

```
In [1]: import pandas as pd
```

```
In [5]: #read csv file
```

```
df_netflix = pd.read_csv("C:/Users/User/Downloads/netflix_titles.csv")
```

```
In [6]: #data types
```

```
df_netflix.dtypes
```

```
Out[6]: show_id      int64  
        type         object  
        title        object  
        director     object  
        cast         object  
        country      object  
        date_added   object  
        release_year  int64  
        rating       object  
        duration     object  
        listed_in    object  
        description  object  
        dtype: object
```

```
In [7]: df_netflix.shape
```

```
Out[7]: (6234, 12)
```

In [9]: `df_netflix`

Out[9]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	descriptio
0	81145628	Movie	Norm of the North: King Sized Adventure	Richard Finn, Tim Maltby	Alan Marriott, Andrew Toth, Brian Dobson, Cole...	United States, India, South Korea, China	September 9, 2019	2019	TV-PG	90 min	Children & Family Movies, Comedies	Befo planning : aweson wedding for h gra
1	80117401	Movie	Jandino: Whatever it Takes	NaN	Jandino Asporaat	United Kingdom	September 9, 2016	2016	TV-MA	94 min	Stand-Up Comedy	Jandii Asporaat ri on tl challenges ra
2	70234439	TV Show	Transformers Prime	NaN	Peter Cullen, Sumalee Montano, Frank Welker, J...	United States	September 8, 2018	2013	TV-Y7-FV	1 Season	Kids' TV	With the he of three hum: allies, tl Autob
3	80058654	TV Show	Transformers: Robots in Disguise	NaN	Will Friedle, Darren Criss, Constance Zimmer, ...	United States	September 8, 2018	2016	TV-Y7	1 Season	Kids' TV	When a pris: ship cra: unleash: hundreds of
4	80125979	Movie	#realityhigh	Fernando Lebrija	Nesta Cooper, Kate Walsh, John Michael Higgins...	United States	September 8, 2017	2017	TV-14	99 min	Comedies	When nen high school Dani fina attracts
...	...	...	...	...	...	...	...	...	...	...	...	...
6229	80000063	TV Show	Red vs. Blue	NaN	Burnie Burns, Jason Saldaña, Gustavo Sorola, G...	United States	NaN	2015	NR	13 Seasons	TV Action & Adventure, TV Comedies, TV Sci-Fi ...	This parody first-pers: shoot games, mil

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	descriptio
6230	70286564	TV Show	Maron	NaN	Marc Maron, Judd Hirsch, Josh Brener, Nora Zeh...	United States	NaN	2016	TV-MA	4 Seasons	TV Comedies	Marc Maron stars as Ma Maron, w/ interviews
6231	80116008	Movie	Little Baby Bum: Nursery Rhyme Friends	NaN	NaN	NaN	NaN	2016	NaN	60 min	Movies	Nurse rhymes an original music for children
6232	70281022	TV Show	A Young Doctor's Notebook and Other Stories	NaN	Daniel Radcliffe, Jon Hamm, Adam Godley, Chris...	United Kingdom	NaN	2013	TV-MA	2 Seasons	British TV Shows, TV Comedies, TV Dramas	Set during the Russian Revolution, the comic
6233	70153404	TV Show	Friends	NaN	Jennifer Aniston, Courteney Cox, Lisa Kudrow, ...	United States	NaN	2003	TV-14	10 Seasons	Classic & Cult TV, TV Comedies	This hit sitcom follows the misadventure

6234 rows × 12 columns

```
In [8]: #identifying missing data
#number of rows missing in each column (True=NULL)

df_netflix.isnull()
```

Out[8]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	description
0	False	False	False	False	False	False	False	False	False	False	False	False
1	False	False	False	True	False	False	False	False	False	False	False	False
2	False	False	False	True	False	False	False	False	False	False	False	False
3	False	False	False	True	False	False	False	False	False	False	False	False
4	False	False	False	False	False	False	False	False	False	False	False	False
...	...	...	...	...	...	...	...	...	...	...	...	...
6229	False	False	False	True	False	False	True	False	False	False	False	False
6230	False	False	False	True	False	False	True	False	False	False	False	False
6231	False	False	False	True	True	True	True	False	True	False	False	False
6232	False	False	False	True	False	False	True	False	False	False	False	False
6233	False	False	False	True	False	False	True	False	False	False	False	False

6234 rows × 12 columns

In [18]: *#sum of null values by column in ascending*

```
df_netflix.isnull().sum().sort_values(ascending=False)
```

Out[18]:

director	1969
cast	570
country	476
date_added	11
rating	10
show_id	0
type	0
title	0
release_year	0
duration	0
listed_in	0
description	0

dtype: int64

In [23]: *# % of rows missing in each column*

```
for column in df_netflix.columns:  
    percentage = df_netflix[column].isnull().mean()  
    print (column + ': ' + str(round (percentage*100, 2)))
```

show\_id: 0.0  
type: 0.0  
title: 0.0  
director: 31.58  
cast: 9.14  
country: 7.64  
date\_added: 0.18  
release\_year: 0.0  
rating: 0.16  
duration: 0.0  
listed\_in: 0.0  
description: 0.0

```
In [24]: #remove a column (axis=1) or row (axis=0) with .drop, .dropna, or .isnull  
  
#drop the whole column  
df_netflix.drop('director', axis=1)
```

Out[24]:

	show_id	type	title	cast	country	date_added	release_year	rating	duration	listed_in	description
0	81145628	Movie	Norm of the North: King Sized Adventure	Alan Marriott, Andrew Toth, Brian Dobson, Cole...	United States, India, South Korea, China	September 9, 2019	2019	TV-PG	90 min	Children & Family Movies, Comedies	Before planning an awesome wedding for his gra...
1	80117401	Movie	Jandino: Whatever it Takes	Jandino Asporaat	United Kingdom	September 9, 2016	2016	TV-MA	94 min	Stand-Up Comedy	Jandino Asporaat riffs on the challenges of ra...
2	70234439	TV Show	Transformers Prime	Peter Cullen, Sumalee Montano, Frank Welker, J...	United States	September 8, 2018	2013	TV-Y7-FV	1 Season	Kids' TV	With the help of three human allies, the Autob...
3	80058654	TV Show	Transformers: Robots in Disguise	Will Friedle, Darren Criss, Constance Zimmer, ...	United States	September 8, 2018	2016	TV-Y7	1 Season	Kids' TV	When a prison ship crash unleashes hundreds of...
4	80125979	Movie	#realityhigh	Nesta Cooper, Kate Walsh, John Michael Higgins...	United States	September 8, 2017	2017	TV-14	99 min	Comedies	When nerdy high schooler Dani finally attracts...
...	...	...	...	...	...	...	...	...	...	...	...
6229	80000063	TV Show	Red vs. Blue	Burnie Burns, Jason Saldaña, Gustavo Sorola, G...	United States	NaN	2015	NR	13 Seasons	TV Action & Adventure, TV Comedies, TV Sci-Fi ...	This parody of first-person shooter games, mil...
6230	70286564	TV Show	Maron	Marc Maron, Judd Hirsch, Josh Brener, Nora Zeh...	United States	NaN	2016	TV-MA	4 Seasons	TV Comedies	Marc Maron stars as Marc Maron, who interviews...



	show_id	type	title	cast	country	date_added	release_year	rating	duration	listed_in	description
6231	80116008	Movie	Little Baby Bum: Nursery Rhyme Friends	NaN	NaN	NaN	2016	NaN	60 min	Movies	Nursery rhymes and original music for children...
6232	70281022	TV Show	A Young Doctor's Notebook and Other Stories	Daniel Radcliffe, Jon Hamm, Adam Godley, Chris...	United Kingdom	NaN	2013	TV-MA	2 Seasons	British TV Shows, TV Comedies, TV Dramas	Set during the Russian Revolution, this comic ...
6233	70153404	TV Show	Friends	Jennifer Aniston, Courteney Cox, Lisa Kudrow, ...	United States	NaN	2003	TV-14	10 Seasons	Classic & Cult TV, TV Comedies	This hit sitcom follows the merry misadventure...

6234 rows × 11 columns

```
In [31]: #drop only null value in row (axis=0)  
  
no_director = df_netflix[df_netflix['director'].isnull()].index  
df_netflix.drop(no_director, axis=0)
```

Out[31]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	descrip
0	81145628	Movie	Norm of the North: King Sized Adventure	Richard Finn, Tim Maltby	Alan Marriott, Andrew Toth, Brian Dobson, Cole...	United States, India, South Korea, China	September 9, 2019	2019	TV-PG	90 min	Children & Family Movies, Comedies	Be plannin... awes... wedding... his g
4	80125979	Movie	#realityhigh	Fernando Lebrija	Nesta Cooper, Kate Walsh, John Michael Higgins...	United States	September 8, 2017	2017	TV-14	99 min	Comedies	When n... sch... Dani fir attrac
6	70304989	Movie	Automata	Gabe Ibáñez	Antonio Banderas, Dylan McDermott, Melanie Gri...	Bulgaria, United States, Spain, Canada	September 8, 2017	2014	R	110 min	International Movies, Sci-Fi & Fantasy, Thrillers	dysto... future... insur... adjuste
7	80164077	Movie	Fabrizio Copano: Solo pienso en mi	Rodrigo Toro, Francisco Schultz	Fabrizio Copano	Chile	September 8, 2017	2017	TV-MA	60 min	Stand-Up Comedy	Fab Cop... te... audie... partici...
9	70304990	Movie	Good People	Henrik Ruben Genz	James Franco, Kate Hudson, Tom Wilkinson, Omar...	United States, United Kingdom, Denmark, Sweden	September 8, 2017	2014	R	90 min	Action & Adventure, Thrillers	A strugg... couple... believe... luck
...	...	...	...	...	...	...	...	...	...	...	...	...
6142	80063224	TV Show	The Great British Baking Show	Andy Devonshire	Mel Giedroyc, Sue Perkins, Mary Berry, Paul Ho...	United Kingdom	August 30, 2019	2019	TV-PG	7 Seasons	British TV Shows, Reality TV	A tale... batc... ama... bakers... off
6158	80164216	TV Show	Miraculous: Tales of Ladybug & Cat Noir	Thomas Astruc	Cristina Vee, Bryce Papenbrook, Keith Silverst...	France, South Korea, Japan	August 2, 2019	2018	TV-Y7	4 Seasons	Kids' TV, TV Action & Adventure	When F... is in p... Marir... beco... La

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	descrip
6167	80115328	TV Show	Sacred Games	Vikramaditya Motwane, Anurag Kashyap	Saif Ali Khan, Nawazuddin Siddiqui, Radhika Ap...	India, United States	August 15, 2019	2019	TV-MA	2 Seasons	Crime TV Shows, International TV Shows, TV Dramas	A lir their p lead honest tc
6182	80176842	TV Show	Men on a Mission	Jung-ah Im	Ho-dong Kang, Soo-geun Lee, Sang-min Lee, Youn...	South Korea	April 9, 2019	2019	TV-14	4 Seasons	International TV Shows, Korean TV Shows, Stand...	Male ce play m. believ schoo
6213	80126599	TV Show	Leyla and Mecnun	Onur Ünlü	Ali Atay, Melis Birkan, Serkan Keskin, Ahmet M...	Turkey	April 15, 2017	2014	TV-PG	3 Seasons	International TV Shows, Romantic TV Shows, TV ...	Des br Mec and L togethe

4265 rows × 12 columns

```
In [32]: #find NOT null values (~)

df_netflix [~(df_netflix['director'].isnull())]
```

Out[32]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	descrip
0	81145628	Movie	Norm of the North: King Sized Adventure	Richard Finn, Tim Maltby	Alan Marriott, Andrew Toth, Brian Dobson, Cole...	United States, India, South Korea, China	September 9, 2019	2019	TV-PG	90 min	Children & Family Movies, Comedies	Be plannin... awes... wedding... his g
4	80125979	Movie	#realityhigh	Fernando Lebrija	Nesta Cooper, Kate Walsh, John Michael Higgins...	United States	September 8, 2017	2017	TV-14	99 min	Comedies	When n... sch... Dani fir attrac
6	70304989	Movie	Automata	Gabe Ibáñez	Antonio Banderas, Dylan McDermott, Melanie Gri...	Bulgaria, United States, Spain, Canada	September 8, 2017	2014	R	110 min	International Movies, Sci-Fi & Fantasy, Thrillers	dysto... future... insur... adjuste
7	80164077	Movie	Fabrizio Copano: Solo pienso en mi	Rodrigo Toro, Francisco Schultz	Fabrizio Copano	Chile	September 8, 2017	2017	TV-MA	60 min	Stand-Up Comedy	Fab Cop... te... audie... partici...
9	70304990	Movie	Good People	Henrik Ruben Genz	James Franco, Kate Hudson, Tom Wilkinson, Omar...	United States, United Kingdom, Denmark, Sweden	September 8, 2017	2014	R	90 min	Action & Adventure, Thrillers	A strugg... couple... believe... luck
...	...	...	...	...	...	...	...	...	...	...	...	...
6142	80063224	TV Show	The Great British Baking Show	Andy Devonshire	Mel Giedroyc, Sue Perkins, Mary Berry, Paul Ho...	United Kingdom	August 30, 2019	2019	TV-PG	7 Seasons	British TV Shows, Reality TV	A tale... batc... ama... bakers... off
6158	80164216	TV Show	Miraculous: Tales of Ladybug & Cat Noir	Thomas Astruc	Cristina Vee, Bryce Papenbrook, Keith Silverst...	France, South Korea, Japan	August 2, 2019	2018	TV-Y7	4 Seasons	Kids' TV, TV Action & Adventure	When F... is in p... Marir... beco... La

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	descrip
6167	80115328	TV Show	Sacred Games	Vikramaditya Motwane, Anurag Kashyap	Saif Ali Khan, Nawazuddin Siddiqui, Radhika Ap...	India, United States	August 15, 2019	2019	TV-MA	2 Seasons	Crime TV Shows, International TV Shows, TV Dramas	A lir their p lead honest tc
6182	80176842	TV Show	Men on a Mission	Jung-ah Im	Ho-dong Kang, Soo-geun Lee, Sang-min Lee, Youn...	South Korea	April 9, 2019	2019	TV-14	4 Seasons	International TV Shows, Korean TV Shows, Stand...	Male ce play m. believ schoo
6213	80126599	TV Show	Leyla and Mecnun	Onur Ünlü	Ali Atay, Melis Birkan, Serkan Keskin, Ahmet M...	Turkey	April 15, 2017	2014	TV-PG	3 Seasons	International TV Shows, Romantic TV Shows, TV ...	Des br Mec and L togethe

4265 rows × 12 columns

```
In [34]: #drop only null value from column director  
df_netflix.dropna (subset=['director'])
```



Out[34]:

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	descrip
0	81145628	Movie	Norm of the North: King Sized Adventure	Richard Finn, Tim Maltby	Alan Marriott, Andrew Toth, Brian Dobson, Cole...	United States, India, South Korea, China	September 9, 2019	2019	TV-PG	90 min	Children & Family Movies, Comedies	Be plannin... awes... wedding... his g
4	80125979	Movie	#realityhigh	Fernando Lebrija	Nesta Cooper, Kate Walsh, John Michael Higgins...	United States	September 8, 2017	2017	TV-14	99 min	Comedies	When n... sch... Dani fir attrac
6	70304989	Movie	Automata	Gabe Ibáñez	Antonio Banderas, Dylan McDermott, Melanie Gri...	Bulgaria, United States, Spain, Canada	September 8, 2017	2014	R	110 min	International Movies, Sci-Fi & Fantasy, Thrillers	dysto... future... insur... adjuste
7	80164077	Movie	Fabrizio Copano: Solo pienso en mi	Rodrigo Toro, Francisco Schultz	Fabrizio Copano	Chile	September 8, 2017	2017	TV-MA	60 min	Stand-Up Comedy	Fab Cop... te... audie... partici...
9	70304990	Movie	Good People	Henrik Ruben Genz	James Franco, Kate Hudson, Tom Wilkinson, Omar...	United States, United Kingdom, Denmark, Sweden	September 8, 2017	2014	R	90 min	Action & Adventure, Thrillers	A strugg... couple... believe... luck
...	...	...	...	...	...	...	...	...	...	...	...	...
6142	80063224	TV Show	The Great British Baking Show	Andy Devonshire	Mel Giedroyc, Sue Perkins, Mary Berry, Paul Ho...	United Kingdom	August 30, 2019	2019	TV-PG	7 Seasons	British TV Shows, Reality TV	A tale... batc... ama... bakers... off
6158	80164216	TV Show	Miraculous: Tales of Ladybug & Cat Noir	Thomas Astruc	Cristina Vee, Bryce Papenbrook, Keith Silverst...	France, South Korea, Japan	August 2, 2019	2018	TV-Y7	4 Seasons	Kids' TV, TV Action & Adventure	When F... is in p... Marir... beco... La

	show_id	type	title	director	cast	country	date_added	release_year	rating	duration	listed_in	descrip
6167	80115328	TV Show	Sacred Games	Vikramaditya Motwane, Anurag Kashyap	Saif Ali Khan, Nawazuddin Siddiqui, Radhika Ap...	India, United States	August 15, 2019	2019	TV-MA	2 Seasons	Crime TV Shows, International TV Shows, TV Dramas	A lir their p lead honest tc
6182	80176842	TV Show	Men on a Mission	Jung-ah Im	Ho-dong Kang, Soo-geun Lee, Sang-min Lee, Youn...	South Korea	April 9, 2019	2019	TV-14	4 Seasons	International TV Shows, Korean TV Shows, Stand...	Male ce play m. believ schoo
6213	80126599	TV Show	Leyla and Mecnun	Onur Ünlü	Ali Atay, Melis Birkan, Serkan Keskin, Ahmet M...	Turkey	April 15, 2017	2014	TV-PG	3 Seasons	International TV Shows, Romantic TV Shows, TV ...	Des br Mec and L togethe

4265 rows × 12 columns

```
In [35]: #use fillna() to replace NAN by the mean, median or mode
#fillna()expect dtype=string/integer

df_netflix['rating'].mode()
```

```
Out[35]: 0    TV-MA
Name: rating, dtype: object
```

```
In [36]: #change dtype 'object' to string

mode = ''.join(df_netflix['rating'].mode())
type(mode)
```

```
Out[36]: str
```

In [37]: *#use fillna() to replace NAN by mean, median or mode. in example, we use mode*

```
mode = ''.join(df_netflix['rating'].mode())  
df_netflix['rating'].fillna(mode, inplace=True)
```

In [50]: *#replace null value by arbitrary number with .fillna()*

```
df_netflix ['duration'].fillna('0', inplace=True)
```

In [53]: *#extracting data from 'duration' column with split() and extract() method*  
*#'split()' will split word after space*  
*#'expand(True)' allow us to expand list into column*  
*#'astype' allow us to convert from one dtype to another*

```
df_movie = df_netflix[(df_netflix['type']=='Movie')]  
df_movie ['minute'] = df_movie ['duration'].str.split(expand=True)[0].astype(int)
```

C:\Users\User\AppData\Local\Temp\ipykernel\_18904\4124136515.py:7: SettingWithCopyWarning:  
A value is trying to be set on a copy of a slice from a DataFrame.  
Try using .loc[row\_indexer,col\_indexer] = value instead

See the caveats in the documentation: [https://pandas.pydata.org/pandas-docs/stable/user\\_guide/indexing.html#returning-a-view-versus-a-copy](https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy) ([https://pandas.pydata.org/pandas-docs/stable/user\\_guide/indexing.html#returning-a-view-versus-a-copy](https://pandas.pydata.org/pandas-docs/stable/user_guide/indexing.html#returning-a-view-versus-a-copy))

```
df_movie ['minute'] = df_movie ['duration'].str.split(expand=True)[0].astype(int)
```

```
In [55]: df_movie.dtypes
```

```
Out[55]: show_id      int64  
         type         object  
         title        object  
         director     object  
         cast         object  
         country      object  
         date_added   object  
         release_year  int64  
         rating       object  
         duration     object  
         listed_in    object  
         description  object  
         minute       int32  
         dtype: object
```