

Web Exercise 4: Working with Amazon AWS Educate Starter

1. What are the advantages and disadvantages of using Amazon EC2 for building a research project website?

The advantages of using Amazon EC2 for building a research product are:

- The ease of administrative control
- Variety of platform selections
- Built-in security features

Amazon EC2 is a web service that allows you to run virtual servers for computing.

Compared to physical servers, there is more flexibility in using Amazon EC2. You are able to select what type of security or storage groups to choose from. For physical servers, if you realized you need more RAM after installing one you ordered earlier, it can be a waste of time and money to physically maintain. You would need to take out the original server, order a new one with the proper memory, and install the new RAM in. Cloud servicing is more in demand these days for its customization. You are able to select what type of operating system your instance can have. Also, you are able to control who can have access to the instance.

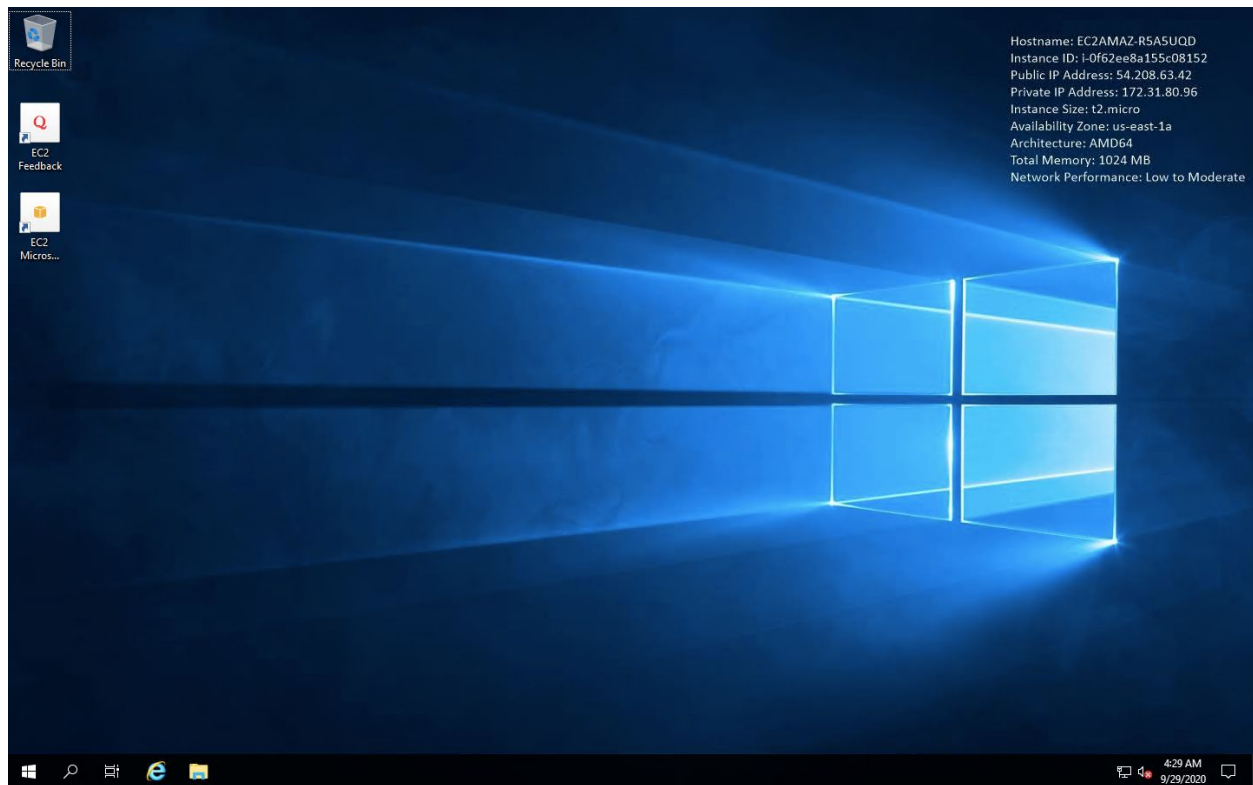
The disadvantages of using Amazon EC2 for building research products are:

- Costs (Specifically technical support fees)
- Huge learning curve
- Cloud issues that may be out of your hands

Even though it may be cheaper to have cloud servers, the monthly fees may add up when requesting technical support. There's three service packages AWS provides: Developer, Business, and Enterprise. Depending on your service package and monthly AWS charge, technical support can charge an additional 3%-7%. Another disadvantage to using Amazon EC2 is the possible learning curve. For projects with bigger teams, developers would need to take training classes to make sure everyone is familiar with AWS. Thus implementing Amazon EC2 will not be instant and may take time to integrate into a project. Lastly, cloud servers can have issues that may be out of your hands. For instance, there's the possibility of an outage or a security threat.

2. Attached the screenshot of your EC2 Virtual Server.

Screen Shot 2020-09-28 at 9.29.21 PM.png:



3. What is “EBS” in Amazon’s Cloud platform? What are the differences between EBS and S3? What are the advantages of creating an additional EBS in your Virtual Machines?

Elastic Block Storage, or EBS, in an Amazon’s Cloud platform works as a persistent storage system with the EC2 cloud. This means that data is available on the AWS EBS servers when the EC2 instances are shut down. They can be compared to as local disk drives on a physical machine. The EBS main use case would be for relational databases, NoSQL databases, big data analytics engines (e.g. Hadoop, Spark), and enterprise applications (e.g. Oracle, Microsoft Sharepoint). It also has a file system workflow and the capability to backup your data.

Amazon Simple Storage Service, or S3, is another storage option that provides object storage. Just from its name describes how it stores data. It simply stores any amount of data from anywhere. It’s use case, other than backup storage and archiving, includes data lakes & big data analytics and hosting websites. The biggest difference between EBS and S3 is the structure on how it stores data. EBS uses a block file system and S3 has no hierarchical level between different files.

The advantages in creating additional EBS in your virtual machine is that it is scalable, highly available, and durable. Adding or removing storage would not hinder any critical workload on the EBS. Thus, EBS are building blocks for your storage needs.

4. What are the differences between traditional SQL databases and NoSQL databases?

SQL (relational databases) was originally developed in the 1970's where data was much simpler and static. As technology progressed, SQL became less equipped to handle the booming amount of data and its growing complexities. Within the last ten years, NoSQL (non-relational databases) became a more popular option for offering that flexibility, scalability, and cost-efficiency. SQL is a tabular database with a strict and predefined structure. As for NoSQL, there's no predefined structure (unstructured data). As for scaling, SQL can be scalable vertically but not as cost efficient for scaling horizontally. This means adding more power (e.g. CPU, RAM) to an existing machine can be done for SQL. However, NoSQL would be the better choice in adding more processing units into your database for scaling up.

5. What are the two Python libraries installed in this exercises? What are their major functions and features? Provide website links for each of them.

The two Python libraries installed in this exercise are Tweepy (<https://www.tweepy.org/>) and Pymongo (<https://api.mongodb.com/python/>). Pymongo enables Python to access MongoDB. Tweepy works similarly, but instead of MongoDB, the Twitter API is accessed by Python.

The first step with Pymongo is to establish a connection with MongoDB using MongoClient. Following right after is creating the database and the collection. The database holds one or more collections. Each collection stores documents, which don't have to have the same schema. Each document can be synonymous to a table entry in a relational database.

As for Tweepy, the first step is authentication by creating an OAuthHandler instance with the consumer key and secret passed through. Next, you need to set the access token to go into the Twitter API. From then on, once you call the Twitter API with your keys, you are able to access the API and can perform a variety of searches. To tie MongoDB and Tweepy together, you would need to move the tweet searches into a MongoDB collection. Now you can view each tweet and its metadata in the MongoDB database.

6. Provide a short summary of MongoDB and list THREE features which you like about MongoDB and the THREE items which you don't like about MongoDB.

