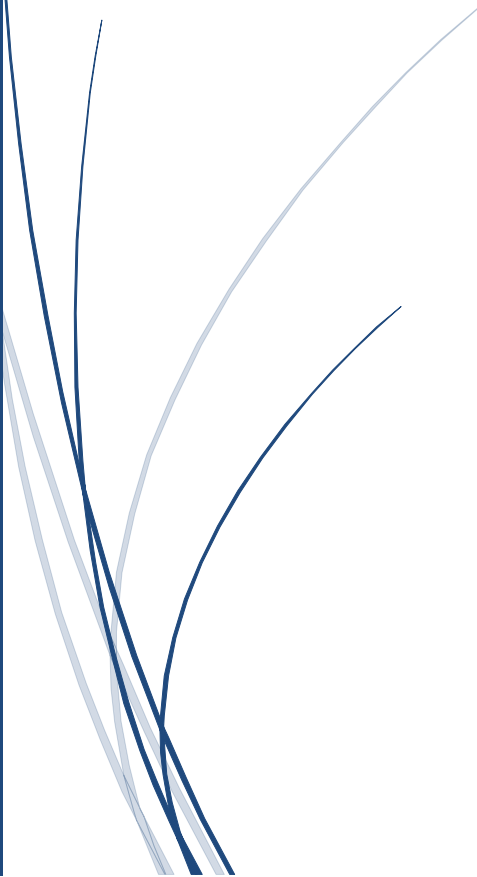




11/4/2018

Docker - Twitter API

Team: The Seekers



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Sithara Krishna Murthy
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SAN JOSE STATE UNIVERSITY

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Abstract

The purpose of this project is to create a client application which implements 8 twitter API's using Docker container framework, on which various components and applications can be deployed. The application is built around the developer's Twitter account. The developer initially requests for the authentication key and token from the Twitter account to work with the APIs. Using the same, the developer can send request to any of the Twitter APIs and receive a response. An HTML page is designed as a part of user interface with CSS styling. The user interface contains a list of the APIs that are implemented by the team. Each of these APIs have a unique functionality. When the user clicks on any of these API's, it redirects to a new page which displays the response to the requested API. The website is hosted on Amazon EC2 server instance, which can be accessed publicly via below link:

<http://ec2-54-183-31-112.us-west-1.compute.amazonaws.com:8000/TwitterApi/TheSeekers/>

Prerequisites

1. Create a Twitter app (For the Twitter Display Name: @TheSeekers6 [Get the OAuth credentials to use in the application]

<http://docs.inboundnow.com/guide/create-twitter-application/#toc-0>

2. Set up the development environment - Install below software:

Python, Django, Docker, AWS EC2 and PyCharm CE (Community Edition)

Github Repository

The Seekers Group:

https://github.com/vidhishah22/CMPE-272-The-Seekers/tree/master/Docker_TwitterAPI_HW

Tools

- Docker Container
- Django Web Framework
- PyCharm Community Edition
- AWS EC2 Server
- Git Repository

Technologies

- Python
- HTML, CSS

Twitter API'S Used

1. Get Status User Timeline

https://developer.twitter.com/en/docs/tweets/timelines/api-reference/get-statuses-user_timeline.html

2. Get Status Mention Timeline

https://developer.twitter.com/en/docs/tweets/timelines/api-reference/get-statuses-mentions_timeline.html

3. Get Account Settings

<https://developer.twitter.com/en/docs/accounts-and-users/manage-account-settings/api-reference/get-account-settings>

4. Get Status based on Tweet Id

<https://developer.twitter.com/en/docs/tweets/post-and-engage/api-reference/get-statuses-show-id>

5. Get Friends list

<https://developer.twitter.com/en/docs/accounts-and-users/follow-search-get-users/api-reference/get-friends-list>

6. Get Followers list

<https://developer.twitter.com/en/docs/accounts-and-users/follow-search-get-users/api-reference/get-followers-list>

