

```
[67]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

```
[68]: df=pd.read_csv('C:\\Users\\admin\\Desktop\\jupyter\\USvideos.csv')
```

```
[69]: df.head()
```

[69]:	video_id	trending_date	title	channel_title	category_id	publish_time	tags	views	likes	dislikes	comrn
0	2kyS6SvSYSE	17.14.11	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	22	2017-11-13T17:13:01.000Z	SHANtell martin	748374	57527	2966	
1	1ZAPwfrtAFY	17.14.11	The Trump Presidency: Last Week Tonight with J...	LastWeekTonight	24	2017-11-13T07:30:00.000Z	last week tonight trump presidency "last week ...	2418783	97185	6146	
2	5qpjK5DgCt4	17.14.11	Racist Superman Rudy Mancuso	Rudy Mancuso	23	2017-11-12T19:05:24.000Z	racist superman "rudy" "mancuso" "king" "bach"...	3191434	146033	5339	

[73]: 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

```
[70]: df.shape
[70]: (40949, 16)

[71]: df=df.drop_duplicates()
df.shape
[71]: (40901, 16)
```

```
[72]: 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

```
[74]: 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
```

[76]: from datetime import datetime

[77]: import datetime

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

[78]:	video_id	trending_date	title	channel_title	category_id	publish_time	tags	views	likes	dislikes	commer
0	2kyS6SvSYSE	2017-11-14	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	22	2017-11-13T17:13:01.000Z	SHANtell martin	748374	57527	2966	
1	1ZAPwrtAFY	2017-11-14	The Trump Presidency: Last Week Tonight with J...	LastWeekTonight	24	2017-11-13T07:30:00.000Z	last week tonight trump presidency "last week ...	2418783	97185	6146	
2	5qpjK5DgCt4	2017-11-14	Racist Superman Rudy Mancuso, King Bach & Le...	Rudy Mancuso	23	2017-11-12T19:05:24.000Z	superman "rudy "mancuso "king "bach"...	3191434	146033	5339	
3	puqaWrEC7tY	2017-11-14	Nickelback Lyrics: Real or Fake?	Good Mythical Morning	24	2017-11-13T11:00:04.000Z	rhett and link "gmm "good mythical morning "...	343168	10172	666	
4	d380meD0W0M	2017-11-14	I Dare You: GOING BALD!?	nigahiga	24	2017-11-12T18:01:41.000Z	ryan "higa "higatv "nigahiga "i dare you "...	2095731	132235	1989	

```
75]: 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
```

```
76]: from datetime import datetime
```

```
77]: import datetime
```

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



[79]:	video_id	trending_date	title	channel_title	category_id	publish_time	tags	views	likes	dislikes	comment_
0	2kyS6SvSYSE	2017-11-14	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	22	2017-11-13 17:13:01+00:00	SHANTell martin	748374	57527	2966	
1	1ZAPwfrtAFY	2017-11-14	The Trump Presidency: Last Week Tonight with J...	LastWeekTonight	24	2017-11-13 07:30:00+00:00	last week tonight trump presidency]"last week ...	2418783	97185	6146	
2	5qpjK5DgCt4	2017-11-14	Racist Superman Rudy Mancuso, King Bach & Le...	Rudy Mancuso	23	2017-11-12 19:05:24+00:00	superman "rudy "mancuso "king "bach"... racist	3191434	146033	5339	
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4	d380meD0W0M	2017-11-14	I Dare You: GOING BALD!?	nigahiga	24	2017-11-12 18:01:41+00:00	ryan "higa "higatv "nigahiga "i dare you "...	2095731	132235	1989	

```
[68]: 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()
```

[80]:	video_id	trending_date	title	channel_title	category_id	publish_time	tags	views	likes	dislikes	comment_
0	2kyS6SvSYSE	2017-11-14	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	22	2017-11-13 17:13:01+00:00	SHANTell martin	748374	57527	2966	
1	1ZAPwrtAFY	2017-11-14	The Trump Presidency: Last Week Tonight with J...	LastWeekTonight	24	2017-11-13 07:30:00+00:00	last week tonight trump presidency "last week ...	2418783	97185	6146	
2	SqpjK5DgCt4	2017-11-14	Racist Superman Rudy Mancuso, King Bach & Le...	Rudy Mancuso	23	2017-11-12 19:05:24+00:00	superman "rudy" "mancuso" "king" "bach"..." racist	3191434	146033	5339	
3	puqaWrEC7tY	2017-11-14	Nickelback Lyrics: Real or Fake?	Good Mythical Morning	24	2017-11-13 11:00:04+00:00	rhett and link "gmm" "good mythical morning" "...	343168	10172	666	
4	d380meD0W0M	2017-11-14	I Dare You: GOING RAI NI?	nigahiga	24	2017-11-12 18:01:41+00:00	ryan "higa" "higatv" "nigahiga" "i dare you" "...	2095731	132235	1989	


```
[81]: print(sorted(df["category_id"].unique()))
      [1,2,10,15,17,19,20,22,23,24,25,26,27,28,29,30,43]

      [np.int64(1), np.int64(2), np.int64(10), np.int64(15), np.int64(17), np.int64(19), np.int64(20), np.int64(22), np.int64(23), np.int64(24), np.int64(25),
      np.int64(26), np.int64(27), np.int64(28), np.int64(29), np.int64(43)]

[81]: [1, 2, 10, 15, 17, 19, 20, 22, 23, 24, 25, 26, 27, 28, 29, 30, 43]

[82]: 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"] = 'Travel 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\admin\AppData\Local\Temp\ipykernel_3988\2497687618.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.

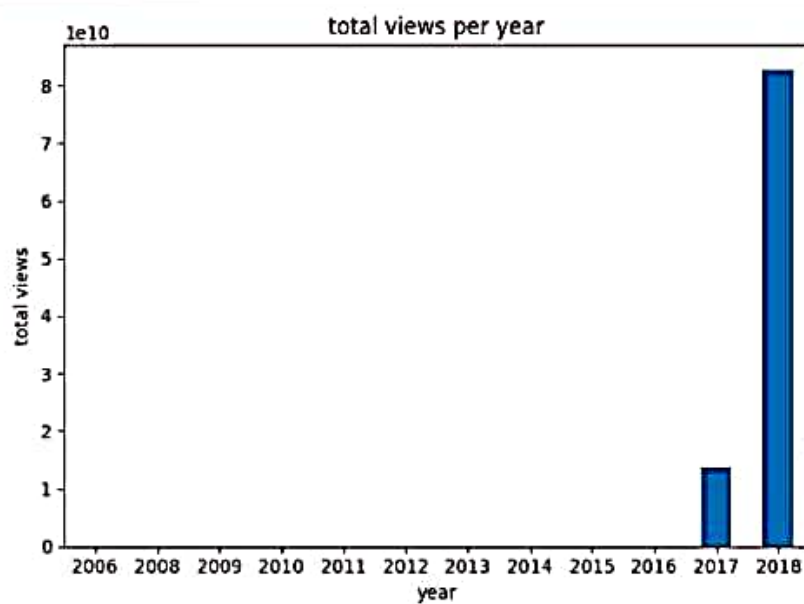
C:\Users\admin\AppData\Local\Temp\ipykernel_3988\2497687618.py:2: FutureWarning: Setting an item of incompatible dtype is deprecated and will raise an error in a future version of pandas. Value 'Film and Animation' has dtype incompatible with float64, please explicitly cast to a compatible dtype first.
df.loc[(df["category_id"]==1), "category_name"] = 'Film and Animation'

[82]:	video_id	trending_date	title	channel_title	category_id	publish_time	tags	views	likes	dislikes	comment_
0	2kys6svSYSE	2017-11-14	WE WANT TO TALK ABOUT OUR MARRIAGE	CaseyNeistat	22	2017-11-13 17:13:01+00:00	SHANtell martin	748374	57527	2966	
1	1ZAPwfrtAFY	2017-11-14	The Trump Presidency: Last Week Tonight with J...	LastWeekTonight	24	2017-11-13 07:30:00+00:00	last week tonight trump presidency "last week ...	2418783	97185	6146	
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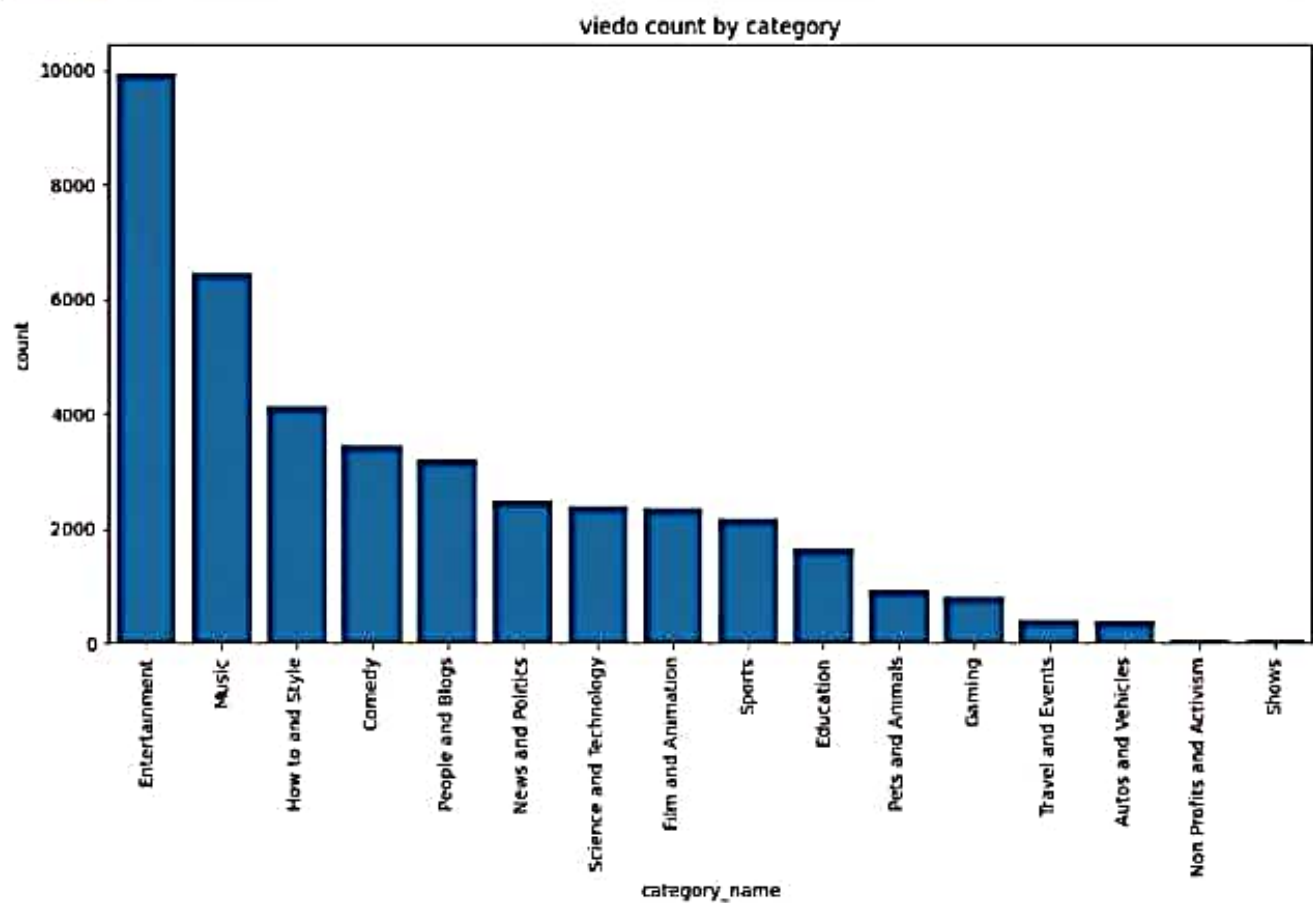
```
[84]: #group by year and sum the views for eac year
yearly_views=df.groupby('year')['views'].sum()
```

```
#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 plot
plt.show()
```



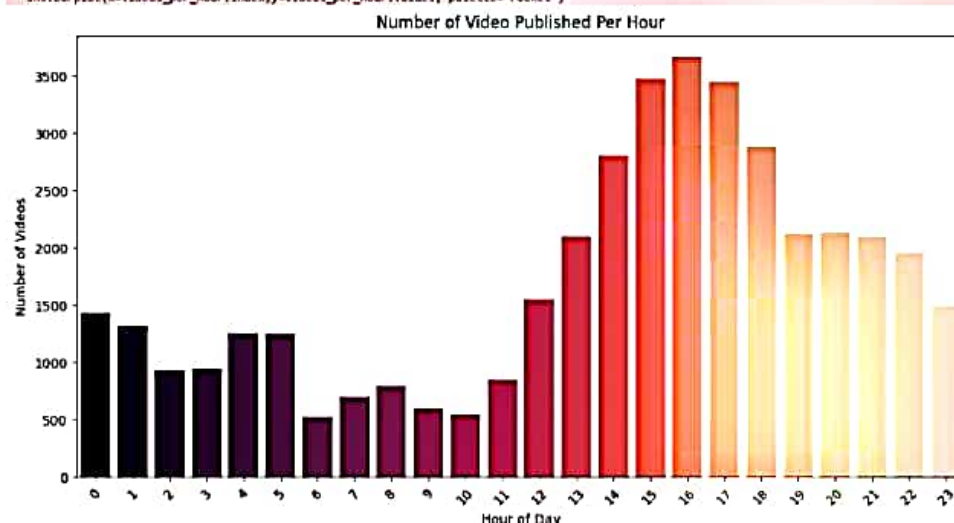
```
[85]: plt.figure(figsize=(12,6))
sns.countplot(x='category_name',data=df,order=df['category_name'].value_counts().index)
plt.xticks(rotation=90)
plt.title('viedo count by category')
plt.show()
```



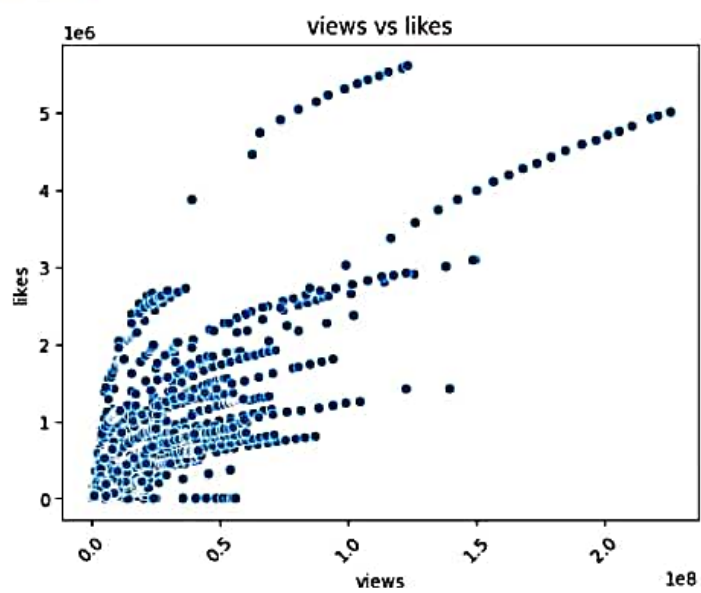
```
[55] #count the number of videos published per hour
videos_per_hour=df['publish_hour'].value_counts().sort_index()

#create a bar plot
plt.figure(figsize=(12,6))
sns.barplot(x=videos_per_hour.index,y=videos_per_hour.values, palette='rocket')
plt.title('Number of Video Published Per Hour')
plt.xlabel('Hour of Day')
plt.ylabel('Number of Videos')
plt.xticks(rotation=45)
plt.show()

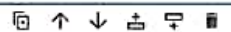
C:\Users\admin\AppData\Local\Temp\ipykernel_3988\583611852.py:6: FutureWarning:
Passing 'palette' without assigning 'hue' is deprecated and will be removed in v0.14.0. Assign the 'x' variable to 'hue' and set 'legend=False' for the
same effect.
sns.barplot(x=videos_per_hour.index,y=videos_per_hour.values, palette='rocket')
```

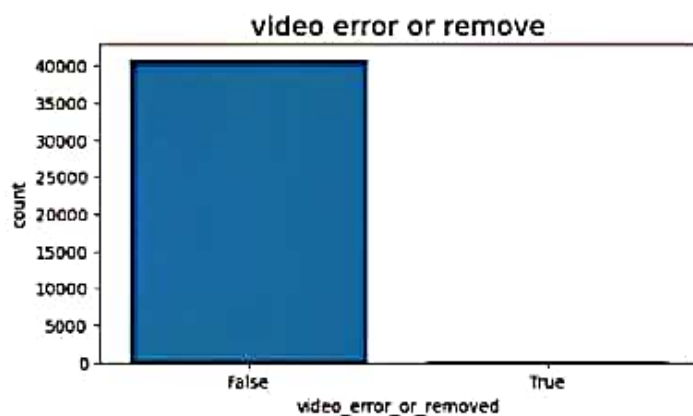
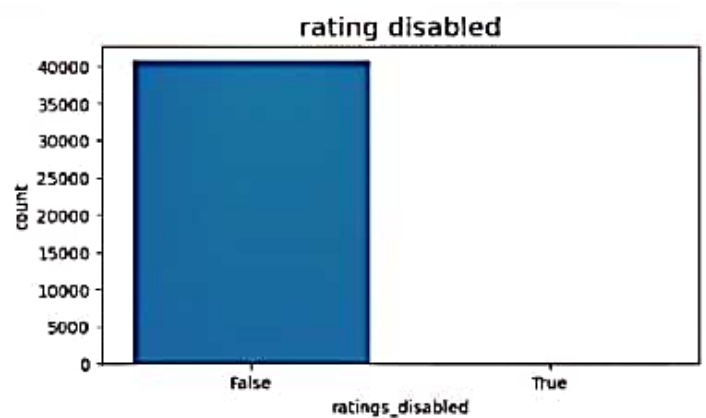
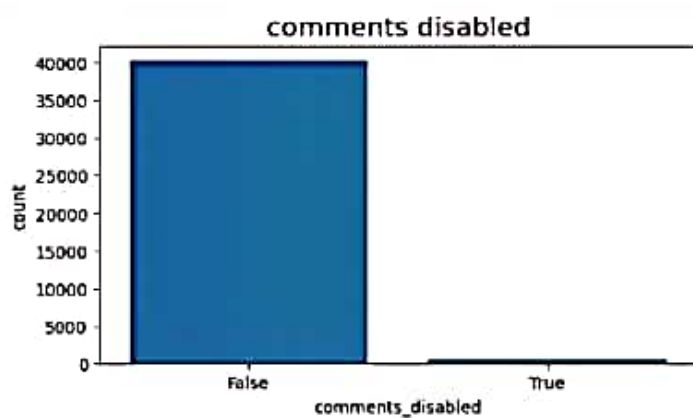


```
[88]: sns.scatterplot(data=df, x= 'views', y= 'likes')
plt.title('views vs likes')
plt.xlabel('views')
plt.ylabel('likes')
plt.xticks(rotation=45)
plt.show()
```



```
[89]: plt.figure(figsize=(14,8))
plt.subplots_adjust(wspace=0.2,hspace=0.4,top=0.9)
plt.subplot(2,2,1)
g= sns.countplot(x='comments_disabled',data=df)
g.set_title("comments disabled",fontsize=16)
plt.subplot(2,2,2)
g1= sns.countplot(x='ratings_disabled',data=df)
g1.set_title("rating disabled",fontsize=16)
plt.subplot(2,2,3)
g2= sns.countplot(x='video_error_or_removed',data=df)
g2.set_title("video error or remove",fontsize=16)
plt.show()
```





```
[90]: corr_matrix=df['views'].corr(df['likes'])  
corr_matrix
```

```
[90]: np.float64(0.8491785476230508)
```



```
[57]: df['publish_time'] = pd.to_datetime(df['publish_time'])
df['publish_date'] = df['publish_time'].dt.date
video_count_by_date = df.groupby('publish_date').size()
plt.figure(figsize=(12,6))
sns.lineplot(data=video_count_by_date)
plt.title('Video Published Over Time')
plt.xlabel('Publish Date')
plt.ylabel('Number of Videos')
plt.xticks(rotation=45)
plt.show()
```

