

CRYPTOCURRENCY API

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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)
```

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Enter your API: .....
{'status': {'timestamp': '2024-07-19T16:16:15.749Z', 'error_code': 0, 'error_message': None, 'elapsed': 23, 'cr
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```

In [11]: type(data)

Out[11]: dict

In [12]: 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]: df = pd.json_normalize(data['data'])
df['timestamp'] = pd.to_datetime('now')

```

In [33]: 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)

    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 = 'column_names')

```

```
In [34]: 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]: 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_supply	circulating_supply
0	0.0	1	Bitcoin	BTC	bitcoin	11608	2010-07-13T00:00:00.000Z	['mineable', 'pow', 'sha-256', 'store-of-value...]	21000000.0	19727806.0
1	1.0	1027	Ethereum	ETH	ethereum	9150	2015-08-07T00:00:00.000Z	['pos', 'smart-contracts', 'ethereum-ecosystem...]	NaN	120224183.73336516
2	2.0	825	Tether USDt	USDT	tether	92111	2015-02-25T00:00:00.000Z	['stablecoin', 'asset-backed-stablecoin', 'ava...]	NaN	113696229620.9447
3	3.0	1839	BNB	BNB	bnb	2194	2017-07-25T00:00:00.000Z	['marketplace', 'centralized-exchange', 'payme...]	NaN	145692918.0804853
4	4.0	5426	Solana	SOL	solana	707	2020-04-10T00:00:00.000Z	['pos', 'platform', 'solana-ecosystem', 'cms-h...]	NaN	464270326.96028805
...
161	85.0	1958	TRON	TRX	tron	1001	2017-09-13T00:00:00.000Z	['media', 'payments', 'tron-ecosystem', 'layer...]	NaN	87093025273.20201
162	86.0	5805	Avalanche	AVAX	avalanche	754	2020-07-13T00:00:00.000Z	['defi', 'smart-contracts', 'three-arrows-capi...]	715748719.0	394726548.68349564
163	87.0	5994	Shiba Inu	SHIB	shiba-inu	847	2020-08-01T00:00:00.000Z	['memes', 'ethereum-ecosystem', 'doggone-dogge...]	NaN	589270684032320.2
164	88.0	6636	Polkadot	DOT	polkadot-new	794	2020-08-19T00:00:00.000Z	['substrate', 'polkadot', 'binance-chain', 'po...]	NaN	1437953431.368154
165	89.0	1975	Chainlink	LINK	chainlink	1817	2017-09-20T00:00:00.000Z	['platform', 'defi', 'oracles', 'smart-contrac...]	NaN	608099970.4527867

166 rows × 38 columns

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

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

Out[37]:

	id	name	symbol	slug	num_market_pairs	date_added	tags	max_supply	circulating_supply	
0	1	Bitcoin	BTC	bitcoin	11608	2010-07-13T00:00:00.000Z	[mineable, pow, sha-256, store-of-value, state...	21000000.00000	19727806.00000	
1	1027	Ethereum	ETH	ethereum	9150	2015-08-07T00:00:00.000Z	[pos, smart-contracts, ethereum-ecosystem, col...	NaN	120224183.73337	1
2	825	Tether USDt	USDT	tether	92111	2015-02-25T00:00:00.000Z	[stablecoin, asset-backed-stablecoin, avalanch...	NaN	113696229620.94470	1170
3	1839	BNB	BNB	bnb	2194	2017-07-25T00:00:00.000Z	[marketplace, centralized-exchange, payments, ...	NaN	145692918.08049	1
4	5426	Solana	SOL	solana	707	2020-04-10T00:00:00.000Z	[pos, platform, solana-ecosystem, cms-holdings...	NaN	464270326.96029	5
...
85	1958	TRON	TRX	tron	1001	2017-09-13T00:00:00.000Z	[media, payments, tron-ecosystem, layer-1, dwf...	NaN	87093025273.20201	870
86	5805	Avalanche	AVAX	avalanche	754	2020-07-13T00:00:00.000Z	[defi, smart-contracts, three-arrows-capital-p...	715748719.00000	394726548.68350	4
87	5994	Shiba Inu	SHIB	shiba-inu	847	2020-08-01T00:00:00.000Z	[memes, ethereum-ecosystem, doggone-doggerel]	NaN	589270684032320.25000	5895191
88	6636	Polkadot	DOT	polkadot-new	794	2020-08-19T00:00:00.000Z	[substrate, polkadot, binance-chain, polkadot-...	NaN	1437953431.36815	14
89	1975	Chainlink	LINK	chainlink	1817	2017-09-20T00:00:00.000Z	[platform, defi, oracles, smart-contracts, sub...	NaN	608099970.45279	10

90 rows × 37 columns

```
In [41]: df_ = df.groupby('name', sort = False)[['quote.USD.percent_change_1h', 'quote.USD.percent_change_24h', 'quote.USD.percent_change_30d', 'quote.USD.percent_change_60d', 'quote.USD.percent_change_90d']].mean()
```

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

Out[42]:

	quote.USD.percent_change_1h	quote.USD.percent_change_24h	quote.USD.percent_change_7d	quote.USD.percent_change_30d	quote.USD.percent_change_60d
name					
Bitcoin	0.45541	5.04807	14.77519	2.82353	-2.55766
Ethereum	0.48576	3.26800	12.01660	-1.03043	-1.03043
Tether USDT	0.01528	0.05748	0.00761	0.09048	0.09048
BNB	0.53909	4.50059	10.82567	-0.86228	-0.86228
Solana	0.33384	8.56878	21.99196	24.01635	24.01635
USDC	0.00100	0.02188	0.00436	0.01144	0.01144
XRP	-0.20340	1.95108	23.43307	16.46147	16.46147
Toncoin	-0.07631	0.36870	-0.65444	4.61271	4.61271
Dogecoin	0.49310	5.21112	15.76988	1.24220	1.24220
Cardano	0.37117	3.13634	5.26110	13.02743	13.02743
TRON	0.06691	0.57146	-1.43896	15.74520	15.74520
Avalanche	0.31900	4.35164	9.31764	3.17680	3.17680
Shiba Inu	0.22908	4.09655	8.05559	-2.43401	-2.43401
Polkadot	0.20216	3.48099	3.95116	7.76277	7.76277
Chainlink	-0.05166	3.73575	10.00243	-2.46013	-2.46013

In []:

In [44]:

```
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]:

```
type(df4)
```

Out[45]:

```
pandas.core.series.Series
```

In [46]:

```
df5 = df4.to_frame(name = 'values')  
df5
```

Out[46]:

		values
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

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

```
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

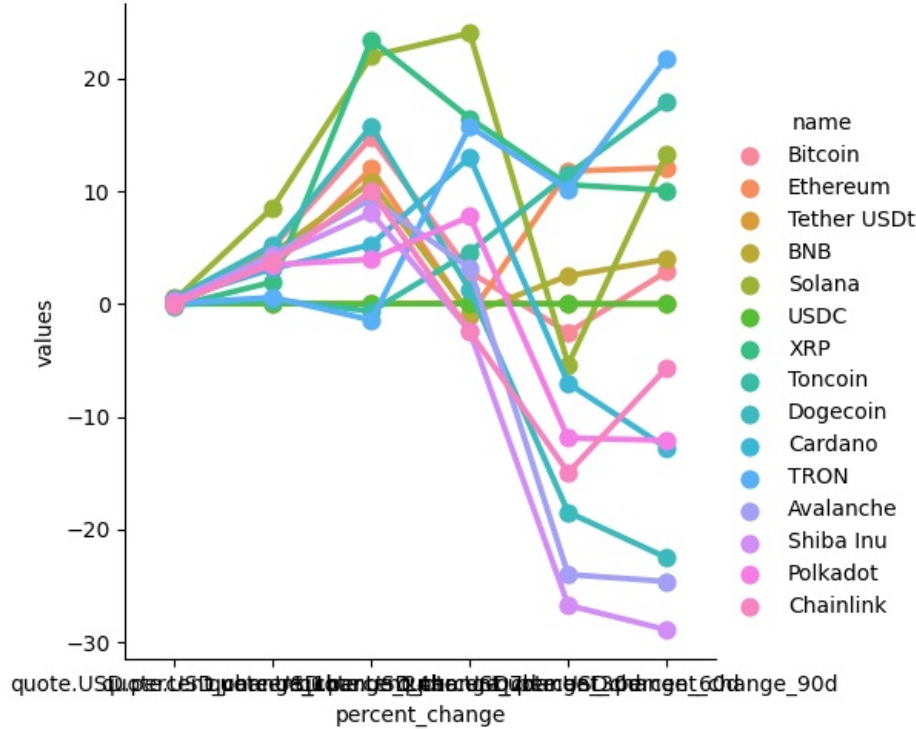
90 rows × 3 columns

```
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

