Extracting and Visualizing Stock Data

Description

Extracting essential data from a dataset and displaying it is a necessary part of data science; therefore individuals can make correct decisions based on the data. In this assignment, you will extract some stock data, you will then display this data in a graph.

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Estimated Time Needed: **30 min**

Note:- If you are working Locally using anaconda, please uncomment the following code and execute it.

```
In [18]:   #!pip install yfinance
           #!pip install pandas
           #!pip install nbformat
```

```
In [21]:   !pip install yfinance
           !pip install pandas
           !pip install bs4
           !pip install nbformat
           #!pip install plotly
```

Requirement already satisfied: yfinance in /opt/conda/lib/python3.11/site-

```
packages (0.2.41)
Requirement already satisfied: pandas>=1.3.0 in /opt/conda/lib/python3.11/
site-packages (from yfinance) (2.2.2)
Requirement already satisfied: numpy>=1.16.5 in /opt/conda/lib/python3.11/
site-packages (from yfinance) (2.0.1)
Requirement already satisfied: requests>=2.31 in /opt/conda/lib/python3.11
/site-packages (from yfinance) (2.31.0)
Requirement already satisfied: multitasking>=0.0.7 in /opt/conda/lib/pytho
n3.11/site-packages (from yfinance) (0.0.11)
Requirement already satisfied: lxml>=4.9.1 in /opt/conda/lib/python3.11/si
te-packages (from yfinance) (5.3.0)
Requirement already satisfied: platformdirs>=2.0.0 in /opt/conda/lib/pytho
n3.11/site-packages (from yfinance) (4.2.1)
Requirement already satisfied: pytz>=2022.5 in /opt/conda/lib/python3.11/s
ite-packages (from yfinance) (2024.1)
Requirement already satisfied: frozendict>=2.3.4 in /opt/conda/lib/python3
.11/site-packages (from yfinance) (2.4.4)
Requirement already satisfied: peewee>=3.16.2 in /opt/conda/lib/python3.11
/site-packages (from yfinance) (3.17.6)
Requirement already satisfied: beautifulsoup4>=4.11.1 in /opt/conda/lib/py
thon3.11/site-packages (from yfinance) (4.12.3)
Requirement already satisfied: html5lib>=1.1 in /opt/conda/lib/python3.11/
site-packages (from yfinance) (1.1)
Requirement already satisfied: soupsieve>1.2 in /opt/conda/lib/python3.11/
site-packages (from beautifulsoup4>=4.11.1->yfinance) (2.5)
Requirement already satisfied: six>=1.9 in /opt/conda/lib/python3.11/site-
packages (from html5lib>=1.1->yfinance) (1.16.0)
Requirement already satisfied: webencodings in /opt/conda/lib/python3.11/s
ite-packages (from html5lib>=1.1->yfinance) (0.5.1)
Requirement already satisfied: python-dateutil>=2.8.2 in /opt/conda/lib/py
thon3.11/site-packages (from pandas>=1.3.0->yfinance) (2.9.0)
Requirement already satisfied: tzdata>=2022.7 in /opt/conda/lib/python3.11
/site-packages (from pandas>=1.3.0->yfinance) (2024.1)
Requirement already satisfied: charset-normalizer<4,>=2 in /opt/conda/lib/
python3.11/site-packages (from requests>=2.31->yfinance) (3.3.2)
Requirement already satisfied: idna<4,>=2.5 in /opt/conda/lib/python3.11/s
ite-packages (from requests>=2.31->yfinance) (3.7)
Requirement already satisfied: urllib3<3,>=1.21.1 in /opt/conda/lib/python
3.11/site-packages (from requests>=2.31->yfinance) (2.2.1)
Requirement already satisfied: certifi>=2017.4.17 in /opt/conda/lib/python
3.11/site-packages (from requests>=2.31->yfinance) (2024.6.2)
Requirement already satisfied: pandas in /opt/conda/lib/python3.11/site-pa
ckages (2.2.2)
Requirement already satisfied: numpy>=1.23.2 in /opt/conda/lib/python3.11/
site-packages (from pandas) (2.0.1)
Requirement already satisfied: python-dateutil>=2.8.2 in /opt/conda/lib/py
thon3.11/site-packages (from pandas) (2.9.0)
Requirement already satisfied: pytz>=2020.1 in /opt/conda/lib/python3.11/s
ite-packages (from pandas) (2024.1)
Requirement already satisfied: tzdata>=2022.7 in /opt/conda/lib/python3.11
/site-packages (from pandas) (2024.1)
Requirement already satisfied: six>=1.5 in /opt/conda/lib/python3.11/site-
packages (from python-dateutil>=2.8.2->pandas) (1.16.0)
```

```
Requirement already satisfied: bs4 in /opt/conda/lib/python3.11/site-packa
ges (0.0.2)
Requirement already satisfied: beautifulsoup4 in /opt/conda/lib/python3.11
/site-packages (from bs4) (4.12.3)
Requirement already satisfied: soupsieve>1.2 in /opt/conda/lib/python3.11/
site-packages (from beautifulsoup4->bs4) (2.5)
Requirement already satisfied: nbformat in /opt/conda/lib/python3.11/site-
packages (5.10.4)
Requirement already satisfied: fastjsonschema>=2.15 in /opt/conda/lib/pyth
on3.11/site-packages (from nbformat) (2.19.1)
Requirement already satisfied: jsonschema>=2.6 in /opt/conda/lib/python3.1
1/site-packages (from nbformat) (4.22.0)
Requirement already satisfied: jupyter-core!=5.0.*,>=4.12 in /opt/conda/li
b/python3.11/site-packages (from nbformat) (5.7.2)
Requirement already satisfied: traitlets>=5.1 in /opt/conda/lib/python3.11
/site-packages (from nbformat) (5.14.3)
Requirement already satisfied: attrs>=22.2.0 in /opt/conda/lib/python3.11/
site-packages (from jsonschema>=2.6->nbformat) (23.2.0)
Requirement already satisfied: jsonschema-specifications>=2023.03.6 in /op
t/conda/lib/python3.11/site-packages (from jsonschema>=2.6->nbformat) (202
3.12.1)
Requirement already satisfied: referencing>=0.28.4 in /opt/conda/lib/pytho
n3.11/site-packages (from jsonschema>=2.6->nbformat) (0.35.1)
Requirement already satisfied: rpds-py>=0.7.1 in /opt/conda/lib/python3.11
/site-packages (from jsonschema>=2.6->nbformat) (0.18.0)
Requirement already satisfied: platformdirs>=2.5 in /opt/conda/lib/python3
.11/site-packages (from jupyter-core!=5.0.*,>=4.12->nbformat) (4.2.1)
```

In [22]:
```python
import yfinance as yf
import pandas as pd
import requests
from bs4 import BeautifulSoup
import plotly.graph_objects as go
from plotly.subplots import make_subplots
```

In Python, you can ignore warnings using the warnings module. You can use the filterwarnings function to filter or ignore specific warning messages or categories.

In [23]:
```python
import warnings
# Ignore all warnings
warnings.filterwarnings("ignore", category=FutureWarning)
```

Define Graphing Function

In this section, we define the function `make_graph`. **You don't have to know how the function works, you should only care about the inputs. It takes a dataframe with stock data (dataframe must contain Date and Close columns), a dataframe with revenue data (dataframe must contain Date and Revenue columns), and the name of the stock.**

```
In [24]:  def make_graph(stock_data, revenue_data, stock):
              fig = make_subplots(rows=2, cols=1, shared_xaxes=True, subplot_titles
              stock_data_specific = stock_data[stock_data.Date <= '2021--06-14']
              revenue_data_specific = revenue_data[revenue_data.Date <= '2021-04-30
              fig.add_trace(go.Scatter(x=pd.to_datetime(stock_data_specific.Date),
              fig.add_trace(go.Scatter(x=pd.to_datetime(revenue_data_specific.Date)
              fig.update_xaxes(title_text="Date", row=1, col=1)
              fig.update_xaxes(title_text="Date", row=2, col=1)
              fig.update_yaxes(title_text="Price ($US)", row=1, col=1)
              fig.update_yaxes(title_text="Revenue ($US Millions)", row=2, col=1)
              fig.update_layout(showlegend=False,
              height=900,
              title=stock,
              xaxis_rangeslider_visible=True)
              fig.show()
```

Use the make_graph function that we've already defined. You'll need to invoke it in questions 5 and 6 to display the graphs and create the dashboard.

> **Note: You don't need to redefine the function for plotting graphs anywhere else in this notebook; just use the existing function.**

Question 1: Use yfinance to Extract Stock Data

```
In [25]:  tesla = yf.Ticker("TSLA")
```

Using the ticker object and the function `history` extract stock information and save it in a dataframe named `tesla_data`. Set the `period` parameter to `"max"` so we get information for the maximum amount of time.

```
In [26]:  tesla_data = tesla.history(period="max")
```

Reset the index using the `reset_index(inplace=True)` function on the tesla_data DataFrame and display the first five rows of the `tesla_data` dataframe using the `head` function. Take a screenshot of the results and code from the beginning of Question 1 to the results below.

```
In [27]:  tesla_data.reset_index(inplace=True)
          tesla_data.head()
```

Out[27]:

	Date	Open	High	Low	Close	Volume	Dividends	Stock Splits
0	2010-06-29 00:00:00-04:00	1.266667	1.666667	1.169333	1.592667	281494500	0.0	0
1	2010-06-30 00:00:00-04:00	1.719333	2.028000	1.553333	1.588667	257806500	0.0	0
2	2010-07-01 00:00:00-04:00	1.666667	1.728000	1.351333	1.464000	123282000	0.0	0
3	2010-07-02 00:00:00-04:00	1.533333	1.540000	1.247333	1.280000	77097000	0.0	0
4	2010-07-06 00:00:00-04:00	1.333333	1.333333	1.055333	1.074000	103003500	0.0	0

Question 2: Use Webscraping to Extract Tesla Revenue Data

Use the `requests` library to download the webpage https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-PY0220EN-SkillsNetwork/labs/project/revenue.htm Save the text of the response as a variable named `html_data`.

