IMD0905 - Data Science I

Lesson #4 - Introduction to Python I

Ivanovitch Silva

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Agenda

- String operations
- Date operations

global_rankings.csv

Update the repository

```
git clone https://github.com/ivanovitchm/IMD0905_datascience_one.git
```

Or ....

```
git pull
```

String operations - Mad Libs

```
"_______________! he said ________ as he jumped into his convertible
  exclamation              adverb
_____ and drove off with his ____________ wife."
  noun                            adjective
```

After completion, they demonstrate that the sentence might read:

```
"Ouch! he said stupidly as he jumped into his convertible
 cat and drove off with his brave wife."
```

Ed Sheeran

String operations - Mad Libs

The A Team

Ed Sheeran

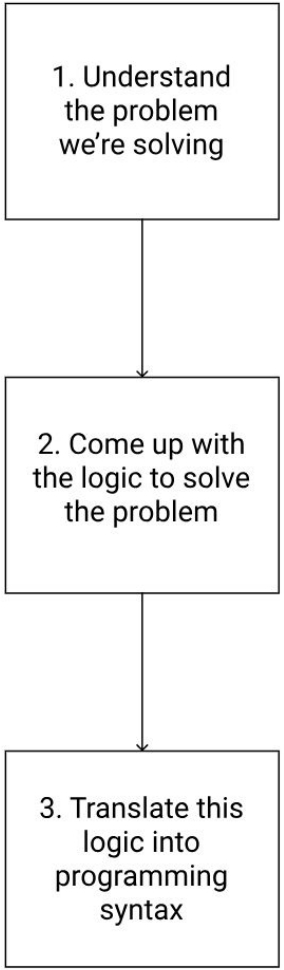
White lips, pale face
Breathing in snowflakes
Burnt lungs, sour taste
Light's gone, day's end
Struggling to pay rent
Long nights, strange men

And they say
She's in the Class A Team
She's stuck in her daydream
Been this way since eighteen
But lately her face seems
Slowly sinking, wasting
Crumbling like pastries

In this section, we'll taking Ed Sheeran's lyrics and transforming his lyrics into a mad libs game. We'll write a program that:

- Detects the nouns, verbs and adjectives in his lyrics.
- Replaces these nouns, verbs and adjectives with placeholders.
- Then, we'll replace these placeholders with our own words.

Planning out your code



Find the length of the list.

1. Initialize an empty length variable.
2. Loop through the list.
3. For each value, add the value to the variable

script.py

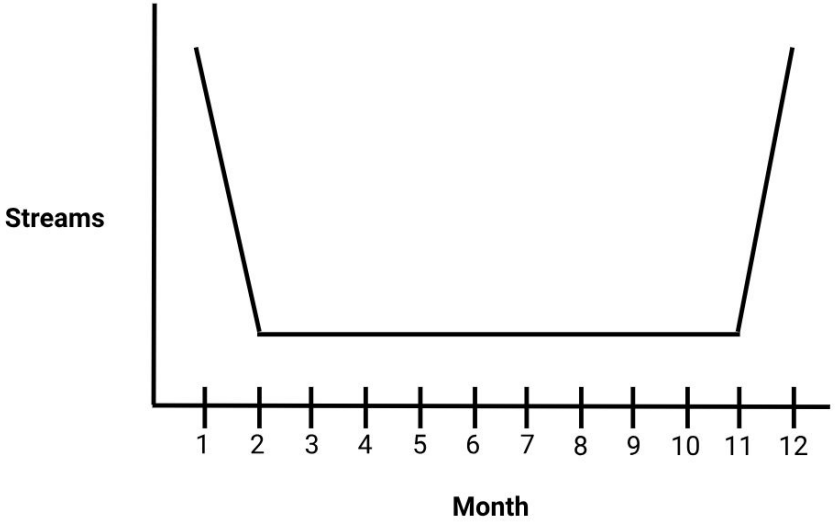
```
numbers = [4,3,5,2,6,7]

length = 0
for num in numbers:
    length  += 1
```

Pseudocode	Drawing
1. Insert a new line for each line in the lyrics.	`'white lips, pale face\nbreathing in snowflakes'`
2. Split our string into a list of lists.	`[['white lips, pale face], [breathing in snowflakes']]`
3. To change the first letter to uppercase, lowercase, break the strings into a list of characters.	`[['W','h','i','t','e',' ','l','i','p's'..... ]]`
4. After changing the first letter, turn the list of characters back into a string.	`[['White lips, pale face], [Breathing in snowflakes']]`
5. Replace words with different parts of speech.	`[['ADJ lips, pale face], [VERB in snowflakes']]`
6. Replace the blanks with specified words.	`[['Hard lips, pale face], [Running in snowflakes']]`

Lesson #05.ipynb (section 2)

Date operations



Such as a Data Scientist, we should always maintain a healthy degree of skepticism towards our initial results.

Whenever we're performing an analysis, a common influence on our results is time.

Who is the dominant artist for each month of the year?

	Position	Track Name	Artist	Streams	URL	Date	Region
0	1	Starboy	The Weeknd	3135625	https://open.spotify.com/track/5aAx2yezTd8zXrk...	2017-01-01	global
1	2	Closer	The Chainsmokers	3015525	https://open.spotify.com/track/7BKLCZ1jbUBVqRi...	2017-01-01	global
2	3	Let Me Love You	DJ Snake	2545384	https://open.spotify.com/track/4pdPtRcBmOSQDlJ...	2017-01-01	global
3	4	Rockabye (feat. Sean Paul & Anne-Marie)	Clean Bandit	2356604	https://open.spotify.com/track/5knuzwU65gJK7IF...	2017-01-01	global
4	5	One Dance	Drake	2259887	https://open.spotify.com/track/1xznGGDReH1oQq0...	2017-01-01	global

str

datetime

Datetime class

- **time** - Represents time of day. To import:

```
from datetime import time
```

- **date** - Represents a date in an idealized calendar. To import:

```
from datetime import date
```

- **datetime** - Represents month, day, dayofweek, year etc. Combines both **time** class and **date** class. To import:

```
from datetime import datetime
```

- **timedelta** - Represents duration of time, difference between two dates. To import:

```
from datetime import timedelta
```

Creating a datetime based on a string

```
date = "01/01/2017"
datetime.strptime(date, "%m/%d/%Y")
```

```
date = "05-02-2017"
datetime.strptime(date, "%m-%d-%Y")
```

Finding the top artist for each group (m,d,y)

Separate data by month

Track	Artist	Streams	Month
A	Bob	100	1
B	Bill	200	1
C	Bob	300	1
D	Bill	400	2

Within each month, group by the artist

Track	Artist	Streams	Month
A	Bob	100	1
B	Bill	200	1
C	Bob	300	1

When grouping the artists, we'll need to take the sum of the "Streams" column

Track	Artist	Streams	Month
A	Bob	400	1
B	Bill	200	1

Lesson #05.ipynb (section 3)