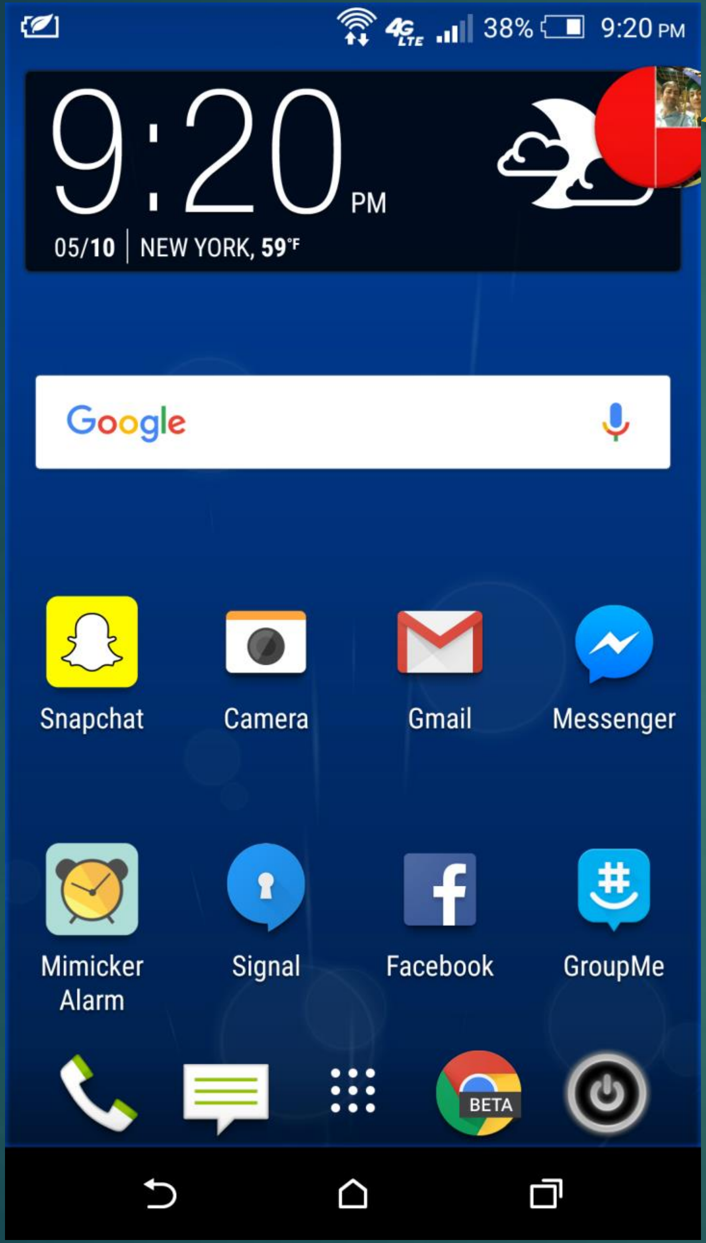
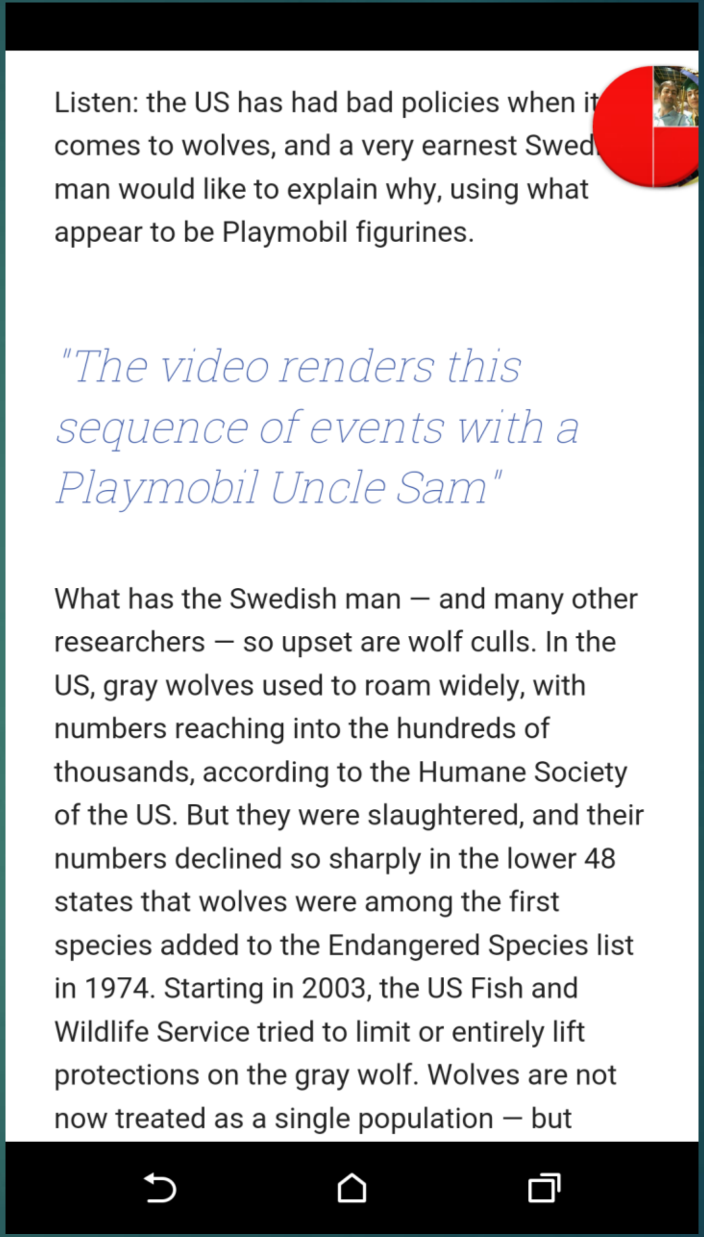
# facebot

