

Description: Program pulls flight data from the Amadeus Travel API, stores it in a Pandas dataframe, cleans up headers and columns, and saves the dataframe to a CSV file.

Exploring Flight Options with Amadeus Travel API



Scenario

Initial Data Pull

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```

ng': {'carrierCode': 'DL', 'number': '817'}, 'duration': '0DT2H1M'}, 'pricingDetailPerAdult': {'travelClass': 'ECONOMY', 'fareClass': 'E', 'availability': 9, 'fareBasis': 'TAVQA0BC'}}}], 'price': {'total': '214.95', 'totalTaxes': '34.95'}, 'pricePerAdult': {'total': '214.95', 'totalTaxes': '34.95'}}}], {'type': 'flight-offer', 'id': '1583015327667--1088268279', 'offerItems': [{'services': [{'segments': [{'flightSegment': {'departure': {'iataCode': 'SFO', 'terminal': '2', 'at': '2020-07-09T17:40:00-07:00'}, 'arrival': {'iataCode': 'LAX', 'terminal': '6', 'at': '2020-07-09T19:15:00-07:00'}, 'carrierCode': 'AS', 'number': '3486', 'aircraft': {'code': 'E75'}, 'operating': {'number': '3486'}, 'duration': '0DT1H35M'}, 'pricingDetailPerAdult': {'travelClass': 'ECONOMY', 'fareClass': 'X', 'availability': 7, 'fareBasis': 'KH2OASBN'}}}], 'price': {'total': '80.00', 'totalTaxes': '18.00'}, 'pricePerAdult': {'total': '80.00', 'totalTaxes': '18.00'}}}], {'type': 'flight-offer', 'id': 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'2020-07-09T21:52:00-07:00'}, 'carrierCode': 'UA', 'number': '1200', 'aircraft': {'code': '739'}, 'operating': {'carrierCode': 'UA', 'number': '1200'}, 'duration': '0DT1H52M'}, 'pricingDetailPerAdult': {'travelClass': 'ECONOMY', 'fareClass': 'G', 'availability': 9, 'fareBasis': 'GAA2AQDN'}}}], 'price': {'total': '96.10', 'totalTaxes': '19.10'}, 'pricePerAdult': {'total': '96.10', 'totalTaxes': '19.10'}}}], {'type': 'flight-offer', 'id': '1583015327667-2125040166', 'offerItems': [{'services': [{'segments': [{'flightSegment': {'departure': {'iataCode': 'SFO', 'terminal': '2', 'at': '2020-07-09T22:15:00-07:00'}, 'arrival': {'iataCode': 'LAX', 'terminal': '6', 'at': '2020-07-09T23:48:00-07:00'}, 'carrierCode': 'AS', 'number': '3496', 'aircraft': {'code': 'E75'}, 'operating': {'number': '3496'}, 'duration': '0DT1H33M'}, 'pricingDetailPerAdult': {'travelClass': 'ECONOMY', 'fareClass': 'X', 'availability': 7, 'fareBasis': 'GH4OAVBN'}}}], 'price': {'total': '73.49', 'totalTaxes': '17.49'}, 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```

Visualizing Data Structure

Since the above data response is very nested and hard to visualize, I pasted the response into a JSON formatter (<https://jsonformatter.curiousconcept.com/>) to see the structure and grab the specific data I wanted.

Here is an example of one formatted entry to visualize the data structure:

```
{
  "type": "flight-offer",
  "id": "1583005516650-988784424",
  "offerItems": [
    {
      "services": [
        {
          "segments": [
            {
              "flightSegment": {
                "departure": {
                  "iataCode": "SFO",
                  "terminal": "2",
                  "at": "2020-07-09T19:00:00-07:00"
                },
                "arrival": {
                  "iataCode": "LAX",
                  "terminal": "6",
                  "at": "2020-07-09T20:33:00-07:00"
                },
                "carrierCode": "AS",
                "number": "1238",
                "aircraft": {
                  "code": "32S"
                },
                "operating": {
                  "carrierCode": "AS",
                  "number": "1238"
                },
                "duration": "0DT1H33M"
              },
              "pricingDetailPerAdult": {
                "travelClass": "ECONOMY",
                "fareClass": "X",
                "availability": 7,
                "fareBasis": "TH20AVBN"
              }
            }
          ]
        }
      ]
    },
    {
      "price": {
        "total": "63.85",
        "totalTaxes": "16.85"
      }
    }
  ]
}
```

Pulling and Storing Specific Data

Now, with a better understanding of the structure, I can pull specific variables using a key or an index.

In [135...

```
# Creating an empty Pandas dataframe to store flight data
flightsdf = pd.DataFrame(columns=['flight_id'])

try:
    ...

    What are the flight options for flying to Los Angeles from San Francisco on July 9th, 2020?
```



```

'''
response = amadeus.shopping.flight_offers.get(origin='SFO', destination='LAX', departureDate='20

# Looping through response, adding each variable to Pandas dataframe
for r in response.data:

    flightsdf = flightsdf.append({'flight_id': r['id'],
                                  'total': r['offerItems'][0]['price']['total'],
                                  'totalTaxes': r['offerItems'][0]['price']['totalTaxes'],
                                  'departure_port': r['offerItems'][0]['services'][0]['segments'],
                                  'arrival_port': r['offerItems'][0]['services'][0]['segments'],
                                  'd_time': r['offerItems'][0]['services'][0]['segments'][0]['fl',
                                  'a_time': r['offerItems'][0]['services'][0]['segments'][0]['fl',
                                  'd_fl_num': r['offerItems'][0]['services'][0]['segments'][0]['fl',
                                  'carrier': r['offerItems'][0]['services'][0]['segments'][0]['fl',
                                  'duration': r['offerItems'][0]['services'][0]['segments'][0]['fl',
                                  'class': r['offerItems'][0]['services'][0]['segments'][0]['pri',
                                  'availability': r['offerItems'][0]['services'][0]['segments'],
                                  'aircraft_code': r['offerItems'][0]['services'][0]['segments'],
                                  'fare_class': r['offerItems'][0]['services'][0]['segments'],

                                },
                                ignore_index=True)

except ResponseError as error:
    print(error)

print(flightsdf)

```

	flight_id	a_time	aircraft_code	\
0	1583014646520--1088268279	2020-07-09T19:15:00-07:00	E75	
1	1583014646520-1686947287	2020-07-09T21:45:00-07:00	319	
2	1583014646520--161207687	2020-07-09T11:35:00-07:00	73J	
3	1583014646520--1143547020	2020-07-09T08:38:00-07:00	E75	
4	1583014646520-2125040166	2020-07-09T23:48:00-07:00	E75	
5	1583014646520-101227269	2020-07-09T19:30:00-07:00	CRJ	
6	1583014646520--1666249787	2020-07-09T13:14:00-07:00	E75	
7	1583014646520-795525582	2020-07-09T15:36:00-07:00	E75	
8	1583014646520-2070373450	2020-07-09T09:15:00-07:00	CRJ	
9	1583014646520-108207099	2020-07-09T18:44:00-07:00	739	
10	1583014646520-1499058599	2020-07-09T15:38:00-07:00	738	
11	1583014646520-1021995922	2020-07-10T00:24:00-07:00	319	
12	1583014646520-389555624	2020-07-09T20:20:00-07:00	739	
13	1583014646520--612326430	2020-07-09T17:45:00-07:00	E75	
14	1583014646520-1567775083	2020-07-09T20:14:00-07:00	739	
15	1583014646520-2041443946	2020-07-09T11:18:00-07:00	CRJ	
16	1583014646520--465362970	2020-07-09T10:00:00-07:00	319	
17	1583014646520-136522242	2020-07-09T09:29:00-07:00	CRJ	
18	1583014646520--2013142932	2020-07-09T21:35:00-07:00	E75	
19	1583014646520--1562699338	2020-07-09T23:22:00-07:00	739	
20	1583014646520-1794346723	2020-07-09T08:19:00-07:00	73J	
21	1583014646520-1039611321	2020-07-09T09:52:00-07:00	739	
22	1583014646520-554495130	2020-07-09T14:39:00-07:00	E75	
23	1583014646520-502868613	2020-07-09T07:35:00-07:00	319	
24	1583014646520--1859054511	2020-07-09T18:40:00-07:00	319	
25	1583014646520-1871803817	2020-07-09T08:21:00-07:00	739	
26	1583014646520-933343851	2020-07-09T07:49:00-07:00	32S	
27	1583014646520-2020987402	2020-07-09T16:33:00-07:00	73H	
28	1583014646520-1547356594	2020-07-09T12:18:00-07:00	E75	
29	1583014646520-648802819	2020-07-09T17:14:00-07:00	739	
30	1583014646520-581136118	2020-07-09T20:33:00-07:00	32S	
31	1583014646520--86614509	2020-07-09T14:13:00-07:00	739	
32	1583014646520-844438014	2020-07-09T04:22:00-06:00	320	
33	1583014646520-1926715411	2020-07-09T16:35:00-07:00	319	
34	1583014646520-2014550491	2020-07-09T09:38:00-07:00	32S	
35	1583014646520-1766326436	2020-07-09T12:10:00-07:00	319	
36	1583014646520-288568539	2020-07-09T14:50:00-07:00	73J	
37	1583014646520--501107881	2020-07-09T10:40:00-07:00	E75	
38	1583014646520--550361565	2020-07-09T14:25:00-07:00	319	
39	1583014646520--702364065	2020-07-09T17:37:00-07:00	E75	
40	1583014646520-1106064779	2020-07-09T07:39:00-07:00	E75	
41	1583014646520-1959417810	2020-07-09T08:50:00-06:00	321	
42	1583014646520-124681231	2020-07-09T09:34:00-07:00	E75	
43	1583014646520--200974178	2020-07-09T21:52:00-07:00	739	
44	1583014646520-1186805071	2020-07-09T12:43:00-07:00	738	

45	1583014646520--2043280160	2020-07-09T11:13:00-07:00	738
46	1583014646520-1283747356	2020-07-09T23:48:00-07:00	CRJ
47	1583014646520-2094684728	2020-07-09T09:48:00-07:00	CRJ
48	1583014646520-325495069	2020-07-09T15:38:00-07:00	CRJ
49	1583014646520-1521513834	2020-07-09T16:45:00-07:00	CRJ

	arrival_port	availability	carrier	class	d_fl_num	\
0	LAX	7.0	AS	ECONOMY	3486	
1	LAX	9.0	DL	ECONOMY	1898	
2	SEA	7.0	AS	ECONOMY	379	
3	LAX	7.0	AS	ECONOMY	3320	
4	LAX	7.0	AS	ECONOMY	3496	
5	ONT	6.0	UA	ECONOMY	5930	
6	LAX	7.0	AS	ECONOMY	3444	
7	LAX	7.0	AS	ECONOMY	2428	
8	ONT	9.0	UA	ECONOMY	5792	
9	LAX	4.0	UA	ECONOMY	2176	
10	LAX	9.0	UA	ECONOMY	2114	
11	LAX	3.0	UA	ECONOMY	257	
12	LAX	9.0	DL	ECONOMY	1897	
13	LAX	7.0	AS	ECONOMY	3434	
14	LAX	3.0	UA	ECONOMY	2264	
15	ONT	1.0	UA	ECONOMY	5371	
16	LAX	9.0	DL	ECONOMY	777	
17	SMF	9.0	UA	ECONOMY	5445	
18	LAX	4.0	AS	ECONOMY	3440	
19	LAX	9.0	UA	ECONOMY	1294	
20	SEA	7.0	AS	ECONOMY	1341	
21	LAX	6.0	UA	ECONOMY	613	
22	LAX	7.0	AS	ECONOMY	3456	
23	LAX	9.0	DL	ECONOMY	1904	
24	LAX	9.0	DL	ECONOMY	2757	
25	LAX	9.0	UA	ECONOMY	504	
26	PDX	7.0	AS	ECONOMY	249	
27	LAX	7.0	AS	ECONOMY	418	
28	LAX	7.0	AS	ECONOMY	3432	
29	LAX	4.0	UA	ECONOMY	215	
30	LAX	7.0	AS	ECONOMY	1238	
31	LAX	9.0	UA	ECONOMY	433	
32	DEN	4.0	F9	ECONOMY	662	
33	LAX	9.0	DL	ECONOMY	1327	
34	LAX	7.0	AS	ECONOMY	1446	
35	LAX	9.0	DL	ECONOMY	708	
36	SEA	7.0	AS	ECONOMY	1477	
37	LAX	7.0	AS	ECONOMY	3446	
38	LAX	9.0	DL	ECONOMY	2600	
39	LAS	7.0	AS	ECONOMY	3386	
40	LAX	7.0	AS	ECONOMY	3318	
41	SLC	9.0	DL	ECONOMY	2401	
42	LAS	7.0	AS	ECONOMY	3302	
43	LAX	9.0	UA	ECONOMY	1200	
44	LAX	6.0	UA	ECONOMY	256	
45	LAX	9.0	UA	ECONOMY	1897	
46	ONT	4.0	UA	ECONOMY	5611	
47	ONT	5.0	UA	ECONOMY	5228	
48	ONT	6.0	UA	ECONOMY	5422	
49	SMF	9.0	UA	ECONOMY	5473	

	d_time	departure_port	duration	fare_class	total	\
0	2020-07-09T17:40:00-07:00	SFO	0DT1H35M	X	80.00	
1	2020-07-09T20:09:00-07:00	SFO	0DT1H36M	E	77.81	
2	2020-07-09T09:15:00-07:00	SFO	0DT2H20M	X	135.46	
3	2020-07-09T07:00:00-07:00	SFO	0DT1H38M	X	63.85	
4	2020-07-09T22:15:00-07:00	SFO	0DT1H33M	X	73.49	
5	2020-07-09T18:12:00-07:00	SFO	0DT1H18M	V	240.10	
6	2020-07-09T11:35:00-07:00	SFO	0DT1H39M	X	63.85	
7	2020-07-09T14:00:00-07:00	SFO	0DT1H36M	X	63.85	
8	2020-07-09T07:45:00-07:00	SFO	0DT1H30M	G	100.42	
9	2020-07-09T17:00:00-07:00	SFO	0DT1H44M	W	174.60	
10	2020-07-09T14:00:00-07:00	SFO	0DT1H38M	G	96.10	
11	2020-07-09T22:45:00-07:00	SFO	0DT1H39M	Q	217.56	
12	2020-07-09T18:39:00-07:00	SFO	0DT1H41M	E	77.81	
13	2020-07-09T16:10:00-07:00	SFO	0DT1H35M	X	73.49	
14	2020-07-09T18:30:00-07:00	SFO	0DT1H44M	K	119.72	
15	2020-07-09T09:51:00-07:00	SFO	0DT1H27M	G	100.42	
16	2020-07-09T08:25:00-07:00	SFO	0DT1H35M	E	77.81	
17	2020-07-09T08:35:00-07:00	SFO	0DT0H54M	S	342.93	
18	2020-07-09T20:00:00-07:00	SFO	0DT1H35M	V	100.42	

