

```
In [1]: 1 import sqlite3 as sq3
```

```
In [2]: 1 con = sq3.connect("movies.db")
```

```
In [3]: 1 con
```

```
Out[3]: <sqlite3.Connection at 0x1975f596d50>
```

```
In [4]: 1 con.execute("SELECT * FROM sqlite_master").fetchall()
```

```
Out[4]: [('table',
          'Movies',
          'Movies',
          2,
          'CREATE TABLE "Movies" (\n"id" INTEGER,\n "title" TEXT,\n "revenue" REAL,\n "budget" REAL,\n "belongs_to_collection_name" TEXT,\n "release_date"
TIMESTAMP\n)'),
          ('table',
          'votes',
          'votes',
          3,
          'CREATE TABLE "votes" (\n"id" INTEGER,\n "vote_count" INTEGER,\n "vote_av
erage" REAL\n)'),
          ('table',
          'Genres',
          'Genres',
          4,
          'CREATE TABLE "Genres" (\n"genre_id" INTEGER,\n "genre_name" TEXT,\n "id"
INTEGER\n)'),
          ('table',
          'prod',
          'prod',
          5,
          'CREATE TABLE "prod" (\n"comp_id" INTEGER,\n "comp_logo_path" TEXT,\n "co
mp_name" TEXT,\n "comp_origin_country" TEXT,\n "id" INTEGER\n)')]
```

```
In [5]: 1 con.execute("SELECT name FROM sqlite_master WHERE type = 'table' ORDER BY
```

```
Out[5]: [('Genres',), ('Movies',), ('prod',), ('votes',)]
```

```
In [6]: 1 con.close()
```

```
In [7]: 1 con.execute("SELECT name FROM sqlite_master WHERE type = 'table' ORDER BY
```

ProgrammingError

Traceback (most recent call last)

Input In [7], in <cell line: 1>()

```
----> 1 con.execute("SELECT name FROM sqlite_master WHERE type = 'table' ORDE  
R BY name").fetchall()
```

ProgrammingError: Cannot operate on a closed database.

Loding Data from DataFrame into an SQLite Database

```
In [8]: 1 import pandas as pd  
2 import json  
3 import sqlite3 as sq3
```

```
In [9]: 1 with open("X:\Data Science\Projects\Work with Pandas, SQL Databases, JSON,  
2         data = json.load(f)
```

```
In [10]: 1 pd.set_option('display.max_columns', None)
```

```
In [11]: 1 data
```

```
Out[11]: [{'adult': False,  
  'backdrop_path': '/orjiB3oUIsyz60hoEqkiGpy5Ce0.jpg',  
  'belongs_to_collection': {'id': 86311,  
    'name': 'The Avengers Collection',  
    'poster_path': '/yFSIUUTCvgYrpalUktulvk3Gi5Y.jpg',  
    'backdrop_path': '/zuW6fOiusv4X9nnW3paHGfXcS1l.jpg'},  
  'budget': 356000000,  
  'genres': [{'id': 12, 'name': 'Adventure'},  
    {'id': 878, 'name': 'Science Fiction'},  
    {'id': 28, 'name': 'Action'}],  
  'homepage': 'https://www.marvel.com/movies/avengers-endgame',  
  'id': 299534,  
  'imdb_id': 'tt4154796',  
  'original_language': 'en',  
  'original_title': 'Avengers: Endgame',  
  'overview': "After the devastating events of Avengers: Infinity War, the  
    universe is in ruins due to the efforts of the Mad Titan, Thanos. With the  
    help of remaining allies, the Avengers must assemble once more in order to  
    undo Thanos' actions and restore order to the universe once and for all, no  
    matter what it takes."}]
```

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

In [13]:

1	df
---	----

Out[13]:

	adult	backdrop_path	budget	genres	
0	False	/orjiB3oUlsyz60hoEqkiGpy5CeO.jpg	356000000	[{'id': 12, 'name': 'Adventure'}, {'id': 878, ...}]	https://www.marvel.com/m
1	False	/wcC7kCICL6x6zHUIUyNp9pWoqW1.jpg	237000000	[{'id': 28, 'name': 'Action'}, {'id': 12, 'nam...	http
2	False	/8BTsTfln4jlQrLXUBquXJ0ASQy9.jpg	245000000	[{'id': 28, 'name': 'Action'}, {'id': 12, 'nam...	http://www.starwars.com
3	False	/lmZFxXgJE3vgrciwuDib0N8CfQo.jpg	300000000	[{'id': 12, 'name': 'Adventure'}, {'id': 28, '...	https://www.marvel.com/
4	False	/6VmFqApQRyZZzmiGOQq2C92jyvH.jpg	200000000	[{'id': 18, 'name': 'Drama'}, {'id': 10749, 'n...	
5	False	/9OywzJLgobAbSGfhMXligzTylko.jpg	150000000	[{'id': 28, 'name': 'Action'}, {'id': 12, 'nam...	http:
6	False	/nRXO2SnOA75OsWhNhXstHB8Zml3.jpg	260000000	[{'id': 12, 'name': 'Adventure'}, {'id': 10751...	https://movies.disne
7	False	/v3A0T4fAz8xRugAkfUVkxGLd377.jpg	220000000	[{'id': 878, 'name': 'Science Fiction'}, {'id'...	http://man
8	False	/7X6zOOEzXTQJkzDgBHVly1BgyYu.jpg	190000000	[{'id': 28, 'name': 'Action'}, {'id': 53, 'nam...	
9	False	/4zmNJNQkugbalqJLnKp0wnlp8i3.jpg	250000000	[{'id': 28, 'name': 'Action'}, {'id': 12, 'nam...	http://marvel.com/movies/n

	adult		backdrop_path		budget	genres	
10	False	/6ELJEzQJ3Y45HczvreC3dg0GV5R.jpg	200000000			[{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}]	https://marvel.com/movies/
11	False	/n5A7brJCejceZmHyujwUTVgQNC.jpg	125000000			[{'id': 14, 'name': 'Fantasy'}, {'id': 12, 'name': 'Adventure'}]	https://www.warnerbros.c
12	False	/5lw7zQTHVRBOYpA0V6z0yypOPZh.jpg	200000000			[{'id': 878, 'name': 'Science Fiction'}, {'id': 12, 'name': 'Adventure'}]	https://www.starwars.co
13	False	/xJWPZIYOEFijZpBL7SVBGnzRYXp.jpg	150000000			[{'id': 16, 'name': 'Animation'}, {'id': 10751, 'name': 'Family'}]	https://mc
14	False	/3s9O5af2xWKWR5JzP2iJZpZeQQg.jpg	170000000			[{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}]	http
15	False	/fydUcbkqLyESCFa9U5XKqi8dIVj.jpg	150000000			[{'id': 16, 'name': 'Animation'}, {'id': 12, 'name': 'Adventure'}]	http://r
16	False	/7QshG75xKCmClghQDU1ta2BTaja.jpg	160000000			[{'id': 10751, 'name': 'Family'}, {'id': 14, 'name': 'Fantasy'}]	http://movies.disney.com
17	False	/mabuNsGJgRuCTuGqjFkWe1xdu19.jpg	200000000			[{'id': 28, 'name': 'Action'}, {'id': 12, 'name': 'Adventure'}]	https://movies

In [14]: 1 movies = df[['id', 'title', 'revenue', 'budget', "belongs_to_collection_name",

In [15]:

1 movies

Out[15]:

	id	title	revenue	budget	belongs_to_collection_name	release_date
0	299534	Avengers: Endgame	2797800564	356000000	The Avengers Collection	2019-04-24
1	19995	Avatar	2787965087	237000000	Avatar Collection	2009-12-10
2	140607	Star Wars: The Force Awakens	2068223624	245000000	Star Wars Collection	2015-12-15
3	299536	Avengers: Infinity War	2046239637	300000000	The Avengers Collection	2018-04-25
4	597	Titanic	1845034188	200000000	NaN	1997-11-18
5	135397	Jurassic World	1671713208	150000000	Jurassic Park Collection	2015-06-06
6	420818	The Lion King	1656943394	260000000	NaN	2019-07-12
7	24428	The Avengers	1519557910	220000000	The Avengers Collection	2012-04-25
8	168259	Furious 7	1515047671	190000000	The Fast and the Furious Collection	2015-04-01
9	99861	Avengers: Age of Ultron	1405403694	250000000	The Avengers Collection	2015-04-22
10	284054	Black Panther	1346739107	200000000	Black Panther Collection	2018-02-13
11	12445	Harry Potter and the Deathly Hallows: Part 2	1341511219	125000000	Harry Potter Collection	2011-07-07
12	181808	Star Wars: The Last Jedi	1332539889	200000000	Star Wars Collection	2017-12-13
13	330457	Frozen II	1330764959	150000000	Frozen Collection	2019-11-20
14	351286	Jurassic World: Fallen Kingdom	1303459585	170000000	Jurassic Park Collection	2018-06-06
15	109445	Frozen	1274219009	150000000	Frozen Collection	2013-11-27
16	321612	Beauty and the Beast	1263521126	160000000	NaN	2017-03-16
17	260513	Incredibles 2	1241891456	200000000	The Incredibles Collection	2018-06-14

In [16]: 1 movies.info()

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 18 entries, 0 to 17
Data columns (total 6 columns):
#   Column                                Non-Null Count  Dtype
---  -
0   id                                    18 non-null     int64
1   title                                18 non-null     object
2   revenue                              18 non-null     int64
3   budget                               18 non-null     int64
4   belongs_to_collection_name          15 non-null     object
5   release_date                         18 non-null     object
dtypes: int64(3), object(3)
memory usage: 992.0+ bytes
```

In [17]: 1 movies.release_date = pd.to_datetime(df.release_date)

In [18]: 1 movies.revenue = df.revenue/1000000
2 movies.budget = df.budget/1000000

In [19]: 1 votes = df[["id", "vote_count", "vote_average"]].copy()

In [20]: 1 votes.head()

Out[20]:

	id	vote_count	vote_average
0	299534	12607	8.3
1	19995	21000	7.4
2	140607	14205	7.4
3	299536	17718	8.3
4	597	16661	7.8

In [21]: 1 votes.info()

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 18 entries, 0 to 17
Data columns (total 3 columns):
#   Column            Non-Null Count  Dtype
---  -
0   id                 18 non-null     int64
1   vote_count         18 non-null     int64
2   vote_average       18 non-null     float64
dtypes: float64(1), int64(2)
memory usage: 560.0 bytes
```

In [22]: 1 genres = pd.json_normalize(data = data, record_path = 'genres', meta = 'id')

In [23]:

1	genres
---	--------

Out[23]:

	genre_id	genre_name	id
0	12	Adventure	299534
1	878	Science Fiction	299534
2	28	Action	299534
3	28	Action	19995
4	12	Adventure	19995
5	14	Fantasy	19995
6	878	Science Fiction	19995
7	28	Action	140607
8	12	Adventure	140607
9	878	Science Fiction	140607
10	14	Fantasy	140607
11	12	Adventure	299536
12	28	Action	299536
13	878	Science Fiction	299536
14	18	Drama	597
15	10749	Romance	597
16	28	Action	135397
17	12	Adventure	135397
18	878	Science Fiction	135397
19	53	Thriller	135397
20	12	Adventure	420818
21	10751	Family	420818
22	878	Science Fiction	24428
23	28	Action	24428
24	12	Adventure	24428
25	28	Action	168259
26	53	Thriller	168259
27	28	Action	99861
28	12	Adventure	99861
29	878	Science Fiction	99861
30	28	Action	284054
31	12	Adventure	284054
32	14	Fantasy	284054
33	878	Science Fiction	284054
34	14	Fantasy	12445

	genre_id	genre_name	id
35	12	Adventure	12445
36	878	Science Fiction	181808
37	28	Action	181808
38	12	Adventure	181808
39	16	Animation	330457
40	10751	Family	330457
41	12	Adventure	330457
42	28	Action	351286
43	12	Adventure	351286
44	878	Science Fiction	351286
45	16	Animation	109445
46	12	Adventure	109445
47	10751	Family	109445
48	10751	Family	321612
49	14	Fantasy	321612
50	10749	Romance	321612
51	28	Action	260513
52	12	Adventure	260513
53	16	Animation	260513
54	10751	Family	260513

In [24]:

```
1 prod = pd.json_normalize(data = data, record_path = "production_companies")
2 prod
```

Out[24]:

	comp_id	comp_logo_path	comp_name	comp_origin_country	
0	420	/hUzeosd33nzE5MCNsZxCGEKTxaQ.png	Marvel Studios	US	2995
1	444	/42UPdZI6B2cFXgNUASR8hSt9mpS.png	Dune Entertainment	US	199
2	574	/iB6GjNVHs5hOqcEYt2rcjBqljki.png	Lightstorm Entertainment	US	199
3	25	/qZCc1lty5FzX30aOCVRBLzaVmcp.png	20th Century Fox	US	199
4	290	/Q8mw2AOQQc8Qg0uNwLWq86DVZv.png	Ingenious Media	GB	199
5	1634	None	Truenorth Productions	IS	1406
6	1	/o86DbpburjxrqAzEDhXZcyE8pDb.png	Lucasfilm	US	1406
7	11461	/p9FoEt5shEKRWRKVllvFaEmRnun.png	Bad Robot	US	1406
8	420	/hUzeosd33nzE5MCNsZxCGEKTxaQ.png	Marvel Studios	US	2995
9	4	/fycMZt242LVjagMByZOLUGbCvv3.png	Paramount	US	5
10	574	/iB6GjNVHs5hOqcEYt2rcjBqljki.png	Lightstorm Entertainment	US	5
11	25	/qZCc1lty5FzX30aOCVRBLzaVmcp.png	20th Century Fox	US	5
12	3341	/dTG5dXE1kU2mpmL9BNnraffckLU.png	Fuji Television Network	JP	1353
13	56	/cEaxANEisCqeEoRvODv2dO1l0il.png	Amblin Entertainment	US	1353
14	923	/5UQsZrbbfG2dYJbx8DxfoTr2Bvu.png	Legendary Entertainment	US	1353
15	33	/8lvHyhjr8oUKOOy2dKXoALWKdp0.png	Universal Pictures	US	1353
16	1778	/69xm6sF3JxugGVjfZfm1YY6d7EE.png	Dentsu	JP	1353
17	862	/udTjbqPmcTbfrihMuLtlcizDEM1.png	The Kennedy/Marshall Company	US	1353
18	2	/wdrCwmRnLFJhEoH8GSfymY85KHT.png	Walt Disney Pictures	US	4208
19	7297	/l29JYQVZbTcjZXoz4CUYFpKRmM3.png	Fairview Entertainment	US	4208
20	420	/hUzeosd33nzE5MCNsZxCGEKTxaQ.png	Marvel Studios	US	244
21	4	/fycMZt242LVjagMByZOLUGbCvv3.png	Paramount	US	244
22	87857	None	Abu Dhabi Film Commission		1682
23	33	/8lvHyhjr8oUKOOy2dKXoALWKdp0.png	Universal Pictures	US	1682
24	40890	None	China Film Co.	CN	1682
25	333	/5xUJfzPZ8jWJUDzYtleuPO4qPIa.png	Original Film	US	1682
26	3341	/dTG5dXE1kU2mpmL9BNnraffckLU.png	Fuji Television Network	JP	1682

	comp_id	comp_logo_path	comp_name	comp_origin_country	
27	86352	None	Québec Production Services Tax Credit	1682	
28	87858	None	Colorado Office of Film, Television & Media	1682	
29	1778	/69xm6sF3JxugGVjfZfm1YY6d7EE.png	Dentsu	JP	1682
30	2531	/pC2iDCDCvV85vOBP7a5Ukxuc0Du.png	Media Rights Capital	US	1682
31	1225	None	One Race	US	1682
32	420	/hUzeosd33nzE5MCNsZxCGEKTXaQ.png	Marvel Studios	US	998
33	420	/hUzeosd33nzE5MCNsZxCGEKTXaQ.png	Marvel Studios	US	2840
34	2	/wdrCwmRnLFJhEoH8GSfymY85KHT.png	Walt Disney Pictures	US	2840
35	174	/luAlhI9eVC9Z8UQWOIDdWRKSEJ.png	Warner Bros. Pictures	US	124
36	437	/nu20mtwbElhUNnQ5NXVhHsNknZj.png	Heyday Films	GB	124
37	1	/o86DbpburjxrqAzEDhXZcyE8pDb.png	Lucasfilm	US	1818
38	11092	None	Ram Bergman Productions	US	1818
39	2	/wdrCwmRnLFJhEoH8GSfymY85KHT.png	Walt Disney Pictures	US	1818
40	6125	/tVPmo07IHhBs4HuIlrcV0yujsZ9.png	Walt Disney Animation Studios	US	3304
41	2	/wdrCwmRnLFJhEoH8GSfymY85KHT.png	Walt Disney Pictures	US	3304
42	56	/cEaxANEisCqeEoRvODv2dO1I0il.png	Amblin Entertainment	US	3512
43	923	/5UQsZrbbfG2dYJbx8DxfoTr2Bvu.png	Legendary Entertainment	US	3512
44	33	/8lvHyhjr8oUKOOy2dKXoALWKdp0.png	Universal Pictures	US	3512
45	10338	/el2ap6lvjcEDdbbyJoB3oKiYgXu9.png	Perfect World Pictures	CN	3512
46	2	/wdrCwmRnLFJhEoH8GSfymY85KHT.png	Walt Disney Pictures	US	1094
47	6125	/tVPmo07IHhBs4HuIlrcV0yujsZ9.png	Walt Disney Animation Studios	US	1094
48	2	/wdrCwmRnLFJhEoH8GSfymY85KHT.png	Walt Disney Pictures	US	3216
49	10227	/3YfRy3DBI4abcqkzGx4RVNz12yl.png	Mandeville Films	US	3216
50	2	/wdrCwmRnLFJhEoH8GSfymY85KHT.png	Walt Disney Pictures	US	2605

	comp_id	comp_logo_path	comp_name	comp_origin_country
51	3	/1TjvGVDMYsj6JBxOAKUHpPEwLf7.png	Pixar	US 2605

```
In [25]: 1 con = sq3.connect("movies.db")
```

```
In [26]: 1 con
```

```
Out[26]: <sqlite3.Connection at 0x197625e3030>
```

```
In [120]: 1 movies.to_sql("Movies", con, index = False)
```

```
In [ ]: 1 votes.to_sql("votes", con, index = False)
```

```
In [ ]: 1 genres.to_sql("Genres", con, index = False)
```

```
In [121]: 1 prod.to_sql("prod", con, index = False)
```

```
In [29]: 1 con.execute("SELECT * FROM sqlite_master").fetchall()
```

```
Out[29]: [('table',
          'Movies',
          'Movies',
          2,
          'CREATE TABLE "Movies" (\n"id" INTEGER,\n "title" TEXT,\n "revenue" REAL,\n "budget" REAL,\n "belongs_to_collection_name" TEXT,\n "release_date"
          TIMESTAMP\n)'),
          ('table',
          'votes',
          'votes',
          3,
          'CREATE TABLE "votes" (\n"id" INTEGER,\n "vote_count" INTEGER,\n "vote_ave
          rage" REAL\n)'),
          ('table',
          'Genres',
          'Genres',
          4,
          'CREATE TABLE "Genres" (\n"genre_id" INTEGER,\n "genre_name" TEXT,\n "id"
          INTEGER\n)'),
          ('table',
          'prod',
          'prod',
          5,
          'CREATE TABLE "prod" (\n"comp_id" INTEGER,\n "comp_logo_path" TEXT,\n "co
          mp_name" TEXT,\n "comp_origin_country" TEXT,\n "id" INTEGER\n)')]
```

```
In [30]: 1 con.execute("SELECT name FROM sqlite_master WHERE type='table' ORDER BY na
```

```
Out[30]: [('Genres',), ('Movies',), ('prod',), ('votes',)]
```

```
In [31]: 1 con.close()
```

Loading Data from SQLite Databases into DataFrame

```
In [32]: 1 import pandas as pd
2 import sqlite3 as sq3
```

```
In [33]: 1 con = sq3.connect("movies.db")
```

```
In [34]: 1 con.execute("SELECT * FROM sqlite_master").fetchall()
```

```
Out[34]: [('table',
           'Movies',
           'Movies',
           2,
           'CREATE TABLE "Movies" (\n"id" INTEGER,\n "title" TEXT,\n "revenue" REAL,\n "budget" REAL,\n "belongs_to_collection_name" TEXT,\n "release_date"
TIMESTAMP\n)'),
          ('table',
           'votes',
           'votes',
           3,
           'CREATE TABLE "votes" (\n"id" INTEGER,\n "vote_count" INTEGER,\n "vote_ave
rage" REAL\n)'),
          ('table',
           'Genres',
           'Genres',
           4,
           'CREATE TABLE "Genres" (\n"genre_id" INTEGER,\n "genre_name" TEXT,\n "id"
INTEGER\n)'),
          ('table',
           'prod',
           'prod',
           5,
           'CREATE TABLE "prod" (\n"comp_id" INTEGER,\n "comp_logo_path" TEXT,\n "co
mp_name" TEXT,\n "comp_origin_country" TEXT,\n "id" INTEGER\n)')]
```

```
In [35]: 1 pd.read_sql("SELECT * FROM Movies", con).info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 18 entries, 0 to 17
Data columns (total 6 columns):
#   Column                                Non-Null Count  Dtype
---  -
0   id                                     18 non-null    int64
1   title                                 18 non-null    object
2   revenue                              18 non-null    float64
3   budget                               18 non-null    float64
4   belongs_to_collection_name          15 non-null    object
5   release_date                         18 non-null    object
dtypes: float64(2), int64(1), object(3)
memory usage: 992.0+ bytes
```


In [36]: 1 pd.read_sql("SELECT * FROM Movies", con)

Out[36]:

	id	title	revenue	budget	belongs_to_collection_name	release_date
0	299534	Avengers: Endgame	2797.800564	356.0	The Avengers Collection	2019-04-24 00:00:00
1	19995	Avatar	2787.965087	237.0	Avatar Collection	2009-12-10 00:00:00
2	140607	Star Wars: The Force Awakens	2068.223624	245.0	Star Wars Collection	2015-12-15 00:00:00
3	299536	Avengers: Infinity War	2046.239637	300.0	The Avengers Collection	2018-04-25 00:00:00
4	597	Titanic	1845.034188	200.0	None	1997-11-18 00:00:00
5	135397	Jurassic World	1671.713208	150.0	Jurassic Park Collection	2015-06-06 00:00:00
6	420818	The Lion King	1656.943394	260.0	None	2019-07-12 00:00:00
7	24428	The Avengers	1519.557910	220.0	The Avengers Collection	2012-04-25 00:00:00
8	168259	Furious 7	1515.047671	190.0	The Fast and the Furious Collection	2015-04-01 00:00:00
9	99861	Avengers: Age of Ultron	1405.403694	250.0	The Avengers Collection	2015-04-22 00:00:00
10	284054	Black Panther	1346.739107	200.0	Black Panther Collection	2018-02-13 00:00:00
11	12445	Harry Potter and the Deathly Hallows: Part 2	1341.511219	125.0	Harry Potter Collection	2011-07-07 00:00:00
12	181808	Star Wars: The Last Jedi	1332.539889	200.0	Star Wars Collection	2017-12-13 00:00:00
13	330457	Frozen II	1330.764959	150.0	Frozen Collection	2019-11-20 00:00:00
14	351286	Jurassic World: Fallen Kingdom	1303.459585	170.0	Jurassic Park Collection	2018-06-06 00:00:00
15	109445	Frozen	1274.219009	150.0	Frozen Collection	2013-11-27 00:00:00
16	321612	Beauty and the Beast	1263.521126	160.0	None	2017-03-16 00:00:00
17	260513	Incredibles 2	1241.891456	200.0	The Incredibles Collection	2018-06-14 00:00:00

In [37]:

```
1 df = pd.read_sql("SELECT * FROM Movies", con, index_col = 'id', parse_dates=
2 df
```

Out[37]:

	title	revenue	budget	belongs_to_collection_name	release_date
id					
299534	Avengers: Endgame	2797.800564	356.0	The Avengers Collection	2019-04-24
19995	Avatar	2787.965087	237.0	Avatar Collection	2009-12-10
140607	Star Wars: The Force Awakens	2068.223624	245.0	Star Wars Collection	2015-12-15
299536	Avengers: Infinity War	2046.239637	300.0	The Avengers Collection	2018-04-25
597	Titanic	1845.034188	200.0	None	1997-11-18
135397	Jurassic World	1671.713208	150.0	Jurassic Park Collection	2015-06-06
420818	The Lion King	1656.943394	260.0	None	2019-07-12
24428	The Avengers	1519.557910	220.0	The Avengers Collection	2012-04-25
168259	Furious 7	1515.047671	190.0	The Fast and the Furious Collection	2015-04-01
99861	Avengers: Age of Ultron	1405.403694	250.0	The Avengers Collection	2015-04-22
284054	Black Panther	1346.739107	200.0	Black Panther Collection	2018-02-13
12445	Harry Potter and the Deathly Hallows: Part 2	1341.511219	125.0	Harry Potter Collection	2011-07-07
181808	Star Wars: The Last Jedi	1332.539889	200.0	Star Wars Collection	2017-12-13
330457	Frozen II	1330.764959	150.0	Frozen Collection	2019-11-20
351286	Jurassic World: Fallen Kingdom	1303.459585	170.0	Jurassic Park Collection	2018-06-06
109445	Frozen	1274.219009	150.0	Frozen Collection	2013-11-27
321612	Beauty and the Beast	1263.521126	160.0	None	2017-03-16
260513	Incredibles 2	1241.891456	200.0	The Incredibles Collection	2018-06-14

In [38]:

```
1 df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 18 entries, 299534 to 260513
Data columns (total 5 columns):
#   Column                                Non-Null Count  Dtype
---  -
0   title                                18 non-null     object
1   revenue                             18 non-null     float64
2   budget                              18 non-null     float64
3   belongs_to_collection_name          15 non-null     object
4   release_date                        18 non-null     datetime64[ns]
dtypes: datetime64[ns](1), float64(2), object(2)
memory usage: 864.0+ bytes
```

In [39]:

```
1 genres = pd.read_sql("SELECT * FROM Genres", con, index_col='id')  
2 genres
```

Out[39]:

	genre_id	genre_name
id		
299534	12	Adventure
299534	878	Science Fiction
299534	28	Action
19995	28	Action
19995	12	Adventure
19995	14	Fantasy
19995	878	Science Fiction
140607	28	Action
140607	12	Adventure
140607	878	Science Fiction
140607	14	Fantasy
299536	12	Adventure
299536	28	Action
299536	878	Science Fiction
597	18	Drama
597	10749	Romance
135397	28	Action
135397	12	Adventure
135397	878	Science Fiction
135397	53	Thriller
420818	12	Adventure
420818	10751	Family
24428	878	Science Fiction
24428	28	Action
24428	12	Adventure
168259	28	Action
168259	53	Thriller
99861	28	Action
99861	12	Adventure
99861	878	Science Fiction
284054	28	Action
284054	12	Adventure
284054	14	Fantasy
284054	878	Science Fiction

	genre_id	genre_name
id		
12445	14	Fantasy
12445	12	Adventure
181808	878	Science Fiction
181808	28	Action
181808	12	Adventure
330457	16	Animation
330457	10751	Family
330457	12	Adventure
351286	28	Action
351286	12	Adventure
351286	878	Science Fiction
109445	16	Animation
109445	12	Adventure
109445	10751	Family
321612	10751	Family
321612	14	Fantasy
321612	10749	Romance
260513	28	Action
260513	12	Adventure
260513	16	Animation
260513	10751	Family

In [40]:

```
1 con.close()
```

Some Simple SQL Queries

In [41]:

```
1 import pandas as pd
```

In [42]:

```
1 import sqlite3 as sq3
```

In [43]:

```
1 con = sq3.connect("movies.db")
```

In [44]: 1 pd.read_sql("SELECT * FROM Movies", con)

Out[44]:

	id	title	revenue	budget	belongs_to_collection_name	release_date
0	299534	Avengers: Endgame	2797.800564	356.0	The Avengers Collection	2019-04-24 00:00:00
1	19995	Avatar	2787.965087	237.0	Avatar Collection	2009-12-10 00:00:00
2	140607	Star Wars: The Force Awakens	2068.223624	245.0	Star Wars Collection	2015-12-15 00:00:00
3	299536	Avengers: Infinity War	2046.239637	300.0	The Avengers Collection	2018-04-25 00:00:00
4	597	Titanic	1845.034188	200.0	None	1997-11-18 00:00:00
5	135397	Jurassic World	1671.713208	150.0	Jurassic Park Collection	2015-06-06 00:00:00
6	420818	The Lion King	1656.943394	260.0	None	2019-07-12 00:00:00
7	24428	The Avengers	1519.557910	220.0	The Avengers Collection	2012-04-25 00:00:00
8	168259	Furious 7	1515.047671	190.0	The Fast and the Furious Collection	2015-04-01 00:00:00
9	99861	Avengers: Age of Ultron	1405.403694	250.0	The Avengers Collection	2015-04-22 00:00:00
10	284054	Black Panther	1346.739107	200.0	Black Panther Collection	2018-02-13 00:00:00
11	12445	Harry Potter and the Deathly Hallows: Part 2	1341.511219	125.0	Harry Potter Collection	2011-07-07 00:00:00
12	181808	Star Wars: The Last Jedi	1332.539889	200.0	Star Wars Collection	2017-12-13 00:00:00
13	330457	Frozen II	1330.764959	150.0	Frozen Collection	2019-11-20 00:00:00
14	351286	Jurassic World: Fallen Kingdom	1303.459585	170.0	Jurassic Park Collection	2018-06-06 00:00:00
15	109445	Frozen	1274.219009	150.0	Frozen Collection	2013-11-27 00:00:00
16	321612	Beauty and the Beast	1263.521126	160.0	None	2017-03-16 00:00:00
17	260513	Incredibles 2	1241.891456	200.0	The Incredibles Collection	2018-06-14 00:00:00

In [45]:

```
1 pd.read_sql("SELECT * \
2             FROM Movies", con)
```

Out[45]:

	id	title	revenue	budget	belongs_to_collection_name	release_date
0	299534	Avengers: Endgame	2797.800564	356.0	The Avengers Collection	2019-04-24 00:00:00
1	19995	Avatar	2787.965087	237.0	Avatar Collection	2009-12-10 00:00:00
2	140607	Star Wars: The Force Awakens	2068.223624	245.0	Star Wars Collection	2015-12-15 00:00:00
3	299536	Avengers: Infinity War	2046.239637	300.0	The Avengers Collection	2018-04-25 00:00:00
4	597	Titanic	1845.034188	200.0	None	1997-11-18 00:00:00
5	135397	Jurassic World	1671.713208	150.0	Jurassic Park Collection	2015-06-06 00:00:00
6	420818	The Lion King	1656.943394	260.0	None	2019-07-12 00:00:00
7	24428	The Avengers	1519.557910	220.0	The Avengers Collection	2012-04-25 00:00:00
8	168259	Furious 7	1515.047671	190.0	The Fast and the Furious Collection	2015-04-01 00:00:00
9	99861	Avengers: Age of Ultron	1405.403694	250.0	The Avengers Collection	2015-04-22 00:00:00
10	284054	Black Panther	1346.739107	200.0	Black Panther Collection	2018-02-13 00:00:00
11	12445	Harry Potter and the Deathly Hallows: Part 2	1341.511219	125.0	Harry Potter Collection	2011-07-07 00:00:00
12	181808	Star Wars: The Last Jedi	1332.539889	200.0	Star Wars Collection	2017-12-13 00:00:00
13	330457	Frozen II	1330.764959	150.0	Frozen Collection	2019-11-20 00:00:00
14	351286	Jurassic World: Fallen Kingdom	1303.459585	170.0	Jurassic Park Collection	2018-06-06 00:00:00
15	109445	Frozen	1274.219009	150.0	Frozen Collection	2013-11-27 00:00:00
16	321612	Beauty and the Beast	1263.521126	160.0	None	2017-03-16 00:00:00
17	260513	Incredibles 2	1241.891456	200.0	The Incredibles Collection	2018-06-14 00:00:00

In [46]: 1 `pd.read_sql("SELECT id, revenue, release_date FROM Movies", con)`

Out[46]:

	id	revenue	release_date
0	299534	2797.800564	2019-04-24 00:00:00
1	19995	2787.965087	2009-12-10 00:00:00
2	140607	2068.223624	2015-12-15 00:00:00
3	299536	2046.239637	2018-04-25 00:00:00
4	597	1845.034188	1997-11-18 00:00:00
5	135397	1671.713208	2015-06-06 00:00:00
6	420818	1656.943394	2019-07-12 00:00:00
7	24428	1519.557910	2012-04-25 00:00:00
8	168259	1515.047671	2015-04-01 00:00:00
9	99861	1405.403694	2015-04-22 00:00:00
10	284054	1346.739107	2018-02-13 00:00:00
11	12445	1341.511219	2011-07-07 00:00:00
12	181808	1332.539889	2017-12-13 00:00:00
13	330457	1330.764959	2019-11-20 00:00:00
14	351286	1303.459585	2018-06-06 00:00:00
15	109445	1274.219009	2013-11-27 00:00:00
16	321612	1263.521126	2017-03-16 00:00:00
17	260513	1241.891456	2018-06-14 00:00:00

In [47]: 1 `pd.read_sql("SELECT sum(revenue) FROM Movies", con)`

Out[47]:

	sum(revenue)
0	29748.575327

In [48]: 1 `con.execute("SELECT sum(revenue) FROM Movies").fetchall()[0][0]`

Out[48]: 29748.575327000002

In [49]: 1 `pd.read_sql("SELECT count(title) FROM Movies", con)`

Out[49]:

	count(title)
0	18


```
In [50]: 1 pd.read_sql("SELECT count(belongs_to_collection_name) FROM Movies", con)
```

```
Out[50]:
```

	count(belongs_to_collection_name)
0	15

```
In [51]: 1 pd.read_sql("SELECT count(*) FROM Movies", con)
```

```
Out[51]:
```

	count(*)
0	18

```
In [52]: 1 pd.read_sql("SELECT avg(budget) FROM Movies", con)
```

```
Out[52]:
```

	avg(budget)
0	209.055556

```
In [53]: 1 con.close()
```

Some SQL Queries

```
In [54]: 1 import pandas as pd
2 import sqlite3 as sq3
```

```
In [55]: 1 con = sq3.connect("Movies.db")
```

```
In [56]: 1 pd.read_sql("SELECT * FROM Movies WHERE id = 597", con)
```

```
Out[56]:
```

	id	title	revenue	budget	belongs_to_collection_name	release_date
0	597	Titanic	1845.034188	200.0	None	1997-11-18 00:00:00

```
In [57]: 1 pd.read_sql("SELECT * FROM Movies WHERE revenue > 2000", con)
```

```
Out[57]:
```

	id	title	revenue	budget	belongs_to_collection_name	release_date
0	299534	Avengers: Endgame	2797.800564	356.0	The Avengers Collection	2019-04-24 00:00:00
1	19995	Avatar	2787.965087	237.0	Avatar Collection	2009-12-10 00:00:00
2	140607	Star Wars: The Force Awakens	2068.223624	245.0	Star Wars Collection	2015-12-15 00:00:00
3	299536	Avengers: Infinity War	2046.239637	300.0	The Avengers Collection	2018-04-25 00:00:00

In [58]:

1 pd.read_sql("SELECT * FROM Movies WHERE revenue > 1500 AND budget < 200",

Out[58]:

	id	title	revenue	budget	belongs_to_collection_name	release_date
0	135397	Jurassic World	1671.713208	150.0	Jurassic Park Collection	2015-06-06 00:00:00
1	168259	Furious 7	1515.047671	190.0	The Fast and the Furious Collection	2015-04-01 00:00:00

In [59]:

1 pd.read_sql("SELECT MIN(budget) FROM Movies WHERE revenue > 1250", con)

Out[59]:

	MIN(budget)
0	125.0

In [60]:

1 pd.read_sql("SELECT DISTINCT title FROM Movies", con)

Out[60]:

	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

```
In [61]: 1 pd.read_sql("SELECT DISTINCT belongs_to_collection_name FROM Movies",con)
```

Out[61]:

	belongs_to_collection_name
0	The Avengers Collection
1	Avatar Collection
2	Star Wars Collection
3	None
4	Jurassic Park Collection
5	The Fast and the Furious Collection
6	Black Panther Collection
7	Harry Potter Collection
8	Frozen Collection
9	The Incredibles Collection

In [62]: 1 pd.read_sql("SELECT * FROM Movies ORDER BY budget DESC", con)

Out[62]:

	id	title	revenue	budget	belongs_to_collection_name	release_date
0	299534	Avengers: Endgame	2797.800564	356.0	The Avengers Collection	2019-04-24 00:00:00
1	299536	Avengers: Infinity War	2046.239637	300.0	The Avengers Collection	2018-04-25 00:00:00
2	420818	The Lion King	1656.943394	260.0	None	2019-07-12 00:00:00
3	99861	Avengers: Age of Ultron	1405.403694	250.0	The Avengers Collection	2015-04-22 00:00:00
4	140607	Star Wars: The Force Awakens	2068.223624	245.0	Star Wars Collection	2015-12-15 00:00:00
5	19995	Avatar	2787.965087	237.0	Avatar Collection	2009-12-10 00:00:00
6	24428	The Avengers	1519.557910	220.0	The Avengers Collection	2012-04-25 00:00:00
7	597	Titanic	1845.034188	200.0	None	1997-11-18 00:00:00
8	284054	Black Panther	1346.739107	200.0	Black Panther Collection	2018-02-13 00:00:00
9	181808	Star Wars: The Last Jedi	1332.539889	200.0	Star Wars Collection	2017-12-13 00:00:00
10	260513	Incredibles 2	1241.891456	200.0	The Incredibles Collection	2018-06-14 00:00:00
11	168259	Furious 7	1515.047671	190.0	The Fast and the Furious Collection	2015-04-01 00:00:00
12	351286	Jurassic World: Fallen Kingdom	1303.459585	170.0	Jurassic Park Collection	2018-06-06 00:00:00
13	321612	Beauty and the Beast	1263.521126	160.0	None	2017-03-16 00:00:00
14	135397	Jurassic World	1671.713208	150.0	Jurassic Park Collection	2015-06-06 00:00:00
15	330457	Frozen II	1330.764959	150.0	Frozen Collection	2019-11-20 00:00:00
16	109445	Frozen	1274.219009	150.0	Frozen Collection	2013-11-27 00:00:00
17	12445	Harry Potter and the Deathly Hallows: Part 2	1341.511219	125.0	Harry Potter Collection	2011-07-07 00:00:00

In [63]: 1 `pd.read_sql("SELECT * FROM Movies WHERE belongs_to_collection_name IS NULL`

Out[63]:

	id	title	revenue	budget	belongs_to_collection_name	release_date
0	597	Titanic	1845.034188	200.0	None	1997-11-18 00:00:00
1	420818	The Lion King	1656.943394	260.0	None	2019-07-12 00:00:00
2	321612	Beauty and the Beast	1263.521126	160.0	None	2017-03-16 00:00:00

In [64]: 1 `pd.read_sql("SELECT * FROM Movies WHERE title LIKE 'Avengers%'", con)`

Out[64]:

	id	title	revenue	budget	belongs_to_collection_name	release_date
0	299534	Avengers: Endgame	2797.800564	356.0	The Avengers Collection	2019-04-24 00:00:00
1	299536	Avengers: Infinity War	2046.239637	300.0	The Avengers Collection	2018-04-25 00:00:00
2	99861	Avengers: Age of Ultron	1405.403694	250.0	The Avengers Collection	2015-04-22 00:00:00

In [65]: 1 `con.close()`

Join Queries

In [66]: 1 `import pandas as pd`
2 `import sqlite3 as sq3`

In [67]: 1 `con = sq3.connect("movies.db")`

In [68]:

```
1 pd.read_sql("SELECT * FROM Movies", con)
```

Out[68]:

	id	title	revenue	budget	belongs_to_collection_name	release_date
0	299534	Avengers: Endgame	2797.800564	356.0	The Avengers Collection	2019-04-24 00:00:00
1	19995	Avatar	2787.965087	237.0	Avatar Collection	2009-12-10 00:00:00
2	140607	Star Wars: The Force Awakens	2068.223624	245.0	Star Wars Collection	2015-12-15 00:00:00
3	299536	Avengers: Infinity War	2046.239637	300.0	The Avengers Collection	2018-04-25 00:00:00
4	597	Titanic	1845.034188	200.0	None	1997-11-18 00:00:00
5	135397	Jurassic World	1671.713208	150.0	Jurassic Park Collection	2015-06-06 00:00:00
6	420818	The Lion King	1656.943394	260.0	None	2019-07-12 00:00:00
7	24428	The Avengers	1519.557910	220.0	The Avengers Collection	2012-04-25 00:00:00
8	168259	Furious 7	1515.047671	190.0	The Fast and the Furious Collection	2015-04-01 00:00:00
9	99861	Avengers: Age of Ultron	1405.403694	250.0	The Avengers Collection	2015-04-22 00:00:00
10	284054	Black Panther	1346.739107	200.0	Black Panther Collection	2018-02-13 00:00:00
11	12445	Harry Potter and the Deathly Hallows: Part 2	1341.511219	125.0	Harry Potter Collection	2011-07-07 00:00:00
12	181808	Star Wars: The Last Jedi	1332.539889	200.0	Star Wars Collection	2017-12-13 00:00:00
13	330457	Frozen II	1330.764959	150.0	Frozen Collection	2019-11-20 00:00:00
14	351286	Jurassic World: Fallen Kingdom	1303.459585	170.0	Jurassic Park Collection	2018-06-06 00:00:00
15	109445	Frozen	1274.219009	150.0	Frozen Collection	2013-11-27 00:00:00
16	321612	Beauty and the Beast	1263.521126	160.0	None	2017-03-16 00:00:00
17	260513	Incredibles 2	1241.891456	200.0	The Incredibles Collection	2018-06-14 00:00:00

In [69]:

```
1 pd.read_sql("SELECT * FROM Votes", con)
```

Out[69]:

	id	vote_count	vote_average
0	299534	12607	8.3
1	19995	21000	7.4
2	140607	14205	7.4
3	299536	17718	8.3
4	597	16661	7.8
5	135397	15399	6.6
6	420818	5425	7.2
7	24428	22101	7.7
8	168259	7359	7.3
9	99861	15548	7.3
10	284054	14830	7.4
11	12445	13447	8.1
12	181808	10304	7.0
13	330457	3982	7.2
14	351286	7337	6.5
15	109445	11616	7.3
16	321612	12203	6.9
17	260513	8147	7.5

In [71]:

```
1 pd.read_sql( "SELECT * \  
2             FROM Movies \  
3             JOIN Votes \  
4             ON Movies.id = Votes.id", con)
```


Out[71]:

	id	title	revenue	budget	belongs_to_collection_name	release_date	id
0	299534	Avengers: Endgame	2797.800564	356.0	The Avengers Collection	2019-04-24 00:00:00	299534
1	19995	Avatar	2787.965087	237.0	Avatar Collection	2009-12-10 00:00:00	19995
2	140607	Star Wars: The Force Awakens	2068.223624	245.0	Star Wars Collection	2015-12-15 00:00:00	140607
3	299536	Avengers: Infinity War	2046.239637	300.0	The Avengers Collection	2018-04-25 00:00:00	299536
4	597	Titanic	1845.034188	200.0	None	1997-11-18 00:00:00	597
5	135397	Jurassic World	1671.713208	150.0	Jurassic Park Collection	2015-06-06 00:00:00	135397
6	420818	The Lion King	1656.943394	260.0	None	2019-07-12 00:00:00	420818
7	24428	The Avengers	1519.557910	220.0	The Avengers Collection	2012-04-25 00:00:00	24428
8	168259	Furious 7	1515.047671	190.0	The Fast and the Furious Collection	2015-04-01 00:00:00	168259
9	99861	Avengers: Age of Ultron	1405.403694	250.0	The Avengers Collection	2015-04-22 00:00:00	99861
10	284054	Black Panther	1346.739107	200.0	Black Panther Collection	2018-02-13 00:00:00	284054
11	12445	Harry Potter and the Deathly Hallows: Part 2	1341.511219	125.0	Harry Potter Collection	2011-07-07 00:00:00	12445
12	181808	Star Wars: The Last Jedi	1332.539889	200.0	Star Wars Collection	2017-12-13 00:00:00	181808
13	330457	Frozen II	1330.764959	150.0	Frozen Collection	2019-11-20 00:00:00	330457
14	351286	Jurassic World: Fallen Kingdom	1303.459585	170.0	Jurassic Park Collection	2018-06-06 00:00:00	351286
15	109445	Frozen	1274.219009	150.0	Frozen Collection	2013-11-27 00:00:00	109445
16	321612	Beauty and the Beast	1263.521126	160.0	None	2017-03-16 00:00:00	321612
17	260513	Incredibles 2	1241.891456	200.0	The Incredibles Collection	2018-06-14 00:00:00	260513

```
In [83]: 1 pd.read_sql(" SELECT Movies.id, Movies.title, Votes.vote_average \
2          FROM Movies \
3          JOIN Votes \
4          ON Movies.id = Votes.id", con, index_col = 'id')
```

Out[83]:

	title	vote_average
id		
299534	Avengers: Endgame	8.3
19995	Avatar	7.4
140607	Star Wars: The Force Awakens	7.4
299536	Avengers: Infinity War	8.3
597	Titanic	7.8
135397	Jurassic World	6.6
420818	The Lion King	7.2
24428	The Avengers	7.7
168259	Furious 7	7.3
99861	Avengers: Age of Ultron	7.3
284054	Black Panther	7.4
12445	Harry Potter and the Deathly Hallows: Part 2	8.1
181808	Star Wars: The Last Jedi	7.0
330457	Frozen II	7.2
351286	Jurassic World: Fallen Kingdom	6.5
109445	Frozen	7.3
321612	Beauty and the Beast	6.9
260513	Incredibles 2	7.5

```
In [84]: 1 pd.read_sql("SELECT Movies.id, Movies.title, Votes.vote_average \
2          FROM Movies \
3          JOIN Votes \
4          ON Movies.id = Votes.id \
5          WHERE Votes.vote_average > 8", con, index_col = 'id')
```

Out[84]:

	title	vote_average
id		
299534	Avengers: Endgame	8.3
299536	Avengers: Infinity War	8.3
12445	Harry Potter and the Deathly Hallows: Part 2	8.1

```
In [85]: 1 pd.read_sql("SELECT Movies.id, Movies.title, Movies.budget, Votes.vote_ave
2           FROM Movies \
3           JOIN Votes \
4           ON Movies.id = Votes.id \
5           WHERE Votes.vote_average > 8 \
6           ORDER BY Movies.budget ASC", con, index_col='id')
```

Out[85]:

	id	title	budget	vote_average
	12445	Harry Potter and the Deathly Hallows: Part 2	125.0	8.1
	299536	Avengers: Infinity War	300.0	8.3
	299534	Avengers: Endgame	356.0	8.3

```
In [87]: 1 con.close()
```

Final Case Study

```
In [89]: 1 import pandas as pd
2 import sqlite3 as sq3
```

```
In [90]: 1 con = sq3.connect("movies.db")
```

In [92]:

```
1 pd.read_sql("SELECT * FROM Prod", con)
```

Out[92]:

	comp_id	comp_logo_path	comp_name	comp_origin_country	
0	420	/hUzeosd33nzE5MCNsZxCGEKTxaQ.png	Marvel Studios	US	2995
1	444	/42UPdZl6B2cFXgNUASR8hSt9mpS.png	Dune Entertainment	US	199
2	574	/iB6GjNVHs5hOqcEYt2rcjBqljki.png	Lightstorm Entertainment	US	199
3	25	/qZCc1lty5FzX30aOCVRBLzaVmcp.png	20th Century Fox	US	199
4	290	/Q8mw2AOQQc8Qg0uNwLWq86DVZv.png	Ingenious Media	GB	199
5	1634	None	Truenorth Productions	IS	1406
6	1	/o86DbpburjxrqAzEDhXZcyE8pDb.png	Lucasfilm	US	1406
7	11461	/p9FoEt5shEKRWRKVllvFaEmRnun.png	Bad Robot	US	1406
8	420	/hUzeosd33nzE5MCNsZxCGEKTxaQ.png	Marvel Studios	US	2995
9	4	/fycMZt242LVjagMByZOLUGbCvv3.png	Paramount	US	5
10	574	/iB6GjNVHs5hOqcEYt2rcjBqljki.png	Lightstorm Entertainment	US	5
11	25	/qZCc1lty5FzX30aOCVRBLzaVmcp.png	20th Century Fox	US	5
12	3341	/dTG5dXE1kU2mpmL9BNnraffckLU.png	Fuji Television Network	JP	1353
13	56	/cEaxANEisCqeEoRvODv2dO1l0il.png	Amblin Entertainment	US	1353
14	923	/5UQsZrbbfG2dYJbx8DxfoTr2Bvu.png	Legendary Entertainment	US	1353
15	33	/8lvHyhjr8oUKOOy2dKXoALWKdp0.png	Universal Pictures	US	1353
16	1778	/69xm6sF3JxugGVjfZfm1YY6d7EE.png	Dentsu	JP	1353
17	862	/udTjbqPmcTbfrihMuLtlcizDEM1.png	The Kennedy/Marshall Company	US	1353
18	2	/wdrCwmRnLFJhEoH8GSfymY85KHT.png	Walt Disney Pictures	US	4208
19	7297	/l29JYQVZbTcjZXoz4CUYFpKRmM3.png	Fairview Entertainment	US	4208
20	420	/hUzeosd33nzE5MCNsZxCGEKTxaQ.png	Marvel Studios	US	244
21	4	/fycMZt242LVjagMByZOLUGbCvv3.png	Paramount	US	244
22	87857	None	Abu Dhabi Film Commission		1682
23	33	/8lvHyhjr8oUKOOy2dKXoALWKdp0.png	Universal Pictures	US	1682
24	40890	None	China Film Co.	CN	1682
25	333	/5xUJfzPZ8jWJUDzYtleuPO4qPIa.png	Original Film	US	1682
26	3341	/dTG5dXE1kU2mpmL9BNnraffckLU.png	Fuji Television Network	JP	1682

	comp_id	comp_logo_path	comp_name	comp_origin_country	
27	86352	None	Québec Production Services Tax Credit		1682
28	87858	None	Colorado Office of Film, Television & Media		1682
29	1778	/69xm6sF3JxugGVjfZfm1YY6d7EE.png	Dentsu	JP	1682
30	2531	/pC2iDCDCvV85vOBP7a5Ukxuc0Du.png	Media Rights Capital	US	1682
31	1225	None	One Race	US	1682
32	420	/hUzeosd33nzE5MCNsZxCGEKTXaQ.png	Marvel Studios	US	998
33	420	/hUzeosd33nzE5MCNsZxCGEKTXaQ.png	Marvel Studios	US	2840
34	2	/wdrCwmRnLFJhEoH8GSfymY85KHT.png	Walt Disney Pictures	US	2840
35	174	/luAlhI9eVC9Z8UQWOIDdWRKSEJ.png	Warner Bros. Pictures	US	124
36	437	/nu20mtwbElhUNnQ5NXVhHsNknZj.png	Heyday Films	GB	124
37	1	/o86DbpburjxrqAzEDhXZcyE8pDb.png	Lucasfilm	US	1818
38	11092	None	Ram Bergman Productions	US	1818
39	2	/wdrCwmRnLFJhEoH8GSfymY85KHT.png	Walt Disney Pictures	US	1818
40	6125	/tVPmo07IHhBs4HuIlrcV0yujsZ9.png	Walt Disney Animation Studios	US	3304
41	2	/wdrCwmRnLFJhEoH8GSfymY85KHT.png	Walt Disney Pictures	US	3304
42	56	/cEaxANEisCqeEoRvODv2dO1I0il.png	Amblin Entertainment	US	3512
43	923	/5UQsZrbbfG2dYJbx8DxfoTr2Bvu.png	Legendary Entertainment	US	3512
44	33	/8lvHyhjr8oUKOOy2dKXoALWKdp0.png	Universal Pictures	US	3512
45	10338	/el2ap6lvjcEDdbbyJoB3oKiYgXu9.png	Perfect World Pictures	CN	3512
46	2	/wdrCwmRnLFJhEoH8GSfymY85KHT.png	Walt Disney Pictures	US	1094
47	6125	/tVPmo07IHhBs4HuIlrcV0yujsZ9.png	Walt Disney Animation Studios	US	1094
48	2	/wdrCwmRnLFJhEoH8GSfymY85KHT.png	Walt Disney Pictures	US	3216
49	10227	/3YfRy3DBI4abcqkzGx4RVNz12yl.png	Mandeville Films	US	3216
50	2	/wdrCwmRnLFJhEoH8GSfymY85KHT.png	Walt Disney Pictures	US	2605

comp_id		comp_logo_path	comp_name	comp_origin_country	
51	3	/1TjvGVDMYsj6JBxOAKUHpPEwLf7.png	Pixar	US	2605

```
In [98]: 1 df = pd.read_sql("SELECT Prod.id, Prod.comp_name, Movies.revenue, Movies.t
2          FROM Prod \
3          LEFT JOIN Movies \
4          ON Prod.id = Movies.id", con)
5 df
```


Out[98]:

	id	comp_name	revenue	title
0	299534	Marvel Studios	2797.800564	Avengers: Endgame
1	19995	Dune Entertainment	2787.965087	Avatar
2	19995	Lightstorm Entertainment	2787.965087	Avatar
3	19995	20th Century Fox	2787.965087	Avatar
4	19995	Ingenious Media	2787.965087	Avatar
5	140607	Truenorth Productions	2068.223624	Star Wars: The Force Awakens
6	140607	Lucasfilm	2068.223624	Star Wars: The Force Awakens
7	140607	Bad Robot	2068.223624	Star Wars: The Force Awakens
8	299536	Marvel Studios	2046.239637	Avengers: Infinity War
9	597	Paramount	1845.034188	Titanic
10	597	Lightstorm Entertainment	1845.034188	Titanic
11	597	20th Century Fox	1845.034188	Titanic
12	135397	Fuji Television Network	1671.713208	Jurassic World
13	135397	Amblin Entertainment	1671.713208	Jurassic World
14	135397	Legendary Entertainment	1671.713208	Jurassic World
15	135397	Universal Pictures	1671.713208	Jurassic World
16	135397	Dentsu	1671.713208	Jurassic World
17	135397	The Kennedy/Marshall Company	1671.713208	Jurassic World
18	420818	Walt Disney Pictures	1656.943394	The Lion King
19	420818	Fairview Entertainment	1656.943394	The Lion King
20	24428	Marvel Studios	1519.557910	The Avengers
21	24428	Paramount	1519.557910	The Avengers
22	168259	Abu Dhabi Film Commission	1515.047671	Furious 7
23	168259	Universal Pictures	1515.047671	Furious 7
24	168259	China Film Co.	1515.047671	Furious 7
25	168259	Original Film	1515.047671	Furious 7
26	168259	Fuji Television Network	1515.047671	Furious 7
27	168259	Québec Production Services Tax Credit	1515.047671	Furious 7
28	168259	Colorado Office of Film, Television & Media	1515.047671	Furious 7
29	168259	Dentsu	1515.047671	Furious 7
30	168259	Media Rights Capital	1515.047671	Furious 7
31	168259	One Race	1515.047671	Furious 7
32	99861	Marvel Studios	1405.403694	Avengers: Age of Ultron
33	284054	Marvel Studios	1346.739107	Black Panther

	id	comp_name	revenue	title
34	284054	Walt Disney Pictures	1346.739107	Black Panther
35	12445	Warner Bros. Pictures	1341.511219	Harry Potter and the Deathly Hallows: Part 2
36	12445	Heyday Films	1341.511219	Harry Potter and the Deathly Hallows: Part 2
37	181808	Lucasfilm	1332.539889	Star Wars: The Last Jedi
38	181808	Ram Bergman Productions	1332.539889	Star Wars: The Last Jedi
39	181808	Walt Disney Pictures	1332.539889	Star Wars: The Last Jedi
40	330457	Walt Disney Animation Studios	1330.764959	Frozen II
41	330457	Walt Disney Pictures	1330.764959	Frozen II
42	351286	Amblin Entertainment	1303.459585	Jurassic World: Fallen Kingdom
43	351286	Legendary Entertainment	1303.459585	Jurassic World: Fallen Kingdom
44	351286	Universal Pictures	1303.459585	Jurassic World: Fallen Kingdom
45	351286	Perfect World Pictures	1303.459585	Jurassic World: Fallen Kingdom
46	109445	Walt Disney Pictures	1274.219009	Frozen
47	109445	Walt Disney Animation Studios	1274.219009	Frozen
48	321612	Walt Disney Pictures	1263.521126	Beauty and the Beast
49	321612	Mandeville Films	1263.521126	Beauty and the Beast
50	260513	Walt Disney Pictures	1241.891456	Incredibles 2
51	260513	Pixar	1241.891456	Incredibles 2

```
In [101]: 1 df.groupby("comp_name").revenue.sum().sort_values(ascending = False)
```

```
Out[101]: comp_name
Walt Disney Pictures      9446.618940
Marvel Studios           9115.740912
20th Century Fox         4632.999275
Lightstorm Entertainment 4632.999275
Universal Pictures       4490.220464
Lucasfilm                3400.763513
Paramount               3364.592098
Fuji Television Network  3186.760879
Dentsu                  3186.760879
Legendary Entertainment  2975.172793
Amblin Entertainment     2975.172793
Ingenious Media         2787.965087
Dune Entertainment       2787.965087
Walt Disney Animation Studios 2604.983968
Bad Robot               2068.223624
Truenorth Productions    2068.223624
The Kennedy/Marshall Company 1671.713208
Fairview Entertainment   1656.943394
Colorado Office of Film, Television & Media 1515.047671
Abu Dhabi Film Commission 1515.047671
China Film Co.           1515.047671
Media Rights Capital      1515.047671
One Race                 1515.047671
Original Film            1515.047671
Québec Production Services Tax Credit 1515.047671
Warner Bros. Pictures     1341.511219
Heyday Films             1341.511219
Ram Bergman Productions  1332.539889
Perfect World Pictures    1303.459585
Mandeville Films         1263.521126
Pixar                    1241.891456
Name: revenue, dtype: float64
```

```
In [102]: 1 pd.read_sql("SELECT Prod.comp_name \
2             FROM Prod \
3             LEFT JOIN Movies \
4             ON Prod.id = Movies.id \
5             WHERE Movies.title = 'Titanic' ", con)
```

```
Out[102]:
```

	comp_name
0	20th Century Fox
1	Lightstorm Entertainment
2	Paramount

```
In [109]: 1 df2 = pd.read_sql("SELECT Genres.genre_name, Movies.revenue, Movies.title
2                FROM Genres \
3                LEFT JOIN Movies \
4                ON Genres.id = Movies.id", con)
5 df2
```

Out[109]:

	genre_name	revenue	title
0	Adventure	2797.800564	Avengers: Endgame
1	Science Fiction	2797.800564	Avengers: Endgame
2	Action	2797.800564	Avengers: Endgame
3	Action	2787.965087	Avatar
4	Adventure	2787.965087	Avatar
5	Fantasy	2787.965087	Avatar
6	Science Fiction	2787.965087	Avatar
7	Action	2068.223624	Star Wars: The Force Awakens
8	Adventure	2068.223624	Star Wars: The Force Awakens
9	Science Fiction	2068.223624	Star Wars: The Force Awakens
10	Fantasy	2068.223624	Star Wars: The Force Awakens
11	Adventure	2046.239637	Avengers: Infinity War
12	Action	2046.239637	Avengers: Infinity War
13	Science Fiction	2046.239637	Avengers: Infinity War
14	Drama	1845.034188	Titanic
15	Romance	1845.034188	Titanic
16	Action	1671.713208	Jurassic World
17	Adventure	1671.713208	Jurassic World
18	Science Fiction	1671.713208	Jurassic World
19	Thriller	1671.713208	Jurassic World
20	Adventure	1656.943394	The Lion King
21	Family	1656.943394	The Lion King
22	Science Fiction	1519.557910	The Avengers
23	Action	1519.557910	The Avengers
24	Adventure	1519.557910	The Avengers
25	Action	1515.047671	Furious 7
26	Thriller	1515.047671	Furious 7
27	Action	1405.403694	Avengers: Age of Ultron
28	Adventure	1405.403694	Avengers: Age of Ultron
29	Science Fiction	1405.403694	Avengers: Age of Ultron
30	Action	1346.739107	Black Panther
31	Adventure	1346.739107	Black Panther
32	Fantasy	1346.739107	Black Panther
33	Science Fiction	1346.739107	Black Panther
34	Fantasy	1341.511219	Harry Potter and the Deathly Hallows: Part 2

	genre_name	revenue	title
35	Adventure	1341.511219	Harry Potter and the Deathly Hallows: Part 2
36	Science Fiction	1332.539889	Star Wars: The Last Jedi
37	Action	1332.539889	Star Wars: The Last Jedi
38	Adventure	1332.539889	Star Wars: The Last Jedi
39	Animation	1330.764959	Frozen II
40	Family	1330.764959	Frozen II
41	Adventure	1330.764959	Frozen II
42	Action	1303.459585	Jurassic World: Fallen Kingdom
43	Adventure	1303.459585	Jurassic World: Fallen Kingdom
44	Science Fiction	1303.459585	Jurassic World: Fallen Kingdom
45	Animation	1274.219009	Frozen
46	Adventure	1274.219009	Frozen
47	Family	1274.219009	Frozen
48	Family	1263.521126	Beauty and the Beast
49	Fantasy	1263.521126	Beauty and the Beast
50	Romance	1263.521126	Beauty and the Beast
51	Action	1241.891456	Incredibles 2
52	Adventure	1241.891456	Incredibles 2
53	Animation	1241.891456	Incredibles 2
54	Family	1241.891456	Incredibles 2

In [113]: 1 df2.groupby("genre_name").revenue.sum().sort_values(ascending = False)

Out[113]: genre_name
Adventure 25124.972342
Action 21036.581432
Science Fiction 18279.642305
Fantasy 8807.960163
Family 6767.339944
Animation 3846.875424
Thriller 3186.760879
Romance 3108.555314
Drama 1845.034188
Name: revenue, dtype: float64

```
In [118]: 1 pd.read_sql("SELECT Genres.genre_name \
2             FROM Genres \
3             LEFT JOIN Movies \
4             ON Genres.id = Movies.id \
5             WHERE Movies.title = 'Frozen II' ",con)
```

Out[118]:

	genre_name
0	Adventure
1	Animation
2	Family

```
In [119]: 1 con.close()
```

```
In [ ]: 1
```