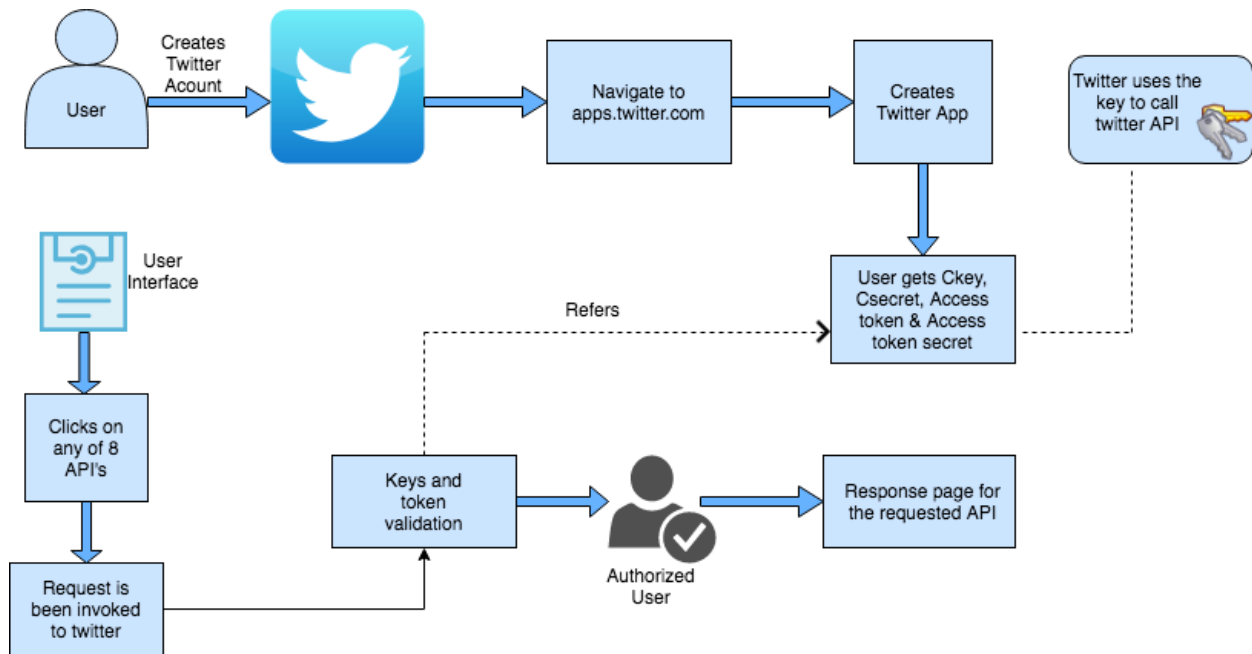
7. Get Twitter's Privacy Policy

<https://developer.twitter.com/en/docs/developer-utilities/privacy-policy/api-reference/get-help-privacy>

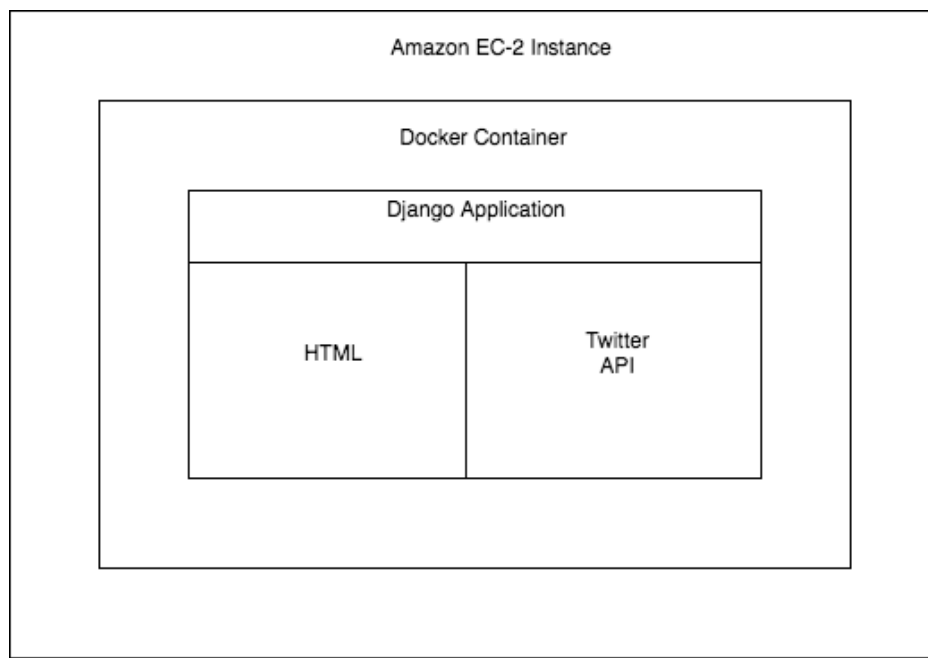
8. Get Twitter's Terms of Service

<https://developer.twitter.com/en/docs/developer-utilities/terms-of-service/api-reference/get-help-tos>