19	2020-07-09T21:30:00-07:00	SFO	0DT1H52M	G	96.10
20	2020-07-09T06:00:00-07:00	SFO	0DT2H19M	X	135.46
21	2020-07-09T08:00:00-07:00	SFO	0DT1H52M	K	119.72
22	2020-07-09T13:00:00-07:00	SFO	0DT1H39M	X	73.49
23	2020-07-09T06:03:00-07:00	SFO	0DT1H32M	E	77.81
24	2020-07-09T17:02:00-07:00	SFO	0DT1H38M	E	103.60
25	2020-07-09T06:30:00-07:00	SFO	0DT1H51M	K	119.72
26	2020-07-09T06:00:00-07:00	SFO	0DT1H49M	X	181.69
27	2020-07-09T15:00:00-07:00	SFO	0DT1H33M	X	63.85
28	2020-07-09T10:40:00-07:00	SFO	0DT1H38M	X	63.85
29	2020-07-09T15:30:00-07:00	SFO	0DT1H44M	G	96.10
30	2020-07-09T19:00:00-07:00	SFO	0DT1H33M	X	63.85
31	2020-07-09T12:30:00-07:00	SFO	0DT1H43M	G	96.10
32	2020-07-09T00:49:00-07:00	SFO	0DT2H33M	B	174.11
33	2020-07-09T15:00:00-07:00	SFO	0DT1H35M	E	103.60
34	2020-07-09T08:00:00-07:00	SFO	0DT1H38M	X	63.85
35	2020-07-09T10:38:00-07:00	SFO	0DT1H32M	E	77.81
36	2020-07-09T12:35:00-07:00	SFO	0DT2H15M	X	135.46
37	2020-07-09T09:00:00-07:00	SFO	0DT1H40M	X	80.00
38	2020-07-09T12:58:00-07:00	SFO	0DT1H27M	E	77.81
39	2020-07-09T16:00:00-07:00	SFO	0DT1H37M	V	198.85
40	2020-07-09T06:00:00-07:00	SFO	0DT1H39M	X	63.85
41	2020-07-09T06:00:00-07:00	SFO	0DT1H50M	E	214.95
42	2020-07-09T07:55:00-07:00	SFO	0DT1H39M	V	198.85
43	2020-07-09T20:00:00-07:00	SFO	0DT1H52M	G	96.10
44	2020-07-09T11:00:00-07:00	SFO	0DT1H43M	G	96.10
45	2020-07-09T09:30:00-07:00	SFO	0DT1H43M	G	96.10
46	2020-07-09T22:30:00-07:00	SFO	0DT1H18M	W	207.92
47	2020-07-09T08:30:00-07:00	SFO	0DT1H18M	K	127.30
48	2020-07-09T14:11:00-07:00	SFO	0DT1H27M	L	146.60
49	2020-07-09T15:55:00-07:00	SFO	0DT0H50M	S	342.93

totalTaxes

0	18.00
1	17.81
2	29.46
3	16.85
4	17.49
5	29.10
6	16.85
7	16.85
8	19.42
9	24.60
10	19.10
11	27.56
12	17.81
13	17.49
14	20.72
15	19.42
16	17.81
17	43.93
18	19.42
19	19.10
20	29.46
21	20.72
22	17.49
23	17.81
24	19.60
25	20.72
26	32.69
27	16.85
28	16.85
29	19.10
30	16.85
31	19.10
32	32.11
33	19.60
34	16.85
35	17.81
36	29.46
37	18.00
38	17.81
39	33.85
40	16.85
41	34.95
42	33.85
43	19.10
44	19.10

```

45      19.10
46      26.92
47      21.30
48      22.60
49      43.93

```

In [136...

```

# Summary of dataframe
print(flightsdf.info())

```

```

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 50 entries, 0 to 49
Data columns (total 14 columns):
flight_id      50 non-null object
a_time         50 non-null object
aircraft_code  50 non-null object
arrival_port   50 non-null object
availability    50 non-null float64
carrier        50 non-null object
class          50 non-null object
d_fl_num       50 non-null object
d_time         50 non-null object
departure_port 50 non-null object
duration       50 non-null object
fare_class     50 non-null object
total          50 non-null object
totalTaxes     50 non-null object
dtypes: float64(1), object(13)
memory usage: 5.5+ KB
None

```

Dataframe Clean Up

Our arrival time and departure time columns include a date and a time. It would make more sense to have this info split into two variables in separate columns.

I'll use string methods and Pandas to split them at "T" and then store them in separate columns.

In [137...

```

# New arrival time data frame with split value columns
a_time_df = flightsdf["a_time"].str.split("T", n = 1, expand = True)

# Making separate date column from new data frame
flightsdf["a_date"] = a_time_df[0]

# Making separate time column from new data frame
flightsdf["a_time_new"] = a_time_df[1]

# Dropping old time column
flightsdf.drop(columns=["a_time"], inplace = True)

# Previewing cleaned data
print(flightsdf.head())

```

	flight_id	aircraft_code	arrival_port	availability	carrier	\
0	1583014646520--1088268279	E75	LAX	7.0	AS	
1	1583014646520-1686947287	319	LAX	9.0	DL	
2	1583014646520--161207687	73J	SEA	7.0	AS	
3	1583014646520--1143547020	E75	LAX	7.0	AS	
4	1583014646520-2125040166	E75	LAX	7.0	AS	

	class	d_fl_num	d_time	departure_port	duration	\
0	ECONOMY	3486	2020-07-09T17:40:00-07:00	SFO	0DT1H35M	
1	ECONOMY	1898	2020-07-09T20:09:00-07:00	SFO	0DT1H36M	
2	ECONOMY	379	2020-07-09T09:15:00-07:00	SFO	0DT2H20M	
3	ECONOMY	3320	2020-07-09T07:00:00-07:00	SFO	0DT1H38M	
4	ECONOMY	3496	2020-07-09T22:15:00-07:00	SFO	0DT1H33M	

	fare_class	total	totalTaxes	a_date	a_time_new
0	X	80.00	18.00	2020-07-09	19:15:00-07:00
1	E	77.81	17.81	2020-07-09	21:45:00-07:00
2	X	135.46	29.46	2020-07-09	11:35:00-07:00
3	X	63.85	16.85	2020-07-09	08:38:00-07:00
4	X	73.49	17.49	2020-07-09	23:48:00-07:00

```
In [138... # New departure time data frame with split value columns
d_time_df = flightsdf["d_time"].str.split("T", n = 1, expand = True)

# Making separate date column from new data frames
flightsdf["d_date"] = d_time_df[0]

# Making separate time column from new data frames
flightsdf["d_time_new"] = d_time_df[1]

# Dropping old time column
flightsdf.drop(columns = ["d_time"], inplace = True)

# Previewing cleaned data
print(flightsdf.head())
```

	flight_id	aircraft_code	arrival_port	availability	carrier	\
0	1583014646520--1088268279	E75	LAX	7.0	AS	
1	1583014646520-1686947287	319	LAX	9.0	DL	
2	1583014646520--161207687	73J	SEA	7.0	AS	
3	1583014646520--1143547020	E75	LAX	7.0	AS	
4	1583014646520-2125040166	E75	LAX	7.0	AS	

	class	d_fl_num	departure_port	duration	fare_class	total	totalTaxes	\
0	ECONOMY	3486	SFO	ODT1H35M	X	80.00	18.00	
1	ECONOMY	1898	SFO	ODT1H36M	E	77.81	17.81	
2	ECONOMY	379	SFO	ODT2H20M	X	135.46	29.46	
3	ECONOMY	3320	SFO	ODT1H38M	X	63.85	16.85	
4	ECONOMY	3496	SFO	ODT1H33M	X	73.49	17.49	

	a_date	a_time_new	d_date	d_time_new
0	2020-07-09	19:15:00-07:00	2020-07-09	17:40:00-07:00
1	2020-07-09	21:45:00-07:00	2020-07-09	20:09:00-07:00
2	2020-07-09	11:35:00-07:00	2020-07-09	09:15:00-07:00
3	2020-07-09	08:38:00-07:00	2020-07-09	07:00:00-07:00
4	2020-07-09	23:48:00-07:00	2020-07-09	22:15:00-07:00

Now that I have them successfully separated, I'll clean up those column names.

```
In [139... flightsdf=flightsdf.rename(columns = {'a_time_new':'arr_time', 'd_time_new':'dep_time', 'a_date':'arr_date', 'd_date':'dep_date'})
print(flightsdf.head())
```

	flight_id	aircraft_code	arrival_port	availability	carrier	\
0	1583014646520--1088268279	E75	LAX	7.0	AS	
1	1583014646520-1686947287	319	LAX	9.0	DL	
2	1583014646520--161207687	73J	SEA	7.0	AS	
3	1583014646520--1143547020	E75	LAX	7.0	AS	
4	1583014646520-2125040166	E75	LAX	7.0	AS	

	class	d_fl_num	departure_port	duration	fare_class	total	totalTaxes	\
0	ECONOMY	3486	SFO	ODT1H35M	X	80.00	18.00	
1	ECONOMY	1898	SFO	ODT1H36M	E	77.81	17.81	
2	ECONOMY	379	SFO	ODT2H20M	X	135.46	29.46	
3	ECONOMY	3320	SFO	ODT1H38M	X	63.85	16.85	
4	ECONOMY	3496	SFO	ODT1H33M	X	73.49	17.49	

	arr_date	arr_time	dep_date	dep_time
0	2020-07-09	19:15:00-07:00	2020-07-09	17:40:00-07:00
1	2020-07-09	21:45:00-07:00	2020-07-09	20:09:00-07:00
2	2020-07-09	11:35:00-07:00	2020-07-09	09:15:00-07:00
3	2020-07-09	08:38:00-07:00	2020-07-09	07:00:00-07:00
4	2020-07-09	23:48:00-07:00	2020-07-09	22:15:00-07:00

The duration column could also use some cleaning. Since none of the flights are longer than a day, I'll strip the data to only include hours and minutes.

```
In [140... # New duration data frame with stripped values
dur_df = flightsdf["duration"].str.split("T", n = 1, expand = True)

# Making new duration column from new data frame
flightsdf["duration_new"] = dur_df[1]

# Dropping old duration column
flightsdf.drop(columns = ["duration"], inplace = True)
```

```
# Renaming cleaned duration column
flightsdf=flightsdf.rename(columns = {'duration_new':'duration'})

# Previewing cleaned data
print(flightsdf.head())
```

	flight_id	aircraft_code	arrival_port	availability	carrier	\
0	1583014646520--1088268279	E75	LAX	7.0	AS	
1	1583014646520-1686947287	319	LAX	9.0	DL	
2	1583014646520--161207687	73J	SEA	7.0	AS	
3	1583014646520--1143547020	E75	LAX	7.0	AS	
4	1583014646520-2125040166	E75	LAX	7.0	AS	

	class	d_fl_num	departure_port	fare_class	total	totalTaxes	arr_date	\
0	ECONOMY	3486	SFO	X	80.00	18.00	2020-07-09	
1	ECONOMY	1898	SFO	E	77.81	17.81	2020-07-09	
2	ECONOMY	379	SFO	X	135.46	29.46	2020-07-09	
3	ECONOMY	3320	SFO	X	63.85	16.85	2020-07-09	
4	ECONOMY	3496	SFO	X	73.49	17.49	2020-07-09	

	arr_time	dep_date	dep_time	duration
0	19:15:00-07:00	2020-07-09	17:40:00-07:00	1H35M
1	21:45:00-07:00	2020-07-09	20:09:00-07:00	1H36M
2	11:35:00-07:00	2020-07-09	09:15:00-07:00	2H20M
3	08:38:00-07:00	2020-07-09	07:00:00-07:00	1H38M
4	23:48:00-07:00	2020-07-09	22:15:00-07:00	1H33M

In [129...

```
# Writing cleaned dataframe to CSV file
flightsdf.to_csv('flights_sfo_lax_07092020.csv')
```

With the CSV file successfully created, I feel great!



(photo courtesy of Amadeus Travel API: https://developers.amadeus.com/PAS-EAS/api/v1/cms-gateway/sites/default/files/styles/blog_list_image/public/2019-12/Back%20view%20of%20redheaded%20woman%20sitting%20on%20a%20rock%20looking%20at%20distance_0.jpg?itok=Apc9D7Jb)