HUSAM ABDUL-KAFI

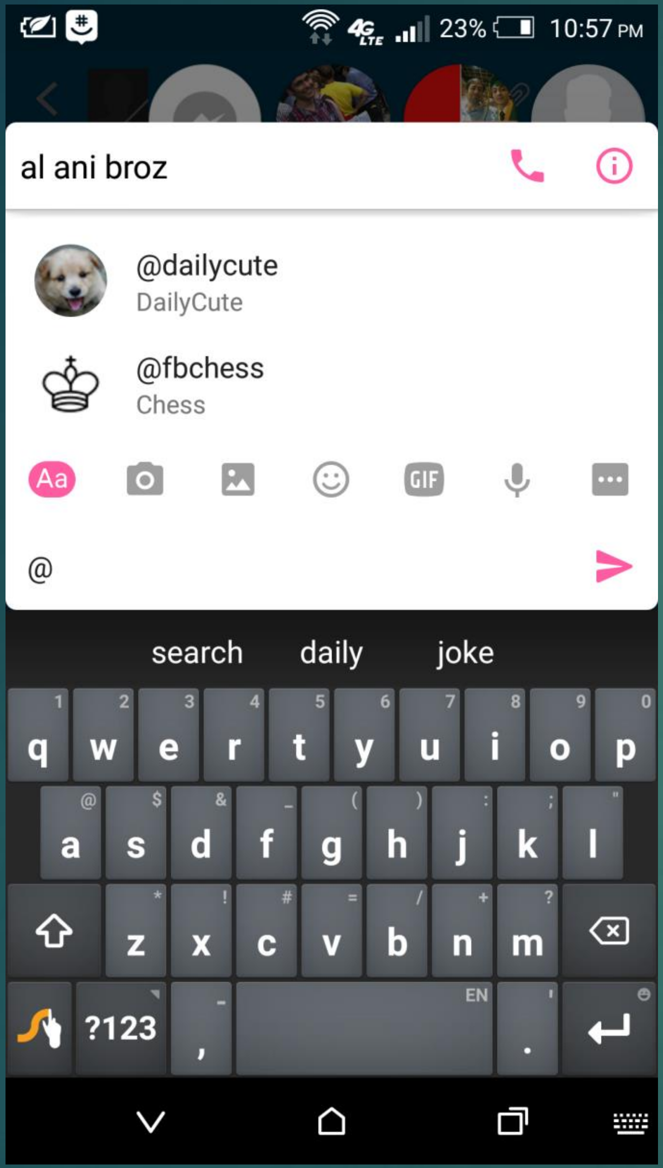


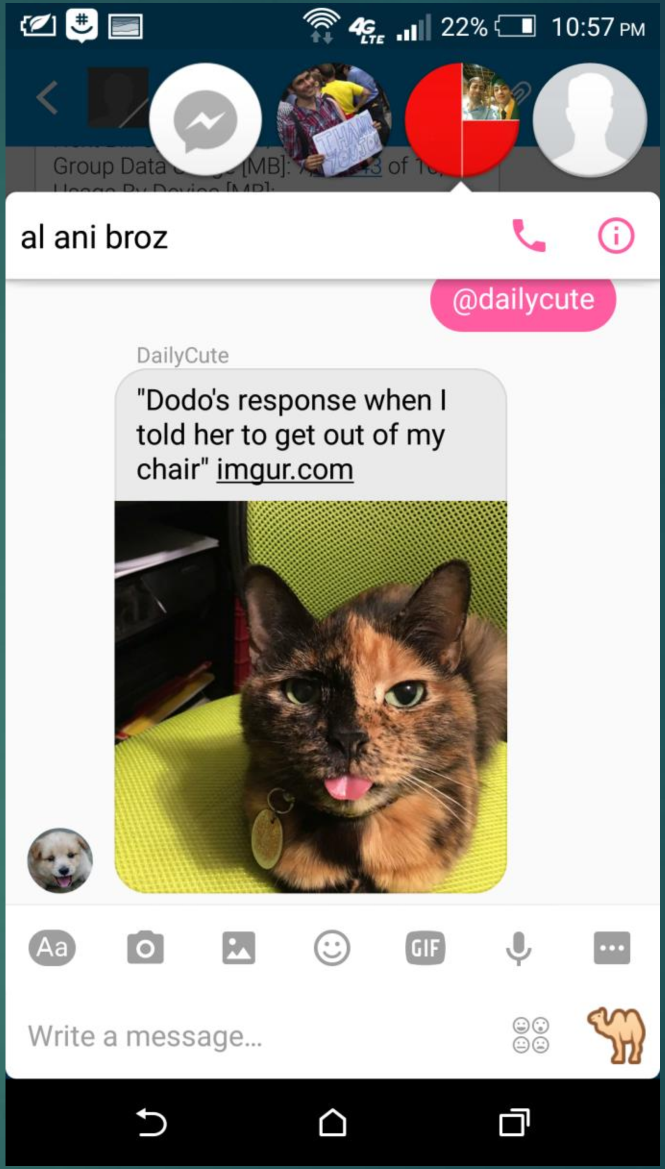

Listen: the US has had bad policies when it comes to wolves, and a very earnest Swed man would like to explain why, using what appear to be Playmobil figurines.

*"The video renders this sequence of events with a Playmobil Uncle Sam"*

What has the Swedish man — and many other researchers — so upset are wolf culls. In the US, gray wolves used to roam widely, with numbers reaching into the hundreds of thousands, according to the Humane Society of the US. But they were slaughtered, and their numbers declined so sharply in the lower 48 states that wolves were among the first species added to the Endangered Species list in 1974. Starting in 2003, the US Fish and Wildlife Service tried to limit or entirely lift protections on the gray wolf. Wolves are not now treated as a single population — but

Facebook Chat Bubbles appear throughout the Android operating system





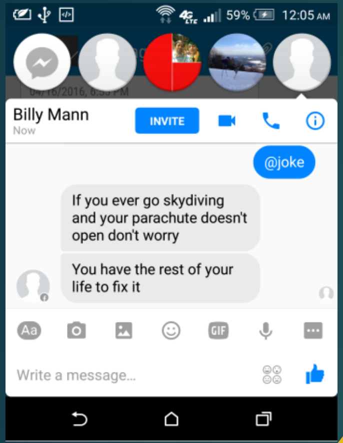
"Dodo's response when I told her to get out of my chair" imgur.com

Built-in Facebook bot functionality

## Goal: create program with similar functionality as the built-in bots

## Introducing: facebot

## Anatomy of a request:



Billy Mann
Now

@joke

If you ever go skydiving and your parachute doesn't open don't worry

You have the rest of your life to fix it

Write a message...

6

Facebook

1

@joke

Phone

2

@joke

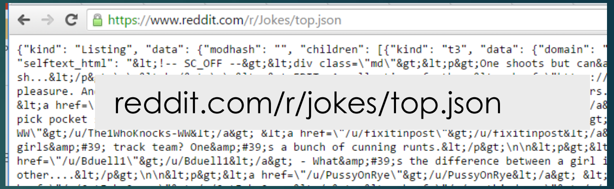
("If you ever go skydiving and your parachute doesn't open don't worry", 'You have the rest of your life to fix it')

5

r/jokes

4

3



https://www.reddit.com/r/Jokes/top.json

{"kind": "Listing", "data": {"modhash": "", "children": [{"kind": "t3", "data": {"domain": "
"selftext_html": "&lt;!-- SC_OFF --&gt;&lt;div class=\"md\"&gt;&lt;p&gt;One shoots but can&a
sh...&lt;/p&
pleasure. An
&lt;a href=\
pick pocket
WW\"&gt;/u/The1WhoKnocks-WW&lt;/a&gt; &lt;a href=\"/u/fixitinpost\"&gt;/u/fixitinpost&lt;/a&
girls&amp;#39; track team? One&amp;#39;s a bunch of cunning runts.&lt;/p&gt;\n\n&lt;p&gt;&lt
href=\"/u/Bduell1\"&gt;/u/Bduell1&lt;/a&gt; - What&amp;#39;s the difference between a girl i
other....&lt;/p&gt;\n\n&lt;p&gt;&lt;a href=\"/u/PussyOnRye\"&gt;/u/PussyOnRye&lt;/a&gt; &lt;

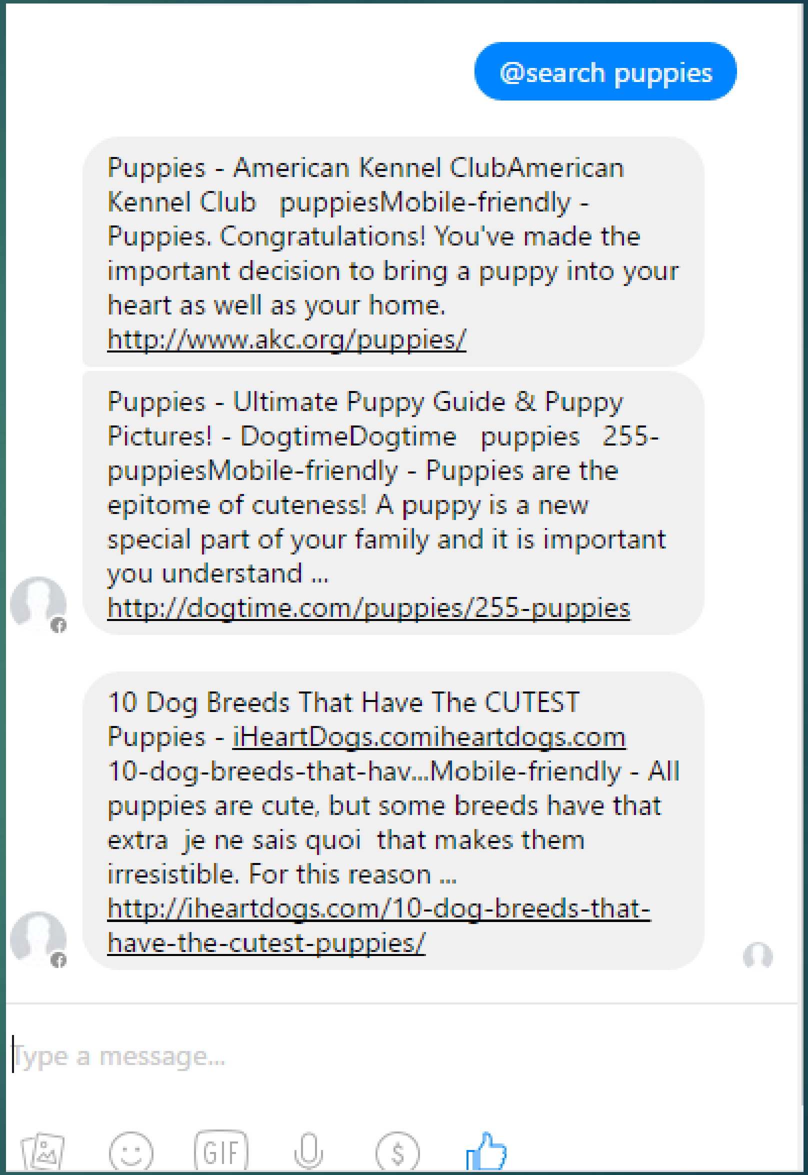
reddit.com/r/jokes/top.json

"Server"

## Functionality

## @search <query>

- Searches google for <query> and sends back the top three search results with the links to the result's webpage

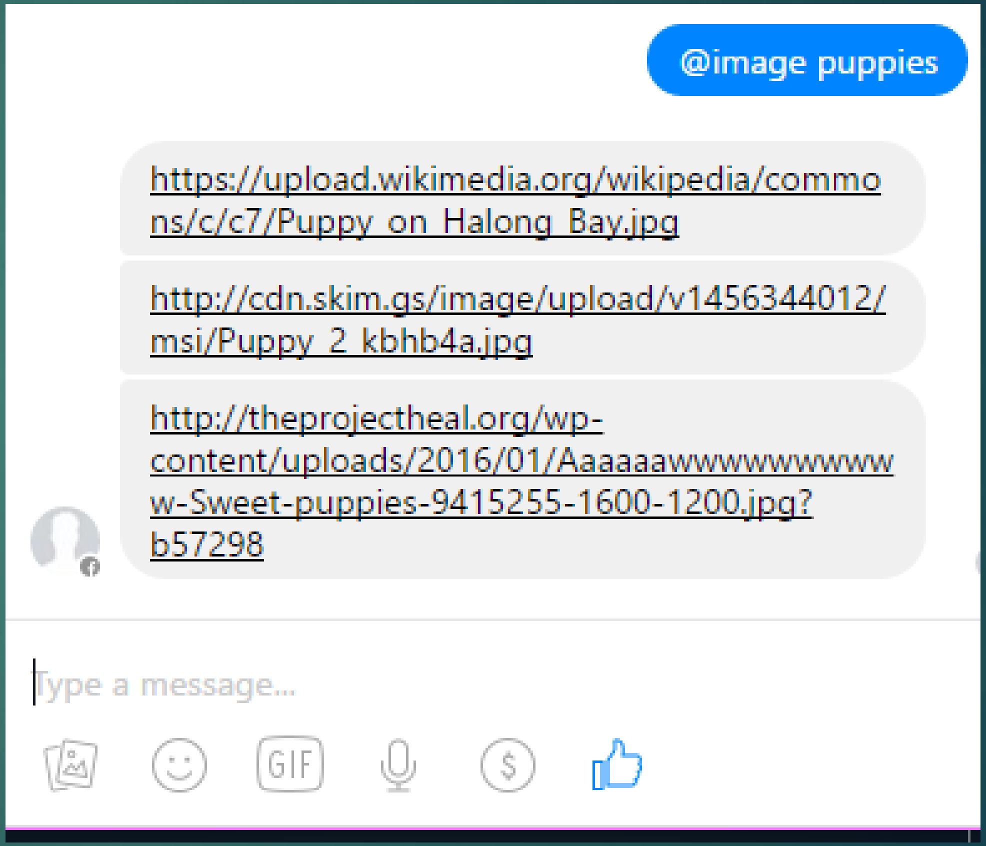

@search puppies

Puppies - American Kennel ClubAmerican Kennel Club   puppiesMobile-friendly - Puppies. Congratulations! You've made the important decision to bring a puppy into your heart as well as your home. http://www.akc.org/puppies/

Puppies - Ultimate Puppy Guide & Puppy Pictures! - DogtimeDogtime   puppies   255-puppiesMobile-friendly - Puppies are the epitome of cuteness! A puppy is a new special part of your family and it is important you understand ... http://dogtime.com/puppies/255-puppies

10 Dog Breeds That Have The CUTEST Puppies - iHeartDogs.comiheartdogs.com 10-dog-breeds-that-hav...Mobile-friendly - All puppies are cute, but some breeds have that extra  je ne sais quoi  that makes them irresistible. For this reason ... http://iheartdogs.com/10-dog-breeds-that-have-the-cutest-puppies/

## @image <query>



@image puppies

https://upload.wikimedia.org/wikipedia/commons/c/c7/Puppy_on_Halong_Bay.jpg

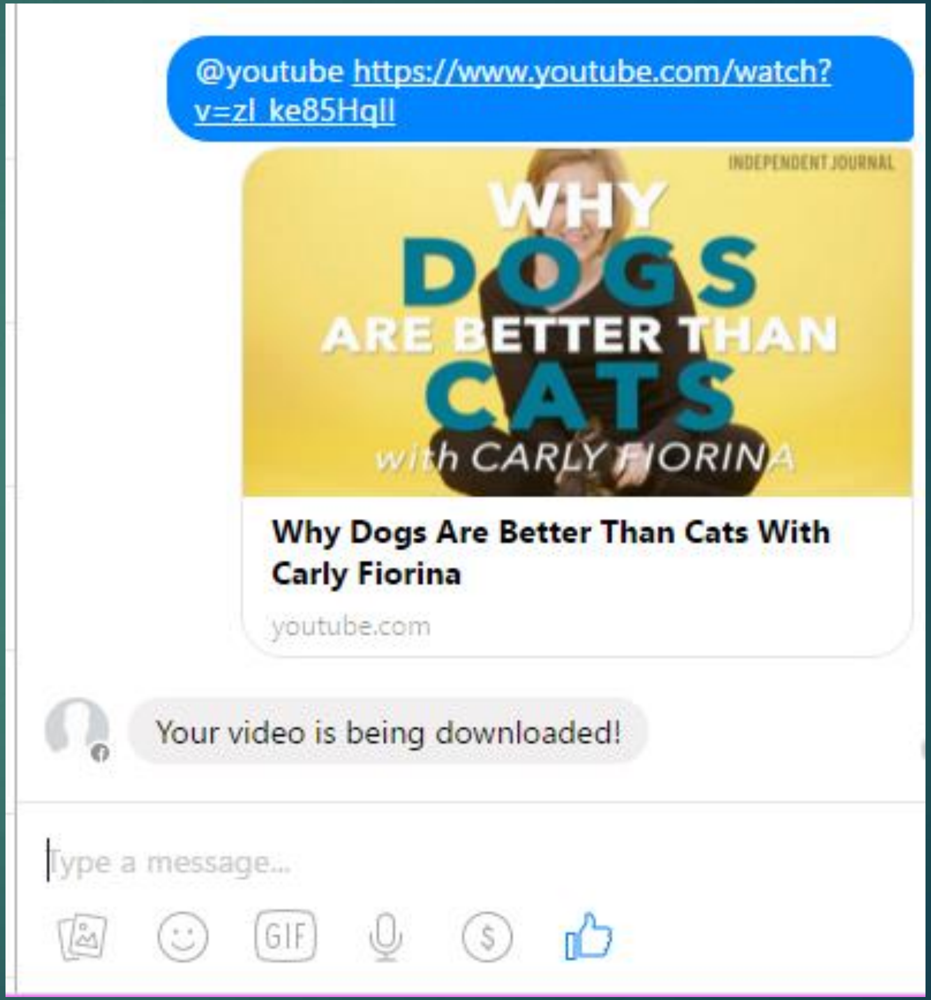
http://cdn.skim.gs/image/upload/v1456344012/msi/Puppy_2_kbhb4a.jpg

http://theprojectheal.org/wp-content/uploads/2016/01/Aaaaaawwwwwwwwww-Sweet-puppies-9415255-1600-1200.jpg?b57298

- Searches google images for <query> and returns links to the top three images in the results

## @youtube <url>

- Uses youtube-dl to download the video located at <url> and saves the video to the **server** (not the phone)



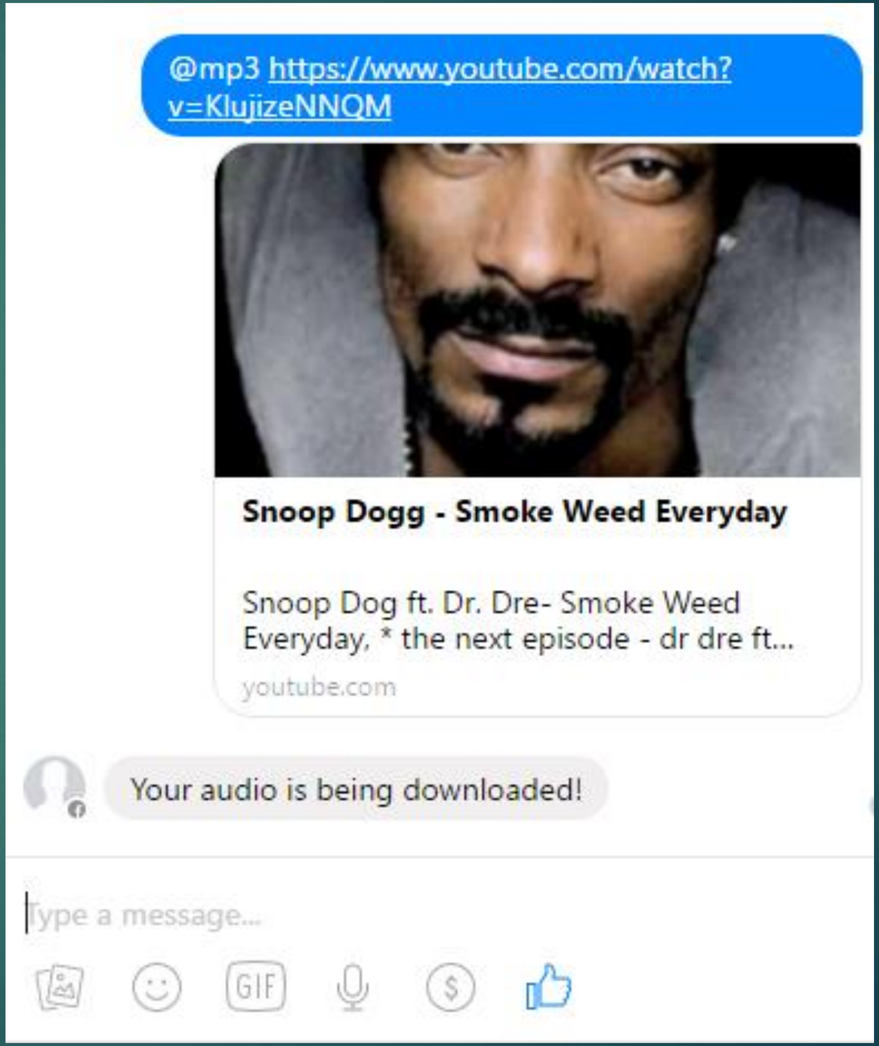
@youtube https://www.youtube.com/watch?v=zl_ke85Hqll

Why Dogs Are Better Than Cats With Carly Fiorina

youtube.com

Your video is being downloaded!

## @mp3 <url>



@mp3 https://www.youtube.com/watch?v=KlujizeNNQM

**Snoop Dogg - Smoke Weed Everyday**

Snoop Dog ft. Dr. Dre- Smoke Weed Everyday, * the next episode - dr dre ft...

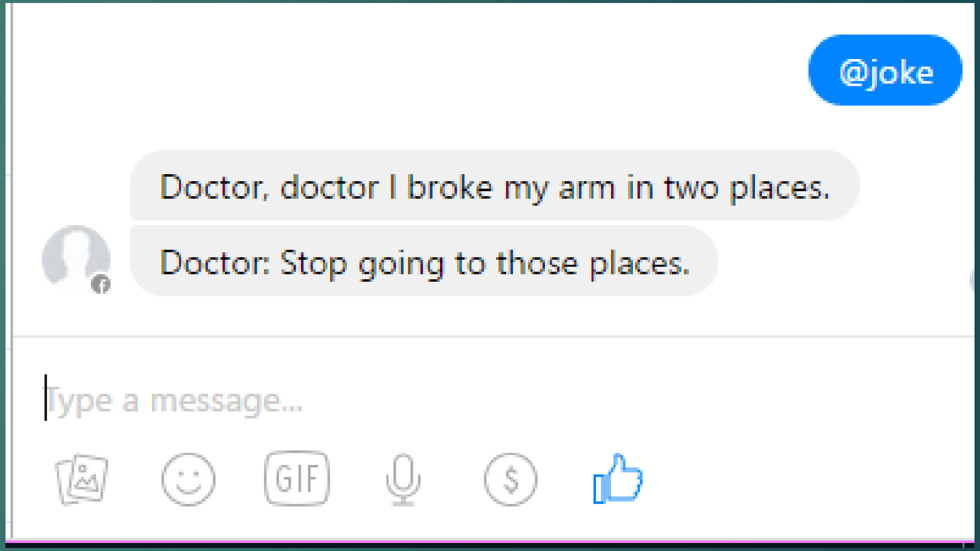
youtube.com

Your audio is being downloaded!

- Uses youtube-dl to download an mp3 version of <url>. Again, saves the file on the **server**. Works with other sources such as soundcloud.

## @joke

- Gets a joke from the daily top 25 jokes on reddit.com/r/jokes and sends it to the user in two messages. First message is the title of the post, second is the body.


@joke

Doctor, doctor I broke my arm in two places.

Doctor: Stop going to those places.

## Prerequisites

## Packages

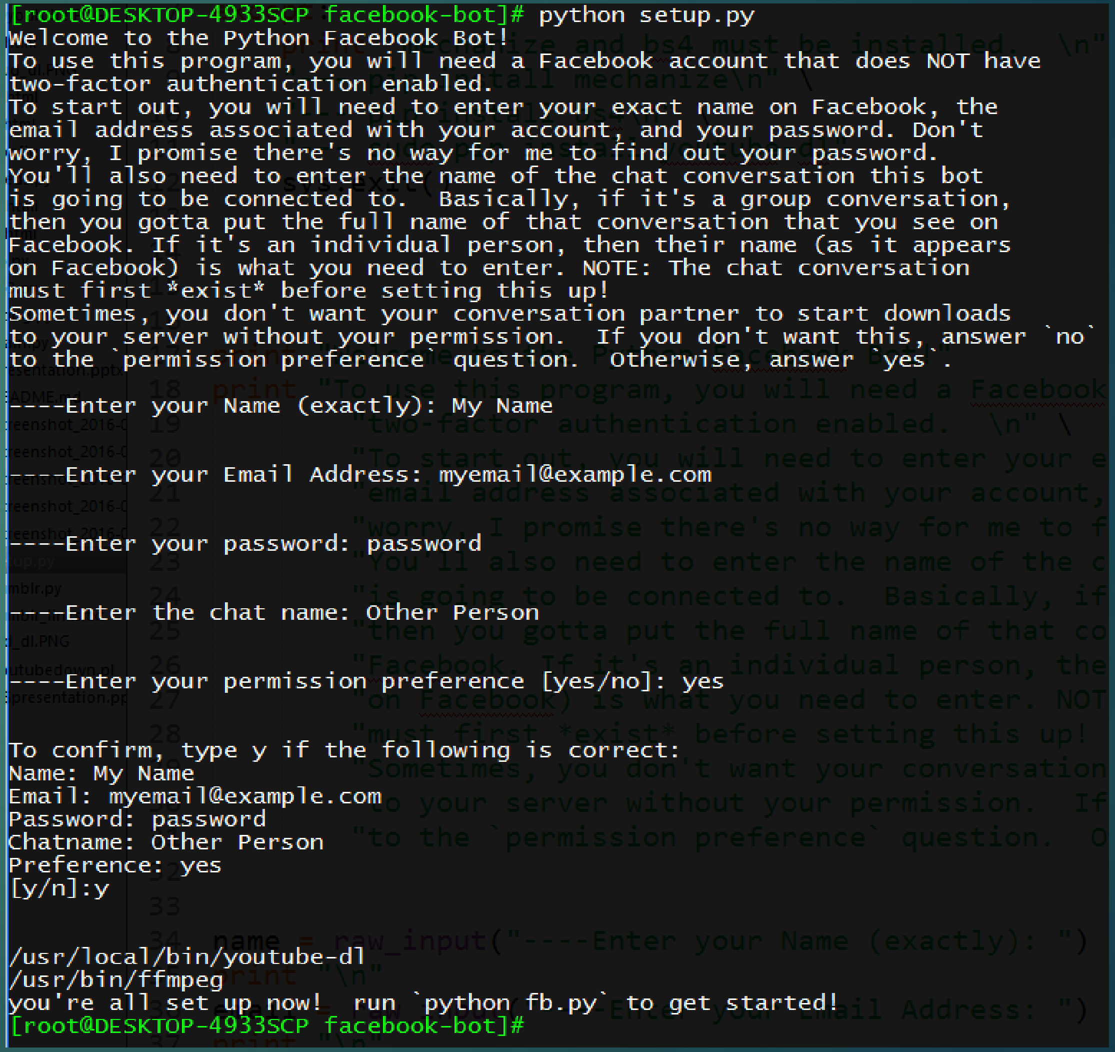
- Need python 2.7 (doesn’t work with python 3.x)
- pip install mechanize
  - Used to emulate a browser
- pip install bs4
  - Used to parse webpages

## Command-line tools

- sudo pip install youtube-dl
  - Used to download youtube videos and mp3 files
  - youtube-dl needs to be in the path (on my computer, doing sudo pip install youtube-dl put it in the path, but ymmv)
- ffmpeg (or avconv)
  - youtube-dl uses ffmpeg to do some converting between different file types.  Installing youtube-dl is independent of installing ffmpeg
  - ffmpeg needs to be in the path for youtube-dl to find it.
  - youtube-dl will mostly still work without ffmpeg.  One thing that won't is downloading mp3s off of youtube (other sources might work)

# Setup

- Running `python setup.py` will set up the config file and check if you have everything installed properly



```
[root@DESKTOP-4933SCP facebook-bot]# python setup.py
Welcome to the Python Facebook Bot!
To use this program, you will need a Facebook account that does NOT have
two-factor authentication enabled.
To start out, you will need to enter your exact name on Facebook, the
email address associated with your account, and your password. Don't
worry, I promise there's no way for me to find out your password.
You'll also need to enter the name of the chat conversation this bot
is going to be connected to.  Basically, if it's a group conversation,
then you gotta put the full name of that conversation that you see on
Facebook. If it's an individual person, then their name (as it appears
on Facebook) is what you need to enter. NOTE: The chat conversation
must first *exist* before setting this up!
Sometimes, you don't want your conversation partner to start downloads
to your server without your permission.  If you don't want this, answer `no`
to the `permission preference` question.  Otherwise, answer `yes`.

----Enter your Name (exactly): My Name

----Enter your Email Address: myemail@example.com

----Enter your password: password

----Enter the chat name: Other Person

----Enter your permission preference [yes/no]: yes


To confirm, type y if the following is correct:
Name: My Name
Email: myemail@example.com
Password: password
Chatname: Other Person
Preference: yes
[y/n]:y


/usr/local/bin/youtube-dl
/usr/bin/ffmpeg
you're all set up now!  run `python fb.py` to get started!
[root@DESKTOP-4933SCP facebook-bot]#
```

## Security

## Permissions

- Sometimes, you don’t 100% trust the friend you’re chatting with to use this app properly
- In this case, answer `no` to the `permission preferences` question during setup
- This will prevent facebot from downloading any files when **they** send a message like `@youtube <url>` or `@mp3 <url>`
- This will **not** prevent you from requesting a download

## Testing

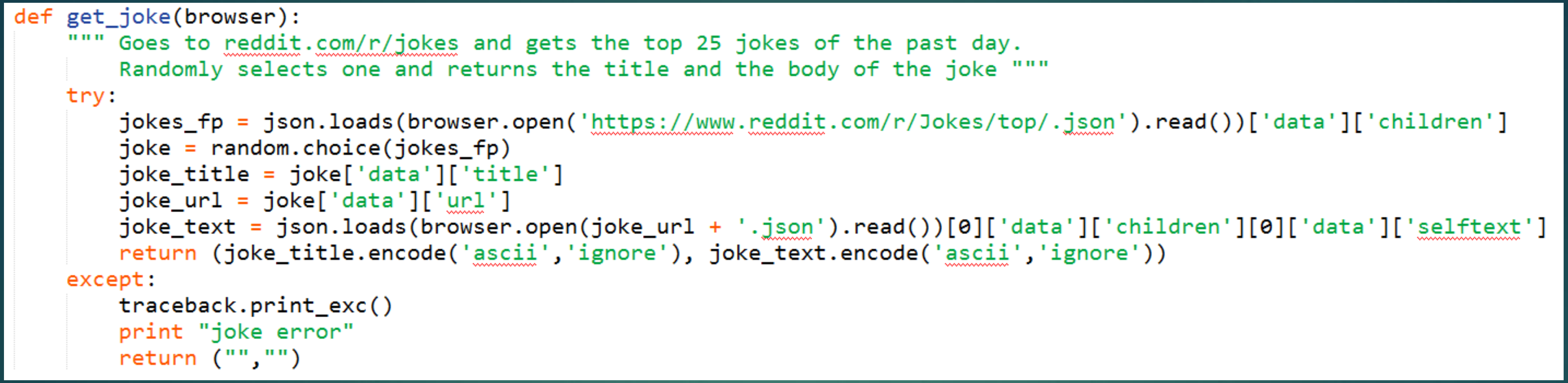
## Unittests

- I couldn’t really emulate a normal conversation between two people using unittests or mock, so I tested the functions that get information from the internet and send information to the user

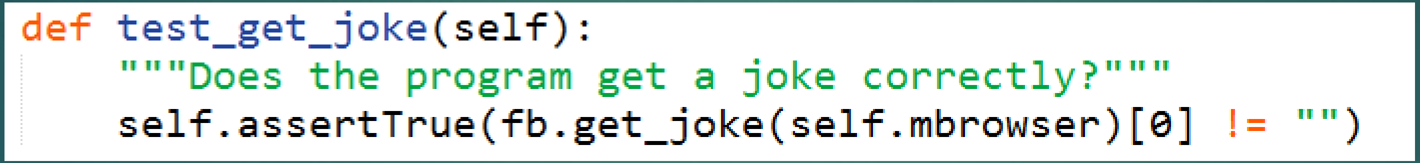
```python
def message(send_string,brf,fbmsgurl):
    """ Sends a message to the user with the given string
        Uses the provided browser object (brf) that must
        be logged in to the user's account """
    try:
        brf.open(fbmsgurl)
        brf.select_form(nr=1)
        brf["body"] = send_string
        brf.submit()
        return True
    except:
        traceback.print_exc()
        print "message error"
        return False
```

```python
def test_sending_message(self):
    """Does the program send messages properly?"""
    self.assertTrue(fb.message("testing 123",self.browser,self.fbmsgurl),'fail message')
```

- Tests sending of a message to the client

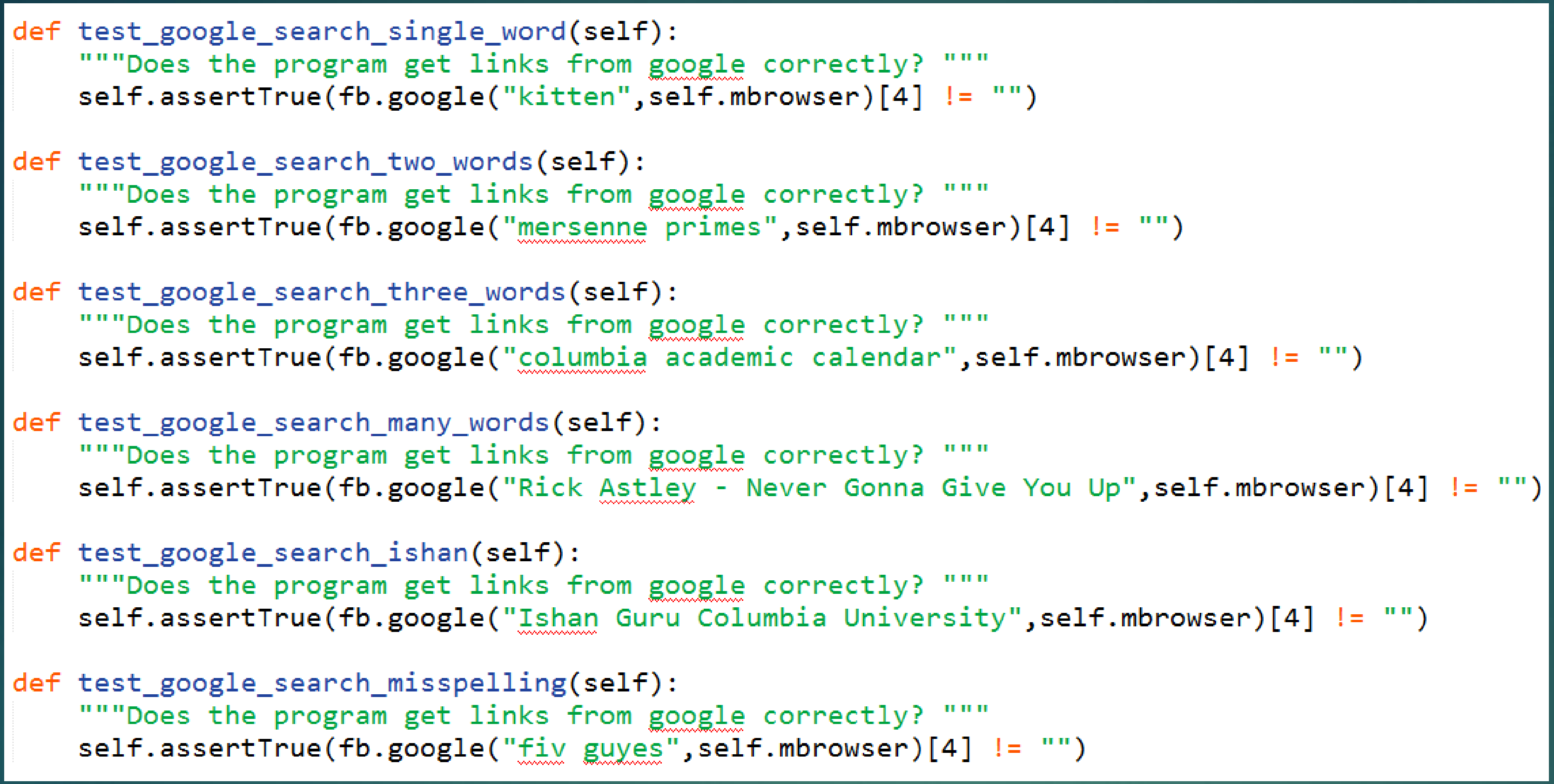


```python
def get_joke(browser):
    """ Goes to reddit.com/r/jokes and gets the top 25 jokes of the past day.
        Randomly selects one and returns the title and the body of the joke """
    try:
        jokes_fp = json.loads(browser.open('https://www.reddit.com/r/Jokes/top/.json').read())['data']['children']
        joke = random.choice(jokes_fp)
        joke_title = joke['data']['title']
        joke_url = joke['data']['url']
        joke_text = json.loads(browser.open(joke_url + '.json').read())[0]['data']['children'][0]['data']['selftext']
        return (joke_title.encode('ascii','ignore'), joke_text.encode('ascii','ignore'))
    except:
        traceback.print_exc()
        print "joke error"
        return ("","")
```



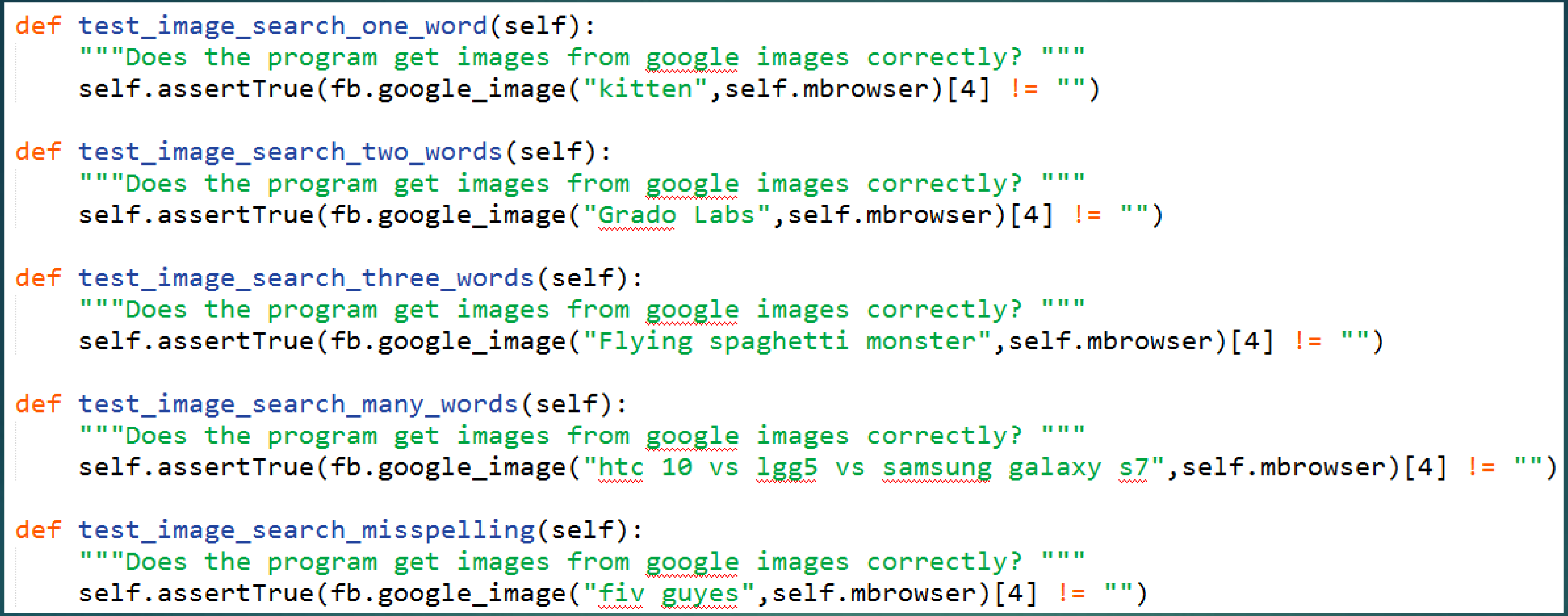
```python
def test_get_joke(self):
    """Does the program get a joke correctly?"""
    self.assertTrue(fb.get_joke(self.mbrowser)[0] != "")
```

- Tests getting a joke from Reddit



```
def test_google_search_single_word(self):
    """Does the program get links from google correctly? """
    self.assertTrue(fb.google("kitten",self.mbrowser)[4] != "")

def test_google_search_two_words(self):
    """Does the program get links from google correctly? """
    self.assertTrue(fb.google("mersenne primes",self.mbrowser)[4] != "")

def test_google_search_three_words(self):
    """Does the program get links from google correctly? """
    self.assertTrue(fb.google("columbia academic calendar",self.mbrowser)[4] != "")

def test_google_search_many_words(self):
    """Does the program get links from google correctly? """
    self.assertTrue(fb.google("Rick Astley - Never Gonna Give You Up",self.mbrowser)[4] != "")

def test_google_search_ishan(self):
    """Does the program get links from google correctly? """
    self.assertTrue(fb.google("Ishan Guru Columbia University",self.mbrowser)[4] != "")

def test_google_search_misspelling(self):
    """Does the program get links from google correctly? """
    self.assertTrue(fb.google("fiv guyes",self.mbrowser)[4] != "")
```

- Tests searching google for various keywords of various lengths
- Also tests a query that is guaranteed to have a youtube card at the top of the search results
- Also tests misspelled queries and a query (Ishan) that definitely broke it before

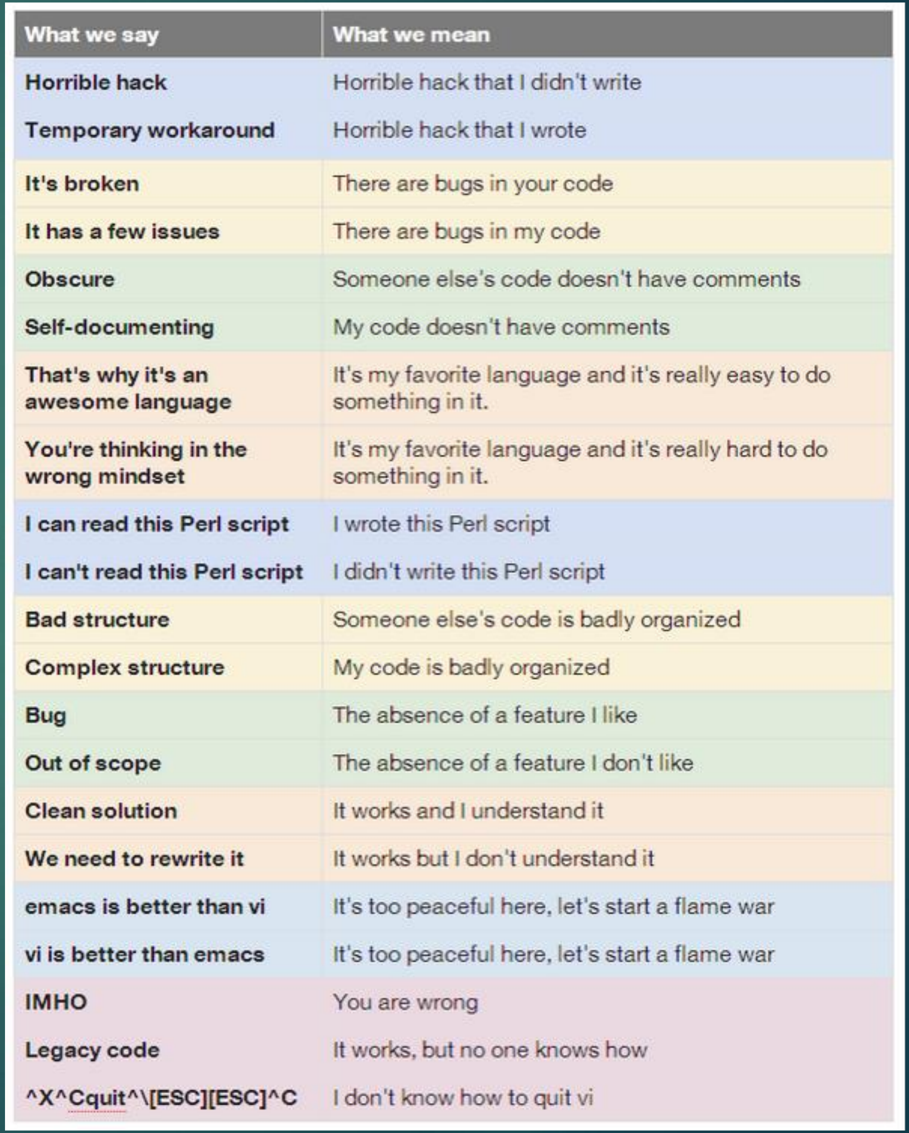

```
def test_image_search_one_word(self):
    """Does the program get images from google images correctly? """
    self.assertTrue(fb.google_image("kitten",self.mbrowser)[4] != "")

def test_image_search_two_words(self):
    """Does the program get images from google images correctly? """
    self.assertTrue(fb.google_image("Grado Labs",self.mbrowser)[4] != "")

def test_image_search_three_words(self):
    """Does the program get images from google images correctly? """
    self.assertTrue(fb.google_image("Flying spaghetti monster",self.mbrowser)[4] != "")

def test_image_search_many_words(self):
    """Does the program get images from google images correctly? """
    self.assertTrue(fb.google_image("htc 10 vs lgg5 vs samsung galaxy s7",self.mbrowser)[4] != "")

def test_image_search_misspelling(self):
    """Does the program get images from google images correctly? """
    self.assertTrue(fb.google_image("fiv guyes",self.mbrowser)[4] != "")
```

- Tests searching google images for different queries.
- Previously, some bugs were exposed when querying longer queries
- Also tests misspelled queries

## Challenges

# Importance of Human Testing

- I thought I was pretty close to done a week ago when I asked my friend Ishan to test out facebot. Pretty much every query/request he tried broke it because of bugs in my code.
- I went back and changed most of the code that parses the webpages to be better and more resilient to random changes.
- I still need more human testing though – can never have enough of that



| What we say | What we mean |
|---|---|
| Horrible hack | Horrible hack that I didn't write |
| Temporary workaround | Horrible hack that I wrote |
| It's broken | There are bugs in your code |
| It has a few issues | There are bugs in my code |
| Obscure | Someone else's code doesn't have comments |
| Self-documenting | My code doesn't have comments |
| That's why it's an awesome language | It's my favorite language and it's really easy to do something in it. |
| You're thinking in the wrong mindset | It's my favorite language and it's really hard to do something in it. |
| I can read this Perl script | I wrote this Perl script |
| I can't read this Perl script | I didn't write this Perl script |
| Bad structure | Someone else's code is badly organized |
| Complex structure | My code is badly organized |
| Bug | The absence of a feature I like |
| Out of scope | The absence of a feature I don't like |
| Clean solution | It works and I understand it |
| We need to rewrite it | It works but I don't understand it |
| emacs is better than vi | It's too peaceful here, let's start a flame war |
| vi is better than emacs | It's too peaceful here, let's start a flame war |
| IMHO | You are wrong |
| Legacy code | It works, but no one knows how |
| ^X^Cquit^\[ESC][ESC]^C | I don't know how to quit vi |

Questions?