

In [7]:

```
1 df = pd.DataFrame(data)
2 df
```

Out[7]:

	title	id	revenue	genres	belongs_to_collection	runtime
0	Avengers: Endgame	299534	2797800564	{'id': 12, 'name': 'Adventure'}, {'id': 878, 'name': 'Action'}	{'id': 86311, 'name': 'The Avengers Collection'}	181
1	Avatar	19995	2787965087	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 87096, 'name': 'Avatar Collection'}	162
2	Star Wars: The Force Awakens	140607	2068223624	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 10, 'name': 'Star Wars Collection'}	136
3	Avengers: Infinity War	299536	2046239637	{'id': 12, 'name': 'Adventure'}, {'id': 28, 'name': 'Action'}	{'id': 86311, 'name': 'The Avengers Collection'}	149
4	Titanic	597	1845034188	{'id': 18, 'name': 'Drama'}, {'id': 10749, 'name': 'History'}	None	194
5	Jurassic World	135397	1671713208	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 328, 'name': 'Jurassic Park Collection'}	124
6	The Lion King	420818	1656943394	{'id': 12, 'name': 'Adventure'}, {'id': 10751, 'name': 'Family'}	None	118
7	The Avengers	24428	1519557910	{'id': 878, 'name': 'Science Fiction'}, {'id': 12, 'name': 'Adventure'}	{'id': 86311, 'name': 'The Avengers Collection'}	143
8	Furious 7	168259	1506249360	{'id': 28, 'name': 'Action'}, {'id': 53, 'name': 'Thriller'}	{'id': 9485, 'name': 'The Fast and the Furious Collection'}	137
9	Avengers: Age of Ultron	99861	1405403694	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 86311, 'name': 'The Avengers Collection'}	141
10	Black Panther	284054	1346739107	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 529892, 'name': 'Black Panther Collection'}	134
11	Harry Potter and the Deathly Hallows: Part 2	12445	1341511219	{'id': 14, 'name': 'Fantasy'}, {'id': 12, 'name': 'Adventure'}	{'id': 1241, 'name': 'Harry Potter Collection'}	130
12	Star Wars: The Last Jedi	181808	1332539889	{'id': 14, 'name': 'Fantasy'}, {'id': 12, 'name': 'Adventure'}	{'id': 10, 'name': 'Star Wars Collection'}	152
13	Frozen II	330457	1330764959	{'id': 16, 'name': 'Animation'}, {'id': 10751, 'name': 'Family'}	{'id': 386382, 'name': 'Frozen Collection'}	104
14	Jurassic World: Fallen Kingdom	351286	1303459585	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 328, 'name': 'Jurassic Park Collection'}	129
15	Frozen	109445	1274219009	{'id': 16, 'name': 'Animation'}, {'id': 12, 'name': 'Adventure'}	{'id': 386382, 'name': 'Frozen Collection'}	102
16	Beauty and the Beast	321612	1263521126	{'id': 10751, 'name': 'Family'}, {'id': 14, 'name': 'Fantasy'}	None	129

	title	id	revenue	genres	belongs_to_collection	runtime
17	Incredibles 2	260513	1241891456	[{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}]	{'id': 468222, 'name': 'The Incredibles Collection'}	118

```
In [8]: 1 df = pd.read_json("X:\Data Science\Projects\Work with Pandas, SQL Database")
```

```
In [9]: 1 df.genres[0]
```

```
Out[9]: [{'id': 12, 'name': 'Adventure'},  
         {'id': 878, 'name': 'Science Fiction'},  
         {'id': 28, 'name': 'Action'}]
```

```
In [10]: 1 df.belongs_to_collection[0]
```

```
Out[10]: {'id': 86311,  
          'name': 'The Avengers Collection',  
          'poster_path': '/yFSIUUTCvgYrpalUktulvk3Gi5Y.jpg',  
          'backdrop_path': '/zuW6f0iusv4X9nnW3paHGfXcS1l.jpg'}
```

```
In [11]: 1 pd.json_normalize(data = data, sep = "_")
```

Out[11]:

	title	id	revenue	genres	runtime	belongs_to_collection_id	belongs_to_co
0	Avengers: Endgame	299534	2797800564	[{'id': 12, 'name': 'Adventure'}, {'id': 878, 'name': 'Action'}]	181	86311.0	The Avengers
1	Avatar	19995	2787965087	[{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}]	162	87096.0	Avatar
2	Star Wars: The Force Awakens	140607	2068223624	[{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}]	136	10.0	Star Wars
3	Avengers: Infinity War	299536	2046239637	[{'id': 12, 'name': 'Adventure'}, {'id': 28, 'name': 'Action'}]	149	86311.0	The Avengers
4	Titanic	597	1845034188	[{'id': 18, 'name': 'Drama'}, {'id': 10749, 'name': 'History'}]	194	NaN	Titanic
5	Jurassic World	135397	1671713208	[{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}]	124	328.0	Jurassic World
6	The Lion King	420818	1656943394	[{'id': 12, 'name': 'Adventure'}, {'id': 10751, 'name': 'Family'}]	118	NaN	The Lion King
7	The Avengers	24428	1519557910	[{'id': 878, 'name': 'Science Fiction'}, {'id': 12, 'name': 'Adventure'}]	143	86311.0	The Avengers
8	Furious 7	168259	1506249360	[{'id': 28, 'name': 'Action'}, {'id': 53, 'name': 'Thriller'}]	137	9485.0	The Fast and the Furious
9	Avengers: Age of Ultron	99861	1405403694	[{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}]	141	86311.0	The Avengers
10	Black Panther	284054	1346739107	[{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}]	134	529892.0	Black Panther

	title	id	revenue	genres	runtime	belongs_to_collection_id	belongs_to_collection
11	Harry Potter and the Deathly Hallows: Part 2	12445	1341511219	[{'id': 14, 'name': 'Fantasy'}, {'id': 12, 'name': 'Adventure'}]	130	1241.0	Harry Potter and the Deathly Hallows: Part 2
12	Star Wars: The Last Jedi	181808	1332539889	[{'id': 14, 'name': 'Fantasy'}, {'id': 12, 'name': 'Adventure'}]	152	10.0	Star Wars: The Last Jedi
13	Frozen II	330457	1330764959	[{'id': 16, 'name': 'Animation'}, {'id': 10751, 'name': 'Family'}]	104	386382.0	Frozen II
14	Jurassic World: Fallen Kingdom	351286	1303459585	[{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}]	129	328.0	Jurassic World: Fallen Kingdom
15	Frozen	109445	1274219009	[{'id': 16, 'name': 'Animation'}, {'id': 12, 'name': 'Adventure'}]	102	386382.0	Frozen
16	Beauty and the Beast	321612	1263521126	[{'id': 10751, 'name': 'Family'}, {'id': 14, 'name': 'Fantasy'}]	129	NaN	Beauty and the Beast
17	Incredibles 2	260513	1241891456	[{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}]	118	468222.0	The Incredibles 2

```
In [12]: 1 pd.json_normalize(data = data, sep = "_").genres[0]
```

Out[12]: [{'id': 12, 'name': 'Adventure'}, {'id': 878, 'name': 'Science Fiction'}, {'id': 28, 'name': 'Action'}]

```
In [13]: 1 pd.json_normalize( data = data, record_path = 'genres', meta = ['title', "
```


Out[13]:

	genres_id	genres_name	title	id
0	12	Adventure	Avengers: Endgame	299534
1	878	Science Fiction	Avengers: Endgame	299534
2	28	Action	Avengers: Endgame	299534
3	28	Action	Avatar	19995
4	12	Adventure	Avatar	19995
5	14	Fantasy	Avatar	19995
6	878	Science Fiction	Avatar	19995
7	28	Action	Star Wars: The Force Awakens	140607
8	12	Adventure	Star Wars: The Force Awakens	140607
9	878	Science Fiction	Star Wars: The Force Awakens	140607
10	14	Fantasy	Star Wars: The Force Awakens	140607
11	12	Adventure	Avengers: Infinity War	299536
12	28	Action	Avengers: Infinity War	299536
13	878	Science Fiction	Avengers: Infinity War	299536
14	18	Drama	Titanic	597
15	10749	Romance	Titanic	597
16	53	Thriller	Titanic	597
17	28	Action	Jurassic World	135397
18	12	Adventure	Jurassic World	135397
19	878	Science Fiction	Jurassic World	135397
20	53	Thriller	Jurassic World	135397
21	12	Adventure	The Lion King	420818
22	10751	Family	The Lion King	420818
23	878	Science Fiction	The Avengers	24428
24	28	Action	The Avengers	24428
25	12	Adventure	The Avengers	24428
26	28	Action	Furious 7	168259
27	53	Thriller	Furious 7	168259
28	28	Action	Avengers: Age of Ultron	99861
29	12	Adventure	Avengers: Age of Ultron	99861
30	878	Science Fiction	Avengers: Age of Ultron	99861
31	28	Action	Black Panther	284054
32	12	Adventure	Black Panther	284054
33	14	Fantasy	Black Panther	284054
34	878	Science Fiction	Black Panther	284054

	genres_id	genres_name	title	id
35	14	Fantasy	Harry Potter and the Deathly Hallows: Part 2	12445
36	12	Adventure	Harry Potter and the Deathly Hallows: Part 2	12445
37	14	Fantasy	Star Wars: The Last Jedi	181808
38	12	Adventure	Star Wars: The Last Jedi	181808
39	878	Science Fiction	Star Wars: The Last Jedi	181808
40	28	Action	Star Wars: The Last Jedi	181808
41	16	Animation	Frozen II	330457
42	10751	Family	Frozen II	330457
43	12	Adventure	Frozen II	330457
44	28	Action	Jurassic World: Fallen Kingdom	351286
45	12	Adventure	Jurassic World: Fallen Kingdom	351286
46	878	Science Fiction	Jurassic World: Fallen Kingdom	351286
47	16	Animation	Frozen	109445
48	12	Adventure	Frozen	109445
49	10751	Family	Frozen	109445
50	10751	Family	Beauty and the Beast	321612
51	14	Fantasy	Beauty and the Beast	321612
52	10749	Romance	Beauty and the Beast	321612
53	28	Action	Incredibles 2	260513
54	12	Adventure	Incredibles 2	260513
55	16	Animation	Incredibles 2	260513
56	10751	Family	Incredibles 2	260513

Case 02: Data Import - Working with Web API and JSON (Movies Dataset)

In [14]:

```

1 import pandas as pd
2 import json

```

In [15]:

```

1 with open("X:\Data Science\Projects\Work with Pandas, SQL Databases, JSON,
2 data = json.load(f)

```

In [16]: 1 data

```
Out[16]: {'title': {'0': 'Avengers: Endgame',
                    '1': 'Avatar',
                    '2': 'Star Wars: The Force Awakens',
                    '3': 'Avengers: Infinity War',
                    '4': 'Titanic',
                    '5': 'Jurassic World',
                    '6': 'The Lion King',
                    '7': 'The Avengers',
                    '8': 'Furious 7',
                    '9': 'Avengers: Age of Ultron',
                    '10': 'Black Panther',
                    '11': 'Harry Potter and the Deathly Hallows: Part 2',
                    '12': 'Star Wars: The Last Jedi',
                    '13': 'Frozen II',
                    '14': 'Jurassic World: Fallen Kingdom',
                    '15': 'Frozen',
                    '16': 'Beauty and the Beast',
                    '17': 'Incredibles 2'},
          'id': {'0': 299534,
                  '1': 10005
```

In [17]: 1 type(data)

Out[17]: dict

In [18]: 1 len(data)

Out[18]: 6

In [19]:

```
1 df = pd.DataFrame(data)
2 df
```

Out[19]:

	title	id	revenue	genres	belongs_to_collection	runtime
0	Avengers: Endgame	299534	2797800564	{'id': 12, 'name': 'Adventure'}, {'id': 878, 'name': 'Action'}	{'id': 86311, 'name': 'The Avengers Collection'}	181
1	Avatar	19995	2787965087	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 87096, 'name': 'Avatar Collection'}	162
2	Star Wars: The Force Awakens	140607	2068223624	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 10, 'name': 'Star Wars Collection'}	136
3	Avengers: Infinity War	299536	2046239637	{'id': 12, 'name': 'Adventure'}, {'id': 28, 'name': 'Action'}	{'id': 86311, 'name': 'The Avengers Collection'}	149
4	Titanic	597	1845034188	{'id': 18, 'name': 'Drama'}, {'id': 10749, 'name': 'History'}	None	194
5	Jurassic World	135397	1671713208	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 328, 'name': 'Jurassic Park Collection'}	124
6	The Lion King	420818	1656943394	{'id': 12, 'name': 'Adventure'}, {'id': 10751, 'name': 'Family'}	None	118
7	The Avengers	24428	1519557910	{'id': 878, 'name': 'Science Fiction'}, {'id': 12, 'name': 'Adventure'}	{'id': 86311, 'name': 'The Avengers Collection'}	143
8	Furious 7	168259	1506249360	{'id': 28, 'name': 'Action'}, {'id': 53, 'name': 'Thriller'}	{'id': 9485, 'name': 'The Fast and the Furious Collection'}	137
9	Avengers: Age of Ultron	99861	1405403694	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 86311, 'name': 'The Avengers Collection'}	141
10	Black Panther	284054	1346739107	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 529892, 'name': 'Black Panther Collection'}	134
11	Harry Potter and the Deathly Hallows: Part 2	12445	1341511219	{'id': 14, 'name': 'Fantasy'}, {'id': 12, 'name': 'Adventure'}	{'id': 1241, 'name': 'Harry Potter Collection'}	130
12	Star Wars: The Last Jedi	181808	1332539889	{'id': 14, 'name': 'Fantasy'}, {'id': 12, 'name': 'Adventure'}	{'id': 10, 'name': 'Star Wars Collection'}	152
13	Frozen II	330457	1330764959	{'id': 16, 'name': 'Animation'}, {'id': 10751, 'name': 'Family'}	{'id': 386382, 'name': 'Frozen Collection'}	104
14	Jurassic World: Fallen Kingdom	351286	1303459585	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 328, 'name': 'Jurassic Park Collection'}	129
15	Frozen	109445	1274219009	{'id': 16, 'name': 'Animation'}, {'id': 12, 'name': 'Adventure'}	{'id': 386382, 'name': 'Frozen Collection'}	102
16	Beauty and the Beast	321612	1263521126	{'id': 10751, 'name': 'Family'}, {'id': 14, 'name': 'Fantasy'}	None	129

	title	id	revenue	genres	belongs_to_collection	runtime
17	Incredibles 2	260513	1241891456	[{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}]	{'id': 468222, 'name': 'The Incredibles Collection'}	118

In [20]:

1 df = pd.read_json("X:\Data Science\Projects\Work with Pandas, SQL Database\movies.json")

In [21]:

1	df
---	----

Out[21]:

	title	id	revenue	genres	belongs_to_collection	runtime
0	Avengers: Endgame	299534	2797800564	{'id': 12, 'name': 'Adventure'}, {'id': 878, 'name': 'Action'}	{'id': 86311, 'name': 'The Avengers Collection'}	181
1	Avatar	19995	2787965087	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 87096, 'name': 'Avatar Collection'}	162
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4	Titanic	597	1845034188	{'id': 18, 'name': 'Drama'}, {'id': 10749, 'name': 'History'}	None	194
5	Jurassic World	135397	1671713208	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 328, 'name': 'Jurassic Park Collection'}	124
6	The Lion King	420818	1656943394	{'id': 12, 'name': 'Adventure'}, {'id': 10751, 'name': 'Family'}	None	118
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8	Furious 7	168259	1506249360	{'id': 28, 'name': 'Action'}, {'id': 53, 'name': 'Thriller'}	{'id': 9485, 'name': 'The Fast and the Furious Collection'}	137
9	Avengers: Age of Ultron	99861	1405403694	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 86311, 'name': 'The Avengers Collection'}	141
10	Black Panther	284054	1346739107	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 529892, 'name': 'Black Panther Collection'}	134
11	Harry Potter and the Deathly Hallows: Part 2	12445	1341511219	{'id': 14, 'name': 'Fantasy'}, {'id': 12, 'name': 'Adventure'}	{'id': 1241, 'name': 'Harry Potter Collection'}	130
12	Star Wars: The Last Jedi	181808	1332539889	{'id': 14, 'name': 'Fantasy'}, {'id': 12, 'name': 'Adventure'}	{'id': 10, 'name': 'Star Wars Collection'}	152
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16	Beauty and the Beast	321612	1263521126	{'id': 10751, 'name': 'Family'}, {'id': 14, 'name': 'Fantasy'}	None	129

In [28]:

```
1 df
```

Out[28]:

	title	id	revenue	genres	belongs_to_collection	runtime
0	Avengers: Endgame	299534	2797800564	{'id': 12, 'name': 'Adventure'}, {'id': 878, 'name': 'Action'}	{'id': 86311, 'name': 'The Avengers Collection'}	181
1	Avatar	19995	2787965087	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 87096, 'name': 'Avatar Collection'}	162
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5	Jurassic World	135397	1671713208	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 328, 'name': 'Jurassic Park Collection'}	124
6	The Lion King	420818	1656943394	{'id': 12, 'name': 'Adventure'}, {'id': 10751, 'name': 'Family'}	None	118
7	The Avengers	24428	1519557910	{'id': 878, 'name': 'Science Fiction'}, {'id': 12, 'name': 'Adventure'}	{'id': 86311, 'name': 'The Avengers Collection'}	143
8	Furious 7	168259	1506249360	{'id': 28, 'name': 'Action'}, {'id': 53, 'name': 'Thriller'}	{'id': 9485, 'name': 'The Fast and the Furious Collection'}	137
9	Avengers: Age of Ultron	99861	1405403694	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 86311, 'name': 'The Avengers Collection'}	141
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12	Star Wars: The Last Jedi	181808	1332539889	{'id': 14, 'name': 'Fantasy'}, {'id': 12, 'name': 'Adventure'}	{'id': 10, 'name': 'Star Wars Collection'}	152
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14	Jurassic World: Fallen Kingdom	351286	1303459585	{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}	{'id': 328, 'name': 'Jurassic Park Collection'}	129
15	Frozen	109445	1274219009	{'id': 16, 'name': 'Animation'}, {'id': 12, 'name': 'Adventure'}	{'id': 386382, 'name': 'Frozen Collection'}	102
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	title	id	revenue	genres	belongs_to_collection	runtime
17	Incredibles 2	260513	1241891456	[{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}]	{'id': 468222, 'name': 'The Incredibles Collection'}	118

In [29]:

1 df.info()

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 18 entries, 0 to 17
Data columns (total 6 columns):
#   Column                                Non-Null Count  Dtype
---  -
0   title                                18 non-null     object
1   id                                    18 non-null     int64
2   revenue                              18 non-null     int64
3   genres                               18 non-null     object
4   belongs_to_collection                15 non-null     object
5   runtime                              18 non-null     int64
dtypes: int64(3), object(3)
memory usage: 1008.0+ bytes
```

In []:

1