


```
import numpy as np
import pandas as pd
```

▼ Creating DataFrame

```
# using lists
student_data = [
    [100,80,10],
    [90,70,7],
    [120,100,14],
    [80,50,2]
]

pd.DataFrame(student_data,columns=['iq','marks','package'])
```



	iq	marks	package
0	100	80	10
1	90	70	7
2	120	100	14
3	80	50	2

```
# using dicts

student_dict = {
    'name':['nitish','ankit','rupesh','rishabh','amit','ankita'],
    'iq':[100,90,120,80,0,0],
    'marks':[80,70,100,50,0,0],
    'package':[10,7,14,2,0,0]
}
```

```
students = pd.DataFrame(student_dict)
students.set_index('name',inplace=True)
students
```

	iq	marks	package
name			
nitish	100	80	10
ankit	90	70	7
rupesh	120	100	14
rishabh	80	50	2
amit	0	0	0
ankita	0	0	0

```
# using read_csv
movies = pd.read_csv('movies.csv')
movies
```

	title_x	imdb_id	poster_path		wiki_link	title_y	original_t
0	Uri: The Surgical Strike	tt8291224	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org/wiki/Uri:_The_Surgica...		Uri: The Surgical Strike	Uri: The Su
1	Battalion 609	tt9472208		NaN	https://en.wikipedia.org/wiki/Battalion_609	Battalion 609	Battalio
2	The Accidental Prime Minister (film)	tt6986710	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org/wiki/The_Accidental_P...		The Accidental Prime Minister	The Accic Prime Mi
3	Why Cheat India	tt8108208	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org/wiki/Why_Cheat_India		Why Cheat India	Why Cheat
4	Evening Shadows	tt6028796		NaN	https://en.wikipedia.org/wiki/Evening_Shadows	Evening Shadows	Evening Sha
...
1624	Tera Mera Saath Rahen	tt0301250	https://upload.wikimedia.org/wikipedia/en/2/2b...	https://en.wikipedia.org/wiki/Tera_Mera_Saath_...		Tera Mera Saath Rahen	Tera Mera t F
1625	Yeh Zindagi Ka Safar	tt0298607	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org/wiki/Yeh_Zindagi_Ka_S...		Yeh Zindagi Ka Safar	Yeh Zinda
1626	Sabse Bada Sukh	tt0069204		NaN	https://en.wikipedia.org/wiki/Sabse_Bada_Sukh	Sabse Bada Sukh	Sabse Bada
1627	Daaka	tt10833860	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org/wiki/Daaka		Daaka	Da

```
ipl = pd.read_csv('ipl-matches.csv')
ipl
```

	ID	City	Date	Season	MatchNumber	Team1	Team2	V
								Nar
0	1312200	Ahmedabad	2022-05-29	2022	Final	Rajasthan Royals	Gujarat Titans	Stē Ahmed
1	1312199	Ahmedabad	2022-05-27	2022	Qualifier 2	Royal Challengers Bangalore	Rajasthan Royals	Nar Stē Ahmed
2	1312198	Kolkata	2022-05-25	2022	Eliminator	Royal Challengers Bangalore	Lucknow Super Giants	Gai K
3	1312197	Kolkata	2022-05-24	2022	Qualifier 1	Rajasthan Royals	Gujarat Titans	Gai K
4	1304116	Mumbai	2022-05-22	2022	70	Sunrisers Hyderabad	Punjab Kings	Wan Stē M
...	
945	335986	Kolkata	2008-04-20	2007/08	4	Kolkata Knight Riders	Deccan Chargers	Ga
946	335985	Mumbai	2008-04-20	2007/08	5	Mumbai Indians	Royal Challengers Bangalore	Wan St
947	335984	Delhi	2008-04-19	2007/08	3	Delhi Daredevils	Rajasthan Royals	Feroz
948	335983	Chandigarh	2008-04-19	2007/08	2	Kings XI Punjab	Chennai Super Kings	F C Assoc Stē ↑
949	335982	Bangalore	2008-04-18	2007/08	1	Royal Challengers Bangalore	Kolkata Knight Riders	Chinnas St

950 rows x 20 columns

▼ DataFrame Attributes and Methods

```
# shape
movies.shape
ipl.shape

(950, 20)
```

```
# dtypes
movies.dtypes
ipl.dtypes

ID                int64
City              object
Date              object
Season            object
MatchNumber       object
Team1             object
Team2             object
Venue             object
TossWinner        object
TossDecision      object
SuperOver         object
WinningTeam       object
WonBy             object
Margin            float64
method            object
Player_of_Match   object
```

```
29/01/2024, 11:33 session-17-pandas-dataframes.ipynb - Colaboratory

Team1Players      object
Team2Players      object
Umpire1           object
Umpire2           object
dtype: object

# index
movies.index
ipl.index

RangeIndex(start=0, stop=950, step=1)

# columns
movies.columns
ipl.columns
student.columns

Index(['iq', 'marks', 'package'], dtype='object')

# values
student.values
ipl.values

array([[1312200, 'Ahmedabad', '2022-05-29', ...,
        "['WP Saha', 'Shubman Gill', 'MS Wade', 'HH Pandya', 'DA Miller', 'R Tewatia', 'Rashid Khan', 'R Sai Kishore',
        'LH Ferguson', 'Yash Dayal', 'Mohammed Shami']]",
        'CB Gaffaney', 'Nitin Menon'],
       [1312199, 'Ahmedabad', '2022-05-27', ...,
        "['YBK Jaiswal', 'JC Buttler', 'SV Samson', 'D Padikkal', 'SO Hetmyer', 'R Parag', 'R Ashwin', 'TA Boult', 'YS
Chahal', 'M Prasidh Krishna', 'OC McCoy']]",
        'CB Gaffaney', 'Nitin Menon'],
       [1312198, 'Kolkata', '2022-05-25', ...,
        "['Q de Kock', 'KL Rahul', 'M Vohra', 'DJ Hooda', 'MP Stoinis', 'E Lewis', 'KH Pandya', 'PVD Chameera', 'Mohsin
Khan', 'Avesh Khan', 'Ravi Bishnoi']]",
        'J Madanagopal', 'MA Gough'],
       ...,
       [335984, 'Delhi', '2008-04-19', ...,
        "['T Kohli', 'YK Pathan', 'SR Watson', 'M Kaif', 'DS Lehmann', 'RA Jadeja', 'M Rawat', 'D Salunkhe', 'SK
Warne', 'SK Trivedi', 'MM Patel']]",
        'Aleem Dar', 'GA Pratapkumar'],
       [335983, 'Chandigarh', '2008-04-19', ...,
        "['PA Patel', 'ML Hayden', 'MEK Hussey', 'MS Dhoni', 'SK Raina', 'JDP Oram', 'S Badrinath', 'Joginder Sharma',
        'P Amarnath', 'MS Gony', 'M Muralitharan']]",
        'MR Benson', 'SL Shastri'],
       [335982, 'Bangalore', '2008-04-18', ...,
        "['SC Ganguly', 'BB McCullum', 'RT Ponting', 'DJ Hussey', 'Mohammad Hafeez', 'LR Shukla', 'WP Saha', 'AB
Agarkar', 'AB Dinda', 'M Kartik', 'I Sharma']]",
        'Asad Rauf', 'RE Koertzen']]), dtype=object)

# head and tail
movies.head(2)

    title_x  imdb_id  poster_path

0  Uri: The Surgical Strike  tt8291224  https://upload.wikimedia.org/wikipedia/en/thum...  https://en.wikipedia.org/w

1  Battalion 609  tt9472208  NaN  https://en.wikipedia.
```

	ID	City	Date	Season	MatchNumber	Team1	Team2	Venue
948	335983	Chandigarh	2008-04-19	2007/08	2	Kings XI Punjab	Chennai Super Kings	Punjab Cricket Association Stadium Mohali
949	335982	Bangalore	2008-04-18	2007/08	1	Royal Challengers Bangalore	Kolkata Knight Riders	M Chinnaswamy Stadium

```
# sample
ipl.sample(5)
```

	ID	City	Date	Season	MatchNumber	Team1	Team2	Venue
336	1082628	Mumbai	2017-05-01	2017	38	Mumbai Indians	Royal Challengers Bangalore	Wankhede Stadium
98	1254107	Sharjah	2021-09-25	2021	37	Punjab Kings	Sunrisers Hyderabad	Sharjah Cricket Stadium
890	392182	Cape Town	2009-04-18	2009	2	Royal Challengers Bangalore	Rajasthan Royals	Newlands Cricket Ground
157	1216533	Abu Dhabi	2020-10-19	2020/21	37	Chennai Super Kings	Rajasthan Royals	Sheikh Zayed Cricket Stadium
386	980991	Chandigarh	2016-05-15	2016	46	Kings XI Punjab	Sunrisers Hyderabad	Punjab Cricket Association IS Bindra Stadium, Mohali

```
# info
movies.info()

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1629 entries, 0 to 1628
Data columns (total 18 columns):
#   Column              Non-Null Count  Dtype
---  -
0   title_x              1629 non-null   object
1   imdb_id              1629 non-null   object
2   poster_path          1526 non-null   object
3   wiki_link            1629 non-null   object
4   title_y              1629 non-null   object
5   original_title       1629 non-null   object
6   is_adult              1629 non-null   int64
7   year_of_release      1629 non-null   int64
8   runtime              1629 non-null   object
9   genres               1629 non-null   object
10  imdb_rating          1629 non-null   float64
11  imdb_votes           1629 non-null   int64
12  story                1609 non-null   object
13  summary              1629 non-null   object
14  tagline              557 non-null    object
15  actors               1624 non-null   object
16  wins_nominations     707 non-null    object
17  release_date         1522 non-null   object
dtypes: float64(1), int64(3), object(14)
memory usage: 229.2+ KB
```

```
ipl.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 950 entries, 0 to 949
Data columns (total 20 columns):
#   Column                Non-Null Count  Dtype
---  -
0   ID                     950 non-null    int64
1   City                   899 non-null    object
2   Date                   950 non-null    object
3   Season                 950 non-null    object
4   MatchNumber           950 non-null    object
5   Team1                  950 non-null    object
6   Team2                  950 non-null    object
7   Venue                  950 non-null    object
8   TossWinner             950 non-null    object
9   TossDecision           950 non-null    object
10  SuperOver              946 non-null    object
11  WinningTeam            946 non-null    object
12  WonBy                  950 non-null    object
13  Margin                 932 non-null    float64
14  method                 19 non-null     object
15  Player_of_Match        946 non-null    object
16  Team1Players           950 non-null    object
17  Team2Players           950 non-null    object
18  Umpire1                950 non-null    object
19  Umpire2                950 non-null    object
dtypes: float64(1), int64(1), object(18)
memory usage: 148.6+ KB
```

```
# describe
movies.describe()
```

	is_adult	year_of_release	imdb_rating	imdb_votes
count	1629.0	1629.000000	1629.000000	1629.000000
mean	0.0	2010.263966	5.557459	5384.263352
std	0.0	5.381542	1.567609	14552.103231
min	0.0	2001.000000	0.000000	0.000000
25%	0.0	2005.000000	4.400000	233.000000
50%	0.0	2011.000000	5.600000	1000.000000
75%	0.0	2015.000000	6.800000	4287.000000
max	0.0	2019.000000	9.400000	310481.000000

```
ipl.describe()
```

	ID	Margin
count	9.500000e+02	932.000000
mean	8.304852e+05	17.056867
std	3.375678e+05	21.633109
min	3.359820e+05	1.000000
25%	5.012612e+05	6.000000
50%	8.297380e+05	8.000000
75%	1.175372e+06	19.000000
max	1.312200e+06	146.000000

```
# isnull
movies.isnull().sum()
```

title_x	0
imdb_id	0
poster_path	103
wiki_link	0
title_y	0
original_title	0
is_adult	0
year_of_release	0
runtime	0
genres	0
imdb_rating	0
imdb_votes	0
story	20
summary	0
tagline	1072
actors	5

```
wins_nominations    922
release_date        107
dtype: int64
```

```
# duplicated
movies.duplicated().sum()
```

```
0
```

```
students.duplicated().sum()
```

```
1
```

```
# rename
students
```

	iq	percent	lpa
0	100	80	10
1	90	70	7
2	120	100	14
3	80	50	2
4	0	0	0
5	0	0	0

```
students.rename(columns={'marks':'percent','package':'lpa'},inplace=True)
```

Math Methods

```
# sum -> axis argument
students.sum(axis=0)
```

```
iq          390
percent     300
lpa         33
dtype: int64
```

```
students.mean(axis=1)
```

```
0    63.333333
1    55.666667
2    78.000000
3    44.000000
4     0.000000
5     0.000000
dtype: float64
```

```
students.var()
```

```
iq          2710.0
percent     1760.0
lpa         33.5
dtype: float64
```

Selecting cols from a DataFrame

```
# single cols
movies['title_x']
```

```
0          Uri: The Surgical Strike
1          Battalion 609
2    The Accidental Prime Minister (film)
3          Why Cheat India
4          Evening Shadows
...
1624    Tera Mera Saath Rahen
1625    Yeh Zindagi Ka Safar
1626    Sabse Bada Sukh
1627    Daaka
```

```
1628                                     Humsafar
Name: title_x, Length: 1629, dtype: object

ipl['Venue']

0          Narendra Modi Stadium, Ahmedabad
1          Narendra Modi Stadium, Ahmedabad
2              Eden Gardens, Kolkata
3              Eden Gardens, Kolkata
4          Wankhede Stadium, Mumbai
...
945              Eden Gardens
946          Wankhede Stadium
947          Feroz Shah Kotla
948  Punjab Cricket Association Stadium, Mohali
949              M Chinnaswamy Stadium
Name: Venue, Length: 950, dtype: object
```

```
# multiple cols
movies[['year_of_release','actors','title_x']]
```

	year_of_release	actors	title_x
0	2019	Vicky KaushalParesh RawalMohit RainaYami Ga...	Uri: The Surgical Strike
1	2019	Vicky AhujaShoaib IbrahimShrikant KamatElen...	Battalion 609
2	2019	Anupam KherAkshaye KhannaAahana KumraAtul S...	The Accidental Prime Minister (film)
3	2019	Emraan HashmiShreya DhanwantharySnigdhaDeep ...	Why Cheat India
4	2018	Mona AmbegaonkarAnanth Narayan MahadevanDeva...	Evening Shadows
...
1624	2001	Ajay DevgnSonali BendreNamrata ShirodkarPre...	Tera Mera Saath Rahen
1625	2001	Ameesha PatelJimmy SheirgillNafisa AliGulsh...	Yeh Zindagi Ka Safar
1626	2018	Vijay AroraAsraniRajni BalalKumud DamleUtpa...	Sabse Bada Sukh
1627	2019	Gippy GrewalZareen Khan	Daaka
1628	2011	Fawad Khan	Humsafar

1629 rows x 3 columns

```
ipl[['Team1','Team2','WinningTeam']]
```

	Team1	Team2	WinningTeam
0	Rajasthan Royals	Gujarat Titans	Gujarat Titans
1	Royal Challengers Bangalore	Rajasthan Royals	Rajasthan Royals
2	Royal Challengers Bangalore	Lucknow Super Giants	Royal Challengers Bangalore
3	Rajasthan Royals	Gujarat Titans	Gujarat Titans
4	Sunrisers Hyderabad	Punjab Kings	Punjab Kings
...
945	Kolkata Knight Riders	Deccan Chargers	Kolkata Knight Riders
946	Mumbai Indians	Royal Challengers Bangalore	Royal Challengers Bangalore
947	Delhi Daredevils	Rajasthan Royals	Delhi Daredevils
948	Kings XI Punjab	Chennai Super Kings	Chennai Super Kings
949	Royal Challengers Bangalore	Kolkata Knight Riders	Kolkata Knight Riders

950 rows x 3 columns

✦ Selecting rows from a DataFrame

- **iloc** - searches using index positions
- **loc** - searches using index labels

```
# single row
movies.iloc[5]

title_x          Soni (film)
imdb_id          tt6078866
poster_path      https://upload.wikimedia.org/wikipedia/en/thum...
```



```
wiki_link      https://en.wikipedia.org/wiki/Soni_(film)
title_y      Soni
original_title Soni
is_adult      0
year_of_release 2018
runtime      97
genres      Drama
imdb_rating   7.2
imdb_votes    1595
story        Soni a young policewoman in Delhi and her su...
summary      While fighting crimes against women in Delhi ...
tagline      NaN
actors       Geetika Vidya Ohlyan|Saloni Batra|Vikas Shukla...
wins_nominations 3 wins & 5 nominations
release_date  18 January 2019 (USA)
Name: 5, dtype: object
```

```
# multiple row
movies.iloc[:5]
```

	title_x	imdb_id	poster_path	
0	Uri: The Surgical Strike	tt8291224	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org/v
1	Battalion 609	tt9472208	NaN	https://en.wikipedi
2	The Accidental Prime Minister (film)	tt6986710	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org/v
3	Why Cheat India	tt8108208	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org
4	Evening Shadows	tt6028796	NaN	https://en.wikipedia.org/

```
# fancy indexing
movies.iloc[[0,4,5]]
```

	title_x	imdb_id	poster_path	
0	Uri: The Surgical Strike	tt8291224	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org/w
4	Evening Shadows	tt6028796	NaN	https://en.wikipedia.org/v
5	Soni (film)	tt6078866	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikip

```
# loc
students
```

	iq	marks	package
name			
nitish	100	80	10
ankit	90	70	7
rupesh	120	100	14
rishabh	80	50	2
amit	0	0	0
ankita	0	0	0

```
students.loc['nitish']
```

```
iq      100
marks   80
package 10
Name: nitish, dtype: int64
```

```
students.loc['nitish':'rishabh':2]
```

	iq	marks	package
name			
nitish	100	80	10
rupesh	120	100	14

```
students.loc[['nitish','ankita','rupesh']]
```

	iq	marks	package
name			
nitish	100	80	10
ankita	0	0	0
rupesh	120	100	14

```
students.iloc[[0,3,4]]
```

	iq	marks	package
name			
nitish	100	80	10
rishabh	80	50	2
amit	0	0	0

Selecting both rows and cols

```
movies.iloc[0:3,0:3]
```

	title_x	imdb_id	poster_path
0	Uri: The Surgical Strike	tt8291224	https://upload.wikimedia.org/wikipedia/en/thum...
1	Battalion 609	tt9472208	NaN
2	The Accidental Prime Minister (film)	tt6986710	https://upload.wikimedia.org/wikipedia/en/thum...

```
movies.loc[0:2,'title_x':'poster_path']
```

	title_x	imdb_id	poster_path
0	Uri: The Surgical Strike	tt8291224	https://upload.wikimedia.org/wikipedia/en/thum...
1	Battalion 609	tt9472208	NaN
2	The Accidental Prime Minister (film)	tt6986710	https://upload.wikimedia.org/wikipedia/en/thum...

Filtering a DataFrame

ipl.head(2)

	ID	City	Date	Season	MatchNumber	Team1	Team2	Venue
0	1312200	Ahmedabad	2022-05-29	2022	Final	Rajasthan Royals	Gujarat Titans	Narendra Modi Stadium, Ahmedabad
1	1312199	Ahmedabad	2022-05-27	2022	Qualifier 2	Royal Challengers Bangalore	Rajasthan Royals	Narendra Modi Stadium, Ahmedabad

```
# find all the final winners
mask = ipl['MatchNumber'] == 'Final'
new_df = ipl[mask]
new_df[['Season', 'WinningTeam']]

ipl[ipl['MatchNumber'] == 'Final'][['Season', 'WinningTeam']]
```

	Season	WinningTeam
0	2022	Gujarat Titans
74	2021	Chennai Super Kings
134	2020/21	Mumbai Indians
194	2019	Mumbai Indians
254	2018	Chennai Super Kings
314	2017	Mumbai Indians
373	2016	Sunrisers Hyderabad
433	2015	Mumbai Indians
492	2014	Kolkata Knight Riders
552	2013	Mumbai Indians
628	2012	Kolkata Knight Riders
702	2011	Chennai Super Kings
775	2009/10	Chennai Super Kings
835	2009	Deccan Chargers
892	2007/08	Rajasthan Royals

```
# how many super over finishes have occurred
ipl[ipl['SuperOver'] == 'Y'].shape[0]

14

# how many matches has csk won in kolkata
ipl[(ipl['City'] == 'Kolkata') & (ipl['WinningTeam'] == 'Chennai Super Kings')].shape[0]

5

# toss winner is match winner in percentage
(ipl[ipl['TossWinner'] == ipl['WinningTeam']].shape[0]/ipl.shape[0])*100

51.473684210526315
```

```
# movies with rating higher than 8 and votes>10000
movies[(movies['imdb_rating'] > 8.5) & (movies['imdb_votes'] > 10000)].shape[0]

0
```

```
# Action movies with rating higher than 7.5
# mask1 = movies['genres'].str.split('|').apply(lambda x:'Action' in x)
mask1 = movies['genres'].str.contains('Action')
mask2 = movies['imdb_rating'] > 7.5

movies[mask1 & mask2]
```

	title_x	imdb_id	poster_path	wiki_link	title_y	origi
0	Uri: The Surgical Strike	tt8291224	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org/wiki/Uri:_The_Surgica...	Uri: The Surgical Strike	Ur
41	Family of Thakurganj	tt8897986	https://upload.wikimedia.org/wikipedia/en/9/99...	https://en.wikipedia.org/wiki/Family_of_Thakur...	Family of Thakurganj	
84	Mukkabaaz	tt7180544	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org/wiki/Mukkabaaz	The Brawler	
106	Raazi	tt7098658	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org/wiki/Raazi	Raazi	
110	Parmanu: The Story of Pokhran	tt6826438	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org/wiki/Parmanu:_The_Sto...	Parmanu: The Story of Pokhran	Sti
112	Bhavesh Joshi Superhero	tt6129302	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org/wiki/Bhavesh_Joshi_Su...	Bhavesh Joshi Superhero	I
169	The Ghazi Attack	tt6299040	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org/wiki/The_Ghazi_Attack...	The Ghazi Attack	Thi
219	Raag Desh (film)	tt6080746	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org/wiki/Raagdes	Raag Desh	
258	Irudhi Suttru	tt5310090	https://upload.wikimedia.org/wikipedia/en/f/fe...	https://en.wikipedia.org/wiki/Saala_Khadooos	Saala Khadooos	ε
280	Laal Rang	tt5600714	NaN	https://en.wikipedia.org/wiki/Laal_Rang	Laal Rang	

```
# write a function that can return the track record of 2 teams against each other
```

✎ Adding new cols

```
# completely new
movies['Country'] = 'India'
movies.head()
```

	title_x	imdb_id	poster_path	
0	Uri: The Surgical Strike	tt8291224	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org/v
1	Battalion 609	tt9472208	NaN	https://en.wikipedia
2	The Accidental Prime Minister (film)	tt6986710	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org/v
3	Why Cheat India	tt8108208	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org
4	Evening Shadows	tt6028796	NaN	https://en.wikipedia.org/

```
# from existing ones
movies.dropna(inplace=True)

movies['lead actor'] = movies['actors'].str.split('|').apply(lambda x:x[0])
movies.head()
```

	title_x	imdb_id	poster_path	
11	Gully Boy	tt2395469	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikip
34	Yeh Hai India	tt5525846	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.c
37	Article 15 (film)	tt10324144	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.or
87	Aiyaary	tt6774212	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wik
96	Raid (2018 film)	tt7363076	https://upload.wikimedia.org/wikipedia/en/thum...	https://en.wikipedia.org

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 298 entries, 11 to 1623
Data columns (total 19 columns):
#   Column                Non-Null Count  Dtype
---  -
0   title_x                298 non-null    object
1   imdb_id                298 non-null    object
2   poster_path            298 non-null    object
3   wiki_link              298 non-null    object
4   title_y                298 non-null    object
5   original_title         298 non-null    object
6   is_adult               298 non-null    int64
7   year_of_release        298 non-null    int64
8   runtime                298 non-null    object
9   genres                 298 non-null    object
10  imdb_rating            298 non-null    float64
11  imdb_votes             298 non-null    int64
12  story                  298 non-null    object
13  summary                298 non-null    object
14  tagline                 298 non-null    object
15  actors                 298 non-null    object
16  wins_nominations       298 non-null    object
17  release_date           298 non-null    object
18  Country                298 non-null    object
dtypes: float64(1), int64(3), object(15)
memory usage: 46.6+ KB
```

✓ Important DataFrame Functions

```
# astype
ipl.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 950 entries, 0 to 949
Data columns (total 20 columns):
#   Column                Non-Null Count  Dtype
---  -
0   ID                    950 non-null    int64
1   City                  899 non-null    object
2   Date                  950 non-null    object
3   Season                950 non-null    object
4   MatchNumber           950 non-null    object
5   Team1                 950 non-null    object
6   Team2                 950 non-null    object
7   Venue                 950 non-null    object
8   TossWinner            950 non-null    object
9   TossDecision          950 non-null    object
10  SuperOver             946 non-null    object
11  WinningTeam           946 non-null    object
12  WonBy                 950 non-null    object
13  Margin                932 non-null    float64
14  method                19 non-null     object
15  Player_of_Match       946 non-null    object
16  Team1Players           950 non-null    object
17  Team2Players           950 non-null    object
18  Umpire1               950 non-null    object
19  Umpire2               950 non-null    object
dtypes: float64(1), int64(1), object(18)
memory usage: 148.6+ KB
```

```
ipl['ID'] = ipl['ID'].astype('int32')
```

```
ipl.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 950 entries, 0 to 949
Data columns (total 20 columns):
#   Column                Non-Null Count  Dtype
---  -
0   ID                    950 non-null    int32
1   City                  899 non-null    object
2   Date                  950 non-null    object
3   Season                950 non-null    object
4   MatchNumber           950 non-null    object
5   Team1                 950 non-null    object
6   Team2                 950 non-null    object
7   Venue                 950 non-null    object
8   TossWinner            950 non-null    object
9   TossDecision          950 non-null    object
10  SuperOver             946 non-null    object
11  WinningTeam           946 non-null    object
12  WonBy                 950 non-null    object
13  Margin                932 non-null    float64
14  method                19 non-null     object
15  Player_of_Match       946 non-null    object
```