Architecture Diagram

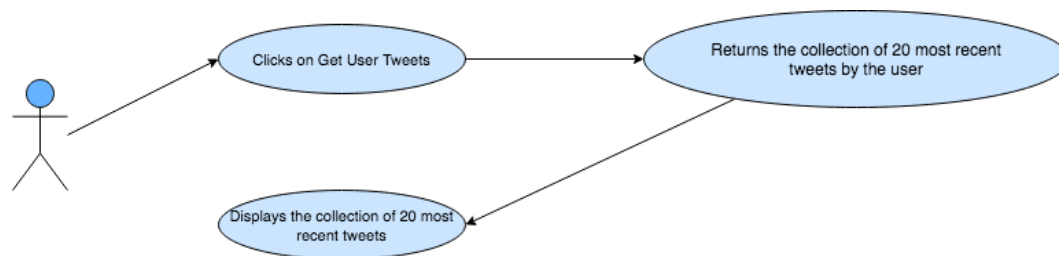


Technology Diagram

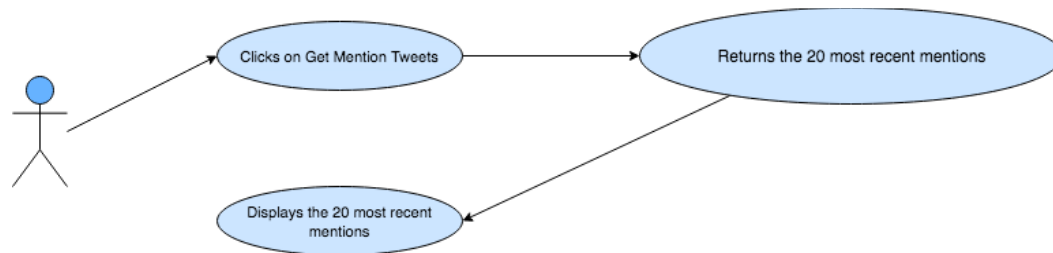


Use Case Diagrams

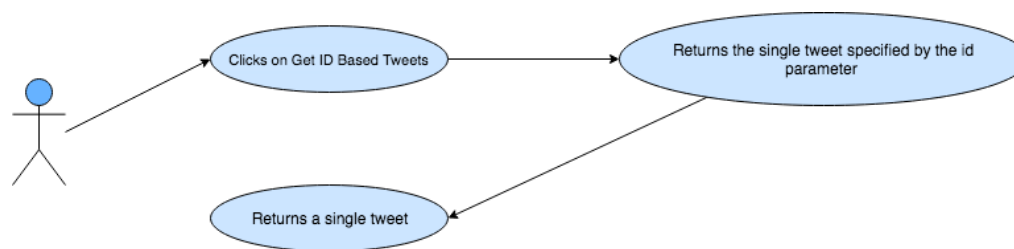
get_user_tweets: This returns the collection of tweets made by a particular user by screen-name. When the user clicks on 'Get User Tweets', the page redirects to [get user tweets](#)



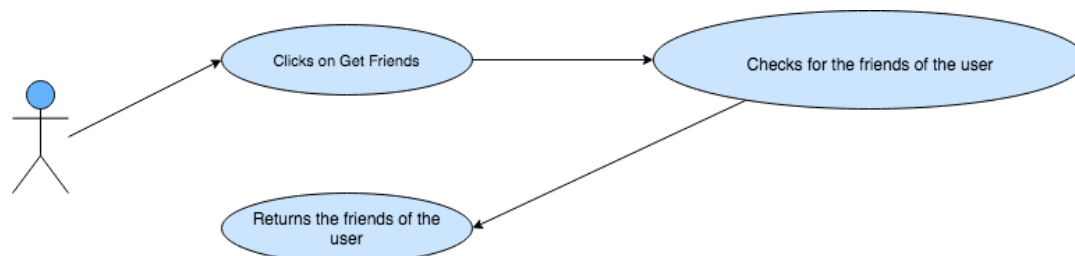
get_mention_tweets: This returns the collection of mentioned tweets for the user by screen-name. When the user clicks on 'Get Mention Tweets', the page redirects to [get Mention Tweets](#)



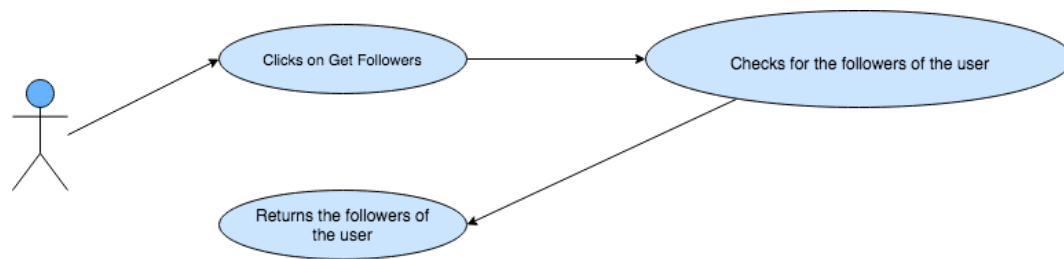
get_id_based_tweets: This returns the specific tweet for the user by screen-name. When the user clicks on 'Get id based Tweets', the page redirects to [Get Id based Tweet](#)



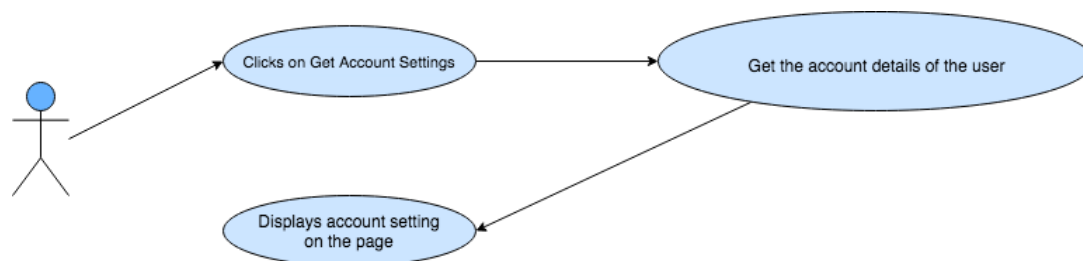
get_friends: This returns the collection of friends for the user by screen-name. When the user clicks on 'Get Friends List', the page redirects to [Get Friends](#)



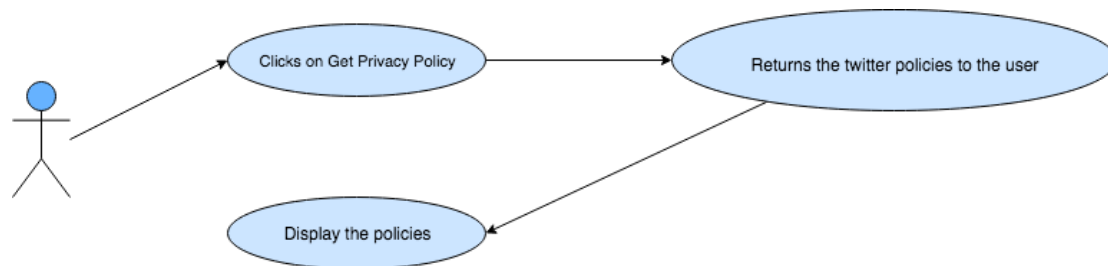
get_followers: This returns the collection of followers for the user by screen-name. When the user clicks on 'Get Followers List', the page redirects to [Get Followers](#)



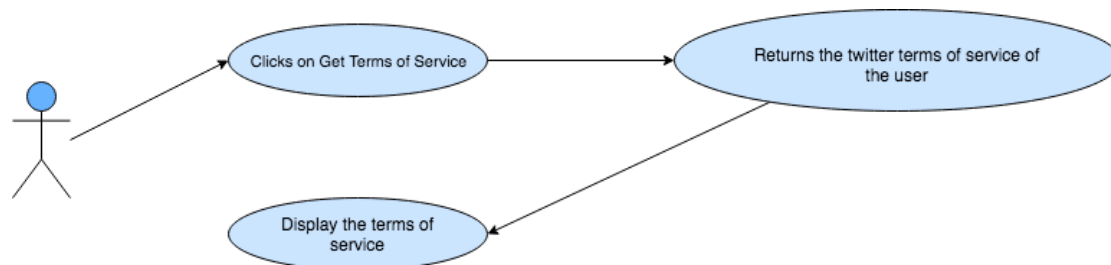
get_account_settings: This returns the account settings of the user by screen-name. When the user clicks on 'Get Account Settings', the page redirects to [Account Settings](#)



get_privacy_policy: This returns Twitter's Privacy policy. When the user clicks on 'Get Twitter Privacy Policy', the page redirects to [Twitter Privacy Policy](#)



get_terms_of_service: This returns Twitter's Terms of Service. When the user clicks on 'Get Twitter Terms of Service', the page redirects to [Twitter Terms of Service](#)



Test Cases

We have implemented **Django's in-build "UnitTest" framework** for development and execution of unit test cases involved within project.

Test Case No	Test Case Description	Status (Pass/Fail)
TC_1	Verify that get_user_tweets return a "status working get_user_tweet 200" response	PASSED
TC_2	Verify that get_mention_tweets return a "status working get_mention_tweets 200" response	PASSED
TC_3	Verify that get_id_based_tweets return a "status working get_id_based_tweets 200" response	PASSED
TC_4	Verify that get_friends return a "status working get_friends 200" response	PASSED
TC_5	Verify that get_followers return a "status working get_followers 200" response	PASSED
TC_6	Verify that get_account_settings return a "status working get_account_settings 200" response	PASSED
TC_7	Verify that get_privacy_policy return a "status working get_privacy_policy 200" response	PASSED
TC_8	Verify that get_terms_of_service return a "status working get_terms_of_service 200" response	PASSED

Test Case Execution Snapshot

```
ec2-user@ip-172-31-15-91:~/TwitterAPICall/CMPE-272-The-Se...
[ec2-user@ip-172-31-15-91 Docker_TwitterAPI_HW]$ ls
db.sqlite3      Dockerfile  readme.txt      TwitterApi
docker-compose.yml  manage.py  requirements.txt  TwitterApiProj
[ec2-user@ip-172-31-15-91 Docker_TwitterAPI_HW]$ docker-compose up
Starting docker_twitterapi_hw_web_1 ... done
Attaching to docker_twitterapi_hw_web_1
web_1 | Creating test database for alias 'default'...
web_1 | System check identified no issues (0 silenced).
web_1 | Get Account Settings Unit Test
web_1 | status working get_account_settings 200
web_1 | .Get Followers Unit Test
web_1 | status working get_followers 200
web_1 | .Get Friends Unit Test
web_1 | status working get_friends 200
web_1 | .Get ID based Tweets Unit Test
web_1 | status working get_id_based_tweets 200
web_1 | .Get Mention Tweets Unit Test
web_1 | status working get_mention_tweets 200
web_1 | .Get Privacy Policy Unit Test
web_1 | status working get_privacy_policy 200
web_1 | .Get Privacy Policy Unit Test
web_1 | status working get_terms_of_service 200
web_1 | .Get User Tweets Unit Test
web_1 | status working get_user_tweets 200
web_1 | .
web_1 | -----
web_1 | Ran 8 tests in 0.587s
web_1 |
web_1 | OK
web_1 | Destroying test database for alias 'default'...
web_1 | Performing system checks...
web_1 |
web_1 | System check identified no issues (0 silenced).
web_1 |
web_1 | You have 15 unapplied migration(s). Your project may not work properly
web_1 | until you apply the migrations for app(s): admin, auth, contenttypes, sessions.
web_1 | | Run 'python manage.py migrate' to apply them.
web_1 | October 27, 2018 - 17:19:27
web_1 | Django version 2.1.2, using settings 'TwitterApiProj.settings'
web_1 | Starting development server at http://0.0.0.0:8000/
web_1 | Quit the server with CONTROL-C.
```


Deployment

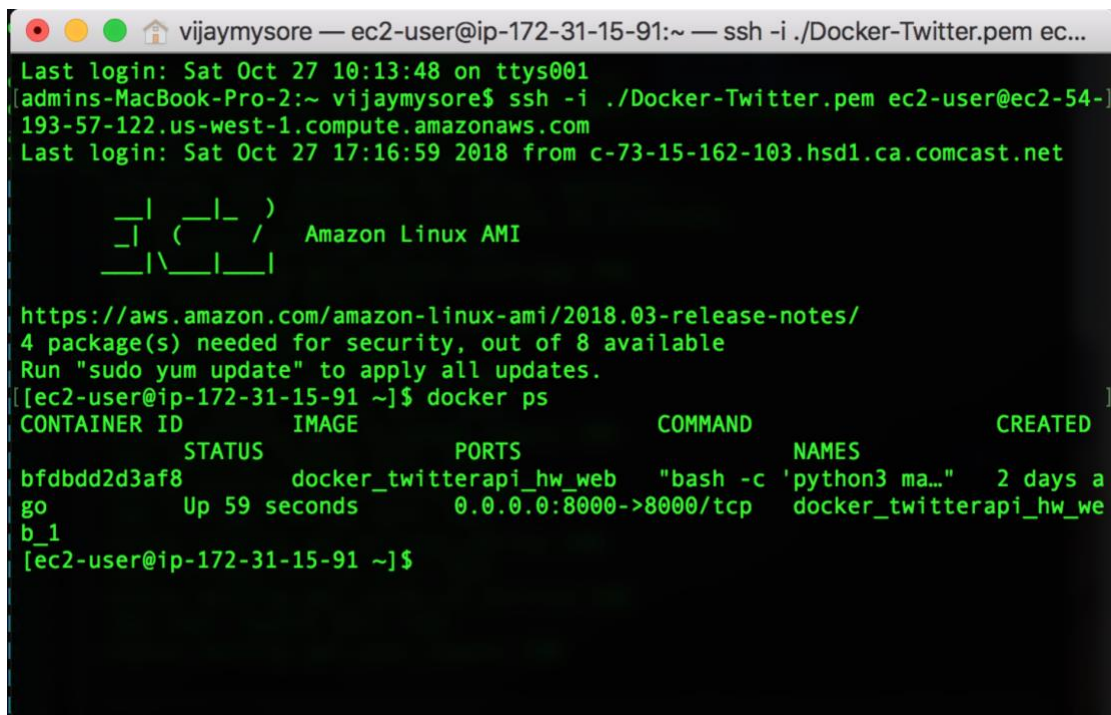
Create an AWS EC2 instance and ssh to it. Then follow the below steps to install Git, Docker and Docker-Compose on the Linux AWS server.

- Update the installed packages and package cache on your instance.
`$ sudo yum update -y`
- Install Git
`$ sudo yum upgrade`
`$ sudo yum install git`
- Download the project code from GitHub
`$ Git clone https://github.com/vidhishah22/CMPE-272-The-Seekers.git`
- Install the most recent Docker Community Edition package.
`$ sudo yum install -y docker`
- Start the Docker service.
`$ sudo service docker start`
- Add the ec2-user to the docker group so you can execute Docker commands without using sudo.
`$ sudo usermod -a -G docker ec2-user`
- Log out and log back in again to pick up the new docker group permissions. You can accomplish this by closing your current SSH terminal window and reconnecting to your instance in a new one. Your new SSH session will have the appropriate docker group permissions.
- Verify that the ec2-user can run Docker commands without sudo.
`$ docker info`
- Run this command to download the latest version of Docker Compose:
`$ sudo curl -L "https://github.com/docker/compose/releases/download/1.22.0/docker-compose-$(uname -s)-$(uname -m)" -o /usr/local/bin/docker-compose`
- Apply executable permissions to the binary:
`$ sudo chmod +x /usr/local/bin/docker-compose`
- Test the installation.
`$ docker-compose --version`
- Once done with the installation, the project can be run on the AWS server using the following command:
`$ Docker-compose build`
`$ Docker-compose up -d --` To keep the project running on the background.

Steps to create a Django project and application

- Create a Django project using the following command:
`$ django-admin startproject <projectname>`
- Create an app within the project:
`$ python manage.py startapp <appname>`
- To run the project:
`$ python manage.py runserver`
- To run the project on a docker container, add the following files to the project.
Docker-compose.yml
Dockerfile
requirements.txt

Docker Screenshots



```
vijaymysore — ec2-user@ip-172-31-15-91:~ — ssh -i ./Docker-Twitter.pem ec2-...
Last login: Sat Oct 27 10:13:48 on ttys001
[admins-MacBook-Pro-2:~ vijaymysore$ ssh -i ./Docker-Twitter.pem ec2-user@ec2-54-193-57-122.us-west-1.compute.amazonaws.com
Last login: Sat Oct 27 17:16:59 2018 from c-73-15-162-103.hsd1.ca.comcast.net

  _ | _ | _ )
  _ | ( _ | /  Amazon Linux AMI
  _ | \ _ | _ |

https://aws.amazon.com/amazon-linux-ami/2018.03-release-notes/
4 package(s) needed for security, out of 8 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-31-15-91 ~]$ docker ps
CONTAINER ID        STATUS          IMAGE                        COMMAND                  CREATED
bfdbdd2d3af8        Up 59 seconds   docker_twitterapi_hw_web    "bash -c 'python3 ma..." 2 days a
go                  Up 59 seconds   0.0.0.0:8000->8000/tcp        docker_twitterapi_hw_we
b_1
[ec2-user@ip-172-31-15-91 ~]$
```

```

vijaymysore — ec2-user@ip-172-31-15-91:~ — ssh -i ./Docker-Twitter.pem ec...
[admins-MacBook-Pro-2:~ vijaymysore$ ssh -i ./Docker-Twitter.pem ec2-user@ec2-54-193-57-122.us-west-1.compute.amazonaws.com
The authenticity of host 'ec2-54-193-57-122.us-west-1.compute.amazonaws.com (54.193.57.122)' can't be established.
ECDSA key fingerprint is SHA256:WLX200W80GopAzifUGi9NzkTCXa4M8IoygpQQDky4eg.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'ec2-54-193-57-122.us-west-1.compute.amazonaws.com,54.193.57.122' (ECDSA) to the list of known hosts.
Last login: Wed Oct 24 21:52:36 2018 from c-73-15-162-103.hsd1.ca.comcast.net

 _ _ | _ _ | _ _ )
 _ | ( _ _ /
 _ | \ _ _ | _ _ |

Amazon Linux AMI

https://aws.amazon.com/amazon-linux-ami/2018.03-release-notes/
4 package(s) needed for security, out of 8 available
Run "sudo yum update" to apply all updates.
[ec2-user@ip-172-31-15-91 ~]$ docker --version
Docker version 18.06.1-ce, build e68fc7a215d7133c34aa18e3b72b4a21fd0c6136
[ec2-user@ip-172-31-15-91 ~]$ docker-compose --version
docker-compose version 1.22.0, build f46880fe
[ec2-user@ip-172-31-15-91 ~]$ █

```

Amazon EC2 Instance Snapshot

aws

Services

Resource Groups

★

sithara

N. California

Support

EC2 Dashboard

Events

Tags

Reports

Limits

INSTANCES

Instances

Launch Templates

Spot Requests

Reserved Instances

Dedicated Hosts

Capacity Reservations

IMAGES

AMIs

Bundle Tasks

ELASTIC BLOCK STORE

Volumes

Snapshots

Lifecycle Manager

NETWORK & SECURITY

Security Groups

Elastic IPs

Placement Groups

Key Pairs

Network Interfaces

Launch Instance

Connect

Actions

Filter by tags and attributes or search by keyword

<

1 to 3 of 3

>

Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IPv4)	IPv4 Public IP
Twitter API C...	i-0d7e8d3bcd4d8bc92	t2.micro	us-west-1c	running	2/2 checks ...	None	ec2-54-193-57-122.us-...	54.193.57.122
Ansible_Hell...	i-032d82e8ce174068f	t2.micro	us-west-1c	stopped		None		-
Docker Twitter	i-037f94906667039	t2.micro	us-west-1a	stopped		None		-

Instance: i-0d7e8d3bcd4d8bc92 (Twitter API Calls)

Public DNS: ec2-54-193-57-122.us-west-1.compute.amazonaws.com

Description

Status Checks

Monitoring

Tags

Instance ID	i-0d7e8d3bcd4d8bc92	Public DNS (IPv4)	ec2-54-193-57-122.us-west-1.compute.amazonaws.com
Instance state	running	IPv4 Public IP	54.193.57.122
Instance type	t2.micro	IPv6 IPs	-
Elastic IPs		Private DNS	ip-172-31-15-91.us-west-1.compute.internal
Availability zone	us-west-1c	Private IPs	172.31.15.91
Security groups	launch-wizard-1 - view inbound rules - view outbound rules	Secondary private IPs	
Scheduled events	No scheduled events	VPC ID	vpc-dd5274ba
AMI ID	amzn-ami-hvm-2018.03.0.20180811-x86_64-gp2 (ami-0bdb828fd58c52235)	Subnet ID	subnet-5e6d4005
Platform	-	Network interfaces	eth0
IAM role	-	Source/dest. check	True
Key pair name	Docker-Twitter	T2/T3 Unlimited	Disabled
Owner	493118612659	EBS-optimized	False
Launch time	October 27, 2018 at 10:14:43 AM UTC-7 (less than one hour)	Root device type	ebs

Website Screenshots

- Home Page

The screenshot shows a web browser with the URL `ec2-54-183-31-112.us-west-1.compute.amazonaws.com:8000/TwitterApi/TheSeekers/`. The page has a green sidebar on the left with the title "Twitter APIs" and a list of links: Home, Get User Tweets, Get Mention Tweets, Get Id based Tweet, Get Friends, Get Followers, Account Settings, Twitter Privacy Policy, and Twitter Terms of Service. The main content area has a title "Implementation of 8 Twitter APIs" followed by a horizontal line. Below this is a section with a Twitter logo and gears icon, a list of technologies (Amazon EC2, Docker Container, Django Framework/Python, HTML/CSS), and a paragraph describing the project as work of "THE SEEKERS" Team. It also states the purpose of the project is to write a client application to implement 8 Twitter API's, using Docker Container framework, and built around a developer's Twitter account.

- Get User Tweets

The screenshot shows the same web browser with the URL `ec2-54-183-31-112.us-west-1.compute.amazonaws.com:8000/TwitterApi/TheSeekers/getusertweets`. The sidebar is identical to the home page. The main content area has the title "Implementation of 8 Twitter APIs" followed by a horizontal line, and then a sub-title "Get Status User Timeline". Below this is a paragraph stating "Returns a collection of the most recent 20 Tweets posted by the user @TheSeekers6" and a link to the Twitter API documentation. A table displays the most recent tweets.

Tweet ID	User Tweet
1049869614321000448	RT @nytimesbusiness: Many long-serving Amazon workers are fuming that, based on what they've been told so far about the \$15 an hour wage hi...
1049796778063622145	Just ran my first Django Program... Feeling Awesome! :)
1046140286492073984	RT @DisneyPixar: Hold onto your hope—it might just be your secret ingredient! https://t.co/0TRDxxs9hw
1046139305662402560	My First Tweet :)

- Get Mentions Tweets

Implement Twitter APIs

Not Secure | ec2-54-183-31-112.us-west-1.compute.amazonaws.com:8000/TwitterApi/TheSeekers/getmentiontweets

Apps | Get started with G... | Canvas | ESP | Sjsu | DM | Large Scale

Twitter APIs

- Home
- Get User Tweets
- Get Mention Tweets
- Get Id based Tweet
- Get Friends
- Get Followers
- Account Settings
- Twitter Privacy Policy
- Twitter Terms of Service

Implementation of 8 Twitter APIs

Get Status Mention Timeline

Returns the 20 most recent mentions for the user @TheSeekers6

https://developer.twitter.com/en/docs/tweets/timelines/api-reference/get-statuses-mentions_timeline.html

Tweet ID	User Mention Tweets
1049820799723425792	@TheSeekers6 Hello The Seekers group.. We are in need of good developers.. hope you guys can help! :)
1049820539852705792	Chilling out with @TheSeekers6

- Get Id based Tweet

Implement Twitter APIs

Not Secure | ec2-54-183-31-112.us-west-1.compute.amazonaws.com:8000/TwitterApi/TheSeekers/getidbasedtweets

Apps | Get started with G... | Canvas | ESP | Sjsu | DM | Large Scale

Twitter APIs

- Home
- Get User Tweets
- Get Mention Tweets
- Get Id based Tweet
- Get Friends
- Get Followers
- Account Settings
- Twitter Privacy Policy
- Twitter Terms of Service

Implementation of 8 Twitter APIs

Get Tweet Based On Id

Returns a single Tweet, specified by the id parameter. The Tweet's author will also be embedded within the Tweet.

<https://developer.twitter.com/en/docs/tweets/post-and-engage/api-reference/get-statuses-show-id>

Tweet ID	User Mention Tweets	Screen Name	Created At
1049869614321000448	RT @nytimesbusiness: Many long-serving Amazon workers are fuming that, based on what they've been told so far about the \$15 an hour wage hi...	@TheSeekers6	Sat Sep 29 20:39:40 +0000 2018

- Get Friends

Implement Twitter APIs

Not Secure | ec2-54-183-31-112.us-west-1.compute.amazonaws.com:8000/TwitterApi/TheSeekers/getfriends

Apps | Get started with G... | Canvas | ESP | Sjsu | DM | Large Scale

Twitter APIs

Home
Get User Tweets
Get Mention Tweets
Get Id based Tweet
Get Friends
Get Followers
Account Settings
Twitter Privacy Policy
Twitter Terms of Service

Implementation of 8 Twitter APIs

Get Friends

Returns a cursored collection of user objects for every user @TheSeekers6 is following

<https://developer.twitter.com/en/docs/accounts-and-users/follow-search-get-users/api-reference/get-friends-list>

Friend ID	Friend Name	Screen Name	Location	Followers Count	Friends Count	Listed Count	Favourites Count
807095	The New York Times	@nytimes	New York City	42365239	875	197457	17451
18839785	Narendra Modi	@narendramodi	India	44372384	2065	22752	0
1045747141547704321	Reetika	@Goel_Reetika	Fremont, CA	4	11	0	0
1045830773037617153	Sithara KrishnaMurthy	@SitharaKrishna1		2	4	0	0
2166930900	Sandeep Maheshwari	@SandeepSeminars	New Delhi	154124	0	74	0
111405668	Sachin Gupta	@SachinG	Sunnyvale, California	145	227	2	14
67418441	Disney	@Disney		5907570	47	13860	96

- Get Followers

Implement Twitter APIs

Not Secure | ec2-54-183-31-112.us-west-1.compute.amazonaws.com:8000/TwitterApi/TheSeekers/getfollowers

Apps | Get started with G... | Canvas | ESP | Sjsu | DM | Large Scale

Twitter APIs

Home
Get User Tweets
Get Mention Tweets
Get Id based Tweet
Get Friends
Get Followers
Account Settings
Twitter Privacy Policy
Twitter Terms of Service

Implementation of 8 Twitter APIs

Get Followers

Returns a cursored collection of user objects for users following the user @TheSeekers6

<https://developer.twitter.com/en/docs/accounts-and-users/follow-search-get-users/api-reference/get-followers-list>

Followers ID	Followers Name	Screen Name	Location	Followers Count	Friends Count	Listed Count	Favourites Count
76780580	Ravi Mantha	@rmantha2	Earth	494565	436674	458	3674
185734052	Vidhi Shah	@vidhishah2288	Pune, Maharashtra	14	13	0	0
712405529402982400	Pragya Gautam	@92_pragya		13	13	0	3
1045830773037617153	Sithara KrishnaMurthy	@SitharaKrishna1		2	4	0	0
1045747141547704321	Reetika	@Goel_Reetika	Fremont, CA	4	11	0	0

- Account Settings

Twitter APIs

Home

Get User Tweets

Get Mention Tweets

Get Id based Tweet

Get Friends

Get Followers

Account Settings

Twitter Privacy Policy

Twitter Terms of Service

Implementation of 8 Twitter APIs

Get Account Settings

Returns settings for the authenticated user @TheSeekers6

<https://developer.twitter.com/en/docs/accounts-and-users/manage-account-settings/api-reference/get-account-settings>

Screen Name	Geo Enabled	Language	Discoverable_by_email	Discoverable_by_mobile_phone
@TheSeekers6	False	en	False	True

- Twitter Privacy Policy

Twitter APIs

Home

Get User Tweets

Get Mention Tweets

Get Id based Tweet

Get Friends

Get Followers

Account Settings

Twitter Privacy Policy

Twitter Terms of Service

Implementation of 8 Twitter APIs

Get Twitter Privacy Policy

<https://developer.twitter.com/en/docs/developer-utilities/privacy-policy/api-reference/get-help-privacy>

We have made revisions to this Privacy Policy, effective June 18th, 2017. You can see the new Privacy Policy here. By continuing to use our services after June 18th, you agree to this new Privacy Policy. A summary of changes can be found on our Help Center.

Twitter Privacy Policy
Our Services instantly connect people everywhere to what's most meaningful to them. For example, any registered user of Twitter can send a Tweet, which is public by default, and can include a message of 140 characters or less and content like photos, videos, and links to other websites.

What you share on Twitter may be viewed all around the world instantly. You are what you Tweet!

- Twitter Terms of Service

Implement Twitter APIs

Not Secure | ec2-54-183-31-112.us-west-1.compute.amazonaws.com:8000/TwitterApi/TheSeekers/gettwitterterms

Apps | Get started with G... | Canvas | ESP | Sjsu | DM | Large Scale

Twitter APIs

- Home
- Get User Tweets
- Get Mention Tweets
- Get Id based Tweet
- Get Friends
- Get Followers
- Account Settings
- Twitter Privacy Policy
- Twitter Terms of Service

Implementation of 8 Twitter APIs

Get Twitter Terms Of Service

<https://developer.twitter.com/en/docs/developer-utilities/terms-of-service/api-reference/get-help-tos>

Download: TheTwitterUserAgreement.pdf

If you live in the United States, the Twitter User Agreement comprises these Terms of Service, our Privacy Policy, the Twitter Rules and all incorporated policies.
If you live in the European Union or otherwise outside the United States, the Twitter User Agreement comprises these Terms of Service, our Privacy Policy, the Twitter Rules and all incorporated policies.

Twitter Terms of Service
(if you live in the United States)
These Terms of Service ("Terms") govern your access to and use of our services, including our various websites, SMS, APIs, email notifications, applications, buttons, widgets, ads, commerce services, and our other covered services

Reference

- <https://developer.twitter.com>
- <https://www.draw.io>
- <http://docs.inboundnow.com/guide/create-twitter-application/#toc-0>
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- <https://docs.aws.amazon.com/AmazonECR/latest/userguide/docker-basics.html>
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- <https://docs.docker.com/compose/install/#install-compose>