```
Out[59]: self.figure.tight_layout(*args, **kwargs)
<seaborn.axisgrid.FacetGrid at 0x1fd5389c3d0>
```



```
In [61]: df7['percent_change'] = df7['percent_change'].replace(['quote.USD.percent_change_1h', 'quote.USD.percent_change_24h', 'quote.USD.percent_change_7d', 'quote.USD.percent_change_30d', 'quote.USD.percent_change_60d', 'quote.USD.percent_change_90d'], df7)
```

Out[61]:

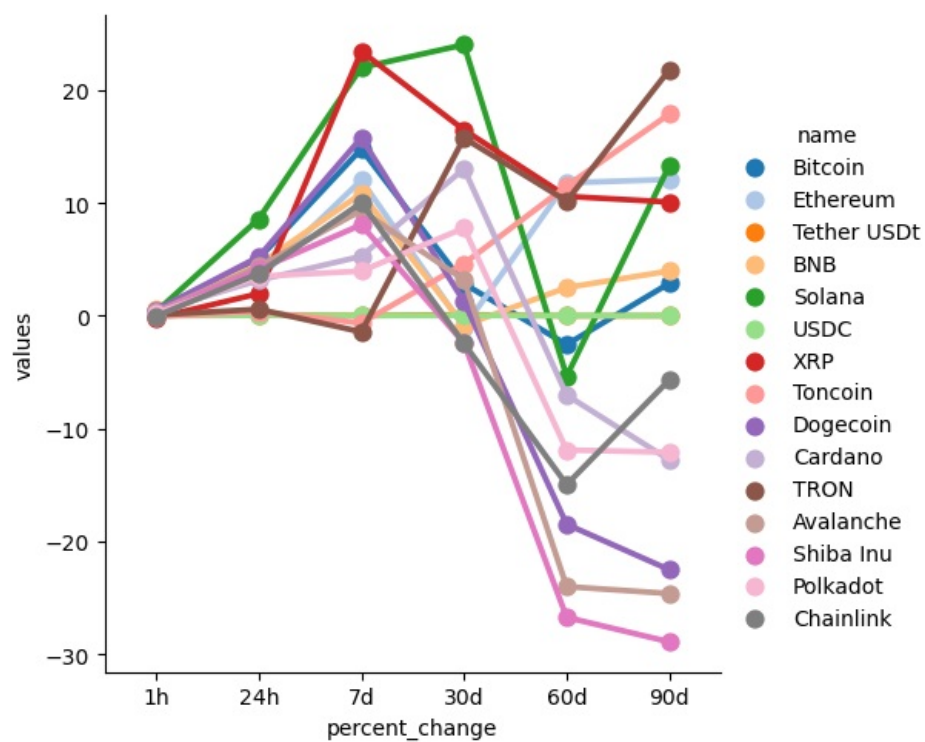
	name	percent_change	values
0	Bitcoin	1h	0.45541
1	Bitcoin	24h	5.04807
2	Bitcoin	7d	14.77519
3	Bitcoin	30d	2.82353
4	Bitcoin	60d	-2.55766
...
85	Chainlink	24h	3.73575
86	Chainlink	7d	10.00243
87	Chainlink	30d	-2.46013
88	Chainlink	60d	-14.97111
89	Chainlink	90d	-5.69230

90 rows × 3 columns

```
In [72]: sns.catplot(x='percent_change', y = 'values', hue = 'name', data=df7, kind = 'point', palette='tab20')
```

C:\Users\NAOMI KOYANA\anaconda3\Lib\site-packages\seaborn\axisgrid.py:118: UserWarning: The figure layout has changed to tight

```
Out[72]: self.figure.tight_layout(*args, **kwargs)
<seaborn.axisgrid.FacetGrid at 0x1fd548154d0>
```

In []:

In []:

Loading [MathJax]/jax/output/CommonHTML/fonts/TeX/fontdata.js