In [28]:
```
url = "https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud
html_data = requests.get(url).text
```

Parse the html data using `beautiful_soup` using parser i.e `html5lib` or `html.parser`. Make sure to use the `html_data` with the content parameter as follow `html_data.content`.

In [29]:
```
soup = BeautifulSoup(html_data,"html5lib")
print(soup.prettify())
```

```
<!DOCTYPE html>
<!--[if lt IE 7]>        <html class="no-js lt-ie9 lt-ie8 lt-ie7"> <![endif]-->
<!--[if IE 7]>          <html class="no-js lt-ie9 lt-ie8"> <![endif]-->
<!--[if IE 8]>          <html class="no-js lt-ie9"> <![endif]-->
```

```
<!--[if gt IE 8]><!-->
<html class="no-js">
 <!--<![endif]-->
 <head>
  <meta charset="utf-8"/>
  <meta content="IE=edge,chrome=1" http-equiv="X-UA-Compatible"/>
  <link href="https://www.macrotrends.net/stocks/charts/TSLA/tesla/revenue
" rel="canonical"/>
  <title>
   Tesla Revenue 2010-2022 | TSLA | MacroTrends
  </title>
  <meta content="Tesla annual/quarterly revenue history and growth rate fr
om 2010 to 2022. Revenue can be defined as the amount of money a company r
eceives from its customers in exchange for the sales of goods or services.
 Revenue is the top line item on an income statement from which all costs a
nd expenses are subtracted to arrive at net income.

                                        &lt;ul style='margin-top:10px;'&gt;
                                        &lt;li&gt;Tesla revenue for the quarter en
ding September 30, 2022 was &lt;strong&gt;$21.454B&lt;/strong&gt;, a &lt;s
trong&gt;55.95% increase&lt;/strong&gt; year-over-year.&lt;/li&gt;
                                        &lt;li&gt;Tesla revenue for the twelve mon
ths ending September 30, 2022 was &lt;strong&gt;$74.863B&lt;/strong&gt;, a
 &lt;strong&gt;59.8% increase&lt;/strong&gt; year-over-year.&lt;/li&gt;
                                        &lt;li&gt;Tesla annual revenue for 2021 wa
s &lt;strong&gt;$53.823B&lt;/strong&gt;, a &lt;strong&gt;70.67% increase&l
t;/strong&gt; from 2020.&lt;/li&gt;
                                        &lt;li&gt;Tesla annual revenue for 2020 wa
s &lt;strong&gt;$31.536B&lt;/strong&gt;, a &lt;strong&gt;28.31% increase&l
t;/strong&gt; from 2019.&lt;/li&gt;
                                        &lt;li&gt;Tesla annual revenue for 2019 wa
s &lt;strong&gt;$24.578B&lt;/strong&gt;, a &lt;strong&gt;14.52% increase&l
t;/strong&gt; from 2018.&lt;/li&gt;
                                        &lt;/ul&gt;" name="description"/>
  <meta content="" name="robots"/>
  <link href="/assets/images/icons/FAVICON/macro-trends_favicon.ico" rel="
shortcut icon" type="image/x-icon"/>
  <meta content="1228954C688F5907894001CD8E5E624B" name="msvalidate.01"/>
  <meta content="6MnD_3iDtAP1ZyoGK1YMyVIVck4r5Ws80I9xD3ue4_A" name="google
-site-verification"/>
  <!-- Load in Roboto Font -->
  <link href="https://fonts.googleapis.com/css?family=Roboto:400,600,700"
rel="stylesheet"/>
  <!-- Bootstrap -->
  <link href="//maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap.min.
css" rel="stylesheet"/>
  <!--for Bootstrap CDN version-->
  <link href="//maxcdn.bootstrapcdn.com/bootstrap/3.3.7/css/bootstrap-them
e.min.css" rel="stylesheet"/>
  <!-- Font Awesome -->
  <link href="//stackpath.bootstrapcdn.com/font-awesome/4.7.0/css/font-awe
some.min.css" rel="stylesheet"/>
  <!--for Font Awesome CDN version-->
```

```
<!-- Jquery, Bootstrap and Menu Javascript -->
<script crossorigin="anonymous" integrity="sha256-ZosEbRLbNQzLpnKIkEdrPv
7lOy9C27hHQ+Xp8a4MxAQ=" src="//code.jquery.com/jquery-1.12.4.min.js">
</script>
<script src="//maxcdn.bootstrapcdn.com/bootstrap/3.3.7/js/bootstrap.min.
js">
</script>
<!-- Modernizr for cross-browser support -->
<script src="/assets/javascript/modernizr-2.6.2-respond-1.1.0.min.js" ty
pe="text/javascript">
</script>
<!-- Latest compiled and minified CSS -->
<link href="//www.fuelcdn.com/fuelux/3.13.0/css/fuelux.min.css" rel="sty
lesheet"/>
<!-- Latest compiled and minified JavaScript -->
<script src="//www.fuelcdn.com/fuelux/3.13.0/js/fuelux.min.js">
</script>
<!-- Twitter Card data -->
<meta content="summary_large_image" name="twitter:card"/>
<meta content="@tmacrotrends" name="twitter:site"/>
<meta content="Tesla Revenue 2010-2022 | TSLA" name="twitter:title"/>
<meta content="Tesla annual/quarterly revenue history and growth rate fr
om 2010 to 2022. Revenue can be defined as the amount of money a company r
eceives from its customers in exchange for the sales of goods or services.
Revenue is the top line item on an income statement from which all costs a
nd expenses are subtracted to arrive at net income.

                                        &lt;ul style='margin-top:10px;'&gt;
                                        &lt;li&gt;Tesla revenue for the quarter en
ding September 30, 2022 was &lt;strong&gt;$21.454B&lt;/strong&gt;, a &lt;s
trong&gt;55.95% increase&lt;/strong&gt; year-over-year.&lt;/li&gt;
                                        &lt;li&gt;Tesla revenue for the twelve mon
ths ending September 30, 2022 was &lt;strong&gt;$74.863B&lt;/strong&gt;, a
&lt;strong&gt;59.8% increase&lt;/strong&gt; year-over-year.&lt;/li&gt;
                                        &lt;li&gt;Tesla annual revenue for 2021 wa
s &lt;strong&gt;$53.823B&lt;/strong&gt;, a &lt;strong&gt;70.67% increase&l
t;/strong&gt; from 2020.&lt;/li&gt;
                                        &lt;li&gt;Tesla annual revenue for 2020 wa
s &lt;strong&gt;$31.536B&lt;/strong&gt;, a &lt;strong&gt;28.31% increase&l
t;/strong&gt; from 2019.&lt;/li&gt;
                                        &lt;li&gt;Tesla annual revenue for 2019 wa
s &lt;strong&gt;$24.578B&lt;/strong&gt;, a &lt;strong&gt;14.52% increase&l
t;/strong&gt; from 2018.&lt;/li&gt;
                                        &lt;/ul&gt;" name="twitter:description"/>
<!-- Open Graph data -->
<meta content="https://www.macrotrends.net/stocks/charts/TSLA/tesla/reve
nue" property="og:url"/>
<meta content="Tesla Revenue 2010-2022 | TSLA" property="og:title"/>
<meta content="Tesla annual/quarterly revenue history and growth rate fr
om 2010 to 2022. Revenue can be defined as the amount of money a company r
eceives from its customers in exchange for the sales of goods or services.
Revenue is the top line item on an income statement from which all costs a
nd expenses are subtracted to arrive at net income.
```

