```
# importing lib.
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

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

	Release_Date	Title	Overview	Popularity	Vote_Count	Vote_Average	Original_Language	Genre	
0	2021-12-15	Spider-Man: No Way Home	Peter Parker is unmasked and no longer able to...	5083.954	8940	8.3	en	Action, Adventure, Science Fiction	https://image.tmdb.org/t/p/original/1
1	2022-03-01	The Batman	In his second year of fighting crime, Batman u...	3827.658	1151	8.1	en	Crime, Mystery, Thriller	https://image.tmdb.org/t/p/original/74
			Stranded at a rest stop in						

```
# 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
```

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

	Genre
0	Action, Adventure, Science Fiction
1	Crime, Mystery, Thriller
2	Thriller
3	Animation, Comedy, Family, Fantasy
4	Action, Adventure, Thriller, War

dtype: object

```
# check for duplicated rows
df.duplicated().sum()
```

```
np.int64(0)
```

```
# exploring summary statistics
df.describe()
```

	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
- Genre column has comma saperated values and white spaces that needs to be hand
- Vote_Average bettter be categorised for proper analysis.
- there is noticable outliers in Popularity column
- there is noticable outliers in Popularity column
- Overview, Original_Languege 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
- we have a dataframe consisting of 9827 rows and 9 columns.
- our dataset looks a bit tidy with no NaNs nor duplicated values.

Data Cleaning

```
df.head()
```

	Release_Date	Title	Overview	Popularity	Vote_Count	Vote_Average	Original_Language	Genre	
0	2021-12-15	Spider-Man: No Way Home	Peter Parker is unmasked and no longer able to...	5083.954	8940	8.3	en	Action, Adventure, Science Fiction	https://image.tmdb.org/t/p/original/1
1	2022-03-01	The Batman	In his second year of fighting crime, Batman u...	3827.658	1151	8.1	en	Crime, Mystery, Thriller	https://image.tmdb.org/t/p/original/74
			Stranded at a rest stop in						

```
# casting column a
df['Release_Date'] = pd.to_datetime(df['Release_Date'])
# confirming changes
print(df['Release_Date'].dtypes)
```

```
datetime64[ns]
```

```
df['Release_Date'] = df['Release_Date'].dt.year
df['Release_Date'].dtypes
```

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

```
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
```

```
df.head()
```

	Release_Date	Title	Overview	Popularity	Vote_Count	Vote_Average	Original_Language	Genre	
0	2021	Spider-Man: No Way Home	Peter Parker is unmasked and no longer able to...	5083.954	8940	8.3	en	Action, Adventure, Science Fiction	https://image.tmdb.org/t/p/original/1
1	2022	The Batman	In his second year of fighting crime, Batman u...	3827.658	1151	8.1	en	Crime, Mystery, Thriller	https://image.tmdb.org/t/p/original/74
			Stranded at						

```
# 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
```

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

```
df.head()
```

	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.

```
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



# 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()
```

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

```
df.head()
```

	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

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

Vote_Average	count
not_popular	2467
popular	2450
average	2412
below_avg	2398

dtype: int64

```
# dropping NaNs
df.dropna(inplace = True)
# confirming
df.isna().sum()
```

	0
Release_Date	0
Title	0
Popularity	0
Vote_Count	0
Vote_Average	0
Genre	0

dtype: int64

```
df.head()
```

	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

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

	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

```
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  object
dtypes: category(1), float64(1), int32(1), int64(1), object(2)
memory usage: 923.6+ KB
```

```
df.nunique()
```

	0
Release_Date	100
Title	9415
Popularity	8088
Vote_Count	3265
Vote_Average	4
Genre	19

dtype: int64

Data Visualization

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

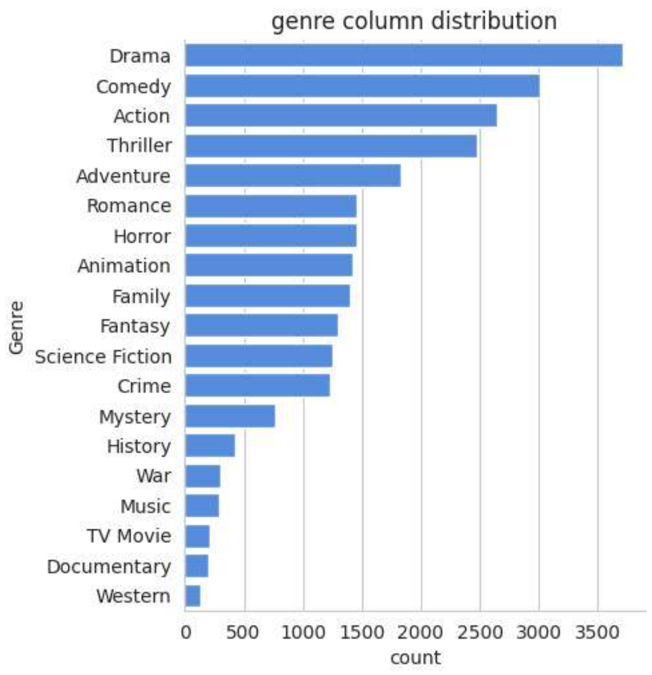
Q1: What is the most frequent genre in the dataset?

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

	Genre
count	25552
unique	19
top	Drama
freq	3715

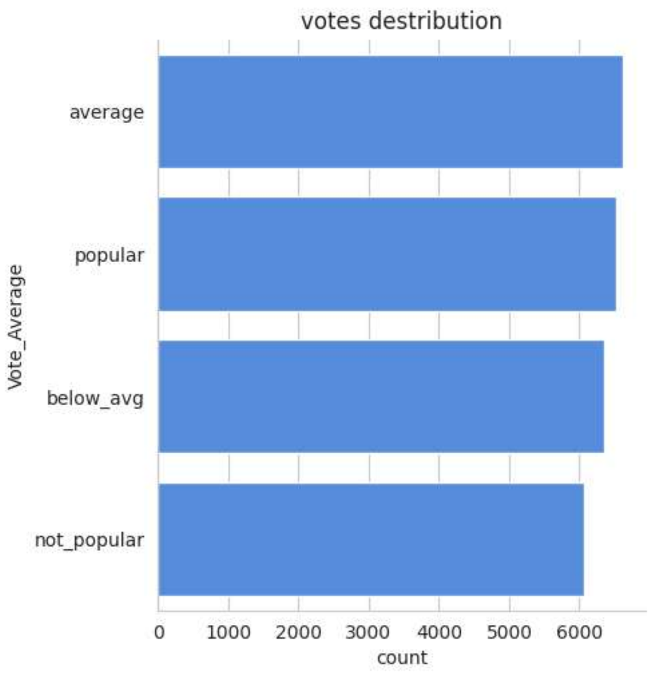
dtype: object

```
# 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()
```



Q2: What genres has highest votes ?

```
# 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 ?

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

	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

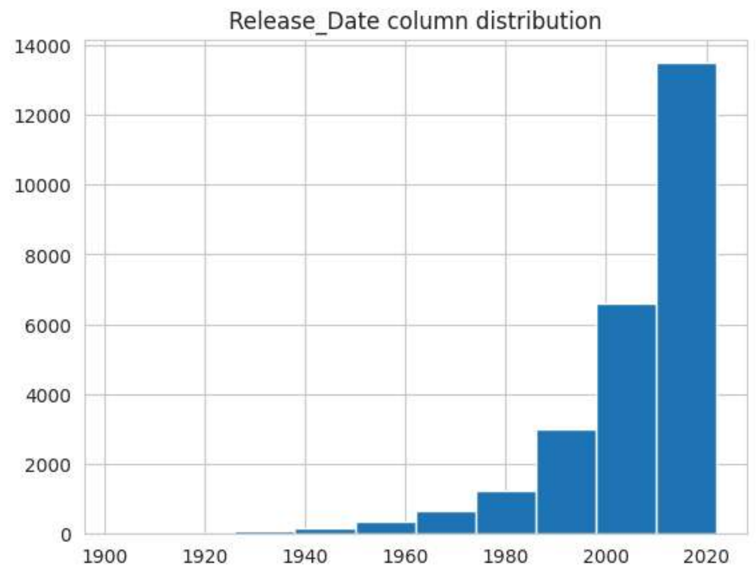
Q4: What movie got the lowest popularity? what's its genre?

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

	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

Q5: Which year has the most filmmed movies?

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


Release_Date column distribution