zerotopandas-course-project

April 24, 2021

1 Netflix Movies & Tv Shows - Dataset

1.1 Data Preparation and Cleaning

Tasks:

- Load the dataset into a data frame using Pandas
- Explore the number of rows & columns, ranges of values etc.
- Handle missing, incorrect and invalid data
- Perform any additional steps (parsing dates, creating additional columns, merging multiple dataset etc.)

[2]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from matplotlib import style
style.use('dark_background')
```

1.1.1 Read Csv and Print Info

[3]:
```
netfx_df = pd.read_csv('netflix_titles.csv')
print("-------INFO------")
print(netfx_df.info())
```

```
-------INFO------
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 7787 entries, 0 to 7786
Data columns (total 12 columns):
 #   Column        Non-Null Count  Dtype
---  ------        --------------  -----
 0   show_id       7787 non-null   object
 1   type          7787 non-null   object
 2   title         7787 non-null   object
 3   director      5398 non-null   object
 4   cast          7069 non-null   object
 5   country       7280 non-null   object
 6   date_added    7777 non-null   object
 7   release_year  7787 non-null   int64
 8   rating        7780 non-null   object
```

```
 9   duration      7787 non-null   object
 10  listed_in     7787 non-null   object
 11  description   7787 non-null   object
dtypes: int64(1), object(11)
memory usage: 730.2+ KB
None
```

1.1.2 Description:

[4]:
```
print("-------Describe--------")
print(netfx_df.describe())
```

```
-------Describe--------
       release_year
count   7787.000000
mean    2013.932580
std        8.757395
min     1925.000000
25%     2013.000000
50%     2017.000000
75%     2018.000000
max     2021.000000
```

1.1.3 Drop Rows With Na Values

[5]:
```
print("Shape Before Filteration:")
print(netfx_df.shape)
netfx_df.dropna(inplace=True)
print("Shape After Filteration:")
print(netfx_df.shape)
```

```
Shape Before Filteration:
(7787, 12)
Shape After Filteration:
(4808, 12)
```

1.1.4 Columns

[6]:
```
print("Columns:")
print(netfx_df.columns)
```

```
Columns:
Index(['show_id', 'type', 'title', 'director', 'cast', 'country', 'date_added',
       'release_year', 'rating', 'duration', 'listed_in', 'description'],
      dtype='object')
```

1.1.5 Sample

[7]:
```
print("Sample:")
print(netfx_df.sample(2))
```

```
Sample:
     show_id   type                title      director  \
7667   s7668  Movie  World Trade Center  Oliver Stone
2084   s2085  Movie           F the Prom    Benny Fine

                                                  cast        country  \
7667  Nicolas Cage, Michael Peña, Maggie Gyllenhaal,…  United States
2084  Cameron Palatas, Richard Karn, Cheri Oteri, Da…  United States

             date_added  release_year rating duration  \
7667  November 20, 2019          2006  PG-13  129 min
2084      March 5, 2018          2017  TV-MA   92 min

                      listed_in  \
7667  Action & Adventure, Dramas
2084   Comedies, Romantic Movies

                                           description
7667  Working under treacherous conditions, an army …
2084  Maddy and Cole were inseparable before high sc…
```

1.1.6 Changing The Format of duration from object to int by removing extra strings like min and season,etc.

1.1.7 Also count the total number of hours and seasons in dataset.

[8]:
```
netfx_sum = netfx_df.query('type == "Movie"')
netfx_sum = netfx_sum['duration'].str.replace(r' min', '').astype(int)
netfx_sum.sum()
```

[8]: 478514

[9]:
```
netfx_sum2 = netfx_df.query('type == "TV Show"')
netfx_sum2 = netfx_sum2['duration'].str.replace(r'[" Seasons", " Season"]', '').
 ↪astype(int)
netfx_sum2.sum()
```

[9]: 262

1.2 Exploratory Analysis and Visualization

Task:

- Compute the mean, sum, range and other interesting statistics for numeric columns

- Explore distributions of numeric columns using histograms etc.
- Explore relationship between columns using scatter plots, bar charts etc.
- Make a note of interesting insights from the exploratory analysis

[13]:
```
import seaborn as sns
import matplotlib
import matplotlib.pyplot as plt
%matplotlib inline

sns.set_style('darkgrid')
matplotlib.rcParams['font.size'] = 14
#matplotlib.rcParams['figure.figsize'] = (9, 5)
matplotlib.rcParams['figure.facecolor'] = '#00000000'
```

Top Countries With Highest No. of movies or Tv Shows.

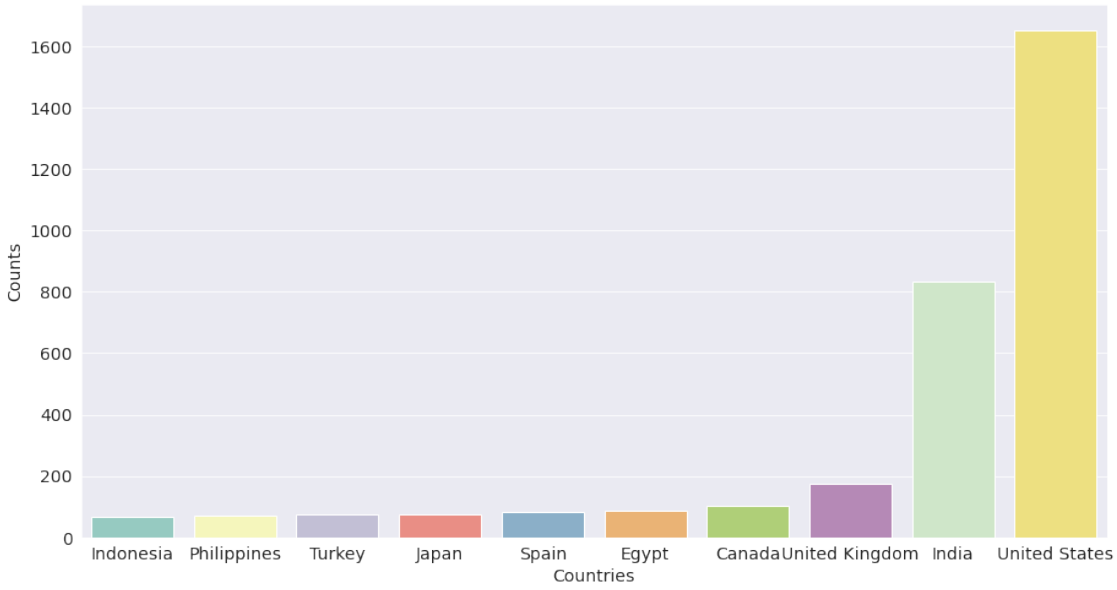
[14]:
```
netfx_bycountry = netfx_df.groupby('country').country.count().to_frame('Count').
↪reset_index().sort_values('Count',ascending=False).head(10)
netfx_bycountry = netfx_bycountry.sort_values('Count',ascending=True)
netfx_bycountry
```

[14]:

	country	Count
192	Indonesia	67
272	Philippines	70
357	Turkey	76
227	Japan	76
317	Spain	83
100	Egypt	87
39	Canada	104
369	United Kingdom	174
173	India	832
440	United States	1653

[29]:
```
plt.figure(figsize=(15,8));
sns.barplot('country','Count',data=netfx_bycountry);
plt.xlabel('Countries');
plt.ylabel('Counts');
```

```
/opt/conda/lib/python3.8/site-packages/seaborn/_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only
valid positional argument will be `data`, and passing other arguments without an
explicit keyword will result in an error or misinterpretation.
  warnings.warn(
```



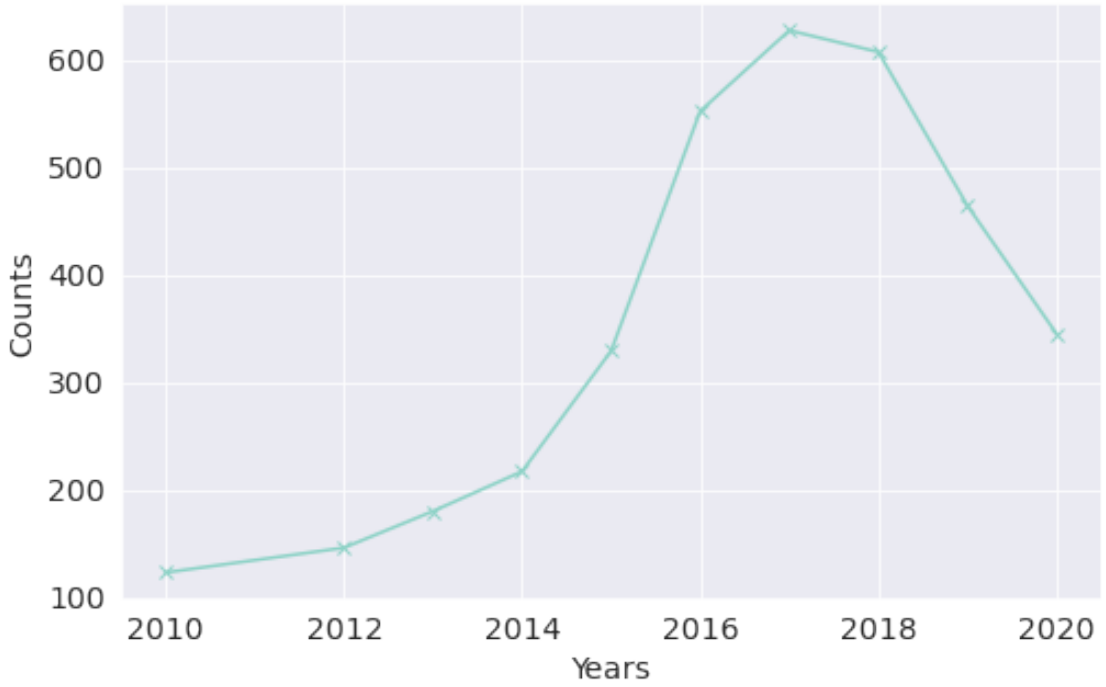
Total No. Of Movies Released Each Year From 2010 to 2020

[16]:
```
netfx_byyear = netfx_df.query('type == "Movie"').groupby('release_year').
 ↪release_year.count().to_frame('Count').reset_index().
 ↪sort_values('Count',ascending=False).head(10)
netfx_byyear = netfx_byyear.sort_index(ascending=True)
netfx_byyear
```

[16]:

	release_year	Count
59	2010	123
61	2012	146
62	2013	180
63	2014	217
64	2015	329
65	2016	552
66	2017	627
67	2018	607
68	2019	464
69	2020	345

[32]:
```
plt.figure(figsize=(8,5));
plt.xlabel('Years');
plt.ylabel('Counts');
plt.plot(netfx_byyear.release_year,netfx_byyear.Count,marker='x');
```



Total No. Of Movies Listed In Each Rating Categories

[18]:
```
netfx_byrate = netfx_df.groupby('rating').rating.count().to_frame('Count').
↪reset_index().sort_values('Count',ascending=False).head(10)
netfx_byrate = netfx_byrate.sort_values('Count',ascending=True)
netfx_byrate
```

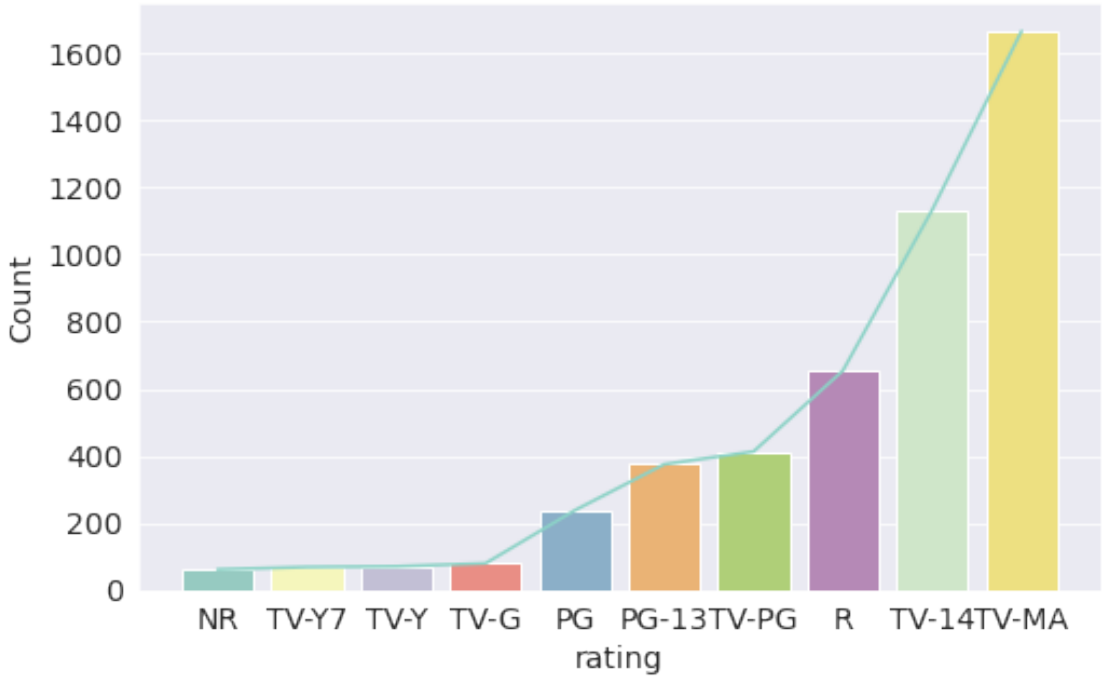
[18]:

	rating	Count
2	NR	62
11	TV-Y7	69
10	TV-Y	71
7	TV-G	80
3	PG	238
4	PG-13	375
9	TV-PG	413
5	R	654
6	TV-14	1133
8	TV-MA	1665

[33]:
```
plt.figure(figsize=(8,5));
sns.barplot('rating','Count',data=netfx_byrate);
sns.lineplot('rating','Count',data=netfx_byrate);
```

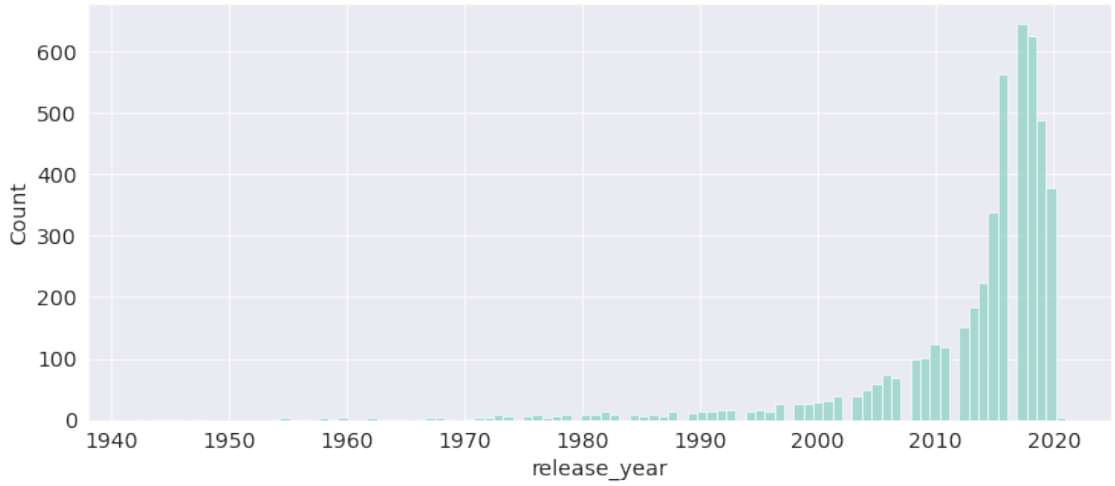
```
/opt/conda/lib/python3.8/site-packages/seaborn/_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only
```

```
valid positional argument will be `data`, and passing other arguments without an
explicit keyword will result in an error or misinterpretation.
  warnings.warn(
/opt/conda/lib/python3.8/site-packages/seaborn/_decorators.py:36: FutureWarning:
Pass the following variables as keyword args: x, y. From version 0.12, the only
valid positional argument will be `data`, and passing other arguments without an
explicit keyword will result in an error or misinterpretation.
  warnings.warn(
```



Complete history trend of total no. of movies being released each year from 1940 to 2020.

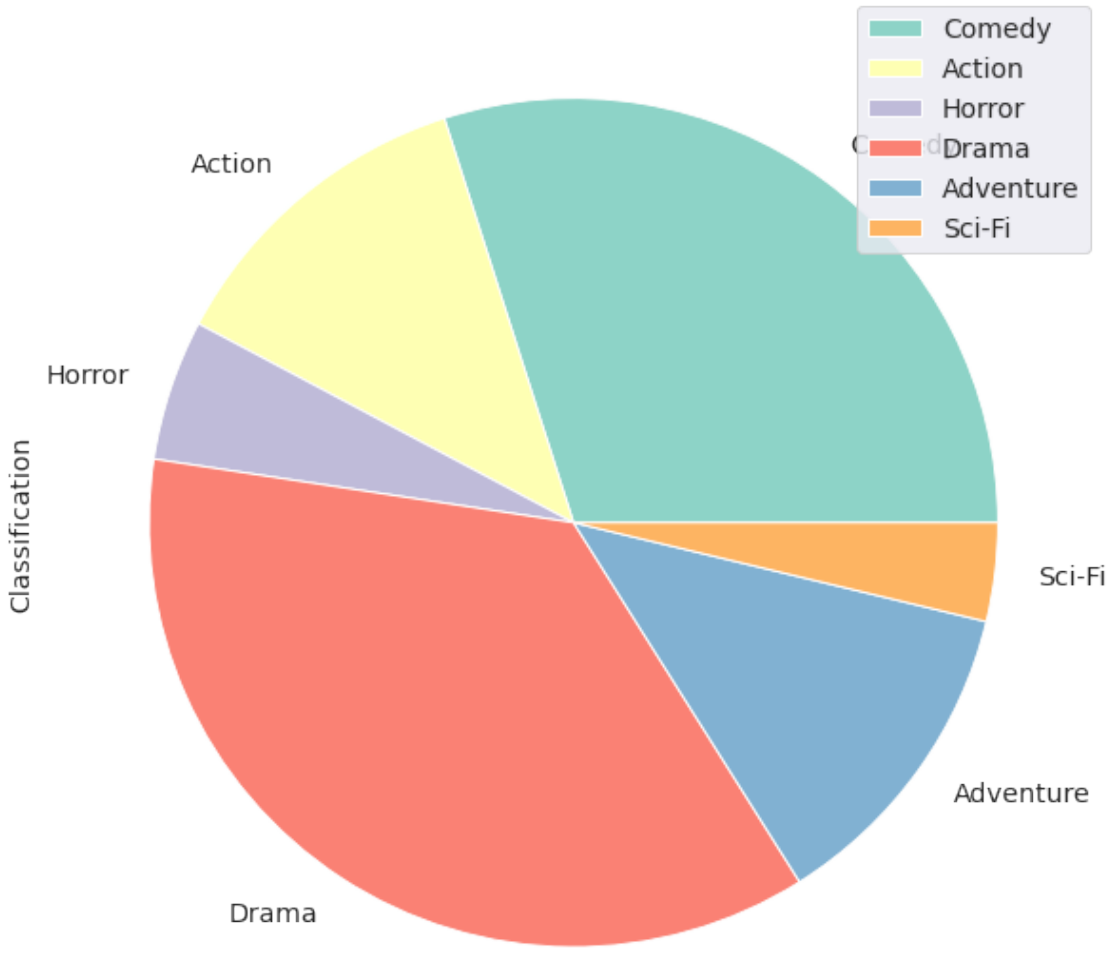
[35]:
```
plt.figure(figsize=(12,5));
sns.histplot(netfx_df.release_year);
```



Classification of major movie genres.

[36]:
```
comedies = netfx_df["listed_in"].str.contains(r'Comed.*')
comedies = netfx_df[comedies].title.count()
action = netfx_df["listed_in"].str.contains(r'Actio.*')
action = netfx_df[action].title.count()
horror = netfx_df["listed_in"].str.contains(r'Horro.*')
horror = netfx_df[horror].title.count()
drama = netfx_df["listed_in"].str.contains(r'Drama.*')
drama = netfx_df[drama].title.count()
adventure = netfx_df["listed_in"].str.contains(r'Adventu.*')
adventure = netfx_df[adventure].title.count()
scifi = netfx_df["listed_in"].str.contains(r'Sci-Fi.*')
scifi = netfx_df[scifi].title.count()
dat = pd.DataFrame({'Classification': [comedies, action , horror, drama,␣
↪adventure, scifi]},
                   index=['Comedy', 'Action', 'Horror', 'Drama', 'Adventure',␣
↪'Sci-Fi'])
```

[38]:
```
dat.plot.pie(y='Classification', figsize=(10, 12));
```



Let us save and upload our work to Jovian before continuing

1.2.1 Which Tv Shows having 5 or more than 5 Seasons ?

[43]:
```
netfx_byseasons = netfx_df.query('type == "TV Show"')
netfx_byseasons = netfx_byseasons.query('duration >= "5 Season"').
 ↪sort_values('duration',ascending = False)
netfx_byseasons.head(5)
```

[43]:

	show_id	type	title	director	\
1181	s1182	TV Show	Call the Midwife	Philippa Lowthorpe	
4404	s4405	TV Show	Naruto	Hayato Date	
584	s585	TV Show	Arrow	James Bamford	
5291	s5292	TV Show	Royal Pains	Jay Chandrasekhar	

```
6415   s6416  TV Show  The Great British Baking Show     Andy Devonshire

                                                  cast         country  \
1181  Vanessa Redgrave, Bryony Hannah, Helen George,…  United Kingdom
4404  Junko Takeuchi, Chie Nakamura, Noriaki Sugiyam…           Japan
584   Stephen Amell, Katie Cassidy, David Ramsey, Wi…   United States
5291  Mark Feuerstein, Paulo Costanzo, Reshma Shetty…   United States
6415  Mel Giedroyc, Sue Perkins, Mary Berry, Paul Ho…  United Kingdom

              date_added  release_year rating   duration  \
1181  September 15, 2020          2020  TV-MA  9 Seasons
4404   September 1, 2019          2006  TV-14  9 Seasons
584     February 5, 2020          2019  TV-14  8 Seasons
5291         May 18, 2017          2016  TV-PG  8 Seasons
6415  September 25, 2020          2020  TV-14  8 Seasons

                                          listed_in  \
1181  British TV Shows, International TV Shows, TV D…
4404               Anime Series, International TV Shows
584              Crime TV Shows, TV Action & Adventure
5291                           TV Comedies, TV Dramas
6415                    British TV Shows, Reality TV

                                           description
1181  This period drama set in impoverished East Lon…
4404  Guided by the spirit demon within him, orphane…
584   Based on DC Comics' Green Arrow, an affluent p…
5291  Dr. Hank Lawson unexpectedly gets a career upg…
6415  A talented batch of amateur bakers face off in…
```

1.2.2 Indian Movies Released In 2020 ?

[46]:
```
netfx_df.query('type == "Movie"' and 'country == "India"').query('release_year␣
↪== 2020').head(5)
```

[46]:
```
    show_id   type                    title                   director  \
244    s245  Movie        A truthful Mother  Ravishankar Venkateswaran
362    s363  Movie                  AK vs AK       Vikramaditya Motwane
368    s369  Movie  Ala Vaikunthapurramuloo         Trivikram Srinivas
510    s511  Movie              Andhakaaram               V Vignarajan
605    s606  Movie               Asura Guru               A. Raajdheep

                                                 cast country  \
244  Revathi, Roger Narayanan, Sneha Ravishankar, V…   India
362                      Anil Kapoor, Anurag Kashyap   India
368  Allu Arjun, Pooja Hegde, Tabu, Sushanth, Nivet…   India
510  Vinoth Kishan, Arjun Das, Pooja Ramachandran, …   India
```

```
605  Vikram Prabhu, Subbaraju, Mahima Nambiar, Yogi…   India

            date_added  release_year rating duration  \
244     March 31, 2020          2020  TV-Y7   85 min
362  December 25, 2020          2020  TV-MA  109 min
368  February 27, 2020          2020  TV-14  162 min
510  November 24, 2020          2020  TV-14  171 min
605      June 13, 2020          2020  TV-14  117 min

                                        listed_in  \
244                       Children & Family Movies
362           Comedies, Dramas, International Movies
368             Action & Adventure, Comedies, Dramas
510  Horror Movies, International Movies, Thrillers
605                     Dramas, International Movies

                                           description
244  Facing a drought, a hungry tiger and a noble c…
362  After a public spat with a movie star, a disgr…
368  After growing up enduring criticism from his f…
510  As a blind librarian, dispirited cricketer and…
605  For a tech-savvy thief, elaborate robberies an…
```