<ul style='margin-top:10px;'>
Tesla revenue for the quarter en
ding September 30, 2022 was $21.454B, a <s
trong>55.95% increase year-over-year.
Tesla revenue for the twelve mon
ths ending September 30, 2022 was $74.863B, a
59.8% increase year-over-year.
Tesla annual revenue for 2021 wa
s $53.823B, a 70.67% increase&l
t;/strong> from 2020.
Tesla annual revenue for 2020 wa
s $31.536B, a 28.31% increase&l
t;/strong> from 2019.
Tesla annual revenue for 2019 wa
s $24.578B, a <strong>14.52% increase&l
t;/strong> from 2018.
" property="og:description"/>
  <!-- JQXGRID STYLES AND JAVASCRIPT -->
  <link href="/assets/php/jqfiles/jqwidgets/styles/jqx.base.css" rel="styl
esheet" type="text/css"/>
  <link href="/assets/php/jqfiles/jqwidgets/styles/jqx.bootstrap.css" rel=
"stylesheet" type="text/css"/>
  <!-- LOAD THESE SCRIPTS EARLY SO THE TICKER INPUT FIELD IS STYLED INSTAN
TLY -->
  <script src="/assets/php/jqfiles/jqwidgets/jqxcore.js" type="text/javasc
ript">
  </script>
  <script src="/assets/php/jqfiles/jqwidgets/jqxdata.js" type="text/javasc
ript">
  </script>
  <script src="/assets/php/jqfiles/jqwidgets/jqxinput.js" type="text/javas
cript">
  </script>
  <!-- Styling for search box -->
  <link href="/assets/php/jquery-typeahead/jquery.typeahead_pages.css" rel
="stylesheet" type="text/css"/>
  <!-- Search box javascript -->
  <script src="/assets/php/jquery-typeahead/jquery.typeahead.min.js">
  </script>
  <link href="//cdnjs.cloudflare.com/ajax/libs/select2/4.0.3/css/select2.m
in.css" rel="stylesheet"/>
  <script src="//cdnjs.cloudflare.com/ajax/libs/select2/4.0.3/js/select2.m
in.js">
  </script>
  <!-- ToolTips -->
  <script src="/assets/php/tipped-4.6.1/js/tipped/tipped.js">
  </script>
  <link href="/assets/php/tipped-4.6.1/css/tipped/tipped.css" rel="stylesh
eet"/>
  <!-- START IC AD INSERT -->
  <script>
    InvestingChannelQueue = window.InvestingChannelQueue || [];

```
    </script>
    <script async="" src="https://u5.investingchannel.com/static/uat.js">
    </script>
    <script type="text/javascript">
      //Push Run command with the API-Key, so that UAT will start processing
publishers request.
          InvestingChannelQueue.push(function() {
              ic_page = InvestingChannel.UAT.Run("df17ac1e-cc7f-11e8-82a5-0a
bbb61c4a6a");
          });

                    var tickerValue = 'TSLA';
          var oopDivTag;
                  var subLeaderboardTag;
                  var rightSidebarTag1;
                  var rightSidebarTag2;
                  var searchButtonTag;
                  var partner_center_tag;
                  var videoTag;
                  var ic_3x7_1;
                  //var IC_D_300x250_BCC;
                  //var IC_D_3x7_BCC;

          //To define new tags/out of page tags.
          InvestingChannelQueue.push(function() {

                        ic_page.setKval({'t': tickerValue});

                //videoTag = ic_page.defineNativeTag("Macrotrends/fundamentala
nalysis","3x6, 728x90, Fluid","IC_D_3x6",35);

                oopDivTag = ic_page.defineOutOfPageTag("Macrotrends/fundamenta
lanalysis","oopDivTag_1");
                        oopDivTag.setKval({"adslot":"IC_OOP_1"});


                        LeaderboardTag = ic_page.defineTag("Macrotrends/fu
ndamentalanalysis","970x250,728x90,970x90,fluid", "IC_D_970x250_1");
                        LeaderboardTag.setKval({"adslot":"IC_D_970x250_1"}
);


                        subLeaderboardTag = ic_page.defineTag("Macrotrends
/fundamentalanalysis","728x90","ic_728x90_1");
                        subLeaderboardTag.setKval({"adslot":"IC_728x90_1"}
);


                        rightSidebarTag1 = ic_page.defineTag("Macrotrends/
fundamentalanalysis","300x250,Fluid","ic_300x250_1");
                        rightSidebarTag1.setKval({"adslot":"IC_300x250_1"}
);
```

```
                                                rightSidebarTag2 = ic_page.defineTag("Macrotrends/
fundamentalanalysis","300x600,300x250,160x600,300x1050,Fluid","ic_300x600_
1");
                                                rightSidebarTag2.setKval({"adslot":"IC_300x600_1"}
);


                                                searchButtonTag = ic_page.defineTag("Macrotrends/f
undamentalanalysis","88x31","ic_88x31_1");
                                                searchButtonTag.setKval({"pc":"pc","adslot":"IC_88
x31"});

                                                partner_center_tag = ic_page.defineTag("macrotrend
s/fundamentalanalysis","728x214, 728x90","IC_728x214_1");
                                                partner_center_tag.setKval({"pc":"pc","adslot":"d_
728x90_2"});

                                                ic_3x7_1 = ic_page.defineNativeTag("macrotrends/fu
ndamentalanalysis","3x7,728x90,Fluid","IC_3x7_1", 35);

                                                //IC_D_300x250_BCC = ic_page.defineTag(adCategory,
"300x250,Fluid","IC_D_300x250_BCC");
                                                //IC_D_300x250_BCC.setKval({"adslot":"IC_D_300x250
_BCC"});

                                                //IC_D_3x7_BCC = ic_page.defineTag(adCategory,"3x7
, Fluid","IC_D_3x7_BCC");
                                                //IC_D_3x7_BCC.setKval({"adslot":"IC_D_3x7_BCC"});


                });

                //To render tags.
                                InvestingChannelQueue.push(function() {
                        ic_page.renderTags();
                });
        </script>
        <!-- END IC AD INSERT -->
        <!-- Global site tag (gtag.js) - Google Analytics -->
        <script async="" src="https://www.googletagmanager.com/gtag/js?id=UA-620
99500-1">
        </script>
        <script>
          window.dataLayer = window.dataLayer || [];
                        function gtag(){dataLayer.push(arguments);}
                        gtag('js', new Date());

                        gtag('config', 'UA-62099500-1');
        </script>
        <!-- Google tag (gtag.js) -->
        <script async="" src="https://www.googletagmanager.com/gtag/js?id=G-3KL0
LYERBH">
```

```
    </script>
    <script>
     window.dataLayer = window.dataLayer || [];
                      function gtag(){dataLayer.push(arguments);}
                      gtag('js', new Date());

                      gtag('config', 'G-3KL0LYERBH');
    </script>
    <!--<script>
                            (function(i,s,o,g,r,a,m){i['GoogleAnalyticsObject'
]=r;i[r]=i[r]||function(){
                            (i[r].q=i[r].q||[]).push(arguments)},i[r].l=1*new
Date();a=s.createElement(o),
                            m=s.getElementsByTagName(o)[0];a.async=1;a.src=g;m
.parentNode.insertBefore(a,m)
                            })(window,document,'script','//www.google-analytic
s.com/analytics.js','ga');

                            ga('create', 'UA-62099500-1', 'auto');
                            ga('send', 'pageview');



                            //Send one event to GA at 30 seconds to control bo
unce rate
                            setTimeout("ga('send','event','Engaged User','30 S
econd Engagement')",30000);


                    //This code sends events to ga every 30 seconds when the
window is in focus
                            var count = 0;
                            var myInterval;

                            // Active
                            window.addEventListener('load', startTimer);
                            window.addEventListener('focus', startTimer);

                            // Inactive
                            window.addEventListener('blur', stopTimer);

                            function timerHandler() {
                                    count++;

                                    if(count % 60 == 0 && count <= 1800) {

                                            var interval = (count/60);
                                            interval = interval.toFixed(0);

                                            var action = interval + " Minute E
ngagement";
```

```
                                                         ga('send','event','Engaged User',a
ction);


                                          }

                              }

                              // Start timer
                              function startTimer() {
                              myInterval = window.setInterval(timerHandler, 1000
);
                              }

                              // Stop timer
                              function stopTimer() {
                              window.clearInterval(myInterval);
                              }



                  </script>-->
  <style>
   #style-1::-webkit-scrollbar-track
{
        -webkit-box-shadow: inset 0 0 6px rgba(0,0,0,0.3);
        border-radius: 3px;
        background-color: #F5F5F5;
}

#style-1::-webkit-scrollbar
{
        width: 18px;
        background-color: #F5F5F5;
}

#style-1::-webkit-scrollbar-thumb
{
        border-radius: 3px;
        -webkit-box-shadow: inset 0 0 6px rgba(0,0,0,.3);
        background-color: #5B9BD5;
}

html {
        width:100%;
        position: relative;
        min-height: 100%;
}

body {

        width:100%;
```

```css
        /* Margin bottom by footer height */
          margin-bottom: 80px;
          color: #444;
          background-color:#fff;
          font-family: 'Roboto', sans-serif;
          font-size:14px;
}



.header_content_container {

        min-width: 1280px;
        padding: 0px;
}

.main_content_container {

        min-width: 1280px;
        max-width: 1280px;
        padding: 0px 30px 100px 30px;

}

.sub_main_content_container {


}



#main_content {

        padding:0px 20px 0px 0px;
        width:826px;
    float:left;

}

#right_sidebar {

  width: 300px;
  float:left;
  height:3200px;

}

#sticky_ad_left {

  position: -webkit-sticky;
  position: sticky;
```

```css
    top: 30px;


}

#sticky_ad_right {

  position: -webkit-sticky;
  position: sticky;
  top: 30px;


}



.footer {
  position: absolute;
  bottom: 0;
  width: 100%;
  /* Set the fixed height of the footer here */
  height: 100px;
  margin-top: 10px;
  padding: 30px 20px 20px 20px;
  color:#fff !important;
  background-color:#444;
  text-align: center;
  font-size:16px;
}

.footer a {
  color:#fff !important;
}

.ticker_search_box {

        background-color:#F5F5F5;
        border: 1px solid #E0E0E0;
        border-bottom:none;
        padding:10px 30px 10px 10px;
        margin:0px 0px 0px 0px;
        text-align:center;


}

.related_tickers {

        width:100%;
        background-color:#F5F5F5;
        border: 1px solid #E0E0E0;
        border-top: 0px;
```

```
            padding:3px 30px 3px 10px;
            margin:0px 0px 0px 0px;
            text-align:center;

    }

    .statement_type_select {

            width:100%;
            height:28px;

    }

    .frequency_select {

            width:100%;
            height:28px;
            font-weight:600;

    }


    .select2 {

            text-align:left;
            font-weight:600;

            }

    #jqxInput {

                    width:100%;
                    height:28px;

    }



    .header__parent_container {

            width:100%;
            height:50px;
            padding:15px 0px 10px -20px;
            margin:0px 0px 0px 0px;
            background-color:#444;

    }

    .header_container {

            width:100%;
            height:50px;
            padding:15px 0px 10px -20px;
```

```css
        margin:0px 0px 0px 0px;
        background-color:#444;

}

.header_logo {

        padding-top:10px;
        margin-left:50px;

}

.menu_parent_container {

        width:100%;
        height:34px;
        font-size:16px;
        padding:15px 0px 10px -20px;
        margin:0px 0px 0px 0px;
        background-color:#0089de;
}

.menu_container {

        width:1280px;
        height:34px;
        font-size:16px;
        padding:11px 0px 0px -20px;
        margin: 0 auto;
        background-color:#0089de;
        z-index:1000;
}

.menu_item {

        height:34px;
        float:left;
        font-size:14px;
        font-weight:bold;
        color:#fff;
        text-align:center;
        padding:7px 16px 0px 16px;

}

.menu_item:hover
{
        background-color:#32a0e4;
        cursor: pointer;
}

.menu_item a
{
```

```
                color:#fff;
                cursor: pointer;
        }


        .menu_item a:hover
        {
                text-decoration:none;
                cursor: pointer;
        }


        .leaderboard_ad {

                margin-top:20px;
                margin-bottom:20px;
                text-align:center;
                min-height:100px;

        }

        #filter_result_count {

                width:100%;
                text-align:center;
                font-size:24px;
                font-weight:bold;
                padding:10px 15px;
                background-color:#efefef;
                border: 1px solid #dfdfdf;
                margin:20px;

        }


        select {
          color: #444;
          background-color: #FFF;
          border: 1px solid #AAA;
          border-radius: 4px;
          box-sizing: border-box;
          cursor: pointer;
          display: block;
          height:40px;
          line-height: 40px;
        }

        .historical_data_table  {
            table-layout: fixed;
                margin:20px;
        }

        .historical_data_table tbody tr td {

                padding:6px;
```

```
        vertical-align: middle !important;

}


.descriptors {

        text-align:center;
        font-size:14px;
        padding:15px;

}

.td_metric_name {

        width:110px;
        padding-top:17px;

}

.metric_link {

        font-size:14px;
        font-weight:bold;

}

.help_icon {

        width:15px;
        height:18px;
        padding-bottom:3px;

}

.td_min_value {

        width:75px;
        text-align:center;
        font-size:13px;

}

.td_max_value {

        width:75px;
        text-align:center;
        font-size:13px;

}

#myCombobox .form-control {
```

```css
            background-color: #99d5ff;


    }

    .dropdown-toggle {

            height:24px;
            padding-top:0px;
            padding-left:7px;
            width:24px;

    }

    .dropdown-menu-right {

            min-width:75px;
            font-size:13px;

    }

    .form-control {

            font-size:12px;
            padding:5px 10px;
            height:24px;


    }

    #myPills1 {

            margin:0px 15px 10px 0px;

    }

    #jqxgrid {

            border-radius:0px;

    }

    .jqx-widget-header {

        font-family: 'Roboto', sans-serif;
            font-size:13px;

    }

    .jqx-item {

        font-family: 'Roboto', sans-serif;
            font-size: 13px;
```

```css
    }

    .jqx-widget-content {

            border-color: #E0E0E0;

    }

    #jqxgrid .jqx-grid-cell {

            border-color: #E0E0E0;

    }

    #jqxgrid .jqx-grid-cell-pinned {

            border-color: #E0E0E0;
            background-color: #F5F5F5;

    }

    #jqxgrid .jqx-grid-column-header {

            border-color: #E0E0E0;
            background-color: #F5F5F5;

    }

    .clear_zero {

            height:0px;

    }



    /* Styles for Popup Charts */

    .tpd-size-large {

            margin:0px;
            padding: 0px;
    }

    .popup_window_wrapper {

            margin:15px;

    }

    .popup_stock_name {
```

```
            font-size:16px;
            font-weight:bold;
            margin:5px;

    }

    .popup_stock_attributes {

            font-size:13px;
            font-weight:bold;
            margin:5px;

    }

    .popup_stock_description {

            font-size:12px;
            margin:5px;

    }

    .jqx-input {

            font-size:14px;

    }

    .jqx-menu-item {

            font-size:14px;

    }

    .jqx-input {

            padding:5px 10px;

    }

    .nav-tabs {
        border: 1px solid #E0E0E0;
            background-color:#F5F5F5;
            padding: 3px 5px 0px 5px;
            margin: 0px 0px 10px 0px;
    }

    .nav-tabs>li>a {
            font-size:13px;
            padding:7px 11px;
            font-weight:600;
        margin-right: 0px;
        line-height: 1.42857143;
        border: 0px;
```

```css
    border-radius: 0px 0px 0 0;
        background-color:#F5F5F5;

}

.nav-tabs>li>a .active {
    margin-right: 0px;
    line-height: 1.42857143;
    border: 1px solid #E0E0E0;
    border-radius: 0px 0px 0 0;
        background-color:#F5F5F5;

}

.nav-tabs>li>a:hover {
    background-color: #F5F5F5;
        text-decoration: underline;

}

.donate_buttons {

        margin-left:20px;

        }

.modal-body {

        margin:10px 40px 20px 40px;
        text-align:left;
        font-size:18px;

}

.modal-body li {

        margin-top:20px;
        font-size:14px;

}

.modal_title {

        text-align:center;
        margin-bottom:30px;

}

.modal-body th{

        margin-left:10px;
```

```
            font-size:14px;
    }

    .modal-body td {

            color: #337ab7;
            margin-left:10px;
            font-size:14px;
    }

    .modal_button {

            margin-top:50px;
            text-align:center;
            font-size:16px;

    }
  </style>
 </head>
 <body class="fuelux">
  <!--[if lt IE 7]>
            <p class="browsehappy">You are using an <strong>outdated</stro
ng> browser. Please <a href="https://browsehappy.com/">upgrade your browse
r</a> to improve your experience.</p>
        <![endif]-->
  <div class="header_content_container container-fluid">
   <div class="header_parent_container">
    <div class="header_container">
     <div class="header_logo col-xs-2">
      <a class="logo" href="https://www.macrotrend
s Home Page">
       <img src="/assets/images/logo_bright1.png"/>
      </a>
     </div>
     <div class="col-xs-1 pull-right" style="padding-top:8px; margin-right
:10px; margin-left:0px; padding-left:0px;">
      <div id="ic_88x31_1">
      </div>
     </div>
     <div class="col-xs-5 pull-right" style="padding-top:8px;">
      <form>
       <div class="typeahead__container">
        <div class="typeahead__field">
         <span class="typeahead__query">
          <input autocomplete="off" autofocus="" class="js-typeahead" name
="q" placeholder="Search over 200,000 charts..." type="search"/>
         </span>
         <span class="typeahead__button">
          <button type="submit">
           <span class="typeahead__search-icon">
           </span>
          </button>
         </span>
```

```
        </div>
       </div>
      </form>
     </div>
    </div>
   </div>
  <div class="menu_parent_container">
   <div class="menu_container">
    <a href="/stocks/stock-screener">
     <div class="menu_item">
      Stock Screener
     </div>
    </a>
    <a href="/stocks/research">
     <div class="menu_item">
      Stock Research
     </div>
    </a>
    <a href="/charts/stock-indexes">
     <div class="menu_item">
      Market Indexes
     </div>
    </a>
    <a href="/charts/precious-metals">
     <div class="menu_item">
      Precious Metals
     </div>
    </a>
    <a href="/charts/energy">
     <div class="menu_item">
      Energy
     </div>
    </a>
    <a href="/charts/commodities">
     <div class="menu_item">
      Commodities
     </div>
    </a>
    <a href="/charts/exchange-rates">
     <div class="menu_item">
      Exchange Rates
     </div>
    </a>
    <a href="/charts/interest-rates">
     <div class="menu_item">
      Interest Rates
     </div>
    </a>
    <a href="/charts/economy">
     <div class="menu_item">
      Economy
     </div>
    </a>
```

```
       <a href="/countries/topic-overview">
        <div class="menu_item">
         Global Metrics
        </div>
       </a>
      </div>
     </div>
    </div>
    <div class="main_content_container container-fluid" id="main_content_con
tainer">
     <div class="adx_top_ad col-xs-12" id="ic_leaderboard" style="margin: 20
px 20px 30px 20px; min-height:265px; text-align:center;">
      <div id="IC_D_970x250_1">
      </div>
      <!--Smartad # 4058: Macrotrends - 970x250 Image - Placement 2-->
      <!--<iframe id="dianomi_leaderboard" WIDTH="970" HEIGHT="250" SCROLLIN
G="NO" src="//www.dianomi.com/smartads.epl?id=4058"  style="height: 250px;
border: none; overflow: hidden;"></iframe>-->
     </div>
     <div style="margin:20px 20px 20px 5px;">
      <h2 style="margin-left:0px; font-weight:600; color:#444;">
       Tesla Revenue 2010-2022 | TSLA
      </h2>
     </div>
     <div class="sub_main_content_container">
      <div id="main_content">
       <div class="navigation_tabs" style="margin-bottom:20px;">
