In [1]:
```
from requests import Request, Session
from requests.exceptions import ConnectionError, Timeout, TooManyRedirects
import json

url = 'https://pro-api.coinmarketcap.com/v1/cryptocurrency/listings/latest'
#Original Sandbox Environment: 'https://sandbox-api.coinmarketcap.com/v1/cryptocurrency/listings/latest'
parameters = {
  'start':'1',
  'limit':'15',
  'convert':'USD'
}
headers = {
  'Accepts': 'application/json',
  'X-CMC_PRO_API_KEY': '5da58583eb234c8ba5019380787c21e9',
}

session = Session()
session.headers.update(headers)

try:
  response = session.get(url, params=parameters)
  data = json.loads(response.text)
  #print(data)
except (ConnectionError, Timeout, TooManyRedirects) as e:
  print(e)
```

In [2]:
```
type(data)
```

Out[2]: dict

In [3]:
```
import pandas as pd


#This allows you to see all the columns, not just like 15
pd.set_option('display.max_columns', None)
pd.set_option('display.max_rows', None)
```

In [4]:
```
print(data.keys())
```

```
dict_keys(['status', 'data'])
```

In [5]:
```
#This normalizes the data and makes it all pretty in a dataframe

df = pd.json_normalize(data['data'])
df['timestamp'] = pd.to_datetime('now')
```

In [138…
```
df.head(5)
```

Out[138…

	id	name	symbol	slug	num_market_pairs	date_added	tags	max_supply	circulating_supply	total_s
0	1	Bitcoin	BTC	bitcoin	12566	2010-07-13T00:00:00.000Z	[mineable, pow, sha-256, store-of-value, state...	2.100000e+07	1.999482e+07	1.99948
1	1027	Ethereum	ETH	ethereum	11588	2015-08-07T00:00:00.000Z	[pos, smart-contracts, ethereum-ecosystem, coi...	NaN	1.206923e+08	1.20692
2	825	Tether USDt	USDT	tether	171679	2015-02-25T00:00:00.000Z	[stablecoin, asset-backed-stablecoin, usd-stab...	NaN	1.836242e+11	1.87940
3	52	XRP	XRP	xrp	1802	2013-08-04T00:00:00.000Z	[medium-of-exchange, enterprise-solutions, xrp...	1.000000e+11	6.101858e+10	9.99857
4	1839	BNB	BNB	bnb	3136	2017-07-25T00:00:00.000Z	[marketplace, centralized-exchange, payments, ...	1.363589e+08	1.363589e+08	1.36358

In [7]:
```
def api_runner():
    global df
    url = 'https://pro-api.coinmarketcap.com/v1/cryptocurrency/listings/latest'
    #Original Sandbox Environment: 'https://sandbox-api.coinmarketcap.com/v1/cryptocurrency/listings/latest'
    parameters = {
```

```
    'start':'1',
    'limit':'15',
    'convert':'USD'
  }
  headers = {
    'Accepts': 'application/json',
    'X-CMC_PRO_API_KEY': '5da58583eb234c8ba5019380787c21e9',
  }

  session = Session()
  session.headers.update(headers)

  try:
    response = session.get(url, params=parameters)
    data = json.loads(response.text)
    #print(data)
  except (ConnectionError, Timeout, TooManyRedirects) as e:
    print(e)


  df = pd.json_normalize(data['data'])
  df['timestamp'] = pd.to_datetime('now')

  if not os.path.isfile(r'C:\Users\User\Downloads\Automating Crypto API\API_Data.csv'):
      df.to_csv(r'C:\Users\User\Downloads\Automating Crypto API\API_Data.csv', header='column_names')
  else:
      df.to_csv(r'C:\Users\User\Downloads\Automating Crypto API\API_Data.csv', mode='a', header=False)

  # Then to read in the file: df = pd.read_csv(r'C:\Users\alexf\OneDrive\Documents\Python Scripts\API.csv')
```

In [8]:

```
import os
from time import time
from time import sleep

for i in range(333):
    api_runner()
    # df = pd.concat([df, new_row]) # Join the old df with the new row
    print('API Runner completed')
    sleep(60) #sleep for 1 minute
exit()
```

```
API Runner completed
---------------------------------------------------------------------------
KeyboardInterrupt                         Traceback (most recent call last)
Cell In[8], line 9
      7     # df = pd.concat([df, new_row]) # Join the old df with the new row
      8     print('API Runner completed')
----> 9     sleep(60) #sleep for 1 minute
     10 exit()

KeyboardInterrupt:
```

In [139…

```
df2 = pd.read_csv(r'C:\Users\User\Downloads\Automating Crypto API\API_Data.csv')
df2.head(5)
```

Out[139…

	Index	id	name	symbol	slug	num_market_pairs	date_added	tags	max_supply	circulating_supply
0	0	1	Bitcoin	BTC	bitcoin	12566	2010-07-13T00:00:00.000Z	['mineable', 'pow', 'sha-256', 'store-of-value...	2.100000e+07	1.999478e+07
1	1	1027	Ethereum	ETH	ethereum	11588	2015-08-07T00:00:00.000Z	['pos', 'smart-contracts', 'ethereum-ecosystem...	NaN	1.206923e+08
2	2	825	Tether USDt	USDT	tether	171679	2015-02-25T00:00:00.000Z	['stablecoin', 'asset-backed-stablecoin', 'usd...	NaN	1.836242e+11
3	3	52	XRP	XRP	xrp	1802	2013-08-04T00:00:00.000Z	['medium-of-exchange', 'enterprise-solutions',...	1.000000e+11	6.101858e+10
4	4	1839	BNB	BNB	bnb	3136	2017-07-25T00:00:00.000Z	['marketplace', 'centralized-exchange', 'payme...	1.363589e+08	1.363589e+08

In [140…

```
df3 = df.groupby('name', sort=False)[['quote.USD.percent_change_1h','quote.USD.percent_change_24h','quote.USD.p
df3.head(5)
```

Out[140…

name	quote.USD.percent_change_1h	quote.USD.percent_change_24h	quote.USD.percent_change_7d	quote.USD.percent_change_
Bitcoin	-1.112036	6.461700	2.818431	-22.477
Ethereum	-1.075386	11.812409	6.822414	-28.872
Tether USDt	-0.018905	0.023853	0.077092	0.132
XRP	-1.951988	7.148953	1.968476	-23.648
BNB	-0.852930	7.608970	4.160159	-28.168

In [141…
```
df4 = df3.stack()
df4.head(5)
```

Out[141…
```
name
Bitcoin  quote.USD.percent_change_1h     -1.112036
         quote.USD.percent_change_24h     6.461700
         quote.USD.percent_change_7d      2.818431
         quote.USD.percent_change_30d   -22.477640
         quote.USD.percent_change_60d   -22.048300
dtype: float64
```

In [115…
```
type(df4)
```

Out[115…
```
pandas.core.series.Series
```

In [143…
```
df5 = df4.to_frame(name='values')
df5.head(15)
```

Out[143…

	name	values
Bitcoin	quote.USD.percent_change_1h	-1.112036
	quote.USD.percent_change_24h	6.461700
	quote.USD.percent_change_7d	2.818431
	quote.USD.percent_change_30d	-22.477640
	quote.USD.percent_change_60d	-22.048300
	quote.USD.percent_change_90d	-25.230197
Ethereum	quote.USD.percent_change_1h	-1.075386
	quote.USD.percent_change_24h	11.812409
	quote.USD.percent_change_7d	6.822414
	quote.USD.percent_change_30d	-28.872810
	quote.USD.percent_change_60d	-29.125677
	quote.USD.percent_change_90d	-30.907161
Tether USDt	quote.USD.percent_change_1h	-0.018905
	quote.USD.percent_change_24h	0.023853
	quote.USD.percent_change_7d	0.077092

In [117…
```
df5.count()
```

Out[117…
```
values    90
dtype: int64
```

In [145…
```
# Index = pd.Index(range(90))

df6 = df5.reset_index()
df6.head(15)
```

Out[145…

	name	level_1	values
0	Bitcoin	quote.USD.percent_change_1h	-1.112036
1	Bitcoin	quote.USD.percent_change_24h	6.461700
2	Bitcoin	quote.USD.percent_change_7d	2.818431
3	Bitcoin	quote.USD.percent_change_30d	-22.477640
4	Bitcoin	quote.USD.percent_change_60d	-22.048300
5	Bitcoin	quote.USD.percent_change_90d	-25.230197
6	Ethereum	quote.USD.percent_change_1h	-1.075386
7	Ethereum	quote.USD.percent_change_24h	11.812409
8	Ethereum	quote.USD.percent_change_7d	6.822414
9	Ethereum	quote.USD.percent_change_30d	-28.872810
10	Ethereum	quote.USD.percent_change_60d	-29.125677
11	Ethereum	quote.USD.percent_change_90d	-30.907161
12	Tether USDt	quote.USD.percent_change_1h	-0.018905
13	Tether USDt	quote.USD.percent_change_24h	0.023853
14	Tether USDt	quote.USD.percent_change_7d	0.077092

In [146…

```
df7 = df6.rename(columns={'level_1': 'percent_change'})
df7.head(15)
```

Out[146…

	name	percent_change	values
0	Bitcoin	quote.USD.percent_change_1h	-1.112036
1	Bitcoin	quote.USD.percent_change_24h	6.461700
2	Bitcoin	quote.USD.percent_change_7d	2.818431
3	Bitcoin	quote.USD.percent_change_30d	-22.477640
4	Bitcoin	quote.USD.percent_change_60d	-22.048300
5	Bitcoin	quote.USD.percent_change_90d	-25.230197
6	Ethereum	quote.USD.percent_change_1h	-1.075386
7	Ethereum	quote.USD.percent_change_24h	11.812409
8	Ethereum	quote.USD.percent_change_7d	6.822414
9	Ethereum	quote.USD.percent_change_30d	-28.872810
10	Ethereum	quote.USD.percent_change_60d	-29.125677
11	Ethereum	quote.USD.percent_change_90d	-30.907161
12	Tether USDt	quote.USD.percent_change_1h	-0.018905
13	Tether USDt	quote.USD.percent_change_24h	0.023853
14	Tether USDt	quote.USD.percent_change_7d	0.077092

In [120…

```
df7['percent_change'] = df7['percent_change'].replace(['quote.USD.percent_change_1h','quote.USD.percent_change_
df7
```

Out[120…

	name	percent_change	values
0	Bitcoin	1h	-1.112036
1	Bitcoin	24h	6.461700
2	Bitcoin	7d	2.818431
3	Bitcoin	30d	-22.477640
4	Bitcoin	60d	-22.048300
5	Bitcoin	90d	-25.230197
6	Ethereum	1h	-1.075386
7	Ethereum	24h	11.812409
8	Ethereum	7d	6.822414
9	Ethereum	30d	-28.872810
10	Ethereum	60d	-29.125677
11	Ethereum	90d	-30.907161
12	Tether USDt	1h	-0.018905

