```
from google.colab import drive
drive.mount('/content/drive')
```

```
Drive already mounted at /content/drive; to attempt to forcibly remount, call drive.mount("/content/drive", force_remount=True).
```

```
import pandas as pd
```

```
df = pd.read_csv('/content/drive/MyDrive/intro_data_science/Project/Resume Projects/Movies/moviedb.csv')
```

```
df.head()
```

	Unnamed: 0	id	title	overview	release_date	popularity	poster_path	vote_average	vote_count
0	0	24438	Did You Hear About the Morgans?	New Yorkers Paul and Meryl Morgan seem to have...	2009-12-17	14.832	/f4ueTTP7pCLau2hoAGMuzrgg8rL.jpg	5.369	911

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+ Code + Text

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 17620 entries, 0 to 17619
Data columns (total 9 columns):
 #   Column        Non-Null Count  Dtype
---  ------        --------------  -----
 0   Unnamed: 0    17620 non-null  int64
 1   id            17620 non-null  int64
 2   title         17620 non-null  object
 3   overview      17619 non-null  object
 4   release_date  17620 non-null  object
 5   popularity    17620 non-null  float64
 6   poster_path   17616 non-null  object
 7   vote_average  17620 non-null  float64
 8   vote_count    17620 non-null  int64
dtypes: float64(2), int64(3), object(4)
memory usage: 1.2+ MB
```

```
df.isnull().sum()
```

	0
Unnamed: 0	0
id	0
title	0
overview	1
release_date	0
popularity	0
poster_path	4
vote_average	0
vote_count	0

dtype: int64

```
#dropping the following columns as they are not relevant to analysis
df = df.drop(['Unnamed: 0', 'poster_path', 'id'], axis=1)
```

```
df.shape
```

```
(17620, 6)
```

```
df.duplicated().sum()
```

```
np.int64(8579)
```

```
df = df.drop_duplicates() #dropped 8579 duplicated values
```

```
df.duplicated().sum()
```

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

```
df.describe()
```

	popularity	vote_average	vote_count
count	9041.000000	9041.000000	9041.000000
mean	28.535513	6.645599	2000.366221
std	45.345257	0.789913	3154.559308
min	0.600000	3.699000	300.000000
25%	14.528000	6.110000	469.000000
50%	19.861000	6.664000	847.000000
75%	29.767000	7.215000	1982.000000
max	1857.801000	8.708000	34961.000000

- Both popularity and vote_count are highly skewed with many movies having low values and a few dominating the upper end.
- vote_average is more stable and normally distributed, with most ratings between 6 and 7.
- There is likely a positive correlation between popularity and vote count (popular movies get more votes).

```
df['release_date'] = pd.to_datetime(df['release_date'])
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'>
Index: 9041 entries, 0 to 17619
Data columns (total 6 columns):
 #   Column        Non-Null Count  Dtype  
---  ------        --------------  -----  
 0   title         9041 non-null   object 
 1   overview      9040 non-null   object 
 2   release_date  9041 non-null   int32  
 3   popularity    9041 non-null   float64
 4   vote_average  9041 non-null   float64
 5   vote_count    9041 non-null   int64  
dtypes: float64(2), int32(1), int64(1), object(2)
memory usage: 459.1+ KB
```

```
df.head()
```

	title	overview	release_date	popularity	vote_average	vote_count
0	Did You Hear About the Morgans?	New Yorkers Paul and Meryl Morgan seem to have...	2009	14.832	5.369	911
1	The Next Karate Kid	Mr. Miyagi decides to take Julie, a troubled t...	1994	23.460	5.367	939
2	Tekken	In the year of 2039, after World Wars destroy ...	2010	17.098	5.365	635
3	Cold Creek Manor	A family moves from New York into an old mansi...	2003	15.491	5.365	437
4	Max Payne	A DEA agent whose family was slain as part of ...	2008	17.068	5.364	1927

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Categorize Vote Average column We would cut the vote_average values and make 4 categories: popular, avergae, below_avg and not_popular to describe it more using categorize_col() function provided above

```
def categorize_col(df, col, labels):
    """
    categorize a certain column based on its quartiles

    Args:
    (df)  df - dataframe we are processing
    (col) str - to be categorized 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 clumn accordingly
    limits = [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], limits, labels = labels, duplicates='drop')
    return df


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

# categorize column baesd on labls and edges
categorize_col(df, 'vote_average', labels)

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

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

```
df.head()
```

	title	overview	release_date	popularity	vote_average	vote_count
0	Did You Hear About the Morgans?	New Yorkers Paul and Meryl Morgan seem to have...	2009	14.832	not_popular	911
1	The Next Karate Kid	Mr. Miyagi decides to take Julie, a troubled t...	1994	23.460	not_popular	939
2	Tekken	In the year of 2039, after World Wars destroy ...	2010	17.098	not_popular	635
3	Cold Creek Manor	A family moves from New York into an old mansi...	2003	15.491	not_popular	437
4	Max Payne	A DEA agent whose family was slain as part of ...	2008	17.068	not_popular	1927

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```
df['vote_average'].value_counts()
```

vote_average	count
average	2264
not_popular	2261
below_avg	2260
popular	2255

dtype: int64

```
df['vote_average'].dropna()
```

	vote_average
0	not_popular
1	not_popular
2	not_popular
3	not_popular
4	not_popular
...	...
17614	not_popular
17615	not_popular
17616	not_popular
17617	not_popular
17618	not_popular

9040 rows × 1 columns

dtype: category

```
df.isna().sum()
```

	0
title	0
overview	1
release_date	0
popularity	0
vote_average	1
vote_count	0

dtype: int64

```
df[['vote_average','overview']].dropna()
```

	vote_average	overview
0	not_popular	New Yorkers Paul and Meryl Morgan seem to have...
1	not_popular	Mr. Miyagi decides to take Julie, a troubled t...
2	not_popular	In the year of 2039, after World Wars destroy ...
3	not_popular	A family moves from New York into an old mansi...
4	not_popular	A DEA agent whose family was slain as part of ...
...	...	...
17614	not_popular	When young Joshua learns that he will be going...
17615	not_popular	When Edward, Peter, Lucy and Susan each follow...
17616	not_popular	Five deadbeat, sex-crazed friends forge their ...
17617	not_popular	Taking inspiration from The Human Centipede fi...
17618	not_popular	A teenager and his mother find themselves besi...

9039 rows × 2 columns

Data Visualisation

```
import matplotlib.pyplot as plt
import seaborn as sns

sns.set_style('whitegrid')
```

Which movie got the lowest popularity

```
df[df['popularity'] == df['popularity'].max()]
```

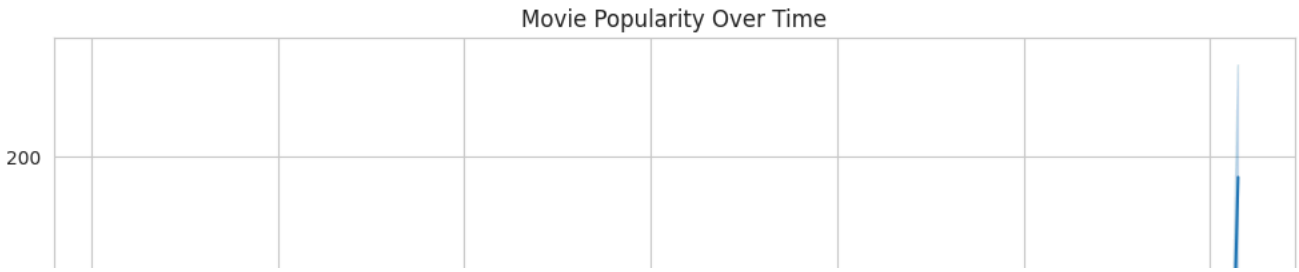
	title	overview	release_date	popularity	vote_average	vote_count
5492	Rebel Moon - Part One: A Child of	When a peaceful colony on the edge of the	2023	1857.801	below_avg	794

Which movie got the lowest popularity

```
df[df['popularity'] == df['popularity'].min()]
```

	title	overview	release_date	popularity	vote_average	vote_count
37	Grave of the Fireflies	In the final months of World War II, 14-year-o...	1988	0.6	popular	5009
69	Hotarubi no Mori e	One hot summer day a little girl gets lost in ...	2011	0.6	popular	1017
3294	Odds and Evens	A bumbling government agent recruits a trucker...	1978	0.6	average	360
3454	Tracks	Accompanied only by her faithful dog and four ...	2013	0.6	average	476
7331	G.B.F.	The bitter fight for supremacy between the thr...	2014	0.6	not_popular	381
8451	Serial Teachers	With only 12 percent of its pupils obtaining t...	2013	0.6	not_popular	1163

```
plt.figure(figsize=(12, 6))
sns.lineplot(x='release_date', y='popularity', data=df)
plt.title('Movie Popularity Over Time')
plt.xlabel('Release Year')
plt.ylabel('Popularity')
plt.show()
```


Movie Popularity Over Time
200