In [28]:
```python
# IMPORTS
from alpha_vantage.timeseries import TimeSeries
from alpha_vantage.foreignexchange import ForeignExchange
from alpha_vantage.cryptocurrencies import CryptoCurrencies
from alpha_vantage.techindicators import TechIndicators
from alpha_vantage.sectorperformance import SectorPerformances
import os
import json
import requests
import pandas as pd

app = TimeSeries('R8QBN54GF80WJUT6')
```

In [2]:
```python
# Example print
aapl = app.get_daily_adjusted('AAPL', outputsize='full')
print(json.dumps(aapl, indent=2))
```


```
[
  {
    "2022-12-14": {
      "1. open": "145.35",
      "2. high": "146.66",
      "3. low": "141.16",
      "4. close": "143.21",
      "5. adjusted close": "143.21",
      "6. volume": "82220264",
      "7. dividend amount": "0.0000",
      "8. split coefficient": "1.0"
    },
    "2022-12-13": {
      "1. open": "149.5",
      "2. high": "149.9692",
      "3. low": "144.24",
      "4. close": "145.47",
      "5. adjusted close": "145.47",
      "6. volume": "93886161",
```


In [3]:
```python
# Checking the connection to MySQL
import mysql.connector
import os

# establishing the connection and creating cursor
try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')
```

```
Connection established to glance_at_finance
```

In [ ]:
```python
#search function test
url = 'https://www.alphavantage.co/query?function=SYMBOL_SEARCH&keywords=AAPL&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()
```

In [4]:
```
# DAILY ADJUSTED STOCK DATA

# connection to MySql
import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

# Daily Adjusted

url = 'https://www.alphavantage.co/query?function=TIME_SERIES_DAILY_ADJUSTED&symbol=AAPL&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

timeSeries = data["Time Series (Daily)"]

for x in timeSeries:
    stock_day = x
    stock_name = data["Meta Data"]["2. Symbol"]
    stock_open = timeSeries[x]["1. open"]
    stock_high = timeSeries[x]["2. high"]
    stock_low = timeSeries[x]["3. low"]
    stock_close = timeSeries[x]["4. close"]
    stock_volume = timeSeries[x]["6. volume"]
    stock_dividend_amount = timeSeries[x]["7. dividend amount"]
    stock_split_coefficient = timeSeries[x]["8. split coefficient"]
    try:
        query = "INSERT INTO daily_adjusted(stock_name, stock_day, stock_high, stock_open, stock_low, stock_close, stock_volume, stock_dividend_amount, stock_split_coefficient) " \
                "VALUES(%s,%s,%s,%s,%s,%s,%s,%s,%s)"
        args = (stock_name, stock_day, stock_high, stock_open, stock_low, stock_close, stock_volume, stock_dividend_amount, stock_split_coefficient)

        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

```
Connection established to glance_at_finance
```

In [5]:
```
# WEEKLY

# connection to MySql
import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

# Weekly
url = 'https://www.alphavantage.co/query?function=TIME_SERIES_WEEKLY&symbol=AAPL&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

timeSeries = data["Weekly Time Series"]

for x in timeSeries:
    stock_day = x
    stock_name = data["Meta Data"]["2. Symbol"]
    stock_open = timeSeries[x]["1. open"]
    stock_high = timeSeries[x]["2. high"]
    stock_low = timeSeries[x]["3. low"]
    stock_close = timeSeries[x]["4. close"]
    stock_volume = timeSeries[x]["5. volume"]
    try:
        query = "INSERT INTO weekly(stock_name, stock_day, stock_high, stock_open, stock_low, stock_close, stock_volume)" \
                "VALUES(%s,%s,%s,%s,%s,%s,%s)"
        args = (stock_name, stock_day, stock_high, stock_open, stock_low, stock_close, stock_volume)

        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')
# print(json.dumps(data, indent=2))
```

```
Connection established to glance_at_finance
```

In [ ]:
```python
# MONTHLY

# connection to MySql
import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')


url = 'https://www.alphavantage.co/query?function=TIME_SERIES_MONTHLY&symbol=AAPL&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

timeSeries = data["Monthly Time Series"]

for x in timeSeries:
    stock_day = x
    stock_name = data["Meta Data"]["2. Symbol"]
    stock_open = timeSeries[x]["1. open"]
    stock_high = timeSeries[x]["2. high"]
    stock_low = timeSeries[x]["3. low"]
    stock_close = timeSeries[x]["4. close"]
    stock_volume = timeSeries[x]["5. volume"]
    try:
        query = "INSERT INTO monthly(stock_name, stock_day, stock_high, stock_open, stock_low, stock_close, stock_volume)" \
                "VALUES(%s,%s,%s,%s,%s,%s,%s)"
        args = (stock_name, stock_day, stock_high, stock_open, stock_low, stock_close, stock_volume)

        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')
# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# Market News & Sentiment
# This API returns live and historical market news & sentiment data derived from over 50 major financial news outlets around the world, covering stocks, cryptocurrencies, forex, and a wide range of topics such as fis
import requests

url = 'https://www.alphavantage.co/query?function=NEWS_SENTIMENT&tickers=AAPL&topics=technology&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```

In [ ]:
```python
# Winning Portfolios
# This API returns the historical portfolio rankings from the Alpha Tournament, world's leading portfolio competition and investors community.

import requests

url = 'https://www.alphavantage.co/query?function=TOURNAMENT_PORTFOLIO&season=2021-09&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```

In [ ]:
```python
# COMPANY REVIEW

import requests

url = 'https://www.alphavantage.co/query?function=OVERVIEW&symbol=AAPL&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```

In [12]:
```python
# EARNINGS
# This API returns the annual and quarterly earnings (EPS) for the company of interest. Quarterly data also includes analyst estimates and surprise metrics.


# connection to MySql
import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

import requests

url = 'https://www.alphavantage.co/query?function=EARNINGS&symbol=AAPL&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```

```
Connection established to glance_at_finance
```


```
{
  "symbol": "AAPL",
  "annualEarnings": [
    {
      "fiscalDateEnding": "2022-09-30",
      "reportedEPS": "6.11"
    },
    {
      "fiscalDateEnding": "2021-09-30",
      "reportedEPS": "5.62"
    },
    {
      "fiscalDateEnding": "2020-09-30",
      "reportedEPS": "3.27"
    },
    {
      "fiscalDateEnding": "2019-09-30",
      "reportedEPS": "2.98"
```


In [23]:
```python
# Listing & Delisting Status
# Returns a list of active or delisted US stocks and ETFs, either as of the latest trading day or at a specific time in history. The endpoint is positioned to facilitate equity research on asset lifecycle and surviv

import csv
import requests

CSV_URL = 'https://www.alphavantage.co/query?function=LISTING_STATUS&apikey=R8QBN54GF80WJUT6'

with requests.Session() as s:
    download = s.get(CSV_URL)
    decoded_content = download.content.decode('utf-8')
    cr = csv.reader(decoded_content.splitlines(), delimiter=',')
    my_list = list(cr)
    for row in my_list:
        print(row)
```


