

Let's import the library first !!!!!!!!

```
In [85]: import pandas as pd  
import numpy as np  
import matplotlib.pyplot as plt
```

Some basic formating for the graph's

```
In [44]: # The dataset was up to 2023.  
import matplotlib  
matplotlib.use("nbAgg") # interactive plot in jupyter notebook
```

```
In [45]: # Change the default format for the vector formate  
from IPython.display import set_matplotlib_formats  
set_matplotlib_formats('svg')
```

C:\Users\nirde\AppData\Local\Temp\ipykernel_16832\3850821838.py:3: DeprecationWarning: `set_matplotlib_formats` is deprecated since IPython 7.23, directly use `matplotlib_inline.backend_inline.set_matplotlib_formats()`
set_matplotlib_formats('svg')

```
In [46]: # dataset importing  
anime_data = pd.read_csv('anime-dataset-2023.csv')  
anime_data
```

Out[46]:

	anime_id	Name	English name	Other name	Score	Genres	Synopsis	Typ
0	1	Cowboy Bebop	Cowboy Bebop	カウボーイビバップ	8.75	Action, Award Winning, Sci-Fi	Crime is timeless. By the year 2071, humanity ...	T
1	5	Cowboy Bebop: Tengoku no Tobira	Cowboy Bebop: The Movie	カウボーイビバップ 天国の扉	8.38	Action, Sci-Fi	Another day, another bounty—such is the life o...	Movi
2	6	Trigun	Trigun	トライガン	8.22	Action, Adventure, Sci-Fi	Vash the Stampede is the man with a \$60,000,0...	T
3	7	Witch Hunter Robin	Witch Hunter Robin	Witch Hunter ROBIN (ワイツチハンター ロビン)	7.25	Action, Drama, Mystery, Supernatural	Robin Sena is a powerful craft user drafted in...	T
4	8	Bouken Ou Beet	Beet the Vandel Buster	冒險王ビート	6.94	Adventure, Fantasy, Supernatural	It is the dark century and the people are suff...	T
...								
24900	55731	Wu Nao Monu	UNKNOWN	无脑魔女	UNKNOWN	Comedy, Fantasy, Slice of Life	No description available for this anime.	ON,
24901	55732	Bu Xing Si: Yuan Qi	Blader Soul	捕星司·源起	UNKNOWN	Action, Adventure, Fantasy	No description available for this anime.	ON,

	anime_id	Name	English name	Other name	Score	Genres	Synopsis	Typ
24902	55733	Di Yi Xulie	The First Order	第一序列	UNKNOWN	Action, Adventure, Fantasy, Sci-Fi	No description available for this anime.	ON,
24903	55734	Bokura no Saishuu Sensou	UNKNOWN	僕らの最終戦争	UNKNOWN	UNKNOWN	A music video for the song Bokura no Saishuu S...	Musi
24904	55735	Shijuuku Nichi	UNKNOWN	四十九日	UNKNOWN	UNKNOWN	A music video for the song Shijuuku Nichi by S...	Musi

24905 rows × 24 columns

Data cleaning and Mata Data

```
In [47]: # Let check the data type
type(anime_data)
```

```
Out[47]: pandas.core.frame.DataFrame
```

```
In [48]: # shape of data will be
anime_data.shape
```

```
Out[48]: (24905, 24)
```

```
In [49]: # Let's check who many columns is has
anime_data.columns
```

```
Out[49]: Index(['anime_id', 'Name', 'English name', 'Other name', 'Score', 'Genres',
       'Synopsis', 'Type', 'Episodes', 'Aired', 'Premiered', 'Status',
       'Producers', 'Licensors', 'Studios', 'Source', 'Duration', 'Rating',
       'Rank', 'Popularity', 'Favorites', 'Scored By', 'Members', 'Image URL'],
      dtype='object')
```

```
In [50]: # Number of index's be have
anime_data.index
```

```
Out[50]: RangeIndex(start=0, stop=24905, step=1)
```

```
In [51]: # Size of the data
anime_data.size
```

```
Out[51]: 597720
```

```
In [52]: # Top five row in dataset  
anime_data.head()
```

Out[52]:

	anime_id	Name	English name	Other name	Score	Genres	Synopsis	Type	Episodes
0	1	Cowboy Bebop	Cowboy Bebop	カウボーイ・ビバップ	8.75	Action, Award Winning, Sci-Fi	Crime is timeless. By the year 2071, humanity ...	TV	26.0
1	5	Cowboy Bebop: Tengoku no Tobira	Cowboy Bebop: The Movie	カウボーイ・ビバップ 天国の扉	8.38	Action, Sci-Fi	Another day, another bounty—such is the life o...	Movie	1.0
2	6	Trigun	Trigun	トライガン	8.22	Action, Adventure, Sci-Fi	Vash the Stampede is the man with a \$\$60,000,0...	TV	26.0
3	7	Witch Hunter Robin	Witch Hunter Robin	Witch Hunter ROBIN (ウィッチハンター・ロビン)	7.25	Action, Drama, Mystery, Supernatural	Robin Sena is a powerful craft user drafted in...	TV	26.0
4	8	Bouken Ou Beet	Beet the Vandel Buster	冒險王ビート	6.94	Adventure, Fantasy, Supernatural	It is the dark century and the people are suff...	TV	52.0

5 rows × 24 columns



```
In [53]: # Least five rows  
anime_data.tail()
```

Out[53]:

	anime_id	Name	English name	Other name	Score	Genres	Synopsis	Type
24900	55731	Wu Nao Monu	UNKNOWN	无脑魔女	UNKNOWN	Comedy, Fantasy, Slice of Life	No description available for this anime.	ONA
24901	55732	Bu Xing Si: Yuan Qi	Blader Soul	捕星司源起	UNKNOWN	Action, Adventure, Fantasy	No description available for this anime.	ONA
24902	55733	Di Yi Xulie	The First Order	第一序列	UNKNOWN	Action, Adventure, Fantasy, Sci-Fi	No description available for this anime.	ONA
24903	55734	Bokura no Saishuu Sensou	UNKNOWN	僕らの最終戦争	UNKNOWN	UNKNOWN	A music video for the song Bokura no Saishuu S...	Music
24904	55735	Shijuuku Nichi	UNKNOWN	四十九日	UNKNOWN	UNKNOWN	A music video for the song Shijuuku Nichi by S...	Music

5 rows × 24 columns



In [54]: `# Some information about the data is
anime_data.info()`

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 24905 entries, 0 to 24904
Data columns (total 24 columns):
 #   Column           Non-Null Count  Dtype  
--- 
 0   anime_id         24905 non-null   int64  
 1   Name              24905 non-null   object  
 2   English name     24905 non-null   object  
 3   Other name        24905 non-null   object  
 4   Score             24905 non-null   object  
 5   Genres            24905 non-null   object  
 6   Synopsis          24905 non-null   object  
 7   Type              24905 non-null   object  
 8   Episodes          24905 non-null   object  
 9   Aired              24905 non-null   object  
 10  Premiered         24905 non-null   object  
 11  Status             24905 non-null   object  
 12  Producers          24905 non-null   object  
 13  Licensors          24905 non-null   object  
 14  Studios            24905 non-null   object  
 15  Source              24905 non-null   object  
 16  Duration            24905 non-null   object  
 17  Rating              24905 non-null   object  
 18  Rank                24905 non-null   object  
 19  Popularity          24905 non-null   int64  
 20  Favorites           24905 non-null   int64  
 21  Scored By          24905 non-null   object  
 22  Members             24905 non-null   int64  
 23  Image URL          24905 non-null   object  
dtypes: int64(4), object(20)
memory usage: 4.6+ MB
```

```
In [55]: # Some statistics about the data
anime_data.describe()
```

```
Out[55]:
```

	anime_id	Popularity	Favorites	Members
count	24905.000000	24905.000000	24905.000000	2.490500e+04
mean	29776.709014	12265.388356	432.595222	3.710496e+04
std	17976.076290	7187.428393	4353.181647	1.568252e+05
min	1.000000	0.000000	0.000000	0.000000e+00
25%	10507.000000	6040.000000	0.000000	2.090000e+02
50%	34628.000000	12265.000000	1.000000	1.056000e+03
75%	45240.000000	18491.000000	18.000000	9.326000e+03
max	55735.000000	24723.000000	217606.000000	3.744541e+06

```
In [56]: # Let's find the Null value in our data set
anime_data.isnull()
```

Out[56]:

	anime_id	Name	English name	Other name	Score	Genres	Synopsis	Type	Episodes	Aired
0	False	False	False	False	False	False	False	False	False	False
1	False	False	False	False	False	False	False	False	False	False
2	False	False	False	False	False	False	False	False	False	False
3	False	False	False	False	False	False	False	False	False	False
4	False	False	False	False	False	False	False	False	False	False
...
24900	False	False	False	False	False	False	False	False	False	False
24901	False	False	False	False	False	False	False	False	False	False
24902	False	False	False	False	False	False	False	False	False	False
24903	False	False	False	False	False	False	False	False	False	False
24904	False	False	False	False	False	False	False	False	False	False

24905 rows × 24 columns

In [57]: `anime_data.isnull().sum()`

```
Out[57]: anime_id      0
Name          0
English name  0
Other name    0
Score         0
Genres        0
Synopsis      0
Type          0
Episodes      0
Aired         0
Premiered     0
Status         0
Producers     0
Licensors     0
Studios       0
Source         0
Duration       0
Rating         0
Rank           0
Popularity    0
Favorites      0
Scored By     0
Members        0
Image URL     0
dtype: int64
```

```
In [58]: #Removing Duplicates  
anime_data.drop_duplicates(inplace=True)
```

Analysis of anime and Manga

```
In [59]: # Let's extract some of the col in dataset and print only top 50 row of them  
anime_data.iloc[0:-1,[1,2,5,7,18,8,14,15]].head(50)
```

Out[59]:

	Name	English name	Genres	Type	Rank	Episodes	Source
0	Cowboy Bebop	Cowboy Bebop	Action, Award Winning, Sci-Fi	TV	41.0	26.0	Original
1	Cowboy Bebop: Tengoku no Tobira	Cowboy Bebop: The Movie	Action, Sci-Fi	Movie	189.0	1.0	Original
2	Trigun	Trigun	Action, Adventure, Sci-Fi	TV	328.0	26.0	Manga
3	Witch Hunter Robin	Witch Hunter Robin	Action, Drama, Mystery, Supernatural	TV	2764.0	26.0	Original
4	Bouken Ou Beet	Beet the Vandel Buster	Adventure, Fantasy, Supernatural	TV	4240.0	52.0	Manga
5	Eyeshield 21	UNKNOWN	Sports	TV	688.0	145.0	Manga
6	Hachimitsu to Clover	Honey and Clover	Comedy, Drama, Romance	TV	589.0	24.0	Manga
7	Hungry Heart: Wild Striker	UNKNOWN	Comedy, Slice of Life, Sports	TV	1551.0	52.0	Manga
8	Initial D Fourth Stage	UNKNOWN	Action, Drama	TV	393.0	24.0	Manga
9	Monster	Monster	Drama, Mystery, Suspense	TV	26.0	74.0	Manga
10	Naruto	Naruto	Action, Adventure, Fantasy	TV	599.0	220.0	Manga
11	One Piece	One Piece	Action, Adventure, Fantasy	TV	55.0	UNKNOWN	Manga
12	Tennis no Ouji-sama	The Prince of Tennis	Sports	TV	805.0	178.0	Manga
13	Ring ni Kakerou	UNKNOWN	Action, Sports	TV	6943.0	12.0	Manga
14	School Rumble	School Rumble	Comedy, Romance	TV	756.0	26.0	Manga
15	Sunabouzu	Desert Punk	Action, Adventure, Comedy, Sci-Fi, Ecchi	TV	2167.0	24.0	Manga

	Name	English name	Genres	Type	Rank	Episodes	Source
16	Texhnolyze	Texhnolyze	Action, Drama, Sci-Fi	TV	990.0	22.0	Original
17	Trinity Blood	Trinity Blood	Action, Supernatural	TV	2591.0	24.0	Light novel
18	Yakitate!! Japan	Yakitate!! Japan	Comedy, Gourmet	TV	704.0	69.0	Manga
19	Zipang	UNKNOWN	Action, Drama, Sci-Fi	TV	1778.0	26.0	Manga
20	Neon Genesis Evangelion	Neon Genesis Evangelion	Action, Avant Garde, Award Winning, Drama, Sci...	TV	204.0	26.0	Original
21	Neon Genesis Evangelion: Death & Rebirth	Neon Genesis Evangelion: Death & Rebirth	Drama, Sci-Fi	Movie	1855.0	1.0	Original
22	Neon Genesis Evangelion: The End of Evangelion	Neon Genesis Evangelion: The End of Evangelion	Avant Garde, Drama, Sci-Fi	Movie	98.0	1.0	Original
23	Kenpuu Denki Berserk	Berserk	Action, Adventure, Drama, Fantasy, Horror	TV	96.0	25.0	Manga
24	Koukaku Kidoutai	Ghost in the Shell	Action, Award Winning, Mystery, Sci-Fi, Suspense	Movie	276.0	1.0	Manga
25	Rurouni Kenshin: Meiji Kenkaku Romantan - Tsui...	Samurai X: Trust and Betrayal	Action, Drama, Romance	OVA	48.0	4.0	Manga
26	Rurouni Kenshin: Meiji Kenkaku Romantan	Rurouni Kenshin	Action, Adventure, Comedy, Romance	TV	249.0	94.0	Manga
27	Rurouni Kenshin: Meiji Kenkaku Romantan - Ishi...	Samurai X: The Motion Picture	Drama	Movie	1567.0	1.0	Manga
28	Akira	Akira	Action, Adventure,	Movie	389.0	1.0	Manga

	Name	English name	Genres	Type	Rank	Episodes	Source
			Horror, Sci-Fi, Supernatural				
29	.hack//Sign	.hack//Sign	Adventure, Fantasy, Mystery	TV	4172.0	26.0	Original
30	Aa! Megami-sama!	Oh! My Goddess	Comedy, Romance, Supernatural	OVA	2542.0	5.0	Manga
31	Aa! Megami-sama! (TV)	Ah! My Goddess	Comedy, Romance, Supernatural	TV	2407.0	24.0	Manga
32	Tenshi Kinryouku	Angel Sanctuary	Action, Drama, Romance, Supernatural	OVA	7564.0	3.0	Manga
33	Kidou Tenshi Angelic Layer	Battle Doll Angelic Layer	Award Winning, Comedy, Drama, Sci-Fi, Sports	TV	2727.0	26.0	Manga
34	Ai Yori Aoshi	Ai Yori Aoshi	Comedy, Drama, Romance	TV	3471.0	24.0	Manga
35	Appleseed (Movie)	UNKNOWN	Action, Drama, Sci-Fi	Movie	3723.0	1.0	Manga
36	Arc the Lad	UNKNOWN	Action, Adventure, Fantasy, Horror, Sci-Fi	TV	6294.0	26.0	Game
37	Avenger	UNKNOWN	Adventure, Fantasy, Sci-Fi	TV	9454.0	13.0	Original
38	Beck	Beck: Mongolian Chop Squad	Comedy, Drama, Slice of Life	TV	252.0	26.0	Manga
39	Blue Gender	Blue Gender	Adventure, Drama, Horror, Romance, Sci-Fi	TV	3873.0	26.0	Original
40	Chobits	Chobits	Comedy, Drama, Romance, Sci-Fi, Ecchi	TV	2080.0	26.0	Manga
41	Chrno Crusade	Chrno Crusade	Action, Romance, Supernatural	TV	1322.0	24.0	Manga

	Name	English name	Genres	Type	Rank	Episodes	Source
42	D.N.Angel	D.N.Angel	Action, Comedy, Fantasy, Romance	TV	3180.0	26.0	Manga
43	D.C.: Da Capo	D.C.~Da Capo~	Drama, Romance	TV	5215.0	26.0	Visual novel
44	DearS	DearS	Comedy, Romance, Sci-Fi, Ecchi	TV	6027.0	12.0	Manga
45	Rozen Maiden	Rozen Maiden	Action, Comedy, Drama	TV	2053.0	12.0	Manga
46	Rozen Maiden: Träumend	Rozen Maiden: Träumend	Action, Comedy, Drama	TV	1340.0	12.0	Manga
47	Azumanga Daiou The Animation	Azumanga Daioh: The Animation	Comedy, Slice of Life	TV	603.0	26.0	4-koma manga
48	Basilisk: Kouga Ninpou Chou	Basilisk	Action, Drama, Romance	TV	1539.0	24.0	Manga
49	Black Cat (TV)	Black Cat	Action, Adventure, Sci-Fi	TV	2389.0	23.0	Manga

```
In [60]: # change the name of clo "Other name" to "Orignal name"
nd = anime_data.rename(columns={"Other name": "Orignal Name"})
```

```
In [61]: nd.columns
```

```
Out[61]: Index(['anime_id', 'Name', 'English name', 'Orignal Name', 'Score', 'Genres',
       'Synopsis', 'Type', 'Episodes', 'Aired', 'Premiered', 'Status',
       'Producers', 'Licensors', 'Studios', 'Source', 'Duration', 'Rating',
       'Rank', 'Popularity', 'Favorites', 'Scored By', 'Members', 'Image URL'],
      dtype='object')
```

Name of the Anime in Different language.

```
In [62]: # Let's know baout the animes names in differrnt Language in details with it Member
nd[['Name", "English name", "Orignal Name", "Synopsis", "Members']].head(30)
```

Out[62]:

	Name	English name	Original Name	Synopsis	Members
0	Cowboy Bebop	Cowboy Bebop	カウボーイビバップ	Crime is timeless. By the year 2071, humanity ...	1771505
1	Cowboy Bebop: Tengoku no Tobira	Cowboy Bebop: The Movie	カウボーイビバップ 天国の扉	Another day, another bounty—such is the life o...	360978
2	Trigun	Trigun	トライガン	Vash the Stampede is the man with a \$60,000,0...	727252
3	Witch Hunter Robin	Witch Hunter Robin	Witch Hunter ROBIN (ウィッチハンターロビン)	Robin Sena is a powerful craft user drafted in...	111931
4	Bouken Ou Beet	Beet the Vandel Buster	冒険王ビート	It is the dark century and the people are suff...	15001
5	Eyeshield 21	UNKNOWN	アイシールド21	Shy, reserved, and small-statured, Deimon High...	177688
6	Hachimitsu to Clover	Honey and Clover	ハチミツとクローバー	Yuuta Takemoto, a sophomore at an arts college...	260166
7	Hungry Heart: Wild Striker	UNKNOWN	ハングリーハート Wild Striker	As the younger brother of Japanese soccer star...	24172
8	Initial D Fourth Stage	UNKNOWN	頭文字〈イニシャル〉D FOURTH STAGE	Takumi Fujiwara finally joins Ryousuke and Kei...	173710
9	Monster	Monster	モンスター	Dr. Kenzou Tenma, an elite neurosurgeon recent...	1013100
10	Naruto	Naruto	ナルト	Moments prior to Naruto Uzumaki's birth, a hug...	2717330
11	One Piece	One Piece	ONE PIECE	Gol D. Roger was known as the "Pirate King," t...	2168904
12	Tennis no Ouji-sama	The Prince of Tennis	テニスの王子様	At the request of his father, tennis prodigy R...	178273
13	Ring ni Kakero 1	UNKNOWN	リングにかけろ 1	In order to fulfill their dead father's	4581

	Name	English name	Original Name	Synopsis	Members
				wish, ...	
14	School Rumble	School Rumble	スクールランブル	Just the words "I love you," and everything ch...	320203
15	Sunabouzu	Desert Punk	砂ぼうず	The Great Kanto Desert, a sweltering wasteland...	134894
16	Texhnolyze	Texhnolyze	TEXHNOLYZE	In the dark underground city of Lux, people li...	239423
17	Trinity Blood	Trinity Blood	トリニティ・ブラッド	Following Armageddon, an apocalyptic war, mankind...	179583
18	Yakitate!! Japan	Yakitate!! Japan	焼きたて!! ジャパン	While countries such as France, England, and G...	95380
19	Zipang	UNKNOWN	ジパング	Mirai, an improved Kongou-class Aegis guided m...	21391
20	Neon Genesis Evangelion	Neon Genesis Evangelion	新世紀エヴァンゲリオン	Fifteen years after a cataclysmic event known ...	1718019
21	Neon Genesis Evangelion: Death & Rebirth	Neon Genesis Evangelion: Death & Rebirth	新世紀エヴァンゲリオン劇場版 シト新生	In the year 2015, more than a decade has passe...	251617
22	Neon Genesis Evangelion: The End of Evangelion	Neon Genesis Evangelion: The End of Evangelion	新世紀エヴァンゲリオン劇場版 THE END OF EVANGELION	Shinji Ikari is left emotionally comatose afte...	879361
23	Kenpuu Denki Berserk	Berserk	剣風伝奇ベルセルク	Guts, a man who will one day be known as the B...	608800
24	Koukaku Kidoutai	Ghost in the Shell	GHOST IN THE SHELL (攻殻機動隊)	In the year 2029, Niihama City has become a te...	604276
25	Rurouni Kenshin: Meiji Kenkaku Romantan - Tsui...	Samurai X: Trust and Betrayal	るろうに剣心—明治剣客浪漫譚—追憶編	When mankind's savagery surpasses his fear of ...	268621
26	Rurouni Kenshin: Meiji Kenkaku Romantan	Rurouni Kenshin	るろうに剣心-明治剣客浪漫譚-	In the final years of the Bakumatsu era lived ...	477389

	Name	English name	Original Name	Synopsis	Members
27	Rurouni Kenshin: Meiji Kenkaku Romantan - Ishi...	Samurai X: The Motion Picture	るろうに剣心 -明治 剣客浪漫譚- 維新志 士への鎮魂歌	The war against the Tokugawa Shogunate ended y...	50732
28	Akira	Akira	AKIRA (アキラ)	Japan, 1988. An explosion caused by a young bo...	804581
29	.hack//Sign	.hack//Sign	.hack//SIGN	A young wavemaster, only known by the alias of...	178659

Category of Anime Represented in chart

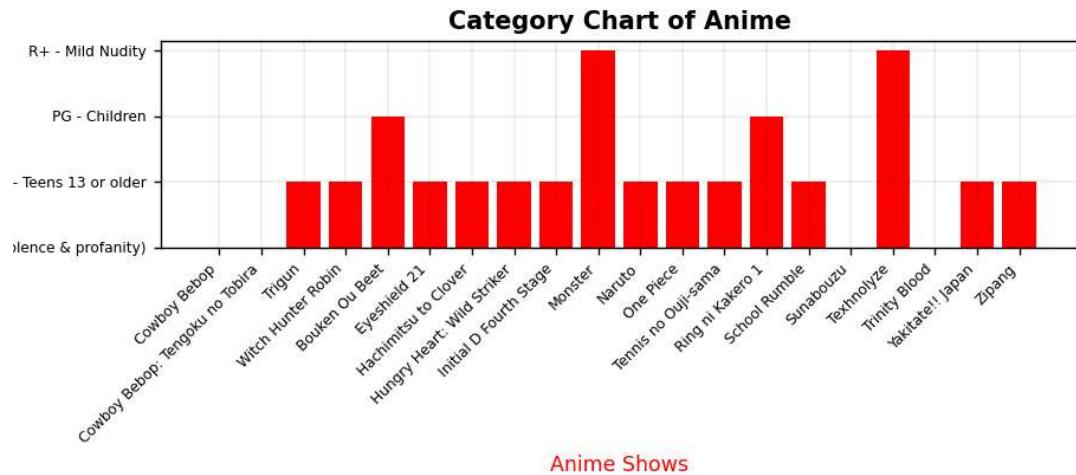
```
In [63]: category = anime_data.Rating.unique()
category
```

```
Out[63]: array(['R - 17+ (violence & profanity)', 'PG-13 - Teens 13 or older',
       'PG - Children', 'R+ - Mild Nudity', 'G - All Ages', 'Rx - Hentai',
       'UNKNOWN'], dtype=object)
```

```
In [64]: pd.DataFrame(category)
```

```
Out[64]: 0
          0   R - 17+ (violence & profanity)
          1   PG-13 - Teens 13 or older
          2   PG - Children
          3   R+ - Mild Nudity
          4   G - All Ages
          5   Rx - Hentai
          6   UNKNOWN
```

```
In [65]: # this graph is show only 20 index of the anime because data was too Large
fig = plt.figure(figsize=(8,4))
ax = fig.add_subplot(211)
ax.set_title("Category Chart of Anime", fontweight="bold")
ax.set_xlabel("Anime Shows", color="red")
ax.set_ylabel("Category", color="red")
ax = plt.bar(nd["Name"][:20], nd["Rating"][:20], color = "red")
ax = plt.grid(linewidth = 0.2, color = "black", alpha = 0.3)
ax = plt.xticks(rotation=45, ha='right', fontsize=7)
ax = plt.yticks(rotation=0, ha='right', fontsize=7)
plt.show()
```



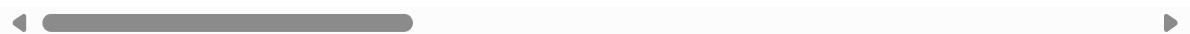
Top Ranking of anime.

```
In [66]: top_anime = anime_data.sort_values(by="Rank", ascending=True).head(10) # Top 10 ranking
ta = top_anime.fillna(0)
ta # ta[["Name", "Rank"]]
```

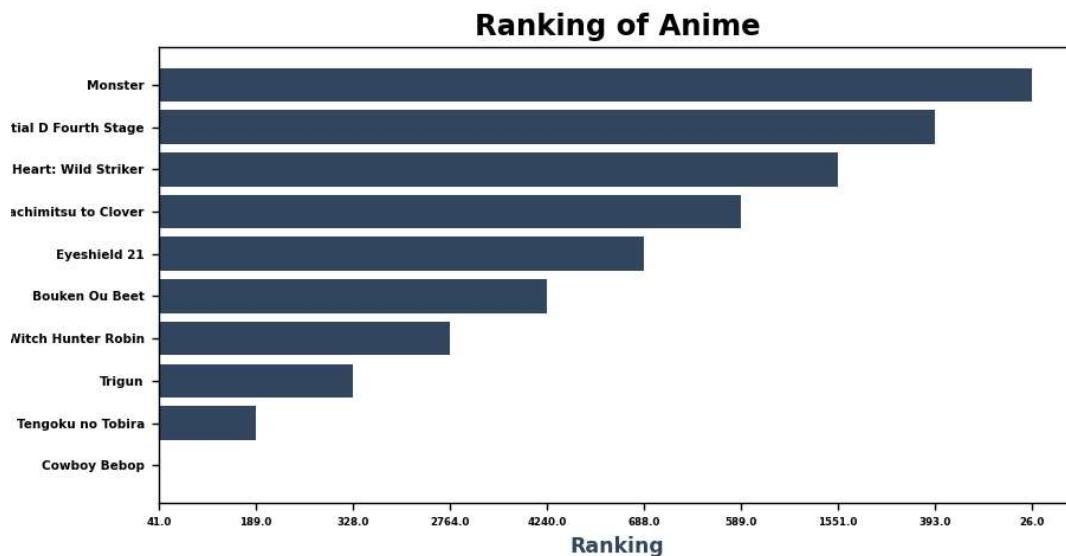
Out[66]:

	anime_id	Name	English name	Other name	Score	Genres
24904	55735	Shijuuku Nichi	UNKNOWN	四十九日	UNKNOWN	UNKNOWN
24500	55229	Free Falling	Free Falling	UNKNOWN	UNKNOWN	Fantasy TOME
24499	55228	A Beautiful Day	A Beautiful Day	기분 좋은 날	UNKNOWN	Boys Love BEAUTIFUL
24498	55227	Night Flower	Night Flower	야화	UNKNOWN	Boys Love NIGHT
24494	55218	The Little Name	The Little Name	어린이름	UNKNOWN	UNKNOWN son
24468	55178	Ridin' (IMLAY Remix)	Ridin' (IMLAY Remix)	UNKNOWN	UNKNOWN	UNKNOWN
24464	55174	Bad Boy (Slom Remix)	Bad Boy (Slom Remix)	UNKNOWN	UNKNOWN	UNKNOWN
24463	55173	Bad Boy (nomad Remix)	Bad Boy (nomad Remix)	UNKNOWN	UNKNOWN	UNKNOWN
24462	55172	맛 (Hot Sauce) (MINIMONSTER Remix)	Hot Sauce (MINIMONSTER Remix)	맛	UNKNOWN	UNKNOWN
24461	55171	Bambi (h4rdy Remix)	Bambi (h4rdy Remix)	UNKNOWN	UNKNOWN	UNKNOWN

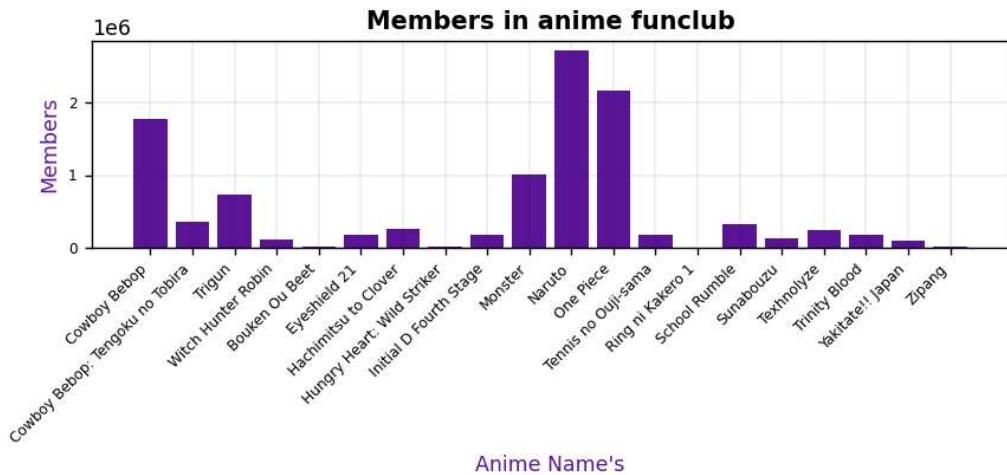
10 rows × 24 columns



```
In [67]: fig = plt.figure(figsize=(8,4))
ax = fig.add_subplot()
plt.barh(anime_data["Name"][:10], anime_data["Rank"][:10], color = "#324a5f")
plt.title('Ranking of Anime', fontsize=14, fontweight='bold')
plt.yticks(fontsize=6, weight="bold")
plt.xticks(fontsize=5, weight="bold")
ax.set_xlabel("Ranking", weight='bold', c="#324a5f")
ax.set_ylabel("Name of Anime", weight='bold', c="#324a5f")
plt.show()
```



```
In [68]: fig = plt.figure(figsize=(8,4))
ax = fig.add_subplot(211)
ax.set_title("Members in anime funclub", fontweight="bold")
ax.set_xlabel("Anime Name's", color="#5a189a")
ax.set_ylabel("Members", color="#5a189a")
ax = plt.bar(nd["Name"][:20], nd["Members"][:20], color = "#5a189a")
ax = plt.grid(linewidth = 0.2, color = "black", alpha = 0.3)
ax = plt.xticks(rotation=45, ha='right', fontsize=7)
ax = plt.yticks(rotation=0, ha='right', fontsize=7)
plt.show()
```



```
In [69]: # Sources for anime where you watch
nd[[ "Name", "Image URL"]].head(20)
```

Out[69]:

	Name	Image URL
0	Cowboy Bebop	https://cdn.myanimelist.net/images/anime/4/196...
1	Cowboy Bebop: Tengoku no Tobira	https://cdn.myanimelist.net/images/anime/1439...
2	Trigun	https://cdn.myanimelist.net/images/anime/7/203...
3	Witch Hunter Robin	https://cdn.myanimelist.net/images/anime/10/19...
4	Bouken Ou Beet	https://cdn.myanimelist.net/images/anime/7/215...
5	Eyeshield 21	https://cdn.myanimelist.net/images/anime/1079...
6	Hachimitsu to Clover	https://cdn.myanimelist.net/images/anime/1301...
7	Hungry Heart: Wild Striker	https://cdn.myanimelist.net/images/anime/12/49...
8	Initial D Fourth Stage	https://cdn.myanimelist.net/images/anime/9/105...
9	Monster	https://cdn.myanimelist.net/images/anime/10/18...
10	Naruto	https://cdn.myanimelist.net/images/anime/13/17...
11	One Piece	https://cdn.myanimelist.net/images/anime/6/732...
12	Tennis no Ouji-sama	https://cdn.myanimelist.net/images/anime/6/216...
13	Ring ni Kakero 1	https://cdn.myanimelist.net/images/anime/1146...
14	School Rumble	https://cdn.myanimelist.net/images/anime/4/754...
15	Sunabouzu	https://cdn.myanimelist.net/images/anime/6/755...
16	Texhnolyze	https://cdn.myanimelist.net/images/anime/1027...
17	Trinity Blood	https://cdn.myanimelist.net/images/anime/10/24...
18	Yakitate!! Japan	https://cdn.myanimelist.net/images/anime/3/764...
19	Zipang	https://cdn.myanimelist.net/images/anime/13/75...

Anime TV Series and movies in Dataset

In [70]:

```
# Anime TV Series and movies in Dataset
# Count the number of Anime Series (TV) and Movies
anime_type_counts = anime_data[ "Type" ].value_counts()

# Extract TV series and Movie counts
tv_count = anime_type_counts.get("TV", 0)
movie_count = anime_type_counts.get("Movie", 0)

# Display the results
tv_count, movie_count
```

Out[70]: (7597, 4381)

```
In [71]: anime_tv = anime_data[anime_data["Type"] == "TV"]
# anime_tv.head()
anime_tv[["Name", "Type"]]
```

Out[71]:

	Name	Type
0	Cowboy Bebop	TV
2	Trigun	TV
3	Witch Hunter Robin	TV
4	Bouken Ou Beet	TV
5	Eyeshield 21	TV
...
24842	Alssongdalssong Catch! Tiniping	TV
24867	Boku no Kokoro no Yabai Yatsu Season 2	TV
24875	Kimetsu no Yaiba: Hashira Geiko-hen	TV
24876	Kimetsu no Yaiba: Purātorēninguāku-hen	TV
24886	Dekisokonai to Yobareta Motoeiyuu wa Jikka kar...	TV

7597 rows × 2 columns

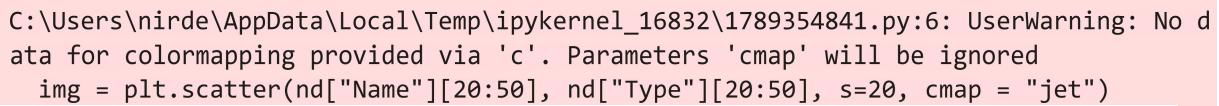
```
In [72]: anime_movie = anime_data[anime_data["Type"] == "Movie"]
anime_movie[["Name", "Type"]]
```

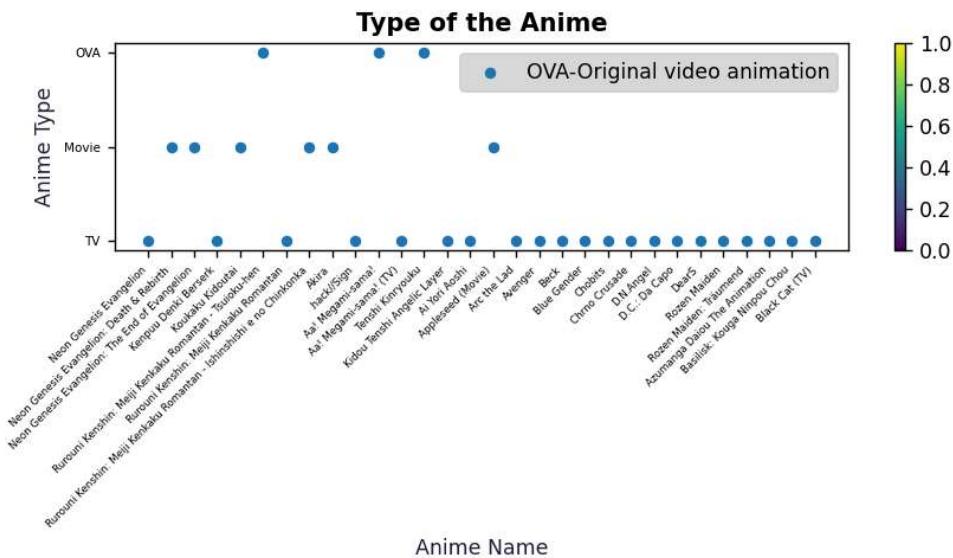
Out[72]:

	Name	Type
1	Cowboy Bebop: Tengoku no Tobira	Movie
21	Neon Genesis Evangelion: Death & Rebirth	Movie
22	Neon Genesis Evangelion: The End of Evangelion	Movie
24	Koukaku Kidoutai	Movie
27	Rurouni Kenshin: Meiji Kenkaku Romantan - Ishi...	Movie
...
24817	Haruzora to Akizora	Movie
24819	Dynamic Venus	Movie
24827	Wasure Hoshi no Volicia	Movie
24882	Boku to Roboko Movie	Movie
24884	Retro Future	Movie

4381 rows × 2 columns

```
In [73]: fig = plt.figure(figsize=(8,4))
ax = fig.add_subplot(211)
ax.set_xlabel("Anime Name", c="#22223b")
ax.set_ylabel("Anime Type", c="#22223b")
plt.title("Type of the Anime", fontweight="bold")
img = plt.scatter(nd["Name"][20:50], nd["Type"][20:50], s=20, cmap = "jet")
ax.legend(["OVA-Original video animation"], facecolor="lightgray")
ax = plt.xticks(rotation=45, ha='right', fontsize=5)
ax = plt.yticks(rotation=0, ha='right', fontsize=6)
fig.colorbar(img)
plt.show()
```

C:\Users\nirde\AppData\Local\Temp\ipykernel_16832\1789354841.py:6: UserWarning: No data for colormapping provided via 'c'. Parameters 'cmap' will be ignored




```
In [74]: # Convert necessary columns to numeric, handling errors where applicable
anime_data["Score"] = pd.to_numeric(anime_data["Score"], errors='coerce')
anime_data["Episodes"] = pd.to_numeric(anime_data["Episodes"], errors='coerce')
anime_data["Rank"] = pd.to_numeric(anime_data["Rank"], errors='coerce')
anime_data["Scored By"] = pd.to_numeric(anime_data["Scored By"], errors='coerce')

# Extracting the first year from the "Aired" column using regex
anime_data["Year"] = anime_data["Aired"].str.extract(r'(\d{4})').astype(float)

# Checking the cleaned dataset
anime_data[["Name", "Score", "Episodes", "Rank", "Scored By", "Year"]].head(10)
```

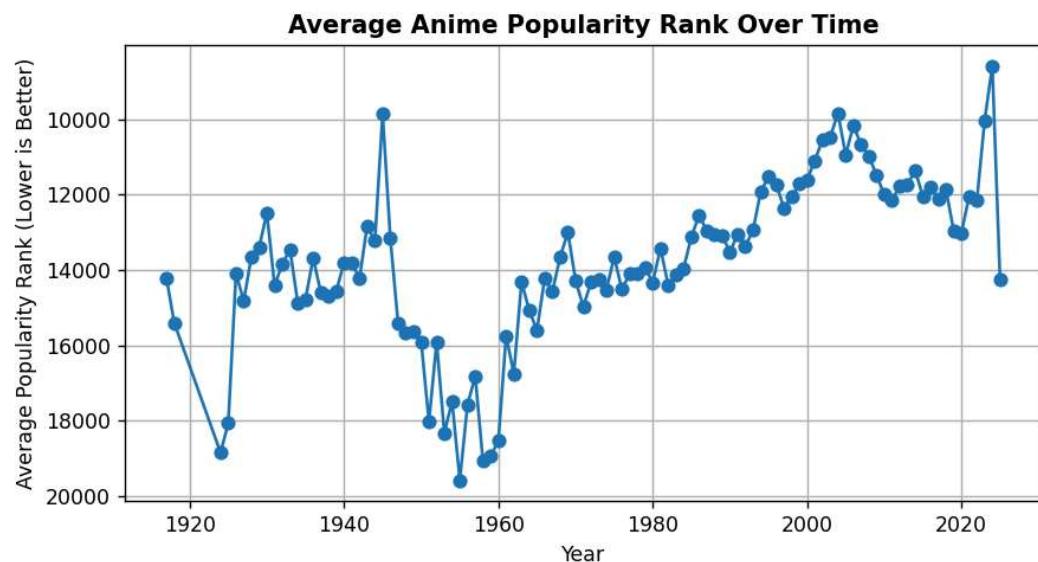
Out[74]:

	Name	Score	Episodes	Rank	Scored By	Year
0	Cowboy Bebop	8.75	26.0	41.0	914193.0	1998.0
1	Cowboy Bebop: Tengoku no Tobira	8.38	1.0	189.0	206248.0	2001.0
2	Trigun	8.22	26.0	328.0	356739.0	1998.0
3	Witch Hunter Robin	7.25	26.0	2764.0	42829.0	2002.0
4	Bouken Ou Beet	6.94	52.0	4240.0	6413.0	2004.0
5	EYESHIELD 21	7.92	145.0	688.0	86524.0	2005.0
6	Hachimitsu to Clover	8.00	24.0	589.0	81747.0	2005.0
7	Hungry Heart: Wild Striker	7.55	52.0	1551.0	12960.0	2002.0
8	Initial D Fourth Stage	8.16	24.0	393.0	97878.0	2004.0
9	Monster	8.87	74.0	26.0	368569.0	2004.0

In [75]:

```
# Grouping by year to find average popularity over time
popularity_trend = anime_data.groupby("Year")["Popularity"].mean().dropna()

# Plot the popularity trend over time
plt.figure(figsize=(8, 4))
plt.plot(popularity_trend.index, popularity_trend.values, marker='o', linestyle='--')
plt.xlabel("Year")
plt.ylabel("Average Popularity Rank (Lower is Better)")
plt.title("Average Anime Popularity Rank Over Time", weight="bold")
plt.gca().invert_yaxis() # Since lower popularity rank is better, invert the y-axis
plt.grid()
plt.show()
```



In [76]:

```
# Finding the most popular anime for each year based on the Lowest rank
most_popular = anime_data.loc[anime_data.groupby("Year")["Rank"].idxmin(), ["Year",
```

```
# Display the top results
most_popular.sort_values("Year", ascending=True).head(20)
```

Out[76]:

	Year	Name	Rank	Score	Popularity
8836	1917.0	Dekobou Shingachou: Meian no Shippai	9816.0	5.77	11619
8674	1918.0	Kobutori	10475.0	5.59	14320
5018	1924.0	Usagi to Kame	11647.0	5.17	11624
9574	1925.0	Ubasuteyama	11095.0	5.40	12022
5020	1926.0	Saiyuuki: Son Gokuu Monogatari	11286.0	5.33	11847
12952	1927.0	Saru Kani Gassen (1927)	11633.0	5.18	12573
5022	1928.0	Doubutsu Olympic Taikai	11075.0	5.40	12098
4337	1929.0	Kobutori (1929)	9490.0	5.85	9179
12671	1930.0	Roba	11136.0	5.38	15268
3616	1931.0	Kuro Nyago	11280.0	5.33	9081
12967	1932.0	Ahiru no Ko	9988.0	5.72	13994
4967	1933.0	Chikara to Onna no Yo no Naka	10498.0	5.59	14113
7209	1934.0	Tsuki no Miya no Oujo-sama	11485.0	5.25	14665
4756	1935.0	Umi no Mizu wa Naze Karai	10431.0	5.60	11823
4748	1936.0	Suzume no Oyado	11676.0	5.15	13328
9746	1937.0	Katsura Hime	11838.0	5.07	13526
10249	1938.0	Tekusuke Monogatari	11484.0	5.24	15926
6760	1939.0	Benkei tai Ushiwaka	11585.0	5.20	11778
9693	1940.0	Ochou Fujin no Gensou	10753.0	5.51	12775
4764	1941.0	Kangaroo no Tanjoubi	11391.0	5.29	12280

In [77]:

```
# Filtering for anime from the year 2000 onwards
recent_popular_anime = most_popular[most_popular["Year"] >= 2000]
new_re = recent_popular_anime.fillna(0)
# Display top results from 2000 onwards
new_re.sort_values("Year", ascending=True).head(30)
```

Out[77]:

	Year	Name	Rank	Score	Popularity
239	2000.0	Hajime no Ippo	40.0	8.76	369
176	2001.0	Sen to Chihiro no Kamikakushi	36.0	8.78	44
24329	2002.0	Chibi Maruko-chan Special: Maruko, Fooku Konsa...	0.0	0.00	0
456	2003.0	Kino no Tabi: The Beautiful World	246.0	8.29	742
24745	2004.0	The Anus	0.0	0.00	0
21479	2005.0	Fate/stay night Specials	0.0	0.00	0
833	2006.0	Gintama	16.0	8.94	138
1822	2007.0	Tengen Toppa Gurren Lagann	71.0	8.63	65
3527	2008.0	Clannad: After Story	19.0	8.93	114
24177	2009.0	Meguriau Sekai	0.0	0.00	0
24795	2010.0	Wagaya no Liliana-san & Tonari no Ie no Anette...	0.0	0.00	0
24622	2011.0	BadBye	0.0	0.00	0
24559	2012.0	Huan Bing Ji	0.0	0.00	0
7228	2013.0	Gintama Movie 2: Kanketsu-hen - Yorozuya yo Ei...	21.0	8.91	977
24613	2014.0	SLoWMoTloN	0.0	0.00	0
21965	2015.0	Yoru ga Boku wo Ookikusuru	0.0	0.00	0
24614	2016.0	Kimi mo Warui Hito de Yokatta	0.0	0.00	0
24619	2017.0	Apple dot com	0.0	0.00	0
24458	2018.0	Animals	0.0	0.00	0
21732	2019.0	Otohime 20000	0.0	0.00	0
24137	2020.0	Awakening	0.0	0.00	0
19398	2021.0	Chokkan × Algorhythms 3rd Season	0.0	0.00	0
22258	2022.0	Fate/Grand Order: Shuukyoku Tokuiten - Kani Ji...	0.0	0.00	0
22515	2023.0	Douluo Dalu II: Jueshi Tangmen	0.0	0.00	0
24778	2024.0	Seasons of Blossom	0.0	0.00	0
24775	2025.0	Ruler of the Land	0.0	0.00	0

In [78]:

```
# Grouping by studios to find the most frequently occurring ones
studio_counts = anime_data["Studios"].str.split(", ").explode().value_counts().head(10)

# Finding the highest-rated studios based on average score
top_scoring_studios = anime_data.groupby("Studios")["Score"].mean().sort_values(ascending=False).head(10)

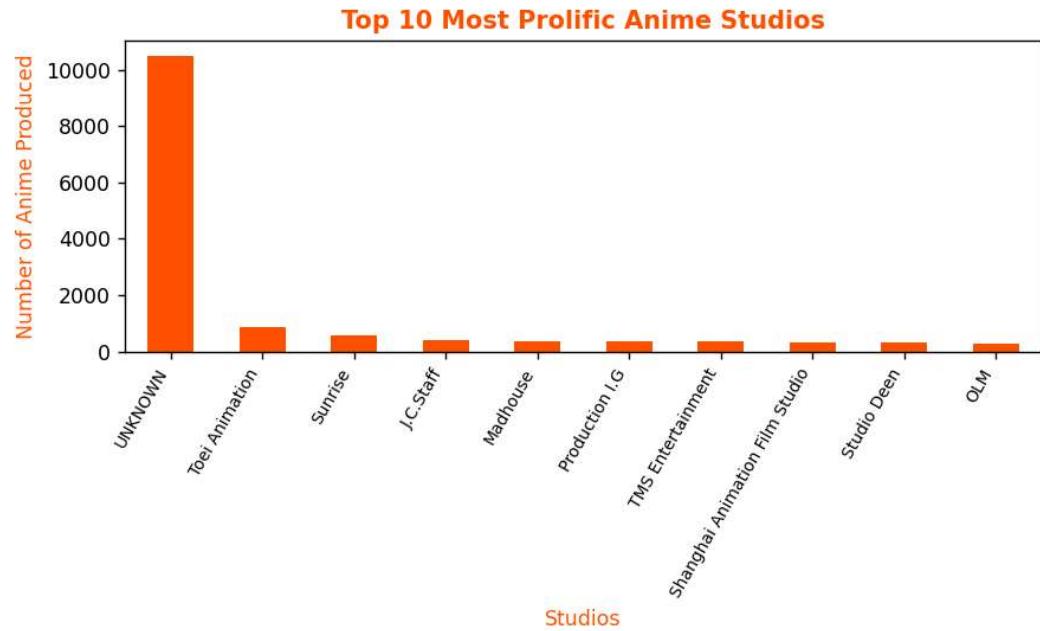
# Plot the most frequently appearing studios
```

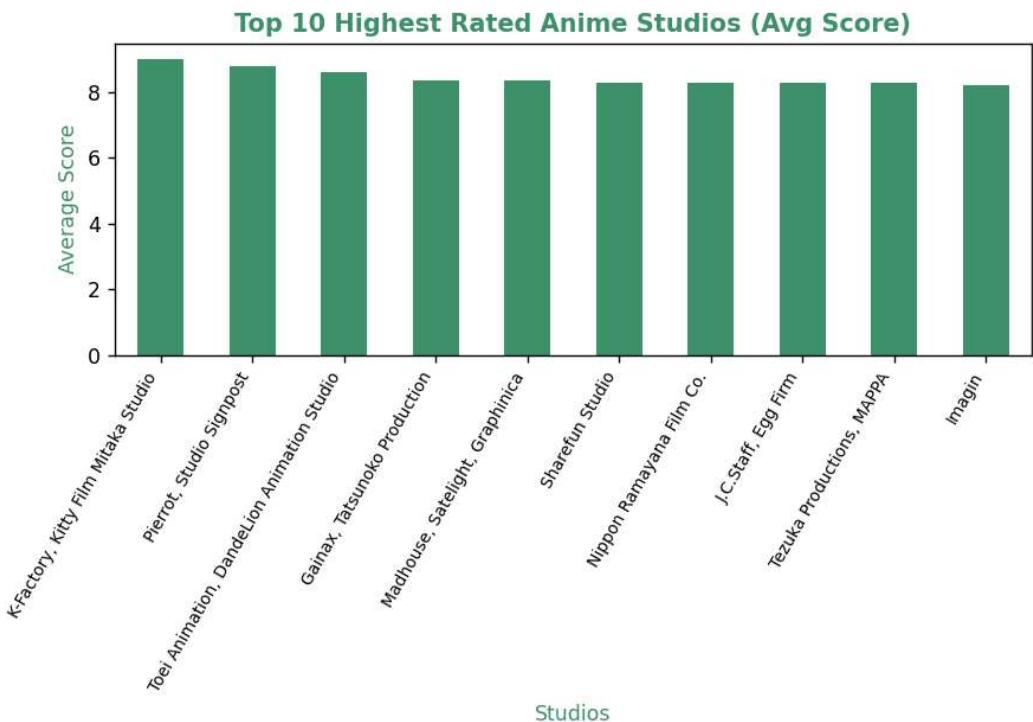
```

fig = plt.figure(figsize=(8, 6))
ax = fig.add_subplot(211)
studio_counts.plot(kind="bar", color="#ff5400")
plt.xlabel("Studios", c="#ff5400")
plt.ylabel("Number of Anime Produced", c="#ff5400")
plt.title("Top 10 Most Prolific Anime Studios", fontweight="bold", c="#ff5400")
plt.xticks(rotation=60, ha='right', fontsize=8)
plt.show()

# Plot the highest-rated studios
fig = plt.figure(figsize=(8, 6))
ax = fig.add_subplot(211)
top_scoring_studios.plot(kind="bar", color="#40916c")
plt.xlabel("Studios", c="#40916c")
plt.ylabel("Average Score", c="#40916c")
plt.title("Top 10 Highest Rated Anime Studios (Avg Score)", fontweight="bold", c="#40916c")
plt.xticks(rotation=60, ha='right', fontsize=8)
plt.show()

```





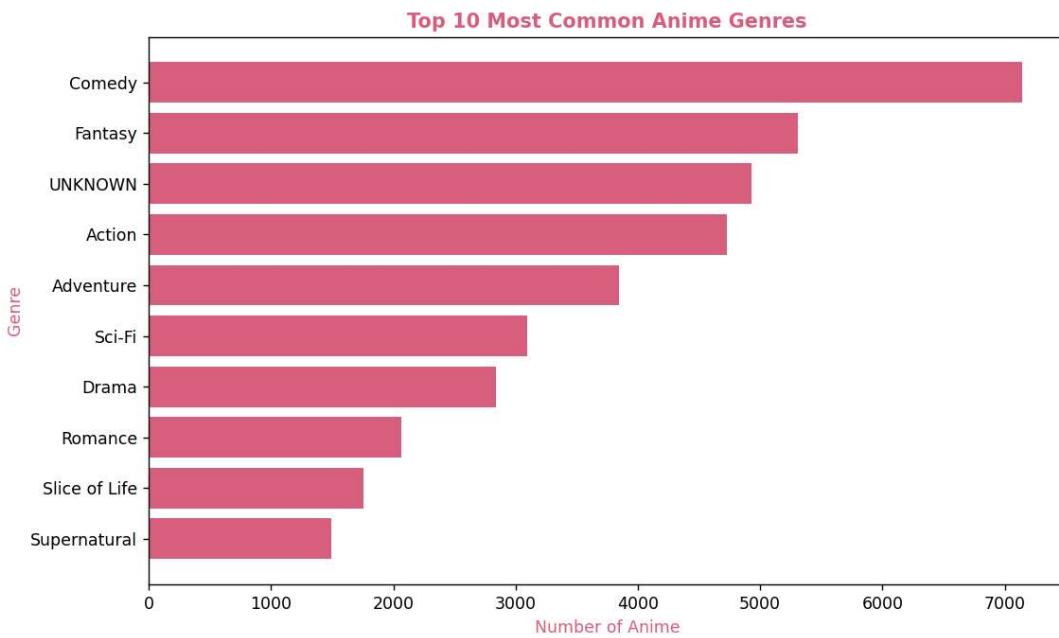
```
In [79]: from collections import Counter

# Splitting and counting genres
genre_counts = Counter()
anime_data.dropna(subset=["Genres"], inplace=True) # Dropping rows with missing genres

for genre_list in anime_data["Genres"]:
    genres = [g.strip() for g in genre_list.split(",")]
    genre_counts.update(genres)

# Convert to DataFrame for visualization
genre_df = pd.DataFrame(genre_counts.items(), columns=["Genre", "Count"]).sort_values("Count", ascending=False)

# Plot top genres
plt.figure(figsize=(10, 6))
plt.barh(genre_df["Genre"].head(10), genre_df["Count"].head(10), color="#da627d")
plt.xlabel("Number of Anime", c="#da627d")
plt.ylabel("Genre", c="#da627d")
plt.title("Top 10 Most Common Anime Genres", weight="bold", c="#da627d")
plt.gca().invert_yaxis() # Flip for better visualization
plt.show()
```



Anime Reference

```
In [80]: # Anime Based on this filled  
anime_data.Source.unique()
```

```
Out[80]: array(['Original', 'Manga', 'Light novel', 'Game', 'Visual novel',  
       '4-koma manga', 'Novel', 'Other', 'Unknown', 'Picture book',  
       'Web manga', 'Music', 'Radio', 'Book', 'Mixed media', 'Card game',  
       'Web novel'], dtype=object)
```

```
In [81]: pd.DataFrame(anime_data.Source.unique(), columns=["Reference of anime"]) # In DataF
```

Out[81]:

Reference of anime	
0	Original
1	Manga
2	Light novel
3	Game
4	Visual novel
5	4-koma manga
6	Novel
7	Other
8	Unknown
9	Picture book
10	Web manga
11	Music
12	Radio
13	Book
14	Mixed media
15	Card game
16	Web novel

Anime Based on the Manga

In []:

```
# Filter anime based on manga source
manga_anime = anime_data[anime_data["Source"].str.lower() == "manga"]
# manga_anime.head()
manga_anime[["Name", "Source"]]
```

Out[82]:

	Name	Source
2	Trigun	Manga
4	Bouken Ou Beet	Manga
5	EYESHIELD 21	Manga
6	Hachimitsu to Clover	Manga
7	Hungry Heart: Wild Striker	Manga
...
24835	Tonikaku Kawaii: Joshikou-hen	Manga
24867	Boku no Kokoro no Yabai Yatsu Season 2	Manga
24875	Kimetsu no Yaiba: Hashira Geiko-hen	Manga
24882	Boku to Roboko Movie	Manga
24893	Beauty and the Brawn	Manga

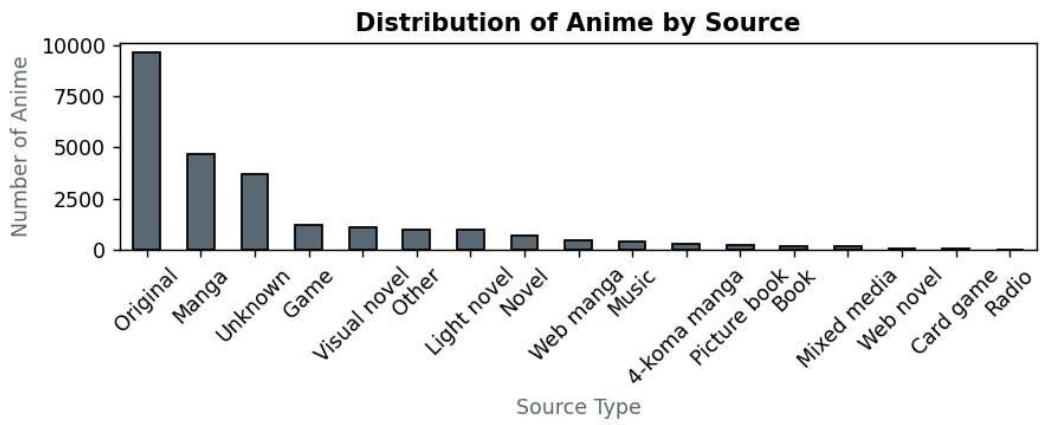
4687 rows × 2 columns

In [83]: `source_counts = anime_data["Source"].value_counts()`

In [84]: `fig = plt.figure(figsize=(8, 4))
fig.add_subplot(211)
source_counts.plot(kind="bar", color="#5c6b73", edgecolor="black")

Labels and title
plt.xlabel("Source Type", c="#5c6b73")
plt.ylabel("Number of Anime", c="#5c6b73")
plt.title("Distribution of Anime by Source", fontweight="bold")
plt.xticks(rotation=45) # Rotate Labels for better readability

plt.show()`



In []: