Apache Flink Getting Started

Experiment 9: Ride Cleansing

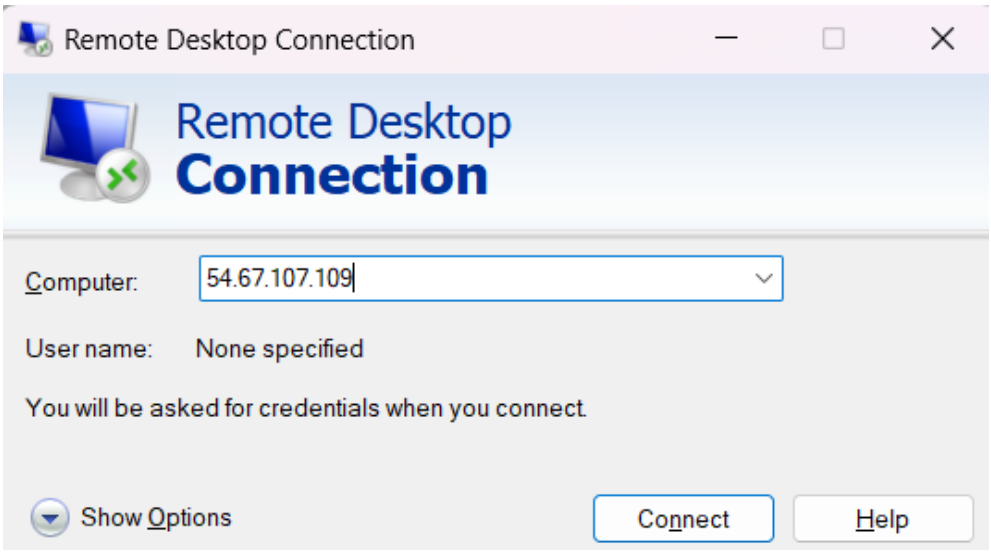
1.1 Steps to run your next Flink Program

1.1.1 Browse to the GitHub repo that you cloned. This should be cloned to your Windows Jump Box and the Flink Development Server
https://github.com/GeorgeNiece/flink-data-processing-2day

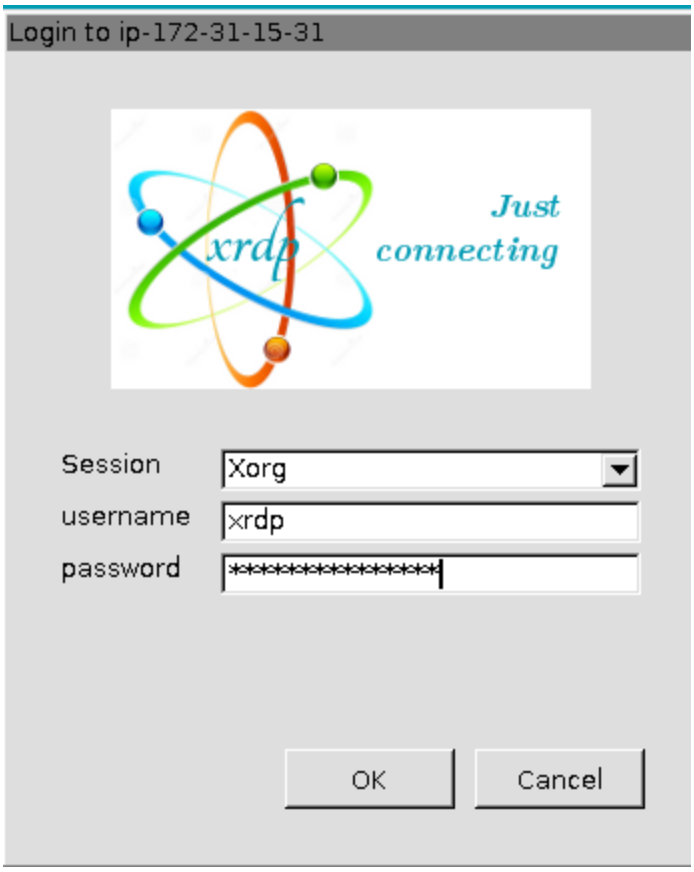
1.1.2 From a command prompt on your jumpbox machine SSH to the Unbuntu server
ssh -o ServerAliveInterval=180 -o ServerAliveCountMax=2 -i ansible.pem ubuntu@*ip_address_provided*

1.1.4 Change to the flink folder, verify Flink isn't started, start the Flink dev cluster, and verify that it started

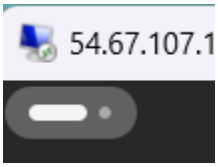
ps -ef | grep flink
cd ~/flink-2.0.0
./bin/start-cluster.sh
ps -ef | grep flink



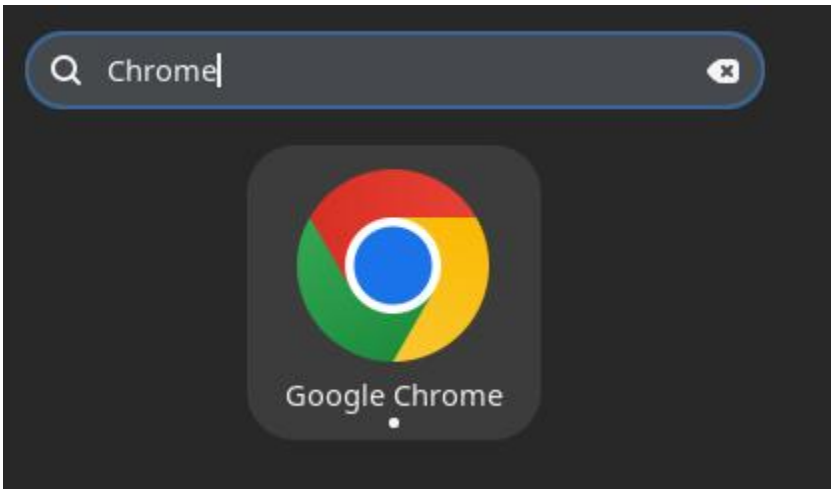
1.1.5 Login to the ubuntu dev sandbox using Windows RDP with the xrdp user and the password that you set in Step 1.14



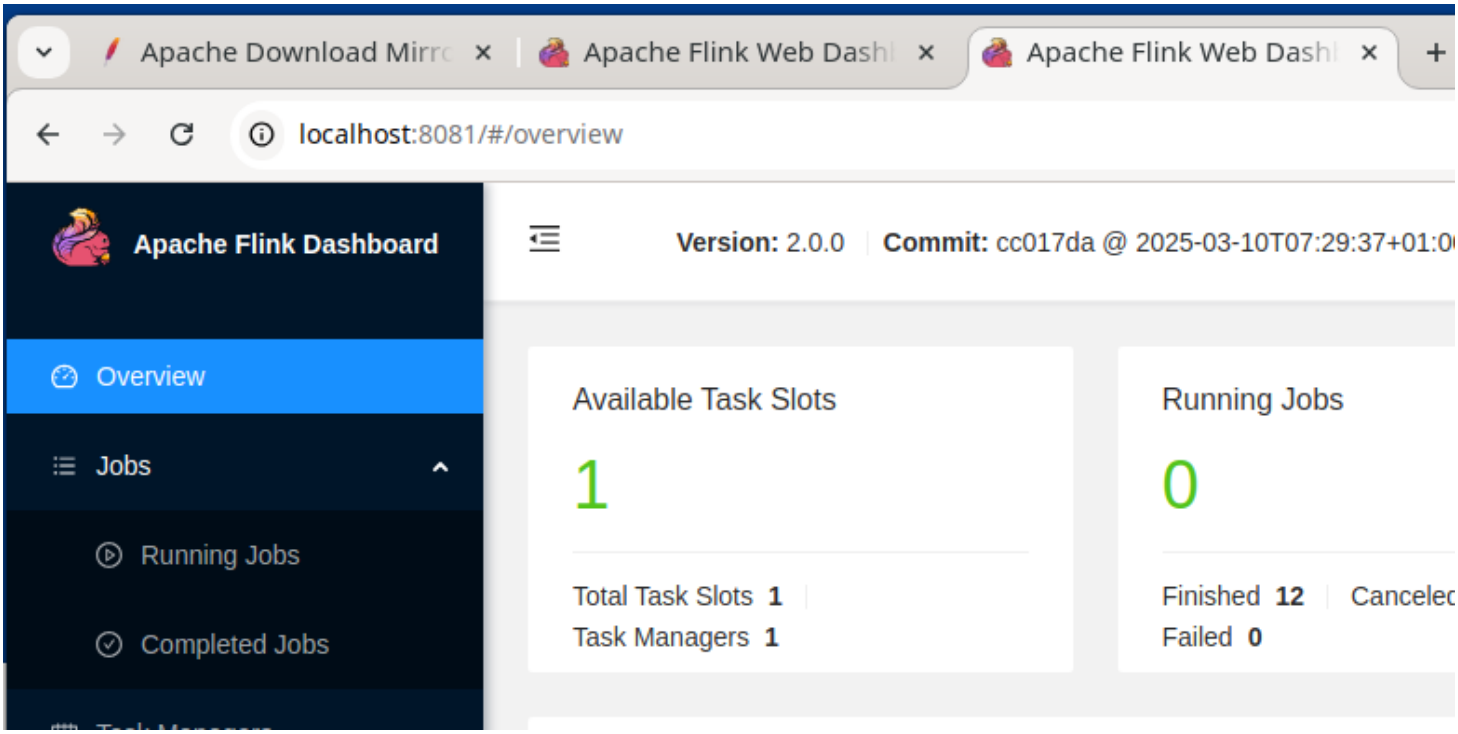
1.1.6 Click the Activities button in the top left corner of the Ubuntu Desktop



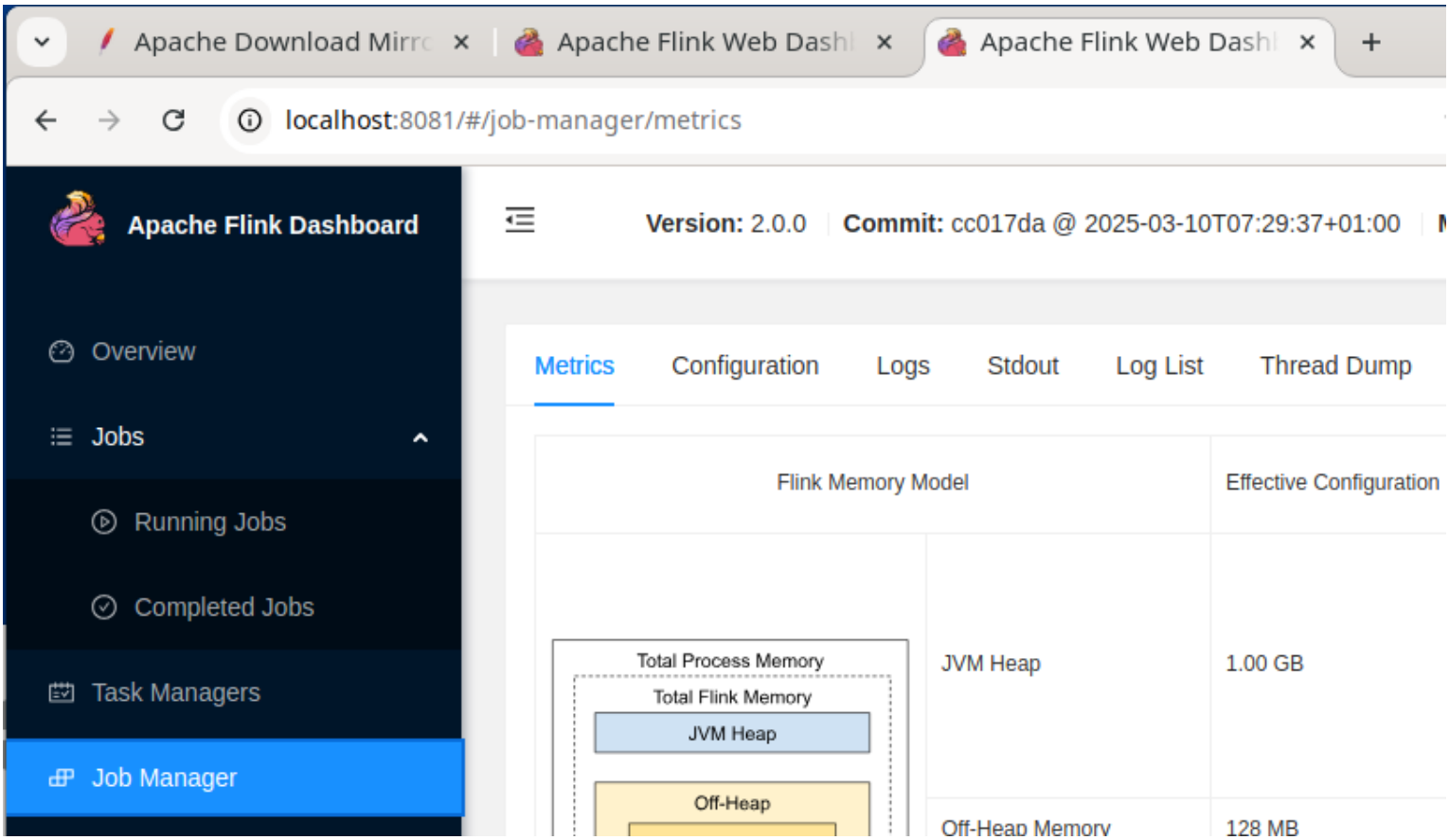
1.1.7 Wait for the Search Box at the top of the Ubuntu Desktop, and enter Chrome, click on the Launch Logo



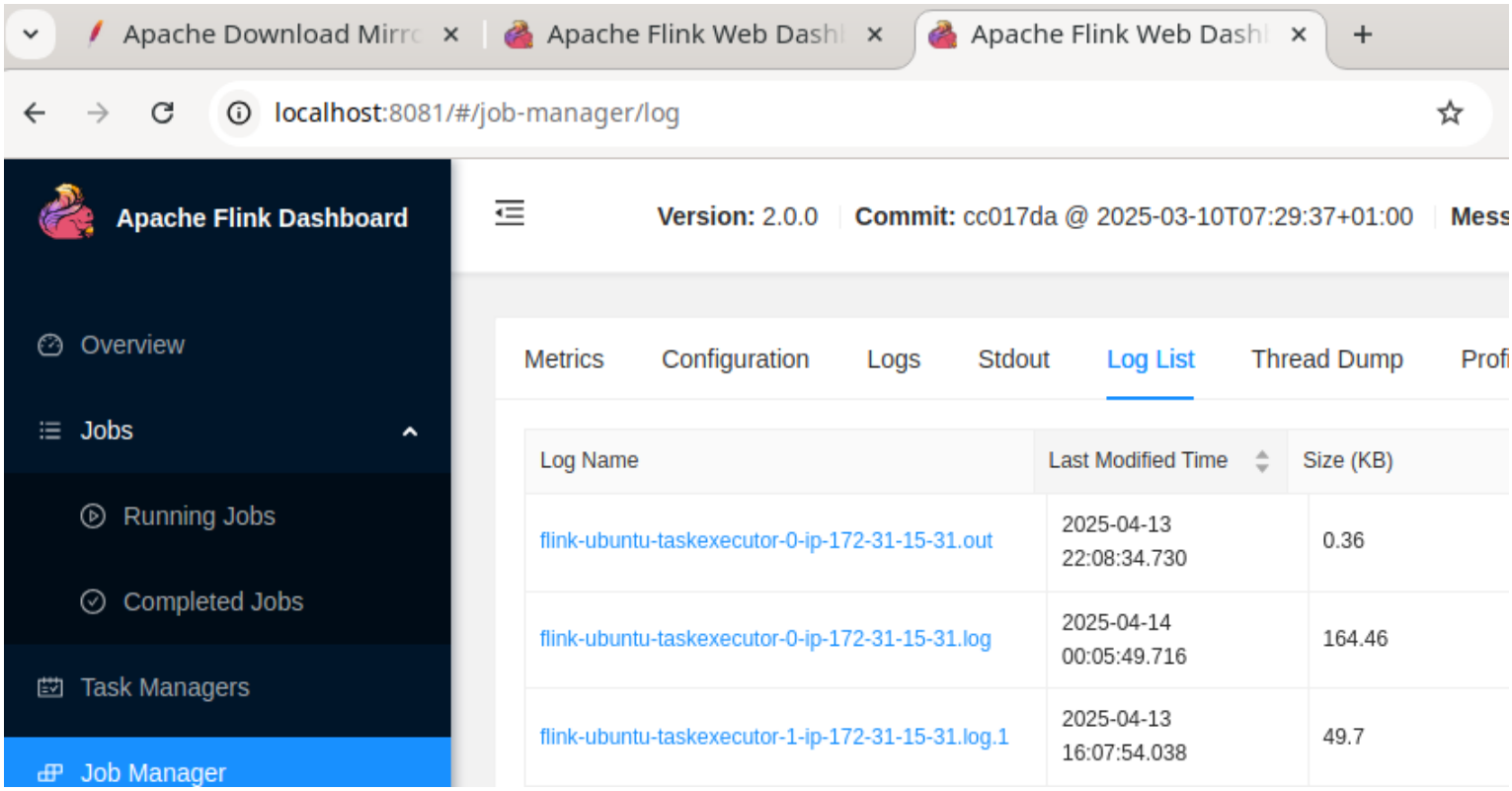
1.1.8 Load the Flink Web UI at localhost:8081



1.1.9 Click the Job Manager in the left hand navigation



1.1.10 Select Log List in the page navigation. These are the logs we'll monitor while we're running some of our experiments



1.1.11 The first flink-ubuntu-taskexecutor*.out file will be the one we spend the most time looking at. Select that so that we can view there. We could open two browser tabs and watch the Jobs -> Running Jobs page while we run our first experiment.

1.1.12 Navigate back to the SSH terminal to the flink distribution folder

cd ~/flink-2.0.0
./bin/flink run ~/flink-data-processing-2day/experiments/built/RideCleansing.jar

This should show us with the Job submission, Program execution finished, JobID and the Job Runtime

View the **flink-ubuntu-taskexecutor*.out,** this time we'll just tail the file which shows us the following. For my sandbox environment that would be
~/flink-2.0.0:$ **tail log/flink-ubuntu-taskexecutor-0-ip-172-31-78-140.out**

We can view the logs to see the last written with the unix command **`ls -alrt`**

1.2 Steps to build your next Flink Program

1.2.1 We have the source for the Flink program in both the flink-project structure and the executable jar. **RideCleansing** uses the DataStream API to cleanse a stream of TaxiRide events by

removing events that start or end outside of New York City. The GeoUtils utility class provides a static method isInNYC(float lon, float lat) to check if a location is within the NYC area. Input Data is based on a stream of TaxiRide events. The result of the exercise should be a DataStream<TaxiRide> that only contains events of taxi rides which both start and end in the New York City area as defined by GeoUtils.isInNYC(). The resulting stream should be printed to standard out

1.2.2 To compile from command line with Java you would need to reference the flink distribution jar files in your classpath, either directly as noted here or in a build tool like Maven or Gradle. A sample POM file is included in our course GitHub repo in the flink-project

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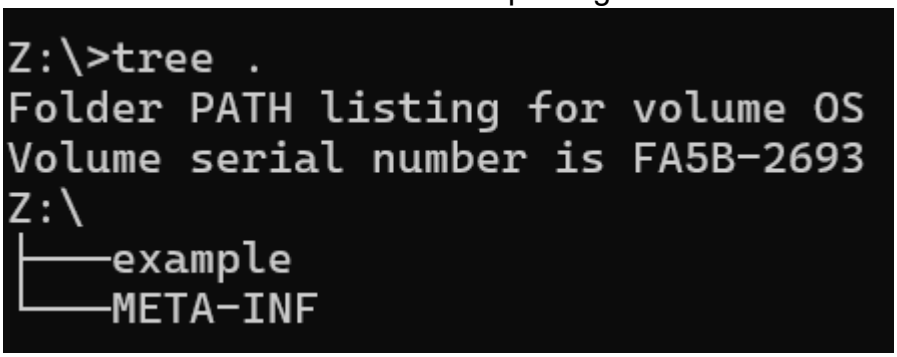
```
javac -classpath C:\lib-2.0\flink-cep-2.0.0.jar;C:\lib-2.0\flink-
connector-files-2.0.0.jar;C:\lib-2.0\flink-csv-2.0.0.jar;C:\lib-
2.0\flink-dist-2.0.0.jar;C:\lib-2.0\flink-json-2.0.0.jar;C:\lib-
2.0\flink-scala_2.12-2.0.0.jar;C:\lib-2.0\flink-table-api-java-
uber-2.0.0.jar;C:\lib-2.0\flink-table-planner-loader-
2.0.0.jar;C:\lib-2.0\flink-table-runtime-2.0.0.jar;C:\lib-
2.0\log4j-1.2-api-2.24.1.jar;C:\lib-2.0\log4j-api-
2.24.1.jar;C:\lib-2.0\log4j-core-2.24.1.jar;C:\lib-2.0\log4j-
slf4j-impl-2.24.1.jar;C:\lib-2.0\flink-streaming-java-
1.20.1.jar;C:\lib-2.0\flink-runtime-2.0.0.jar;
example/RideCleansing.java
```

1.2.4 To package the executable jar for the Flink program we create a MANIFEST.MF that we'll use in the packaging, notice that the

```
Manifest-Version: 1.0
Implementation-Title: Flink : Examples : Simple Stream
Implementation-Version: 2.0.0
Archiver-Version: Plexus Archiver
Built-By: geoniece
Specification-Vendor: Innovation in Software
Specification-Title: Flink : Examples : Simple Stream
Implementation-Vendor-Id: com.innovationinsoftware
program-class: example.RideCleansing
Implementation-Vendor: Innovation in Software
Created-By: Apache Maven 3.8.6
Build-Jdk: 1.11.0_312
Specification-Version: 2.0.0
```

1.2.5 We have a folder structure with our package



1.2.6 To package the executable jar for our Flink program we do the following

Ubuntu-@ip-172.15.50.23:~$ **jar --manifest=META-INF/MANIFEST.MF --create --file c:\users\Geo\RideCleansing.jar example/***

1.2.7 **Congratulations, time to celebrate** you ran another Flink program in our session