In [1]:
```python
# importing lib.
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

In [3]:
```python
# Load the dataset

df = pd.read_csv('mymoviedb.csv', lineterminator='\n')
df.head()
```

Out[3]:

	Release_Date	Title	Overview	Popularity	Vote_Count	Vote_Average
0	2021-12-15	Spider-Man: No Way Home	Peter Parker is unmasked and no longer able to...	5083.954	8940	8.3
1	2022-03-01	The Batman	In his second year of fighting crime, Batman u...	3827.658	1151	8.1
2	2022-02-25	No Exit	Stranded at a rest stop in the mountains durin...	2618.087	122	6.3
3	2021-11-24	Encanto	The tale of an extraordinary family, the Madri...	2402.201	5076	7.7
4	2021-12-22	The King's Man	As a collection of history's worst tyrants and...	1895.511	1793	7.0

Observe the data

In [4]:
```python
# viewing dataset info
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 9827 entries, 0 to 9826
Data columns (total 9 columns):
 #   Column             Non-Null Count  Dtype  
---  ------             --------------  -----  
 0   Release_Date       9827 non-null   object 
 1   Title              9827 non-null   object 
 2   Overview           9827 non-null   object 
 3   Popularity         9827 non-null   float64
 4   Vote_Count         9827 non-null   int64  
 5   Vote_Average       9827 non-null   float64
 6   Original_Language  9827 non-null   object 
 7   Genre              9827 non-null   object 
 8   Poster_Url         9827 non-null   object 
dtypes: float64(2), int64(1), object(6)
memory usage: 691.1+ KB
```

In [7]:
```
# check for duplicate rows
df.duplicated().sum()
```

Out[7]:
```
0
```

In [8]:
```
# exploring summary statistics
df.describe()
```

Out[8]:

	Popularity	Vote_Count	Vote_Average
count	9827.000000	9827.000000	9827.000000
mean	40.326088	1392.805536	6.439534
std	108.873998	2611.206907	1.129759
min	13.354000	0.000000	0.000000
25%	16.128500	146.000000	5.900000
50%	21.199000	444.000000	6.500000
75%	35.191500	1376.000000	7.100000
max	5083.954000	31077.000000	10.000000

Exploration Summary

• We have a dataframe consisting of 9827 rows and 9 columns. • Our dataset Does not have Nan or Duplicate Values. • There is noticable outliers in Popularity column • Release_Date column needs to be casted into date time Data type and extract Year for analysis • Drop (Overview, Original_Languege and Poster-Url) Coloumns as they won't be so useful during analysis • Vote_Average bettter be categorised for proper analysis. • Genre column has comma saperated values and white spaces that needs to be handled

In [ ]:

```

```

Data Cleaning

In [9]:

```
# Changing the data type of Relese date Coloumn to Date and time
df['Release_Date'] = pd.to_datetime(df['Release_Date'])
# confirming changes
print(df['Release_Date'].dtypes)
```

```
datetime64[ns]
```

In [10]:

```
# Extracting a year from date
df['Release_Date'] = df['Release_Date'].dt.year
#Confirming the changes as data type will be changed after extraction
df['Release_Date'].dtypes
```

Out[10]:

```
dtype('int32')
```

In [11]:

```
# making list of column to be dropped
cols = ['Overview', 'Original_Language', 'Poster_Url']
cols
```

Out[11]:

```
['Overview', 'Original_Language', 'Poster_Url']
```

In [12]:

```
# dropping columns and confirming changes
df.drop(cols, axis = 1, inplace = True)
df.head(1)
```

Out[12]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre
0	2021	Spider-Man: No Way Home	5083.954	8940	8.3	Action, Adventure, Science Fiction

In [20]:

```
# categorizing Vote_Average column
# We Will cut the Vote_Average values and make 4 categories: popular, averag
def catigorize_col (df, col, labels):
    edges = [df[col].describe()['min'],
             df[col].describe()['25%'],
             df[col].describe()['50%'],
             df[col].describe()['75%'],
             df[col].describe()['max']]
    df[col] = pd.cut(df[col], edges, labels = labels, duplicates='drop')
    return df
```

In [23]:

```
# define labels for edges
labels = ['not_popular', 'below_avg', 'average', 'popular']

# categorize column based on labels and edges
catigorize_col(df, 'Vote_Average', labels)
```

```
# confirming changes
df['Vote_Average'].unique()
```

Out[23]:
```
['popular', 'below_avg', 'average', 'not_popular', NaN]
Categories (4, object): ['not_popular' < 'below_avg' < 'average' < 'popula
r']
```

In [25]:
```
df.head(2)
```

Out[25]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre
0	2021	Spider-Man: No Way Home	5083.954	8940	popular	Action, Adventure, Science Fiction
1	2022	The Batman	3827.658	1151	popular	Crime, Mystery, Thriller

In [26]:
```
# exploring column
df['Vote_Average'].value_counts()
```

Out[26]:
```
Vote_Average
not_popular    2467
popular        2450
average        2412
below_avg      2398
Name: count, dtype: int64
```

In [27]:
```
# dropping NaNs
df.dropna(inplace = True)
# confirming
df.isna().sum()
```

Out[27]:
```
Release_Date    0
Title           0
Popularity      0
Vote_Count      0
Vote_Average    0
Genre           0
dtype: int64
```

In [28]:
```
df.head(5)
```

Out[28]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre
0	2021	Spider-Man: No Way Home	5083.954	8940	popular	Action, Adventure, Science Fiction
1	2022	The Batman	3827.658	1151	popular	Crime, Mystery, Thriller
2	2022	No Exit	2618.087	122	below_avg	Thriller
3	2021	Encanto	2402.201	5076	popular	Animation, Comedy, Family, Fantasy
4	2021	The King's Man	1895.511	1793	average	Action, Adventure, Thriller, War

In [29]:
```
# we will split genres into a list and then explode our dataframe to have or

# split the strings into lists
df['Genre'] = df['Genre'].str.split(', ')
# explode the lists
df = df.explode('Genre').reset_index(drop=True)
df.head()
```

Out[29]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre
0	2021	Spider-Man: No Way Home	5083.954	8940	popular	Action
1	2021	Spider-Man: No Way Home	5083.954	8940	popular	Adventure
2	2021	Spider-Man: No Way Home	5083.954	8940	popular	Science Fiction
3	2022	The Batman	3827.658	1151	popular	Crime
4	2022	The Batman	3827.658	1151	popular	Mystery

In [32]:
```
# casting column into category
df['Genre'] = df['Genre'].astype('category')
# confirming changes
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 25552 entries, 0 to 25551
Data columns (total 6 columns):
 #   Column        Non-Null Count  Dtype   
---  ------        --------------  -----   
 0   Release_Date  25552 non-null  int32   
 1   Title         25552 non-null  object  
 2   Popularity    25552 non-null  float64 
 3   Vote_Count    25552 non-null  int64   
 4   Vote_Average  25552 non-null  category
 5   Genre         25552 non-null  category
dtypes: category(2), float64(1), int32(1), int64(1), object(1)
memory usage: 749.6+ KB
```

In [ ]:

```

```

Data Visualization

here, we will use Matplotlib and seaborn for making some informative visuals to gain insights abut our data

In [33]:

```
# setting up seaborn configurations
sns.set_style('whitegrid')
```

In [ ]:

```

```

Q1: What is the most frequent genre in the dataset?

In [34]:

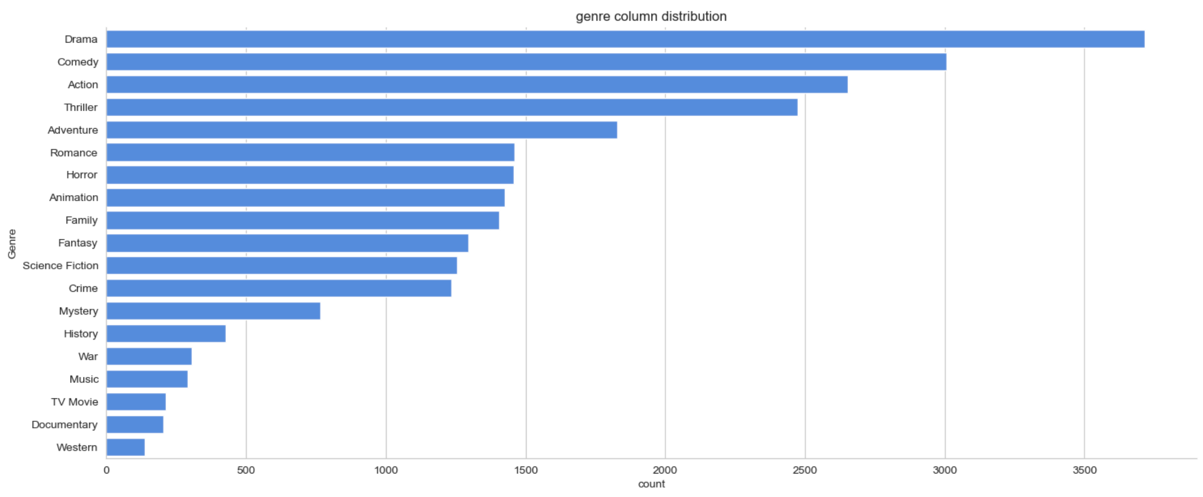
```
# showing stats. on genre column
df['Genre'].describe()
```

Out[34]:

```
count     25552
unique       19
top       Drama
freq       3715
Name: Genre, dtype: object
```

In [36]:

```
# visualizing genre column
sns.catplot(y = 'Genre', data = df, kind = 'count',
 order = df['Genre'].value_counts().index,
 color = '#4287f5', height=6, aspect=2.5)
plt.title('genre column distribution')
plt.show()
```

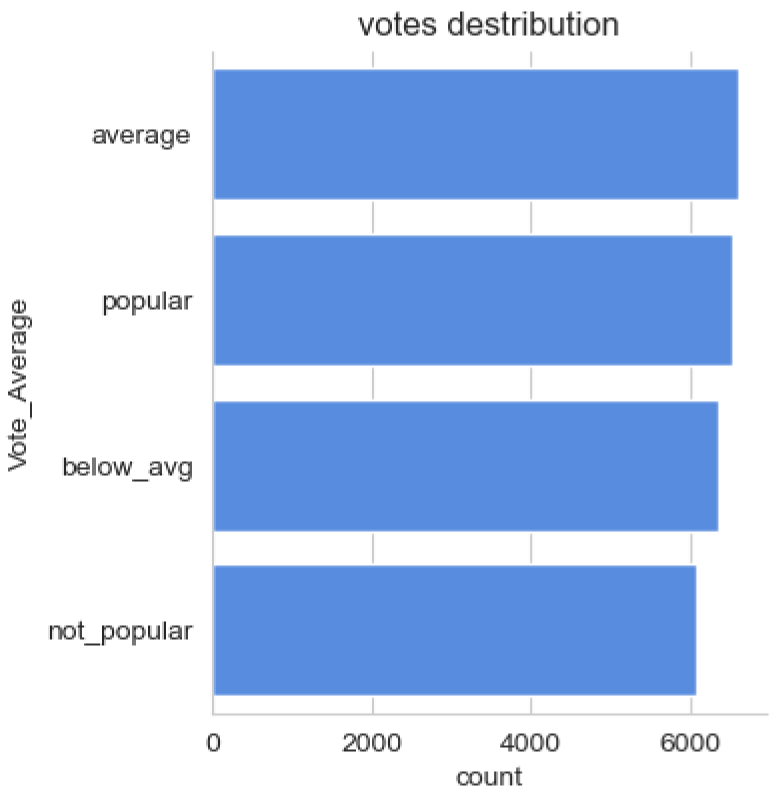


```
In [37]: # we can notice from the above visual that Drama genre is the most frequent
```

```
In [ ]:
```

Q2: What genres has highest votes ?

```
In [44]: # visualizing vote_average column
sns.catplot(y = 'Vote_Average', data = df, kind = 'count',
 order = df['Vote_Average'].value_counts().index,
 color = '#4287f5', height=4, aspect=1)
plt.title('votes destribution')
plt.show()
```



```
In [ ]:
```

Q3: What movie got the highest popularity ? what's its genre ?

```
In [47]: # checking max popularity in dataset
         df[df['Popularity'] == df['Popularity'].max()]
```

Out[47]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre
0	2021	Spider-Man: No Way Home	5083.954	8940	popular	Action
1	2021	Spider-Man: No Way Home	5083.954	8940	popular	Adventure
2	2021	Spider-Man: No Way Home	5083.954	8940	popular	Science Fiction

```
In [ ]:
```

Q4: What movie got the lowest popularity? what's its genre?

```
In [48]: # checking max popularity in dataset
         df[df['Popularity'] == df['Popularity'].min()]
```

Out[48]:

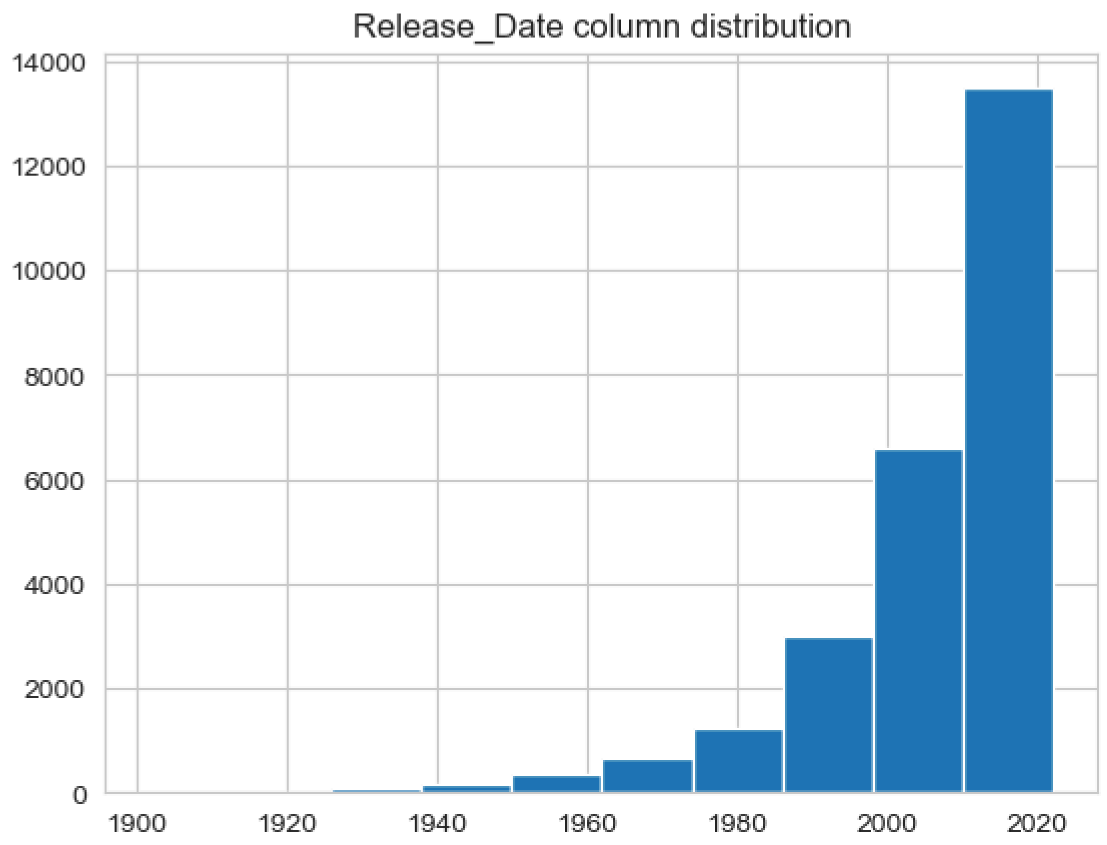
	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre
25546	2021	The United States vs. Billie Holiday	13.354	152	average	Music
25547	2021	The United States vs. Billie Holiday	13.354	152	average	Drama
25548	2021	The United States vs. Billie Holiday	13.354	152	average	History
25549	1984	Threads	13.354	186	popular	War
25550	1984	Threads	13.354	186	popular	Drama
25551	1984	Threads	13.354	186	popular	Science Fiction

In [ ]:

Q5: Which year has the most filmmed movies?

In [49]:

```
df['Release_Date'].hist()
plt.title('Release_Date column distribution')
plt.show()
```



```
In [ ]:
```

Conclusion

Q1: What is the most frequent genre in the dataset? Drama genre is the most frequent genre in our dataset and has appeared more than 14% of the times among 19 other genres.

Q2: What genres has highest votes ? we have 25.5% of our dataset with popular vote (6520 rows). Drama again gets the highest popularity among fans by being having more than 18.5% of movies popularities.

Q3: What movie got the highest popularity ? what's its genre ? Spider-Man: No Way Home has the highest popularity rate in our dataset and it has genres of Action , Adventure and Sience Fiction .

Q4: What movie got the lowest popularity ? what's its genre ? The united states, thread' has the highest lowest rate in our dataset and it has genres of music , drama , 'war', 'sci-fi' and history`.

Q5: Which year has the most filmmed movies? year 2020 has the highest filmming rate in our dataset.