```
['symbol', 'name', 'exchange', 'assetType', 'ipoDate', 'delistingDate', 'status']
['A', 'Agilent Technologies Inc', 'NYSE', 'Stock', '1999-11-18', 'null', 'Active']
['AA', 'Alcoa Corp', 'NYSE', 'Stock', '2016-10-18', 'null', 'Active']
['AAA', 'AXS FIRST PRIORITY CLO BOND ETF ', 'NYSE ARCA', 'ETF', '2020-09-09', 'null', 'Active']
['AAAU', 'Goldman Sachs Physical Gold ETF', 'BATS', 'ETF', '2018-08-15', 'null', 'Active']
['AAC', 'Ares Acquisition Corporation - Class A', 'NYSE', 'Stock', '2021-03-25', 'null', 'Active']
['AAC-U', 'Ares Acquisition Corporation - Units (1 Ord Share Class A & 1/5 War)', 'NYSE', 'Stock', '2021-02-02', 'null', 'Active']
['AAC-WS', 'Ares Acquisition Corporation - Warrants (01/01/9999)', 'NYSE', 'Stock', '2021-03-25', 'null', 'Active']
['AACG', 'ATA Creativity Global', 'NASDAQ', 'Stock', '2008-01-29', 'null', 'Active']
['AACI', 'Armada Acquisition Corp I', 'NASDAQ', 'Stock', '2021-11-10', 'null', 'Active']
['AACIU', 'Armada Acquisition Corp I - Units (1 Ord & 1/2 War)', 'NASDAQ', 'Stock', '2021-08-13', 'null', 'Active']
['AACIW', 'Armada Acquisition Corp I - Warrants (13/08/2026)', 'NASDAQ', 'Stock', '2021-11-11', 'null', 'Active']
['AADI', 'Aadi Bioscience Inc', 'NASDAQ', 'Stock', '2017-08-08', 'null', 'Active']
['AADR', 'AdvisorShares Dorsey Wright ADR ETF', 'NASDAQ', 'ETF', '2010-07-21', 'null', 'Active']
['AAIC', 'Arlington Asset Investment Corp - Class A', 'NYSE', 'Stock', '1997-12-23', 'null', 'Active']
['AAIC-P-B', 'Arlington Asset Investment Corp', 'NYSE', 'Stock', '2017-05-16', 'null', 'Active']
['AAIC-P-C', 'Arlington Asset Investment Corp', 'NYSE', 'Stock', '2019-03-06', 'null', 'Active']
['AAIN', 'Arlington Asset Investment Corp', 'NYSE', 'Stock', '2021-07-19', 'null', 'Active']
['AAL', 'American Airlines Group Inc', 'NASDAQ', 'Stock', '2005-09-27', 'null', 'Active']
```

In [24]:
```python
# Earnings Calendar
# This API returns a list of company earnings expected in the next 3, 6, or 12 months.


import csv
import requests


CSV_URL = 'https://www.alphavantage.co/query?function=EARNINGS_CALENDAR&horizon=3month&apikey=R8QBN54GF80WJUT6'

with requests.Session() as s:
    download = s.get(CSV_URL)
    decoded_content = download.content.decode('utf-8')
    cr = csv.reader(decoded_content.splitlines(), delimiter=',')
    my_list = list(cr)
    for row in my_list:
        print(row)
```

```
['AAN', 'Aarons Company Inc (The)', '2023-02-21', '2022-12-31', '0.01', 'USD']
['AAOI', 'Applied Optoelectronics Inc', '2023-02-22', '2022-12-31', '-0.31', 'USD']
['AAON', 'AAON Inc', '2023-02-27', '2022-12-31', '0.56', 'USD']
['AAP', 'Advance Auto Parts Inc', '2023-02-13', '2022-12-31', '2.43', 'USD']
['AAPL', 'Apple Inc', '2023-01-25', '2022-12-31', '1.99', 'USD']
['AAT', 'American Assets Trust Inc', '2023-02-06', '2022-12-31', '0.16', 'USD']
['AAVVF', 'AAVVF', '2023-02-22', '2022-12-31', '0.32', 'CAD']
['AAWH', 'AAWH', '2023-03-07', '2022-12-31', '-0.0317', 'USD']
['AAWW', 'Atlas Air Worldwide Holdings Inc', '2023-02-15', '2022-12-31', '5.41', 'USD']
['AB', 'AllianceBernstein Holding Lp', '2023-02-09', '2022-12-31', '0.56', 'USD']
['ABB', 'ABB Ltd', '2023-02-02', '2022-12-31', '0.3804', 'USD']
['ABBV', 'Abbvie Inc', '2023-01-31', '2022-12-31', '3.68', 'USD']
['ABC', 'Amerisource Bergen Corp', '2023-01-31', '2022-12-31', '2.61', 'USD']
['ABCB', 'Ameris Bancorp', '2023-01-25', '2022-12-31', '1.34', 'USD']
['ABCL', 'AbCellera Biologics Inc', '2023-02-22', '2022-12-31', '-0.01', 'USD']
['ABEV', 'Ambev S.A.', '2023-03-02', '2022-12-31', '0.05', 'BRL']
['ABG', 'Asbury Automotive Group Inc', '2023-02-13', '2022-12-31', '8.22', 'USD']
['ABILF', 'ABILF', '2023-03-01', '2022-12-31', '0', 'USD']
['ABIO', 'ARCA biopharma Inc', '2023-03-13', '2022-12-31', '', 'USD']
```

In [25]:
```python
# IPO Calendar
# This API returns a list of IPOs expected in the next 3 months.

import csv
import requests


CSV_URL = 'https://www.alphavantage.co/query?function=IPO_CALENDAR&apikey=R8QBN54GF80WJUT6'

with requests.Session() as s:
    download = s.get(CSV_URL)
    decoded_content = download.content.decode('utf-8')
    cr = csv.reader(decoded_content.splitlines(), delimiter=',')
    my_list = list(cr)
    for row in my_list:
        print(row)
```

```
['symbol', 'name', 'ipoDate', 'priceRangeLow', 'priceRangeHigh', 'currency', 'exchange']
['RAYA', 'Erayak Power Solution Group Inc. Class A Ordinary Shares', '2022-12-14', '4', '4', 'USD', 'NASDAQ']
['GEHCV', 'GE HealthCare Technologies Inc. Common Stock When-Issued', '2022-12-15', '0', '0', 'USD', 'NASDAQ']
['PRZO', 'ParaZero Technologies Ltd.', '2022-12-16', '4.25', '6.25', 'USD', 'NASDAQ']
['SODR', 'SONDORS Inc.', '2022-12-16', '8', '10', 'USD', 'NASDAQ']
['ATMVU', 'AlphaVest Acquisition Corp.', '2022-12-20', '10', '10', 'USD', 'NASDAQ']
['PWM', 'Prestige Wealth Inc.', '2022-12-30', '5.5', '6.5', 'USD', 'NASDAQ']
```

In [29]:
```python
# CURRENCY_EXCHANGE_RATE
# Returns the realtime exchange rate for a pair of digital currency (e.g., Bitcoin) and physical currency (e.g., USD).

import requests

url = 'https://www.alphavantage.co/query?function=CURRENCY_EXCHANGE_RATE&from_currency=USD&to_currency=JPY&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```


```
{
  "Realtime Currency Exchange Rate": {
    "1. From_Currency Code": "USD",
    "2. From_Currency Name": "United States Dollar",
    "3. To_Currency Code": "JPY",
    "4. To_Currency Name": "Japanese Yen",
    "5. Exchange Rate": "135.44000000",
    "6. Last Refreshed": "2022-12-15 00:19:23",
    "7. Time Zone": "UTC",
    "8. Bid Price": "135.44000000",
    "9. Ask Price": "135.44000000"
  }
}
```

In [14]:
```python
# FX_DAILY
# This API returns the daily time series (timestamp, open, high, low, close) of the FX currency pair specified, updated realtime.

# connection to MySql
import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

import requests

url = 'https://www.alphavantage.co/query?function=FX_DAILY&from_symbol=EUR&to_symbol=USD&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()


print(json.dumps(data, indent=2))
```

```
Connection established to glance_at_finance
```

```
{
  "Meta Data": {
    "1. Information": "Forex Daily Prices (open, high, low, close)",
    "2. From Symbol": "EUR",
    "3. To Symbol": "USD",
    "4. Output Size": "Compact",
    "5. Last Refreshed": "2022-12-14 23:00:00",
    "6. Time Zone": "UTC"
  },
  "Time Series FX (Daily)": {
    "2022-12-14": {
      "1. open": "1.06270",
      "2. high": "1.06952",
      "3. low": "1.06170",
      "4. close": "1.06801"
    },
    "2022-12-13": {
      "1. open": "1.05355",
```


In [15]:
```python
# FX_WEEKLY
# Returns the weekly time series (timestamp, open, high, low, close) of the FX currency pair specified, updated realtime.The latest data point is the price information for the week (or partial week) containing the cu

# connection to MySql
import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

import requests

url = 'https://www.alphavantage.co/query?function=FX_WEEKLY&from_symbol=EUR&to_symbol=USD&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```

```
Connection established to glance_at_finance
```

```
{
  "Meta Data": {
    "1. Information": "Forex Weekly Prices (open, high, low, close)",
    "2. From Symbol": "EUR",
    "3. To Symbol": "USD",
    "4. Last Refreshed": "2022-12-14 23:00:00",
    "5. Time Zone": "UTC"
  },
  "Time Series FX (Weekly)": {
    "2022-12-14": {
      "1. open": "1.05281",
      "2. high": "1.06952",
      "3. low": "1.05040",
      "4. close": "1.06800"
    },
    "2022-12-09": {
      "1. open": "1.05300",
      "2. high": "1.05948",
```

In [16]:
```python
# FX_MONTHLY
# Returns the monthly time series (timestamp, open, high, low, close) of the FX currency pair specified, updated realtime.The latest data point is the prices information for the month (or partial month) containing th

import requests

url = 'https://www.alphavantage.co/query?function=FX_MONTHLY&from_symbol=EUR&to_symbol=USD&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```


```
{
  "Meta Data": {
    "1. Information": "Forex Monthly Prices (open, high, low, close)",
    "2. From Symbol": "EUR",
    "3. To Symbol": "USD",
    "4. Last Refreshed": "2022-12-14 23:00:00",
    "5. Time Zone": "UTC"
  },
  "Time Series FX (Monthly)": {
    "2022-12-14": {
      "1. open": "1.04041",
      "2. high": "1.06952",
      "3. low": "1.03906",
      "4. close": "1.06800"
    },
    "2022-11-30": {
      "1. open": "0.98818",
      "2. high": "1.04969",
      "3. low": "0.97280",
```


In [ ]:
```python
# CURRENCY_EXCHANGE_RATE
# This API returns the realtime exchange rate for any pair of digital currency (e.g., Bitcoin) or physical currency (e.g., USD).

import requests

url = 'https://www.alphavantage.co/query?function=CURRENCY_EXCHANGE_RATE&from_currency=BTC&to_currency=CNY&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

# connection to MySql
import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

rcer = data["Realtime Currency Exchange Rate"]

From_Currency = rcer["2. From_Currency Name"]
To_Currency = rcer["4. To_Currency Name"]
Exchange_Rate = rcer["5. Exchange Rate"]

try:
    query = "INSERT INTO digital_currency_exchange(From_Currency, To_Currency, Exchange_Rate)" \
            "VALUES(%s,%s,%s)"
    args = (From_Currency, To_Currency, Exchange_Rate)
    conn.cursor().execute(query, args)
    conn.commit()
except:
    print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')


# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# DIGITAL_CURRENCY_WEEKLY
# Returns the weekly historical time series for a digital currency (e.g., BTC) traded on a specific market (e.g., CNY/Chinese Yuan), refreshed daily at midnight (UTC). Prices and volumes are quoted in both the market

import requests

url = 'https://www.alphavantage.co/query?function=DIGITAL_CURRENCY_WEEKLY&symbol=BTC&market=CNY&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

# connection to MySql
import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Time Series (Digital Currency Weekly)"]

for x in timeSeries:
    currency_day = x
    currency_name = data["Meta Data"]["3. Digital Currency Name"]
    Market_Name = data["Meta Data"]["5. Market Name"]
    open_CNY = timeSeries[x]["1a. open (CNY)"]
    open_USD = timeSeries[x]["1b. open (USD)"]
    high_CNY = timeSeries[x]["2a. high (CNY)"]
    high_USD = timeSeries[x]["2b. high (USD)"]
    low_CNY = timeSeries[x]["3a. low (CNY)"]
    low_USD = timeSeries[x]["3b. low (USD)"]
    close_CNY = timeSeries[x]["4a. close (CNY)"]
    close_USD = timeSeries[x]["4b. close (USD)"]
    volume = timeSeries[x]["5. volume"]
    market_cap_USD = timeSeries[x]["6. market cap (USD)"]
    try:
        query = "INSERT INTO digital_currency_weekly(currency_day, currency_name, Market_Name, open_CNY, open_USD, high_CNY, high_USD, low_CNY, low_USD, close_CNY, close_USD, volume, market_cap_USD)" \
                "VALUES(%s,%s,%s,%s,%s,%s,%s,%s,%s,%s,%s,%s,%s)"
        args = (currency_day, currency_name, Market_Name, open_CNY, open_USD, high_CNY, high_USD, low_CNY, low_USD, close_CNY, close_USD, volume, market_cap_USD)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')


print(json.dumps(data, indent=2))
```

In [ ]:
```python
# DIGITAL_CURRENCY_MONTHLY
# Returns the monthly historical time series for a digital currency (e.g., BTC) traded on a specific market (e.g., CNY/Chinese Yuan), refreshed daily at midnight (UTC). Prices and volumes are quoted in both the marke

import requests

url = 'https://www.alphavantage.co/query?function=DIGITAL_CURRENCY_MONTHLY&symbol=BTC&market=CNY&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

# connection to MySql
import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Time Series (Digital Currency Monthly)"]

for x in timeSeries:
    currency_day = x
    currency_name = data["Meta Data"]["3. Digital Currency Name"]
    open_CNY = timeSeries[x]["1a. open (CNY)"]
    open_USD = timeSeries[x]["1b. open (USD)"]
    high_CNY = timeSeries[x]["2a. high (CNY)"]
    high_USD = timeSeries[x]["2b. high (USD)"]
    low_CNY = timeSeries[x]["3a. low (CNY)"]
    low_USD = timeSeries[x]["3b. low (USD)"]
    close_CNY = timeSeries[x]["4a. close (CNY)"]
    close_USD = timeSeries[x]["4b. close (USD)"]
    volume = timeSeries[x]["5. volume"]
    market_cap_USD = timeSeries[x]["6. market cap (USD)"]
    try:
        query = "INSERT INTO digital_currency_monthly(currency_day, currency_name, open_CNY, open_USD, high_CNY, high_USD, low_CNY, low_USD, close_CNY, close_USD, volume, market_cap_USD)" \
                "VALUES(%s,%s,%s,%s,%s,%s,%s,%s,%s,%s,%s,%s)"
        args = (currency_day, currency_name, open_CNY, open_USD, high_CNY, high_USD, low_CNY, low_USD, close_CNY, close_USD, volume, market_cap_USD)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [30]:
```python
# REAL_GDP
# Returns the annual and quarterly Real GDP of the United States.

import requests

url = 'https://www.alphavantage.co/query?function=REAL_GDP&interval=annual&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```


```
{
  "name": "Real Gross Domestic Product",
  "interval": "annual",
  "unit": "billions of dollars",
  "data": [
    {
      "date": "2021-01-01",
      "value": "19609.812"
    },
    {
      "date": "2020-01-01",
      "value": "18509.143"
    },
    {
      "date": "2019-01-01",
      "value": "19036.052"
    },
    {
      "date": "2018-01-01",
```


In [31]:
```python
# REAL_GDP_PER_CAPITA
# Returns the quarterly Real GDP per Capita data of the United States.

import requests

url = 'https://www.alphavantage.co/query?function=REAL_GDP_PER_CAPITA&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```


```
{
  "name": "Real Gross Domestic Product per Capita",
  "interval": "quarterly",
  "unit": "chained 2012 dollars",
  "data": [
    {
      "date": "2022-07-01",
      "value": "60135.0"
    },
    {
      "date": "2022-04-01",
      "value": "59756.0"
    },
    {
      "date": "2022-01-01",
      "value": "59877.0"
    },
    {
      "date": "2021-10-01",
```


In [32]:
```python
# TREASURY_YIELD
# Returns the daily, weekly, and monthly US treasury yield of a given maturity timeline (e.g., 5 year, 30 year, etc).

import requests

url = 'https://www.alphavantage.co/query?function=TREASURY_YIELD&interval=monthly&maturity=10year&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```


```
{
  "name": "10-Year Treasury Constant Maturity Rate",
  "interval": "monthly",
  "unit": "percent",
  "data": [
    {
      "date": "2022-11-01",
      "value": "3.89"
    },
    {
      "date": "2022-10-01",
      "value": "3.98"
    },
    {
      "date": "2022-09-01",
      "value": "3.52"
    },
    {
      "date": "2022-08-01",
```

In [33]:
```python
# FEDERAL_FUNDS_RATE
# Returns the daily, weekly, and monthly federal funds rate (interest rate) of the United States.

import requests

url = 'https://www.alphavantage.co/query?function=FEDERAL_FUNDS_RATE&interval=monthly&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```


```
{
  "name": "Effective Federal Funds Rate",
  "interval": "monthly",
  "unit": "percent",
  "data": [
    {
      "date": "2022-11-01",
      "value": "3.78"
    },
    {
      "date": "2022-10-01",
      "value": "3.08"
    },
    {
      "date": "2022-09-01",
      "value": "2.56"
    },
    {
      "date": "2022-08-01",
```


In [34]:
```python
# CPI
# Returns the monthly and semiannual consumer price index (CPI) of the United States. CPI is widely regarded as the barometer of inflation levels in the broader economy.

import requests

url = 'https://www.alphavantage.co/query?function=CPI&interval=monthly&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```


```
{
  "name": "Consumer Price Index for all Urban Consumers",
  "interval": "monthly",
  "unit": "index 1982-1984=100",
  "data": [
    {
      "date": "2022-11-01",
      "value": "297.711"
    },
    {
      "date": "2022-10-01",
      "value": "298.012"
    },
    {
      "date": "2022-09-01",
      "value": "296.808"
    },
    {
      "date": "2022-08-01",
```


In [35]:
```python
# INFLATION
# Returns the annual inflation rates (consumer prices) of the United States.

import requests

url = 'https://www.alphavantage.co/query?function=INFLATION&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```


```
{
  "name": "Inflation - US Consumer Prices",
  "interval": "annual",
  "unit": "percent",
  "data": [
    {
      "date": "2021-01-01",
      "value": "4.69785886363739"
    },
    {
      "date": "2020-01-01",
      "value": "1.23358439630637"
    },
    {
      "date": "2019-01-01",
      "value": "1.81221007526015"
    },
    {
      "date": "2018-01-01",
```

In [36]:

```python
# INFLATION_EXPECTATION
# Returns the monthly inflation expectation data of the United States, as measured by the median expected price change next 12 months according to the Surveys of Consumers by University of Michigan (Inflation Expecta

import requests

url = 'https://www.alphavantage.co/query?function=INFLATION_EXPECTATION&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```


```
{
  "name": "Inflation Expectations",
  "interval": "monthly",
  "unit": "percent",
  "data": [
    {
      "date": "2022-10-01",
      "value": "5"
    },
    {
      "date": "2022-09-01",
      "value": "4.7"
    },
    {
      "date": "2022-08-01",
      "value": "4.8"
    },
    {
      "date": "2022-07-01",
```


In [38]:

```python
# CONSUMER_SENTIMENT
# Returns the monthly consumer sentiment and confidence data of the United States, as measured by the Surveys of Consumers by University of Michigan (Consumer Sentiment © [UMCSENT]), retrieved from FRED, Federal Rese

import requests

url = 'https://www.alphavantage.co/query?function=CONSUMER_SENTIMENT&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```


```
{
  "name": "Consumer Sentiment & Consumer Confidence",
  "interval": "monthly",
  "unit": "index 1966:Q1=100",
  "data": [
    {
      "date": "2022-10-01",
      "value": "59.9"
    },
    {
      "date": "2022-09-01",
      "value": "58.6"
    },
    {
      "date": "2022-08-01",
      "value": "58.2"
    },
    {
      "date": "2022-07-01",
```


In [39]:

```python
# RETAIL_SALES
# Returns the monthly Advance Retail Sales: Retail Trade data of the United States.

import requests

url = 'https://www.alphavantage.co/query?function=RETAIL_SALES&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```


```
{
  "name": "Advance Retail Sales: Retail Trade",
  "interval": "monthly",
  "unit": "millions of dollars",
  "data": [
    {
      "date": "2022-10-01",
      "value": "597492"
    },
    {
      "date": "2022-09-01",
      "value": "576853"
    },
    {
      "date": "2022-08-01",
      "value": "613416"
    },
    {
      "date": "2022-07-01",
```

In [40]:
```
# DURABLES
# Returns the monthly manufacturers' new orders of durable goods in the United States.

import requests

url = 'https://www.alphavantage.co/query?function=DURABLES&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```


```
{
  "name": "Manufacturer New Orders: Durable Goods",
  "interval": "monthly",
  "unit": "millions of dollars",
  "data": [
    {
      "date": "2022-10-01",
      "value": "273481"
    },
    {
      "date": "2022-09-01",
      "value": "289932"
    },
    {
      "date": "2022-08-01",
      "value": "279323"
    },
    {
      "date": "2022-07-01",
```


In [41]:
```
# UNEMPLOYMENT
# Returns the monthly unemployment data of the United States. The unemployment rate represents the number of unemployed as a percentage of the labor force. Labor force data are restricted to people 16 years of age ar

import requests

url = 'https://www.alphavantage.co/query?function=UNEMPLOYMENT&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```


```
{
  "name": "Unemployment Rate",
  "interval": "monthly",
  "unit": "percent",
  "data": [
    {
      "date": "2022-11-01",
      "value": "3.7"
    },
    {
      "date": "2022-10-01",
      "value": "3.7"
    },
    {
      "date": "2022-09-01",
      "value": "3.5"
    },
    {
      "date": "2022-08-01",
```


In [42]:
```
# NONFARM_PAYROLL
# Returns the monthly US All Employees: Total Nonfarm (commonly known as Total Nonfarm Payroll), a measure of the number of U.S. workers in the economy that excludes proprietors, private household employees, unpaid v

import requests

url = 'https://www.alphavantage.co/query?function=NONFARM_PAYROLL&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

print(json.dumps(data, indent=2))
```


```
{
  "name": "Total Nonfarm Payroll",
  "interval": "monthly",
  "unit": "thousands of persons",
  "data": [
    {
      "date": "2022-11-01",
      "value": "154990"
    },
    {
      "date": "2022-10-01",
      "value": "154416"
    },
    {
      "date": "2022-09-01",
      "value": "153204"
    },
    {
      "date": "2022-08-01",
```

In [ ]:
```
# WMA
# Returns the weighted moving average (WMA) values.

import requests

url = 'https://www.alphavantage.co/query?function=WMA&symbol=AAPL&interval=weekly&time_period=10&series_type=open&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: WMA"]

for x in timeSeries:
    wma_day = x
    wma_name = data["Meta Data"]["1: Symbol"]
    wma_value = timeSeries[x]["WMA"]

    try:
        query = "INSERT INTO wma(wma_day, wma_name, wma_value)" \
                "VALUES(%s,%s,%s)"
        args = (wma_day, wma_name, wma_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```
# DEMA
# Returns the double exponential moving average (DEMA) values.

import requests

url = 'https://www.alphavantage.co/query?function=DEMA&symbol=AAPL&interval=weekly&time_period=10&series_type=open&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: DEMA"]

for x in timeSeries:
    dema_day = x
    dema_name = data["Meta Data"]["1: Symbol"]
    dema_value = timeSeries[x]["DEMA"]

    try:
        query = "INSERT INTO dema(dema_day, dema_name, dema_value)" \
                "VALUES(%s,%s,%s)"
        args = (dema_day, dema_name, dema_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# TEMA
# Returns the triple exponential moving average (TEMA) values.

import requests

url = 'https://www.alphavantage.co/query?function=TEMA&symbol=AAPL&interval=weekly&time_period=10&series_type=open&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: TEMA"]

for x in timeSeries:
    tema_day = x
    tema_name = data["Meta Data"]["1: Symbol"]
    tema_value = timeSeries[x]["TEMA"]

    try:
        query = "INSERT INTO tema(tema_day, tema_name, tema_value)" \
                "VALUES(%s,%s,%s)"
        args = (tema_day, tema_name, tema_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# TRIMA

# Returns the triangular moving average (TRIMA) values.

import requests

url = 'https://www.alphavantage.co/query?function=TRIMA&symbol=AAPL&interval=weekly&time_period=10&series_type=open&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: TRIMA"]

for x in timeSeries:
    trima_day = x
    trima_name = data["Meta Data"]["1: Symbol"]
    trima_value = timeSeries[x]["TRIMA"]

    try:
        query = "INSERT INTO trima(trima_day, trima_name, trima_value)" \
                "VALUES(%s,%s,%s)"
        args = (trima_day, trima_name, trima_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# KAMA

# Returns the Kaufman adaptive moving average (KAMA) values.

import requests

url = 'https://www.alphavantage.co/query?function=KAMA&symbol=AAPL&interval=weekly&time_period=10&series_type=open&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: KAMA"]

for x in timeSeries:
    kama_day = x
    kama_name = data["Meta Data"]["1: Symbol"]
    kama_value = timeSeries[x]["KAMA"]

    try:
        query = "INSERT INTO kama(kama_day, kama_name, kama_value)" \
                "VALUES(%s,%s,%s)"
        args = (kama_day, kama_name, kama_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')


# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# MAMA

# Returns the MESA adaptive moving average (MAMA) values.

import requests

url = 'https://www.alphavantage.co/query?function=MAMA&symbol=AAPL&interval=daily&series_type=close&fastlimit=0.02&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: MAMA"]

for x in timeSeries:
    mama_day = x
    mama_name = data["Meta Data"]["1: Symbol"]
    mama_value = timeSeries[x]["MAMA"]

    try:
        query = "INSERT INTO mama(mama_day, mama_name, mama_value)" \
                "VALUES(%s,%s,%s)"
        args = (mama_day, mama_name, mama_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')


# print(json.dumps(data, indent=2))
```

In [ ]:
```
# T3

# Returns the triple exponential moving average (T3) values

import requests

url = 'https://www.alphavantage.co/query?function=T3&symbol=AAPL&interval=weekly&time_period=10&series_type=open&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: T3"]

for x in timeSeries:
    t3_day = x
    t3_name = data["Meta Data"]["1: Symbol"]
    t3_value = timeSeries[x]["T3"]

    try:
        query = "INSERT INTO t3(t3_day, t3_name, t3_value)" \
                "VALUES(%s,%s,%s)"
        args = (t3_day, t3_name, t3_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```
# MACDEXT

# Returns the moving average convergence / divergence values with controllable moving average type.

import requests

url = 'https://www.alphavantage.co/query?function=MACDEXT&symbol=AAPL&interval=daily&series_type=open&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: MACDEXT"]

for x in timeSeries:
    MACD_day = x
    MACD_name = data["Meta Data"]["1: Symbol"]
    MACD_Signal = timeSeries[x]["MACD_Signal"]
    MACD_Hist = timeSeries[x]["MACD_Hist"]
    MACD_value = timeSeries[x]["MACD"]

    try:
        query = "INSERT INTO macd(MACD_day, MACD_name, MACD_Signal, MACD_Hist, MACD_value)" \
                "VALUES(%s,%s,%s,%s,%s)"
        args = (MACD_day, MACD_name, MACD_Signal, MACD_Hist, MACD_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# STOCHF

# Returns the stochastic fast (STOCHF) values.

import requests

url = 'https://www.alphavantage.co/query?function=STOCHF&symbol=AAPL&interval=daily&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: STOCHF"]

for x in timeSeries:
    STOCHF_day = x
    STOCHF_name = data["Meta Data"]["1: Symbol"]
    FastD = timeSeries[x]["FastD"]
    FastK = timeSeries[x]["FastK"]

    try:
        query = "INSERT INTO stochf(STOCHF_day, STOCHF_name, FastD, FastK)" \
                "VALUES(%s,%s,%s,%s)"
        args = (STOCHF_day, STOCHF_name, FastD, FastK)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# STOCHRSI

# Returns the stochastic relative strength index (STOCHRSI) values.

import requests

url = 'https://www.alphavantage.co/query?function=STOCHRSI&symbol=AAPL&interval=daily&time_period=10&series_type=close&fastkperiod=6&fastdmatype=1&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: STOCHRSI"]

for x in timeSeries:
    STOCHRSI_day = x
    STOCHRSI_name = data["Meta Data"]["1: Symbol"]
    FastD = timeSeries[x]["FastD"]
    FastK = timeSeries[x]["FastK"]

    try:
        query = "INSERT INTO stochrsi(STOCHRSI_day, STOCHRSI_name, FastD, FastK)" \
                "VALUES(%s,%s,%s,%s)"
        args = (STOCHRSI_day, STOCHRSI_name, FastD, FastK)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')


# print(json.dumps(data, indent=2))
```

In [ ]:
```
# WILLR

# Returns the Williams' %R (WILLR) values.

import requests

url = 'https://www.alphavantage.co/query?function=WILLR&symbol=AAPL&interval=daily&time_period=10&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: WILLR"]

for x in timeSeries:
    WILLR_day = x
    WILLR_name = data["Meta Data"]["1: Symbol"]
    WILLR_value = timeSeries[x]["WILLR"]

    try:
        query = "INSERT INTO willr(WILLR_day, WILLR_name, WILLR_value)" \
                "VALUES(%s,%s,%s)"
        args = (WILLR_day, WILLR_name, WILLR_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```
# ADXR

# Returns the average directional movement index rating (ADXR) values.

import requests

url = 'https://www.alphavantage.co/query?function=ADXR&symbol=AAPL&interval=daily&time_period=10&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: ADXR"]

for x in timeSeries:
    ADXR_day = x
    ADXR_name = data["Meta Data"]["1: Symbol"]
    ADXR_value = timeSeries[x]["ADXR"]

    try:
        query = "INSERT INTO adxr(ADXR_day, ADXR_name, ADXR_value)" \
                "VALUES(%s,%s,%s)"
        args = (ADXR_day, ADXR_name, ADXR_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# APO

# Returns the absolute price oscillator (APO) values.

import requests

url = 'https://www.alphavantage.co/query?function=APO&symbol=AAPL&interval=daily&series_type=close&fastperiod=10&matype=1&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: APO"]

for x in timeSeries:
    APO_day = x
    APO_name = data["Meta Data"]["1: Symbol"]
    APO_value = timeSeries[x]["APO"]

    try:
        query = "INSERT INTO apo(APO_day, APO_name, APO_value)" \
                "VALUES(%s,%s,%s)"
        args = (APO_day, APO_name, APO_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# PPO

# Returns the percentage price oscillator (PPO) values.

import requests

url = 'https://www.alphavantage.co/query?function=PPO&symbol=IBM&interval=daily&series_type=close&fastperiod=10&matype=1&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: PPO"]

for x in timeSeries:
    PPO_day = x
    PPO_name = data["Meta Data"]["1: Symbol"]
    PPO_value = timeSeries[x]["PPO"]

    try:
        query = "INSERT INTO ppo(PPO_day, PPO_name, PPO_value)" \
                "VALUES(%s,%s,%s)"
        args = (PPO_day, PPO_name, PPO_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# MOM

# Returns the momentum (MOM) values.

import requests

url = 'https://www.alphavantage.co/query?function=MOM&symbol=AAPL&interval=daily&time_period=10&series_type=close&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: MOM"]

for x in timeSeries:
    MOM_day = x
    MOM_name = data["Meta Data"]["1: Symbol"]
    MOM_value = timeSeries[x]["MOM"]

    try:
        query = "INSERT INTO mom(MOM_day, MOM_name, MOM_value)" \
                "VALUES(%s,%s,%s)"
        args = (MOM_day, MOM_name, MOM_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# BOP

# Returns the balance of power (BOP) values.

import requests

url = 'https://www.alphavantage.co/query?function=BOP&symbol=IBM&interval=daily&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: BOP"]

for x in timeSeries:
    BOP_day = x
    BOP_name = data["Meta Data"]["1: Symbol"]
    BOP_value = timeSeries[x]["BOP"]

    try:
        query = "INSERT INTO bop(BOP_day, BOP_name, BOP_value)" \
                "VALUES(%s,%s,%s)"
        args = (BOP_day, BOP_name, BOP_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')


# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# CMO

# Returns the Chande momentum oscillator (CMO) values.

import requests

url = 'https://www.alphavantage.co/query?function=CMO&symbol=IBM&interval=weekly&time_period=10&series_type=close&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: CMO"]

for x in timeSeries:
    CMO_day = x
    CMO_name = data["Meta Data"]["1: Symbol"]
    CMO_value = timeSeries[x]["CMO"]

    try:
        query = "INSERT INTO cmo(CMO_day, CMO_name, CMO_value)" \
                "VALUES(%s,%s,%s)"
        args = (CMO_day, CMO_name, CMO_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')


# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# ROC

# Returns the rate of change (ROC) values.

import requests

url = 'https://www.alphavantage.co/query?function=ROC&symbol=IBM&interval=weekly&time_period=10&series_type=close&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: ROC"]

for x in timeSeries:
    ROC_day = x
    ROC_name = data["Meta Data"]["1: Symbol"]
    ROC_value = timeSeries[x]["ROC"]

    try:
        query = "INSERT INTO roc(ROC_day, ROC_name, ROC_value)" \
                "VALUES(%s,%s,%s)"
        args = (ROC_day, ROC_name, ROC_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# ROCR

# Returns the rate of change ratio (ROCR) values.

import requests

url = 'https://www.alphavantage.co/query?function=ROCR&symbol=IBM&interval=daily&time_period=10&series_type=close&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: ROCR"]

for x in timeSeries:
    ROCR_day = x
    ROCR_name = data["Meta Data"]["1: Symbol"]
    ROCR_value = timeSeries[x]["ROCR"]

    try:
        query = "INSERT INTO rocr(ROCR_day, ROCR_name, ROCR_value)" \
                "VALUES(%s,%s,%s)"
        args = (ROCR_day, ROCR_name, ROCR_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# AROON

# This API returns the Aroon (AROON) values.

import requests

url = 'https://www.alphavantage.co/query?function=AROON&symbol=AAPL&interval=daily&time_period=14&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: AROON"]

for x in timeSeries:
    AROON_day = x
    AROON_name = data["Meta Data"]["1: Symbol"]
    Aroon_Up = timeSeries[x]["Aroon Up"]
    Aroon_Down = timeSeries[x]["Aroon Down"]

    try:
        query = "INSERT INTO aroon(AROON_day, AROON_name, Aroon_Up, Aroon_Down)" \
                "VALUES(%s,%s,%s,%s)"
        args = (AROON_day, AROON_name, Aroon_Up, Aroon_Down)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')


# print(json.dumps(data, indent=2))
```

In [ ]:

```python
# AROONOSC

# Returns the Aroon oscillator (AROONOSC) values.

import requests

url = 'https://www.alphavantage.co/query?function=AROONOSC&symbol=AAPL&interval=daily&time_period=10&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: AROONOSC"]

for x in timeSeries:
    AROONOSC_day = x
    AROONOSC_name = data["Meta Data"]["1: Symbol"]
    AROONOSC_value = timeSeries[x]["AROONOSC"]

    try:
        query = "INSERT INTO aroonosc(AROONOSC_day, AROONOSC_name, AROONOSC_value)" \
                "VALUES(%s,%s,%s)"
        args = (AROONOSC_day, AROONOSC_name, AROONOSC_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:

```python
# MFI

# Returns the money flow index (MFI) values.

import requests

url = 'https://www.alphavantage.co/query?function=MFI&symbol=AAPL&interval=weekly&time_period=10&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: MFI"]

for x in timeSeries:
    MFI_day = x
    MFI_name = data["Meta Data"]["1: Symbol"]
    MFI_value = timeSeries[x]["MFI"]

    try:
        query = "INSERT INTO mfi(MFI_day, MFI_name, MFI_value)" \
                "VALUES(%s,%s,%s)"
        args = (MFI_day, MFI_name, MFI_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# TRIX

# Returns the 1-day rate of change of a triple smooth exponential moving average (TRIX) values.

import requests

url = 'https://www.alphavantage.co/query?function=TRIX&symbol=AAPL&interval=daily&time_period=10&series_type=close&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: TRIX"]

for x in timeSeries:
    TRIX_day = x
    TRIX_name = data["Meta Data"]["1: Symbol"]
    TRIX_value = timeSeries[x]["TRIX"]

    try:
        query = "INSERT INTO trix(TRIX_day, TRIX_name, TRIX_value)" \
                "VALUES(%s,%s,%s)"
        args = (TRIX_day, TRIX_name, TRIX_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# ULTOSC

# Returns the ultimate oscillator (ULTOSC) values

import requests

url = 'https://www.alphavantage.co/query?function=ULTOSC&symbol=IBM&interval=daily&timeperiod1=8&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: ULTOSC"]

for x in timeSeries:
    ULTOSC_day = x
    ULTOSC_name = data["Meta Data"]["1: Symbol"]
    ULTOSC_value = timeSeries[x]["ULTOSC"]

    try:
        query = "INSERT INTO ultosc(ULTOSC_day, ULTOSC_name, ULTOSC_value)" \
                "VALUES(%s,%s,%s)"
        args = (ULTOSC_day, ULTOSC_name, ULTOSC_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# DX

# This API returns the directional movement index (DX) values.

import requests

url = 'https://www.alphavantage.co/query?function=DX&symbol=IBM&interval=daily&time_period=10&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: DX"]

for x in timeSeries:
    DX_day = x
    DX_name = data["Meta Data"]["1: Symbol"]
    DX_value = timeSeries[x]["DX"]

    try:
        query = "INSERT INTO dx(DX_day, DX_name, DX_value)" \
                "VALUES(%s,%s,%s)"
        args = (DX_day, DX_name, DX_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# MINUS_DI

# This API returns the minus directional indicator (MINUS_DI) values.

import requests

url = 'https://www.alphavantage.co/query?function=MINUS_DI&symbol=AAPL&interval=weekly&time_period=10&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: MINUS_DI"]

for x in timeSeries:
    MINUS_DI_day = x
    MINUS_DI_name = data["Meta Data"]["1: Symbol"]
    MINUS_DI_value = timeSeries[x]["MINUS_DI"]

    try:
        query = "INSERT INTO minusdi(MINUS_DI_day, MINUS_DI_name, MINUS_DI_value)" \
                "VALUES(%s,%s,%s)"
        args = (MINUS_DI_day, MINUS_DI_name, MINUS_DI_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:

```
# PLUS_DI

# This API returns the plus directional indicator (PLUS_DI) values.

import requests

url = 'https://www.alphavantage.co/query?function=PLUS_DI&symbol=AAPL&interval=daily&time_period=10&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: PLUS_DI"]

for x in timeSeries:
    PLUS_DI_day = x
    PLUS_DI_name = data["Meta Data"]["1: Symbol"]
    PLUS_DI_value = timeSeries[x]["PLUS_DI"]

    try:
        query = "INSERT INTO plusdi(PLUS_DI_day, PLUS_DI_name, PLUS_DI_value)" \
                "VALUES(%s,%s,%s)"
        args = (PLUS_DI_day, PLUS_DI_name, PLUS_DI_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:

```
# MINUS_DM

# This API returns the minus directional movement (MINUS_DM) values.

import requests

url = 'https://www.alphavantage.co/query?function=MINUS_DM&symbol=AAPL&interval=daily&time_period=10&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: MINUS_DM"]

for x in timeSeries:
    MINUS_DM_day = x
    MINUS_DM_name = data["Meta Data"]["1: Symbol"]
    MINUS_DM_value = timeSeries[x]["MINUS_DM"]

    try:
        query = "INSERT INTO minusdm(MINUS_DM_day, MINUS_DM_name, MINUS_DM_value)" \
                "VALUES(%s,%s,%s)"
        args = (MINUS_DM_day, MINUS_DM_name, MINUS_DM_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# PLUS_DM

