Exercise 2

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W205-6

Application Use Case

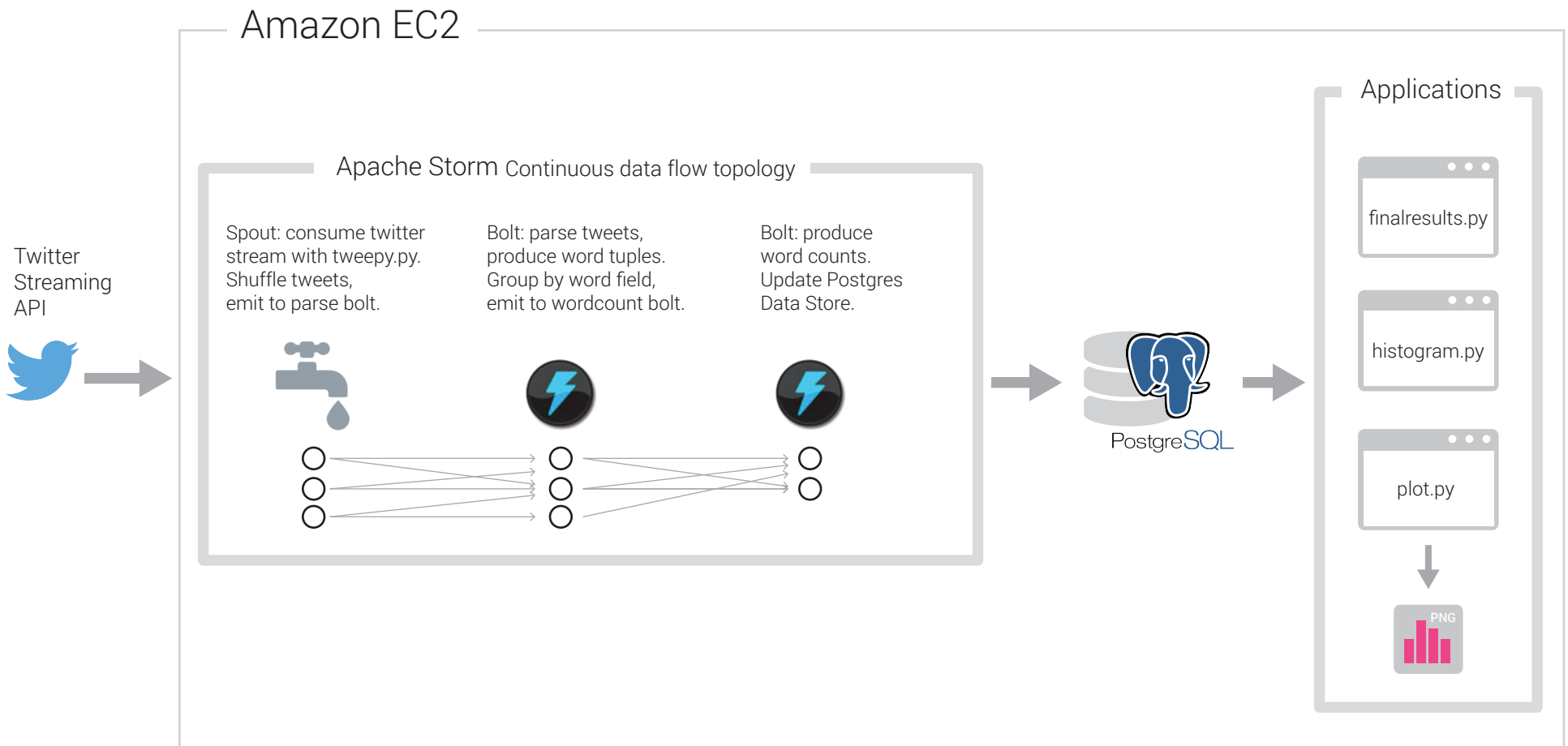
Graphing the counts of celebrities' names, politicians, ideas, etc., to measure and display their popularity over time.

Architecture

1. Apache Storm processes Twitter streaming API.
2. Tweet word counts are appended to a Postgres DB.
   (See diagram for details)

3. The following python apps display results:
   - **Finalresults.py** – displays count for a word provided as argument, or if no arguments are provided, displays all words and counts from the DB.
   - **Historgram.py** – displays words and counts within a given count range
   - **Plot.py** – displays a bar graph of the 20 most frequently used words. While all words are stored in the DB, most common words are filtered out, as they are not interesting. This is merely a proof of concept. The common words list is, in reality, a much longer list. They are filtered at this stage, and not before for the sake of possible future applications, where one might actually want to know these words. Another way would be to simply specify an OFFSET and LIMIT in the query, but then there is a possibility (albeit small) that we miss something.

Exercise 2 - Architecture Diagram



Running the Application

Requirements:

AMI
The __ucbw205_complete_plus_postgres_virtual2.7__ AMI is recommended. It has the python 2.7 virtual environment already set up and running:
ucbw205_complete_plus_postgres_virtual2.7
ami-003f7f6a

But if you insist... you can use the AMI specified in the exercise. If you use this AMI, python 2.7 will be run in a virtualenv. Lein will also be installed in the appropriate location, namely /usr/local/bin/lein. This is important! Do not use the python 2.7 installation instructions in the exercise, as that method breaks the necessary components to install some dependencies.

Alas, what if you've already got python 2.7 running according to the exercise instructions:
In order to install matplotlib, you have to jump through a couple hoops first. Do:

```
mkdir /usr/local/lib/tmp_h/
mv /usr/local/lib/libpython2.7.a /usr/local/lib/tmp_h/
pip install --no-cache-dir matplotlib
mv /usr/local/lib/tmp_h/libpython2.7.a /usr/local/lib/
```

I really hope it doesn't come to that ^^

Volume
m3.large

Dependencies:
(These will be installed as needed by following the Steps, see below)

Postgres
Python 2.7
lein

Python modules
matplotlib
streamparse
psycopg2
argparse
numpy
tweepy

Steps to install dependencies and run application

1. **Once you have mounted /data on your volume:**

   ```
   cd /data
   git clone git@github.com:kyleiwaniec/ucb205.git
   cd ucb205/
   git checkout exercise_2
   ```

2. **Install dependencies.**

You will be prompted to choose which AMI you are using, and to confirm whether or not Postgres is set up on /data:

   ```
   . /data/ucb205/exercise_2/install-dependencies.sh
   ```

3. **Create the Database and table:**

   ```
   . /data/ucb205/exercise_2/make-db.sh
   ```

4. **Start the application:**

   ```
   cd /data/ucb205/exercise_2/EX2Tweetwordcount/
   sparse quickstart EX2Tweetwordcount
   sparse run
   ```

5. **Open a new shell, and run applications:**

   ```
   python /data/ucb205/exercise_2/histogram.py
   python /data/ucb205/exercise_2/histogram.py 50 100
   python /data/ucb205/exercise_2/finalresults.py -w mother
   python /data/ucb205/exercise_2/plot.py
   ```

6. **You can use scp to view the generated plot.png bar graph on your local machine:**

   ```
   scp -i your_key.pem root@xx.xxx.xx.xx:/data/ucb205/exercise_2/plot.png /path/to/local/dir
   ```

Complete file structure:

```
├── EX2Tweetwordcount
│   ├── .gitignore
│   ├── README.md
│   ├── config.json
│   ├── fabfile.py
│   ├── project.clj
│   ├── src
│   │   ├── bolts
│   │   │   ├── __init__.py
│   │   │   ├── parse.py
│   │   │   └── wordcount.py
│   │   └── spouts
│   │       ├── __init__.py
│   │       └── tweets.py
│   ├── tasks.py
│   ├── topologies
│   │   └── tweetwordcount.clj
│   └── virtualenvs
│       └── wordcount.txt
├── README.md
├── Twittercredentials.py
├── architecture.pdf
├── finalresults.py
├── histogram.py
├── install-dependencies.sh
├── make-db.sh
├── plot.png
├── plot.py
├── provision.sh
├── screenshots
│   ├── screenshot-finalresults-results-no-arg.png
│   ├── screenshot-finalresults-results.png
│   ├── screenshot-histogram-results-50-100.png
│   ├── screenshot-histogram-results.png
│   ├── screenshot-postgres-results.png
│   ├── screenshot-twitterStream-2.png
│   └── screenshot-twitterStream.png
└── twitter.sql
```