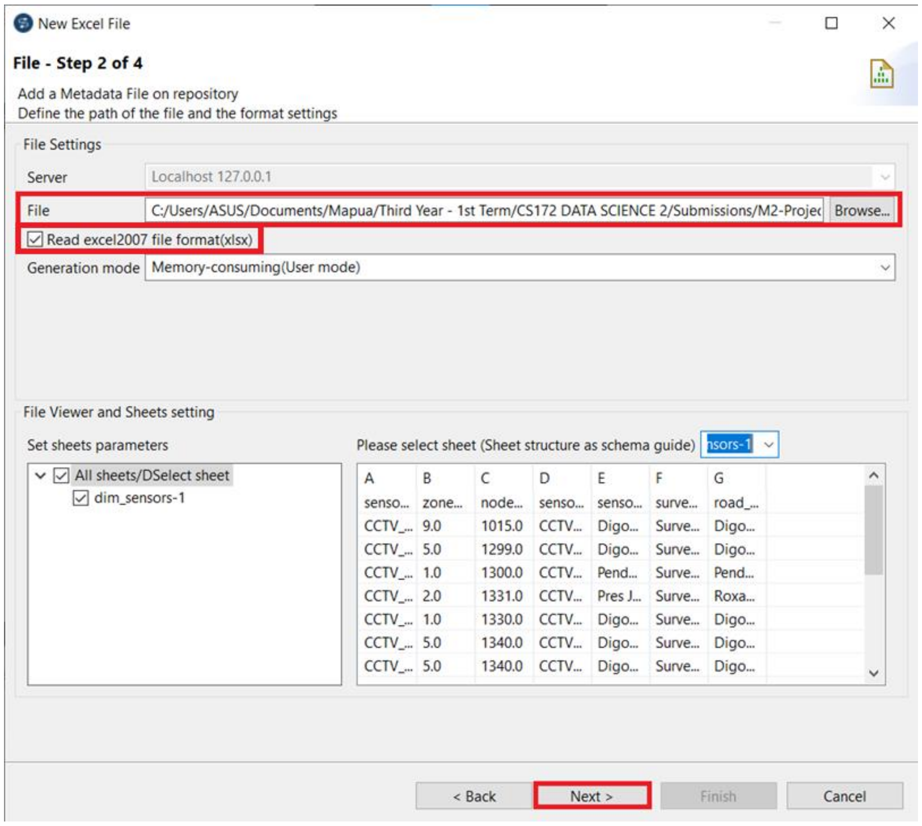

New Excel File

File - Step 1 of 4

It is inadvisable to leave the purpose blank.

Name	dim_sensors
Purpose	
Description	
Author	user@talend.com
Locker	
Version	0.1
Status	
Path	

Then, select the “Browse…” button on the right of the *File* text field, and find the *dim_sensors* file. The file’s directory should appear like the one in the screenshot below. Select the *Read excel2007 file format(xlsx)* checkbox to ensure that all Excel versions of the dataset will be read. The File Viewer should automatically detect the columns and its contents, as shown in the bottom half of the window. No changes are required so click *Next >* to proceed.


New Excel File

File - Step 2 of 4

Add a Metadata File on repository
Define the path of the file and the format settings

File Settings

Server: Localhost 127.0.0.1

File: C:/Users/ASUS/Documents/Mapua/Third Year - 1st Term/CS172 DATA SCIENCE 2/Submissions/M2-Projec

☑ Read excel2007 file format(xlsx)

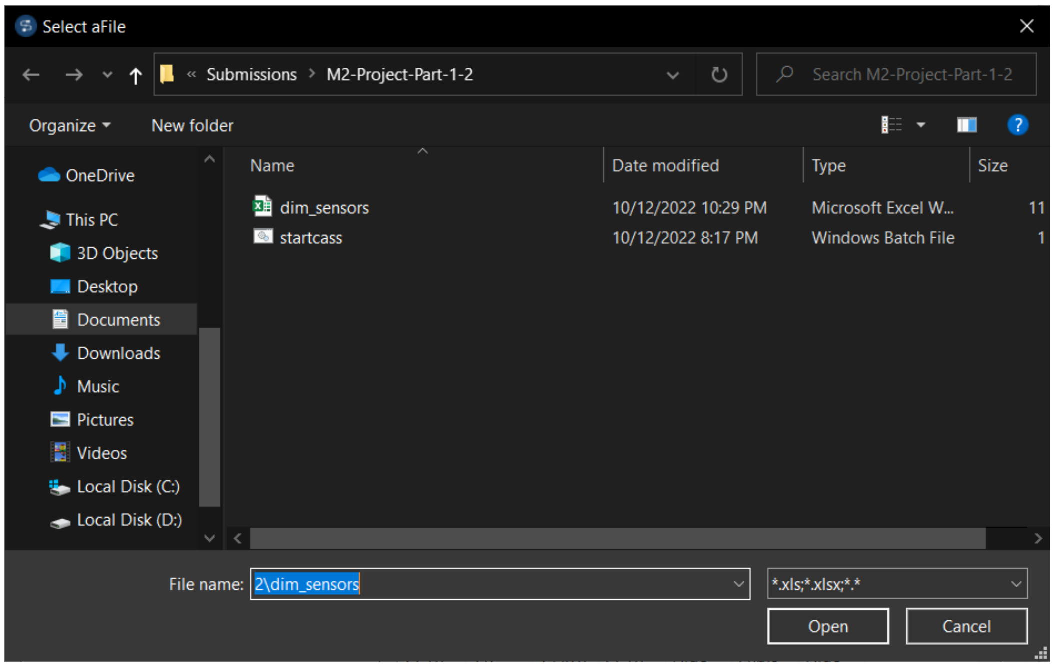
Generation mode: Memory-consuming(User mode)

File Viewer and Sheets setting

Set sheets parameters
☑ All sheets/DSelect sheet
☑ dim_sensors-1

Please select sheet (Sheet structure as schema guide) nsors-1

A	B	C	D	E	F	G
senso...	zone...	node...	senso...	senso...	surve...	road_...
CCTV_...	9.0	1015.0	CCTV...	Digo...	Surve...	Digo...
CCTV_...	5.0	1299.0	CCTV...	Digo...	Surve...	Digo...
CCTV_...	1.0	1300.0	CCTV...	Pend...	Surve...	Pend...
CCTV_...	2.0	1331.0	CCTV...	Pres J...	Surve...	Roxa...
CCTV_...	1.0	1330.0	CCTV...	Digo...	Surve...	Digo...
CCTV_...	5.0	1340.0	CCTV...	Digo...	Surve...	Digo...
CCTV_...	5.0	1340.0	CCTV...	Digo...	Surve...	Digo...


