CRYPTOCURRENCY API

```python
In [10]:   from requests import Request, Session
           from requests.exceptions import ConnectionError, Timeout, TooManyRedirects
           import json
           import getpass
           api = getpass.getpass(prompt = "Enter your API: ")
           url = 'https://pro-api.coinmarketcap.com/v1/cryptocurrency/listings/latest'
           #url = 'https://pro-api.coinmarketcap.com'
           parameters = {
             'start':'1',
             'limit':'15',
             'convert':'USD'
           }
           headers = {
             'Accepts': 'application/json',
             'X-CMC_PRO_API_KEY': api,
           }

           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)
```

Enter your API: ·······

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4h': 287892075.5183996, 'volume_change_24h': -5.4468, 'percent_change_1h': 1.32026492,
'percent_change_24h': 2.86194325, 'percent_change_7d': 10.60330212, 'percent_change_30
d': -1.49400723, 'percent_change_60d': -15.32238754, 'percent_change_90d': -4.22175995,
'market_cap': 8493186585.481496, 'market_cap_dominance': 0.3524, 'fully_diluted_market_c
ap': 13966760398.22, 'tvl': None, 'last_updated': '2024-07-19T16:14:00.000Z'}}}]}

In [11]: `type(data)`

Out[11]: `dict`

In [12]:
```python
import pandas as pd

pd.json_normalize(data['status'])
```

Out[12]:

	timestamp	error_code	error_message	elapsed	credit_count	notice	total_count
0	2024-07-19T16:16:15.749Z	0	None	23	1	None	10001

In [14]:
```python
df = pd.json_normalize(data['data'])
df['timestamp'] = pd.to_datetime('now')
```

In [33]:
```python
def api_runner():
    from requests import Request, Session
    from requests.exceptions import ConnectionError, Timeout, TooManyRedirects
    import json
    import getpass
    api = getpass.getpass(prompt = "Enter your API: ")
    url = 'https://pro-api.coinmarketcap.com/v1/cryptocurrency/listings/latest'
    #url = 'https://pro-api.coinmarketcap.com'
    parameters = {
      'start':'1',
      'limit':'15',
      'convert':'USD'
    }
    headers = {
      'Accepts': 'application/json',
      'X-CMC_PRO_API_KEY': api,
    }

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

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




    #appending
    global df

    df2 = pd.json_normalize(data['data'])
    df2['timestamp'] = pd.to_datetime('now')
    df = pd.concat([df,df2], ignore_index = True)

    if not os.path.isfile(r'C:\Users\NAOMI KOYANA\Downloads\API.csv'):
        df.to_csv(r'C:\Users\NAOMI KOYANA\Downloads\API.csv', header = 'column_names')
    else:
        #append
        df.to_csv(r'C:\Users\NAOMI KOYANA\Downloads\API.csv',mode = 'a', header = 'colum
```

In [34]:
```python
import os
from time import time
from time import sleep

for i in range(333):
    api_runner()
    print('API Runner successfully completed!')
    sleep(60)
exit()
```

```
Enter your API: ········
API Runner successfully completed!
Enter your API: ········
API Runner successfully completed!
---------------------------------------------------------------------------
KeyboardInterrupt                         Traceback (most recent call last)
Cell In[34], line 8
      6     api_runner()
      7     print('API Runner successfully completed!')
----> 8     sleep(60)
      9 exit()

KeyboardInterrupt:
```

In [35]:
```python
df4 = pd.read_csv(r'C:\Users\NAOMI KOYANA\Downloads\API.csv')
df4
```

```
Out[35]:
```

	Unnamed: 0	id	name	symbol	slug	num_market_pairs	date_added	tags	max_s
0	0.0	1	Bitcoin	BTC	bitcoin	11608	2010-07-13T00:00:00.000Z	['mineable', 'pow', 'sha-256', 'store-of-value...	21000
1	1.0	1027	Ethereum	ETH	ethereum	9150	2015-08-07T00:00:00.000Z	['pos', 'smart-contracts', 'ethereum-ecosystem...	
2	2.0	825	Tether USDt	USDT	tether	92111	2015-02-25T00:00:00.000Z	['stablecoin', 'asset-backed-stablecoin', 'ava...	
3	3.0	1839	BNB	BNB	bnb	2194	2017-07-25T00:00:00.000Z	['marketplace', 'centralized-exchange', 'payme...	
4	4.0	5426	Solana	SOL	solana	707	2020-04-10T00:00:00.000Z	['pos', 'platform', 'solana-ecosystem', 'cms-h...	
...	...	...	...	...	...	...	...	...	
161	85.0	1958	TRON	TRX	tron	1001	2017-09-13T00:00:00.000Z	['media', 'payments', 'tron-ecosystem', 'layer...	
162	86.0	5805	Avalanche	AVAX	avalanche	754	2020-07-13T00:00:00.000Z	['defi', 'smart-contracts', 'three-arrows-capi...	715748
163	87.0	5994	Shiba Inu	SHIB	shiba-inu	847	2020-08-01T00:00:00.000Z	['memes', 'ethereum-ecosystem', 'doggone-dogge...	
164	88.0	6636	Polkadot	DOT	polkadot-new	794	2020-08-19T00:00:00.000Z	['substrate', 'polkadot', 'binance-chain', 'po...	
165	89.0	1975	Chainlink	LINK	chainlink	1817	2017-09-20T00:00:00.000Z	['platform', 'defi', 'oracles', 'smart-contrac...	

166 rows × 38 columns

```
In [36]: pd.set_option('display.float_format', lambda x:'%.5f' % x)
```

```
In [37]: df
```

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Out[37]:

	id	name	symbol	slug	num_market_pairs	date_added	tags	max_supply
0	1	Bitcoin	BTC	bitcoin	11608	2010-07-13T00:00:00.000Z	[mineable, pow, sha-256, store-of-value, state...	21000000.00000
1	1027	Ethereum	ETH	ethereum	9150	2015-08-07T00:00:00.000Z	[pos, smart-contracts, ethereum-ecosystem, coi...	NaN
2	825	Tether USDt	USDT	tether	92111	2015-02-25T00:00:00.000Z	[stablecoin, asset-backed-stablecoin, avalanch...	NaN
3	1839	BNB	BNB	bnb	2194	2017-07-25T00:00:00.000Z	[marketplace, centralized-exchange, payments, ...	NaN
4	5426	Solana	SOL	solana	707	2020-04-10T00:00:00.000Z	[pos, platform, solana-ecosystem, cms-holdings...	NaN
...	...	...	...	...	...	...	...	...
85	1958	TRON	TRX	tron	1001	2017-09-13T00:00:00.000Z	[media, payments, tron-ecosystem, layer-1, dwf...	NaN
86	5805	Avalanche	AVAX	avalanche	754	2020-07-13T00:00:00.000Z	[defi, smart-contracts, three-arrows-capital-p...	715748719.00000
87	5994	Shiba Inu	SHIB	shiba-inu	847	2020-08-01T00:00:00.000Z	[memes, ethereum-ecosystem, doggone-doggerel]	NaN 58
88	6636	Polkadot	DOT	polkadot-new	794	2020-08-19T00:00:00.000Z	[substrate, polkadot, binance-chain, polkadot-...	NaN
89	1975	Chainlink	LINK	chainlink	1817	2017-09-20T00:00:00.000Z	[platform, defi, oracles, smart-contracts, sub...	NaN

90 rows × 37 columns

```
In [41]: df_ = df.groupby('name', sort = False)[['quote.USD.percent_change_1h', 'quote.USD.percen
             'quote.USD.percent_change_30d', 'quote.USD.percent_change_60d', 'quote.USD.percen
```

```
In [42]: df_
```

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Out[42]:

name	quote.USD.percent_change_1h	quote.USD.percent_change_24h	quote.USD.percent_change_7d	quote.U
Bitcoin	0.45541	5.04807	14.77519	
Ethereum	0.48576	3.26800	12.01660	
Tether USDt	0.01528	0.05748	0.00761	
BNB	0.53909	4.50059	10.82567	
Solana	0.33384	8.56878	21.99196	
USDC	0.00100	0.02188	0.00436	
XRP	-0.20340	1.95108	23.43307	
Toncoin	-0.07631	0.36870	-0.65444	
Dogecoin	0.49310	5.21112	15.76988	
Cardano	0.37117	3.13634	5.26110	
TRON	0.06691	0.57146	-1.43896	
Avalanche	0.31900	4.35164	9.31764	
Shiba Inu	0.22908	4.09655	8.05559	
Polkadot	0.20216	3.48099	3.95116	
Chainlink	-0.05166	3.73575	10.00243	

In [ ]:

In [44]:
```python
df4 = df_.stack()
df4
```

Out[44]:
```
name
Bitcoin     quote.USD.percent_change_1h      0.45541
            quote.USD.percent_change_24h     5.04807
            quote.USD.percent_change_7d     14.77519
            quote.USD.percent_change_30d     2.82353
            quote.USD.percent_change_60d    -2.55766
                                               ...
Chainlink   quote.USD.percent_change_24h     3.73575
            quote.USD.percent_change_7d     10.00243
            quote.USD.percent_change_30d    -2.46013
            quote.USD.percent_change_60d   -14.97111
            quote.USD.percent_change_90d    -5.69230
Length: 90, dtype: float64
```

In [45]:
```python
type(df4)
```

Out[45]:
```
pandas.core.series.Series
```

In [46]:
```python
df5 = df4.to_frame(name = 'values')
df5
```

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Out[46]:

name		values
Bitcoin	**quote.USD.percent_change_1h**	0.45541
	quote.USD.percent_change_24h	5.04807
	quote.USD.percent_change_7d	14.77519
	quote.USD.percent_change_30d	2.82353
	quote.USD.percent_change_60d	-2.55766
...	**...**	...
Chainlink	**quote.USD.percent_change_24h**	3.73575
	quote.USD.percent_change_7d	10.00243
	quote.USD.percent_change_30d	-2.46013
	quote.USD.percent_change_60d	-14.97111
	quote.USD.percent_change_90d	-5.69230

90 rows × 1 columns

```
In [47]:  type(df5)
```

Out[47]: pandas.core.frame.DataFrame

```
In [ ]:  df6 = df5.set_index(df5['name'])
```

```
In [48]:  df5.count()
```

Out[48]: values   90
dtype: int64

```
In [52]:  index = pd.Index(range(90))

          df6 = df5.set_index(index)
          df6
```

Out[52]:

	values
0	0.45541
1	5.04807
2	14.77519
3	2.82353
4	-2.55766
...	...
85	3.73575
86	10.00243
87	-2.46013
88	-14.97111
89	-5.69230

90 rows × 1 columns

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```
In [54]:  df6 = df5.reset_index()
          df6
```

Out[54]:

	name	level_1	values
0	Bitcoin	quote.USD.percent_change_1h	0.45541
1	Bitcoin	quote.USD.percent_change_24h	5.04807
2	Bitcoin	quote.USD.percent_change_7d	14.77519
3	Bitcoin	quote.USD.percent_change_30d	2.82353
4	Bitcoin	quote.USD.percent_change_60d	-2.55766
...	...	...	...
85	Chainlink	quote.USD.percent_change_24h	3.73575
86	Chainlink	quote.USD.percent_change_7d	10.00243
87	Chainlink	quote.USD.percent_change_30d	-2.46013
88	Chainlink	quote.USD.percent_change_60d	-14.97111
89	Chainlink	quote.USD.percent_change_90d	-5.69230

90 rows × 3 columns

```
In [55]:  df7 = df6.rename(columns = {'level_1':'percent_change'})
          df7
```

Out[55]:

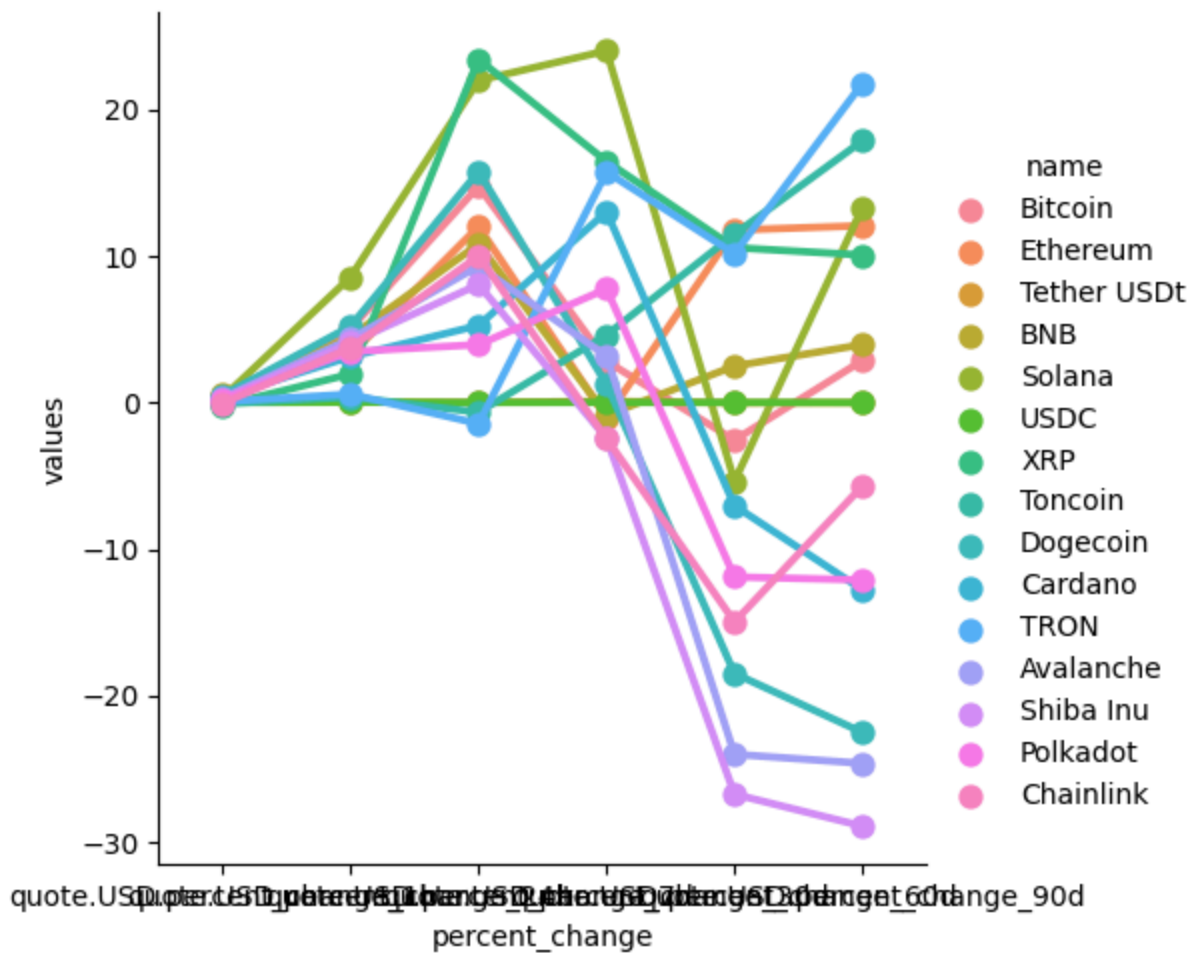|	name	percent_change	values
0	Bitcoin	quote.USD.percent_change_1h	0.45541
1	Bitcoin	quote.USD.percent_change_24h	5.04807
2	Bitcoin	quote.USD.percent_change_7d	14.77519
3	Bitcoin	quote.USD.percent_change_30d	2.82353
4	Bitcoin	quote.USD.percent_change_60d	-2.55766
...	...	...	...
85	Chainlink	quote.USD.percent_change_24h	3.73575
86	Chainlink	quote.USD.percent_change_7d	10.00243
87	Chainlink	quote.USD.percent_change_30d	-2.46013
88	Chainlink	quote.USD.percent_change_60d	-14.97111
89	Chainlink	quote.USD.percent_change_90d	-5.69230

90 rows × 3 columns

```
In [57]:  import seaborn as sns
          import matplotlib.pyplot as plt
```

```
In [59]:  sns.catplot(x='percent_change', y = 'values', hue ='name', data=df7, kind = 'point')
```

```
C:\Users\NAOMI KOYANA\anaconda3\Lib\site-packages\seaborn\axisgrid.py:118: UserWarning:
The figure layout has changed to tight
  self._figure.tight_layout(*args, **kwargs)
```

Out[59]: <seaborn.axisgrid.FacetGrid at 0x1fd5389c3d0>

Loading [MathJax]/extensions/Safe.js

```
In [61]: df7['percent_change'] = df7['percent_change'].replace(['quote.USD.percent_change_1h','qu
         df7
```
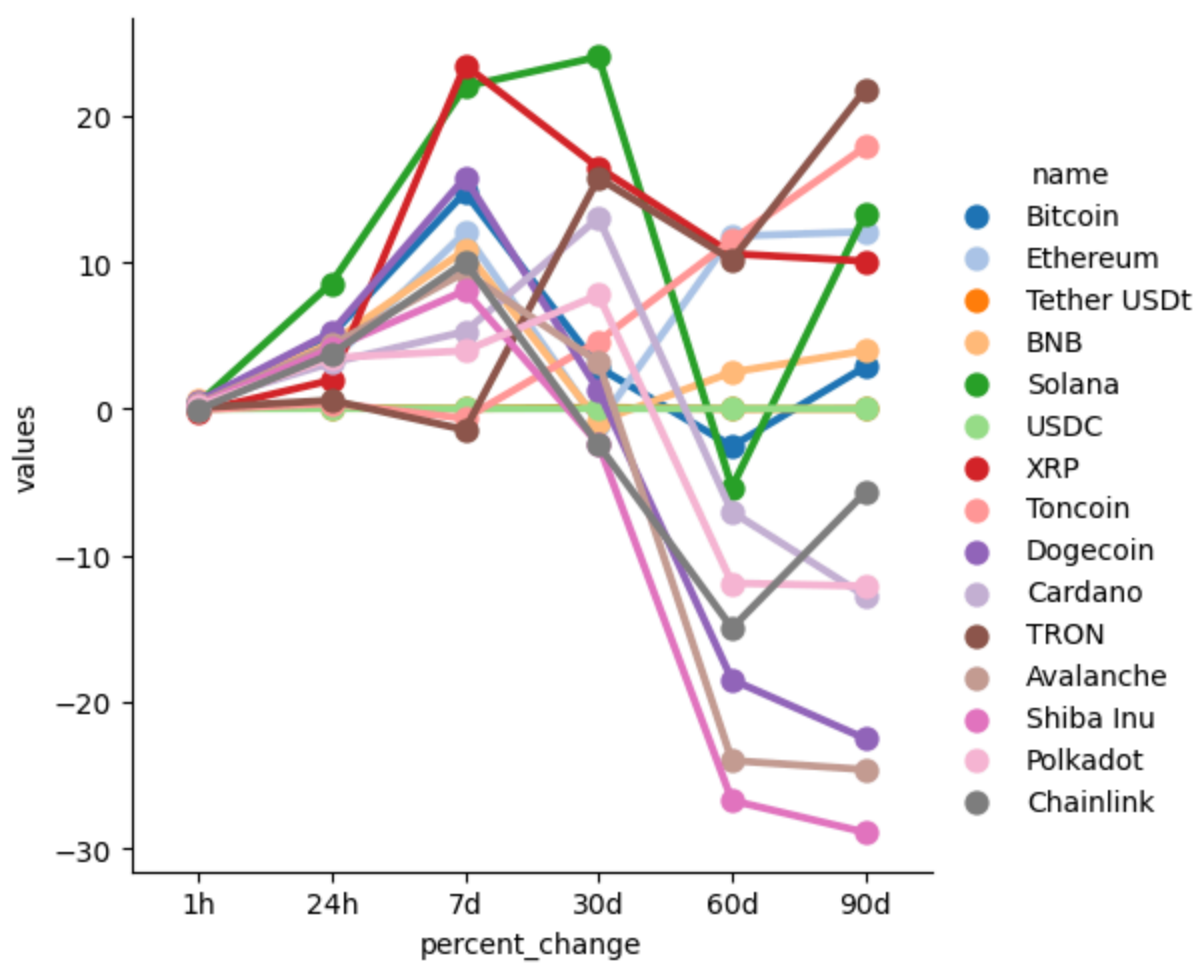
Out[61]:

	name	percent_change	values
0	Bitcoin	1h	0.45541
1	Bitcoin	24h	5.04807
2	Bitcoin	7d	14.77519
3	Bitcoin	30d	2.82353
4	Bitcoin	60d	-2.55766
...	...	...	...
85	Chainlink	24h	3.73575
86	Chainlink	7d	10.00243
87	Chainlink	30d	-2.46013
88	Chainlink	60d	-14.97111
89	Chainlink	90d	-5.69230

90 rows × 3 columns

```
In [72]: sns.catplot(x='percent_change', y = 'values', hue ='name', data=df7, kind = 'point',pale
```

```
C:\Users\NAOMI KOYANA\anaconda3\Lib\site-packages\seaborn\axisgrid.py:118: UserWarning:
The figure layout has changed to tight
  self._figure.tight_layout(*args, **kwargs)
```

Out[72]:   <seaborn.axisgrid.FacetGrid at 0x1fd548154d0>

Loading [MathJax]/extensions/Safe.js

In [ ]:

In [ ]: