TWITTER BOTS AND APIS

SJU ACM STUDENT CHAPTER

SJU ACM
Student Chapter

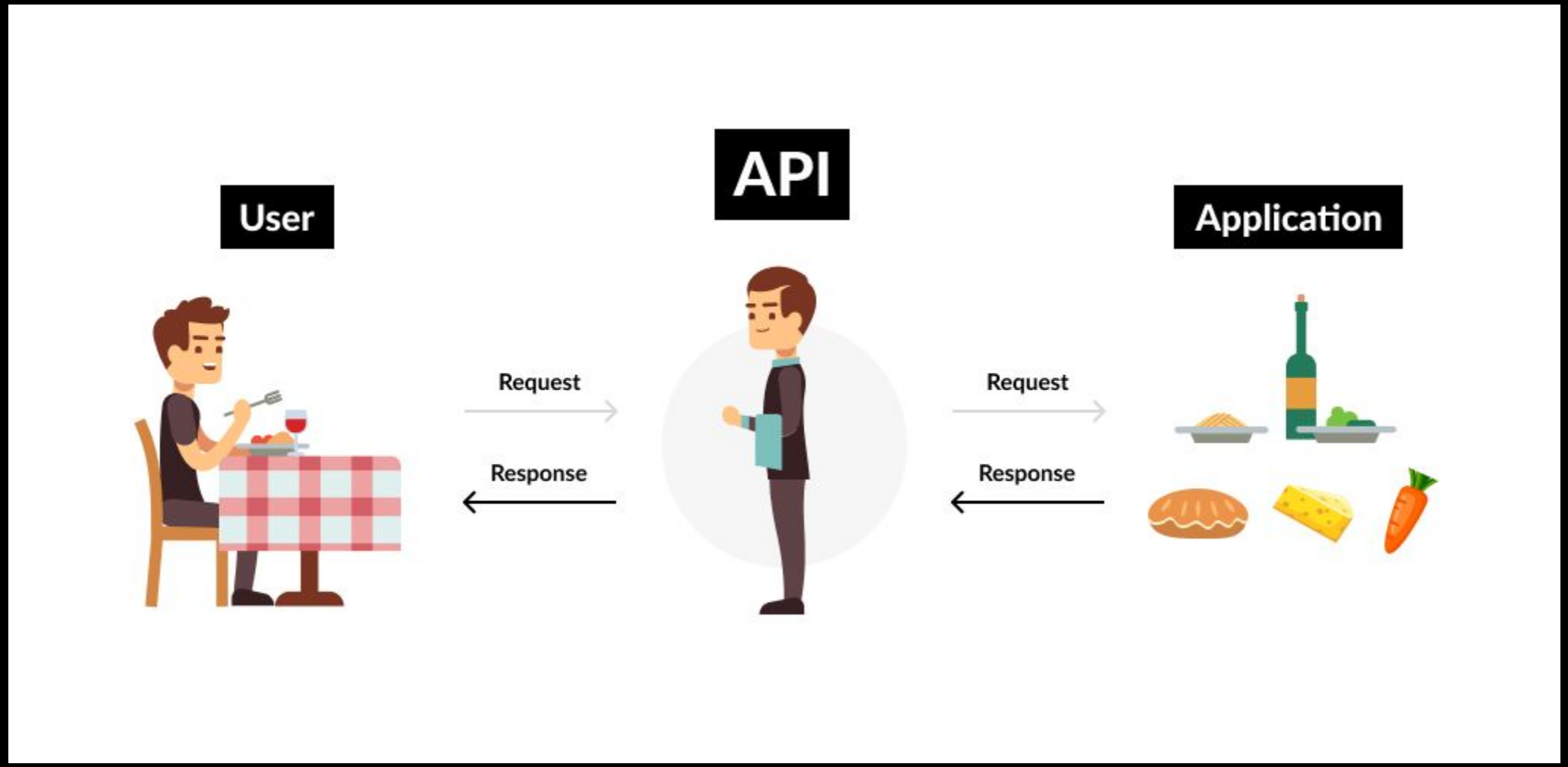
SIGN IN FORM:

THE BASICS OF APIS

WHAT IS AN API?

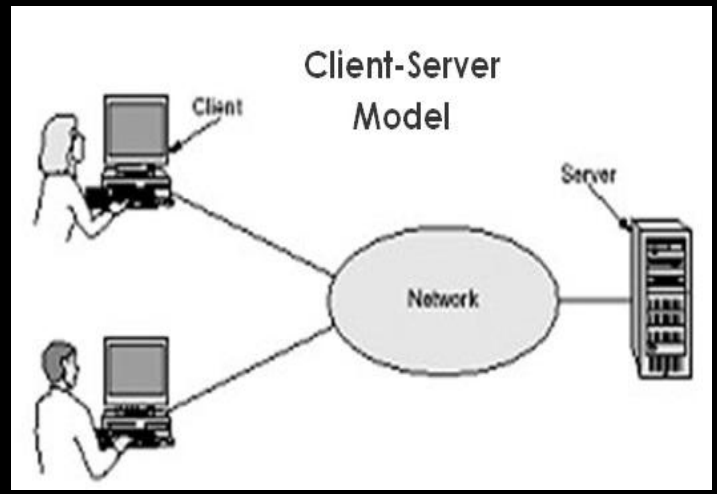
- API: APPLICATION PROGRAMMING INTERFACE
- AMAZON WEB SERVICES (AWS) DEFINES API AS:
  - "...MECHANISMS THAT ENABLE TWO SOFTWARE COMPONENTS TO COMMUNICATE WITH EACH OTHER USING A SET OF DEFINITIONS AND PROTOCOLS."
- EXAMPLE OF HOW AN API WORKS:
  - THE WEATHER BUREAU'S SOFTWARE SYSTEM CONTAINS DAILY WEATHER DATA. THE WEATHER APP ON YOUR PHONE "TALKS" TO THIS SYSTEM VIA APIS AND SHOWS YOU DAILY WEATHER UPDATES ON YOUR PHONE.

SIMPLIFIED EXAMPLE OF HOW AN API WORKS



HOW DO APIS WORK? (PART 1)

- APIS ARE USUALLY TALKED ABOUT IN TERMS OF CLIENT AND SERVER.
  - APPLICATION SENDING THE REQUEST IS THE CLIENT
  - APPLICATION SENDING THE RESPONSE IS CALLED THE SERVER
- EXAMPLE:
  - IN THE WEATHER EXAMPLE, THE WEATHER BUREAU'S DATABASE IS THE SERVER, AND THE MOBILE APP (I.E. THE WEATHER CHANNEL/WEATHER APP ON YOUR PHONE) IS THE CLIENT.
- API ENDPOINTS:
  - A POINT AT WHICH AN API - THE CODE THAT ALLOWS TWO SOFTWARE PROGRAMS TO COMMUNICATE WITH EACH OTHER -- CONNECTS WITH THE SOFTWARE PROGRAM.
    - API ENDPOINTS = SPECIFIC DIGITAL LOCATION WHERE REQUESTS FOR INFO ARE SENT BY ONE PROGRAM TO RETRIEVE THE DIGITAL RESOURCE THAT EXISTS THERE. ENDPOINTS SPECIFY WHERE APIS CAN ACCESS RESOURCES, HELP GUARANTEE THE PROPER FUNCTIONING OF THE INCORPORATED SOFTWARE.



HOW DO APIS WORK? (PART 2)

- THERE ARE FOUR WAYS APIS CAN WORK (DEPENDING ON DATE OF CREATION AND REASON FOR CREATION):
  - SOAP APIS
    - SOAP = SIMPLE OBJECT ACCESS PROTOCOL
    - CLIENT/SERVER EXCHANGE MESSAGES USING XML.
      - XML = EXTENSIBLE MARKUP LANGUAGE
    - MORE POPULAR IN THE PAST, LESS FLEXIBLE TODAY
  - RPC APIS
    - RPC = REMOTE PROCEDURE CALLS
    - CLIENT COMPLETES FUNCTION/PROCEDURE ON SERVER, THEN SERVER SENDS OUTPUT BACK TO CLIENT

HOW DO APIS WORK? (PART 3)

- WEBSOCKET APIS
  - USES JSON OBJECTS TO PASS DATA
  - SUPPORTS TWO-WAY COMMUNICATION BETWEEN CLIENT APPS AND SERVERS
  - SERVER CAN SEND CALLBACK MESSAGES TO CONNECTED CLIENTS.
- REST APIS
  - REST = REPRESENTATIONAL STATE TRANSFER
  - MOST POPULAR/FLEXIBLE API ON THE WEB TODAY.
  - CLIENT SENDS REQUESTS TO SERVER AS DATA
    - SERVER USES THIS CLIENT INPUT TO START ITS INTERNAL FUNCTIONS AND RETURNS THIS DATA BACK TO CLIENT

BENEFITS OF USING REST APIS

- INTEGRATION
  - INTEGRATE NEW APPS WITH EXISTING SOFTWARE SYSTEMS
  - INCREASED DEVELOPMENT SPEED
    - NO FUNCTIONALITY WRITTEN FROM SCRATCH
  - LEVERAGE EXISTING CODE
- INNOVATION
  - ARRIVAL OF NEW APP = CHANGES IN ENTIRE INDUSTRIES
  - MAKE CHANGES AT API LEVEL W/O HAVING TO REWRITE WHOLE CODE
- EXPANSION
  - UNIQUE OPPORTUNITY TO EXPAND TO MEET CLIENT'S NEEDS ON DIFF. PLATFORMS
  - EX:
    - MAPS API ALLOWS MAP INFO INTEGRATION VIA WEBSITES, ANDROID, IOS, ETC.
    - ANY BIZ CAN DO SIMILAR THINGS BY USING FREE/PAID APIS
- EASE OF MAINTENANCE
  - API ACTS AS A GATEWAY BETWEEN TWO SYSTEMS
  - EACH SYSTEM = HAS TO MAKE CHANGES INTERNALLY TO PREVENT IMPACT TO API
    - THIS WAY, ANY CODE CHANGES BY ONE PARTY DON'T IMPACT ANOTHER PARTY.

INTRO TO THE TWITTER BOT

WHAT IS A TWITTER BOT?

- IN ESSENCE, A TWITTER BOT IS A TYPE OF SOFTWARE BOT THAT CONTROLS A TWITTER ACCOUNT VIA THE TWITTER API.

HOW TWITTER BOTS WORK

- TWITTER BOTS ARE ABLE TO AUTONOMOUSLY PERFORM ACTIONS SUCH AS:
  - TWEETING
  - RE-TWEETING
  - LIKING
  - FOLLOWING
  - UNFOLLOWING
  - DIRECT MESSAGING

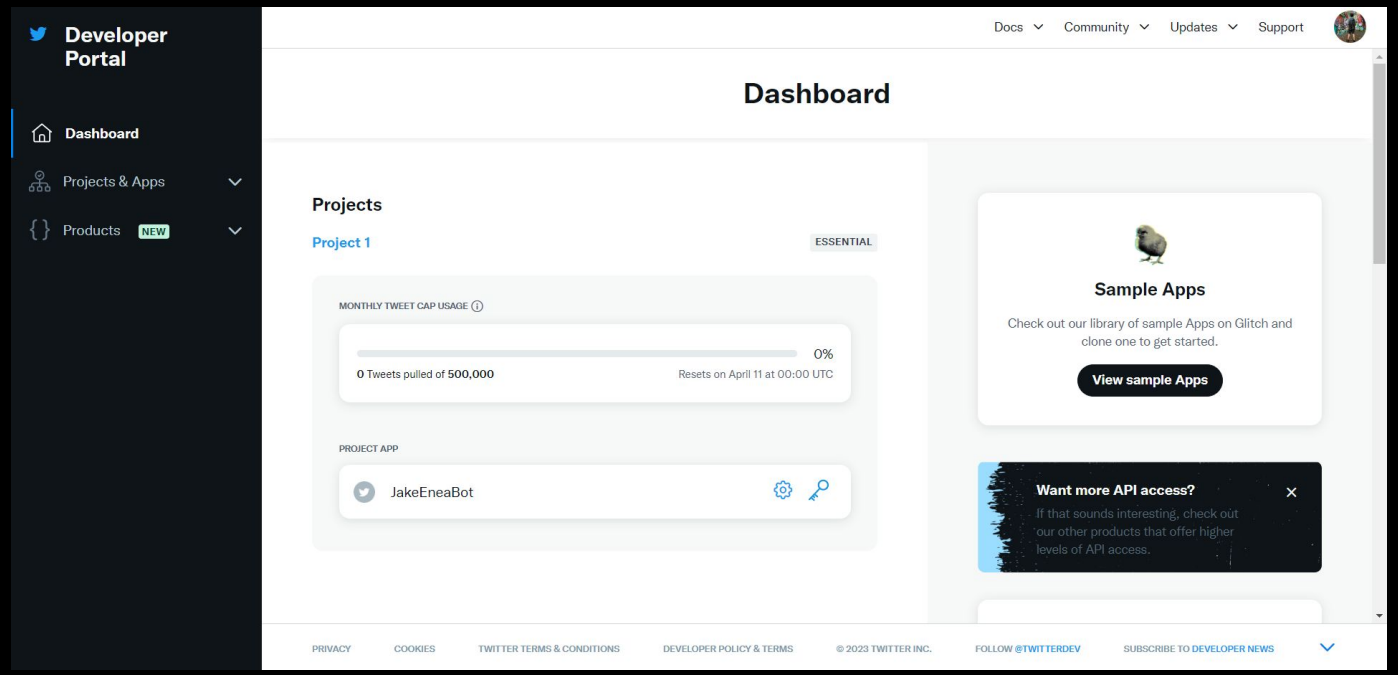
OTHER NOTES ABOUT TWITTER APIS

- VERSIONS
  - RECENTLY, TW API RELEASED APIV2.
    - LARGEST UPGRADE OF API SINCE 2012.
      - NEW ENDPOINTS
      - NEW AND MORE DETAILED DATA OBJECTS
      - ADVANCED METRICS
      - ETC.
- ACCESS LEVELS:
  - ESSENTIAL
  - ELEVATED
  - ACADEMIC RESEARCH
  - ELEVATED + (COMING SOON)
    - EACH ACCESS LEVEL HAS DIFFERENT RULES AND LIMITS, DEPENDING ON THE NEEDS OF YOUR PROJECT.
- OTHER OFFERINGS
  - ENTERPRISE APIS (FORMERLY GNIP 2.0)
  - PREMIUM V1.1
  - STANDARD V1.1
    - THESE OFFER SCALABLE ACCESS TO TWITTER'S DATA, INCL. BETTER APIS, ENDPOINTS, ETC.

	Essential	Elevated	Elevated+ (coming soon)	Academic Research
Getting access	More information soon	Apply for additional access within the developer portal	Need more? Sign up for our waitlist	Apply for additional access
Price	TBD	TBD		TBD
Access to Twitter API v2	✓	✓		✓
Access to standard v1.1	✓ (Limited access - only media endpoints)	✓		✓
Access to premium v1.1	✗	✓		✓
Access to enterprise	✗	✓		✓
Project limits	1 Project	1 Project		1 Project
App limits	1 App per Project	3 Apps per Project		1 App per Project
Tweet caps	Retrieve up to 500k Tweets per month	Retrieve up to 2 million Tweets per month		Retrieve up to 10 million Tweets per month
Filtered stream rule limit	5 rules	25 rules		1000 rules
Filtered stream rule length	512 characters	512 characters		1024 characters
Filtered stream POST rules rate limit	25 requests per 15 minutes	50 requests per 15 minutes		100 requests per 15 minutes
Search Tweets query length	512 characters	512 characters		1024 characters
Access to full-archive search Tweets	✗	✗		✓
Access to full-archive Tweet counts	✗	✗		✓
Access to advanced filter operators	✗	✗		✓
Option to manage a team in the developer portal	✗	✓ (Requires an organization type account)		✗
Access to the Ads API	✓ (Requires additional application)	✓ (Requires additional application)		✗
Authentication methods	OAuth 2.0 with PKCE App only	OAuth 2.0 with PKCE OAuth 1.0a App only		OAuth 2.0 with PKCE OAuth 1.0a App only

HOW TO MAKE A TWITTER BOT

1. APPLY FOR A TWITTER DEVELOPER ACCOUNT (VISIT HTTPS://DEVELOPER.TWITTER.COM/)
2. CREATE A TWITTER PROJECT AND APP
3. ADJUST TWITTER APP SETTINGS ACCORDING TO YOUR NEEDS
4. GENERATE YOUR ACCESS TOKEN AND SECRET ACCESS TOKEN (API CREDENTIALS)
   A. NOTE: SAVE YOUR CREDENTIALS IN A SAFE PLACE AND DO NOT SHARE WITH ANYONE!
5. PROGRAM YOUR TWITTER BOT
   A. PYTHON IS SIMPLES/MOST POPULAR CHOICE FOR THIS



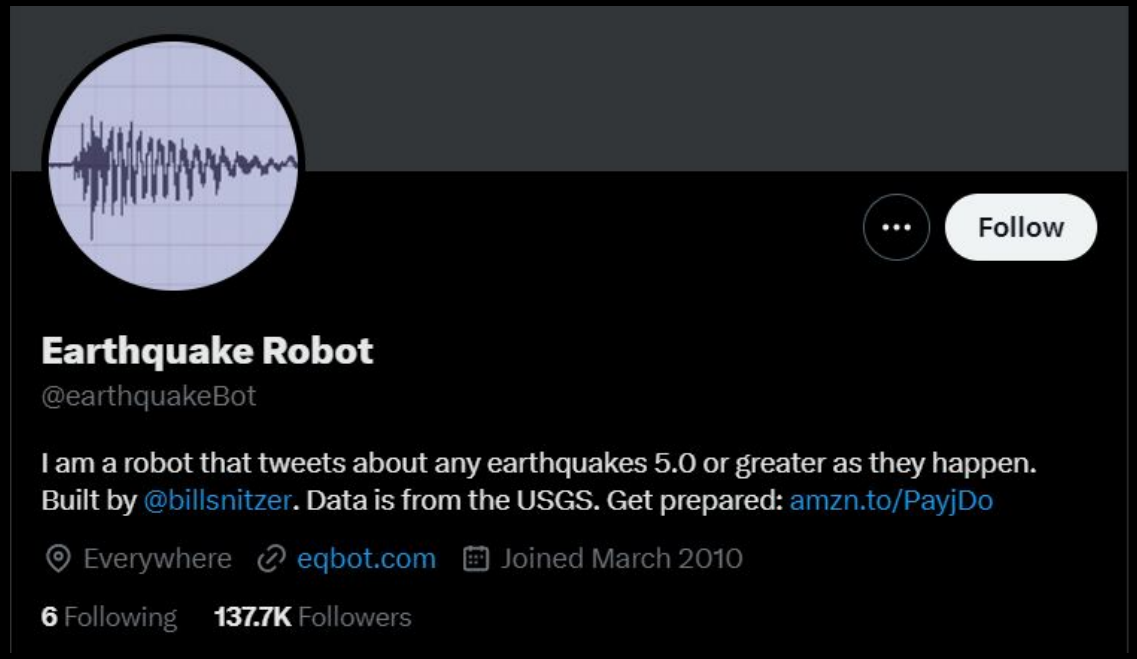
BENEFITS OF CREATING A TWITTER BOT

- USEFUL
  - TWITTER BOTS CAN PROVIDE USEFUL INFORMATION OR FUNCTIONS TO USERS
- AUTOMATED
  - ALLOWS FOR AUTOMATION OF TASKS SIMPLY BY INTERACTING WITH THE BOT ON TWITTER
- QUICK
  - TWITTER BOTS POST AND RESPOND QUICKLY
- ENTERTAINING
  - THERE ARE LOTS OF FUN AND INTERESTING TWITTER BOTS TO FOLLOW AND USE
- GOOD TO PUT ON RESUME
  - PROJECTS LIKE TWITTER BOTS CAN BE ADDED TO YOUR RESUME, GITHUB, OR LINKEDIN

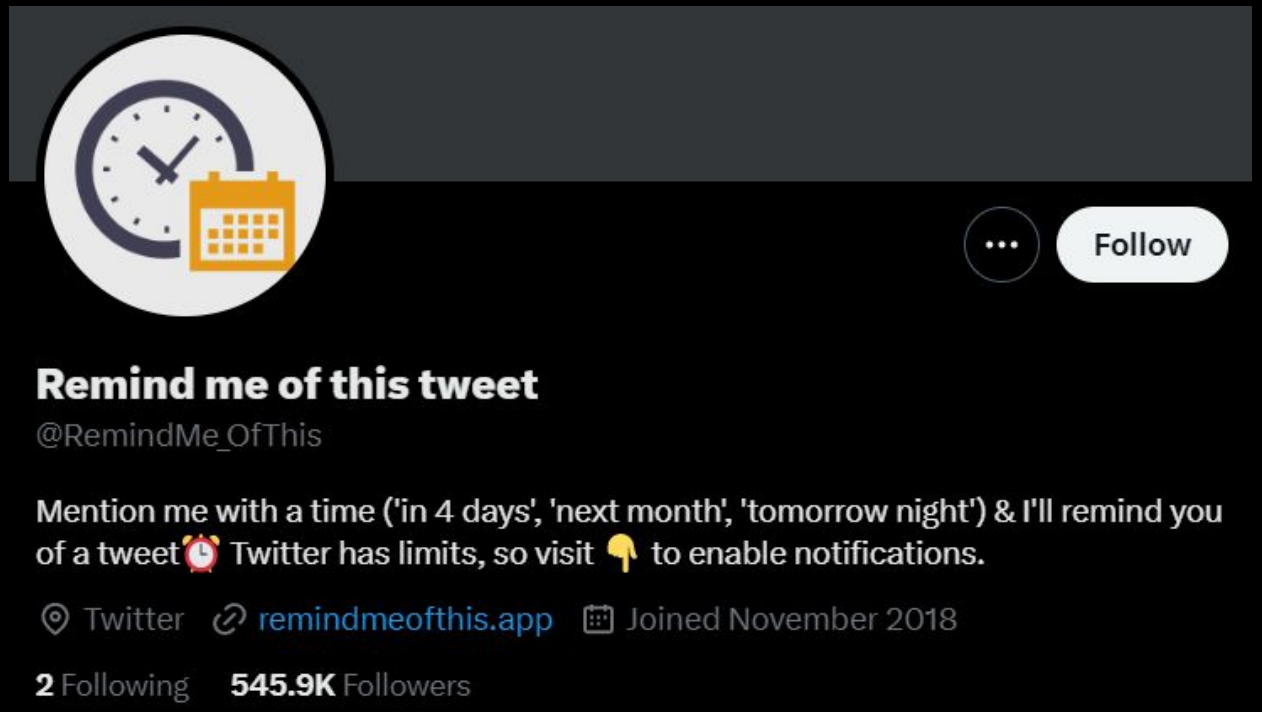
DOWNSIDES OF TWITTER BOTS

- SPAM
  - BOTS CAN BE PROGRAMMED TO SPAM MESSAGES ON TWITTER, CREATING CLUTTERED FEEDS
- SCAM
  - BOTS CAN PROMOTE SCHEMES TO STEAL YOUR PERSONAL INFORMATION OR CARRY OUT OTHER MALICIOUS ACTIVITIES
- FALSE INFORMATION
  - AUTO-GENERATED MESSAGES CAN POTENTIALLY LEAD TO THE POSTING AND SHARING OF FALSE INFORMATION

EXAMPLES OF TWITTER BOTS ON TWITTER - EARTHQUAKE ROBOT



EXAMPLES OF TWITTER BOTS ON TWITTER - REMIND ME OF THIS TWEET



EXAMPLES OF TWITTER BOTS ON TWITTER - MAKE IT A QUOTE

- Mahatma Gandhi

Follow

Make it a quote

@MakeItAQuote

Automated by @its_daku

Quote or reply to a tweet and mention me to generate a graphic.
Mention @RemoveMyQuote if you want a tweet removed.

Support me: ko-fi.com/makeitaquote

FOLLOWERS ONLY makeitaquote.com Born January 3
Joined October 2021

66 Following **591.6K** Followers

i want to be used

- Linux
@linux

@MakeItAQuote

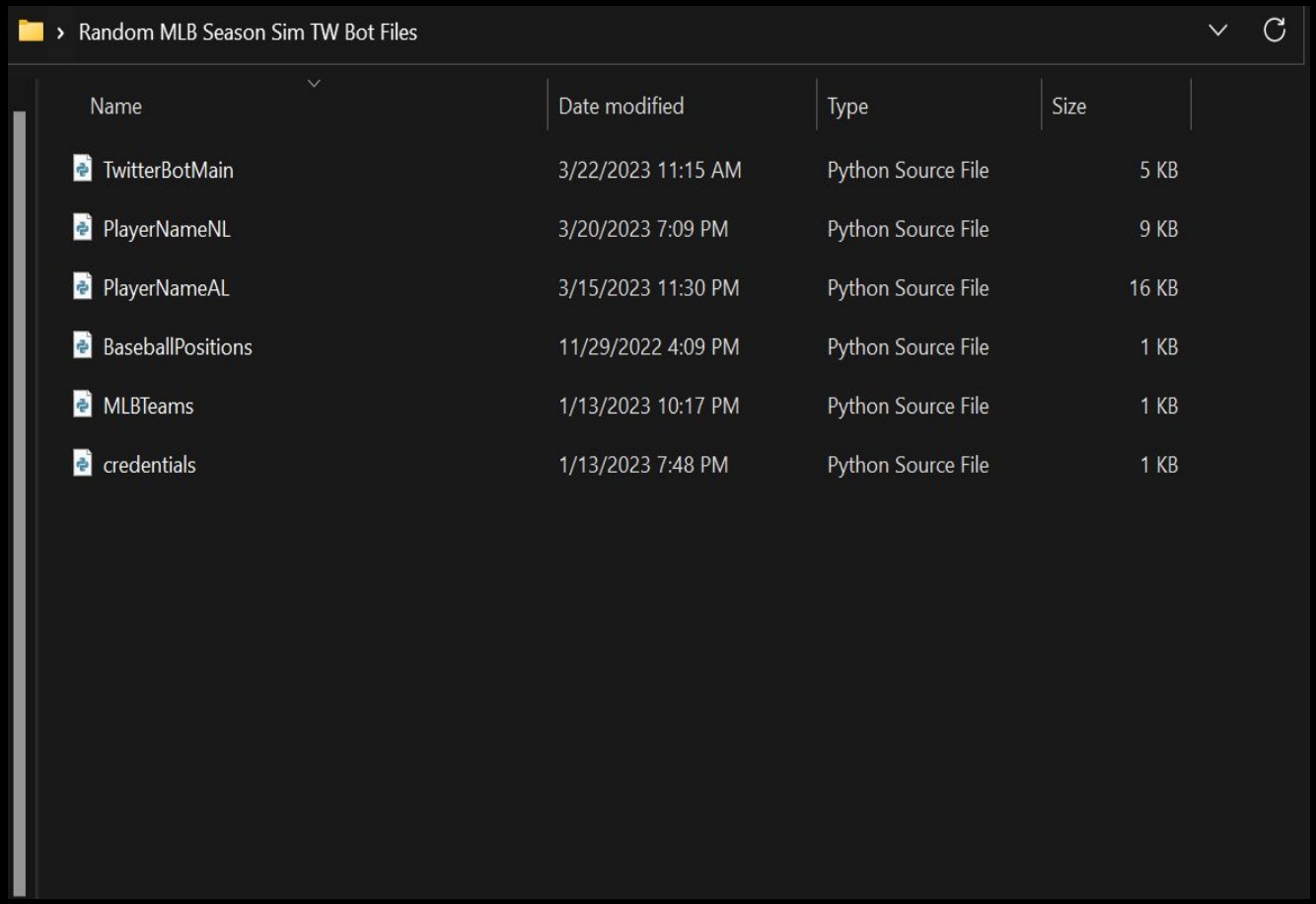
TWITTER BOT DEMO

TWITTER BOT INFORMATION:

- NAME OF BOT: MLBRANDOMSEASONSIMBOT
- TWITTER HANDLE: @SEASONRANDOM
- CREATED: NOVEMBER 2022
- LANGUAGE: PYTHON
- REASON FOR CREATING THE BOT:
  - I LOVE BASEBALL, AND I HAVE A KEEN INTEREST IN BASEBALL STATS. I WAS ALSO INSPIRED BY THE MLB SH*TPOST BOT A TON, AS IT TWEETED RANDOM STATEMENTS WITH RANDOM (ACTUAL) MLB PLAYERS IN THEM.

TWITTER BOT CODE:

- SIX DIFFERENT PYTHON FILES:
  - TWITTERBOTMAIN (WHERE THE TWEET IS MADE)
  - PLAYERNAMENL (PLAYER NAMES FROM THE NATIONAL LEAGUE)
  - PLAYERNAMEAL (PLAYER NAMES FROM THE AMERICAN LEAGUE)
  - BASEBALLPOSITIONS (ALL POSITIONS ON A BASEBALL DIAMOND)
  - MLBTEAMS (EVERY MLB TEAM)
  - CREDENTIALS (API KEYS)



TWITTER BOT RESOURCES

TWITTER BOT/API RESOURCES

1. WHAT IS AN API? - AWS
   HTTPS://AWS.AMAZON.COM/WHAT-IS/API/

2. TWITTER BOT DOCUMENTATION
   HTTPS://DEVELOPER.TWITTER.COM/EN/DOCS/TWITTER-API

3. REST API/CREATING A TWITTER BOT WITH PYTHON
   HTTPS://WWW.CRMCRATE.COM/WEB-API/WHAT-IS-REST-API-CREATE-A-TWITTER-API-USING-PYTHON/

4. EARTHQUAKE ROBOT - TW
   HTTPS://TWITTER.COM/EARTHQUAKEBOT

5. REMIND ME OF THIS TWEET - TW
   HTTPS://TWITTER.COM/REMINDME_OFTHIS

TWITTER BOT/API RESOURCES (CONT).

1. MAKE IT A QUOTE - TW
   HTTPS://TWITTER.COM/MAKEITAQUOTE

2. MLBRANDOMSEASONSIMBOT - TW
   HTTPS://TWITTER.COM/SEASONRANDOM

3. CREATE YOUR OWN TWITTER BOT IN PYTHON 3.10 TUTORIAL (2022 EDITION) - INDENTLY (YT)
   HTTPS://WWW.YOUTUBE.COM/WATCH?V=2UBCRIDDWAO

4. HOW TO CREATE A TWITTER BOT WITH PYTHON | BUILD A STARTUP #4 - CS DOJO (YT)
   HTTPS://WWW.YOUTUBE.COM/WATCH?V=WOWWWGLE1VC

5. STEM/COMPSCI RESOURCES GOOGLE DRIVE FOLDER
   HTTPS://DRIVE.GOOGLE.COM/DRIVE/FOLDERS/1ZC5JK1B8GILONF298ZLMTKAGE1L2F2XA?USP=SHARING

E-BOARD ELECTIONS

SJU ACM STUDENT CHAPTER
2023 - 2024
E-BOARD ELECTION

YOU MUST BE AN SJU STUDENT WITH A STRONG INTEREST IN TECHNOLOGY TO APPLY

APPLICATIONS ARE DUE BY FRI, MARCH 24TH @ 11:59 P.M. USING THE LINK IN BIO

- JOIN A MAGNIFICENT TEAM THAT ALLOWS YOU TO BUILD LEADERSHIP EXPERIENCE FOR YOUR FUTURE CAREER
- DEVELOP SOFT AND HARD SKILLS BY LEADING LIVE, HANDS-ON LABS
- GROW YOUR NETWORK THROUGH COLLABORATIONS WITH OTHER STUDENTS, PROFESSORS, AND TECH PROFESSIONALS

THANK YOU!