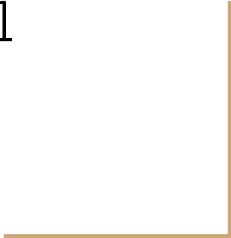


Programming, Problem Solving, and Algorithms

CPSC203, 2019 W1



Announcements

Lab this week: Project 1 part 1.

“Problem of the Day” continues!

Today:

Pandas, Plotting

Something completely new!

Some challenges...

Given last week's chart,

How many new songs were there?

- 1) select rows w.
'last_week' == 101
- 2) count ~~that~~ rows
in that selection

new_songs = df[df['last_week'] == 101].count()['title']

col
any column

[illegible]

Some challenges...

Given last week's chart,

What's the average peak?

peak : 'peak_pos'

average : .mean()

df[['peak_pos']].mean()

last-week, 'rank'

...

Some challenges...

Given last week's chart,

Among those who were on the list for more than 10wk, what's the average peak? (is it very different than the previous answer?)


```
df[df['weeks_on_chart'] > 10].mean()  
data frame      ['peak_pos']
```

⋮

Some challenges...

Given last week's chart,

Which song moved the most? Did it rise or fall? *it rose! (gradient is negative)*

1) you need a new column
'gradient'

2) functions you'll need:

• `idxmax()` - index of max item
in a column.

• `loc[k]` gives row in pos k.

• `abs()` gives abs value
of elements of column.



Some challenges...

Given last week's chart,

Write and answer your own question:

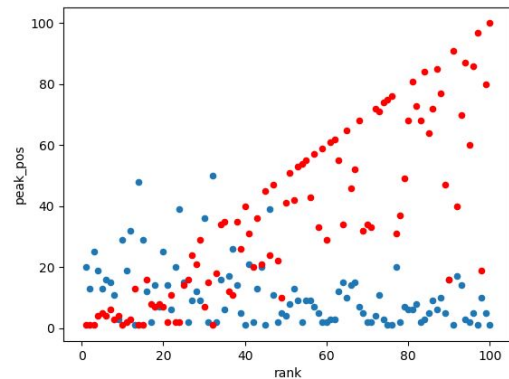
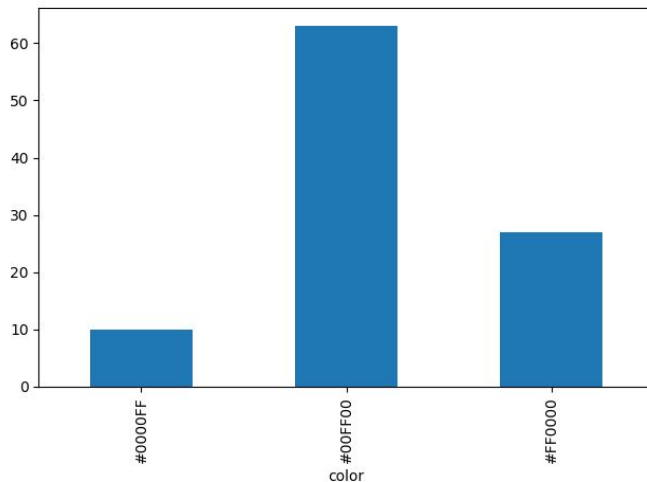
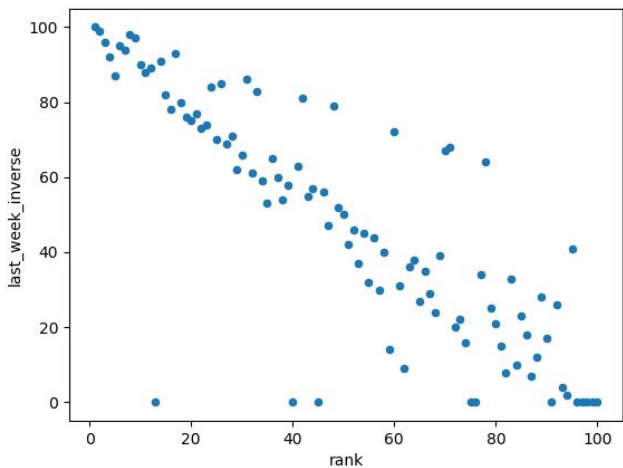


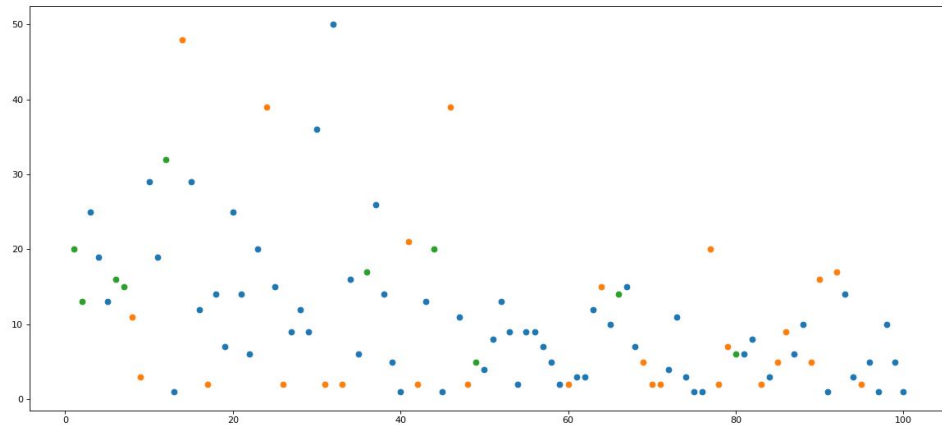
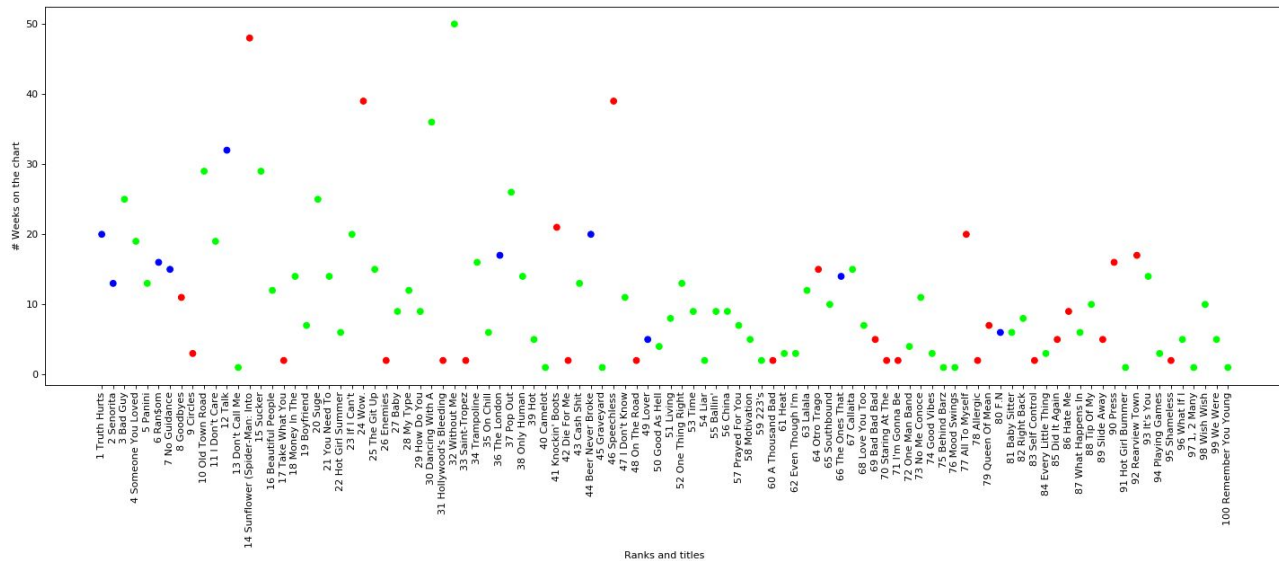
Plotting with Pandas

Several approaches, all fine. Best strategy is to sketch and find examples!

Nice reference:

<http://queirozf.com/entries/pandas-dataframe-plot-examples-with-matplotlib-pyplot>





Everyone needs a Tim Horton

Every address in Vancouver has a nearest TH.

Partition Vancouver into regions so that points are in the same region if they have the same nearest TH.



Voronoi Diagrams

Given a (finite) set of “centers” c_1, c_2, \dots, c_k , a Voronoi region, R_j consists of the set of points nearer to center c_j than to any other center.

Together, the R_j regions compose the Voronoi Diagram of a plane.

The applications of this structure go far beyond our coffee fix!!



POTD #9 Tue

<https://github.students.cs.ubc.ca/cpsc203-2019w-t1/potd0>

Describe any snags you run into:

1. Line ____: _____
2. Line ____: _____
3. Line ____: _____
4. Line ____: _____
5. Line ____: _____

ToDo for next class...

POTD: Continue every weekday! Submit to repo.

Reading: TLACS Ch 10 & 12 (lists and dictionaries)

References:

<https://www.dataschool.io/best-python-pandas-resources/>

https://pandas.pydata.org/Pandas_Cheat_Sheet.pdf