# This API returns the minus directional movement (MINUS_DM) values.

import requests

url = 'https://www.alphavantage.co/query?function=PLUS_DM&symbol=AAPL&interval=daily&time_period=10&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: PLUS_DM"]

for x in timeSeries:
    PLUS_DM_day = x
    PLUS_DM_name = data["Meta Data"]["1: Symbol"]
    PLUS_DM_value = timeSeries[x]["PLUS_DM"]

    try:
        query = "INSERT INTO plusdm(PLUS_DM_day, PLUS_DM_name, PLUS_DM_value)" \
                "VALUES(%s,%s,%s)"
        args = (PLUS_DM_day, PLUS_DM_name, PLUS_DM_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# MIDPOINT

# This API returns the midpoint (MIDPOINT) values. MIDPOINT = (highest value + lowest value)/2.

import requests

url = 'https://www.alphavantage.co/query?function=MIDPOINT&symbol=AAPL&interval=daily&time_period=10&series_type=close&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: MIDPOINT"]

for x in timeSeries:
    MIDPOINT_day = x
    MIDPOINT_name = data["Meta Data"]["1: Symbol"]
    MIDPOINT_value = timeSeries[x]["MIDPOINT"]

    try:
        query = "INSERT INTO midpoint(MIDPOINT_day, MIDPOINT_name, MIDPOINT_value)" \
                "VALUES(%s,%s,%s)"
        args = (MIDPOINT_day, MIDPOINT_name, MIDPOINT_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# MIDPRICE

# This API returns the midpoint price (MIDPRICE) values. MIDPRICE = (highest high + lowest low)/2.

import requests

url = 'https://www.alphavantage.co/query?function=MIDPRICE&symbol=IBM&interval=daily&time_period=10&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: MIDPRICE"]

for x in timeSeries:
    MIDPRICE_day = x
    MIDPRICE_name = data["Meta Data"]["1: Symbol"]
    MIDPRICE_value = timeSeries[x]["MIDPRICE"]

    try:
        query = "INSERT INTO midprice(MIDPRICE_day, MIDPRICE_name, MIDPRICE_value)" \
                "VALUES(%s,%s,%s)"
        args = (MIDPRICE_day, MIDPRICE_name, MIDPRICE_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# SAR

# This API returns the parabolic SAR (SAR) values.

import requests

url = 'https://www.alphavantage.co/query?function=SAR&symbol=AAPL&interval=weekly&acceleration=0.05&maximum=0.25&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: SAR"]

for x in timeSeries:
    SAR_day = x
    SAR_name = data["Meta Data"]["1: Symbol"]
    SAR_value = timeSeries[x]["SAR"]

    try:
        query = "INSERT INTO sar(SAR_day, SAR_name, SAR_value)" \
                "VALUES(%s,%s,%s)"
        args = (SAR_day, SAR_name, SAR_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:

```python
# TRANGE

# This API returns the true range (TRANGE) values.

import requests

url = 'https://www.alphavantage.co/query?function=TRANGE&symbol=AAPL&interval=daily&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: TRANGE"]

for x in timeSeries:
    TRANGE_day = x
    TRANGE_name = data["Meta Data"]["1: Symbol"]
    TRANGE_value = timeSeries[x]["TRANGE"]

    try:
        query = "INSERT INTO trange(TRANGE_day, TRANGE_name, TRANGE_value)" \
                "VALUES(%s,%s,%s)"
        args = (TRANGE_day, TRANGE_name, TRANGE_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:

```python
# ATR

# This API returns the average true range (ATR) values.

import requests

url = 'https://www.alphavantage.co/query?function=ATR&symbol=AAPL&interval=daily&time_period=14&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: ATR"]

for x in timeSeries:
    ATR_day = x
    ATR_name = data["Meta Data"]["1: Symbol"]
    ATR_value = timeSeries[x]["ATR"]

    try:
        query = "INSERT INTO atr(ATR_day, ATR_name, ATR_value)" \
                "VALUES(%s,%s,%s)"
        args = (ATR_day, ATR_name, ATR_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```
# NATR

# This API returns the average true range (NATR) values.

import requests

url = 'https://www.alphavantage.co/query?function=NATR&symbol=AAPL&interval=weekly&time_period=14&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: NATR"]

for x in timeSeries:
    NATR_day = x
    NATR_name = data["Meta Data"]["1: Symbol"]
    NATR_value = timeSeries[x]["NATR"]

    try:
        query = "INSERT INTO Natr(NATR_day, NATR_name, NATR_value)" \
                "VALUES(%s,%s,%s)"
        args = (NATR_day, NATR_name, NATR_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```
# AD

# This API returns the Chaikin A/D line (AD) values.

import requests

url = 'https://www.alphavantage.co/query?function=AD&symbol=IBM&interval=daily&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: Chaikin A/D"]

for x in timeSeries:
    AD_day = x
    AD_name = data["Meta Data"]["1: Symbol"]
    AD_value = timeSeries[x]["Chaikin A/D"]

    try:
        query = "INSERT INTO ad(AD_day, AD_name, AD_value)" \
                "VALUES(%s,%s,%s)"
        args = (AD_day, AD_name, AD_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# ADOSC

# This API returns the Chaikin A/D oscillator (ADOSC) values.

import requests

url = 'https://www.alphavantage.co/query?function=ADOSC&symbol=AAPL&interval=daily&fastperiod=5&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: ADOSC"]

for x in timeSeries:
    ADOSC_day = x
    ADOSC_name = data["Meta Data"]["1: Symbol"]
    ADOSC_value = timeSeries[x]["ADOSC"]

    try:
        query = "INSERT INTO adosc(ADOSC_day, ADOSC_name, ADOSC_value)" \
                "VALUES(%s,%s,%s)"
        args = (ADOSC_day, ADOSC_name, ADOSC_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# OBV

# This API returns the on balance volume (OBV) values.

import requests

url = 'https://www.alphavantage.co/query?function=OBV&symbol=IBM&interval=weekly&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: OBV"]

for x in timeSeries:
    OBV_day = x
    OBV_name = data["Meta Data"]["1: Symbol"]
    OBV_value = timeSeries[x]["OBV"]

    try:
        query = "INSERT INTO obv(OBV_day, OBV_name, OBV_value)" \
                "VALUES(%s,%s,%s)"
        args = (OBV_day, OBV_name, OBV_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# HT_TRENDLINE

# This API returns the Hilbert transform, instantaneous trendline (HT_TRENDLINE) values.

import requests

url = 'https://www.alphavantage.co/query?function=HT_TRENDLINE&symbol=AAPL&interval=daily&series_type=close&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: HT_TRENDLINE"]

for x in timeSeries:
    HT_TRENDLINE_day = x
    HT_TRENDLINE_name = data["Meta Data"]["1: Symbol"]
    HT_TRENDLINE_value = timeSeries[x]["HT_TRENDLINE"]

    try:
        query = "INSERT INTO httrendline(HT_TRENDLINE_day, HT_TRENDLINE_name, HT_TRENDLINE_value)" \
                "VALUES(%s,%s,%s)"
        args = (HT_TRENDLINE_day, HT_TRENDLINE_name, HT_TRENDLINE_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```python
# HT_SINE

# This API returns the Hilbert transform, instantaneous trendline (HT_TRENDLINE) values.

import requests

url = 'https://www.alphavantage.co/query?function=HT_SINE&symbol=AAPL&interval=daily&series_type=close&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: HT_SINE"]

for x in timeSeries:
    HT_SINE_day = x
    HT_SINE_name = data["Meta Data"]["1: Symbol"]
    LEAD_SINE = timeSeries[x]["LEAD SINE"]
    SINE = timeSeries[x]["SINE"]

    try:
        query = "INSERT INTO htsine(HT_SINE_day, HT_SINE_name, LEAD_SINE, SINE)" \
                "VALUES(%s,%s,%s,%s)"
        args = (HT_SINE_day, HT_SINE_name, LEAD_SINE, SINE)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```
# HT_TRENDMODE

# This API returns the Hilbert transform, trend vs cycle mode (HT_TRENDMODE) values.

import requests

url = 'https://www.alphavantage.co/query?function=HT_TRENDMODE&symbol=AAPL&interval=weekly&series_type=close&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: HT_TRENDMODE"]

for x in timeSeries:
    HT_TRENDMODE_day = x
    HT_TRENDMODE_name = data["Meta Data"]["1: Symbol"]
    HT_TRENDMODE_VALUE = timeSeries[x]["TRENDMODE"]

    try:
        query = "INSERT INTO httrendmode(HT_TRENDMODE_day, HT_TRENDMODE_name, HT_TRENDMODE_VALUE)" \
                "VALUES(%s,%s,%s)"
        args = (HT_TRENDMODE_day, HT_TRENDMODE_name, HT_TRENDMODE_VALUE)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```
# HT_DCPERIOD

# This API returns the Hilbert transform, dominant cycle period (HT_DCPERIOD) values.

import requests

url = 'https://www.alphavantage.co/query?function=HT_DCPERIOD&symbol=AAPL&interval=daily&series_type=close&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: HT_DCPERIOD"]

for x in timeSeries:
    HT_DCPERIOD_day = x
    HT_DCPERIOD_name = data["Meta Data"]["1: Symbol"]
    HT_DCPERIOD_VALUE = timeSeries[x]["DCPERIOD"]

    try:
        query = "INSERT INTO htdcperiod(HT_DCPERIOD_day, HT_DCPERIOD_name, HT_DCPERIOD_VALUE)" \
                "VALUES(%s,%s,%s)"
        args = (HT_DCPERIOD_day, HT_DCPERIOD_name, HT_DCPERIOD_VALUE)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```
# HT_PHASE

# This API returns the Hilbert transform, dominant cycle phase (HT_DCPHASE) values.

import requests

url = 'https://www.alphavantage.co/query?function=HT_DCPHASE&symbol=AAPL&interval=daily&series_type=close&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: HT_DCPHASE"]

for x in timeSeries:
    HT_DCPHASE_day = x
    HT_DCPHASE_name = data["Meta Data"]["1: Symbol"]
    HT_DCPHASE_VALUE = timeSeries[x]["HT_DCPHASE"]

    try:
        query = "INSERT INTO htdcphase(HT_DCPHASE_day, HT_DCPHASE_name, HT_DCPHASE_VALUE)" \
                "VALUES(%s,%s,%s)"
        args = (HT_DCPHASE_day, HT_DCPHASE_name, HT_DCPHASE_VALUE)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```
# HT_PHASOR

# This API returns the Hilbert transform, phasor components (HT_PHASOR) values.

import requests

url = 'https://www.alphavantage.co/query?function=HT_PHASOR&symbol=AAPL&interval=weekly&series_type=close&apikey=R8QBN54GF80WJUT6'
r = requests.get(url)
data = r.json()

import mysql.connector
import os

try:
    conn = mysql.connector.connect(user = 'root', password = 'bakugan56', host = '127.0.0.1', database = 'glance_at_finance')
    print("Connection established to", conn.database)
except:
    print("Error connecting to ", 'glance_at_finance')

timeSeries = data["Technical Analysis: HT_PHASOR"]

for x in timeSeries:
    HT_PHASOR_day = x
    HT_PHASOR_name = data["Meta Data"]["1: Symbol"]
    QUADRATURE = timeSeries[x]["QUADRATURE"]
    PHASE_value = timeSeries[x]["PHASE"]

    try:
        query = "INSERT INTO htphasor(HT_PHASOR_day, HT_PHASOR_name, QUADRATURE, PHASE_value)" \
                "VALUES(%s,%s,%s,%s)"
        args = (HT_PHASOR_day, HT_PHASOR_name, QUADRATURE, PHASE_value)
        conn.cursor().execute(query, args)
        conn.commit()
    except:
        print("Error during insertion")

# closing the connection
try:
    conn.close()
except:
    print('No Connection found')

# print(json.dumps(data, indent=2))
```

In [ ]:
```
# VISUALIZATIONS
```

In [2]:
```python
# Plotting the AAPL stock data
import matplotlib.pyplot as plt
import pandas as pd

# Reading the data
df = pd.read_csv('/Users/varadmurtymohod/Downloads/GAF Database/AAPL.csv')
type(df)

# Viewing the data
pd.set_option("display.max.columns", None)
df.head(10)
```

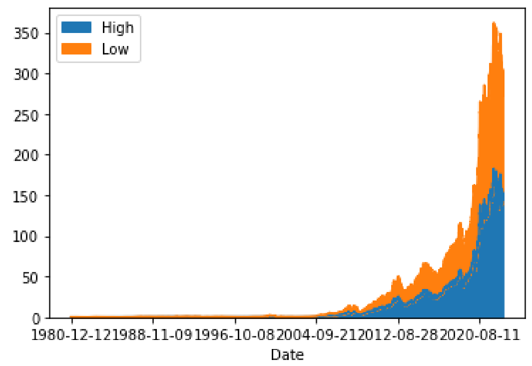
Out[2]:

	Date	Open	High	Low	Close	Adj Close	Volume
0	1980-12-12	0.128348	0.128906	0.128348	0.128348	0.099874	469033600
1	1980-12-15	0.122210	0.122210	0.121652	0.121652	0.094663	175884800
2	1980-12-16	0.113281	0.113281	0.112723	0.112723	0.087715	105728000
3	1980-12-17	0.115513	0.116071	0.115513	0.115513	0.089886	86441600
4	1980-12-18	0.118862	0.119420	0.118862	0.118862	0.092492	73449600
5	1980-12-19	0.126116	0.126674	0.126116	0.126116	0.098137	48630400
6	1980-12-22	0.132254	0.132813	0.132254	0.132254	0.102913	37363200
7	1980-12-23	0.137835	0.138393	0.137835	0.137835	0.107256	46950400
8	1980-12-24	0.145089	0.145647	0.145089	0.145089	0.112901	48003200
9	1980-12-26	0.158482	0.159040	0.158482	0.158482	0.123323	55574400

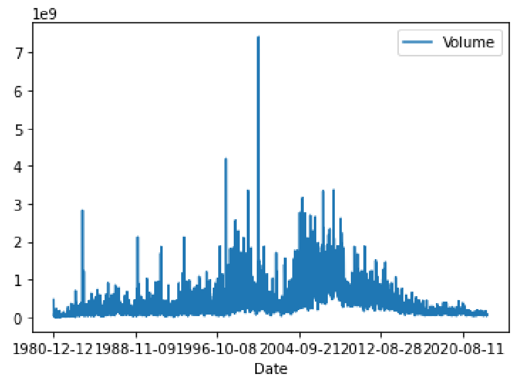
In [30]:
```python
%matplotlib
```

Using matplotlib backend: MacOSX

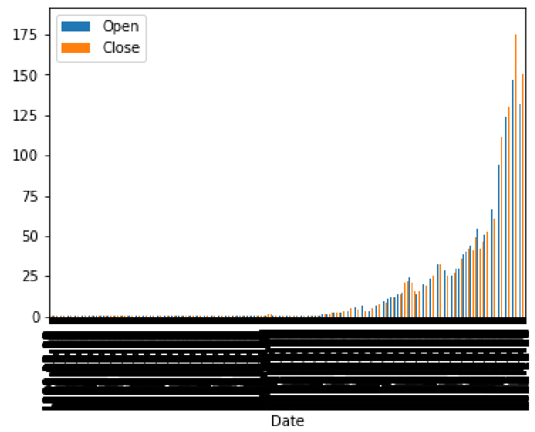
In [15]:
```python
df.plot.area(x="Date", y=["High", "Low"])
plt.show()
# Displays the plot (might open in an exterior Python window)
```



In [14]:
```python
df.plot.line(x="Date", y=["Volume"])
plt.show()
# Displays the plot (might open in an exterior Python window)
```



In [22]:
```python
df.plot.bar(x="Date", y=["Open", "Close"])
plt.show()
# Displays the plot (might open in an exterior Python window)
```



In [ ]: