Conditional Filtering

Imports

In [1]:

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

In [2]:

```python
df = pd.read_csv('tips.csv')
```

In [5]:

```python
df.head()
```

Out[5]:

	total_bill	tip	sex	smoker	day	time	size	price_per_person	Payer Name	CC Number	Payment ID
0	16.99	1.01	Female	No	Sun	Dinner	2	8.49	Christy Cunningham	3560325168603410	Sun2959
1	10.34	1.66	Male	No	Sun	Dinner	3	3.45	Douglas Tucker	4478071379779230	Sun4608
2	21.01	3.50	Male	No	Sun	Dinner	3	7.00	Travis Walters	6011812112971322	Sun4458
3	23.68	3.31	Male	No	Sun	Dinner	2	11.84	Nathaniel Harris	4676137647685994	Sun5260
4	24.59	3.61	Female	No	Sun	Dinner	4	6.15	Tonya Carter	4832732618637221	Sun2251

Conditions

In [12]:

```python
# df['total_bill'] > 30
```

In [10]:

```python
bool_series = df['total_bill'] > 30
```

In [11]:

```python
df[bool_series]
```

Out[11]:

	total_bill	tip	sex	smoker	day	time	size	price_per_person	Payer Name	CC Number	Payment ID
11	35.26	5.00	Female	No	Sun	Dinner	4	8.82	Diane Macias	4577817359320969	Sun6686
23	39.42	7.58	Male	No	Sat	Dinner	4	9.86	Lance Peterson	3542584061609808	Sat239
		5.00				Dinner			Mr. Brandon		

	total_bill	tip	sex	smoker	day	time	size	price_per_person	Payer Name	CC Number	Payment ID
39	31.27	5.00	Male	No	Sat	Dinner	3	10.42	Berry	6011525851069856	Sat6373
44	30.40	5.60	Male	No	Sun	Dinner	4	7.60	Todd Cooper	503846761263	Sun2274
47	32.40	6.00	Male	No	Sun	Dinner	4	8.10	James Barnes	3552002592874186	Sun9677
52	34.81	5.20	Female	No	Sun	Dinner	4	8.70	Emily Daniel	4291280793094374	Sun6165
56	38.01	3.00	Male	Yes	Sat	Dinner	4	9.50	James Christensen DDS	349793629453226	Sat8903
59	48.27	6.73	Male	No	Sat	Dinner	4	12.07	Brian Ortiz	6596453823950595	Sat8139
83	32.68	5.00	Male	Yes	Thur	Lunch	2	16.34	Daniel Murphy	5356177501009133	Thur8801
85	34.83	5.17	Female	No	Thur	Lunch	4	8.71	Shawna Cook	60117874641773340	Thur7972
95	40.17	4.73	Male	Yes	Fri	Dinner	4	10.04	Aaron Bentley	180026611638690	Fri9628
102	44.30	2.50	Female	Yes	Sat	Dinner	3	14.77	Heather Cohen	379771118886604	Sat6240
112	38.07	4.00	Male	No	Sun	Dinner	3	12.69	Jeff Lopez	3572865915176463	Sun591
141	34.30	6.70	Male	No	Thur	Lunch	6	5.72	Steven Carlson	3526515703718508	Thur1025
142	41.19	5.00	Male	No	Thur	Lunch	5	8.24	Eric Andrews	4356531761046453	Thur3621
156	48.17	5.00	Male	No	Sun	Dinner	6	8.03	Ryan Gonzales	3523151482063321	Sun7518
167	31.71	4.50	Male	No	Sun	Dinner	4	7.93	Michael Lawson	3566285921227119	Sun3719
170	50.81	10.00	Male	Yes	Sat	Dinner	3	16.94	Gregory Clark	5473850968388236	Sat1954
173	31.85	3.18	Male	Yes	Sun	Dinner	2	15.92	Scott Perez	3577115550328507	Sun9335
175	32.90	3.11	Male	Yes	Sun	Dinner	2	16.45	Nathan Reynolds	370307040837149	Sun5109
179	34.63	3.55	Male	Yes	Sun	Dinner	2	17.32	Brian Bailey	346656312114848	Sun9851
180	34.65	3.68	Male	Yes	Sun	Dinner	4	8.66	James Hebert DDS	676168737648	Sun7544
182	45.35	3.50	Male	Yes	Sun	Dinner	3	15.12	Jose Parsons	4112207559459910	Sun2337
184	40.55	3.00	Male	Yes	Sun	Dinner	2	20.27	Stephen Cox	3547798222044029	Sun5140
187	30.46	2.00	Male	Yes	Sun	Dinner	5	6.09	David Barrett	4792882899700988	Sun9987
197	43.11	5.00	Female	Yes	Thur	Lunch	4	10.78	Brooke Soto	5544902205760175	Thur9313
207	38.73	3.00	Male	Yes	Sat	Dinner	4	9.68	Ricky Ramirez	347817964484033	Sat4505
210	30.06	2.00	Male	Yes	Sat	Dinner	3	10.02	Shawn Mendoza	30184049218122	Sat8361
212	48.33	9.00	Male	No	Sat	Dinner	4	12.08	Alex Williamson	676218815212	Sat4590
219	30.14	3.09	Female	Yes	Sat	Dinner	4	7.54	Shelby House	502097403252	Sat8863
237	32.83	1.17	Male	Yes	Sat	Dinner	2	16.42	Thomas Brown	4284722681265508	Sat2929
238	35.83	4.67	Female	No	Sat	Dinner	3	11.94	Kimberly Crane	676184013727	Sat9777

In [13]:

```
df[df['total_bill']>30]
```

Out[13]:

	total_bill	tip	sex	smoker	day	time	size	price_per_person	Payer Name	CC Number	Payment ID
11	35.26	5.00	Female	No	Sun	Dinner	4	8.82	Diane Macias	4577817359320969	Sun6686
23	39.42	7.58	Male	No	Sat	Dinner	4	9.86	Lance Peterson	3542584061609808	Sat239
39	31.27	5.00	Male	No	Sat	Dinner	3	10.42	Mr. Brandon Berry	6011525851069856	Sat6373
44	30.40	5.60	Male	No	Sun	Dinner	4	7.60	Todd Cooper	503846761263	Sun2274
47	32.40	6.00	Male	No	Sun	Dinner	4	8.10	James Barnes	3552002592874186	Sun9677
52	34.81	5.20	Female	No	Sun	Dinner	4	8.70	Emily Daniel	4291280793094374	Sun6165
56	38.01	3.00	Male	Yes	Sat	Dinner	4	9.50	James Christensen DDS	349793629453226	Sat8903

	total_bill	tip	sex	smoker	day	time	size	price_per_person	Payer Name	CC Number	Payment ID
59	48.27	6.73	Male	No	Sat	Dinner	4	12.07	Brian Ortiz	6596453823950595	Sat8139
83	32.68	5.00	Male	Yes	Thur	Lunch	2	16.34	Daniel Murphy	5356177501009133	Thur8801
85	34.83	5.17	Female	No	Thur	Lunch	4	8.71	Shawna Cook	6011787464177340	Thur7972
95	40.17	4.73	Male	Yes	Fri	Dinner	4	10.04	Aaron Bentley	180026611638690	Fri9628
102	44.30	2.50	Female	Yes	Sat	Dinner	3	14.77	Heather Cohen	379771118886604	Sat6240
112	38.07	4.00	Male	No	Sun	Dinner	3	12.69	Jeff Lopez	3572865915176463	Sun591
141	34.30	6.70	Male	No	Thur	Lunch	6	5.72	Steven Carlson	3526515703718508	Thur1025
142	41.19	5.00	Male	No	Thur	Lunch	5	8.24	Eric Andrews	4356531761046453	Thur3621
156	48.17	5.00	Male	No	Sun	Dinner	6	8.03	Ryan Gonzales	3523151482063321	Sun7518
167	31.71	4.50	Male	No	Sun	Dinner	4	7.93	Michael Lawson	35662859212277119	Sun3719
170	50.81	10.00	Male	Yes	Sat	Dinner	3	16.94	Gregory Clark	5473850968388236	Sat1954
173	31.85	3.18	Male	Yes	Sun	Dinner	2	15.92	Scott Perez	3577115550328507	Sun9335
175	32.90	3.11	Male	Yes	Sun	Dinner	2	16.45	Nathan Reynolds	370307040837149	Sun5109
179	34.63	3.55	Male	Yes	Sun	Dinner	2	17.32	Brian Bailey	346656312114848	Sun9851
180	34.65	3.68	Male	Yes	Sun	Dinner	4	8.66	James Hebert DDS	676168737648	Sun7544
182	45.35	3.50	Male	Yes	Sun	Dinner	3	15.12	Jose Parsons	4112207559459910	Sun2337
184	40.55	3.00	Male	Yes	Sun	Dinner	2	20.27	Stephen Cox	3547798222044029	Sun5140
187	30.46	2.00	Male	Yes	Sun	Dinner	5	6.09	David Barrett	4792882899700988	Sun9987
197	43.11	5.00	Female	Yes	Thur	Lunch	4	10.78	Brooke Soto	5544902205760175	Thur9313
207	38.73	3.00	Male	Yes	Sat	Dinner	4	9.68	Ricky Ramirez	347817964484033	Sat4505
210	30.06	2.00	Male	Yes	Sat	Dinner	3	10.02	Shawn Mendoza	30184049218122	Sat8361
212	48.33	9.00	Male	No	Sat	Dinner	4	12.08	Alex Williamson	676218815212	Sat4590
219	30.14	3.09	Female	Yes	Sat	Dinner	4	7.54	Shelby House	502097403252	Sat8863
237	32.83	1.17	Male	Yes	Sat	Dinner	2	16.42	Thomas Brown	4284722681265508	Sat2929
238	35.83	4.67	Female	No	Sat	Dinner	3	11.94	Kimberly Crane	676184013727	Sat9777

In [14]:

```python
df[df['sex'] == 'Male']
```

Out[14]:

	total_bill	tip	sex	smoker	day	time	size	price_per_person	Payer Name	CC Number	Payment ID
1	10.34	1.66	Male	No	Sun	Dinner	3	3.45	Douglas Tucker	4478071379779230	Sun4608
2	21.01	3.50	Male	No	Sun	Dinner	3	7.00	Travis Walters	6011812112971322	Sun4458
3	23.68	3.31	Male	No	Sun	Dinner	2	11.84	Nathaniel Harris	4676137647685994	Sun5260
5	25.29	4.71	Male	No	Sun	Dinner	4	6.32	Erik Smith	213140353657882	Sun9679
6	8.77	2.00	Male	No	Sun	Dinner	2	4.38	Kristopher Johnson	2223727524230344	Sun5985
7	26.88	3.12	Male	No	Sun	Dinner	4	6.72	Robert Buck	3514785077705092	Sun8157
8	15.04	1.96	Male	No	Sun	Dinner	2	7.52	Joseph Mcdonald	3522866365840377	Sun6820
9	14.78	3.23	Male	No	Sun	Dinner	2	7.39	Jerome Abbott	3532124519049786	Sun3775
10	10.27	1.71	Male	No	Sun	Dinner	2	5.14	William Riley	566287581219	Sun2546
12	15.42	1.57	Male	No	Sun	Dinner	2	7.71	Chad Harrington	577040572932	Sun1300
13	18.43	3.00	Male	No	Sun	Dinner	4	4.61	Joshua Jones	6011163105616890	Sun2971
15	21.58	3.92	Male	No	Sun	Dinner	2	10.79	Matthew Reilly	180073029785069	Sun1878
17	16.29	3.71	Male	No	Sun	Dinner	3	5.43	John Pittman	6521340257218708	Sun2998

	total_bill	tip	sex	smoker	day	time	size	price_per_person	Payer Name	CC Number	Payment ID
19	20.65	3.35	Male	No	Sat	Dinner	3	6.88	Timothy Oneal	6568069240986485	Sat3707
20	17.92	4.08	Male	No	Sat	Dinner	2	8.96	Thomas Rice	4403296224639756	Sat1709
23	39.42	7.58	Male	No	Sat	Dinner	4	9.86	Lance Peterson	3542584061609808	Sat239
24	19.82	3.18	Male	No	Sat	Dinner	2	9.91	Christopher Ross	36739148167928	Sat6236
25	17.81	2.34	Male	No	Sat	Dinner	4	4.45	Robert Perkins	305029304993388	Sat907
26	13.37	2.00	Male	No	Sat	Dinner	2	6.68	Kyle Avery	6531339539615499	Sat6651
27	12.69	2.00	Male	No	Sat	Dinner	2	6.34	Patrick Barber	30155551880343	Sat394
28	21.70	4.30	Male	No	Sat	Dinner	2	10.85	David Collier	5529694315416009	Sat3697
30	9.55	1.45	Male	No	Sat	Dinner	2	4.78	Grant Hall	30196517521548	Sat4099
31	18.35	2.50	Male	No	Sat	Dinner	4	4.59	Danny Santiago	630415546013	Sat4947
34	17.78	3.27	Male	No	Sat	Dinner	2	8.89	Jacob Castillo	3551492000704805	Sat8124
35	24.06	3.60	Male	No	Sat	Dinner	3	8.02	Joseph Mullins	5519770449260299	Sat632
36	16.31	2.00	Male	No	Sat	Dinner	3	5.44	William Ford	3527691170179398	Sat9139
38	18.69	2.31	Male	No	Sat	Dinner	3	6.23	Brandon Bradley	4427601595688633	Sat4056
39	31.27	5.00	Male	No	Sat	Dinner	3	10.42	Mr. Brandon Berry	6011525851069856	Sat6373
40	16.04	2.24	Male	No	Sat	Dinner	3	5.35	Adam Edwards	3544447755679420	Sat8549
41	17.46	2.54	Male	No	Sun	Dinner	2	8.73	David Boyer	3536678244278149	Sun9460
...	...	...	...	...	...	...	...	...	...	...	...
195	7.56	1.44	Male	No	Thur	Lunch	2	3.78	Michael White	4865390263095532	Thur697
196	10.34	2.00	Male	Yes	Thur	Lunch	2	5.17	Eric Martin	30442491190342	Thur9862
199	13.51	2.00	Male	Yes	Thur	Lunch	2	6.76	Joseph Murphy MD	6547218923471275	Thur2428
200	18.71	4.00	Male	Yes	Thur	Lunch	3	6.24	Jason Conrad	4581233003487	Thur6048
204	20.53	4.00	Male	Yes	Thur	Lunch	4	5.13	Scott Kim	3570611756827620	Thur2160
206	26.59	3.41	Male	Yes	Sat	Dinner	3	8.86	Daniel Owens	38971087967574	Sat1
207	38.73	3.00	Male	Yes	Sat	Dinner	4	9.68	Ricky Ramirez	347817964484033	Sat4505
208	24.27	2.03	Male	Yes	Sat	Dinner	2	12.14	Jason Carter	4268942915626180	Sat6048
210	30.06	2.00	Male	Yes	Sat	Dinner	3	10.02	Shawn Mendoza	30184049218122	Sat8361
211	25.89	5.16	Male	Yes	Sat	Dinner	4	6.47	Christopher Li	6011962464150569	Sat6735
212	48.33	9.00	Male	No	Sat	Dinner	4	12.08	Alex Williamson	676218815212	Sat4590
216	28.15	3.00	Male	Yes	Sat	Dinner	5	5.63	Shawn Barnett PhD	4590982568244	Sat7320
217	11.59	1.50	Male	Yes	Sat	Dinner	2	5.80	Gary Orr	30324521283406	Sat8489
218	7.74	1.44	Male	Yes	Sat	Dinner	2	3.87	Nicholas Archer	340517153733524	Sat4772
220	12.16	2.20	Male	Yes	Fri	Lunch	2	6.08	Ricky Johnson	213109508670736	Fri4607
222	8.58	1.92	Male	Yes	Fri	Lunch	1	8.58	Jason Lawrence	3505302934650403	Fri6624
224	13.42	1.58	Male	Yes	Fri	Lunch	2	6.71	Ronald Vaughn DVM	341503466406403	Fri5959
227	20.45	3.00	Male	No	Sat	Dinner	4	5.11	Robert Bradley	213141668145910	Sat4319
228	13.28	2.72	Male	No	Sat	Dinner	2	6.64	Glenn Jones	502061651712	Sat2937
230	24.01	2.00	Male	Yes	Sat	Dinner	4	6.00	Michael Osborne	4258682154026	Sat7872
231	15.69	3.00	Male	Yes	Sat	Dinner	3	5.23	Jason Parks	4812333796161	Sat6334
232	11.61	3.39	Male	No	Sat	Dinner	2	5.80	James Taylor	6011482917327995	Sat2124
233	10.77	1.47	Male	No	Sat	Dinner	2	5.38	Paul Novak	6011698897610858	Sat1467
234	15.53	3.00	Male	Yes	Sat	Dinner	2	7.76	Tracy Douglas	4097938155941930	Sat7220
235	10.07	1.25	Male	No	Sat	Dinner	2	5.04	Sean Gonzalez	3534021246117605	Sat4615
236	12.60	1.00	Male	Yes	Sat	Dinner	2	6.30	Matthew Myers	3543676378973965	Sat5032

	total_bill	tip	sex	smoker	day	time	size	price_per_person	Payer Name	CC Number	Payment ID
237	32.83	1.17	Male	Yes	Sat	Dinner	2	16.42	Thomas Brown	4284722681265508	Sat2929
239	29.03	5.92	Male	No	Sat	Dinner	3	9.68	Michael Avila	5296068606052842	Sat2657
241	22.67	2.00	Male	Yes	Sat	Dinner	2	11.34	Keith Wong	6011891618747196	Sat3880
242	17.82	1.75	Male	No	Sat	Dinner	2	8.91	Dennis Dixon	4375220550950	Sat17

157 rows × 11 columns

Multiple Conditions

Recall the steps:

- Get the conditions
- Wrap each condition in parenthesis
- Use the | or & operator, depending if you want an
    - OR | (either condition is True)
    - AND & (both conditions must be True)
- You can also use the ~ operator as a NOT operation

In [33]:

```
df[(df['total_bill'] > 30) & (df['sex']=='Male')]
```

Out[33]:

	total_bill	tip	sex	smoker	day	time	size	price_per_person	Payer Name	CC Number	Payment ID
23	39.42	7.58	Male	No	Sat	Dinner	4	9.86	Lance Peterson	3542584061609808	Sat239
39	31.27	5.00	Male	No	Sat	Dinner	3	10.42	Mr. Brandon Berry	6011525851069856	Sat6373
44	30.40	5.60	Male	No	Sun	Dinner	4	7.60	Todd Cooper	503846761263	Sun2274
47	32.40	6.00	Male	No	Sun	Dinner	4	8.10	James Barnes	3552002592874186	Sun9677
56	38.01	3.00	Male	Yes	Sat	Dinner	4	9.50	James Christensen DDS	349793629453226	Sat8903
59	48.27	6.73	Male	No	Sat	Dinner	4	12.07	Brian Ortiz	6596453823950595	Sat8139
83	32.68	5.00	Male	Yes	Thur	Lunch	2	16.34	Daniel Murphy	5356177501009133	Thur8801
95	40.17	4.73	Male	Yes	Fri	Dinner	4	10.04	Aaron Bentley	180026611638690	Fri9628
112	38.07	4.00	Male	No	Sun	Dinner	3	12.69	Jeff Lopez	3572865915176463	Sun591
141	34.30	6.70	Male	No	Thur	Lunch	6	5.72	Steven Carlson	3526515703718508	Thur1025
142	41.19	5.00	Male	No	Thur	Lunch	5	8.24	Eric Andrews	4356531761046453	Thur3621
156	48.17	5.00	Male	No	Sun	Dinner	6	8.03	Ryan Gonzales	3523151482063321	Sun7518
167	31.71	4.50	Male	No	Sun	Dinner	4	7.93	Michael Lawson	3566285921227119	Sun3719
170	50.81	10.00	Male	Yes	Sat	Dinner	3	16.94	Gregory Clark	5473850968388236	Sat1954
173	31.85	3.18	Male	Yes	Sun	Dinner	2	15.92	Scott Perez	3577115550328507	Sun9335
175	32.90	3.11	Male	Yes	Sun	Dinner	2	16.45	Nathan Reynolds	370307040837149	Sun5109
179	34.63	3.55	Male	Yes	Sun	Dinner	2	17.32	Brian Bailey	346656312114848	Sun9851
180	34.65	3.68	Male	Yes	Sun	Dinner	4	8.66	James Hebert DDS	676168737648	Sun7544
182	45.35	3.50	Male	Yes	Sun	Dinner	3	15.12	Jose Parsons	4112207559459910	Sun2337
184	40.55	3.00	Male	Yes	Sun	Dinner	2	20.27	Stephen Cox	3547798222044029	Sun5140
187	30.46	2.00	Male	Yes	Sun	Dinner	5	6.09	David Barrett	4792882899700988	Sun9987
207	38.73	3.00	Male	Yes	Sat	Dinner	4	9.68	Ricky Ramirez	347817964464033	Sat4505
210	30.06	2.00	Male	Yes	Sat	Dinner	3	10.02	Shawn Mendoza	30184049218122	Sat8361
212	48.33	9.00	Male	No	Sat	Dinner	4	12.08	Alex Williamson	676218815212	Sat4590
237	32.83	1.17	Male	Yes	Sat	Dinner	2	16.42	Thomas Brown	4284722681265508	Sat2929

In [34]:

```python
df[(df['total_bill'] > 30) & ~(df['sex']=='Male')]
```

Out[34]:

	total_bill	tip	sex	smoker	day	time	size	price_per_person	Payer Name	CC Number	Payment ID
11	35.26	5.00	Female	No	Sun	Dinner	4	8.82	Diane Macias	4577817359320969	Sun6686
52	34.81	5.20	Female	No	Sun	Dinner	4	8.70	Emily Daniel	4291280793094374	Sun6165
85	34.83	5.17	Female	No	Thur	Lunch	4	8.71	Shawna Cook	6011787464177340	Thur7972
102	44.30	2.50	Female	Yes	Sat	Dinner	3	14.77	Heather Cohen	379771118886604	Sat6240
197	43.11	5.00	Female	Yes	Thur	Lunch	4	10.78	Brooke Soto	5544902205760175	Thur9313
219	30.14	3.09	Female	Yes	Sat	Dinner	4	7.54	Shelby House	502097403252	Sat8863
238	35.83	4.67	Female	No	Sat	Dinner	3	11.94	Kimberly Crane	676184013727	Sat9777

In [35]:

```python
df[(df['total_bill'] > 30) & (df['sex']!='Male')]
```

Out[35]:

	total_bill	tip	sex	smoker	day	time	size	price_per_person	Payer Name	CC Number	Payment ID
11	35.26	5.00	Female	No	Sun	Dinner	4	8.82	Diane Macias	4577817359320969	Sun6686
52	34.81	5.20	Female	No	Sun	Dinner	4	8.70	Emily Daniel	4291280793094374	Sun6165
85	34.83	5.17	Female	No	Thur	Lunch	4	8.71	Shawna Cook	6011787464177340	Thur7972
102	44.30	2.50	Female	Yes	Sat	Dinner	3	14.77	Heather Cohen	379771118886604	Sat6240
197	43.11	5.00	Female	Yes	Thur	Lunch	4	10.78	Brooke Soto	5544902205760175	Thur9313
219	30.14	3.09	Female	Yes	Sat	Dinner	4	7.54	Shelby House	502097403252	Sat8863
238	35.83	4.67	Female	No	Sat	Dinner	3	11.94	Kimberly Crane	676184013727	Sat9777

In [30]:

```python
# The Weekend
df[(df['day'] =='Sun') | (df['day']=='Sat')]
```

Out[30]:

	total_bill	tip	sex	smoker	day	time	size	price_per_person	Payer Name	CC Number	Payment ID
0	16.99	1.01	Female	No	Sun	Dinner	2	8.49	Christy Cunningham	3560325168603410	Sun2959
1	10.34	1.66	Male	No	Sun	Dinner	3	3.45	Douglas Tucker	4478071379779230	Sun4608
2	21.01	3.50	Male	No	Sun	Dinner	3	7.00	Travis Walters	6011812112971322	Sun4458
3	23.68	3.31	Male	No	Sun	Dinner	2	11.84	Nathaniel Harris	4676137647685994	Sun5260
4	24.59	3.61	Female	No	Sun	Dinner	4	6.15	Tonya Carter	4832732618637221	Sun2251
5	25.29	4.71	Male	No	Sun	Dinner	4	6.32	Erik Smith	213140353657882	Sun9679
6	8.77	2.00	Male	No	Sun	Dinner	2	4.38	Kristopher Johnson	2223727524230344	Sun5985
7	26.88	3.12	Male	No	Sun	Dinner	4	6.72	Robert Buck	3514785077705092	Sun8157
8	15.04	1.96	Male	No	Sun	Dinner	2	7.52	Joseph Mcdonald	3522866365840377	Sun6820
9	14.78	3.23	Male	No	Sun	Dinner	2	7.39	Jerome Abbott	3532124519049786	Sun3775
10	10.27	1.71	Male	No	Sun	Dinner	2	5.14	William Riley	566287581219	Sun2546
11	35.26	5.00	Female	No	Sun	Dinner	4	8.82	Diane Macias	4577817359320969	Sun6686

	total_bill	tip	sex	smoker	day	time	size	price_per_person	Payer Name	CC Number	Payment ID
11	35.26	5.00	Female	No	Sun	Dinner	4	8.82	Diane Macias	4577817359320969	Sun6686
12	15.42	1.57	Male	No	Sun	Dinner	2	7.71	Chad Harrington	5770405572952	Sun1300
13	18.43	3.00	Male	No	Sun	Dinner	4	4.61	Joshua Jones	6011163105616890	Sun2971
14	14.83	3.02	Female	No	Sun	Dinner	2	7.42	Vanessa Jones	30016702287574	Sun3848
15	21.58	3.92	Male	No	Sun	Dinner	2	10.79	Matthew Reilly	1800073029785069	Sun1878
16	10.33	1.67	Female	No	Sun	Dinner	3	3.44	Elizabeth Foster	4240025044626033	Sun9715
17	16.29	3.71	Male	No	Sun	Dinner	3	5.43	John Pittman	6521340257218708	Sun2998
18	16.97	3.50	Female	No	Sun	Dinner	3	5.66	Laura Martinez	304422275171379	Sun2789
19	20.65	3.35	Male	No	Sat	Dinner	3	6.88	Timothy Oneal	6568069240986485	Sat9213
20	17.92	4.08	Male	No	Sat	Dinner	2	8.96	Thomas Rice	4403296224639756	Sat1709
21	20.29	2.75	Female	No	Sat	Dinner	2	10.14	Natalie Gardner	5448125351489749	Sat9618
22	15.77	2.23	Female	No	Sat	Dinner	2	7.88	Ashley Shelton	3524119516293213	Sat9786
23	39.42	7.58	Male	No	Sat	Dinner	4	9.86	Lance Peterson	3542584061609808	Sat239
24	19.82	3.18	Male	No	Sat	Dinner	2	9.91	Christopher Ross	36739148167928	Sat6236
25	17.81	2.34	Male	No	Sat	Dinner	4	4.45	Robert Perkins	30502930499388	Sat907
26	13.37	2.00	Male	No	Sat	Dinner	2	6.68	Kyle Avery	6531339539615499	Sat6651
27	12.69	2.00	Male	No	Sat	Dinner	2	6.34	Patrick Barber	30155551880343	Sat394
28	21.70	4.30	Male	No	Sat	Dinner	2	10.85	David Collier	5529694315416009	Sat3697
29	19.65	3.00	Female	No	Sat	Dinner	2	9.82	Melinda Murphy	5489272944576051	Sat2467
...	...	...	...	...	...	...	...	...	...	...	...
206	26.59	3.41	Male	Yes	Sat	Dinner	3	8.86	Daniel Owens	38971087967574	Sat1
207	38.73	3.00	Male	Yes	Sat	Dinner	4	9.68	Ricky Ramirez	347817964484033	Sat4505
208	24.27	2.03	Male	Yes	Sat	Dinner	2	12.14	Jason Carter	4268942915626180	Sat6048
209	12.76	2.23	Female	Yes	Sat	Dinner	2	6.38	Sarah Cunningham	341876516331163	Sat1274
210	30.06	2.00	Male	Yes	Sat	Dinner	3	10.02	Shawn Mendoza	30184049218122	Sat8361
211	25.89	5.16	Male	Yes	Sat	Dinner	4	6.47	Christopher Li	6011962464150569	Sat6735
212	48.33	9.00	Male	No	Sat	Dinner	4	12.08	Alex Williamson	676218815212	Sat4590
213	13.27	2.50	Female	Yes	Sat	Dinner	2	6.64	Robin Andersen	580140531089	Sat1374
214	28.17	6.50	Female	Yes	Sat	Dinner	3	9.39	Marissa Jackson	49223025386919962	Sat3374
215	12.90	1.10	Female	Yes	Sat	Dinner	2	6.45	Jessica Owen	4726904879471	Sat6983
216	28.15	3.00	Male	Yes	Sat	Dinner	5	5.63	Shawn Barnett PhD	4590982568244	Sat7320
217	11.59	1.50	Male	Yes	Sat	Dinner	2	5.80	Gary Orr	30324521283406	Sat8489
218	7.74	1.44	Male	Yes	Sat	Dinner	2	3.87	Nicholas Archer	340517153733524	Sat4772
219	30.14	3.09	Female	Yes	Sat	Dinner	4	7.54	Shelby House	502097403252	Sat8863
227	20.45	3.00	Male	No	Sat	Dinner	4	5.11	Robert Bradley	213141668145910	Sat4319
228	13.28	2.72	Male	No	Sat	Dinner	2	6.64	Glenn Jones	502061651712	Sat2937
229	22.12	2.88	Female	Yes	Sat	Dinner	2	11.06	Jennifer Russell	4793003293608	Sat3943
230	24.01	2.00	Male	Yes	Sat	Dinner	4	6.00	Michael Osborne	4258682154026	Sat7872
231	15.69	3.00	Male	Yes	Sat	Dinner	3	5.23	Jason Parks	4812333796161	Sat6334
232	11.61	3.39	Male	No	Sat	Dinner	2	5.80	James Taylor	6011482917327995	Sat2124
233	10.77	1.47	Male	No	Sat	Dinner	2	5.38	Paul Novak	6011698897610858	Sat1467
234	15.53	3.00	Male	Yes	Sat	Dinner	2	7.76	Tracy Douglas	4097938155941930	Sat7220
235	10.07	1.25	Male	No	Sat	Dinner	2	5.04	Sean Gonzalez	3534021246117605	Sat4615
236	12.60	1.00	Male	Yes	Sat	Dinner	2	6.30	Matthew Myers	3543676378973965	Sat5032
237	32.83	1.17	Male	Yes	Sat	Dinner	2	16.42	Thomas Brown	4284722681265508	Sat2929

	total_bill	tip	sex	smoker	day	time	size	price_per_person	Payer Name	CC Number	Payment ID
238	35.83	4.67	Female	No	Sat	Dinner	3	11.94	Kimberly Crane	676184013727	Sat9677
239	29.03	5.92	Male	No	Sat	Dinner	3	9.68	Michael Avila	5296068606052842	Sat2657
240	27.18	2.00	Female	Yes	Sat	Dinner	2	13.59	Monica Sanders	3506806155565404	Sat1766
241	22.67	2.00	Male	Yes	Sat	Dinner	2	11.34	Keith Wong	6011891618747196	Sat3880
242	17.82	1.75	Male	No	Sat	Dinner	2	8.91	Dennis Dixon	4375220550950	Sat17

163 rows × 11 columns

Conditional Operator isin()

We can use .isin() operator to filter by a list of options.

In [36]:

```
options = ['Sat','Sun']
df['day'].isin(options)
```

Out[36]:

```
0         True
1         True
2         True
3         True
4         True
5         True
6         True
7         True
8         True
9         True
10        True
11        True
12        True
13        True
14        True
15        True
16        True
17        True
18        True
19        True
20        True
21        True
22        True
23        True
24        True
25        True
26        True
27        True
28        True
29        True
         ...
214       True
215       True
216       True
217       True
218       True
219       True
220       False
221       False
222       False
223       False
224       False
225       False
226       False
227       True
228       True
229       True
230       True
231       True
```

```
232     True
233     True
234     True
235     True
236     True
237     True
238     True
239     True
240     True
241     True
242     True
243     False
Name: day, Length: 244, dtype: bool
```

In [37]:

```
df[df['day'].isin(['Sat','Sun'])]
```

Out[37]:

	total_bill	tip	sex	smoker	day	time	size	price_per_person	Payer Name	CC Number	Payment ID
0	16.99	1.01	Female	No	Sun	Dinner	2	8.49	Christy Cunningham	3560325168603410	Sun2959
1	10.34	1.66	Male	No	Sun	Dinner	3	3.45	Douglas Tucker	4478071379779230	Sun4608
2	21.01	3.50	Male	No	Sun	Dinner	3	7.00	Travis Walters	6011812112971322	Sun4458
3	23.68	3.31	Male	No	Sun	Dinner	2	11.84	Nathaniel Harris	4676137647685994	Sun5260
4	24.59	3.61	Female	No	Sun	Dinner	4	6.15	Tonya Carter	4832732618637221	Sun2251
5	25.29	4.71	Male	No	Sun	Dinner	4	6.32	Erik Smith	213140353657882	Sun9679
6	8.77	2.00	Male	No	Sun	Dinner	2	4.38	Kristopher Johnson	2223727524230344	Sun5985
7	26.88	3.12	Male	No	Sun	Dinner	4	6.72	Robert Buck	3514785077705092	Sun8157
8	15.04	1.96	Male	No	Sun	Dinner	2	7.52	Joseph Mcdonald	3522866365840377	Sun6820
9	14.78	3.23	Male	No	Sun	Dinner	2	7.39	Jerome Abbott	3532124519049786	Sun3775
10	10.27	1.71	Male	No	Sun	Dinner	2	5.14	William Riley	566287581219	Sun2546
11	35.26	5.00	Female	No	Sun	Dinner	4	8.82	Diane Macias	4577817359320969	Sun6686
12	15.42	1.57	Male	No	Sun	Dinner	2	7.71	Chad Harrington	577040572932	Sun1300
13	18.43	3.00	Male	No	Sun	Dinner	4	4.61	Joshua Jones	6011163105616890	Sun2971
14	14.83	3.02	Female	No	Sun	Dinner	2	7.42	Vanessa Jones	30016702287574	Sun3848
15	21.58	3.92	Male	No	Sun	Dinner	2	10.79	Matthew Reilly	180073029785069	Sun1878
16	10.33	1.67	Female	No	Sun	Dinner	3	3.44	Elizabeth Foster	4240025044626033	Sun9715
17	16.29	3.71	Male	No	Sun	Dinner	3	5.43	John Pittman	6521340257218708	Sun2998
18	16.97	3.50	Female	No	Sun	Dinner	3	5.66	Laura Martinez	30422275171379	Sun2789
19	20.65	3.35	Male	No	Sat	Dinner	3	6.88	Timothy Oneal	6568069240986485	Sat9213
20	17.92	4.08	Male	No	Sat	Dinner	2	8.96	Thomas Rice	4403296224639756	Sat1709
21	20.29	2.75	Female	No	Sat	Dinner	2	10.14	Natalie Gardner	5448125351489749	Sat9618
22	15.77	2.23	Female	No	Sat	Dinner	2	7.88	Ashley Shelton	3524119516293213	Sat9786
23	39.42	7.58	Male	No	Sat	Dinner	4	9.86	Lance Peterson	3542584061609808	Sat239
24	19.82	3.18	Male	No	Sat	Dinner	2	9.91	Christopher Ross	36739148167928	Sat6236
25	17.81	2.34	Male	No	Sat	Dinner	4	4.45	Robert Perkins	30502930499388	Sat907
26	13.37	2.00	Male	No	Sat	Dinner	2	6.68	Kyle Avery	65313395396154999	Sat6651
27	12.69	2.00	Male	No	Sat	Dinner	2	6.34	Patrick Barber	30155551880343	Sat394
28	21.70	4.30	Male	No	Sat	Dinner	2	10.85	David Collier	5529694315416009	Sat3697

	total_bill	tip	sex	smoker	day	time	size	price_per_person	Payer Name	CC Number	Payment ID
29	19.65	3.00	Female	No	Sat	Dinner	2	9.82	Melinda Murphy	5489272944576051	Sat2467
	...	...	...	...	...	...	...	...	...	...	...
206	26.59	3.41	Male	Yes	Sat	Dinner	3	8.86	Daniel Owens	38971087967574	Sat1
207	38.73	3.00	Male	Yes	Sat	Dinner	4	9.68	Ricky Ramirez	347817964484033	Sat4505
208	24.27	2.03	Male	Yes	Sat	Dinner	2	12.14	Jason Carter	42689429156226180	Sat6048
209	12.76	2.23	Female	Yes	Sat	Dinner	2	6.38	Sarah Cunningham	341876516331163	Sat1274
210	30.06	2.00	Male	Yes	Sat	Dinner	3	10.02	Shawn Mendoza	30184049218122	Sat8361
211	25.89	5.16	Male	Yes	Sat	Dinner	4	6.47	Christopher Li	6011962464150569	Sat6735
212	48.33	9.00	Male	No	Sat	Dinner	4	12.08	Alex Williamson	676218815212	Sat4590
213	13.27	2.50	Female	Yes	Sat	Dinner	2	6.64	Robin Andersen	580140531089	Sat1374
214	28.17	6.50	Female	Yes	Sat	Dinner	3	9.39	Marissa Jackson	49223025388691962	Sat3374
215	12.90	1.10	Female	Yes	Sat	Dinner	2	6.45	Jessica Owen	4726904879471	Sat6983
216	28.15	3.00	Male	Yes	Sat	Dinner	5	5.63	Shawn Barnett PhD	4590982568244	Sat7320
217	11.59	1.50	Male	Yes	Sat	Dinner	2	5.80	Gary Orr	30324521283406	Sat8489
218	7.74	1.44	Male	Yes	Sat	Dinner	2	3.87	Nicholas Archer	340517153733524	Sat4772
219	30.14	3.09	Female	Yes	Sat	Dinner	4	7.54	Shelby House	502097403252	Sat8863
227	20.45	3.00	Male	No	Sat	Dinner	4	5.11	Robert Bradley	213141668145910	Sat4319
228	13.28	2.72	Male	No	Sat	Dinner	2	6.64	Glenn Jones	502061651712	Sat2937
229	22.12	2.88	Female	Yes	Sat	Dinner	2	11.06	Jennifer Russell	4793003293608	Sat3943
230	24.01	2.00	Male	Yes	Sat	Dinner	4	6.00	Michael Osborne	4258682154026	Sat7872
231	15.69	3.00	Male	Yes	Sat	Dinner	3	5.23	Jason Parks	4812333796161	Sat6334
232	11.61	3.39	Male	No	Sat	Dinner	2	5.80	James Taylor	6011482917327995	Sat2124
233	10.77	1.47	Male	No	Sat	Dinner	2	5.38	Paul Novak	6011698897610858	Sat1467
234	15.53	3.00	Male	Yes	Sat	Dinner	2	7.76	Tracy Douglas	4097938155941930	Sat7220
235	10.07	1.25	Male	No	Sat	Dinner	2	5.04	Sean Gonzalez	3534021246117605	Sat4615
236	12.60	1.00	Male	Yes	Sat	Dinner	2	6.30	Matthew Myers	35436763789973965	Sat5032
237	32.83	1.17	Male	Yes	Sat	Dinner	2	16.42	Thomas Brown	4284722681265508	Sat2929
238	35.83	4.67	Female	No	Sat	Dinner	3	11.94	Kimberly Crane	676184013727	Sat9777
239	29.03	5.92	Male	No	Sat	Dinner	3	9.68	Michael Avila	5296068606052842	Sat2657
240	27.18	2.00	Female	Yes	Sat	Dinner	2	13.59	Monica Sanders	3506806155565404	Sat1766
241	22.67	2.00	Male	Yes	Sat	Dinner	2	11.34	Keith Wong	6011891618747196	Sat3880
242	17.82	1.75	Male	No	Sat	Dinner	2	8.91	Dennis Dixon	4375220550950	Sat17

163 rows × 11 columns

In [ ]: