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

In [2]:
```
df = pd.read_csv('mymoviedb.csv', lineterminator='\n')
df.head()
```

Out[2]:

Peter Parker

	Release_Date	Title	Overview	Popularity	Vote_Count	Vote_Average	Original_
0	2021-12-15	Spider Man: No Way Home	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	

In [3]:
```
# 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
```

• looks like our dataset has no NaNs! • Overview, Original_Language and Poster-Url wouldn't be so useful during analysis • Release_Date column needs to be casted into date time and to extract only the year value

```
In [8]: # exploring genres column
        df['Genre'].head()
```

```
Out[8]: 0    Action, Adventure, Science Fiction 1
         Crime, Mystery, Thriller
         2                                Thriller
         3                                Animation, Comedy, Family, Fantasy
         4                                Action, Adventure, Thriller, War
         Name: Genre, dtype: object
```

- genres are saperated by commas followed by whitespaces.

```
In [11]: # check for duplicated rows
         df.duplicated().sum()
```

```
Out[11]: 0
```

- our dataset has no duplicated rows either.

```
In [15]: # exploring summary statistics
         df.describe()
```

Out[15]:

	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

```
In [ ]: • Exploration Summary
```

```
• we have a dataframe consisting of 9827 rows and 9 columns.
• our dataset looks a bit tidy with no NaNs nor duplicated values.
• Release_Date column needs to be casted into date time and to extract only the
• Overview, Original_Languege and Poster-Url wouldn't be so useful during analys
• there is noticable outliers in Popularity column
• Vote_Average bettter be categorised for proper analysis.
• Genre column has comma saperated values and white spaces that needs to be hand
```

In [18]:
```
# Data Cleaning
```

Casting Release_Date column and extracing year values

In [21]:
```
df.head()
```

Out[21]:

	Release_Date	Title	Overview	Popularity	Vote_Count	Vote_Average	Original_
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	

In [23]:
```
# casting column a
df['Release_Date'] = pd.to_datetime(df['Release_Date'])

# confirming changes
print(df['Release_Date'].dtypes)
```

```
datetime64[ns]
```

In [25]:
```
df['Release_Date'] = df['Release_Date'].dt.year df['Release_Date'].dtypes
```

Out[25]:
```
dtype('int32')
```

In [27]:
```
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   int32
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), int32(1), int64(1), object(5) memory usage: 652.7+
    KB
```

In [29]:
```
df.head()
```

Out[29]:

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

Dropping Overview, Original_Languege and Poster-Url

In [32]:
```
# making list of column to be dropped
cols = ['Overview', 'Original_Language', 'Poster_Url']
# dropping columns and confirming changes
df.drop(cols, axis = 1, inplace = True) df.columns
```

Out[32]:
```
Index(['Release_Date', 'Title', 'Popularity', 'Vote_Count', 'Vote_Average',
       'Genre'],
      dtype='object')
```

In [34]:
```
df.head()
```

Out[34]:

	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
1	2022	The Batman	3827.658	1151	8.1	Crime, Mystery, Thriller
2	2022	No Exit	2618.087	122	6.3	Thriller
3	2021	Encanto	2402.201	5076	7.7	Animation, Comedy, Family, Fantasy
4	2021	The King's Man	1895.511	1793	7.0	Action, Adventure, Thriller, War

categorizing `Vote_Average` column

We would cut the `Vote_Average` values and make 4 categories: `popular` `average` `below_avg` `not_popular` to describe it more using `catigorize_col()` function provided above.

In [37]:
```
def catigorize_col (df, col, labels):
    """
    catigorizes a certain column based on its quartiles
Args:
        (df)     df   - dataframe we are proccesing
        (col)    str  - to be catigorized column's name
(labels) list - list of labels from min to max

Returns:
        (df)     df   - dataframe with the categorized col
    """


    # setting the edges to cut the column accordingly
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 [39]:
```
# 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[39]:
```
['popular', 'below_avg', 'average', 'not_popular', NaN]
   Categories (4, object): ['not_popular' < 'below_avg' < 'average' < 'popular']
```

In [41]:
```
df.head()
```

Out[41]:

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

```
Out[43]:  Vote_Average
          not_popular    2467
          popular        2450
          average        2412
          below_avg      2398
          Name: count, dtype: int64
```

```
In [45]: # dropping NaNs
         df.dropna(inplace = True)

# confirming df.isna().sum()
```

```
Out[45]:  Release_Date    0
          Title           0
          Popularity      0
          Vote_Count      0
          Vote_Average     0
          Genre            0
          dtype: int64
```

```
In [47]: df.head()
```

Out[47]:

	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

we'd split genres into a list and then explode our dataframe to have only one genre per row for ezch movie

```
In [52]: # 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[52]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre

0	2021	Spider-Man: No Way Home	5083.954	8940	popular	Action

```
# casting column into category
df['Genre'] = df['Genre'].astype('category')

# confirming changes
df['Genre'].dtypes
```

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 [55]:

```
Out[55]: CategoricalDtype(categories=['Action', 'Adventure', 'Animation', 'Comedy', 'Cri
          me',
                            'Documentary', 'Drama', 'Family', 'Fantasy', 'History',
                            'Horror', 'Music', 'Mystery', 'Romance', 'Science Fiction',
                            'TV Movie', 'Thriller', 'War', 'Western'],
          , ordered=False, categories_dtype=object)
```

In [57]:
```
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 [59]:
```
df.nunique()
```

```
Out[59]: Release_Date     100 Title
          9415
          Popularity       8088
          Vote_Count       3265
          Vote_Average        4
          Genre              19
          dtype: int64
```

Now that our dataset is clean and tidy, we are left with a total of 6 columns and 25551 rows to dig into during our analysis

Data Visualization

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

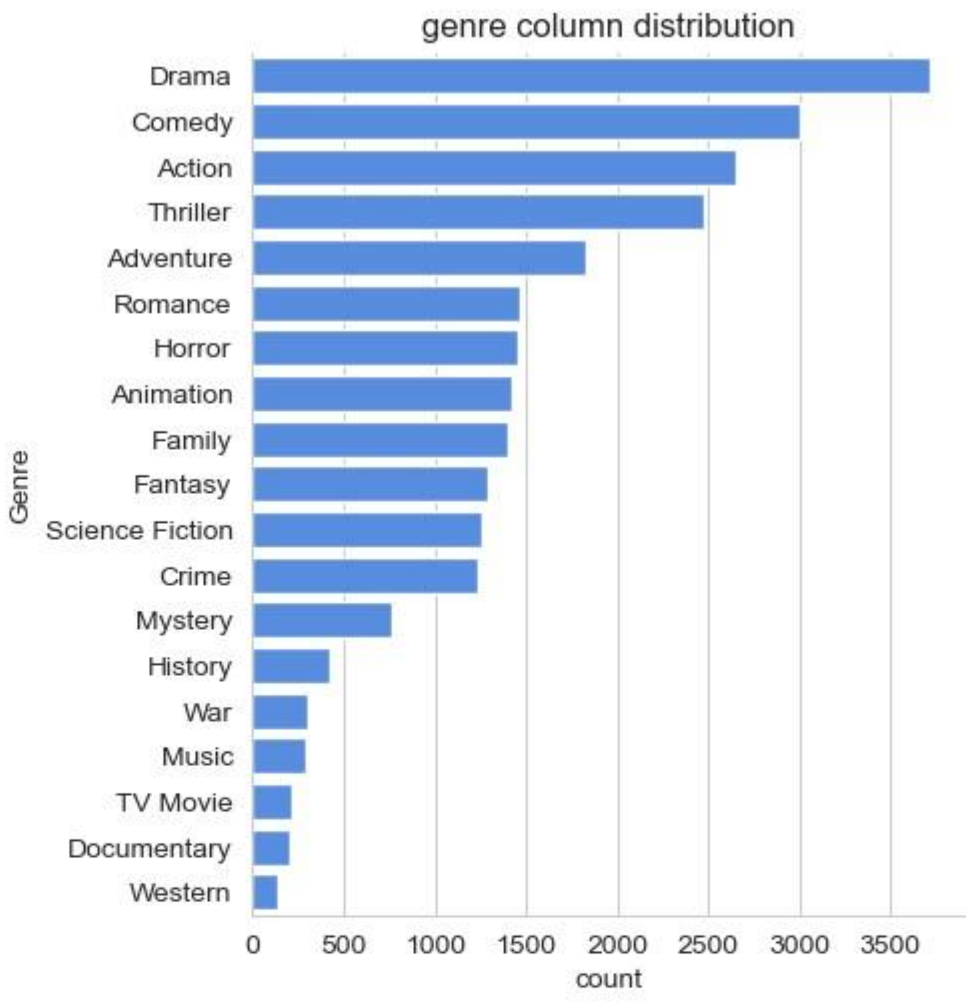
```
In [62]: # setting up seaborn configurations
         sns.set_style('whitegrid')
```

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

```
In [65]: # showing stats. on genre column
         df['Genre'].describe()
```

```
Out[65]: count      25552 unique
          19 top       Drama freq
          3715 Name: Genre, dtype:
          object
```

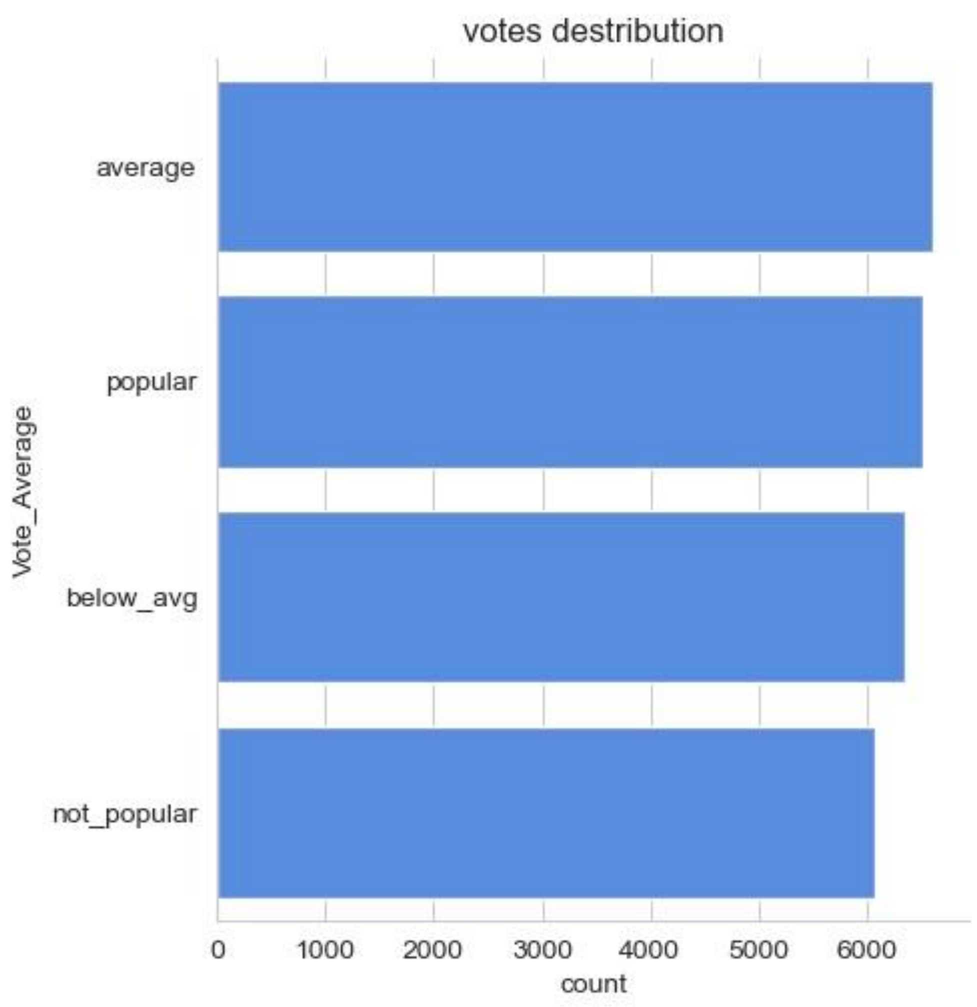
```
In [67]: # visualizing genre column
         sns.catplot(y = 'Genre', data = df, kind = 'count',
         order = df['Genre'].value_counts().index,
         color = '#4287f5') plt.title('genre column
         distribution') plt.show()
```



- we can notice from the above visual that `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` ?

In [71]:
```
# visualizing vote_average column
sns.catplot(y = 'Vote_Average', data = df, kind = 'count',
order = df['Vote_Average'].value_counts().index,
color = '#4287f5') plt.title('votes destribution') plt.show()
```



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

In [74]:
```
# checking max popularity in dataset df[df['Popularity']
== df['Popularity'].max()]
```

Out[74]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre
0		Spider-Man: 2021	5083.954	8940	popular	Action No Way Home
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

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

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

its genre?

In [86]:

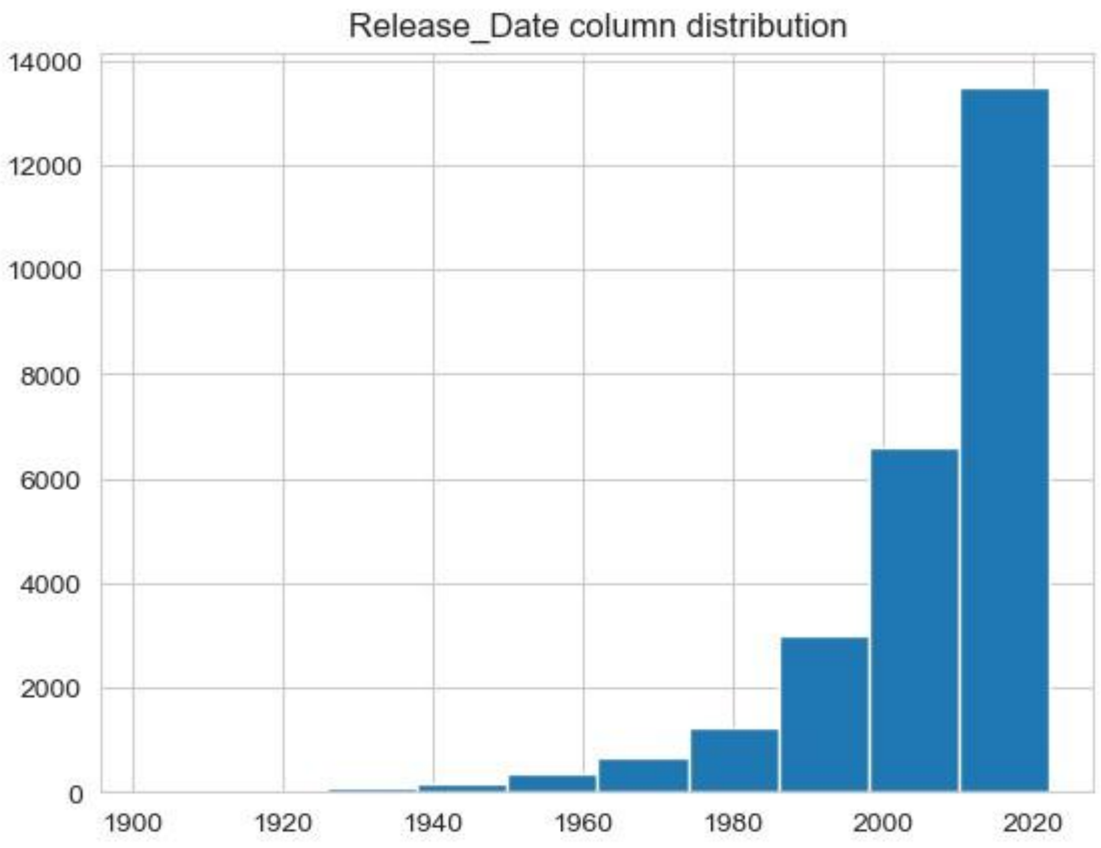
```
Out[86]:
```

	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

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

Q5: Which year has the most filmmed movies?

```
In [82]:
```



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` .

Q3: 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`.

Q4: Which year has the most filmmed movies?

year `2020` has the highest filmming rate in our dataset.

In [ ]:

```
```