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

```
data = pd.read_csv('https://raw.githubusercontent.com/kedeisha1/Challenges/main/netflix_titles.csv')
```

```
# Checking the top 5 rows of data
data.head()
```

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	description
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NaN	United States	September 25, 2021	2020	PG-13	90 min	Documentaries	As her father nears the end of his life, filmm...
1	s2	TV Show	Blood & Water	NaN	Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...	South Africa	September 24, 2021	2021	TV-MA	2 Seasons	International TV Shows, TV Dramas, TV Mysteries	After crossing paths at a party, a Cape Town t...
2	s3	TV Show	Ganglands	Julien Leclercq	Sami Bouajila, Tracy Gotoas, Samuel	NaN	September 24, 2021	2021	TV-MA	1 Season	Crime TV Shows, International TV Shows, TV	To protect his family from a powerful drug

```
# checking the rows, column names and data types info of the data
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 8807 entries, 0 to 8806
Data columns (total 12 columns):
 #   Column        Non-Null Count  Dtype
---  ------        --------------  -----
 0   show_id       8807 non-null   object
 1   type          8807 non-null   object
 2   title         8807 non-null   object
 3   director      6173 non-null   object
 4   cast          7982 non-null   object
 5   country       7976 non-null   object
 6   date_added    8797 non-null   object
 7   release_year  8807 non-null   int64
 8   rating        8803 non-null   object
 9   duration      8804 non-null   object
 10  listed_in     8807 non-null   object
 11  description   8807 non-null   object
dtypes: int64(1), object(11)
memory usage: 825.8+ KB
```

```
# Question 1 - checking the null values
data.isnull().sum()
```

```
show_id            0
type               0
title              0
director        2634
cast             825
country          831
date_added        10
release_year       0
rating             4
duration           3
listed_in          0
description        0
dtype: int64
```

```
# There are some null values in the few columns , lets check if the null values in a column are more than 5%
# of the total data or if it is less than 5% (if it is less than 5% we can drop the rows)

Threshold = len(data) * 0.05 # caluculating the threshold limit at 5%
print(Threshold)
```

```
    440.35
```

```
# Check columns which have less than 5% of null values, so that we can drop the null values

col_to_be_dropped = data.columns[(data.isna().sum() > 0) & (data.isna().sum() <= Threshold)]
print(col_to_be_dropped)
```

```
    Index(['date_added', 'rating', 'duration'], dtype='object')
```

```
# lets drop the null values less than 5%
data.dropna(subset = col_to_be_dropped, inplace = True)
```

```
data.isna().sum() # check the data again
```

```
    show_id            0
    type               0
    title              0
    director        2621
    cast             825
    country          829
    date_added         0
    release_year       0
    rating             0
    duration           0
    listed_in          0
    description        0
    dtype: int64
```

```
print(data[['director','cast','country']].nunique())
```

```
    director    4526
    cast        7678
    country      748
    dtype: int64
```

```
# removing the duplicate data
data = data.drop_duplicates()
```

```
data.info()
```

```
    <class 'pandas.core.frame.DataFrame'>
    Int64Index: 8790 entries, 0 to 8806
    Data columns (total 12 columns):
     #   Column        Non-Null Count  Dtype
    ---  ------        --------------  -----
     0   show_id       8790 non-null   object
     1   type          8790 non-null   object
     2   title         8790 non-null   object
     3   director      6169 non-null   object
     4   cast          7965 non-null   object
     5   country       7961 non-null   object
     6   date_added    8790 non-null   object
     7   release_year  8790 non-null   int64
     8   rating        8790 non-null   object
     9   duration      8790 non-null   object
     10  listed_in     8790 non-null   object
     11  description   8790 non-null   object
    dtypes: int64(1), object(11)
    memory usage: 892.7+ KB
```

```
data.isnull().sum()
```

```
    show_id            0
    type               0
    title              0
    director        2621
    cast             825
    country          829
    date_added         0
    release_year       0
    rating             0
    duration           0
    listed_in          0
    description        0
    dtype: int64
```

```
print(data['director'].value_counts())
```

```
    Rajiv Chilaka                     19
    Raúl Campos, Jan Suter            18
    Marcus Raboy                      16
    Suhas Kadav                       16
    Jay Karas                         14
                                      ..
    Raymie Muzquiz, Stu Livingston     1
    Joe Menendez                       1
    Eric Bross                         1
    Will Eisenberg                     1
    Mozez Singh                        1
    Name: director, Length: 4526, dtype: int64
```

```
print(data['country'].value_counts())
```

```
    United States                             2809
    India                                      972
    United Kingdom                             418
    Japan                                      243
    South Korea                                199
                                              ...
    Romania, Bulgaria, Hungary                   1
    Uruguay, Guatemala                           1
    France, Senegal, Belgium                     1
    Mexico, United States, Spain, Colombia       1
    United Arab Emirates, Jordan                 1
    Name: country, Length: 748, dtype: int64
```

```
# looking at data info , date_added column is an object , lets change it to date time format

data['date_added'] = pd.to_datetime(data['date_added'], errors='coerce')
```

```
data.info() # checking the type of recently changed date column
```

```
    <class 'pandas.core.frame.DataFrame'>
    Int64Index: 8790 entries, 0 to 8806
    Data columns (total 12 columns):
     #   Column        Non-Null Count  Dtype
    ---  ------        --------------  -----
     0   show_id       8790 non-null   object
     1   type          8790 non-null   object
     2   title         8790 non-null   object
     3   director      6169 non-null   object
     4   cast          7965 non-null   object
     5   country       7961 non-null   object
     6   date_added    8790 non-null   datetime64[ns]
     7   release_year  8790 non-null   int64
     8   rating        8790 non-null   object
     9   duration      8790 non-null   object
     10  listed_in     8790 non-null   object
     11  description   8790 non-null   object
    dtypes: datetime64[ns](1), int64(1), object(10)
    memory usage: 892.7+ KB
```

```
# Question - 2 - Using the ‘date_added’ column a new column called ‘year_added’ that
# only has the year the title was added.

data['year_added'] = data['date_added'].dt.year
```

```
data.head()
```

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	description
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NaN	United States	2021-09-25	2020	PG-13	90 min	Documentaries	As her father nears the end of his life, filmm...
1	s2	TV Show	Blood & Water	NaN	Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...	South Africa	2021-09-24	2021	TV-MA	2 Seasons	International TV Shows, TV Dramas, TV Mysteries	After crossing paths at a party, a Cape Town t...
2	s3	TV Show	Ganglands	Julien Leclercq	Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabi...	NaN	2021-09-24	2021	TV-MA	1 Season	Crime TV Shows, International TV Shows, TV Act...	To protect his family from a powerful drug lor...
		TV	Jailbirds								Docuseries,	Feuds, flirtations and

```
# Question - 3 - Using the ‘date_added’ column a new column called ‘month_added’ that only has
# the month the title was added.

data['month_added'] = data['date_added'].dt.month
```

```
data.head()
```

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	description
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson	NaN	United States	2021-09-25	2020	PG-13	90 min	Documentaries	As her father nears the end of his life, filmm...
1	s2	TV Show	Blood & Water	NaN	Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban...	South Africa	2021-09-24	2021	TV-MA	2 Seasons	International TV Shows, TV Dramas, TV Mysteries	After crossing paths at a party, a Cape Town t...
2	s3	TV Show	Ganglands	Julien Leclercq	Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabi...	NaN	2021-09-24	2021	TV-MA	1 Season	Crime TV Shows, International TV Shows, TV Act...	To protect his family from a powerful drug lor...
3	s4	TV Show	Jailbirds New Orleans	NaN	NaN	NaN	2021-09-24	2021	TV-MA	1 Season	Docuseries, Reality TV	Feuds, flirtations and toilet talk go down amo...

```
# Question - 4- Check the data types. Anything look odd? Adjust accordingly.

data.info() # Checking the data type
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 8790 entries, 0 to 8806
Data columns (total 14 columns):
 #   Column        Non-Null Count  Dtype
---  ------        --------------  -----
 0   show_id       8790 non-null   object
 1   type          8790 non-null   object
 2   title         8790 non-null   object
 3   director      6169 non-null   object
 4   cast          7965 non-null   object
 5   country       7961 non-null   object
 6   date_added    8790 non-null   datetime64[ns]
 7   release_year  8790 non-null   int64
 8   rating        8790 non-null   object
 9   duration      8790 non-null   object
 10  listed_in     8790 non-null   object
 11  description   8790 non-null   object
 12  year_added    8790 non-null   int64
 13  month_added   8790 non-null   int64
dtypes: datetime64[ns](1), int64(3), object(10)
memory usage: 1.0+ MB
```

```
data.isnull().sum()
```

```
show_id            0
type               0
title              0
director        2621
cast             825
country          829
date_added         0
release_year       0
rating             0
duration           0
listed_in          0
description        0
year_added         0
month_added        0
dtype: int64
```

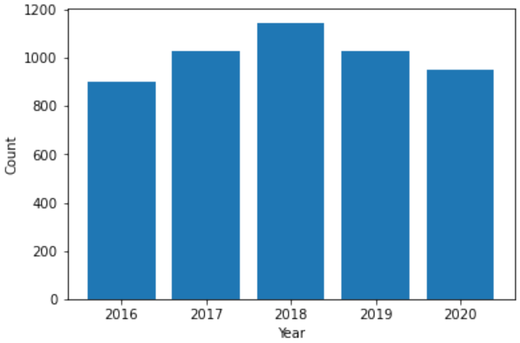
```
# replacing null value with blanks
data.fillna('',inplace = True)
```

```
# Question - 5 - What is the most popular release year for movies on Netflix?

release_year = data['release_year'].value_counts().sort_values(ascending = False).head(5)
print(release_year)

plt.bar(release_year.index, release_year.values)
plt.xlabel('Year')
plt.ylabel('Count')
plt.show()
```

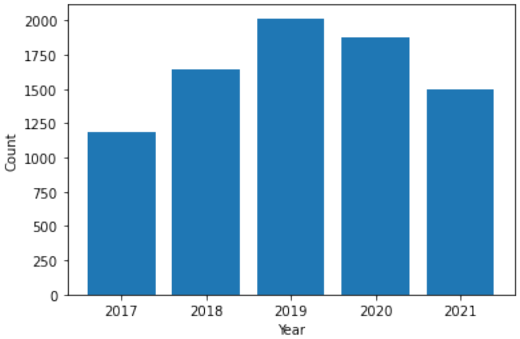
```
2018    1146
2017    1030
2019    1030
2020     953
2016     901
Name: release_year, dtype: int64
```



```
# Question 6 - What year did Netflix add the most content to its platform?
most_content_year= data['year_added'].value_counts().sort_values(ascending = False).head(5)
print(most_content_year)

plt.bar(most_content_year.index, most_content_year.values)
plt.xlabel('Year')
plt.ylabel('Count')
plt.show()
```

```
2019    2016
2020    1879
2018    1648
2021    1498
2017    1185
Name: year_added, dtype: int64
```



```
# Question 7 - What is the movie with the longest title in the dataset?

movies = data[data['type'] == 'Movie']

movie_with_longest_title = movies.loc[movies['title'].str.len().idxmax()]

print(movie_with_longest_title['title'])
```

```
Jim & Andy: The Great Beyond – Featuring a Very Special, Contractually Obligated Mention of Tony Clifton
```

```
# Question 7 - What are the top 5 most popular movie genres?

data['listed_in'].nunique()
```

```
513
```

```
movies.head()
```

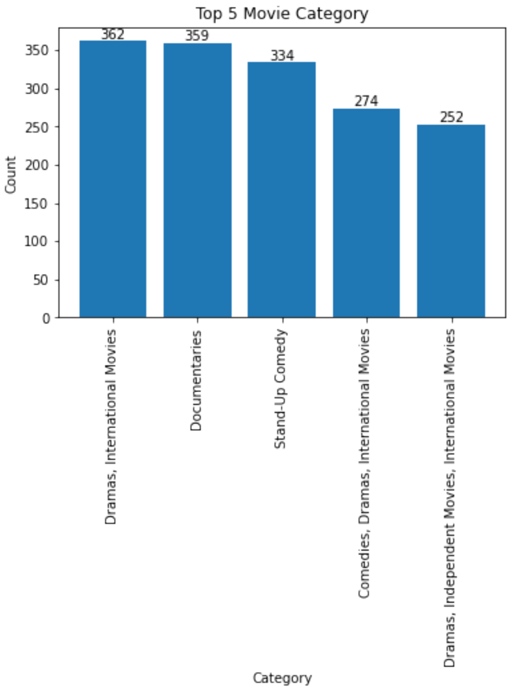
	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	descriptic
0	s1	Movie	Dick Johnson Is Dead	Kirsten Johnson		United States	2021-09-25	2020	PG-13	90 min	Documentaries	As her fath nears the er of his lif filmm
6	s7	Movie	My Little Pony: A New Generation	Robert Cullen, José Luis Ucha	Vanessa Hudgens, Kimiko Glenn, James Marsden, ...		2021-09-24	2021	PG	91 min	Children & Family Movies	Equestria divided. But bright-eye hero be
7	s8	Movie	Sankofa	Haile Gerima	Kofi Ghanaba, Oyafunmike Ogunlano, Alexandra D...	United States, Ghana, Burkina Faso, United Kin...	2021-09-24	1993	TV-MA	125 min	Dramas, Independent Movies, International Movies	On a pho shoot Ghana, a America model s
9	s10	Movie	The Starling	Theodore Melfi	Melissa McCarthy, Chris O'Dowd, Kevin Kline, T...	United States	2021-09-24	2021	PG-13	104 min	Comedies, Dramas	A woma adjusting life after a los contend
12	s13	Movie	Je Suis Karl	Christian Schwochow	Luna Wedler, Jannis Niewöhner, Milan	Germany, Czech Republic	2021-09-23	2021	TV-MA	127 min	Dramas, International Movies	After most her family murdered in terr

```
# Question 8 - What are the top 5 most popular movie genres?

result = movies.groupby('listed_in')['type'].count().sort_values(ascending = False).head(5)
print(result)
```

```
listed_in
Dramas, International Movies                          362
Documentaries                                         359
Stand-Up Comedy                                       334
Comedies, Dramas, International Movies                274
Dramas, Independent Movies, International Movies      252
Name: type, dtype: int64
```

```
plt.bar(result.index, result.values)
for i, v in enumerate(result.values):
    plt.text(i, v, str(v), ha='center', va='bottom')
plt.xlabel('Category')
plt.ylabel('Count')
plt.title('Top 5 Movie Category')
plt.xticks(rotation = 90)
plt.show()
```



```
# Question 9 - Create a pie chart visualizing the proportion of movies vs TV shows. Label each section with the percentage.

type = round(data['type'].value_counts(normalize = True),2)
```

```
type.head()
```

```
Movie      0.7
TV Show    0.3
Name: type, dtype: float64
```

```
type.values
```

```
array([0.7, 0.3])
```

```
plt.pie(type, labels = type.values)
plt.legend(type.index, bbox_to_anchor= (1,1))
plt.show()
```

0.7
Movie
TV Show