# Learning Apache Spark with Python

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CHAPTER

TWO

# WHY SPARK WITH PYTHON ?

**Chinese proverb**

**Sharpening the knife longer can make it easier to hack the firewood** – old Chinese proverb

I want to answer this question from the following two parts:

## 2.1 Why Spark?

I think the following four main reasons from Apache Spark™ official website are good enough to convince you to use Spark.

1. Speed

   Run programs up to 100x faster than Hadoop MapReduce in memory, or 10x faster on disk.

   Apache Spark has an advanced DAG execution engine that supports acyclic data flow and in-memory computing.

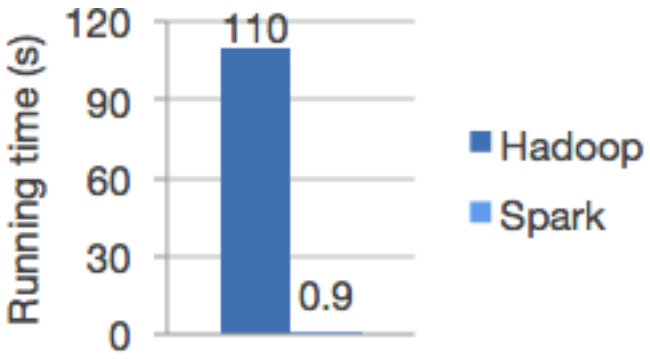



Fig. 1: Logistic regression in Hadoop and Spark

2. Ease of Use

   Write applications quickly in Java, Scala, Python, R.

Spark offers over 80 high-level operators that make it easy to build parallel apps. And you can use it interactively from the Scala, Python and R shells.

3. Generality

   Combine SQL, streaming, and complex analytics.

   Spark powers a stack of libraries including SQL and DataFrames, MLlib for machine learning, GraphX, and Spark Streaming. You can combine these libraries seamlessly in the same application.

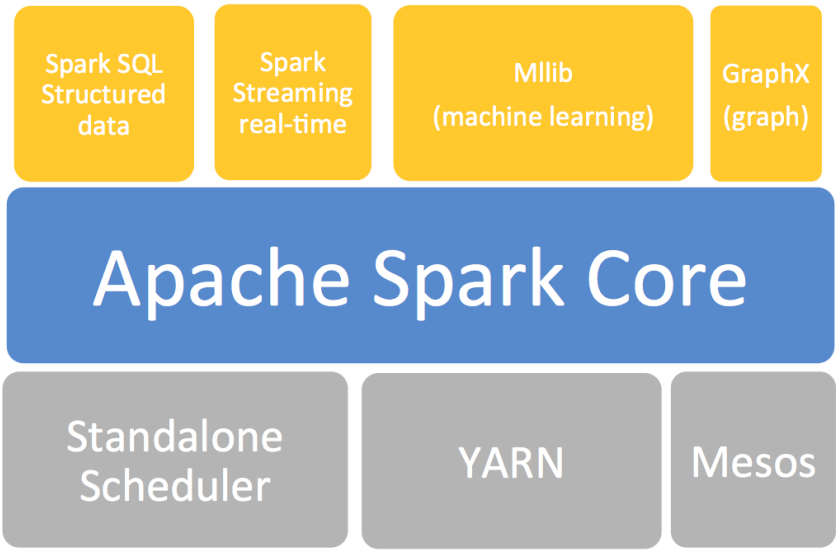



Fig. 2: The Spark stack

4. Runs Everywhere

   Spark runs on Hadoop, Mesos, standalone, or in the cloud. It can access diverse data sources including HDFS, Cassandra, HBase, and S3.

## 2.2 Why Spark with Python (PySpark)?

No matter you like it or not, Python has been one of the most popular programming languages.


Fig. 3: The Spark platform

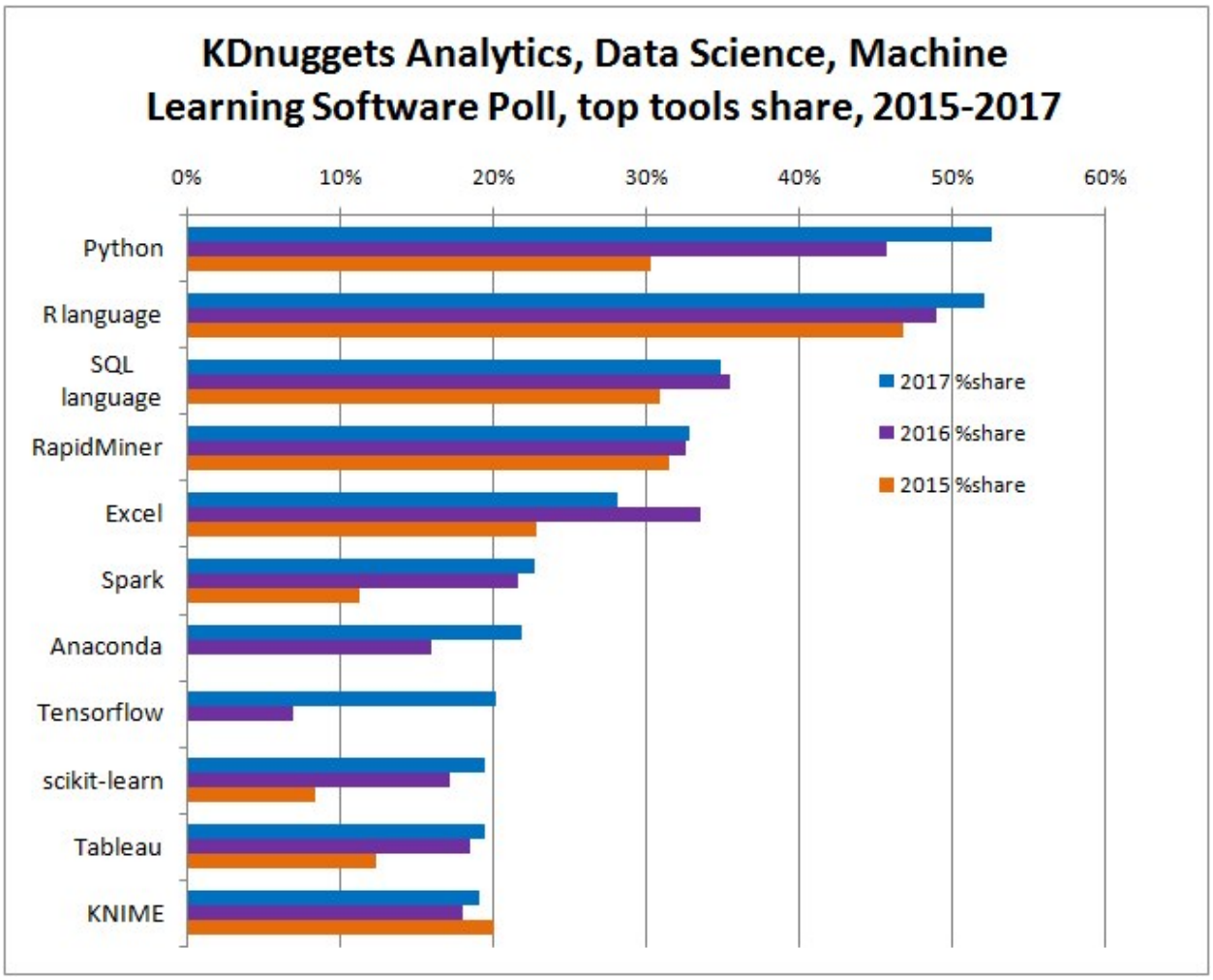



Fig. 4: KDnuggets Analytics/Data Science 2017 Software Poll from kdnuggets.

CHAPTER

THREE

# CONFIGURE RUNNING PLATFORM

**Chinese proverb**

**Good tools are prerequisite to the successful execution of a job.** – old Chinese proverb

A good programming platform can save you lots of troubles and time. Herein I will only present how to install my favorite programming platform and only show the easiest way which I know to set it up on Linux system. If you want to install on the other operator system, you can Google it. In this section, you may learn how to set up Pyspark on the corresponding programming platform and package.

## 3.1 Run on Databricks Community Cloud

If you don't have any experience with Linux or Unix operator system, I would love to recommend you to use Spark on Databricks Community Cloud. Since you do not need to setup the Spark and it's totally **free** for Community Edition. Please follow the steps listed below.

1. Sign up a account at: https://community.cloud.databricks.com/login.html

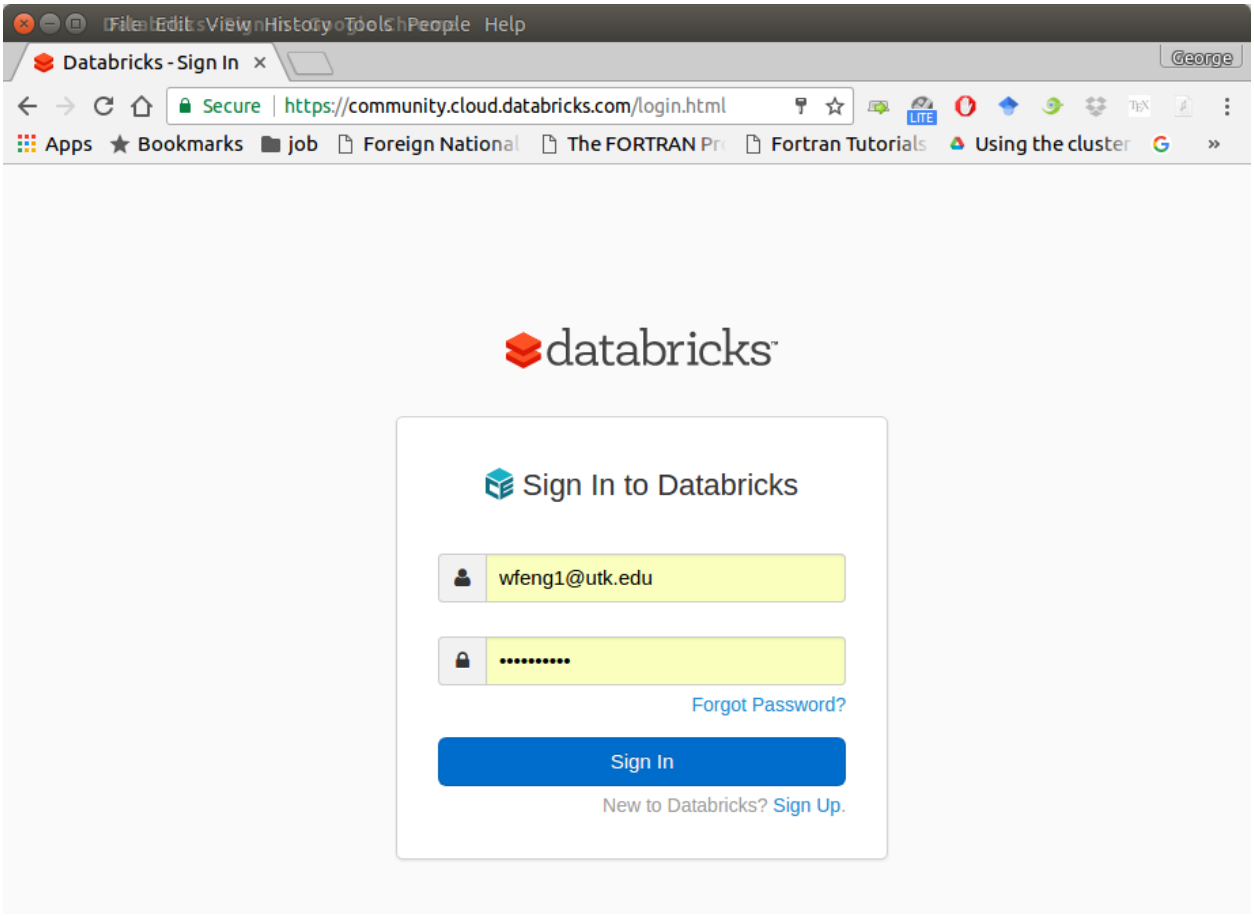
2. Sign in with your account, then you can creat your cluster(machine), table(dataset) and notebook(code).

3. Create your cluster where your code will run

4. Import your dataset

   **Note:** You need to save the path which appears at Uploaded to DBFS: /FileStore/tables/05rmhuqv1489687378010/. Since we will use this path to load the dataset.

5. Create your notebook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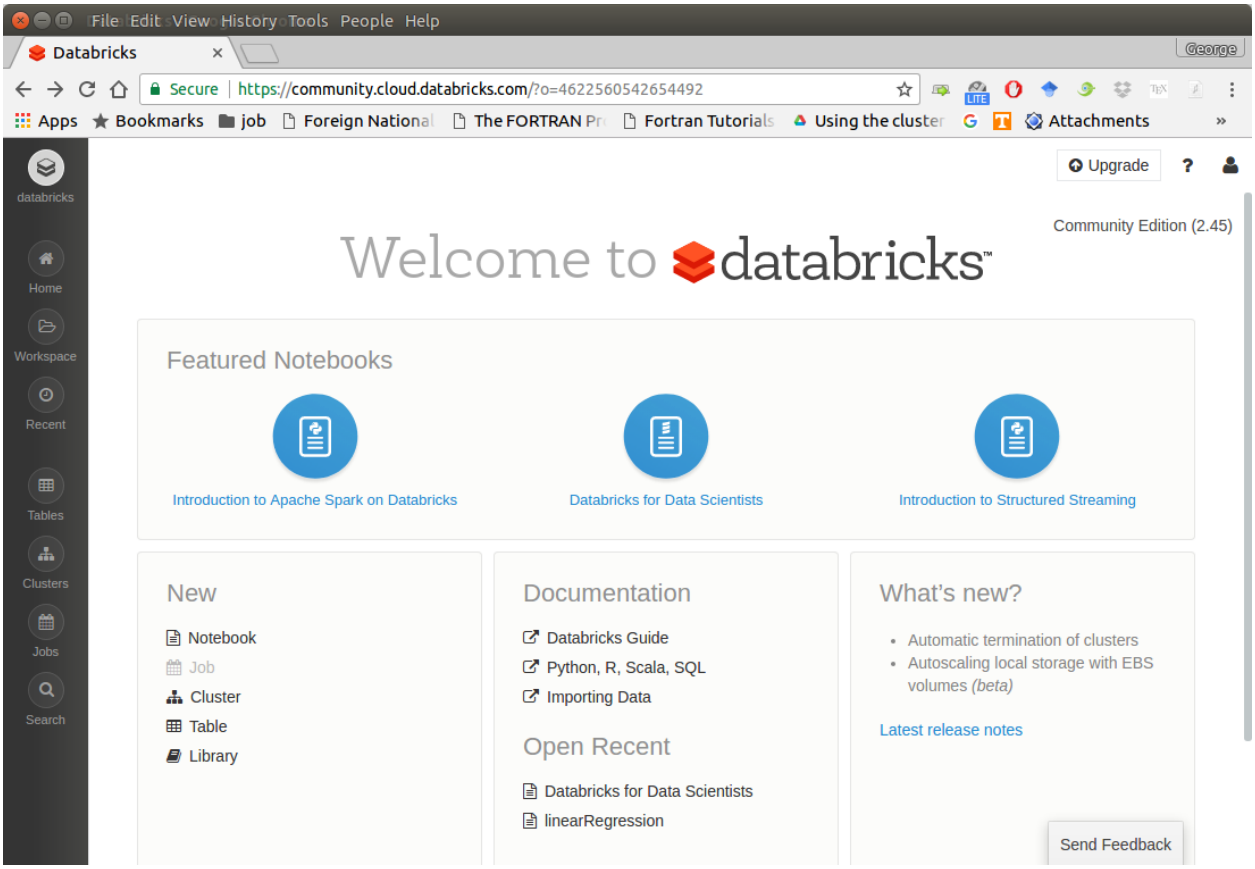
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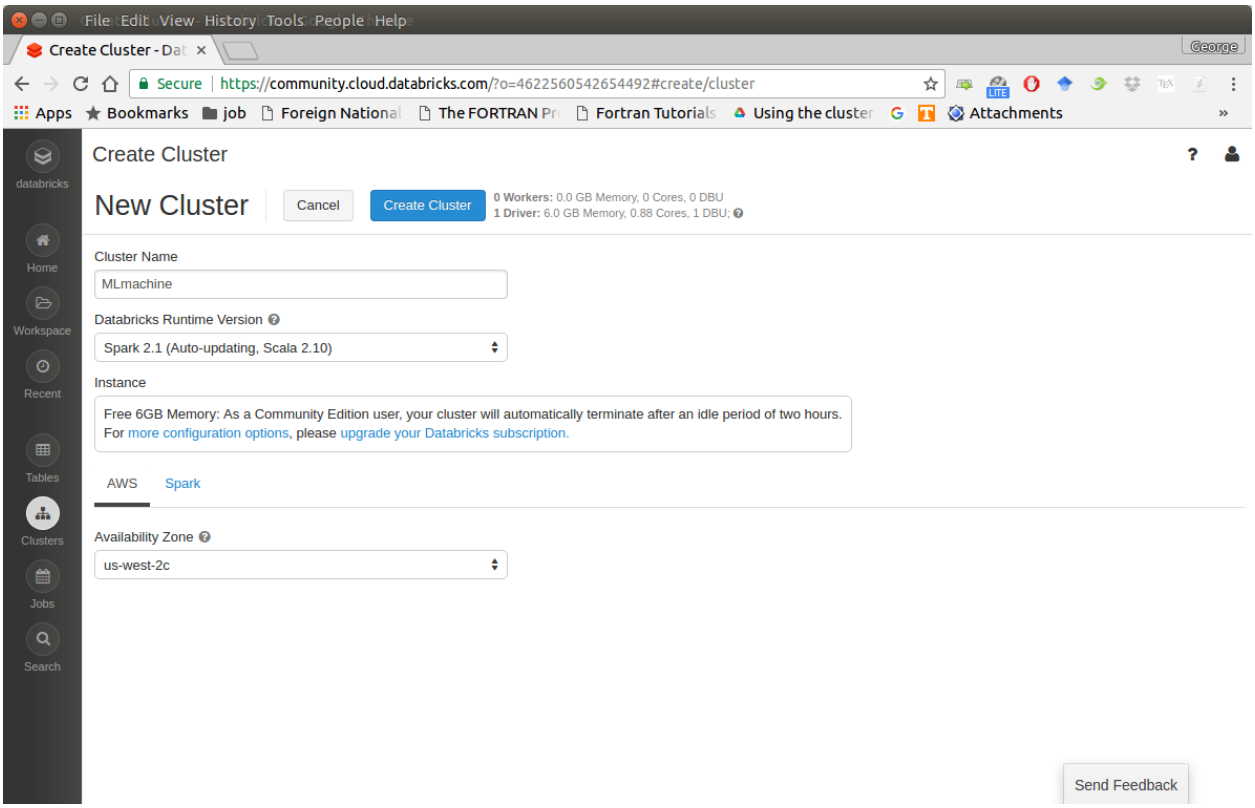
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0 Workers: 0.0 GB Memory, 0 Cores, 0 DBU
1 Driver: 6.0 GB Memory, 0.88 Cores, 1 DBU;
Cluster Name
MLmachine
Databricks Runtime Version
Spark 2.1 (Auto-updating, Scala 2.10)
Instance
Free 6GB Memory: As a Community Edition user, your cluster will automatically terminate after an idle period of two hours.
For more configuration options, please upgrade your Databricks subscription.
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Spark
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us-west-2c
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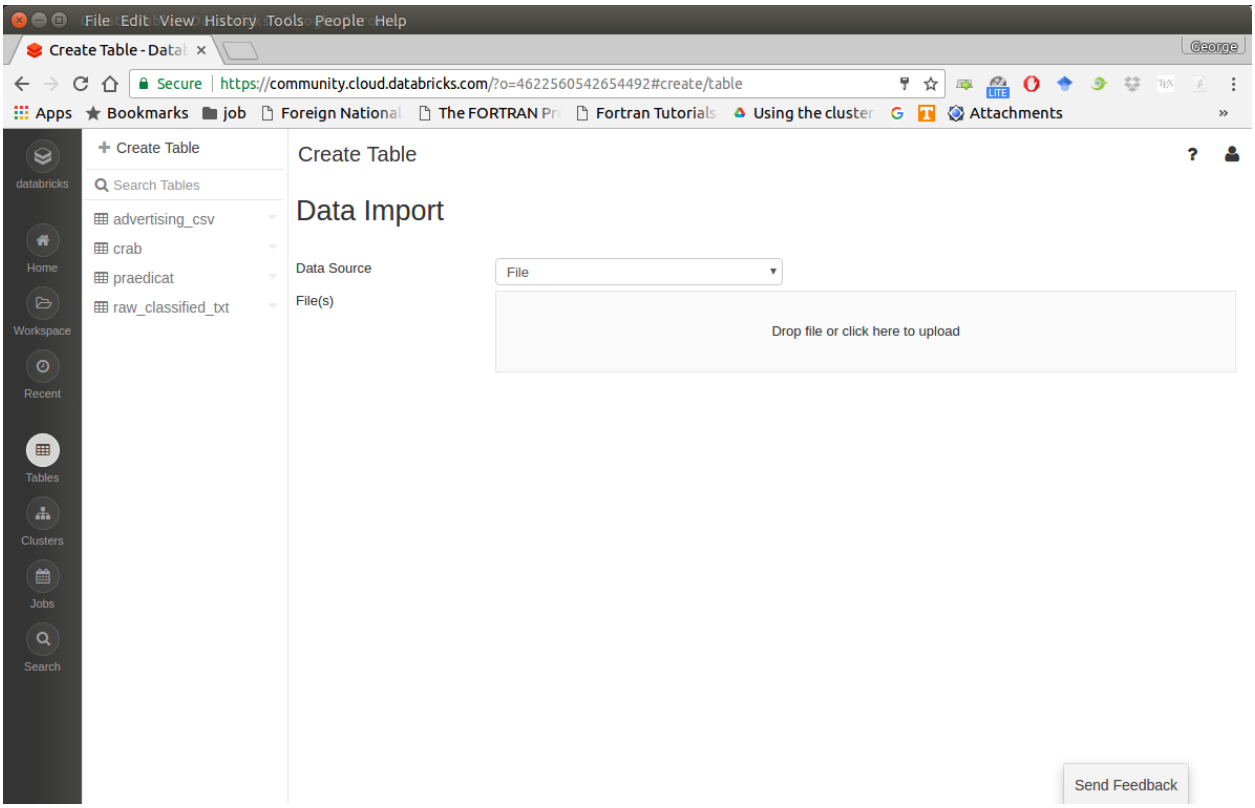
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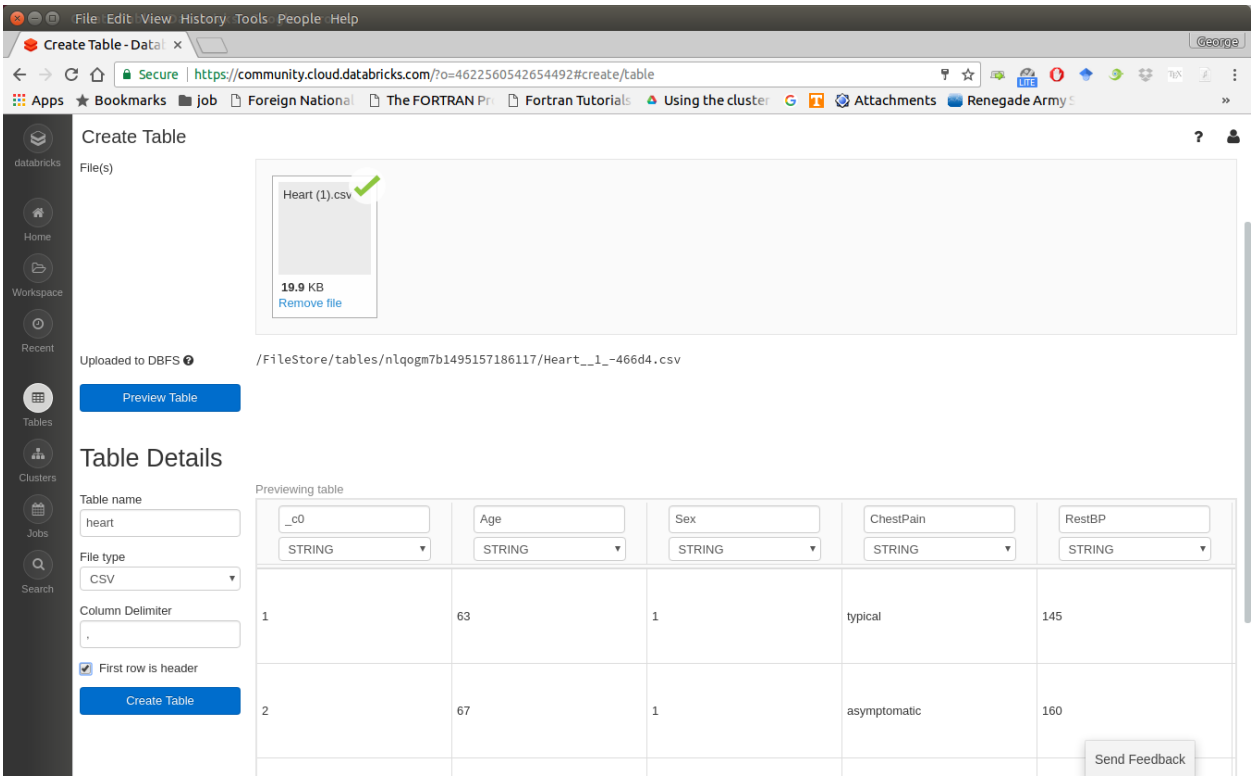
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File type
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Column Delimiter
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