

```
In [7]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import datetime as dt
```

```
In [8]: pd.set_option("display.max_columns",100)
df=pd.read_csv("https://raw.githubusercontent.com/justmarkham/pycon-2019-tutorial/master/ted.csv")
```

```
In [9]: df["film_date"]=pd.to_datetime(df["film_date"],unit="s")
df["published_date"]=pd.to_datetime(df["published_date"],unit="s")
df["today"]=pd.to_datetime('today').normalize()
```

```
In [10]: df.head(3)
```

Out[10]:

		comments	description	duration	event	film_date	languages	main Speaker	name	num Speaker	published_date	ratings	related_talks	speaker_occupation	tags	title	url	vie
0	4553	Sir Ken Robinson makes an entertaining and pro...	1164 TED2006	2006-02-25	60	Ken Robinson	Ken Robinson: Do schools kill creativity?	1	2006-06-27 00:11:00	[{"id": 7, "name": "Funny", "count": 19645}, {"i...]	"https://pe.tedcdn.com/im...]	Author/educator	['children', 'creativity', 'culture', 'dance', ...]	Do schools kill creativity?	https://www.ted.com/talks/ken_robinson_says_sc...	47227		
1	265	With the same humor and humanity he exuded in ...	977 TED2006	2006-02-25	43	Al Gore	Al Gore: Averting the climate crisis	1	2006-06-27 00:11:00	[{"id": 7, "name": "Funny", "count": 544}, {"i...]	"https://pe.tedcdn.com/im...]	Climate advocate	['alternative energy', 'cars', 'climate change...]	Averting the climate crisis	https://www.ted.com/talks/al_gore_on_averting_...	3200:		
2	124	New York Times columnist David Pogue takes aim...	1286 TED2006	2006-02-24	26	David Pogue	David Pogue: Simplicity sells	1	2006-06-27 00:11:00	[{"id": 7, "name": "Funny", "count": 964}, {"i...]	"https://pe.tedcdn.com/i...]	Technology columnist	['computers', 'entertainment', 'interface desi...]	Simplicity sells	https://www.ted.com/talks/david_pogue_says_sim...	1636:		

```
In [11]: import ast
df["ratings"] = df["ratings"].apply(lambda x:ast.literal_eval(x))
```

Find total count of ratings for each talk

```
In [12]: for row,name in zip(df["ratings"],df["name"]):
    total_count=0
    for i in row:
        total_count+=i["count"]
    print(total_count, " - ",name)
```

```
93850 - Ken Robinson: Do schools kill creativity?
2936 - Al Gore: Averting the climate crisis
2824 - David Pogue: Simplicity sells
3728 - Majora Carter: Greening the ghetto
25620 - Hans Rosling: The best stats you've ever seen
15356 - Tony Robbins: Why we do what we do
5998 - Julia Sweeney: Letting go of God
1024 - Joshua Prince-Ramus: Behind the design of Seattle's library
3946 - Dan Dennett: Let's teach religion -- all religion -- in schools
8327 - Rick Warren: A life of purpose
1780 - Cameron Sinclair: My wish: A call for open-source architecture
592 - Jehane Noujaim: My wish: A global day of film
886 - Larry Brilliant: My wish: Help me stop pandemics
8317 - Jeff Han: The radical promise of the multi-touch interface
781 - Nicholas Negroponte: One Laptop per Child
6239 - Sirena Huang: An 11-year-old's magical violin
4679 - Jennifer Lin: Improvising on piano, aged 14
1788 - Amy Smith: Simple designs to save a life
1931 - Ross Lovegrove: Organic design, inspired by nature
```

For each talk find which emotion was expressed most often and its' percentage of total emotion count

```
In [13]: for row,name in zip(df["ratings"],df["name"]):
    count=0
    total_count=0
    for i in row:
        total_count+=i["count"]
        if i["count"]>count:
            count=i["count"]
            emotion=i["name"]
    print(count,emotion,round(count/total_count*100,2),"%", " - ",name)
```

```
24924 Inspiring 26.56 % - Ken Robinson: Do schools kill creativity?
544 Funny 18.53 % - Al Gore: Averting the climate crisis
964 Funny 34.14 % - David Pogue: Simplicity sells
1070 Inspiring 28.7 % - Majora Carter: Greening the ghetto
5433 Informative 21.21 % - Hans Rosling: The best stats you've ever seen
5211 Inspiring 33.93 % - Tony Robbins: Why we do what we do
2484 Funny 41.41 % - Julia Sweeney: Letting go of God
195 Ingenious 19.04 % - Joshua Prince-Ramus: Behind the design of Seattle's library
764 Persuasive 19.36 % - Dan Dennett: Let's teach religion -- all religion -- in schools
2556 Inspiring 30.7 % - Rick Warren: A life of purpose
608 Inspiring 34.16 % - Cameron Sinclair: My wish: A call for open-source architecture
201 Inspiring 33.95 % - Jehane Noujaim: My wish: A global day of film
240 Inspiring 27.09 % - Larry Brilliant: My wish: Help me stop pandemics
4643 Jaw-dropping 55.83 % - Jeff Han: The radical promise of the multi-touch interface
216 Inspiring 27.66 % - Nicholas Negroponte: One Laptop per Child
2280 Jaw-dropping 36.54 % - Sirena Huang: An 11-year-old's magical violin
1997 Jaw-dropping 42.68 % - Jennifer Lin: Improvising on piano, aged 14
515 Inspiring 28.8 % - Amy Smith: Simple designs to save a life
363 Inspiring 18.8 % - Ross Lovegrove: Organic design, inspired by nature
```

For each talk find which emotion was expressed the least often

```
In [14]: for row in df['ratings']:
    count=10**10
    for i in row:
        if i["count"]<count:
            count=i["count"]
            name=i["name"]
    print(name,count)
```

```
Obnoxious 209
Ingenious 56
Confusing 27
Confusing 32
Obnoxious 61
Longwinded 285
Jaw-dropping 61
Obnoxious 5
Funny 60
Funny 26
Obnoxious 7
Obnoxious 1
Confusing 2
Confusing 19
Confusing 6
Confusing 10
Confusing 22
Obnoxious 4
Persuasive 22
~' . ..'
```

Find 5 talks with the most rating per view

```
In [15]: ratingscount=[]
for row in df["ratings"]:
    ratings_count=0
    for i in row:
        if i["count"]>rating_count:
            rating_count=i["count"]
            name=i["name"]
    emotion.append(name)
df["emotion"]=emotion
```

Out[15]:

		comments	description	duration	event	film_date	languages	main Speaker	name	num Speaker	published Date	ratings	related talks	Speaker occupation	tags	Title	
791	225	In a courageous, intensely emotional talk at t...		775	Fort Worth City Council	2010-10-12	0	Joel Burns	Joel Burns: A message to gay teens: It gets be...	1	2010-10-17 09:22:00	[{"id": 3, "name": "Courageous", "count": 1254...}	[{"id": 931, "hero": "https://pe.tedcdn.com/im..."}]	City councilman	['LGBT', 'TEDYouth', 'humanity', 'social chang...', 'message to gay teens: It gets better']	A	https://www.ted.com/talks/joel_burns_tells_
972	92	New York was planning to tear down the High Li...		341	TED2011	2011-03-03	36	Robert Hammond	Robert Hammond: Building a park in the sky	1	2011-06-30 14:54:00	[{"id": 22, "name": "Fascinating", "count": 19...}	[{"id": 8, "hero": "https://pe.tedcdn.com/imag..."}]	Friend of the High Line	['activism', 'architecture', 'cities', 'cultur...']	Building a park in the sky	https://www.ted.com/talks/robert_hammond_b
914	273	Pioneering surgeon Susan Lim performed the fir...		986	INK Conference	2010-12-07	31	Susan Lim	Susan Lim: Transplant cells, not organs	1	2011-04-15 18:47:00	[{"id": 3, "name": "Courageous", "count": 1135...}	[{"id": 744, "hero": "https://pe.tedcdn.com/im..."}]	Surgeon	['business', 'technology']	Transplant cells, not organs	https://www.ted.com/talks/susa
744	649	Hours before New York lawmakers rejected a key...		453	New York State Senate	2009-12-02	0	Diane J. Savino	Diane J. Savino: The case for same-sex marriage	1	2010-08-17 16:23:00	[{"id": 25, "name": "OK", "count": 100}, {"id": ...}	[{"id": 217, "hero": "https://pe.tedcdn.com/im..."}]	Senator	['God', 'LGBT', 'culture', 'government', 'law'...]	The case for same-sex marriage	https://www.ted.com/talks/diane_j_savino_th
2171	335	It doesn't matter whether you love or hate gun...		818	TED2016	2016-02-17	19	Dan Gross	Dan Gross: Why gun violence can't be our new n...	1	2016-03-29 14:58:52	[{"id": 8, "name": "Informative", "count": 154...}	[{"id": 1342, "hero": "https://pe.tedcdn.com/i..."}]	Gun-control activist	['Debate', 'Guns', 'activism', 'big problems',...]	Why gun violence can't be our new normal	https://www.ted.com/talks/dan_gross_why_gur

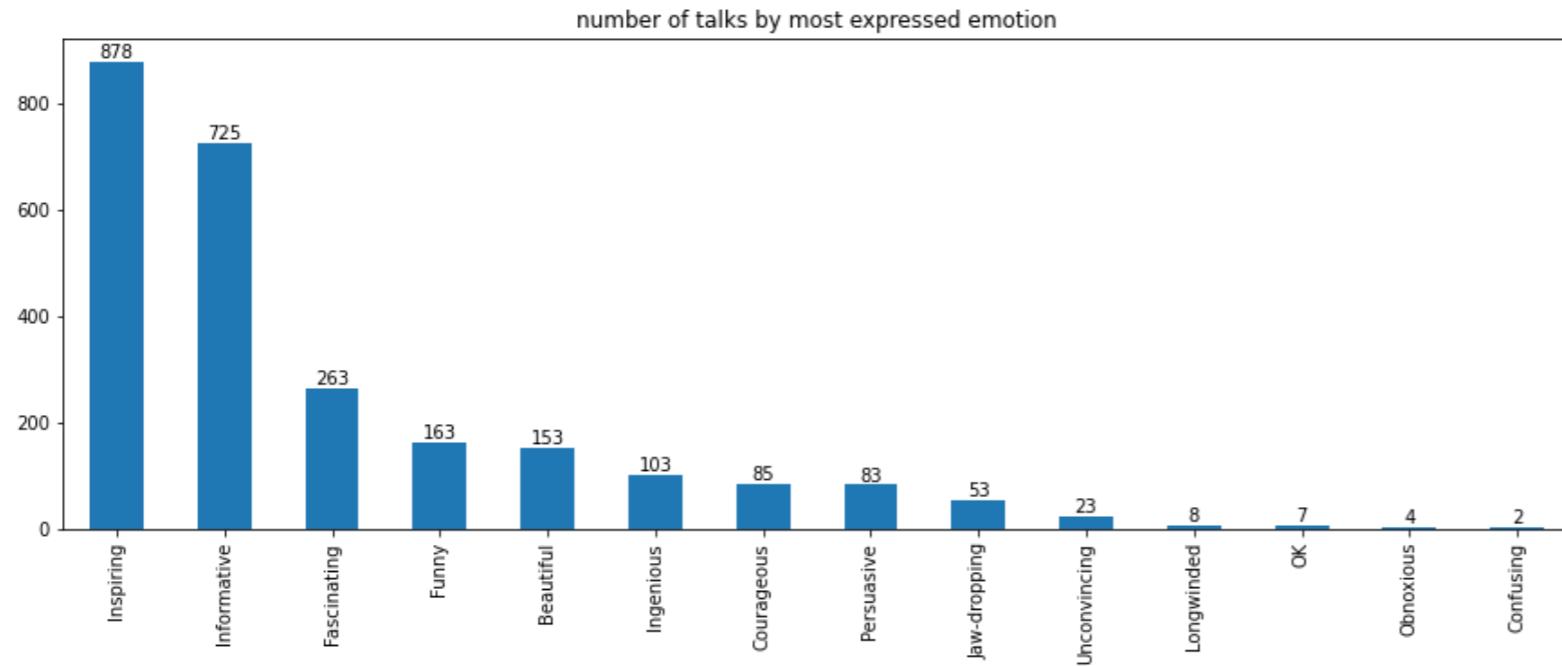
Create column that shows most expressed emotion for that talk

```
In [16]: emotion=[]
for row in df["ratings"]:
    rating_count=0
    for i in row:
        if i["count"]>rating_count:
            rating_count=i["count"]
            name=i["name"]
    emotion.append(name)
df["emotion"]=emotion
```

```
In [17]: grouped=df.groupby("emotion")["emotion"].count().reset_index(name="count").sort_values("count",ascending=False)
grouped.plot(kind="bar",figsize=(15,5),x="emotion",y="count",title="number of talks by most expressed emotion",xlabel="",legend=False)

def value_labels(y):
    for i in range(len(y)):
        plt.text(i,y.iloc[i],y.iloc[i],size=10,ha="center",va="bottom")
value_labels(grouped["count"])

plt.show()
```



Find speakers of which occupation give inspiring and informative talks, which speakers are most funny, ingenious, persuasive etc.

```
In [19]: emotions=df.emotion.unique()

for i in emotions:
    print("Most "+i+" speeches are given by people of these occupations: ")

    print(df[df.emotion==i].groupby("speaker_occupation")["name"].count().reset_index().sort_values("name",ascending=False)[["speaker_occupation"]].head(3).to_string(index=False))

    print(" ")

Most Inspiring speeches are given by people of these occupations:
    Writer
Entrepreneur
    Architect

Most Funny speeches are given by people of these occupations:
    Comedian
    Artist
Singer/songwriter

Most Informative speeches are given by people of these occupations:
    Journalist
    Psychologist
Neuroscientist

Most Ingenious speeches are given by people of these occupations:
    Inventor
Architect
    Artist
```