

Importing libraries

```
In [15]: import numpy as np
import pandas as pd
```

Preprocessing

```
In [16]: movies = pd.read_csv('tmdb_5000_movies.csv')
credits_raw = pd.read_csv('tmdb_5000_credits.csv')
```

```
In [19]: movies.head()
```

| | budget | genres | homepage | id | keywords | original_language | original_title | overview | popularity | production_companies | production_countries | release_date | revenue | runtime | spoken_languages |
|----------|-----------|---|--|--------|---|-------------------|--|---|------------|--|--|--------------|------------|---------|---|
| Out[19]: | | | | | | | | | | | | | | | |
| 0 | 237000000 | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}] | http://www.avatarmovie.com/ | 19995 | [{"id": 1463, "name": "culture clash"}, {"id": 726, "name": "ocean"}] | en | Avatar | In the 22nd century, a paraplegic Marine is d... | 150.437577 | [{"name": "Ingenious Film Partners", "id": 289}, {"name": "United States o..."}] | [{"iso_3166_1": "US", "name": "United States o..."}] | 2009-12-10 | 2787865087 | 162.0 | [{"iso_639_1": "en", "name": "English"}, {"iso_639_1": "tko..."}] |
| 1 | 300000000 | [{"id": 12, "name": "Adventure"}, {"id": 14, "name": "Action"}] | http://disney.go.com/disneypictures/pirates/ | 285 | [{"id": 270, "name": "ocean"}, {"id": 726, "name": "ha..."}, {"id": 14, "name": "adventure"}] | en | Pirates of the Caribbean: At World's End | Pirates of the Caribbean: long believed to be dead, ha... | 139.082615 | [{"name": "Walt Disney Pictures", "id": 2}, {"name": "United States o..."}] | [{"iso_3166_1": "US", "name": "United States o..."}] | 2007-05-19 | 96100000 | 169.0 | [{"iso_639_1": "en", "name": "English"}, {"iso_639_1": "tko..."}] |
| 2 | 245000000 | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}] | http://www.sonyictures.com/movies/spectre/ | 206647 | [{"id": 470, "name": "spy"}, {"id": 818, "name": "ocean"}, {"id": 818, "name": "novel"}] | en | Spectre | A cryptic message from Bond's past sends him o... | 107.367768 | [{"name": "Columbia Pictures", "id": 5}, {"name": "United Kingdom..."}] | [{"iso_3166_1": "US", "name": "United Kingdom..."}] | 2015-10-26 | 880674609 | 148.0 | [{"iso_639_1": "en", "name": "English"}, {"iso_639_1": "frn..."}] |
| 3 | 250000000 | [{"id": 28, "name": "Action"}, {"id": 80, "name": "Crime"}] | http://www.thedarkknightseries.com/ | 49026 | [{"id": 849, "name": "dc comics"}, {"id": 853, "name": "novel"}] | en | The Dark Knight Rises | Following the death of District Attorney Harvey... | 112.312950 | [{"name": "Legendary Pictures", "id": 923}, {"name": "United States o..."}] | [{"iso_3166_1": "US", "name": "United States o..."}] | 2012-07-16 | 109493099 | 165.0 | [{"iso_639_1": "en", "name": "English"}, {"iso_639_1": "tko..."}] |
| 4 | 260000000 | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}] | http://movies.disney.com/john-carter | 48529 | [{"id": 818, "name": "based on novel"}, {"id": 818, "name": "war"}, {"id": 818, "name": "former military ca..."}] | en | John Carter | John Carter is a war-weary, former military ca... | 43.926995 | [{"name": "Walt Disney Pictures", "id": 2}, {"name": "United States o..."}] | [{"iso_3166_1": "US", "name": "United States o..."}] | 2012-03-07 | 284139100 | 132.0 | [{"iso_639_1": "en", "name": "English"}, {"iso_639_1": "tko..."}] |

```
In [19]: credits.head()
```

| | movie_id | title | cast | crew |
|----------|----------|--|--|------|
| Out[19]: | | | | |
| 0 | 19995 | Avatar | [{"cast_id": 242, "character": "Jake Sully", "..."}, {"credit_id": "526e4809251416c750ac23", "de..."}] | |
| 1 | 285 | Pirates of the Caribbean: At World's End | [{"cast_id": 4, "character": "Captain Jack Spa...", "credit_id": "526e4232ca36847800b679", "de..."}] | |
| 2 | 206647 | Spectre | [{"cast_id": 1, "character": "James Bond", "..."}, {"credit_id": "54805967ca36847800b679", "de..."}] | |
| 3 | 49026 | The Dark Knight Rises | [{"cast_id": 2, "character": "Bruce Wayne / Ba...", "credit_id": "526e4781ca3684781398d3", "de..."}] | |
| 4 | 49529 | John Carter | [{"cast_id": 5, "character": "John Carter", "..."}, {"credit_id": "526e478ac3a368478139ac3", "de..."}] | |

```
In [111]: movies = merge(movies, credits, on='title')
```

```
In [112]: movies.head()
```

| | budget | genres | homepage | id | keywords | original_language | original_title | overview | popularity | production_companies | ... | runtime | spoken_languages | status | tagline | title |
|-----------|-----------|---|--|--------|---|-------------------|--|---|------------|--|-----|---------|---|----------|--|---|
| Out[112]: | | | | | | | | | | | | | | | | |
| 0 | 237000000 | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}] | http://www.avatarmovie.com/ | 19995 | [{"id": 1463, "name": "culture clash"}, {"id": 726, "name": "ocean"}] | en | Avatar | In the 22nd century, a paraplegic Marine is d... | 150.437577 | [{"name": "Ingenious Film Partners", "id": 289}, {"name": "United States o..."}] | ... | 162.0 | [{"iso_639_1": "en", "name": "English"}, {"iso_639_1": "tko..."}] | Released | Enter the World of Pandora. | Avata |
| 1 | 300000000 | [{"id": 12, "name": "Adventure"}, {"id": 14, "name": "Action"}] | http://disney.go.com/disneypictures/pirates/ | 285 | [{"id": 270, "name": "ocean"}, {"id": 726, "name": "ha..."}, {"id": 14, "name": "adventure"}] | en | Pirates of the Caribbean: At World's End | Pirates of the Caribbean: long believed to be dead, ha... | 139.082615 | [{"name": "Walt Disney Pictures", "id": 2}, {"name": "United States o..."}] | ... | 169.0 | [{"iso_639_1": "en", "name": "English"}, {"iso_639_1": "tko..."}] | Released | At the end of the world, the Caribbean adventure begins. | Pirates o... of the Caribbean: At World's End |
| 2 | 245000000 | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}] | http://www.sonyictures.com/movies/spectre/ | 206647 | [{"id": 470, "name": "spy"}, {"id": 818, "name": "ocean"}, {"id": 818, "name": "novel"}] | en | Spectre | A cryptic message from Bond's past sends him o... | 107.367768 | [{"name": "Columbia Pictures", "id": 5}, {"name": "United Kingdom..."}] | ... | 148.0 | [{"iso_639_1": "en", "name": "English"}, {"iso_639_1": "frn..."}] | Released | A Plan No One Escapes | Spectr |
| 3 | 250000000 | [{"id": 28, "name": "Action"}, {"id": 80, "name": "Crime"}] | http://www.thedarkknightseries.com/ | 49026 | [{"id": 849, "name": "dc comics"}, {"id": 853, "name": "novel"}] | en | The Dark Knight Rises | Following the death of District Attorney Harvey... | 112.312950 | [{"name": "Legendary Pictures", "id": 923}, {"name": "United States o..."}] | ... | 165.0 | [{"iso_639_1": "en", "name": "English"}, {"iso_639_1": "tko..."}] | Released | The Legend Ends | The Dark Knight Rises |
| 4 | 260000000 | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}] | http://movies.disney.com/john-carter | 48529 | [{"id": 818, "name": "based on novel"}, {"id": 818, "name": "war"}, {"id": 818, "name": "former military ca..."}] | en | John Carter | John Carter is a war-weary, former military ca... | 43.926995 | [{"name": "Walt Disney Pictures", "id": 2}, {"name": "United States o..."}] | ... | 132.0 | [{"iso_639_1": "en", "name": "English"}, {"iso_639_1": "tko..."}] | Released | Lost in another world. | John Carter |

5 rows × 17 columns

```
In [15]: movies.describe()
```

| | budget | id | popularity | revenue | runtime | vote_average | vote_count | movie_id |
|----------|--------------|---------------|-------------|--------------|-------------|--------------|--------------|---------------|
| Out[15]: | | | | | | | | |
| count | 4.800000e+03 | 4809.000000 | 4809.000000 | 4.800000e+03 | 4807.000000 | 4809.000000 | 4809.000000 | 4809.000000 |
| mean | 2.902780e+07 | 57120.571429 | 21.491664 | 8.227515e+07 | 106.882255 | 6.092514 | 690.331670 | 57120.571429 |
| std | 4.070047e+07 | 88653.369649 | 31.803366 | 1.626379e+08 | 22.602335 | 1.193969 | 1234.187111 | 88653.369649 |
| min | 0.000000e+00 | 5.000000 | 0.000000 | 0.000000e+00 | 0.000000 | 0.000000 | 0.000000 | 5.000000 |
| 25% | 7.800000e+05 | 9012.000000 | 4.667230 | 0.000000e+00 | 84.000000 | 5.600000 | 54.000000 | 9012.000000 |
| 50% | 1.500000e+07 | 14624.000000 | 12.821594 | 1.917000e+07 | 103.000000 | 6.200000 | 235.000000 | 14624.000000 |
| 75% | 4.000000e+07 | 56595.000000 | 28.350529 | 9.293157e+07 | 118.000000 | 6.800000 | 737.000000 | 56595.000000 |
| max | 3.800000e+08 | 459448.000000 | 575.81305 | 2.787965e+09 | 338.000000 | 10.000000 | 13752.000000 | 459448.000000 |

```
In [19]: movies[movies[["movie_id", "title", "overview", "genres", "keywords", "cast", "crew"]]
```

```
In [19]: movies.head()
```

| | movie_id | title | overview | genres | keywords | cast | crew |
|----------|----------|--|--|---|---|--|------|
| Out[19]: | | | | | | | |
| 0 | 19995 | Avatar | In the 22nd century, a paraplegic Marine is d... | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}] | [{"id": 1463, "name": "culture clash"}, {"id": 726, "name": "ocean"}] | [{"cast_id": 242, "character": "Jake Sully", "..."}, {"credit_id": "526e4809251416c750ac23", "de..."}] | |
| 1 | 285 | Pirates of the Caribbean: At World's End | Captain Barbossa, long believed to be dead, ha... | [{"id": 12, "name": "Adventure"}, {"id": 14, "name": "Action"}] | [{"id": 270, "name": "ocean"}, {"id": 726, "name": "ha..."}] | [{"cast_id": 4, "character": "Captain Jack Spa...", "credit_id": "526e4232ca36847800b679", "de..."}] | |
| 2 | 206647 | Spectre | A cryptic message from Bond's past sends him o... | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}] | [{"id": 470, "name": "spy"}, {"id": 818, "name": "ocean"}, {"id": 818, "name": "novel"}] | [{"cast_id": 1, "character": "James Bond", "..."}, {"credit_id": "54805967ca36847800b679", "de..."}] | |
| 3 | 49026 | The Dark Knight Rises | Following the death of District Attorney Harvey... | [{"id": 28, "name": "Action"}, {"id": 80, "name": "Crime"}] | [{"id": 849, "name": "dc comics"}, {"id": 853, "name": "novel"}] | [{"cast_id": 2, "character": "Bruce Wayne / Ba...", "credit_id": "526e4781ca3684781398d3", "de..."}] | |
| 4 | 49529 | John Carter | John Carter is a war-weary, former military ca... | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}] | [{"id": 818, "name": "based on novel"}, {"id": 818, "name": "war"}, {"id": 818, "name": "former military ca..."}] | [{"cast_id": 5, "character": "John Carter", "..."}, {"credit_id": "526e478ac3a368478139ac3", "de..."}] | |

```
In [24]: movies.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 4809 entries, 0 to 4808
Data columns (total 7 columns):
 #   Column        Non-Null Count  Dtype
---  --
 0   movie_id      4809 non-null    int64
 1   title         4809 non-null    object
 2   overview      4806 non-null    object
 3   genres        4809 non-null    object
 4   keywords      4809 non-null    object
 5   cast          4809 non-null    object
 6   crew          4809 non-null    object
dtypes: int64(1), object(6)
memory usage: 263.1+ KB
```

```
In [26]: movies.isnull().sum()
```

```
Out[26]:
movie_id      0
title         0
overview      3
genres        0
keywords      0
cast          0
crew          0
dtypes: int64
```

```
In [28]: movies.dropna(inplace=True)
movies.dropna(inplace=True)
warnings.filterwarnings('ignore')
```

```
In [30]: movies.duplicated().sum()
```

```
Out[30]: 0
```

```
In [32]: # listing genres
```

```
In [34]: movies.iloc[0].genres
```

```
Out[34]: '[{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}, {"id": 14, "name": "Fantasy"}, {"id": 8, "name": "Science Fiction"}]'
```

```
In [36]: import ast
```

```
In [38]: def convert(obj):
In[]:
    if isinstance(obj, list):
        for i in ast.literal_eval(obj):
            i.append(i['name'])
        return obj
```

```
In [40]: movies['genres'] = movies['genres'].apply(convert)
```

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

| | movie_id | title | overview | genres | keywords | cast | crew |
|----------|----------|--|--|--|---|--|------|
| Out[41]: | | | | | | | |
| 0 | 19995 | Avatar | In the 22nd century, a paraplegic Marine is d... | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}, {"id": 14, "name": "Fantasy"}, {"id": 8, "name": "Science Fiction"}] | [{"id": 1463, "name": "culture clash"}, {"id": 726, "name": "ocean"}] | [{"cast_id": 242, "character": "Jake Sully", "..."}, {"credit_id": "526e4809251416c750ac23", "de..."}] | |
| 1 | 285 | Pirates of the Caribbean: At World's End | Captain Barbossa, long believed to be dead, ha... | [{"id": 12, "name": "Adventure"}, {"id": 14, "name": "Fantasy"}, {"id": 8, "name": "Science Fiction"}] | [{"id": 270, "name": "ocean"}, {"id": 726, "name": "ha..."}] | [{"cast_id": 4, "character": "Captain Jack Spa...", "credit_id": "526e4232ca36847800b679", "de..."}] | |
| 2 | 206647 | Spectre | A cryptic message from Bond's past sends him o... | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}, {"id": 8, "name": "Crime"}] | [{"id": 470, "name": "spy"}, {"id": 818, "name": "ocean"}, {"id": 818, "name": "novel"}] | [{"cast_id": 1, "character": "James Bond", "..."}, {"credit_id": "54805967ca36847800b679", "de..."}] | |
| 3 | 49026 | The Dark Knight Rises | Following the death of District Attorney Harvey... | [{"id": 28, "name": "Action"}, {"id": 80, "name": "Crime"}, {"id": 12, "name": "Drama"}, {"id": 14, "name": "Thriller"}] | [{"id": 849, "name": "dc comics"}, {"id": 853, "name": "novel"}] | [{"cast_id": 2, "character": "Bruce Wayne / Ba...", "credit_id": "526e4781ca3684781398d3", "de..."}] | |
| 4 | 49529 | John Carter | John Carter is a war-weary, former military ca... | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}, {"id": 8, "name": "Science Fiction"}] | [{"id": 818, "name": "based on novel"}, {"id": 818, "name": "war"}, {"id": 818, "name": "former military ca..."}] | [{"cast_id": 5, "character": "John Carter", "..."}, {"credit_id": "526e478ac3a368478139ac3", "de..."}] | |

```
In [42]: movies['keywords'] = movies['keywords'].apply(convert)
```

```
Out[42]:
```

```
In [43]: movies.head()
```

| | movie_id | title | overview | genres | keywords | cast | crew |
|----------|----------|--|--|--|---|--|------|
| Out[43]: | | | | | | | |
| 0 | 19995 | Avatar | In the 22nd century, a paraplegic Marine is d... | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}, {"id": 14, "name": "Fantasy"}, {"id": 8, "name": "Science Fiction"}] | [{"id": 1463, "name": "culture clash"}, {"id": 726, "name": "ocean"}] | [{"cast_id": 242, "character": "Jake Sully", "..."}, {"credit_id": "526e4809251416c750ac23", "de..."}] | |
| 1 | 285 | Pirates of the Caribbean: At World's End | Captain Barbossa, long believed to be dead, ha... | [{"id": 12, "name": "Adventure"}, {"id": 14, "name": "Fantasy"}, {"id": 8, "name": "Science Fiction"}] | [{"id": 270, "name": "ocean"}, {"id": 726, "name": "ha..."}] | [{"cast_id": 4, "character": "Captain Jack Spa...", "credit_id": "526e4232ca36847800b679", "de..."}] | |
| 2 | 206647 | Spectre | A cryptic message from Bond's past sends him o... | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}, {"id": 8, "name": "Crime"}] | [{"id": 470, "name": "spy"}, {"id": 818, "name": "ocean"}, {"id": 818, "name": "novel"}] | [{"cast_id": 1, "character": "James Bond", "..."}, {"credit_id": "54805967ca36847800b679", "de..."}] | |
| 3 | 49026 | The Dark Knight Rises | Following the death of District Attorney Harvey... | [{"id": 28, "name": "Action"}, {"id": 80, "name": "Crime"}, {"id": 12, "name": "Drama"}, {"id": 14, "name": "Thriller"}] | [{"id": 849, "name": "dc comics"}, {"id": 853, "name": "novel"}] | [{"cast_id": 2, "character": "Bruce Wayne / Ba...", "credit_id": "526e4781ca3684781398d3", "de..."}] | |
| 4 | 49529 | John Carter | John Carter is a war-weary, former military ca... | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}, {"id": 8, "name": "Science Fiction"}] | [{"id": 818, "name": "based on novel"}, {"id": 818, "name": "war"}, {"id": 818, "name": "former military ca..."}] | [{"cast_id": 5, "character": "John Carter", "..."}, {"credit_id": "526e478ac3a368478139ac3", "de..."}] | |

```
In [46]: def convert(obj):
In[]:
    if isinstance(obj, list):
        for i in ast.literal_eval(obj):
            if isinstance(i, dict):
                i['name'] = convert(i['name'])
            else:
                break
        return obj
```

```
In [47]: movies['cast'] = movies['cast'].apply(convert)
```

```
Out[47]:
```

| | movie_id | title | overview | genres | keywords | cast | crew |
|----------|----------|--|--|--|---|--|------|
| Out[47]: | | | | | | | |
| 0 | 19995 | Avatar | In the 22nd century, a paraplegic Marine is d... | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}, {"id": 14, "name": "Fantasy"}, {"id": 8, "name": "Science Fiction"}] | [{"id": 1463, "name": "culture clash"}, {"id": 726, "name": "ocean"}] | [{"cast_id": 242, "character": "Jake Sully", "..."}, {"credit_id": "526e4809251416c750ac23", "de..."}] | |
| 1 | 285 | Pirates of the Caribbean: At World's End | Captain Barbossa, long believed to be dead, ha... | [{"id": 12, "name": "Adventure"}, {"id": 14, "name": "Fantasy"}, {"id": 8, "name": "Science Fiction"}] | [{"id": 270, "name": "ocean"}, {"id": 726, "name": "ha..."}] | [{"cast_id": 4, "character": "Captain Jack Spa...", "credit_id": "526e4232ca36847800b679", "de..."}] | |
| 2 | 206647 | Spectre | A cryptic message from Bond's past sends him o... | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}, {"id": 8, "name": "Crime"}] | [{"id": 470, "name": "spy"}, {"id": 818, "name": "ocean"}, {"id": 818, "name": "novel"}] | [{"cast_id": 1, "character": "James Bond", "..."}, {"credit_id": "54805967ca36847800b679", "de..."}] | |
| 3 | 49026 | The Dark Knight Rises | Following the death of District Attorney Harvey... | [{"id": 28, "name": "Action"}, {"id": 80, "name": "Crime"}, {"id": 12, "name": "Drama"}, {"id": 14, "name": "Thriller"}] | [{"id": 849, "name": "dc comics"}, {"id": 853, "name": "novel"}] | [{"cast_id": 2, "character": "Bruce Wayne / Ba...", "credit_id": "526e4781ca3684781398d3", "de..."}] | |
| 4 | 49529 | John Carter | John Carter is a war-weary, former military ca... | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}, {"id": 8, "name": "Science Fiction"}] | [{"id": 818, "name": "based on novel"}, {"id": 818, "name": "war"}, {"id": 818, "name": "former military ca..."}] | [{"cast_id": 5, "character": "John Carter", "..."}, {"credit_id": "526e478ac3a368478139ac3", "de..."}] | |

```
In [52]: def fetch_director(obj):
In[]:
    if isinstance(obj, list):
        for i in ast.literal_eval(obj):
            if i['job'] == 'Director':
                i.append(i['name'])
            else:
                break
        return obj
```

```
In [53]: movies['crew'] = movies['crew'].apply(fetch_director)
```

```
Out[53]:
```

| | movie_id | title | overview | genres | keywords | cast | crew |
|----------|----------|--|--|--|---|--|------|
| Out[53]: | | | | | | | |
| 0 | 19995 | Avatar | In the 22nd century, a paraplegic Marine is d... | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}, {"id": 14, "name": "Fantasy"}, {"id": 8, "name": "Science Fiction"}] | [{"id": 1463, "name": "culture clash"}, {"id": 726, "name": "ocean"}] | [{"cast_id": 242, "character": "Jake Sully", "..."}, {"credit_id": "526e4809251416c750ac23", "de..."}] | |
| 1 | 285 | Pirates of the Caribbean: At World's End | Captain Barbossa, long believed to be dead, ha... | [{"id": 12, "name": "Adventure"}, {"id": 14, "name": "Fantasy"}, {"id": 8, "name": "Science Fiction"}] | [{"id": 270, "name": "ocean"}, {"id": 726, "name": "ha..."}] | [{"cast_id": 4, "character": "Captain Jack Spa...", "credit_id": "526e4232ca36847800b679", "de..."}] | |
| 2 | 206647 | Spectre | A cryptic message from Bond's past sends him o... | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}, {"id": 8, "name": "Crime"}] | [{"id": 470, "name": "spy"}, {"id": 818, "name": "ocean"}, {"id": 818, "name": "novel"}] | [{"cast_id": 1, "character": "James Bond", "..."}, {"credit_id": "54805967ca36847800b679", "de..."}] | |
| 3 | 49026 | The Dark Knight Rises | Following the death of District Attorney Harvey... | [{"id": 28, "name": "Action"}, {"id": 80, "name": "Crime"}, {"id": 12, "name": "Drama"}, {"id": 14, "name": "Thriller"}] | [{"id": 849, "name": "dc comics"}, {"id": 853, "name": "novel"}] | [{"cast_id": 2, "character": "Bruce Wayne / Ba...", "credit_id": "526e4781ca3684781398d3", "de..."}] | |
| 4 | 49529 | John Carter | John Carter is a war-weary, former military ca... | [{"id": 28, "name": "Action"}, {"id": 12, "name": "Adventure"}, {"id": 8, "name": "Science Fiction"}] | [{"id": 818, "name": "based on novel"}, {"id": 818, "name": "war"}, {"id": 818, "name": "former military ca..."}] | [{"cast_id": 5, "character": "John Carter", "..."}, {"credit_id": "526e478ac3a368478139ac3", "de..."}] | |

```
In [55]: movies['overview'] = movies['overview'].apply(lambda x: x.replace("\n", ""))
```

```
Out[55]:
```