MongoDB is a non-relational (NoSQL) database. This is the case because the documents stored in a MongoDB collection do not have to have a fixed schema. These documents contain metadata information for each instance in the collection. To note, a database can contain one or more collections.

Three features I like about MongoDB is:

- The option to use either a GUI or mongo shell for administrative tasks: Sometimes it is easier to view a database through a GUI. But other times, it's easier to call commands to modify a database. For example, clearing a database is easier to do on the mongo shell.
- High speed: Once I ran the get_tweets-liz.py script, there was no wait time. The tweet data in MongoDB was already available. This makes sense since non-relational databases are known to be faster than relational databases.

- System.sessions collection: The config database contains a collection called system.sessions. This internal collection shows session records. Thus, you can keep track when a MongoDB session was created and check for any unknown sessions.

Three features I don't like about MongoDB:

- Robo 3T GUI is not intuitive: This feature is more due to the GUI than the actual MongoDB database. It took me a while to figure out the GUI. It required some exploring and clicking around to understand the format.
- Joins are not supported in relational databases: Since MongoDB is a non-relational database and has no set data structure, joins are not supported. If you wanted to create a code to perform a join in MongoDB, it may slow down the execution speed and performance.
- Updating databases: NoSQL databases may seem like the better choice when collecting data since SQL requires more forethought in planning your tables and relationships properly. However, once the data is collected, changing values in a NoSQL database can get frustrating since there's no structure to the schema as it is.

7. What is your selected keyword in the get_tweets-yourname.py to collect tweets? How many tweets did you get? List the content of first 3 tweets in your report. (Please include all metadata elements in the example, including ID, source, text, location, etc. Screenshots are fine.) Discuss your search results and how to improve the keyword search for your future research projects.

The selected keyword I choose is "Trump". With the 2020 elections coming up and a lot of constant news about him, there should be no shortage of tweets with the word "Trump" in it. Based on the 'data' database, I got 100 tweets since the count parameter applied to the get_tweets-liz.py script limits the number of returns. Shown below is each JSON document for the first three tweets.

Based on the search, each ObjectId key shows a Value range of 26-28 fields. This shows again the idea that MongoDB is a non-relational database and has no set structure. From observing the Value fields, I realize that some fields have a number of fields of their own. For example, "entities" contains "hashtags", "symbols", "user_mentions", and "urls". Even these fields may have their own field depending on the tweet.

To improve the search further than just searching for the keyword "Trump", you can use other parameters when calling the API search command. For instance, you can add the geocode parameter to collect tweets at a particular location range. This parameter is useful because you can find tweets with the keyword "Trump" from a specific city or establishment. Depending on what type of tweets you need, applying different parameters listed in the following link is quite useful

(<https://developer.twitter.com/en/docs/twitter-api/v1/tweets/search/api-reference/get-search-tweets>).

First three tweets in the 'data' database:

Tweet #1:

```
{
  "_id" : ObjectId("5f77f5ffaae714ffaf380d6e"),
  "created_at" : "Sat Oct 03 03:54:37 +0000 2020",
  "id" : NumberLong(1312239609355534336),
  "id_str" : "1312239609355534336",
  "text" : "RT @ResisterSis20: Donald J. Trump was a racist when he refused to rent to Black families, when went after the Central Park 5, when he prop...",
  "truncated" : false,
  "entities" : {
    "hashtags" : [],
    "symbols" : [],
    "user_mentions" : [
      {
        "screen_name" : "ResisterSis20",
        "name" : "Southern Sister Resister - Wordsmith #WeAreFresh",
        "id" : 328756439,
        "id_str" : "328756439",
        "indices" : [
          3,
          17
        ]
      }
    ]
  },
  "urls" : [],
  "metadata" : {
    "iso_language_code" : "en",
    "result_type" : "recent"
  },
  "source" : "<a href='\"http://twitter.com/download/iphone\"' rel='\"nofollow\"'>Twitter for iPhone</a>",
  "in_reply_to_status_id" : null,
  "in_reply_to_status_id_str" : null,
  "in_reply_to_user_id" : null,
  "in_reply_to_user_id_str" : null,
  "in_reply_to_screen_name" : null,
  "user" : {
    "id" : NumberLong(1038084061124747265),
    "id_str" : "1038084061124747265",
    "name" : "mgoro147",
    "screen_name" : "mgoro147",
    "location" : "",
    "description" : "",
    "url" : null,
    "entities" : {
      "description" : {
        "urls" : []
      }
    }
  },
  "protected" : false,
  "followers_count" : 7,
  "friends_count" : 61,
  "listed_count" : 0,
  "created_at" : "Fri Sep 07 15:18:21 +0000 2018",
  "favourites_count" : 2529,
  "utc_offset" : null,
  "time_zone" : null,
  "geo_enabled" : false,
```

```
"verified" : false,
"statuses_count" : 4400,
"lang" : null,
"contributors_enabled" : false,
"is_translator" : false,
"is_translation_enabled" : false,
"profile_background_color" : "F5F8FA",
"profile_background_image_url" : null,
"profile_background_image_url_https" : null,
"profile_background_tile" : false,
"profile_image_url" : "http://abs.twimg.com/sticky/default_profile_images/default_profile_normal.png",
"profile_image_url_https" : "https://abs.twimg.com/sticky/default_profile_images/default_profile_normal.png",
"profile_link_color" : "1DA1F2",
"profile_sidebar_border_color" : "C0DEED",
"profile_sidebar_fill_color" : "DDEEF6",
"profile_text_color" : "333333",
"profile_use_background_image" : true,
"has_extended_profile" : false,
"default_profile" : true,
"default_profile_image" : true,
"following" : false,
"follow_request_sent" : false,
"notifications" : false,
"translator_type" : "none"
},
"geo" : null,
"coordinates" : null,
"place" : null,
"contributors" : null,
"retweeted_status" : {
  "created_at" : "Sat Oct 03 00:29:43 +0000 2020",
  "id" : NumberLong(1312188043843919872),
  "id_str" : "1312188043843919872",
  "text" : "Donald J. Trump was a racist when he refused to rent to Black families, when went after the Central
Park 5, when he... https://t.co/Hm3juYa5SW",
  "truncated" : true,
  "entities" : {
    "hashtags" : [],
    "symbols" : [],
    "user_mentions" : [],
    "urls" : [
      {
        "url" : "https://t.co/Hm3juYa5SW",
        "expanded_url" : "https://twitter.com/i/web/status/1312188043843919872",
        "display_url" : "twitter.com/i/web/status/1...",
        "indices" : [
          117,
          140
        ]
      }
    ]
  }
},
"metadata" : {
  "iso_language_code" : "en",
  "result_type" : "recent"
},
"source" : "<a href='\"http://twitter.com/download/iphone\"' rel='\"nofollow\"'>Twitter for iPhone</a>",
"in_reply_to_status_id" : null,
"in_reply_to_status_id_str" : null,
"in_reply_to_user_id" : null,
"in_reply_to_user_id_str" : null,
```

```
"in_reply_to_screen_name" : null,
"user" : {
  "id" : 328756439,
  "id_str" : "328756439",
  "name" : "Southern Sister Resister - Wordsmith #WeAreFresh",
  "screen_name" : "ResisterSis20",
  "location" : "Somewhere Some place",
  "description" : "I am a reader, writer, and thinker. Every word is new a start, a 2nd chance to get it right.
#SisSpeak is real. #FreshTweets #TogetherWeRise2020",
  "url" : null,
  "entities" : {
    "description" : {
      "urls" : []
    }
  },
  "protected" : false,
  "followers_count" : 68259,
  "friends_count" : 52938,
  "listed_count" : 129,
  "created_at" : "Sun Jul 03 23:53:58 +0000 2011",
  "favourites_count" : 47781,
  "utc_offset" : null,
  "time_zone" : null,
  "geo_enabled" : false,
  "verified" : false,
  "statuses_count" : 181774,
  "lang" : null,
  "contributors_enabled" : false,
  "is_translator" : false,
  "is_translation_enabled" : false,
  "profile_background_color" : "C0DEED",
  "profile_background_image_url" : "http://abs.twimg.com/images/themes/theme1/bg.png",
  "profile_background_image_url_https" : "https://abs.twimg.com/images/themes/theme1/bg.png",
  "profile_background_tile" : false,
  "profile_image_url" : "http://pbs.twimg.com/profile_images/1311617815082864640/L7ya3p9O_normal.jpg",
  "profile_image_url_https" :
"https://pbs.twimg.com/profile_images/1311617815082864640/L7ya3p9O_normal.jpg",
  "profile_banner_url" : "https://pbs.twimg.com/profile_banners/328756439/1601256550",
  "profile_link_color" : "1DA1F2",
  "profile_sidebar_border_color" : "C0DEED",
  "profile_sidebar_fill_color" : "DDEEF6",
  "profile_text_color" : "333333",
  "profile_use_background_image" : true,
  "has_extended_profile" : false,
  "default_profile" : true,
  "default_profile_image" : false,
  "following" : false,
  "follow_request_sent" : false,
  "notifications" : false,
  "translator_type" : "none"
},
"geo" : null,
"coordinates" : null,
"place" : null,
"contributors" : null,
"is_quote_status" : false,
"retweet_count" : 510,
"favorite_count" : 1582,
"favorited" : false,
"retweeted" : false,
"lang" : "en"
```

```
},  
"is_quote_status" : false,  
"retweet_count" : 510,  
"favorite_count" : 0,  
"favorited" : false,  
"retweeted" : false,  
"lang" : "en"  
}
```

Tweet #2:

```
{  
  "_id" : ObjectId("5f77f5ffaae714ffaf380d6f"),  
  "created_at" : "Sat Oct 03 03:54:37 +0000 2020",  
  "id" : NumberLong(1312239609280069632),  
  "id_str" : "1312239609280069632",  
  "text" : "RT @murray_nyc: @realDonaldTrump The same MAGA folks who have spent the past 7 months  
mocking those who have taken the pandemic seriously n...",  
  "truncated" : false,  
  "entities" : {  
    "hashtags" : [],  
    "symbols" : [],  
    "user_mentions" : [  
      {  
        "screen_name" : "murray_nyc",  
        "name" : "MURRAY 🇺🇸 🇬🇪",  
        "id" : 16972715,  
        "id_str" : "16972715",  
        "indices" : [  
          3,  
          14  
        ]  
      },  
      {  
        "screen_name" : "realDonaldTrump",  
        "name" : "Donald J. Trump",  
        "id" : 25073877,  
        "id_str" : "25073877",  
        "indices" : [  
          16,  
          32  
        ]  
      }  
    ],  
    "urls" : []  
  },  
  "metadata" : {  
    "iso_language_code" : "en",  
    "result_type" : "recent"  
  },  
  "source" : "<a href='\"http://twitter.com/download/android\"' rel='\"nofollow\"'>Twitter for Android</a>",  
  "in_reply_to_status_id" : null,  
  "in_reply_to_status_id_str" : null,  
  "in_reply_to_user_id" : null,  
  "in_reply_to_user_id_str" : null,  
  "in_reply_to_screen_name" : null,  
  "user" : {  
    "id" : NumberLong(1268322956838678528),  
    "id_str" : "1268322956838678528",  
    "name" : "LynnTeri_Mica",  
  }  
}
```



```
"screen_name" : "LynnterIM",
"location" : "",
"description" : "",
"url" : null,
"entities" : {
  "description" : {
    "urls" : []
  }
},
"protected" : false,
"followers_count" : 86,
"friends_count" : 386,
"listed_count" : 0,
"created_at" : "Wed Jun 03 23:25:51 +0000 2020",
"favourites_count" : 17026,
"utc_offset" : null,
"time_zone" : null,
"geo_enabled" : false,
"verified" : false,
"statuses_count" : 25895,
"lang" : null,
"contributors_enabled" : false,
"is_translator" : false,
"is_translation_enabled" : false,
"profile_background_color" : "F5F8FA",
"profile_background_image_url" : null,
"profile_background_image_url_https" : null,
"profile_background_tile" : false,
"profile_image_url" : "http://pbs.twimg.com/profile_images/1268324701643866113/WUxjC2Lw_normal.jpg",
"profile_image_url_https" :
"https://pbs.twimg.com/profile_images/1268324701643866113/WUxjC2Lw_normal.jpg",
"profile_banner_url" : "https://pbs.twimg.com/profile_banners/1268322956838678528/1591227195",
"profile_link_color" : "1DA1F2",
"profile_sidebar_border_color" : "C0DEED",
"profile_sidebar_fill_color" : "DDEEF6",
"profile_text_color" : "333333",
"profile_use_background_image" : true,
"has_extended_profile" : true,
"default_profile" : true,
"default_profile_image" : false,
"following" : false,
"follow_request_sent" : false,
"notifications" : false,
"translator_type" : "none"
},
"geo" : null,
"coordinates" : null,
"place" : null,
"contributors" : null,
"retweeted_status" : {
  "created_at" : "Sat Oct 03 03:37:51 +0000 2020",
  "id" : NumberLong(1312235390166806529),
  "id_str" : "1312235390166806529",
  "text" : "@realDonaldTrump The same MAGA folks who have spent the past 7 months mocking those who have taken the pandemic ser... https://t.co/HfvihY7J1Q",
  "truncated" : true,
  "entities" : {
    "hashtags" : [],
    "symbols" : [],
    "user_mentions" : [
      {

```

```
    "screen_name" : "realDonaldTrump",
    "name" : "Donald J. Trump",
    "id" : 25073877,
    "id_str" : "25073877",
    "indices" : [
      0,
      16
    ]
  },
  ],
  "urls" : [
    {
      "url" : "https://t.co/HfvihY7J1Q",
      "expanded_url" : "https://twitter.com/i/web/status/1312235390166806529",
      "display_url" : "twitter.com/i/web/status/1...",
      "indices" : [
        117,
        140
      ]
    }
  ]
},
"metadata" : {
  "iso_language_code" : "en",
  "result_type" : "recent"
},
"source" : "<a href='\"http://twitter.com/download/iphone\"' rel='\"nofollow\"'>Twitter for iPhone</a>",
"in_reply_to_status_id" : NumberLong(1312233807991496704),
"in_reply_to_status_id_str" : "1312233807991496704",
"in_reply_to_user_id" : 25073877,
"in_reply_to_user_id_str" : "25073877",
"in_reply_to_screen_name" : "realDonaldTrump",
"user" : {
  "id" : 16972715,
  "id_str" : "16972715",
  "name" : "MURRAY 🇺🇸 🇬🇧",
  "screen_name" : "murray_nyc",
  "location" : "New York, NY",
  "description" : "Psychology, sociology & politics. Started tweeting during the pandemic. 32 days until Nov 3rd! #Biden2020! En español: @murray_esp",
  "url" : null,
  "entities" : {
    "description" : {
      "urls" : []
    }
  }
},
"protected" : false,
"followers_count" : 23405,
"friends_count" : 50,
"listed_count" : 57,
"created_at" : "Sat Oct 25 22:58:19 +0000 2008",
"favourites_count" : 21129,
"utc_offset" : null,
"time_zone" : null,
"geo_enabled" : true,
"verified" : false,
"statuses_count" : 17482,
"lang" : null,
"contributors_enabled" : false,
"is_translator" : false,
"is_translation_enabled" : false,
```

```
"profile_background_color": "C0DEED",
"profile_background_image_url": "http://abs.twimg.com/images/themes/theme1/bg.png",
"profile_background_image_url_https": "https://abs.twimg.com/images/themes/theme1/bg.png",
"profile_background_tile": false,
"profile_image_url": "http://pbs.twimg.com/profile_images/1266411904026755072/7CiWNMf3_normal.jpg",
"profile_image_url_https":
"https://pbs.twimg.com/profile_images/1266411904026755072/7CiWNMf3_normal.jpg",
"profile_banner_url": "https://pbs.twimg.com/profile_banners/16972715/1585364251",
"profile_link_color": "1DA1F2",
"profile_sidebar_border_color": "C0DEED",
"profile_sidebar_fill_color": "DDEEF6",
"profile_text_color": "333333",
"profile_use_background_image": true,
"has_extended_profile": false,
"default_profile": true,
"default_profile_image": false,
"following": false,
"follow_request_sent": false,
"notifications": false,
"translator_type": "none"
},
"geo": null,
"coordinates": null,
"place": null,
"contributors": null,
"is_quote_status": false,
"retweet_count": 271,
"favorite_count": 2191,
"favorited": false,
"retweeted": false,
"lang": "en"
},
"is_quote_status": false,
"retweet_count": 271,
"favorite_count": 0,
"favorited": false,
"retweeted": false,
"lang": "en"
}
```

Tweet #3:

```
{
  "_id": ObjectId("5f77f5f8ae714ffaf380d70"),
  "created_at": "Sat Oct 03 03:54:37 +0000 2020",
  "id": NumberLong(1312239609191915520),
  "id_str": "1312239609191915520",
  "text": "RT @KosUnbound: If he wins, Democratic presidential nominee Joe Biden has vowed to take in
125,000 refugees during his first year in office...",
  "truncated": false,
  "entities": {
    "hashtags": [],
    "symbols": [],
    "user_mentions": [
      {
        "screen_name": "KosUnbound",
        "name": "Kos Unbound",
        "id": NumberLong(1177924114591272960),
        "id_str": "1177924114591272960",
        "indices": [
```

```
        3,
        14
    ]
  }
},
"urls" : []
},
"metadata" : {
  "iso_language_code" : "en",
  "result_type" : "recent"
},
"source" : "<a href='\"http://twitter.com/download/iphone\"' rel='\"nofollow\"'>Twitter for iPhone</a>",
"in_reply_to_status_id" : null,
"in_reply_to_status_id_str" : null,
"in_reply_to_user_id" : null,
"in_reply_to_user_id_str" : null,
"in_reply_to_screen_name" : null,
"user" : {
  "id" : NumberLong(779476491092434944),
  "id_str" : "779476491092434944",
  "name" : "🇺🇸 Pismo 🇺🇸",
  "screen_name" : "Pismo_B",
  "location" : "United States",
  "description" : "★Constitution ★Capitalism ★Term Limits ★Trump 2020 \n★Followed by 1000's of Deplorable Patriots 🇺🇸🇺🇸🇺🇸",
  "url" : null,
  "entities" : {
    "description" : {
      "urls" : []
    }
  },
  "protected" : false,
  "followers_count" : 115271,
  "friends_count" : 62317,
  "listed_count" : 39,
  "created_at" : "Sat Sep 24 00:24:12 +0000 2016",
  "favourites_count" : 86510,
  "utc_offset" : null,
  "time_zone" : null,
  "geo_enabled" : false,
  "verified" : false,
  "statuses_count" : 190008,
  "lang" : null,
  "contributors_enabled" : false,
  "is_translator" : false,
  "is_translation_enabled" : false,
  "profile_background_color" : "000000",
  "profile_background_image_url" : "http://abs.twimg.com/images/themes/theme1/bg.png",
  "profile_background_image_url_https" : "https://abs.twimg.com/images/themes/theme1/bg.png",
  "profile_background_tile" : false,
  "profile_image_url" : "http://pbs.twimg.com/profile_images/907446755008012289/Jv_Cu_a7_normal.jpg",
  "profile_image_url_https" : "https://pbs.twimg.com/profile_images/907446755008012289/Jv_Cu_a7_normal.jpg",
  "profile_banner_url" : "https://pbs.twimg.com/profile_banners/779476491092434944/1530566180",
  "profile_link_color" : "1B95E0",
  "profile_sidebar_border_color" : "000000",
  "profile_sidebar_fill_color" : "000000",
  "profile_text_color" : "000000",
  "profile_use_background_image" : false,
  "has_extended_profile" : false,
  "default_profile" : false,
```

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"default_profile_image" : false,
"following" : false,
"follow_request_sent" : false,
"notifications" : false,
"translator_type" : "none"
},
"geo" : null,
"coordinates" : null,
"place" : null,
"contributors" : null,
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  "created_at" : "Sat Oct 03 00:20:55 +0000 2020",
  "id" : NumberLong(1312185827321995264),
  "id_str" : "1312185827321995264",
  "text" : "If he wins, Democratic presidential nominee Joe Biden has vowed to take in 125,000 refugees during
his first year i... https://t.co/3u65xVXQhV",
  "truncated" : true,
  "entities" : {
    "hashtags" : [],
    "symbols" : [],
    "user_mentions" : [],
    "urls" : [
      {
        "url" : "https://t.co/3u65xVXQhV",
        "expanded_url" : "https://twitter.com/i/web/status/1312185827321995264",
        "display_url" : "twitter.com/i/web/status/1...",
        "indices" : [
          117,
          140
        ]
      }
    ]
  }
},
"metadata" : {
  "iso_language_code" : "en",
  "result_type" : "recent"
},
"source" : "<a href='\"http://twitter.com/download/android\"' rel='\"nofollow\"'>Twitter for Android</a>",
"in_reply_to_status_id" : null,
"in_reply_to_status_id_str" : null,
"in_reply_to_user_id" : null,
"in_reply_to_user_id_str" : null,
"in_reply_to_screen_name" : null,
"user" : {
  "id" : NumberLong(1177924114591272960),
  "id_str" : "1177924114591272960",
  "name" : "Kos Unbound",
  "screen_name" : "KosUnbound",
  "location" : "",
  "description" : "Just a member of the pride supporting the King 🦁 of the jungle. Currently in BEAST mode.
The pride is pissed off! Alerts on",
  "url" : "https://t.co/GW3H69y8ur",
  "entities" : {
    "url" : {
      "urls" : [
        {
          "url" : "https://t.co/GW3H69y8ur",
          "expanded_url" : "http://parler.com/profile/KosUnbound",
          "display_url" : "parler.com/profile/KosUnb...",
          "indices" : [
            0,
```

```

        23
      ]
    }
  ]
},
"description": {
  "urls": []
}
},
"protected": false,
"followers_count": 6659,
"friends_count": 6383,
"listed_count": 2,
"created_at": "Sat Sep 28 12:33:07 +0000 2019",
"favourites_count": 1027,
"utc_offset": null,
"time_zone": null,
"geo_enabled": false,
"verified": false,
"statuses_count": 4323,
"lang": null,
"contributors_enabled": false,
"is_translator": false,
"is_translation_enabled": false,
"profile_background_color": "F5F8FA",
"profile_background_image_url": null,
"profile_background_image_url_https": null,
"profile_background_tile": false,
"profile_image_url": "http://pbs.twimg.com/profile_images/1201158530390097920/e9-TF3iZ_normal.jpg",
"profile_image_url_https":
"https://pbs.twimg.com/profile_images/1201158530390097920/e9-TF3iZ_normal.jpg",
"profile_banner_url": "https://pbs.twimg.com/profile_banners/1177924114591272960/1569766538",
"profile_link_color": "1DA1F2",
"profile_sidebar_border_color": "C0DEED",
"profile_sidebar_fill_color": "DDEEF6",
"profile_text_color": "333333",
"profile_use_background_image": true,
"has_extended_profile": true,
"default_profile": true,
"default_profile_image": false,
"following": false,
"follow_request_sent": false,
"notifications": false,
"translator_type": "none"
},
"geo": null,
"coordinates": null,
"place": null,
"contributors": null,
"is_quote_status": false,
"retweet_count": 137,
"favorite_count": 82,
"favorited": false,
"retweeted": false,
"possibly_sensitive": false,
"lang": "en"
},
"is_quote_status": false,
"retweet_count": 137,
"favorite_count": 0,
"favorited": false,
```

Elizabeth Fabio
BDA-594

```
"retweeted" : false,  
"lang" : "en"  
}
```