        <ul class="nav nav-tabs" id="myTabs" style="font-size:15px;">
         <li>
          <a href="https://www.macrotrends.net/stocks/charts/TSLA/tesla/stoc
k-price-history">
           Prices
          </a>
         </li>
         <li>
          <a href="https://www.macrotrends.net/stocks/charts/TSLA/tesla/fina
ncial-statements">
           Financials
          </a>
         </li>
         <li class="active">
          <a href="https://www.macrotrends.net/stocks/charts/TSLA/tesla/reve
nue">
           Revenue &amp; Profit
          </a>
         </li>
         <li>
          <a href="https://www.macrotrends.net/stocks/charts/TSLA/tesla/tota
l-assets">
           Assets &amp; Liabilities
          </a>
         </li>
         <li>
```

```
          <a href="https://www.macrotrends.net/stocks/charts/TSLA/tesla/prof
it-margins">
            Margins
          </a>
        </li>
        <li>
          <a href="https://www.macrotrends.net/stocks/charts/TSLA/tesla/pe-r
atio">
            Price Ratios
          </a>
        </li>
        <li>
          <a href="https://www.macrotrends.net/stocks/charts/TSLA/tesla/curr
ent-ratio">
            Other Ratios
          </a>
        </li>
        <li>
          <a href="https://www.macrotrends.net/stocks/charts/TSLA/tesla/divi
dend-yield-history">
            Other Metrics
          </a>
        </li>
      </ul>
      <ul class="nav nav-tabs" id="myTabs" style="font-size:15px;">
        <li class="active">
          <a href="https://www.macrotrends.net/stocks/charts/TSLA/tesla/reve
nue">
            Revenue
          </a>
        </li>
        <li>
          <a href="https://www.macrotrends.net/stocks/charts/TSLA/tesla/gros
s-profit">
            Gross Profit
          </a>
        </li>
        <li>
          <a href="https://www.macrotrends.net/stocks/charts/TSLA/tesla/oper
ating-income">
            Operating Income
          </a>
        </li>
        <li>
          <a href="https://www.macrotrends.net/stocks/charts/TSLA/tesla/ebit
da">
            EBITDA
          </a>
        </li>
        <li>
          <a href="https://www.macrotrends.net/stocks/charts/TSLA/tesla/net-
income">
            Net Income
```

```
        </a>
      </li>
      <li>
       <a href="https://www.macrotrends.net/stocks/charts/TSLA/tesla/eps-
earnings-per-share-diluted">
         EPS
       </a>
      </li>
      <li>
       <a href="https://www.macrotrends.net/stocks/charts/TSLA/tesla/shar
es-outstanding">
         Shares Outstanding
       </a>
      </li>
     </ul>
    </div>
    <div style="background-color:#fff; margin: 0px 0px 20px 0px; padding:
20px 30px; border:1px solid #dfdfdf;">
     <span style="color:#444; line-height: 1.8;">
      Tesla annual/quarterly revenue history and growth rate from 2010 to
2022. Revenue can be defined as the amount of money a company receives fro
m its customers in exchange for the sales of goods or services.  Revenue i
s the top line item on an income statement from which all costs and expens
es are subtracted to arrive at net income.
       <ul style="margin-top:10px;">
        <li>
         Tesla revenue for the quarter ending September 30, 2022 was
          <strong>
           $21.454B
          </strong>
          , a
          <strong>
           55.95% increase
          </strong>
          year-over-year.
        </li>
        <li>
         Tesla revenue for the twelve months ending September 30, 2022 was
          <strong>
           $74.863B
          </strong>
          , a
          <strong>
           59.8% increase
          </strong>
          year-over-year.
        </li>
        <li>
         Tesla annual revenue for 2021 was
          <strong>
           $53.823B
          </strong>
          , a
```

```
    <strong>
     70.67% increase
    </strong>
    from 2020.
   </li>
   <li>
    Tesla annual revenue for 2020 was
    <strong>
     $31.536B
    </strong>
    , a
    <strong>
     28.31% increase
    </strong>
    from 2019.
   </li>
   <li>
    Tesla annual revenue for 2019 was
    <strong>
     $24.578B
    </strong>
    , a
    <strong>
     14.52% increase
    </strong>
    from 2018.
   </li>
  </ul>
 </span>
</div>
<div style="background-color:#fff; margin: 30px 0px 30px 0px; text-al
ign:center; min-height:90px;">
 <div id="ic_728x90_1" style="margin:10px 20px;">
 </div>
</div>
<div class="ticker_search_box" style="text-align:center;">
 <div style="width:400px; margin-left:20px; border-bottom:none;">
  <script type="text/javascript">
   $(document).ready(function () {

                                         var url = "https://www.macrotrends
.net/assets/php/ticker_search_list.php";

            // prepare the data
            var source =
            {
                datatype: "json",
                datafields: [
                    { name: 'n' },
                                            { name: 's'}
                ],
                url: url
            };
```

```
                    var dataAdapter = new $.jqx.dataAdapter(source);
                    // Create a jqxInput
                    $("#jqxInput").jqxInput({ source: dataAdapter, minLength:
1, placeHolder: "Search for ticker or company name...", items: 20, searchM
ode: 'containsignorecase', displayMember: "n", valueMember: "s", width: '1
00%', height: 22, theme: 'bootstrap'});
                    $("#jqxInput").on('select', function (event) {
                        if (event.args) {
                            var item = event.args.item;

                                                    //Have to split the ticker
and slug back out since jqxinput only seems to allow one data value
                                                    var itemArray = item.value
.split("\/");

                                                    var ticker = itemArray[0];
                                                    var slug = itemArray[1];
                        if (item) {


                                                    window.loc
ation = "https://www.macrotrends.net/stocks/charts/" + ticker + "/" + slug
+ "/revenue";


}
                        }
                    });
                });
        </script>
        <input autocomplete="off" id="jqxInput"/>
      </div>
      <div style="width:280px; margin-top: -32px; margin-left:80px; border
-bottom:none; float:right;">
        <button class="chart_buttons btn btn-success btn-sm" id="compareSto
cks" style="margin-right:15px;">
          <span class="glyphicon glyphicon-stats">
          </span>
          <strong>
           Compare TSLA With Other Stocks
          </strong>
        </button>
       </div>
      </div>
      <div style="height:690px; background-color:#fff; border:1px solid #df
dfdf;">
        <iframe frameborder="0" height="680" hspace="0" id="chart_iframe" ma
rgin="0px" marginheight="0" marginwidth="0" scrolling="NO" src="https://ww
w.macrotrends.net/assets/php/fundamental_iframe.php?t=TSLA&amp;type=revenu
e&amp;statement=income-statement&amp;freq=Q" title="Interactive chart: Tes
la Revenue 2010-2022 | TSLA" valign="middle" vspace="0" width="800">
        </iframe>
      </div>
      <div id="ic_video_ad" style="height:317px; margin:30px;">
```

```
      <div id="IC_D_3x6">
      </div>
    </div>
    <div style="background-color:#fff; margin: 30px 0px; padding:10px 30p
x; border:1px solid #dfdfdf;">
      <iframe frameborder="0" height="300" hspace="0" id="dianomi_below_ch
art" marginheight="0" marginwidth="0" scrolling="NO" src="//www.dianomi.co
m/smartads.epl?id=4057" valign="middle" vspace="0" width="100%">
      </iframe>
      <!--<div id="IC_D_3x7_BCC"></div>-->
    </div>
    <div id="style-1" style="background-color:#fff; height:510px; overflo
w:auto; margin: 30px 0px 30px 0px; padding:0px 30px 20px 0px; border:1px s
olid #dfdfdf;">
      <div class="col-xs-6">
       <table class="historical_data_table table">
        <thead>
         <tr>
          <th colspan="2" style="text-align:center">
           Tesla Annual Revenue
           <br/>
           <span style="font-size:14px;">
            (Millions of US $)
           </span>
          </th>
         </tr>
        </thead>
        <tbody>
         <tr>
          <td style="text-align:center">
           2021
          </td>
          <td style="text-align:center">
           $53,823
          </td>
         </tr>
         <tr>
          <td style="text-align:center">
           2020
          </td>
          <td style="text-align:center">
           $31,536
          </td>
         </tr>
         <tr>
          <td style="text-align:center">
           2019
          </td>
          <td style="text-align:center">
           $24,578
          </td>
         </tr>
         <tr>
```

```
  <td style="text-align:center">
   2018
  </td>
  <td style="text-align:center">
   $21,461
  </td>
 </tr>
 <tr>
  <td style="text-align:center">
   2017
  </td>
  <td style="text-align:center">
   $11,759
  </td>
 </tr>
 <tr>
  <td style="text-align:center">
   2016
  </td>
  <td style="text-align:center">
   $7,000
  </td>
 </tr>
 <tr>
  <td style="text-align:center">
   2015
  </td>
  <td style="text-align:center">
   $4,046
  </td>
 </tr>
 <tr>
  <td style="text-align:center">
   2014
  </td>
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       <br/>
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        (Millions of US $)
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          Market Cap
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          Revenue
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           Tesla is the market leader in battery-powered electric car sale
s in the United States, with roughly 70% market share. The company's flags
hip Model 3 is the best-selling EV model in the United States. Tesla, whic
h has managed to garner the reputation of a gold standard over the years,
is now a far bigger entity that what it started off since its IPO in 2010,
with its market cap crossing $1 trillion for the first time in October 202
1.? The EV king's market capitalization is more than the combined value of
legacy automakers including Toyota, Volkswagen, Daimler, General Motors an
d Ford.Over the years, Tesla has shifted from developing niche products fo
r affluent buyers to making more affordable EVs for the masses. The firm's
```

three-pronged business model approach of direct sales, servicing, and char
ging its EVs sets it apart from other carmakers. Tesla, which is touted as
the clean energy revolutionary automaker, is much more than just a car man
ufacturer.

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        </tbody>
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           Market Cap
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           PE Ratio
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            Ford Motor (F)

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    </div>
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center;">


                                          <h2 style="font-weight:600
;">Try our new<br />stock screener!</h2></a>

                                      </div>
                                    </a>-->
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     </script>
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 </div>
 <!--This is the div for the IC OOP ad-->
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 <footer class="footer">
  <span>
   © 2010-2022 Macrotrends LLC
  </span>
  |
  <a href="/terms">
   Terms of Service
  </a>
  |
  <a href="/privacy">
   Privacy Policy
  </a>
  |
  <a href="mailto:%69n%66o@%6Dac%72otrends%2En%65t">
   Contact Us
  </a>
  |
  <a href="/ccpa">
   Do Not Sell My Personal Information
  </a>
  <br/>
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       Fundamental data from
      </span>
      <a href="https://www.zacksdata.com" rel="nofollow" target="_blank">
       Zacks Investment Research, Inc.
      </a>
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      <div class="modal-dialog modal-lg">
       <div class="modal-content">
        <div class="modal-body">
         <div class="modal_title">
          <h2>
           <strong>
            We Need Your Support!
           </strong>
          </h2>
         </div>
         <p>
          Backlinks from other websites are the lifeblood of our site and a p
rimary source of new traffic.
         </p>
         <p>
         </p>
         <p>
          If you use our chart images on your site or blog, we ask that you p
rovide attribution via a "dofollow" link back to this page.  We have provi
ded a few examples below that you can copy and paste to your site:
         </p>
         <br/>
         <table class="table">
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             Link Preview
            </th>
            <th>
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              Tesla Revenue 2010-2022 | TSLA
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        </p>
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        </button>
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       <div class="modal-body">
        <div class="modal_title">
         <h2>
          <strong>
           We Need Your Support!
          </strong>
         </h2>
```

```
      </div>
      <p>
        Backlinks from other websites are the lifeblood of our site and a p
rimary source of new traffic.
      </p>
      <p>
      </p>
      <p>
        If you use our datasets on your site or blog, we ask that you provi
de attribution via a "dofollow" link back to this page.  We have provided
a few examples below that you can copy and paste to your site:
      </p>
      <br/>
      <table class="table">
       <thead>
        <tr>
         <th>
          Link Preview
         </th>
         <th>
          HTML Code (Click to Copy)
         </th>
        </tr>
       </thead>
       <tbody>
        <tr>
         <td>
          <a>
           Tesla Revenue 2010–2022 | TSLA
          </a>
         </td>
         <td>
          <input class="modal_link" size="50" type="text" value="&lt;a hre
f='https://www.macrotrends.net/stocks/charts/TSLA/tesla/revenue'&gt;Tesla
Revenue 2010–2022 | TSLA&lt;/a&gt;"/>
         </td>
        </tr>
        <tr>
         <td>
          <a>
           Macrotrends
          </a>
         </td>
         <td>
          <input class="modal_link" size="50" type="text" value="&lt;a hre
f='https://www.macrotrends.net/stocks/charts/TSLA/tesla/revenue'&gt;Macrot
rends&lt;/a&gt;"/>
         </td>
        </tr>
        <tr>
         <td>
          <a>
            Source
```

```
          </a>
        </td>
        <td>
         <input class="modal_link" size="50" type="text" value="&lt;a hre
f='https://www.macrotrends.net/stocks/charts/TSLA/tesla/revenue'&gt;Source
&lt;/a&gt;"/>
        </td>
       </tr>
      </tbody>
     </table>
     <br/>
     <p style="text-align:center">
      Your data export is now complete.  Please check your download folde
r.
     </p>
    </div>
    <div class="modal-footer">
     <button class="btn btn-primary" data-dismiss="modal" type="button">
      Close Window
     </button>
    </div>
   </div>
  </div>
 </div>
 <script type="text/javascript">
  $.typeahead({
             input: '.js-typeahead',
             minLength: 1,
             filter: false,  //Disables typahead filter to just show ev
erything in the results from the database
             debug: false,
             highlight: true,
             maxItem: 10,
             dynamic: true,
             delay: 200,
             searchOnFocus: true,
             backdrop: {
                     "background-color": "#fff"
             },
             href: "{{url}}",
             emptyTemplate: "no result for {{query}}",
             display: ["name"],
             source: {
                     users: {
                             ajax: {
                                     url: '/assets/php/all_pages_query.
php',
                                     data: {
                                             q: '{{query}}'
                                     }
                             }
                     }
             }
```

```
        });
    </script>
    <script>
     // /*! js-cookie v3.0.0-rc.1 | MIT */
         // !function(e,t){"object"==typeof exports&&"undefined"!=typeof mo
dule?module.exports=t():"function"==typeof define&&define.amd?define(t):(e
=e||self,function(){var n=e.Cookies,r=e.Cookies=t();r.noConflict=function(
){return e.Cookies=n,r}}())}(this,function(){"use strict";function e(e){fo
r(var t=1;t<arguments.length;t++){var n=arguments[t];for(var r in n)e[r]=n
[r]}return e}var t={read:function(e){return e.replace(/(%[\dA-F]{2})+/gi,d
ecodeURIComponent)},write:function(e){return encodeURIComponent(e).replace
(/%(2[346BF]|3[AC-F]|40|5[BDE]|60|7[BCD])/g,decodeURIComponent)}};return f
unction n(r,o){function i(t,n,i){if("undefined"!=typeof document){"number"
==typeof(i=e({},o,i)).expires&&(i.expires=new Date(Date.now()+864e5*i.expi
res)),i.expires&&(i.expires=i.expires.toUTCString()),t=encodeURIComponent(
t).replace(/%(2[346B]|5E|60|7C)/g,decodeURIComponent).replace(/[()]/g,esca
pe),n=r.write(n,t);var c="";for(var u in i)i[u]&&(c+="; "+u,!0!==i[u]&&(c+
="="+i[u].split(";")[0]));return document.cookie=t+"="+n+c}}return Object.
create({set:i,get:function(e){if("undefined"!=typeof document&&(!arguments
.length||e)){for(var n=document.cookie?document.cookie.split("; "):[],o={}
,i=0;i<n.length;i++){var c=n[i].split("="),u=c.slice(1).join("=");'"'===u[
0]&&(u=u.slice(1,-1));try{var f=t.read(c[0]);if(o[f]=r.read(u,f),e===f)bre
ak}catch(e){}}return e?o[e]:o}},remove:function(t,n){i(t,"",e({},n,{expire
s:-1}))},withAttributes:function(t){return n(this.converter,e({},this.attr
ibutes,t))},withConverter:function(t){return n(e({},this.converter,t),this
.attributes)}},{attributes:{value:Object.freeze(o)},converter:{value:Objec
t.freeze(r)}})}(t,{path:"/"})});


        // // Cookie Settings
        // var maxCookieValue = 4, initCookie = 1, expirationDays = 1;
        // var cookieName = "session_pageviews";
        // var getCookie = Cookies.get(cookieName);

        // // Under the Hood
        // if (getCookie == null) {
            // Cookies.set(cookieName, initCookie, { expires: expirati
onDays });
            // console.log('Cookie set to value 1');
            // $( "#ic_video_ad" ).append( "<div id=\"IC_D_3x6\" style
=\"margin:30px;\"></div>" );
        // } else {
            // if (getCookie >= initCookie && getCookie < maxCookieVal
ue) {
                // getCookie++;
                // Cookies.set(cookieName, getCookie, { expires: e
xpirationDays });
                // console.log('Cookie incremented. New value is '
+ getCookie);
                // $( "#ic_video_ad" ).append( "<div id=\"IC_D_3x6
\" style=\"margin:30px;\"></div>" );
            // }
            // else if (getCookie >= maxCookieValue && getCookie < 7)
```

```
{
                            // getCookie++;
                            // Cookies.set(cookieName, getCookie, { expires: e
xpirationDays });
                            // console.log('Cookie max allowed value reached.
No video ads showing. New value is ' + getCookie);
                            // //Cookies.remove(cookieName);
                            // // if cookie is equal with the number you've se
t, then do something
                            // // hide an element, delete the cookie etc...
                // }
                // else if (getCookie >= 7) {
                            // Cookies.remove(cookieName);
                            // // if cookie is equal with the number you've se
t, then do something
                            // // hide an element, delete the cookie etc...
                // }
        // }
  </script>
  <script>
   $(document).ready(function() {

        var user_data = '171.76.81.154';        var country_code = 'United
States';
        $.post('https://www.macrotrends.net/assets/php/user_frequency_trac
king.php', {user_ip: user_data, user_country: country_code});

        // Selects all of the text in the chart export window when clicked
        $(".modal_link").focus(function() {
                var $this = $(this);
                $this.select();

                // Work around Chrome's little problem
                $this.mouseup(function() {
                        // Prevent further mouseup intervention
                        $this.unbind("mouseup");
                        return false;
                });
        });


        $('[data-toggle="tooltip"]').tooltip();

    $('.statement_type_select').select2({

        theme: "classic",
        minimumResultsForSearch: 20

        });

    $('.frequency_select').select2({

        theme: "classic",
```

```
        minimumResultsForSearch: 20

    });


});

$( "#compareStocks" ).click(function() {


    window.location.href = '/stocks/stock-comparison?s=revenue&axis=si
ngle&comp=TSLA';


});

$( "#chartExport" ).click(function() {

            window.$('#smallWidthModal1').modal();

            //Turn off scroll bar for image export
            chart.chartScrollbarSettings.enabled = false;
            chart.validateNow();


            chart.export.capture({},function() {
                this.toPNG({},function(data) {
                    // Download the image to the browser
                    this.download( data, "image/png", "TSLA-re
venue-2022-12-09-macrotrends.png" );

                });

            //Turn scroll bar back on again
            chart.chartScrollbarSettings.enabled = true;
            chart.validateNow();

    });

});

$( ".statement_type_select" ).change(function() {

  window.location.href = 'https://testing.macrotrends.net/assets/php/incom
e_statement_testing.php?t=ZEV&type=' + this.value + '&freq=Q';

});

$( ".frequency_select" ).change(function() {

  window.location.href = '/assets/php/new_chart_page.php?t=ZEV&type=revenu
e&freq=' + this.value;
```

```
});
  </script>
  <!--<div class="modal" id="contribute_modal" tabindex="-1" role="dialog"
aria-labelledby="exampleModalLabel" aria-hidden="false">
    <div class="modal-dialog modal-lg">
      <div class="modal-content">
        <div class="modal-body" style="margin:20px 40px 20px 40px; text-alig
n:left;font-size:18px;">



<div class="row">

<div class="col-xs-6">

<script src="https://donorbox.org/widget.js" paypalExpress="true"></script
><iframe src="https://donorbox.org/embed/macrotrends-donations?hide_donati
on_meter=true" height="685px" width="100%" style="max-width:500px; min-wid
th:310px; max-height:none!important" seamless="seamless" name="donorbox" f
rameborder="0" scrolling="no" allowpaymentrequest></iframe>

</div>

<div class="col-xs-6">

                  <div class="modal_title"><h1><strong>We Need Your Support!
</strong></h1></div>

                  <p><strong>Macrotrends has been subscription-free since 20
10 and we want to keep it that way.</strong></p>

<p>Our goal has always been to serve as an easily accessible, high quality
source of investment research for both professionals and amateurs alike.</
p>

<p>Any amount that you can contribute will help ensure we can keep the sit
e completely free for many years to come.</p>

<p style="margin-top:20px;">Regards,</p>
<p>The Macrotrends Team</p>

</div>

</div>

</div>

      <div class="modal-footer" style="text-align:center;">
        <button type="button" class="btn btn-success" data-dismiss="modal"
>Maybe Next Time...</button>
      </div>
    </div>
  </div>
```

```html
</div>

<script src="/ads.js" type="text/javascript"></script>

<script>

$(document).ready(function() {

        var botPattern = "(googlebot\/|Googlebot-Mobile|Googlebot-Image|Go
ogle favicon|Mediapartners-Google|bingbot|slurp|java|wget|curl|Commons-Htt
pClient|Python-urllib|libwww|httpunit|nutch|phpcrawl|msnbot|jyxobot|FAST-W
ebCrawler|FAST Enterprise Crawler|biglotron|teoma|convera|seekbot|gigablas
t|exabot|ngbot|ia_archiver|GingerCrawler|webmon |httrack|webcrawler|grub.o
rg|UsineNouvelleCrawler|antibot|netresearchserver|speedy|fluffy|bibnum.bnf
|findlink|msrbot|panscient|yacybot|AISearchBot|IOI|ips-agent|tagoobot|MJ12
bot|dotbot|woriobot|yanga|buzzbot|mlbot|yandexbot|purebot|Linguee Bot|Voya
ger|CyberPatrol|voilabot|baiduspider|citeseerxbot|spbot|twengabot|postrank
|turnitinbot|scribdbot|page2rss|sitebot|linkdex|Adidxbot|blekkobot|ezooms|
dotbot|Mail.RU_Bot|discobot|heritrix|findthatfile|europarchive.org|NerdByN
ature.Bot|sistrix crawler|ahrefsbot|Aboundex|domaincrawler|wbsearchbot|sum
mify|ccbot|edisterbot|seznambot|ec2linkfinder|gslfbot|aihitbot|intelium_bo
t|facebookexternalhit|yeti|RetrevoPageAnalyzer|lb-spider|sogou|lssbot|care
erbot|wotbox|wocbot|ichiro|DuckDuckBot|lssrocketcrawler|drupact|webcompany
crawler|acoonbot|openindexspider|gnam gnam spider|web-archive-net.com.bot|
backlinkcrawler|coccoc|integromedb|content crawler spider|toplistbot|seoki
cks-robot|it2media-domain-crawler|ip-web-crawler.com|siteexplorer.info|eli
sabot|proximic|changedetection|blexbot|arabot|WeSEE:Search|niki-bot|Crysta
lSemanticsBot|rogerbot|360Spider|psbot|InterfaxScanBot|Lipperhey SEO Servi
ce|CC Metadata Scaper|g00g1e.net|GrapeshotCrawler|urlappendbot|brainobot|f
r-crawler|binlar|SimpleCrawler|Livelapbot|Twitterbot|cXensebot|smtbot|bnf.
fr_bot|A6-Indexer|ADmantX|Facebot|Twitterbot|OrangeBot|memorybot|AdvBot|Me
gaIndex|SemanticScholarBot|ltx71|nerdybot|xovibot|BUbiNG|Qwantify|archive.
org_bot|Applebot|TweetmemeBot|crawler4j|findxbot|SemrushBot|yoozBot|lipper
hey|y!j-asr|Domain Re-Animator Bot|AddThis)";

        var re = new RegExp(botPattern, 'i');

        if (re.test(navigator.userAgent)) {

        } else {

                //Check to see whether they are running an ad blocker
                if(document.getElementById('12mORwMnaEkJXlxz')){
                  var ad_blocker = 'N';
                } else {
                  var ad_blocker = 'Y';
                }

                $.post('https://api.ipstack.com/check?access_key=14fe63e83
d5cfefa0b3d4cec498479ba&output=json&fields=ip,continent_name,country_name,
region_name,city',
                function(ip_data){
```

```
                              $.post('https://www.macrotrends.net/assets/php/pag
e_view_tracking.php', {ip: ip_data.ip,continent: ip_data.continent_name, c
ountry: ip_data.country_name, state: ip_data.region_name, city: ip_data.ci
ty, screen_width: screen.width, ads: ad_blocker, page_type: 'stock'},
                                        function(data){
                                                /*
                                                if(data % 20 === 0) {

                                                        //$('#contribute_modal').m
odal();

                                                }
                                                */
                                        });

                        });


                }


        });


        $.post('https://api.ipstack.com/check?access_key=14fe63e83d5cfefa0b3d4cec4
98479ba&output=json&fields=ip,continent_name,country_name,region_name,city
',
        function(ip_data){

                $(".contribute_user_id").val(ip_data.ip);

        });

        $( ".donate_buttons" ).click(function() {

                var payment = $(this).attr("value");

                $.post('https://api.ipstack.com/check?access_key=14fe63e83d5cfefa0
b3d4cec498479ba&output=json&fields=ip,continent_name,country_name,region_n
ame,city',
                        function(ip_data){

                        $.post('https://www.macrotrends.net/assets/php/page_view_t
racking.php', {ip: ip_data.ip, paid: payment});

                });

        });

</script>

-->
```

```html
<script type="text/javascript">
  var clicky_site_ids = clicky_site_ids || [];
clicky_site_ids.push(100827248);
(function() {
  var s = document.createElement('script');
  s.type = 'text/javascript';
  s.async = true;
  s.src = '//static.getclicky.com/js';
  ( document.getElementsByTagName('head')[0] || document.getElementsByTagN
ame('body')[0] ).appendChild( s );
})();
  </script>
  <noscript>
   <p>
    <img alt="Clicky" height="1" src="//in.getclicky.com/100827248ns.gif"
width="1"/>
   </p>
  </noscript>
  <!-- This site is converting visitors into subscribers and customers wit
h OptinMonster - https://optinmonster.com -->
  <!-- <script type="text/javascript" src="https://a.omappapi.com/app/js/a
pi.min.js" data-account="6392" data-user="15772" async></script> -->
  <!-- / OptinMonster -->
 </body>
</html>
```

Using `BeautifulSoup` or the `read_html` function extract the table with `Tesla Revenue` and store it into a dataframe named `tesla_revenue`. The dataframe should have columns `Date` and `Revenue`.

▶ Step-by-step instructions

▶ Click here if you need help locating the table

```
In [30]: tesla_revenue = pd.read_html(html_data, match="Tesla Quarterly Revenue")[
         tesla_revenue.rename(inplace=True, columns={"Tesla Quarterly Revenue(Mill
```

Execute the following line to remove the comma and dollar sign from the `Revenue` column.

```
In [31]: tesla_revenue["Revenue"] = tesla_revenue['Revenue'].str.replace(',|\$',""
```

```
---------------------------------------------------------------------------
-
KeyError                                  Traceback (most recent call last
)
File /opt/conda/lib/python3.11/site-packages/pandas/core/indexes/base.py:3
805, in Index.get_loc(self, key)
   3804 try:
-> 3805     return self._engine.get_loc(casted_key)
```

```
   3806 except KeyError as err:

File index.pyx:167, in pandas._libs.index.IndexEngine.get_loc()

File index.pyx:196, in pandas._libs.index.IndexEngine.get_loc()

File pandas/_libs/hashtable_class_helper.pxi:7081, in pandas._libs.hashtab
le.PyObjectHashTable.get_item()

File pandas/_libs/hashtable_class_helper.pxi:7089, in pandas._libs.hashtab
le.PyObjectHashTable.get_item()

KeyError: 'Revenue'

The above exception was the direct cause of the following exception:

KeyError                                 Traceback (most recent call last
)
Cell In[31], line 1
----> 1 tesla_revenue["Revenue"] = tesla_revenue['Revenue'].str.replace(',
|\$',"",regex=True)

File /opt/conda/lib/python3.11/site-packages/pandas/core/frame.py:4102, in
DataFrame.__getitem__(self, key)
   4100 if self.columns.nlevels > 1:
   4101     return self._getitem_multilevel(key)
-> 4102 indexer = self.columns.get_loc(key)
   4103 if is_integer(indexer):
   4104     indexer = [indexer]

File /opt/conda/lib/python3.11/site-packages/pandas/core/indexes/base.py:3
812, in Index.get_loc(self, key)
   3807     if isinstance(casted_key, slice) or (
   3808         isinstance(casted_key, abc.Iterable)
   3809         and any(isinstance(x, slice) for x in casted_key)
   3810     ):
   3811         raise InvalidIndexError(key)
-> 3812     raise KeyError(key) from err
   3813 except TypeError:
   3814     # If we have a listlike key, _check_indexing_error will raise
   3815     #  InvalidIndexError. Otherwise we fall through and re-raise
   3816     #  the TypeError.
   3817     self._check_indexing_error(key)

KeyError: 'Revenue'
```

In [51]:
```
tesla_revenue.dropna(inplace=True)
tesla_revenue = tesla_revenue[tesla_revenue['Revenue'] != ""]
```

Display the last 5 row of the `tesla_revenue` dataframe using the `tail` function.
Take a screenshot of the results.

In [32]:
```
tesla_revenue.tail(5)
```

Out[32]:

	Tesla Quarterly Revenue (Millions of US $)	Tesla Quarterly Revenue (Millions of US $).1
49	2010-06-30	$28
50	2010-03-31	$21
51	2009-12-31	NaN
52	2009-09-30	$46
53	2009-06-30	$27

Question 3: Use yfinance to Extract Stock Data

Using the `Ticker` function enter the ticker symbol of the stock we want to extract data on to create a ticker object. The stock is GameStop and its ticker symbol is `GME`.

In [52]:
```python
gme = yf.Ticker('GME')
```

Using the ticker object and the function `history` extract stock information and save it in a dataframe named `gme_data`. Set the `period` parameter to `"max"` so we get information for the maximum amount of time.

In [53]:
```python
gme_data = gme.history(period='max')
```

Reset the index using the `reset_index(inplace=True)` function on the gme_data DataFrame and display the first five rows of the `gme_data` dataframe using the `head` function. Take a screenshot of the results and code from the beginning of Question 3 to the results below.

In [54]:
```python
gme_data.reset_index(inplace=True)
gme_data.head()
```

Out[54]:

	Date	Open	High	Low	Close	Volume	Dividends	Stock Splits
0	2002-02-13 00:00:00-05:00	1.620129	1.693350	1.603296	1.691667	76216000	0.0	0.0
1	2002-02-14 00:00:00-05:00	1.712707	1.716074	1.670626	1.683250	11021600	0.0	0.0
2	2002-02-15 00:00:00-05:00	1.683250	1.687458	1.658002	1.674834	8389600	0.0	0.0
3	2002-02-19 00:00:00-05:00	1.666418	1.666418	1.578047	1.607504	7410400	0.0	0.0
4	2002-02-20 00:00:00-05:00	1.615920	1.662210	1.603296	1.662210	6892800	0.0	0.0

Question 4: Use Webscraping to Extract GME Revenue Data

Use the `requests` library to download the webpage https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-PY0220EN-SkillsNetwork/labs/project/stock.html. Save the text of the response as a variable named `html_data_2`.

In [55]:
```
url = "https://www.macrotrends.net/stocks/charts/GME/gamestop/revenue"
html_data = requests.get(url).text
```

Parse the html data using `beautiful_soup` using parser i.e `html5lib` or `html.parser`.

In [56]:
```
soup = BeautifulSoup(html_data, 'html5lib')
print(soup.prettify())
```

```
<html>
 <head>
 </head>
 <body>
  <div style="margin: 50px auto; width: 50%; border: 1px solid #dfdfdf; pa
dding: 20px 50px 30px 50px; font-family:helvetica;">
```

```
    <h1>
     We do not allow automated access to our servers.
    </h1>
    <h2>
     <p>
      Automated access to our data is prohibited by our data provider.
     </p>
     <p>
      If you are a user attempting to access the site via a browser, please
follow this process to regain access:
     </p>
     <ul>
      <li>
       Go to
       <a href="https://whatismyipaddress.com/" rel="noopener noreferrer" t
arget="_blank">
        whatismyipaddress
       </a>
       and obtain your IPv4 address
      </li>
      <li>
       Email us your IPv4 address at
       <a class="__cf_email__" data-cfemail="4821262e270825292b3a273c3a2d26
2c3b66262d3c" href="/cdn-cgi/l/email-protection">
        [email protected]
       </a>
      </li>
      <li>
       We will add you to our whitelist within 24 hours
      </li>
     </ul>
    </h2>
   </div>
   <script data-cfasync="false">
    !function(){"use strict";function e(e){try{if("undefined"==typeof conso
le)return;"error"in console?console.error(e):console.log(e)}catch(e){}}fun
ction t(e,t){var r=e.substr(t,2);return parseInt(r,16)}function r(r,n){for
(var c="",o=t(r,n),a=n+2;a<r.length;a+=2){var l=t(r,a)^o;c+=String.fromCha
rCode(l)}try{c=decodeURIComponent(escape(c))}catch(t){e(t)}return function
(e){return i.innerHTML='<a href="'+e.replace(/"/g,"&quot;")+'"></a>',i.chi
ldNodes[0].getAttribute("href")||""}(c)}function n(t){try{(function(t){for
(var n=t.querySelectorAll("a"),o=0;o<n.length;o++)try{var a=n[o],i=a.href.
indexOf(c);i>-1&&(a.href="mailto:"+r(a.href,i+c.length))}catch(t){e(t)}})(
t),function(t){for(var n=t.querySelectorAll(o),c=0;c<n.length;c++)try{var
i=n[c],l=i.parentNode,u=i.getAttribute(a);if(u){var f=r(u,0),d=document.cr
eateTextNode(f);l.replaceChild(d,i)}}catch(t){e(t)}}(t),function(t){for(va
r r=t.querySelectorAll("template"),c=0;c<r.length;c++)try{n(r[c].content)}
catch(t){e(t)}}(t)}catch(t){e(t)}}var c="/cdn-cgi/l/email-protection#",o="
.__cf_email__",a="data-cfemail",i=document.createElement("div");n(document
),function(){var e=document.currentScript||document.scripts[document.scrip
ts.length-1];e.parentNode.removeChild(e)}()}();
   </script>
   <script>
```

```
    (function(){function c(){var b=a.contentDocument||a.contentWindow.docum
ent;if(b){var d=b.createElement('script');d.innerHTML="window.__CF$cv$para
ms={r:'8b2179dc2f602054',t:'MTcyMzQ3NjMwNS4wMDAwMDA='};var a=document.crea
teElement('script');a.nonce='';a.src='/cdn-cgi/challenge-platform/scripts/
jsd/main.js';document.getElementsByTagName('head')[0].appendChild(a);";b.g
etElementsByTagName('head')[0].appendChild(d)}}if(document.body){var a=doc
ument.createElement('iframe');a.height=1;a.width=1;a.style.position='absol
ute';a.style.top=0;a.style.left=0;a.style.border='none';a.style.visibility
='hidden';document.body.appendChild(a);if('loading'!==document.readyState)
c();else if(window.addEventListener)document.addEventListener('DOMContentL
oaded',c);else{var e=document.onreadystatechange||function(){};document.on
readystatechange=function(b){e(b);'loading'!==document.readyState&&(docume
nt.onreadystatechange=e,c())}}}})();
  </script>
 </body>
</html>
```

Using `BeautifulSoup` or the `read_html` function extract the table with `GameStop Revenue` and store it into a dataframe named `gme_revenue`. The dataframe should have columns `Date` and `Revenue`. Make sure the comma and dollar sign is removed from the `Revenue` column.

> **Note: Use the method similar to what you did in question 2.**

▶ Click here if you need help locating the table

In [ ]:

In [57]:
```python
gme_revenue = pd.DataFrame(columns = ['Date', 'Revenue'])
gme_body = soup.find_all("tbody")[1]

for row in tesla_body.find_all("tr"):
    col = row.find_all("td")
    date = col[0].text
    revenue = col[1].text.replace("$", "").replace(",", "")

    gme_revenue = gme_revenue.append({"Date": date, "Revenue": revenue},
```

```
---------------------------------------------------------------------------
IndexError                                Traceback (most recent call last
)
Cell In[57], line 2
      1 gme_revenue = pd.DataFrame(columns = ['Date', 'Revenue'])
----> 2 gme_body = soup.find_all("tbody")[1]
      4 for row in tesla_body.find_all("tr"):
      5     col = row.find_all("td")

IndexError: list index out of range
```

Display the last five rows of the `gme_revenue` dataframe using the `tail` function. Take a screenshot of the results.

```
In [58]:  gme_revenue.tail(5)
```

Out[58]:   **Date   Revenue**

```
In [59]:  gme_revenue.tail(5)
```

Out[59]:   **Date   Revenue**

Question 5: Plot Tesla Stock Graph

▶ Hint

```
In [60]:  make_graph(tesla_data[['Date','Close']], tesla_revenue, 'Tesla')
```

Question 6: Plot GameStop Stock Graph

Use the `make_graph` function to graph the GameStop Stock Data, also provide a title for the graph. The structure to call the `make_graph` function is `make_graph(gme_data, gme_revenue, 'GameStop')`. Note the graph will only show data upto June 2021.

▶ Hint

```
You just need to invoke the make_graph function with the
required parameter to print the graphs.The structure to
call the `make_graph` function is `make_graph(gme_data,
gme_revenue, 'GameStop')`
```

In [61]:
```python
make_graph(gme_data,gme_revenue, 'GameStop')
```

About the Authors:

Joseph Santarcangelo has a PhD in Electrical Engineering, his research focused on using machine learning, signal processing, and computer vision to determine how videos impact human cognition. Joseph has been working for IBM since he completed his PhD.

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In [ ]:

In [ ]:

In [42]: `#jitendra vaish`

In [ ]: