

# IMD0033 - Probabilidade

## Aula 06 - Introdução a Python II

Ivanovitch Silva  
Agosto, 2018



# Agenda

---

- Iterations
- List comprehension



top100.csv



# Atualizar o repositório

---

```
git clone https://github.com/ivanovitchm/imd0033_2018_2.git
```

Ou ....

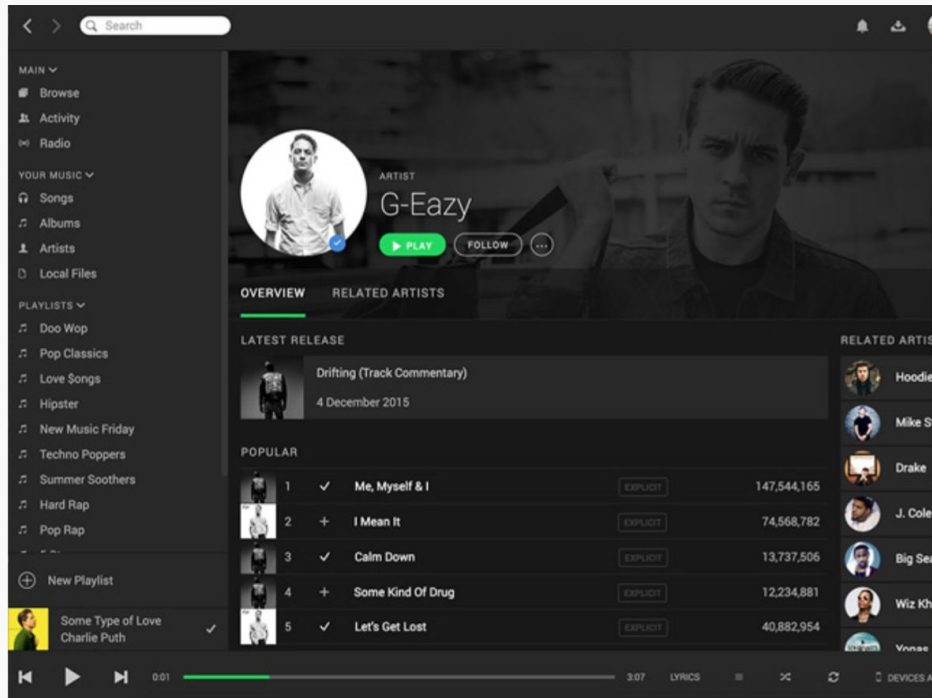
```
git pull
```

# Spotify

As of January 2018, Spotify has over 70 million paying users

What are the average total streams for each song in the top 100?

Which song was the most popular song of 2017?



# Spotify's Worldwide Daily Song Ranking

---

kaggle

	Track Name	Artist	Position	Streams
77	Sign of the Times	Harry Styles	756325	503894417
92	Photograph	Ed Sheeran	1525708	441132246
70	Look What You Made Me Do	Taylor Swift	335837	562562226
36	Scared to Be Lonely	Martin Garrix	1074560	866104216
13	Attention	Charlie Puth	560536	1112777364

# List Comprehension

---

```
streams = [57, 62, 63, 99, 142]
average = 84

diff = []
for num in streams:
    diff.append(num - average)
```



## Section 2.1

7

# List Comprehension

Key

new list

value

original list

transformation

Using a For Loop

```
diff = []  
for num in streams:  
    diff.append(num - average)
```



Using a List Comprehension

```
diff = [(num - average) for num in streams]
```

# Getting the artists count

```
['Ed Sheeran',  
'Luis Fonsi',  
'Luis Fonsi',  
'The Chainsmokers',  
'Kendrick Lamar',  
'French Montana',  
'Post Malone',  
'DJ Khaled',  
'Kygo',  
'Lil Uzi Vert']
```



counter

```
{'21 Savage': 1,  
'Alessia Cara': 1,  
'Avicii': 1,  
'Axwell /\ Ingrosso': 1,  
'Big Sean': 1,  
'Bruno Mars': 2,  
'CNCO': 1,  
'Calvin Harris': 2,  
'Camila Cabello': 1,  
'Cardi B': 1,  
'Charlie Puth': 1,  
'Cheat Codes': 1,  
'Childish Gambino': 1,  
'Chris Jeday': 1,  
'Clean Bandit': 2,  
'DJ Khaled': 2,  
'DJ Snake': 1,  
'Danny Ocean': 1,  
'David Guetta': 1,  
'Demi Lovato': 1,  
'Drake': 3,  
'Dua Lipa': 1,  
'Ed Sheeran': 5,
```



```
from collections import Counter
```

```
artists = ['Ed Sheeran',  
           'Luis Fonsi',  
           'Luis Fonsi',  
           'The Chainsmokers',  
           'Kendrick Lamar'  
          ]
```

```
count_artists = Counter(artists)  
count_artists
```

```
Counter({'Ed Sheeran': 1,  
        'Kendrick Lamar': 1,  
        'Luis Fonsi': 2,  
        'The Chainsmokers': 1})
```

```
count_artists_list = [[key, item] for key, item in count_artists.items().]  
count_artists_list
```

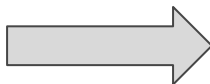
```
[['The Chainsmokers', 1],  
 ['Ed Sheeran', 1],  
 ['Kendrick Lamar', 1],  
 ['Luis Fonsi', 2]]
```

## Getting the Artist Count Using a Function and List Comprehension

# Sorting a list of lists

```
artists_counts_lol.sort()  
artists_counts_lol
```

Alphabetical order



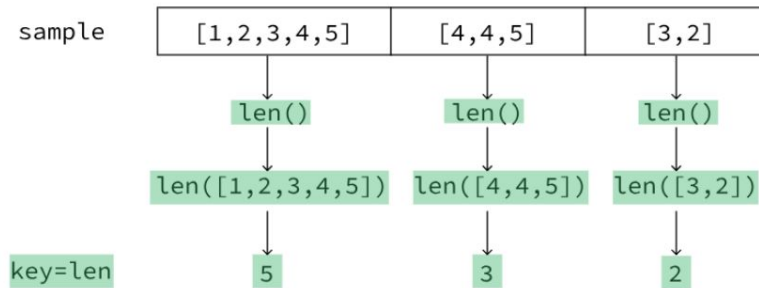
```
[['21 Savage', 1],  
 ['Alessia Cara', 1],  
 ['Avicii', 1],  
 ['Axwell /\ Ingrosso', 1],  
 ['Big Sean', 1],  
 ['Bruno Mars', 2],  
 ['CNCO', 1],  
 ['Calvin Harris', 2],  
 ['Camila Cabello', 1],  
 ['Cardi B', 1],
```

# Customizing sort()

Code

```
sample.sort(key=len)
```

sample



After calculating the length for each value, each value will be sorted:

Code

```
sample.sort(key=len)
```

sample  
key=len

[1,2,3,4,5]	[4,4,5]	[3,2]
5	3	2

sample  
key=len

[3,2]	[4,4,5]	[1,2,3,4,5]
2	3	5

# Creating a anonymous function

---

```
f = open("top100.csv", "r")
music = list(csv.reader(f))

artists = [row[1] for row in music[1:]]

artist_dict = Counter(artists)
artist_counts = [[key, value] for key, value in artist_dict.items()]

artist_counts.sort(key = lambda x: x[1], reverse=True)
```

# How to deal with errors

```
In [1]: streams = [53, 33, 57, 21, "NULL", 47]
```

```
In [2]: total = 0
```

```
In [3]: for s in streams:
...:     total += s
...:
```

```
-----
TypeError                                Traceback (most recent call last)
<ipython-input-3-9f5cd44a4b06> in <module>()
      1 for s in streams:
----> 2     total += s
      3
```

```
TypeError: unsupported operand type(s) for +=: 'int' and 'str'
```

# How to deal with errors

---

```
>>> streams = [53, 33, 57, 21, "NULL", 47]
>>> total = 0
>>> for s in streams:
...     try:
...         total += s
...     except:
...         print("Error occurred")
Error occurred
>>> print(total)
211
>>> █
```



```
index.js
import React, { useState } from 'react';
import './index.css';

function App() {
  const [contacts, setContacts] = useState([]);
  const [name, setName] = useState('');
  const [phone, setPhone] = useState('');
  const [email, setEmail] = useState('');

  const handleSubmit = (e) => {
    e.preventDefault();
    setContacts([...contacts, { name, phone, email }]);
    setName('');
    setPhone('');
    setEmail('');
  };

  return (
    <div>
      <h1>Contact Manager</h1>
      <div>
        <input type="text" value={name} onChange={e => setName(e.target.value)} />
        <input type="text" value={phone} onChange={e => setPhone(e.target.value)} />
        <input type="text" value={email} onChange={e => setEmail(e.target.value)} />
        <button onClick={handleSubmit}>Add Contact</button>
      </div>
      <ul>
        {contacts.map((contact) => (
          <li>
            {contact.name} {contact.phone} {contact.email}
            <button onClick={() => setContacts(contacts.filter(c => c !== contact))}>Remove</button>
          </li>
        ))}
      </ul>
    </div>
  );
}

export default App;
```

```
index.html
<!DOCTYPE html>
<html>
  <head>
    <meta charset="UTF-8" />
    <title>Contact Manager</title>
  </head>
  <body>
    <div id="root">
      <div>
        <h1>Contact Manager</h1>
        <div>
          <input type="text" value="" />
          <input type="text" value="" />
          <input type="text" value="" />
          <button>Add Contact</button>
        </div>
        <ul>
          <li></li>
        </ul>
      </div>
    </div>
  </body>
</html>
```