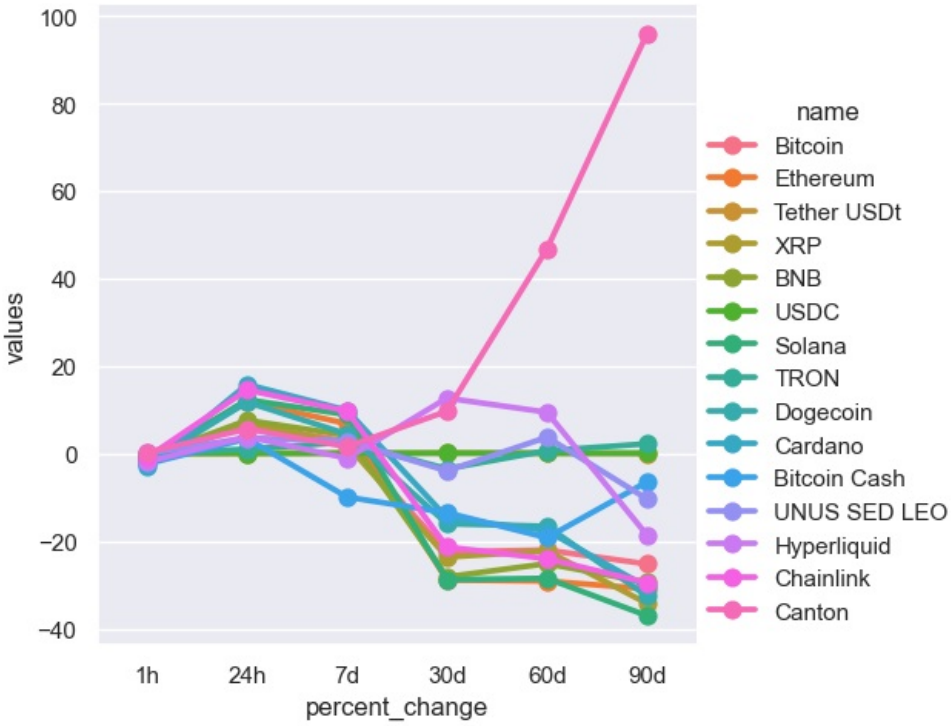
12	Tether USDt	1h	-0.018903
13	Tether USDt	24h	0.023853
14	Tether USDt	7d	0.077092
15	Tether USDt	30d	0.132238
16	Tether USDt	60d	0.089059
17	Tether USDt	90d	0.026488
18	XRP	1h	-1.951988
19	XRP	24h	7.148953
20	XRP	7d	1.968476
21	XRP	30d	-23.648450
22	XRP	60d	-22.245914
23	XRP	90d	-34.237855
24	BNB	1h	-0.852930
25	BNB	24h	7.608970
26	BNB	7d	4.160159
27	BNB	30d	-28.168225
28	BNB	60d	-25.149414
29	BNB	90d	-29.447325
30	USDC	1h	0.031036
31	USDC	24h	0.049102
32	USDC	7d	0.065302
33	USDC	30d	0.085898
34	USDC	60d	0.065907
35	USDC	90d	0.072097
36	Solana	1h	-1.624713
37	Solana	24h	12.294375
38	Solana	7d	8.877957
39	Solana	30d	-28.815400
40	Solana	60d	-28.507454
41	Solana	90d	-37.031400
42	TRON	1h	-0.094820
43	TRON	24h	0.988805
44	TRON	7d	2.611457
45	TRON	30d	-3.493917
46	TRON	60d	0.650643
47	TRON	90d	2.224221
48	Dogecoin	1h	-2.308353
49	Dogecoin	24h	11.742943
50	Dogecoin	7d	4.449504
51	Dogecoin	30d	-16.046561
52	Dogecoin	60d	-16.598707
53	Dogecoin	90d	-32.525137
54	Cardano	1h	-3.006030
55	Cardano	24h	15.784574
56	Cardano	7d	9.873511
57	Cardano	30d	-14.664287
58	Cardano	60d	-17.620785
59	Cardano	90d	-30.495127
60	Bitcoin Cash	1h	-2.372780
61	Bitcoin Cash	24h	3.402261
62	Bitcoin Cash	7d	-9.945219

63	Bitcoin Cash	30d	-13.510410
64	Bitcoin Cash	60d	-19.234597
65	Bitcoin Cash	90d	-6.488925
66	UNUS SED LEO	1h	0.097224
67	UNUS SED LEO	24h	3.548778
68	UNUS SED LEO	7d	2.855203
69	UNUS SED LEO	30d	-3.962316
70	UNUS SED LEO	60d	3.730503
71	UNUS SED LEO	90d	-10.342725
72	Hyperliquid	1h	-1.914289
73	Hyperliquid	24h	3.881790
74	Hyperliquid	7d	-1.095352
75	Hyperliquid	30d	12.667520
76	Hyperliquid	60d	9.433675
77	Hyperliquid	90d	-18.597892
78	Chainlink	1h	-0.901365
79	Chainlink	24h	14.536616
80	Chainlink	7d	9.695866
81	Chainlink	30d	-21.362599
82	Chainlink	60d	-24.029431
83	Chainlink	90d	-29.492155
84	Canton	1h	0.270238
85	Canton	24h	5.618191
86	Canton	7d	1.559229
87	Canton	30d	9.680635
88	Canton	60d	46.739700
89	Canton	90d	95.854930

In [121…
```
import seaborn as sns
import matplotlib.pyplot as plt
```

In [137…
```
sns.catplot(x='percent_change', y='values', hue='name', data=df7, kind='point')
plt.figure(figsize=(20, 25))
```

Out[137… `<Figure size 2000x2500 with 0 Axes>`



`<Figure size 2000x2500 with 0 Axes>`

In [147…
```
df10 = df2[['name','quote.USD.price','timestamp']]
df10 = df10.query("name == 'Bitcoin'")
df10
```

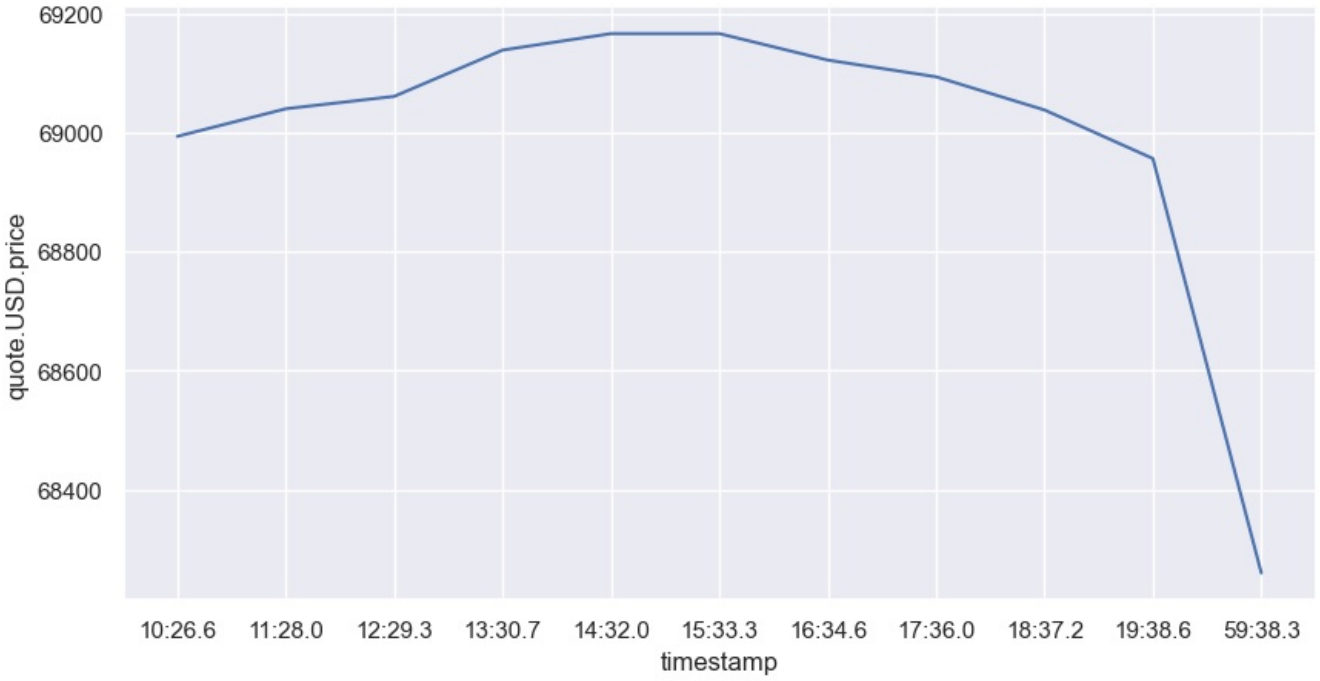
Out[147…

	name	quote.USD.price	timestamp
0	Bitcoin	68993.789704	10:26.6
15	Bitcoin	69040.153073	11:28.0
30	Bitcoin	69060.966946	12:29.3
45	Bitcoin	69138.779099	13:30.7
60	Bitcoin	69166.435160	14:32.0
75	Bitcoin	69166.435160	15:33.3
90	Bitcoin	69122.005109	16:34.6
105	Bitcoin	69093.854259	17:36.0
120	Bitcoin	69038.133921	18:37.2
135	Bitcoin	68956.488175	19:38.6
150	Bitcoin	68260.028607	59:38.3

In [131…
```
sns.set_theme(style="darkgrid")
plt.figure(figsize=(10, 5))

sns.lineplot(x='timestamp', y='quote.USD.price', data = df10)
```

Out[131… `<Axes: xlabel='timestamp', ylabel='quote.USD.price'>`



In [ ]: