```
In [55]:
          #for mathematical computation
          import numpy as np
           import pandas as pd
           import seaborn as sns
           import matplotlib.pyplot as plt
           %matplotlib inline
          df_track = pd.read_csv('Tracks.csv')
In [33]:
          df track.head()
             genre artist_name track_name
                                                             track_id popularity acousticness
Out[33]:
                                  C'est beau
                           Henri
                                             0BRjO6ga9RKCKjfDqeFgWV
                                                                              0
             Movie
                                   de faire un
                                                                                         0.611
                        Salvador
                                       Show
                                       Perdu
                     Martin & les
                                    d'avance
           1 Movie
                                              0BjC1NfoEOOusryehmNudP
                                                                               1
                                                                                        0.246
                           fées
                                    (par Gad
                                    Elmaleh)
                                    Don't Let
                         Joseph
                                      Me Be
           2 Movie
                                              0CoSDzoNIKCRs124s9uTVy
                                                                              3
                                                                                        0.952
                        Williams
                                      Lonely
                                     Tonight
                                     Dis-moi
                           Henri
                                    Monsieur
          3 Movie
                                                                              0
                                              0Gc6TVm52BwZD07Ki6tlvf
                                                                                        0.703
                                     Gordon
                        Salvador
                                     Cooper
          4 Movie Fabien Nataf
                                              0luslXpMROHdEPvSl1fTQK
                                   Ouverture
                                                                              4
                                                                                        0.950
```

In [34]: #data Info
 df_track.info()

> <class 'pandas.core.frame.DataFrame'> RangeIndex: 232725 entries, 0 to 232724 Data columns (total 18 columns):

```
#
    Column
                     Non-Null Count
                                    Dtype
    -----
                     -----
0
                     232725 non-null object
    genre
1
                   232725 non-null object
    artist_name
2
                   232725 non-null object
    track name
3
                    232725 non-null object
    track id
4
   popularity
                    232725 non-null int64
5
    acousticness
                    232725 non-null float64
    danceability
6
                    232725 non-null float64
7
                    232725 non-null int64
    duration ms
                    232725 non-null float64
    energy
9
    instrumentalness 232725 non-null float64
10
                     232725 non-null object
    key
11
   liveness
                     232725 non-null float64
12 loudness
                    232725 non-null float64
                     232725 non-null object
13 mode
14 speechiness 232725 non-null float64
15 tempo
                    232725 non-null float64
16 time_signature 232725 non-null object
                     232725 non-null float64
17 valence
dtypes: float64(9), int64(2), object(7)
```

memory usage: 32.0+ MB

```
In [35]:
         #Checking The Null Values
         df_track.isnull().sum()
```

```
genre
Out[35]:
          artist_name
                               0
          track name
                               0
          track id
          popularity
          acousticness
                               0
          danceability
          duration_ms
          energy
          instrumentalness
                               0
          key
                               0
          liveness
          loudness
                               0
          mode
          speechiness
                               0
                               0
          tempo
```

time signature

valence

In [17]:

```
dtype: int64
```

0 0

```
df most popular sorted = df track.sort values('popularity', ascending = Fa
df most popular sorted
```

Out[17]:		genre	artist_name	track_name	track_id	popularity	ac
	9027	Dance	Ariana Grande	7 rings	14msK75pk3pA33pzPVNtBF	100	
	107804	Рор	Ariana Grande	7 rings	14msK75pk3pA33pzPVNtBF	100	
	86951	Rap	Post Malone	Wow.	6MWtB6iiXyIwun0YzU6DFP	99	
	107803	Pop	Post Malone	Wow.	6MWtB6iiXylwun0YzU6DFP	99	
	107802	Рор	Ariana Grande	break up with your girlfriend, i'm bored	4kV4N9D1iKVxx1KLvtTpjS	99	
	9026	Dance	Ariana Grande	break up with your girlfriend, i'm bored	4kV4N9D1iKVxx1KLvtTpjS	99	
	66643	Нір-Нор	Daddy Yankee	Con Calma	5w9c2J52mkdntKOmRLeM2m	98	
	107909	Рор	Daddy Yankee	Con Calma	5w9c2J52mkdntKOmRLeM2m	98	
	138918	Reggaeton	Daddy Yankee	Con Calma	5w9c2J52mkdntKOmRLeM2m	98	
	107829	Рор	Ava Max	Sweet but Psycho	25sgk305KZfyuqVBQlahim	97	

In [36]: most_popular = df_track.query('popularity > 90',inplace = False).sort_val
 most_popular[:10]

Out[36]:

	genre	artist_name	track_name	track_id	popularity	ac
107804	Рор	Ariana Grande	7 rings	14msK75pk3pA33pzPVNtBF	100	
9027	Dance	Ariana Grande	7 rings	14msK75pk3pA33pzPVNtBF	100	
9026	Dance	Ariana Grande	break up with your girlfriend, i'm bored	4kV4N9D1iKVxx1KLvtTpjS	99	
86951	Rap	Post Malone	Wow.	6MWtB6iiXyIwun0YzU6DFP	99	
107803	Pop	Post Malone	Wow.	6MWtB6iiXylwun0YzU6DFP	99	
107802	Рор	Ariana Grande	break up with your girlfriend, i'm bored	4kV4N9D1iKVxx1KLvtTpjS	99	
138918	Reggaeton	Daddy Yankee	Con Calma	5w9c2J52mkdntKOmRLeM2m	98	
66643	Нір-Нор	Daddy Yankee	Con Calma	5w9c2J52mkdntKOmRLeM2m	98	
107909	Рор	Daddy Yankee	Con Calma	5w9c2J52mkdntKOmRLeM2m	98	
86953	Rap	Post Malone	Sunflower - Spider-Man: Into the Spider- Verse	3KkXRkHbMCARz0aVfEt68P	97	

In [38]: df_track.head()

Out[38]:		genre	artist_name	track_name	track_id	popularity	acousticness
	0	Movie	Henri Salvador	C'est beau de faire un Show	0BRjO6ga9RKCKjfDqeFgWV	0	0.611
	1	Movie	Martin & les fées	Perdu d'avance (par Gad Elmaleh)	0BjC1NfoEOOusryehmNudP	1	0.246
	2	Movie	Joseph Williams	Don't Let Me Be Lonely Tonight	0CoSDzoNIKCRs124s9uTVy	3	0.952
	3	Movie	Henri Salvador	Dis-moi Monsieur Gordon Cooper	0Gc6TVm52BwZD07Ki6tlvf	0	0.703
	4	Movie	Fabien Nataf	Ouverture	0luslXpMROHdEPvSl1fTQK	4	0.950

In [43]: df_most_popular_sorted = df_track.sort_values('popularity', ascending = F
 df_most_popular_sorted

Out[43]:

genre	artist_name	track_name	track_id	popularity	ac
Dance	Ariana Grande	7 rings	14msK75pk3pA33pzPVNtBF	100	
Рор	Ariana Grande	7 rings	14msK75pk3pA33pzPVNtBF	100	
Rap	Post Malone	Wow.	6MWtB6iiXylwun0YzU6DFP	99	
Рор	Post Malone	Wow.	6MWtB6iiXylwun0YzU6DFP	99	
Рор	Ariana Grande	break up with your girlfriend, i'm bored	4kV4N9D1iKVxx1KLvtTpjS	99	
Dance	Ariana Grande	break up with your girlfriend, i'm bored	4kV4N9D1iKVxx1KLvtTpjS	99	
Нір-Нор	Daddy Yankee	Con Calma	5w9c2J52mkdntKOmRLeM2m	98	
Рор	Daddy Yankee	Con Calma	5w9c2J52mkdntKOmRLeM2m	98	
Reggaeton	Daddy Yankee	Con Calma	5w9c2J52mkdntKOmRLeM2m	98	
Рор	Ava Max	Sweet but Psycho	25sgk305KZfyuqVBQlahim	97	
	Dance Pop Rap Pop Dance Hip-Hop Pop Reggaeton	Dance Ariana Grande Pop Ariana Grande Rap Post Malone Pop Post Malone Pop Ariana Grande Pop Ariana Grande Dance Ariana Grande Dance Daddy Yankee Reggaeton Daddy Yankee	Dance Ariana Grande 7 rings Pop Ariana Grande 7 rings Rap Post Malone Wow. Pop Post Malone Wow. Pop Ariana Grande break up with your girlfriend, i'm bored Dance Ariana Grande Urim bored Dance Daddy Yankee Con Calma Reggaeton Daddy Yankee Con Calma Sweet but	Dance Ariana Grande 7 rings 14msK75pk3pA33pzPVNtBF Rap Post Malone Wow. 6MWtB6iiXylwun0YzU6DFP Pop Post Malone Wow. 6MWtB6iiXylwun0YzU6DFP Pop Post Malone Wow. 6MWtB6iiXylwun0YzU6DFP Pop Post Malone Wow. 6MWtB6iiXylwun0YzU6DFP Ariana break up with your girlfriend, i'm bored Break up with your girlfriend, i'm bored Ariana Grande Grande Sw9c2J52mkdntKOmRLeM2m Pop Daddy Yankee Con Calma Sw9c2J52mkdntKOmRLeM2m Reggaeton Daddy Yankee Con Calma Sw9c2J52mkdntKOmRLeM2m Sweet but 25sgk305K7fwugVR0labim	DanceAriana Grande7 rings14msK75pk3pA33pzPVNtBF100PopAriana Grande7 rings14msK75pk3pA33pzPVNtBF100RapPost MaloneWow.6MWtB6iiXyIwun0YzU6DFP99PopPost MaloneWow.6MWtB6iiXyIwun0YzU6DFP99PopAriana Grandebreak up with your girlfriend, i'm bored4kV4N9D1iKVxx1KLvtTpjS99DanceAriana Grandebreak up with your girlfriend, i'm bored4kV4N9D1iKVxx1KLvtTpjS99Hip-HopDaddy YankeeCon Calma5w9c2J52mkdntKOmRLeM2m98PopDaddy YankeeCon Calma5w9c2J52mkdntKOmRLeM2m98ReggaetonDaddy YankeeCon Calma5w9c2J52mkdntKOmRLeM2m98ReggaetonDaddy YankeeCon Calma5w9c2J52mkdntKOmRLeM2m98

```
In [58]:
             plt.figure(figsize=(9,5))
             sns.heatmap(df.corr(), annot= True)
             <AxesSubplot:>
Out[58]:
                                                                                                                 - 1.0
                    popularity -
                                 1
                                       -0.38
                                              0.26 0.0023 0.25
                                                                 -0.21 -0.17
                                                                               0.36
                                                                                      -0.15 0.081 0.06
                                                                                                                 - 0.8
                  acousticness
                                -0.38
                                        1
                                              -0.36 0.011
                                                           -0.73
                                                                  0.32
                                                                        0.069
                                                                               -0.69
                                                                                      0.15
                                                                                             -0.24
                                                                                                   -0.33
                                                                       -0.042 0.44
                  danceability
                                0.26
                                       -0.36
                                                    -0.13
                                                                                      0.13 0.022
                                                           0.33
                                                                  -0.36
                                                                                                                - 0.6
                                             -0.13
                  duration_ms -0.0023 0.011
                                                           -0.031 0.076 0.024 -0.048 -0.016 -0.028
                                                      1
                                                                                                  -0.14
                                                                                                                - 0.4
                       energy
                                0.25
                                       -0.73
                                              0.33
                                                   -0.031
                                                            1
                                                                  -0.38
                                                                         0.19
                                                                               0.82
                                                                                      0.15
                                                                                             0.23
                                                                                                                - 0.2
                                -0.21
                                              -0.36 0.076
                                                          -0.38
                                                                   1
                                                                         -0.13 -0.51
                                                                                      -0.18
                                                                                             -0.1
                                                                                                   -0.31
              instrumentalness -
                                       0.32
                                -0.17 0.069
                                            -0.042 0.024
                                                           0.19
                                                                  -0.13
                                                                          1
                                                                               0.046
                                                                                                                - 0.0
                                                                                            -0.051 0.012
                      liveness
                                                                        0.046
                                                           0.82
                                                                                     0.0023 0.23
                     loudness
                                0.36
                                       -0.69
                                                   -0.048
                                                                  -0.51
                                                                                 1
                                                                                                                 - -0.2
                                                                              -0.0023
                  speechiness
                                -0.15
                                      0.15
                                              0.13
                                                   -0.016
                                                          0.15
                                                                 -0.18
                                                                                            -0.082 0.024
                                                                                                                 -0.4
                                0.081 -0.24
                                             0.022 -0.028
                                                           0.23
                                                                   -0.1
                                                                        -0.051
                                                                                     -0.082
                                                                               0.23
                                                                                                    0.13
                        tempo
```

-0.14

duration_ms

danceability

0.012

-0.31

nstrumentalness

0.4

0.13

1

valence

0.024

speechiness

0.06

popularity

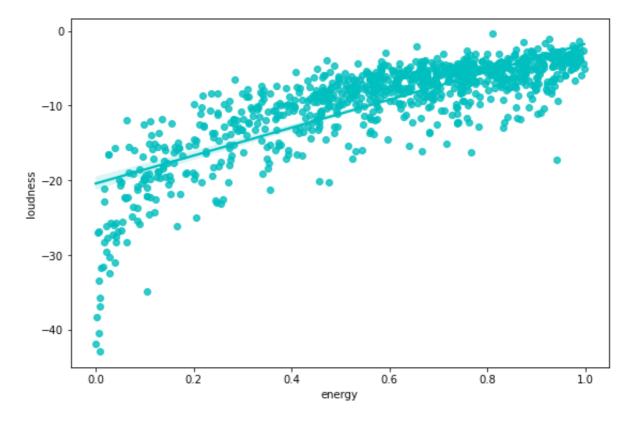
valence

-0.33

acousticness

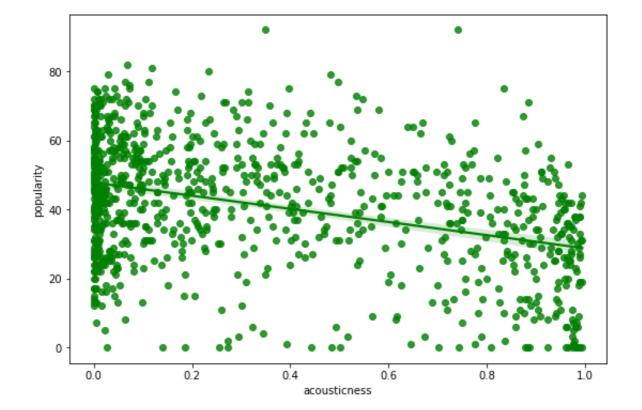
```
In [59]: sample_df = df_track.sample(int(0.004 * len(df_track)))
In [60]: plt.figure(figsize = [9, 6])
    sns.regplot(data = sample_df, y = 'loudness', x = 'energy', color = 'c')
Out[60]: <AxesSubplot:xlabel='energy', ylabel='loudness'>
```

energy



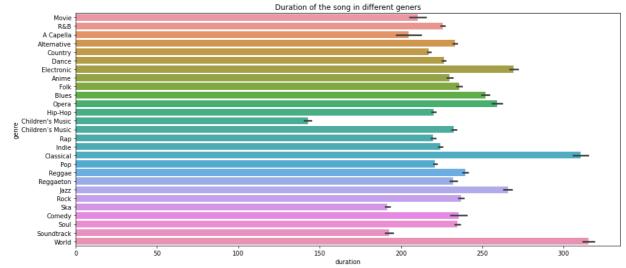
In [61]: plt.figure(figsize = [9,6])
sns.regplot(data = sample_df, y = 'popularity', x = 'acousticness', color

Out[61]: <AxesSubplot:xlabel='acousticness', ylabel='popularity'>



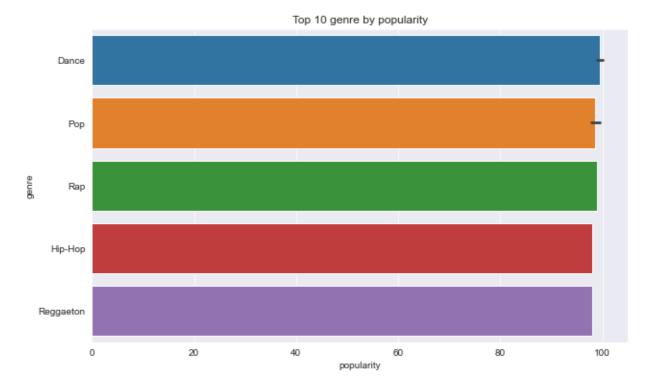
```
In [62]: plt.figure(figsize = [16,7])
  plt.title('Duration of the song in different geners')
  sns.color_palette('rocket', as_cmap = True)
  sns.barplot(y = 'genre', x = 'duration', data = df_track)
```

Out[62]: <AxesSubplot:title={'center':'Duration of the song in different geners'},
 xlabel='duration', ylabel='genre'>



```
In [63]: sns.set_style(style ='darkgrid')
  plt.figure(figsize = [10,6])
  most_popular_genres = df_track.sort_values('popularity', ascending = False
  sns.barplot(y ='genre', x = 'popularity', data = most_popular_genres).set
```

Out[63]: [Text(0.5, 1.0, 'Top 10 genre by popularity')]



In []: