DATA ANALYSIS WITH PYTHON
TASK-4

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from datetime import datetime

df = pd.read_csv("C:\\Users\\vibha\\Downloads\\USvideos.csv")

df.head()
```

```
      video_id trending_date  \
0  2kyS6SvSYSE      17.14.11
1  1ZAPwfrtAFY      17.14.11
2  5qpjK5DgCt4      17.14.11
3  puqaWrEC7tY      17.14.11
4  d380meD0W0M      17.14.11

                                               title
channel_title  \
0                 WE WANT TO TALK ABOUT OUR MARRIAGE
CaseyNeistat
1  The Trump Presidency: Last Week Tonight with J...
LastWeekTonight
2  Racist Superman | Rudy Mancuso, King Bach & Le...           Rudy
Mancuso
3                   Nickelback Lyrics: Real or Fake?  Good Mythical
Morning
4                           I Dare You: GOING BALD!?
nigahiga

   category_id              publish_time  \
0           22  2017-11-13T17:13:01.000Z
1           24  2017-11-13T07:30:00.000Z
2           23  2017-11-12T19:05:24.000Z
3           24  2017-11-13T11:00:04.000Z
4           24  2017-11-12T18:01:41.000Z

                                                tags    views   likes
\
0                                   SHANtell martin   748374   57527

1  last week tonight trump presidency|"last week ...  2418783   97185

2  racist superman|"rudy"|"mancuso"|"king"|"bach"...  3191434  146033

3  rhett and link|"gmm"|"good mythical morning"|"...   343168   10172

4  ryan|"higa"|"higatv"|"nigahiga"|"i dare you"|"...  2095731  132235


   dislikes  comment_count
thumbnail_link  \
```

```
0      2966          15954
https://i.ytimg.com/vi/2kyS6SvSYSE/default.jpg
1      6146          12703
https://i.ytimg.com/vi/1ZAPwfrtAFY/default.jpg
2      5339           8181
https://i.ytimg.com/vi/5qpjK5DgCt4/default.jpg
3       666           2146
https://i.ytimg.com/vi/puqaWrEC7tY/default.jpg
4      1989          17518
https://i.ytimg.com/vi/d380meD0W0M/default.jpg

   comments_disabled  ratings_disabled  video_error_or_removed  \
0              False             False                   False
1              False             False                   False
2              False             False                   False
3              False             False                   False
4              False             False                   False

                                          description
0  SHANTELL'S CHANNEL - https://www.youtube.com/s...
1  One year after the presidential election, John...
2  WATCH MY PREVIOUS VIDEO â–¶ \n\nSUBSCRIBE â–º ...
3  Today we find out if Link is a Nickelback amat...
4  I know it's been a while since we did this sho...
```

```
df.shape
```

```
(40949, 16)
```

```
df = df.drop_duplicates()
df.shape
```

```
(40901, 16)
```

```
df.describe()
```

```
        category_id         views         likes      dislikes
comment_count
count  40901.000000  4.090100e+04  4.090100e+04  4.090100e+04
4.090100e+04
mean      19.970588  2.360678e+06  7.427173e+04  3.711722e+03
8.448567e+03
std        7.569362  7.397719e+06  2.289999e+05  2.904624e+04
3.745139e+04
min        1.000000  5.490000e+02  0.000000e+00  0.000000e+00
0.000000e+00
25%       17.000000  2.419720e+05  5.416000e+03  2.020000e+02
6.130000e+02
50%       24.000000  6.810640e+05  1.806900e+04  6.300000e+02
1.855000e+03
75%       25.000000  1.821926e+06  5.533800e+04  1.936000e+03
```

```
5.752000e+03
max       43.000000  2.252119e+08  5.613827e+06  1.674420e+06
1.361580e+06

df.info()

<class 'pandas.core.frame.DataFrame'>
Index: 40901 entries, 0 to 40948
Data columns (total 16 columns):
 #   Column                  Non-Null Count  Dtype
---  ------                  --------------  -----
 0   video_id                40901 non-null  object
 1   trending_date           40901 non-null  object
 2   title                   40901 non-null  object
 3   channel_title           40901 non-null  object
 4   category_id             40901 non-null  int64
 5   publish_time            40901 non-null  object
 6   tags                    40901 non-null  object
 7   views                   40901 non-null  int64
 8   likes                   40901 non-null  int64
 9   dislikes                40901 non-null  int64
 10  comment_count           40901 non-null  int64
 11  thumbnail_link          40901 non-null  object
 12  comments_disabled       40901 non-null  bool
 13  ratings_disabled        40901 non-null  bool
 14  video_error_or_removed  40901 non-null  bool
 15  description             40332 non-null  object
dtypes: bool(3), int64(5), object(8)
memory usage: 4.5+ MB

columns_to_remove = ['thumbnail_link','description']
df= df.drop(columns=columns_to_remove)
df.info()

<class 'pandas.core.frame.DataFrame'>
Index: 40901 entries, 0 to 40948
Data columns (total 14 columns):
 #   Column                  Non-Null Count  Dtype
---  ------                  --------------  -----
 0   video_id                40901 non-null  object
 1   trending_date           40901 non-null  object
 2   title                   40901 non-null  object
 3   channel_title           40901 non-null  object
 4   category_id             40901 non-null  int64
 5   publish_time            40901 non-null  object
 6   tags                    40901 non-null  object
 7   views                   40901 non-null  int64
 8   likes                   40901 non-null  int64
 9   dislikes                40901 non-null  int64
 10  comment_count           40901 non-null  int64
```

```
 11  comments_disabled       40901 non-null  bool
 12  ratings_disabled        40901 non-null  bool
 13  video_error_or_removed  40901 non-null  bool
dtypes: bool(3), int64(5), object(6)
memory usage: 3.9+ MB
```

```
from datetime import datetime
```

```
import datetime
```

```
df["trending_date"] = df["trending_date"].apply (lambda x :
datetime.datetime.strptime(x, '%y.%d.%m'))
df.head(3)
```

```
      video_id trending_date  \
0  2kyS6SvSYSE    2017-11-14
1  1ZAPwfrtAFY    2017-11-14
2  5qpjK5DgCt4    2017-11-14

                                                title    channel_title
\
0                WE WANT TO TALK ABOUT OUR MARRIAGE     CaseyNeistat

1  The Trump Presidency: Last Week Tonight with J...  LastWeekTonight

2  Racist Superman | Rudy Mancuso, King Bach & Le...     Rudy Mancuso


   category_id              publish_time  \
0           22  2017-11-13T17:13:01.000Z
1           24  2017-11-13T07:30:00.000Z
2           23  2017-11-12T19:05:24.000Z

                                                 tags    views   likes
\
0                                   SHANtell martin   748374   57527

1  last week tonight trump presidency|"last week ...  2418783   97185

2  racist superman|"rudy"|"mancuso"|"king"|"bach"...  3191434  146033


   dislikes  comment_count  comments_disabled  ratings_disabled  \
0      2966          15954              False             False
1      6146          12703              False             False
2      5339           8181              False             False

   video_error_or_removed
0                   False
1                   False
2                   False
```

```
df['publish_time'] = pd.to_datetime(df['publish_time'])
df.head(2)
```

```
      video_id trending_date  \
0  2kyS6SvSYSE    2017-11-14
1  1ZAPwfrtAFY    2017-11-14

                                                title    channel_title
\
0                 WE WANT TO TALK ABOUT OUR MARRIAGE     CaseyNeistat

1  The Trump Presidency: Last Week Tonight with J...  LastWeekTonight


   category_id              publish_time  \
0           22 2017-11-13 17:13:01+00:00
1           24 2017-11-13 07:30:00+00:00

                                                 tags    views
likes  \
0                                   SHANtell martin   748374  57527

1  last week tonight trump presidency|"last week ...  2418783  97185


   dislikes  comment_count  comments_disabled  ratings_disabled  \
0      2966          15954              False             False
1      6146          12703              False             False

   video_error_or_removed
0                   False
1                   False
```

```
df['publish_month'] = df['publish_time'].dt.month
df['publish_day'] = df['publish_time'].dt.day
df['publish_hour'] = df['publish_time'].dt.hour
df.head(2)
```

```
      video_id trending_date  \
0  2kyS6SvSYSE    2017-11-14
1  1ZAPwfrtAFY    2017-11-14

                                                title    channel_title
\
0                 WE WANT TO TALK ABOUT OUR MARRIAGE     CaseyNeistat

1  The Trump Presidency: Last Week Tonight with J...  LastWeekTonight


   category_id              publish_time  \
0           22 2017-11-13 17:13:01+00:00
```

```
1           24 2017-11-13 07:30:00+00:00

                                                tags    views
likes  \
0                                   SHANtell martin   748374  57527

1  last week tonight trump presidency|"last week ...  2418783  97185


   dislikes  comment_count  comments_disabled  ratings_disabled  \
0      2966          15954              False             False
1      6146          12703              False             False

   video_error_or_removed  publish_month  publish_day  publish_hour
0                   False             11           13            17
1                   False             11           13             7
```

```
print ( sorted(df["category_id"].unique()))
```

```
[1,2,10,15,17,19,20,22,23,24,25,26,27,28,29,30,43]
```

```
[1, 2, 10, 15, 17, 19, 20, 22, 23, 24, 25, 26, 27, 28, 29, 43]
```

```
[1, 2, 10, 15, 17, 19, 20, 22, 23, 24, 25, 26, 27, 28, 29, 30, 43]
```

```
import numpy as np

df['category_name'] = np.nan
df.loc[(df["category_id"] == 1),"category_name"] = 'Film and
Animation'
df.loc[(df["category_id"] == 2),"category_name"] = 'Autos and
Vehicles'
df.loc[(df["category_id"] == 10),"category_name"] = 'Music'
df.loc[(df["category_id"] == 15),"category_name"] = 'Pets and Animals'
df.loc[(df["category_id"] == 17),"category_name"] = 'Sports'
df.loc[(df["category_id"] == 19),"category_name"] ='Travels and
Events'
df.loc[(df["category_id"] == 20),"category_name"] = 'Gaming'
df.loc[(df["category_id"] == 22),"category_name"] = 'People and Blogs'
df.loc[(df["category_id"] == 23),"category_name"] = 'Comedy'
df.loc[(df["category_id"] == 24),"category_name"] = 'Entertainment'
df.loc[(df["category_id"] == 25),"category_name"] = 'News and
Politics'
df.loc[(df["category_id"] == 26),"category_name"] = 'How to and Style'
df.loc[(df["category_id"] == 27),"category_name"] = 'Education'
df.loc[(df["category_id"] == 28),"category_name"] = 'Science and
Technology'
df.loc[(df["category_id"] == 29),"category_name"] = 'Non Profits and
Activism'
df.loc[(df["category_id"] == 30),"category_name"] = 'Movies'
df.loc[(df["category_id"] == 43),"category_name"] = 'Shows'
```

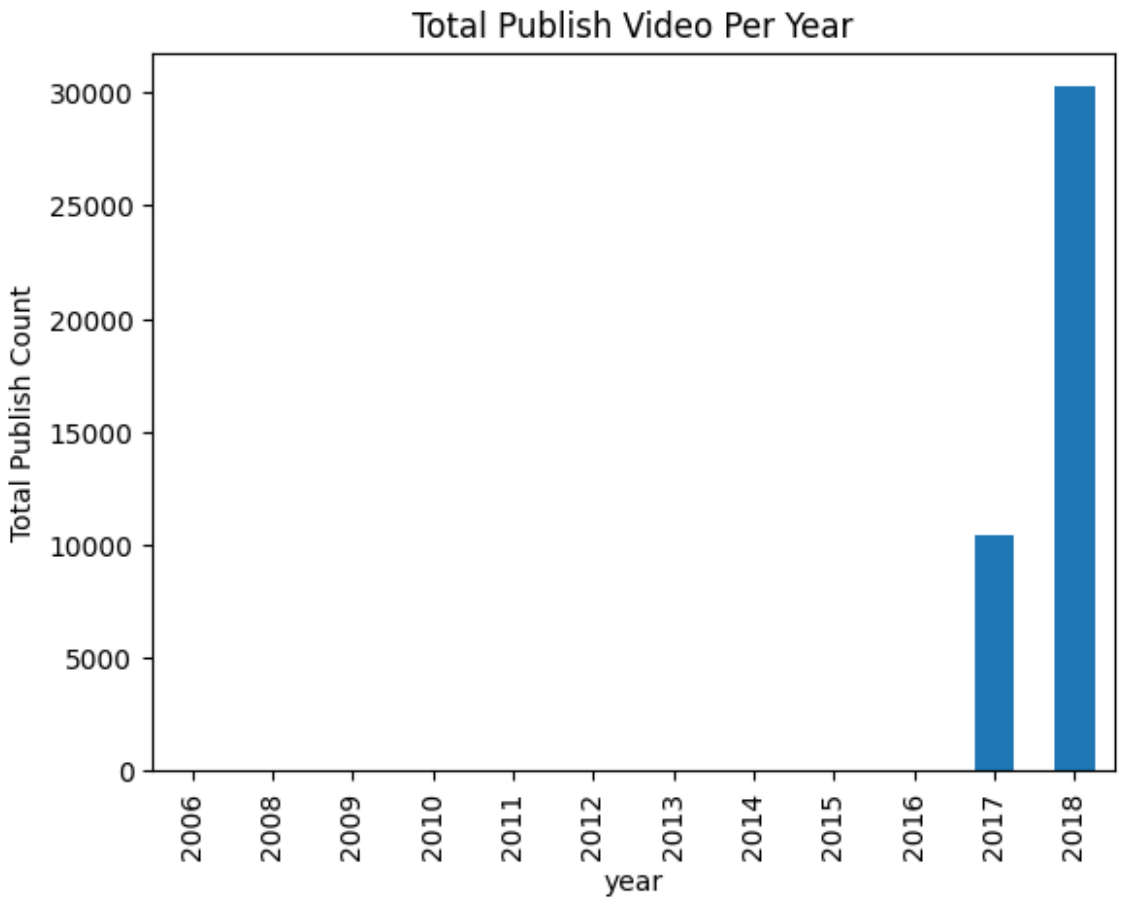
```
df.head()
```

```
C:\Users\vibha\AppData\Local\Temp\ipykernel_13192\4137347438.py:2:
FutureWarning: Setting an item of incompatible dtype is deprecated and
will raise an error in a future version of pandas. Value 'Film and
Animation' has dtype incompatible with float64, please explicitly cast
to a compatible dtype first.
  df.loc[(df["category_id"] == 1),"category_name"] = 'Film and
Animation'
```

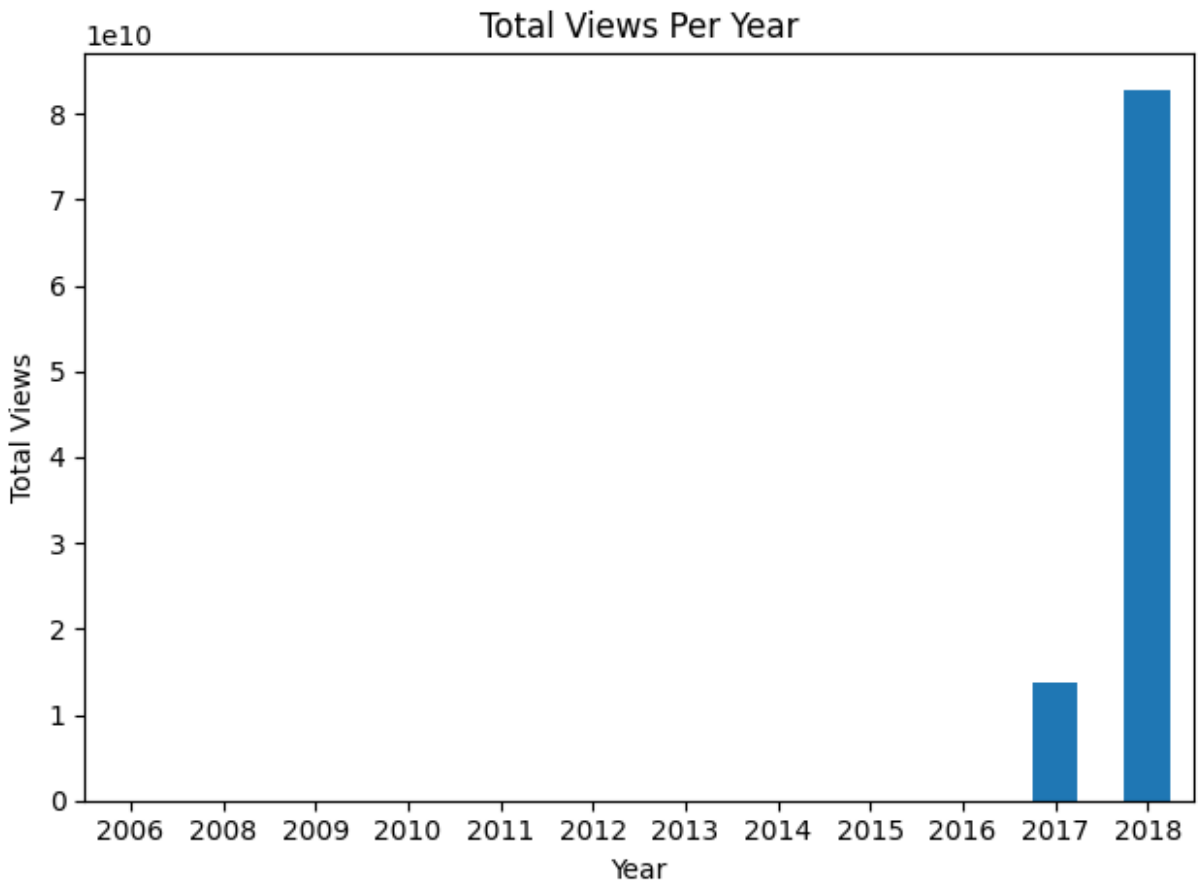
```
      video_id trending_date  \
0  2kyS6SvSYSE    2017-11-14
1  1ZAPwfrtAFY    2017-11-14
2  5qpjK5DgCt4    2017-11-14
3  puqaWrEC7tY    2017-11-14
4  d380meD0W0M    2017-11-14

                                               title
channel_title  \
0                  WE WANT TO TALK ABOUT OUR MARRIAGE
CaseyNeistat
1  The Trump Presidency: Last Week Tonight with J...
LastWeekTonight
2  Racist Superman | Rudy Mancuso, King Bach & Le...           Rudy
Mancuso
3                    Nickelback Lyrics: Real or Fake?  Good Mythical
Morning
4                           I Dare You: GOING BALD!?
nigahiga

   category_id              publish_time  \
0           22 2017-11-13 17:13:01+00:00
1           24 2017-11-13 07:30:00+00:00
2           23 2017-11-12 19:05:24+00:00
3           24 2017-11-13 11:00:04+00:00
4           24 2017-11-12 18:01:41+00:00

                                                 tags    views   likes
\
0                                   SHANtell martin   748374   57527

1  last week tonight trump presidency|"last week ...  2418783   97185

2  racist superman|"rudy"|"mancuso"|"king"|"bach"...  3191434  146033

3  rhett and link|"gmm"|"good mythical morning"|"...   343168   10172

4  ryan|"higa"|"higatv"|"nigahiga"|"i dare you"|"...  2095731  132235
```

```
   dislikes  comment_count  comments_disabled  ratings_disabled  \
0      2966          15954              False             False
1      6146          12703              False             False
2      5339           8181              False             False
3       666           2146              False             False
4      1989          17518              False             False

   video_error_or_removed  publish_month  publish_day  publish_hour  \
0                   False             11           13            17
1                   False             11           13             7
2                   False             11           12            19
3                   False             11           13            11
4                   False             11           12            18

      category_name
0  People and Blogs
1     Entertainment
2            Comedy
3     Entertainment
4     Entertainment
```

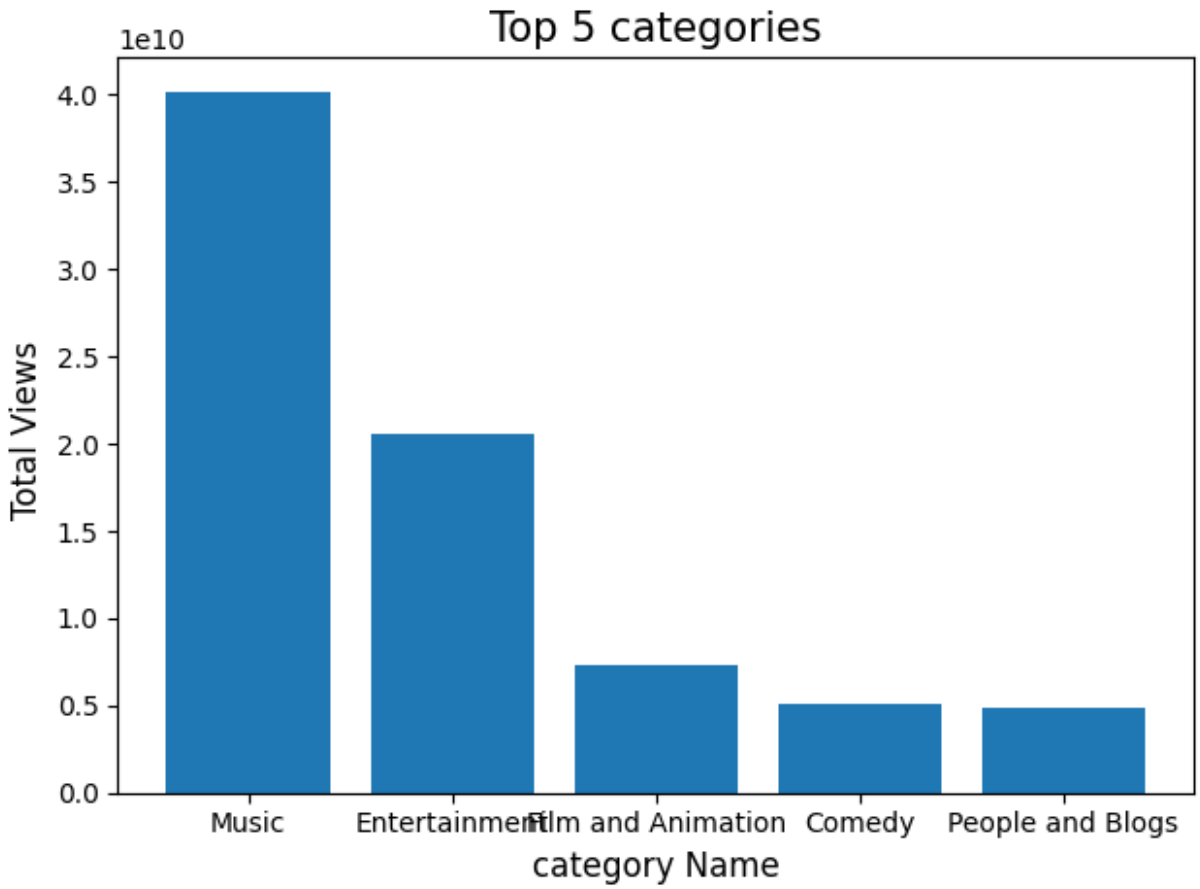
```
df['year'] = df['publish_time'].dt.year
yearly_counts = df.groupby('year')['video_id'].count()

#create a bar chart
yearly_counts.plot(kind='bar' ,xlabel='year' , ylabel='Total Publish
Count',title='Total Publish Video Per Year')

#show the chart
plt.show()
```



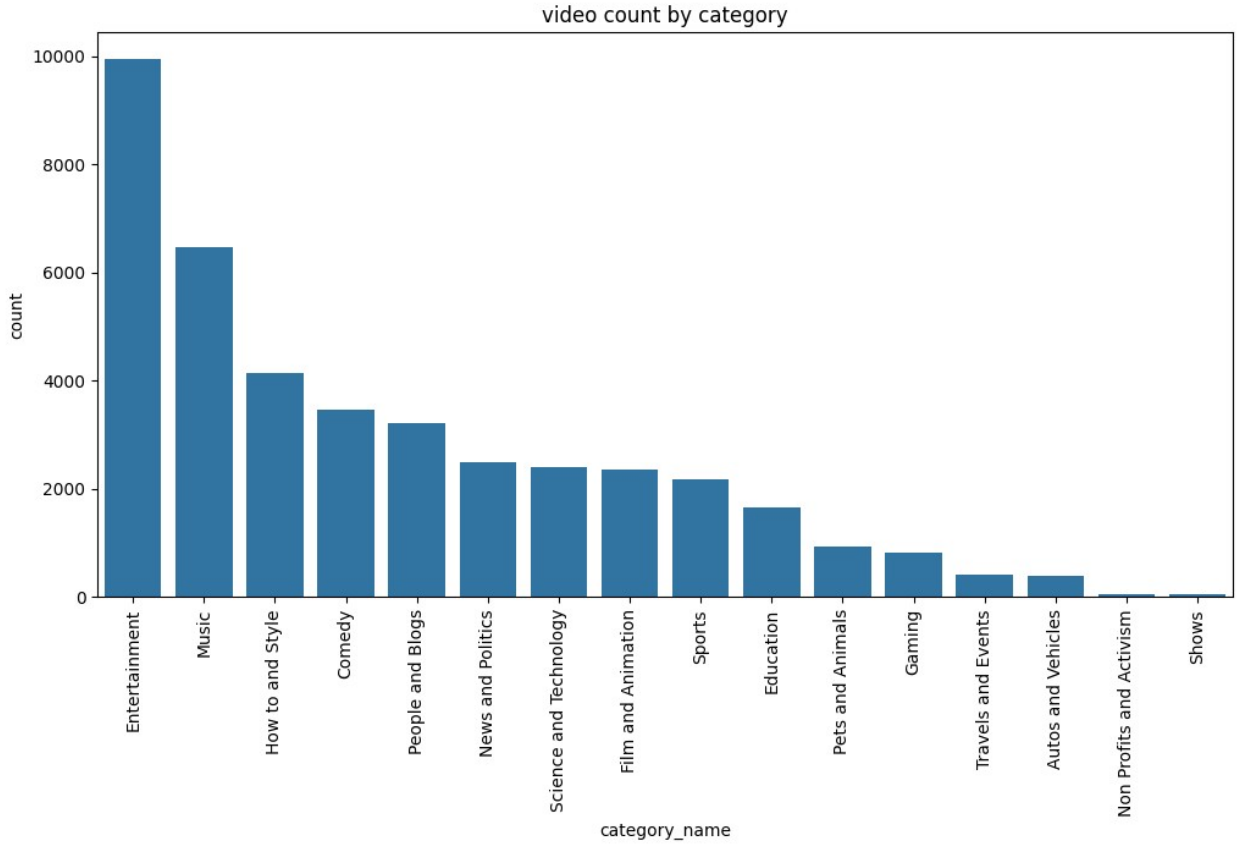

```
#group by year and sum the views for each year
yearly_views = df.groupby('year')['views'].sum()

#create a bar chart
yearly_views.plot(kind='bar', xlabel = 'Year', ylabel = 'Total Views',
title ='Total Views Per Year')
plt.xticks(rotation=0)
plt.tight_layout()

#show the bar chart
plt.show()
```




```
#group the data by 'category_name' and calculate the sum of 'views' in
each category
category_views = df.groupby('category_name')
['views'].sum().reset_index()

#sort the categories by views in descending order
top_categories =
category_views.sort_values(by='views',ascending=False).head(5)

#create a bar plot chart to visualize the top 5 categories
plt.bar(top_categories['category_name'],top_categories['views'])
plt.xlabel('category Name',fontsize=12)
plt.ylabel('Total Views ',fontsize=12)
plt.title('Top 5 categories',fontsize=15)
plt.tight_layout()
plt.show()
```




```
plt.figure(figsize=(12,6))
sns.countplot(x='category_name',data=
df,order=df['category_name'].value_counts().index)
plt.xticks(rotation=90)
plt.title('video count by category')
plt.show()
```


video count by category
count
10000
8000
6000
4000
2000
0
Entertainment
Music
How to and Style
Comedy
People and Blogs
News and Politics
Science and Technology
Film and Animation
Sports
Education
Pets and Animals
Gaming
Travels and Events
Autos and Vehicles
Non Profits and Activism
Shows
category_name