Select aFile

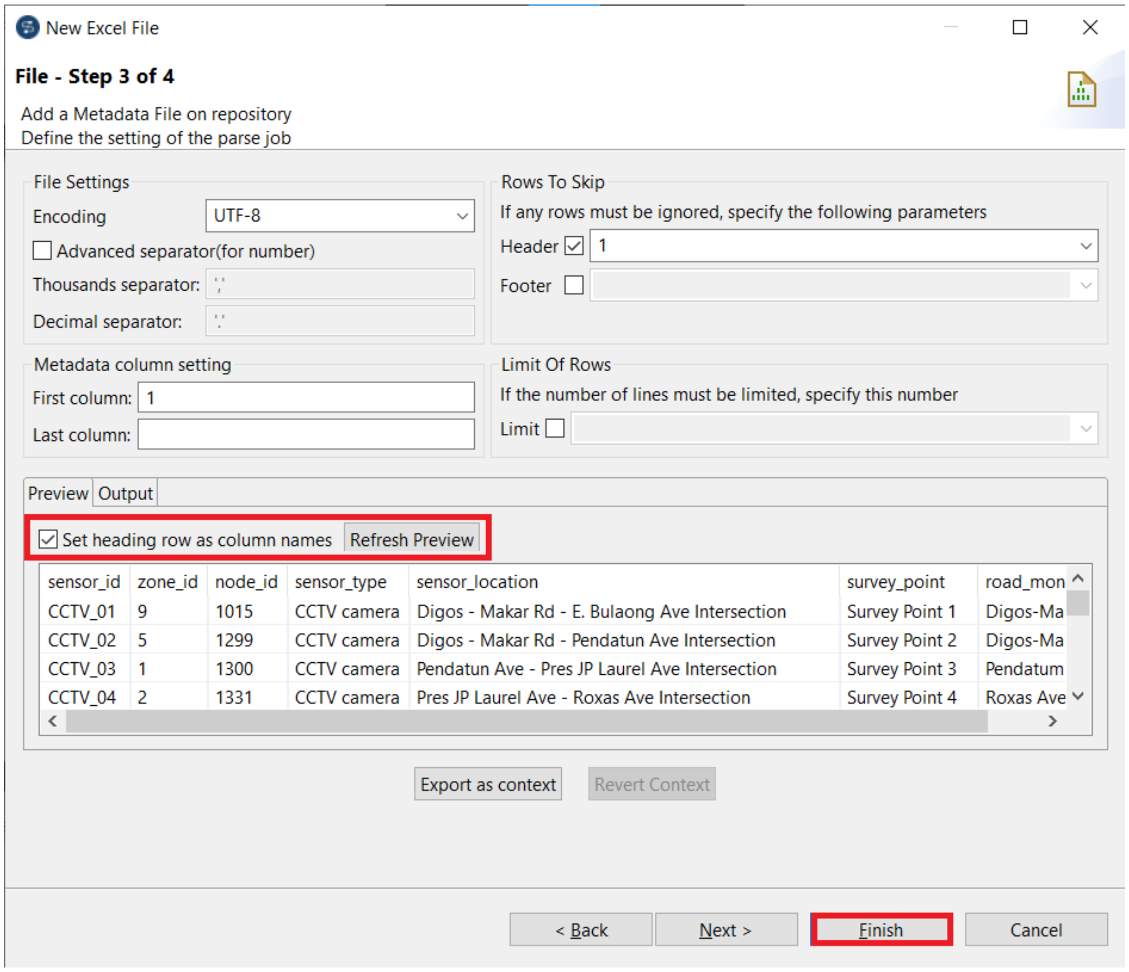
« Submissions › M2-Project-Part-1-2

Name	Date modified	Type	Size
dim_sensors	10/12/2022 10:29 PM	Microsoft Excel W...	11
startcass	10/12/2022 8:17 PM	Windows Batch File	1

File name: 2\dim_sensors

.xls;.xlsx;*.*

For the next step, make sure to check mark the box next to *Set heading row as column names*. After, click on “Refresh Preview” to check if the excel output looks right. Click “Finish” once everything is done.



New Excel File

File - Step 3 of 4

Add a Metadata File on repository
Define the setting of the parse job

File Settings
Encoding: UTF-8
☐ Advanced separator(for number)
Thousands separator: ','
Decimal separator: '.'

Rows To Skip
If any rows must be ignored, specify the following parameters
Header ✓ 1
Footer ☐

Metadata column setting
First column: 1
Last column:

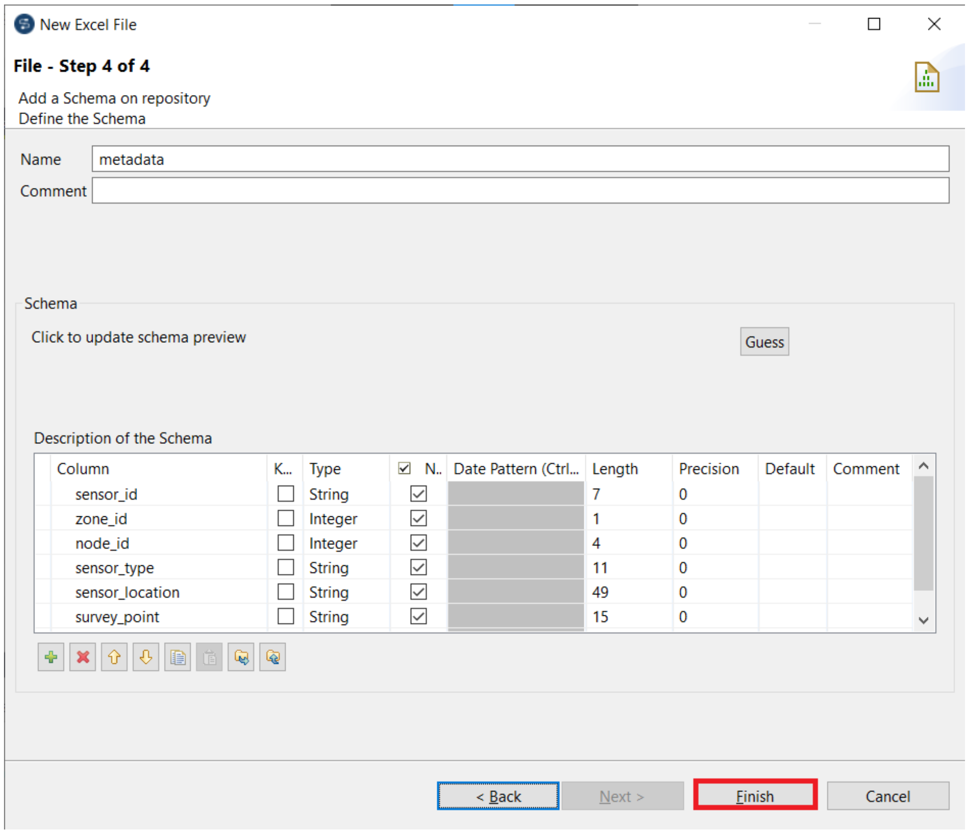
Limit Of Rows
If the number of lines must be limited, specify this number
Limit ☐

Preview | Output

✓ Set heading row as column names — Refresh Preview

sensor_id	zone_id	node_id	sensor_type	sensor_location	survey_point	road_mon
CCTV_01	9	1015	CCTV camera	Digos - Makar Rd - E. Bulaong Ave Intersection	Survey Point 1	Digos-Ma
CCTV_02	5	1299	CCTV camera	Digos - Makar Rd - Pendatun Ave Intersection	Survey Point 2	Digos-Ma
CCTV_03	1	1300	CCTV camera	Pendatun Ave - Pres JP Laurel Ave Intersection	Survey Point 3	Pendatum
CCTV_04	2	1331	CCTV camera	Pres JP Laurel Ave - Roxas Ave Intersection	Survey Point 4	Roxas Ave

There is nothing else to change in the last step so click on “Finish” to complete the process.



New Excel File

File - Step 4 of 4

Add a Schema on repository
Define the Schema

Name: metadata
Comment:

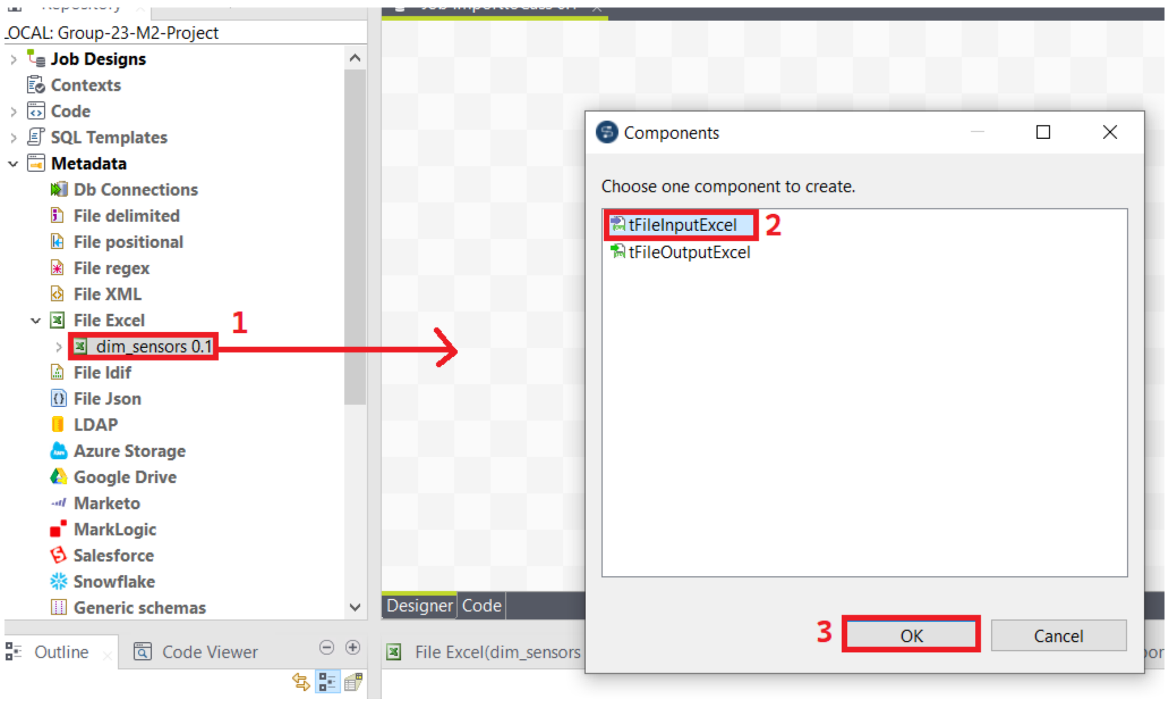
Schema
Click to update schema preview — Guess

Description of the Schema

Column	K...	Type	N..	Date Pattern (Ctrl...	Length	Precision	Default	Comment
sensor_id	☐	String	✓		7	0		
zone_id	☐	Integer	✓		1	0		
node_id	☐	Integer	✓		4	0		
sensor_type	☐	String	✓		11	0		
sensor_location	☐	String	✓		49	0		
survey_point	☐	String	✓		15	0		

< Back | Next > | Finish | Cancel

Next, drag the newly made File excel component *dim_sensors* to the job. Choose tFileInputExcel and click “OK”.



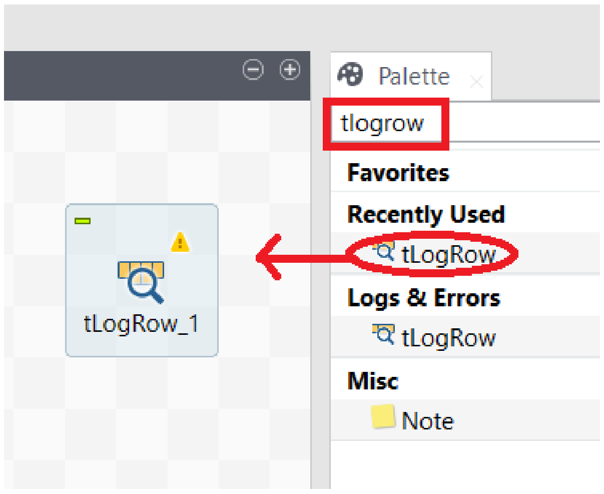
LOCAL: Group-23-M2-Project
- Job Designs
- Contexts
- Code
- SQL Templates
- Metadata
  - Db Connections
  - File delimited
  - File positional
  - File regex
  - File XML
  - File Excel
    - dim_sensors 0.1
  - File ldif
  - File Json
  - LDAP
  - Azure Storage
  - Google Drive
  - Marketo
  - MarkLogic
  - Salesforce
  - Snowflake
  - Generic schemas

Components

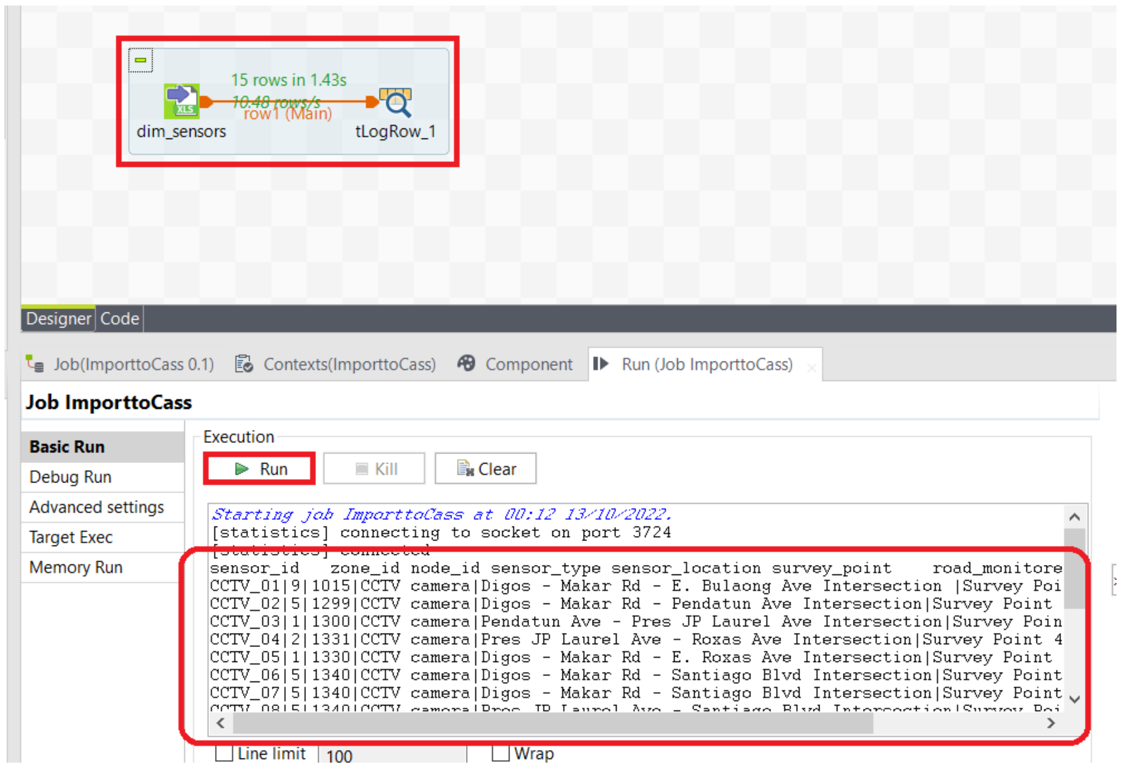
Choose one component to create.
- tFileInputExcel
- tFileOutputExcel

OK | Cancel

Then, in the Palette tab to your right, search for **tLog Row**, then select and drag it. This component will help verify the data. Drag the component to the workspace, as indicated.

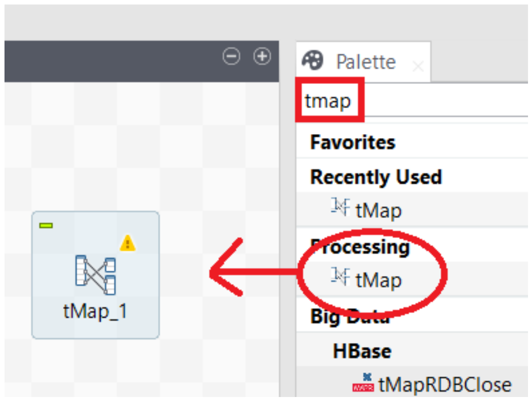


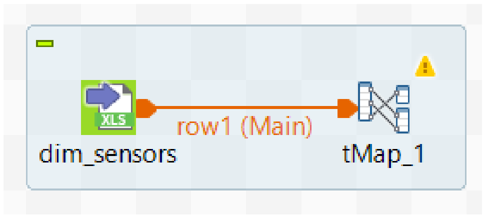
Now, drag an arrow from the *dim_sensors* component that was created earlier to the *tLogRow_1* component. To run the execution, go to the *Run (Job ImporttoCass)* tab and select the *Run* command. The emphasized portion of the screenshot should appear; here we see the data from *dim_sensors*. Delete this *tLogRow_1* component since we do not need it for importing.



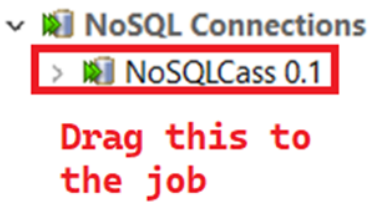
```
Starting job ImporttoCass at 00:12 13/10/2022.
[statistics] connecting to socket on port 3724
[statistics] connected
sensor_id   zone_id node_id sensor_type sensor_location survey_point    road_monitore
CCTV_01|9|1015|CCTV camera|Digos - Makar Rd - E. Bulaong Ave Intersection |Survey Poi
CCTV_02|5|1299|CCTV camera|Digos - Makar Rd - Pendatun Ave Intersection|Survey Point
CCTV_03|1|1300|CCTV camera|Pendatun Ave - Pres JP Laurel Ave Intersection|Survey Poin
CCTV_04|2|1331|CCTV camera|Pres JP Laurel Ave - Roxas Ave Intersection|Survey Point 4
CCTV_05|1|1330|CCTV camera|Digos - Makar Rd - E. Roxas Ave Intersection|Survey Point
CCTV_06|5|1340|CCTV camera|Digos - Makar Rd - Santiago Blvd Intersection|Survey Point
CCTV_07|5|1340|CCTV camera|Digos - Makar Rd - Santiago Blvd Intersection|Survey Point
CCTV_08|5|1340|CCTV camera|Pres JP Laurel Ave - Santiago Blvd Intersection|Survey Poi
```

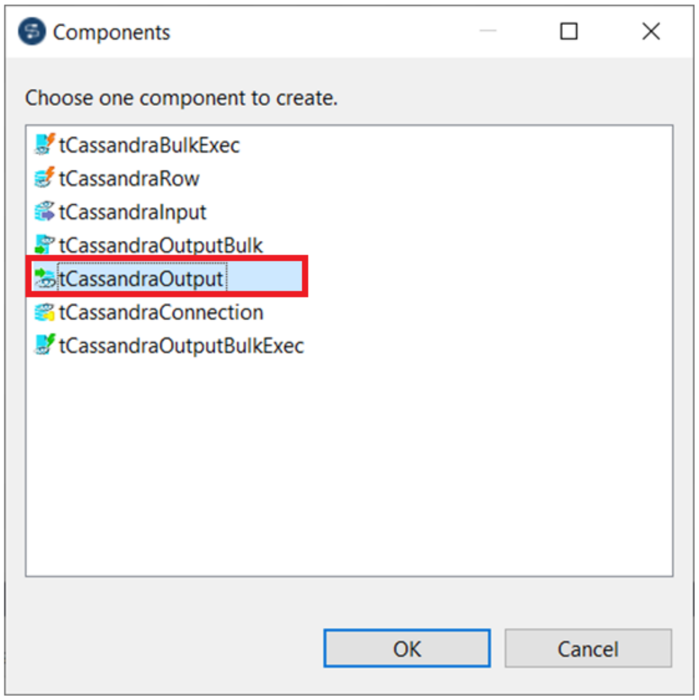
On the Palette tab located at the right-hand side area of the Talend window, search for **tMap**, then select and drag it to the workspace, as indicated. Then, drag an arrow from the *dim_sensors* component that was created earlier to the *tMap_1* job.



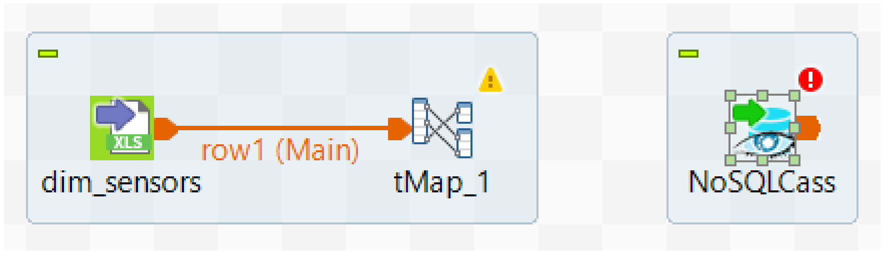


Then, under the Repository tab click on NoSQL Connections and drag the NoSQLCass component we made earlier to the job. Select *tCassandraOutput* and click "OK."

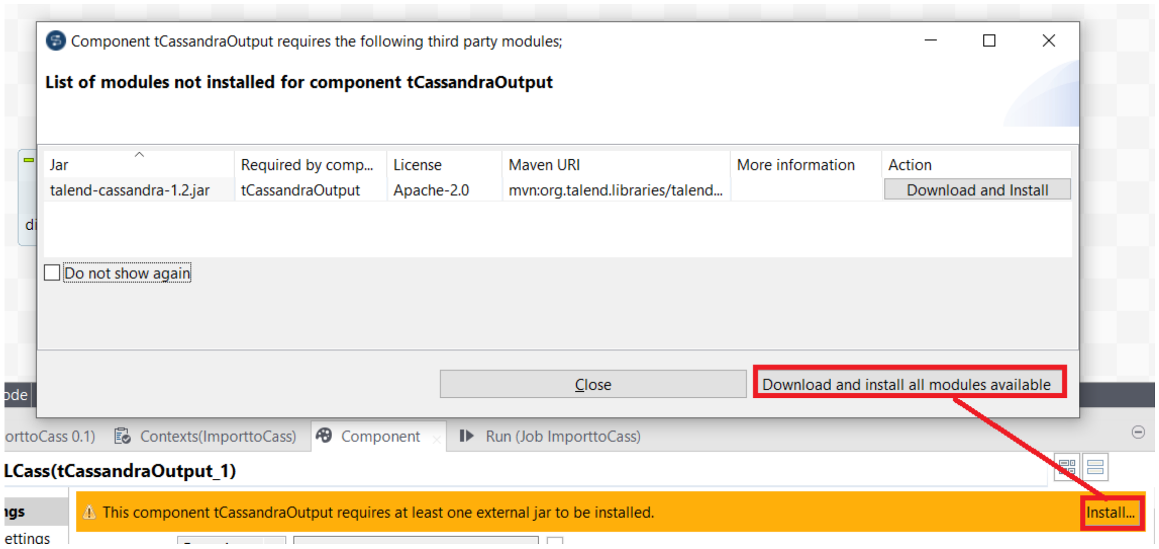




The workspace should appear like the figure below.



Since the *tCassandraOutput* component requires at least one external jar file to be installed, select *Install…* then click on the *Download and install all modules available* button to download the required modules.


Component tCassandraOutput requires the following third party modules;

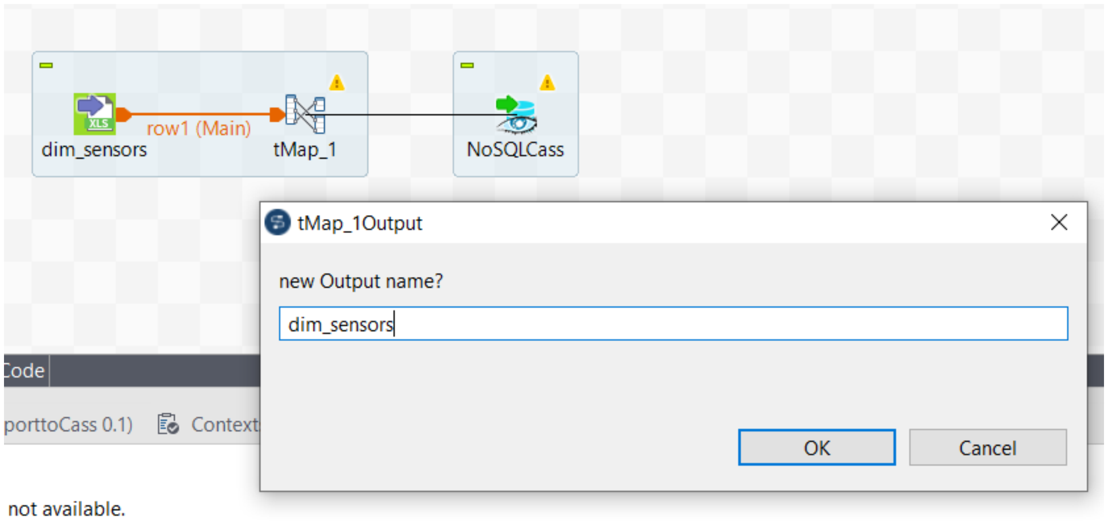
List of modules not installed for component tCassandraOutput

Jar	Required by comp...	License	Maven URI	More information	Action
talend-cassandra-1.2.jar	tCassandraOutput	Apache-2.0	mvn:org.talend.libraries/talend...		Download and Install

Do not show again

⚠ This component tCassandraOutput requires at least one external jar to be installed.

Next, drag an arow from the *tMap* component to the *tCassandraOutput*. There will be a prompt to name the tMap output. We named this output as *dim_sensors* but you may name it whatever you want.

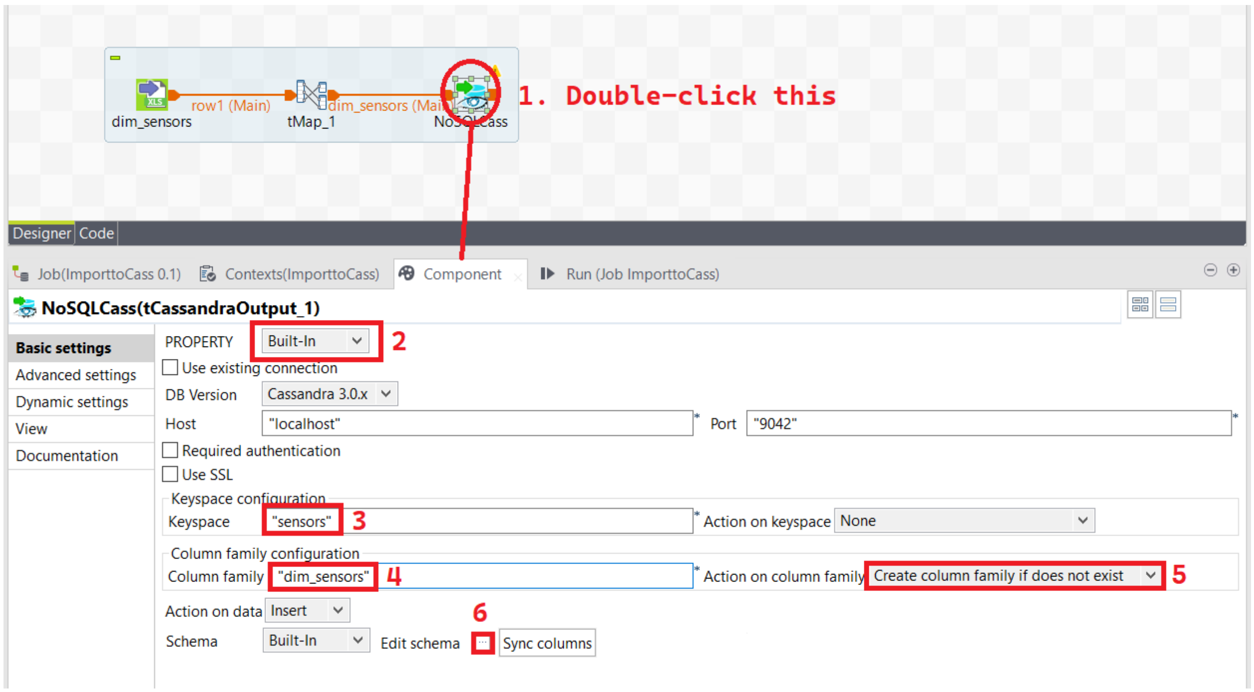


new Output name?

dim_sensors

not available.

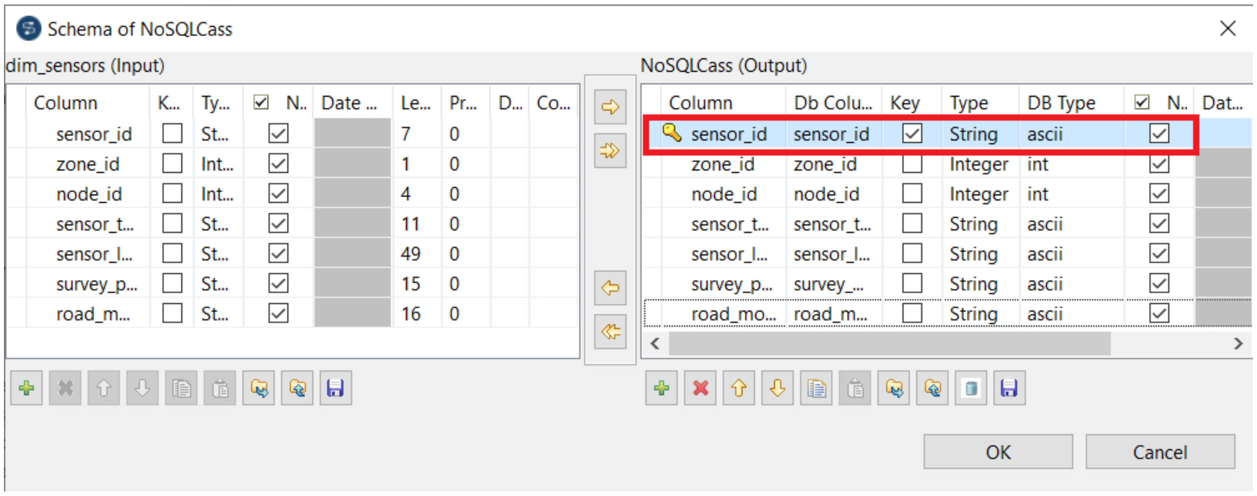
Next, double click on the *tCassandraOutput* component to check its basic settings. Make sure you selected “Built-In” for **PROPERTY**. After, under Keyspace configuration, properly indicate the **Keyspace** we made earlier which would be *sensors*. Then, under Column family configuration, indicate the **Column family** which would be *dim_sensors* and select “Create column family if does not exist” for **Action on column family**. Lastly, click on the button with the three dots to edit the table schema.



NoSQLCass(tCassandraOutput_1)

PROPERTY: Built-In
☐ Use existing connection
DB Version: Cassandra 3.0.x
Host: "localhost" Port: "9042"
☐ Required authentication
☐ Use SSL
Keyspace configuration
Keyspace: "sensors" Action on keyspace: None
Column family configuration
Column family: "dim_sensors" Action on column family: Create column family if does not exist
Action on data: Insert
Schema: Built-In Edit schema: ... Sync columns

In the schema, we need to make sure that sensor_id is our primary key. Click on “OK” once finished.



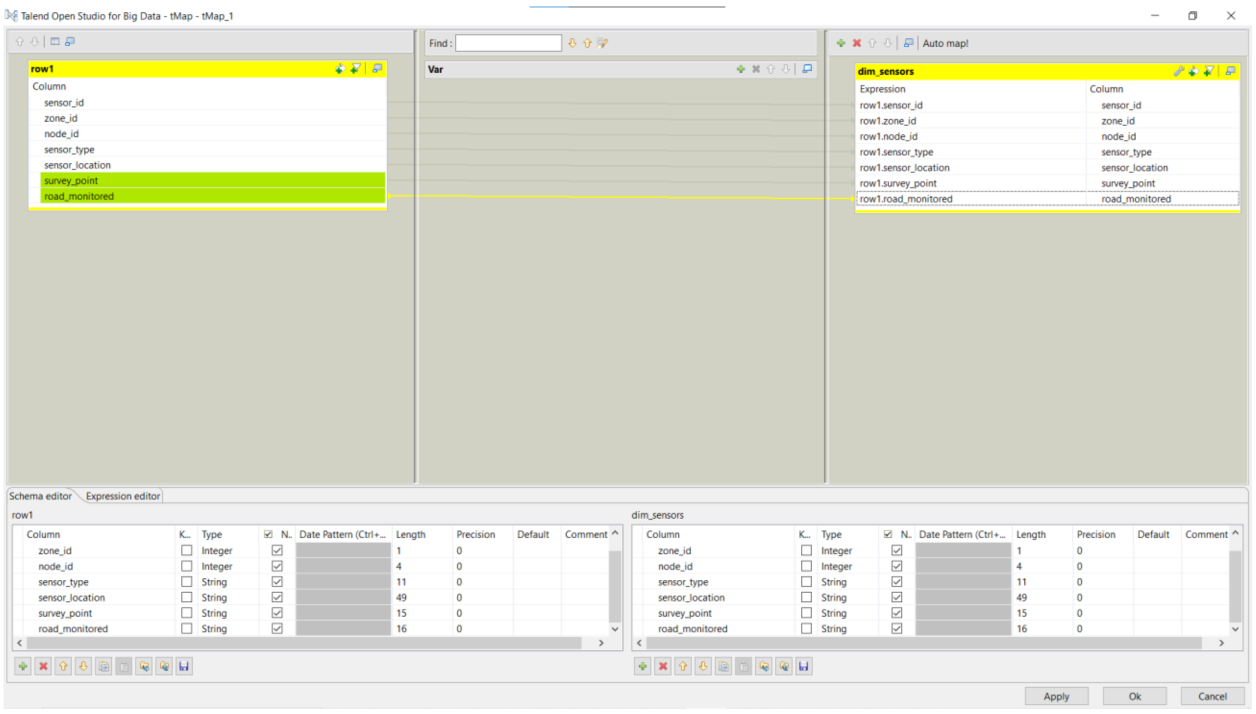
dim_sensors (Input)

Column	K...	Ty...	N..	Date ...	Le...	Pr...	D...	Co...
sensor_id	☐	St...	✓		7	0		
zone_id	☐	Int...	✓		1	0		
node_id	☐	Int...	✓		4	0		
sensor_t...	☐	St...	✓		11	0		
sensor_l...	☐	St...	✓		49	0		
survey_p...	☐	St...	✓		15	0		
road_m...	☐	St...	✓		16	0		

NoSQLCass (Output)

Column	Db Colu...	Key	Type	DB Type	N..	Dat...
sensor_id	sensor_id	✓	String	ascii	✓	
zone_id	zone_id	☐	Integer	int	✓	
node_id	node_id	☐	Integer	int	✓	
sensor_t...	sensor_t...	☐	String	ascii	✓	
sensor_l...	sensor_l...	☐	String	ascii	✓	
survey_p...	survey_...	☐	String	ascii	✓	
road_mo...	road_m...	☐	String	ascii	✓	

Go back to your job and double-click on the tMap component to open the Schema editor. Drag every component from row1 to the table (dim_sensors) we have for Cassandra.



row1

Column
sensor_id
zone_id
node_id
sensor_type
sensor_location
survey_point
road_monitored

dim_sensors

Expression	Column
row1.sensor_id	sensor_id
row1.zone_id	zone_id
row1.node_id	node_id
row1.sensor_type	sensor_type
row1.sensor_location	sensor_location
row1.survey_point	survey_point
row1.road_monitored	road_monitored

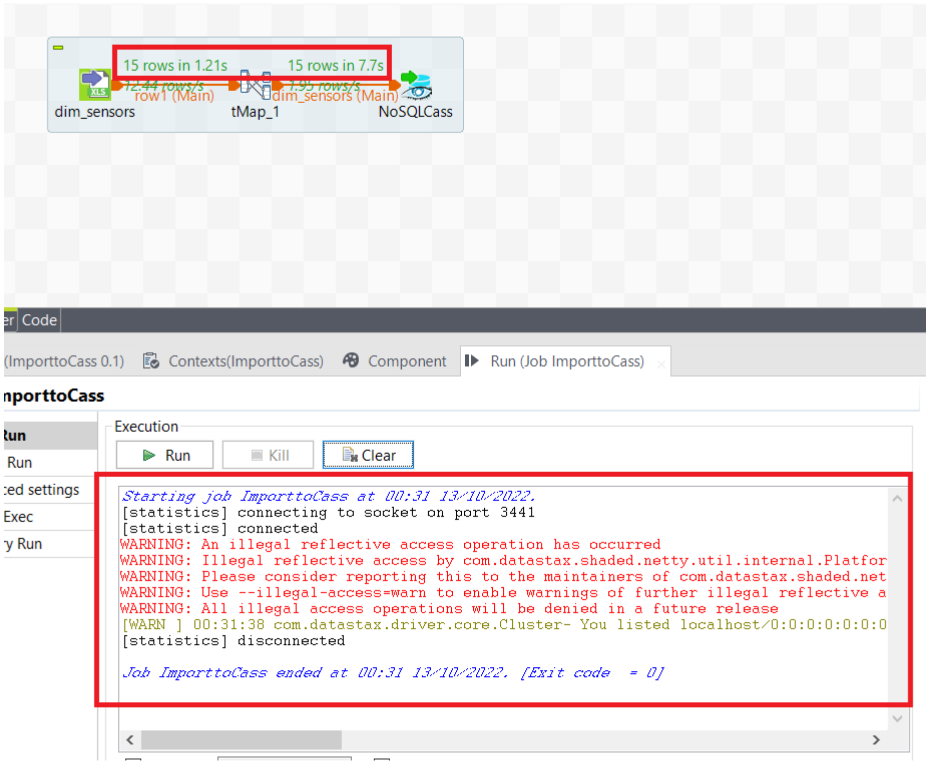
row1

Column	K...	Type	N...	Date Pattern (Ctrl+...	Length	Precision	Default	Comment
zone_id	☐	Integer	✓		1	0		
node_id	☐	Integer	✓		4	0		
sensor_type	☐	String	✓		11	0		
sensor_location	☐	String	✓		49	0		
survey_point	☐	String	✓		15	0		
road_monitored	☐	String	✓		16	0		

dim_sensors

Column	K...	Type	N...	Date Pattern (Ctrl+...	Length	Precision	Default	Comment
zone_id	☐	Integer	✓		1	0		
node_id	☐	Integer	✓		4	0		
sensor_type	☐	String	✓		11	0		
sensor_location	☐	String	✓		49	0		
survey_point	☐	String	✓		15	0		
road_monitored	☐	String	✓		16	0		

Now, we will run the job. The emphasized portion of the screenshot below indicates that all 15 rows from the excel file were imported successfully to our Cassandra database.



```
Starting job ImporttoCass at 00:31 13/10/2022.
[statistics] connecting to socket on port 3441
[statistics] connected
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by com.datastax.shaded.netty.util.internal.Platfor
WARNING: Please consider reporting this to the maintainers of com.datastax.shaded.net
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective a
WARNING: All illegal access operations will be denied in a future release
[WARN ] 00:31:38 com.datastax.driver.core.Cluster- You listed localhost/0:0:0:0:0:0:0
[statistics] disconnected

Job ImporttoCass ended at 00:31 13/10/2022. [Exit code  = 0]
```

V. Verifying the Importing of data to Cassandra

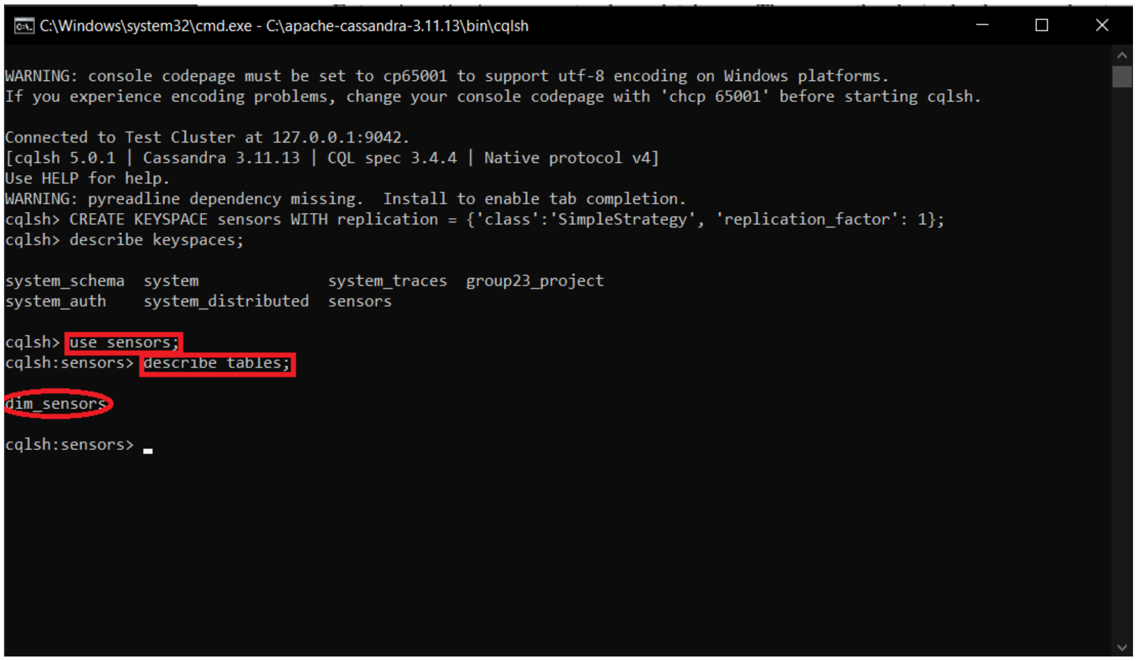
To verify that the import from the dataset to a Cassandra table via Talend was successful, run the following commands on Cassandra's CQL shell:

```
use sensors;
```

This command opens or uses the database in which the table was saved.

```
describe tables;
```

This command shows or describes the tables saved in the database sensors.



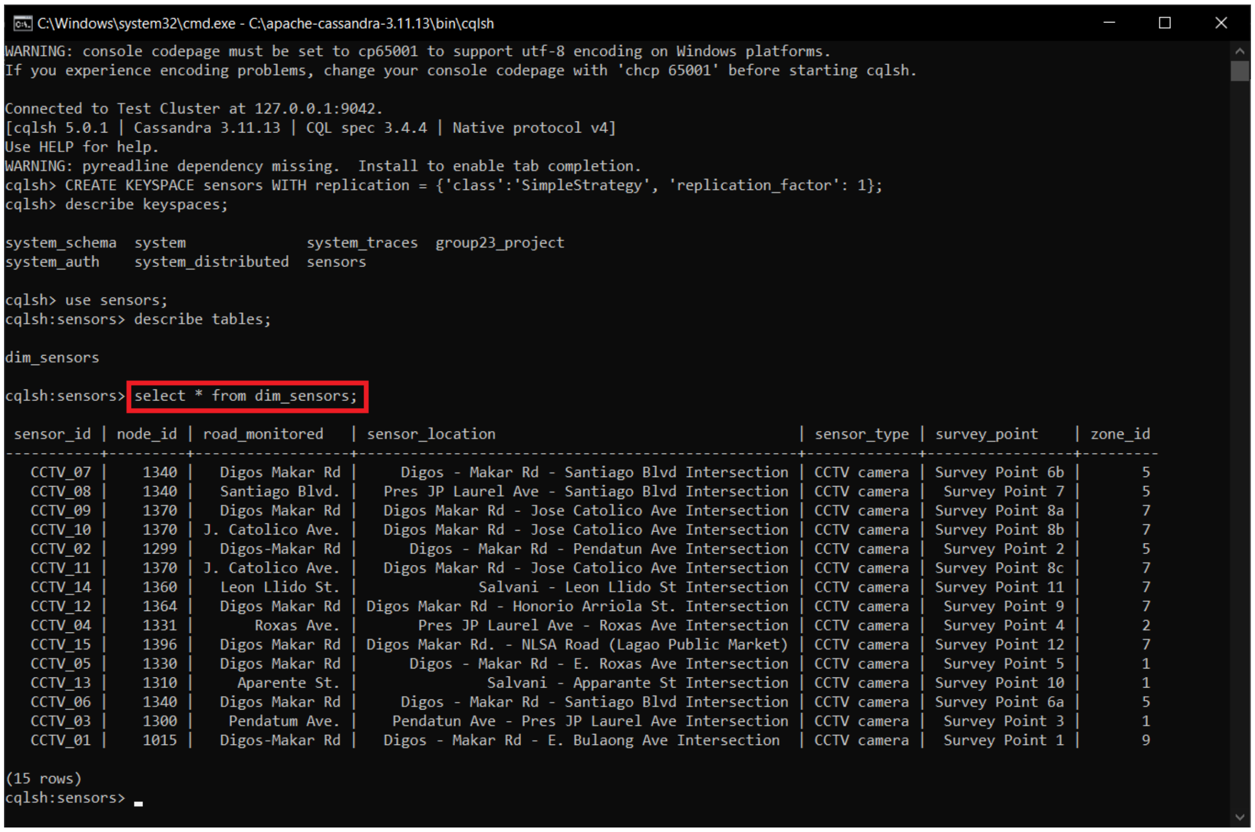
C:\Windows\system32\cmd.exe - C:\apache-cassandra-3.11.13\bin\cqlsh

```
WARNING: console codepage must be set to cp65001 to support utf-8 encoding on Windows platforms.
If you experience encoding problems, change your console codepage with 'chcp 65001' before starting cqlsh.

Connected to Test Cluster at 127.0.0.1:9042.
[cqlsh 5.0.1 | Cassandra 3.11.13 | CQL spec 3.4.4 | Native protocol v4]
Use HELP for help.
WARNING: pyreadline dependency missing.  Install to enable tab completion.
cqlsh> CREATE KEYSPACE sensors WITH replication = {'class':'SimpleStrategy', 'replication_factor': 1};
cqlsh> describe keyspaces;

system_schema  system              system_traces  group23_project
system_auth    system_distributed  sensors

cqlsh> use sensors;
cqlsh:sensors> describe tables;

dim_sensors

cqlsh:sensors>
```

Note: If all the configurations made previously were correct, the table `dim_sensors` should appear after executing the `describe tables;` command.

Now, run the following command to see if table dim_sensors has been populated:

```
select * from dim_sensors;
```



```
C:\Windows\system32\cmd.exe - C:\apache-cassandra-3.11.13\bin\cqlsh
WARNING: console codepage must be set to cp65001 to support utf-8 encoding on Windows platforms.
If you experience encoding problems, change your console codepage with 'chcp 65001' before starting cqlsh.

Connected to Test Cluster at 127.0.0.1:9042.
[cqlsh 5.0.1 | Cassandra 3.11.13 | CQL spec 3.4.4 | Native protocol v4]
Use HELP for help.
WARNING: pyreadline dependency missing.  Install to enable tab completion.
cqlsh> CREATE KEYSPACE sensors WITH replication = {'class':'SimpleStrategy', 'replication_factor': 1};
cqlsh> describe keyspaces;

system_schema  system              system_traces  group23_project
system_auth    system_distributed  sensors

cqlsh> use sensors;
cqlsh:sensors> describe tables;

dim_sensors

cqlsh:sensors> select * from dim_sensors;

 sensor_id | node_id | road_monitored   | sensor_location                                  | sensor_type | survey_point    | zone_id
-----------+---------+------------------+--------------------------------------------------+-------------+-----------------+---------
   CCTV_07 |    1340 |   Digos Makar Rd |     Digos - Makar Rd - Santiago Blvd Intersection | CCTV camera | Survey Point 6b |       5
   CCTV_08 |    1340 |   Santiago Blvd. |   Pres JP Laurel Ave - Santiago Blvd Intersection | CCTV camera |  Survey Point 7 |       5
   CCTV_09 |    1370 |   Digos Makar Rd |   Digos Makar Rd - Jose Catolico Ave Intersection | CCTV camera | Survey Point 8a |       7
   CCTV_10 |    1370 | J. Catolico Ave. |   Digos Makar Rd - Jose Catolico Ave Intersection | CCTV camera | Survey Point 8b |       7
   CCTV_02 |    1299 |   Digos-Makar Rd |      Digos - Makar Rd - Pendatun Ave Intersection | CCTV camera |  Survey Point 2 |       5
   CCTV_11 |    1370 | J. Catolico Ave. |   Digos Makar Rd - Jose Catolico Ave Intersection | CCTV camera | Survey Point 8c |       7
   CCTV_14 |    1360 |   Leon Llido St. |          Salvani - Leon Llido St Intersection | CCTV camera | Survey Point 11 |       7
   CCTV_12 |    1364 |   Digos Makar Rd | Digos Makar Rd - Honorio Arriola St. Intersection | CCTV camera |  Survey Point 9 |       7
   CCTV_04 |    1331 |       Roxas Ave. |       Pres JP Laurel Ave - Roxas Ave Intersection | CCTV camera |  Survey Point 4 |       2
   CCTV_15 |    1396 |   Digos Makar Rd | Digos Makar Rd. - NLSA Road (Lagao Public Market) | CCTV camera | Survey Point 12 |       7
   CCTV_05 |    1330 |   Digos Makar Rd |      Digos - Makar Rd - E. Roxas Ave Intersection | CCTV camera |  Survey Point 5 |       1
   CCTV_13 |    1310 |    Aparente St. |          Salvani - Apparante St Intersection | CCTV camera | Survey Point 10 |       1
   CCTV_06 |    1340 |   Digos Makar Rd |     Digos - Makar Rd - Santiago Blvd Intersection | CCTV camera | Survey Point 6a |       5
   CCTV_03 |    1300 |    Pendatum Ave. |   Pendatum Ave - Pres JP Laurel Ave Intersection | CCTV camera |  Survey Point 3 |       1
   CCTV_01 |    1015 |   Digos-Makar Rd |    Digos - Makar Rd - E. Bulaong Ave Intersection  | CCTV camera |  Survey Point 1 |       9

(15 rows)
cqlsh:sensors> _
```

This proves that our Talend project was a success, and we were able to meet the objectives of the activity.

REFERENCES

CREATE KEYSPACE. (n.d.). DataStax. Retrieved from *https://docs.datastax.com/en/cql-oss/3.3/cql/cql_reference/cqlCreateKeyspace.html*

Managing NoSQL metadata. (n.d.). Talend. Retrieved from https://help.talend.com/r/en-US/7.3/studio-user-guide-big-data/managing-nosql-metadata

Read Excel File in Talend. (n.d.). Tutorial Gateway. Retrieved from https://www.tutorialgateway.org/read-excel-file-in-talend/