(https://skills.network/?utm_medium=Exinfluencer&utm_source=Exinfluencer&utm_content=000026UJ&utm_term=10006555&utm_id=NA-SkillsNetwork-Channel-SkillsNetworkCoursesIBMDeveloperSkillsNetworkPY0220ENSkillsNetwork900-2022-01-01)

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**

In [2]:
```
!pip install yfinance==0.1.67
!mamba install bs4==4.10.0 -y
!pip install nbformat==4.2.0
```

```
Requirement already satisfied: yfinance==0.1.67 in c:\users\dellpc\anaconda3\lib\site-packages (0.1.67)
Requirement already satisfied: pandas>=0.24 in c:\users\dellpc\anaconda3\lib\site-packages (from yfinance==0.1.6
7) (1.2.4)
Requirement already satisfied: numpy>=1.15 in c:\users\dellpc\anaconda3\lib\site-packages (from yfinance==0.1.67)
(1.23.3)
Requirement already satisfied: multitasking>=0.0.7 in c:\users\dellpc\anaconda3\lib\site-packages (from yfinance=
=0.1.67) (0.0.11)
Requirement already satisfied: requests>=2.20 in c:\users\dellpc\anaconda3\lib\site-packages (from yfinance==0.1.
67) (2.25.1)
Requirement already satisfied: lxml>=4.5.1 in c:\users\dellpc\anaconda3\lib\site-packages (from yfinance==0.1.67)
(4.6.4)
Requirement already satisfied: python-dateutil>=2.7.3 in c:\users\dellpc\anaconda3\lib\site-packages (from pandas
>=0.24->yfinance==0.1.67) (2.8.1)
Requirement already satisfied: pytz>=2017.3 in c:\users\dellpc\anaconda3\lib\site-packages (from pandas>=0.24->yf
inance==0.1.67) (2021.1)
Requirement already satisfied: six>=1.5 in c:\users\dellpc\anaconda3\lib\site-packages (from python-dateutil>=2.
7.3->pandas>=0.24->yfinance==0.1.67) (1.15.0)
Requirement already satisfied: idna<3,>=2.5 in c:\users\dellpc\anaconda3\lib\site-packages (from requests>=2.20->
yfinance==0.1.67) (2.10)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\dellpc\anaconda3\lib\site-packages (from requests>=
2.20->yfinance==0.1.67) (2020.12.5)
Requirement already satisfied: urllib3<1.27,>=1.21.1 in c:\users\dellpc\anaconda3\lib\site-packages (from request
s>=2.20->yfinance==0.1.67) (1.26.4)
Requirement already satisfied: chardet<5,>=3.0.2 in c:\users\dellpc\anaconda3\lib\site-packages (from requests>=
2.20->yfinance==0.1.67) (4.0.0)

usage: mamba [-h] [--version] [--slow SLOW] [--enable-coverage]
             [--coverage-file COVERAGE_FILE] [--format FORMAT] [--no-color]
             [--tags TAGS]
             [specs [specs ...]]
mamba: error: unrecognized arguments: -y
```

```
Requirement already satisfied: nbformat==4.2.0 in c:\users\dellpc\anaconda3\lib\site-packages (4.2.0)
Requirement already satisfied: jsonschema!=2.5.0,>=2.4 in c:\users\dellpc\anaconda3\lib\site-packages (from nbfor
mat==4.2.0) (3.2.0)
Requirement already satisfied: traitlets>=4.1 in c:\users\dellpc\anaconda3\lib\site-packages (from nbformat==4.2.
0) (5.0.5)
Requirement already satisfied: ipython-genutils in c:\users\dellpc\anaconda3\lib\site-packages (from nbformat==4.
2.0) (0.2.0)
Requirement already satisfied: jupyter-core in c:\users\dellpc\anaconda3\lib\site-packages (from nbformat==4.2.0)
(4.7.1)
Requirement already satisfied: six>=1.11.0 in c:\users\dellpc\anaconda3\lib\site-packages (from jsonschema!=2.5.
0,>=2.4->nbformat==4.2.0) (1.15.0)
Requirement already satisfied: attrs>=17.4.0 in c:\users\dellpc\anaconda3\lib\site-packages (from jsonschema!=2.
5.0,>=2.4->nbformat==4.2.0) (20.3.0)
Requirement already satisfied: setuptools in c:\users\dellpc\anaconda3\lib\site-packages (from jsonschema!=2.5.0,
>=2.4->nbformat==4.2.0) (52.0.0.post20210125)
Requirement already satisfied: pyrsistent>=0.14.0 in c:\users\dellpc\anaconda3\lib\site-packages (from jsonschem
a!=2.5.0,>=2.4->nbformat==4.2.0) (0.17.3)
Requirement already satisfied: pywin32>=1.0 in c:\users\dellpc\anaconda3\lib\site-packages (from jupyter-core->nb
format==4.2.0) (227)
```

In [3]:

```
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
```

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 [4]:
```
def make_graph(stock_data, revenue_data, stock):
    fig = make_subplots(rows=2, cols=1, shared_xaxes=True, subplot_titles=("Historical Share Price", "Historical R
    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, infer_datetime_format=True), y=stock_data_
    fig.add_trace(go.Scatter(x=pd.to_datetime(revenue_data_specific.Date, infer_datetime_format=True), y=revenue_d
    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()
```

Question 1: 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 Tesla and its ticker symbol is `TSLA`.

In [5]:
```
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 [6]:
```
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 [7]:
```
tesla_data.reset_index(inplace=True)
tesla_data.head(5)
```

Out[7]:

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

In [27]:
```
tesla_data.tail(5)
```

Out[27]:

	Date	Open	High	Low	Close	Volume	Dividends	Stock Splits
3240	2023-05-12	176.070007	177.380005	167.229996	167.979996	157577100	0	0.0
3241	2023-05-15	167.660004	169.759995	164.550003	166.350006	105592500	0	0.0
3242	2023-05-16	165.649994	169.520004	164.350006	166.520004	98288800	0	0.0
3243	2023-05-17	168.410004	174.500000	167.190002	173.860001	125473600	0	0.0
3244	2023-05-18	174.220001	176.500000	172.449997	176.479996	99249842	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 (https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-PY0220EN-SkillsNetwork/labs/project/revenue.htm)](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 [8]:
```
url = "https://www.macrotrends.net/stocks/charts/TSLA/tesla/revenue"
html_data = requests.get(url).text
```

Parse the html data using `beautiful_soup` .

In [9]:
```
soup = BeautifulSoup(html_data, "html5lib")
print(soup.prettify())
```

```
});

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

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

        $.post('https://api.ipstack.com/check?access_key=14fe63e83d5cfefa0b3d4cec498479ba&output=json&fields=ip,continent_name,country_name,region_name,city',
                function(ip_data){

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

        });

});

</script>

-->
```

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

Click here if you need help locating the table

In [14]:
```
tesla_revenue = pd.DataFrame(columns = ["Date","Revenue"])

for table in soup.find_all('table'):
    if table.find('th').getText().startswith("GameStop Quarterly Revenue"):
        for row in table.find("tbody").find_all("tr"):
            col = row.find_all("td")
            if len(col) != 2: continue
            Date = col[0].text
            Revenue = col[1].text.replace("$","").replace(",","")

            tesla_revenue = tesla_revenue.append({"Date":Date, "Revenue":Revenue}, ignore_index=True)
```

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

In [15]:
```
tesla_revenue["Revenue"] = tesla_revenue['Revenue'].str.replace(',|\$',"")
```

```
<ipython-input-15-2aef5327de36>:1: FutureWarning: The default value of regex will change from True to False in a
future version.
  tesla_revenue["Revenue"] = tesla_revenue['Revenue'].str.replace(',|\$',"")
```

Execute the following lines to remove an null or empty strings in the Revenue column.

In [16]:
```
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 [17]:
```
tesla_revenue.tail()
```

Out[17]:

	Date	Revenue

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 [18]:
```
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 [19]:
```
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 [20]:
```
gme_data.reset_index(inplace=True)
gme_data.head(5)
```

Out[20]:

	Date	Open	High	Low	Close	Volume	Dividends	Stock Splits
0	2002-02-13	1.620129	1.693350	1.603296	1.691667	76216000	0.0	0.0
1	2002-02-14	1.712707	1.716074	1.670626	1.683250	11021600	0.0	0.0
2	2002-02-15	1.683250	1.687458	1.658001	1.674834	8389600	0.0	0.0
3	2002-02-19	1.666418	1.666418	1.578047	1.607504	7410400	0.0	0.0
4	2002-02-20	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 (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`.

In [21]:
```
url = "https://www.macrotrends.net/stocks/charts/GME/gamestop/revenue"
html_data = requests.get(url).text
```

Parse the html data using `beautiful_soup`.

In [22]:
```
soup = BeautifulSoup(html_data, "html5lib")
print(soup.prettify())
```

```
<link href="//cdnjs.cloudflare.com/ajax/libs/select2/4.0.3/css/select2.min.css" rel="stylesheet" />
<script src="//cdnjs.cloudflare.com/ajax/libs/select2/4.0.3/js/select2.min.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="stylesheet"/>
<!-- 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-11e8-82a5-0abbb61c4a6a");
      });

              var tickerValue = 'GME';
```

Using `BeautifulSoup` or the `read_html` function extract the table with `GameStop Quarterly 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 using a method similar to what you did in Question 2.

Click here if you need help locating the table

In [23]:
```
gme_revenue = pd.DataFrame(columns = ["Date","Revenue"])

for table in soup.find_all('table'):
    if table.find('th').getText().startswith("GameStop Quarterly Revenue"):
        for row in table.find("tbody").find_all("tr"):
            col = row.find_all("td")
            if len(col) != 2: continue
            Date = col[0].text
            Revenue = col[1].text.replace("$","").replace(",","")

            gme_revenue = gme_revenue.append({"Date":Date, "Revenue":Revenue}, ignore_index=True)
```

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

In [24]:
```
gme_revenue.tail(5)
```

Out[24]:

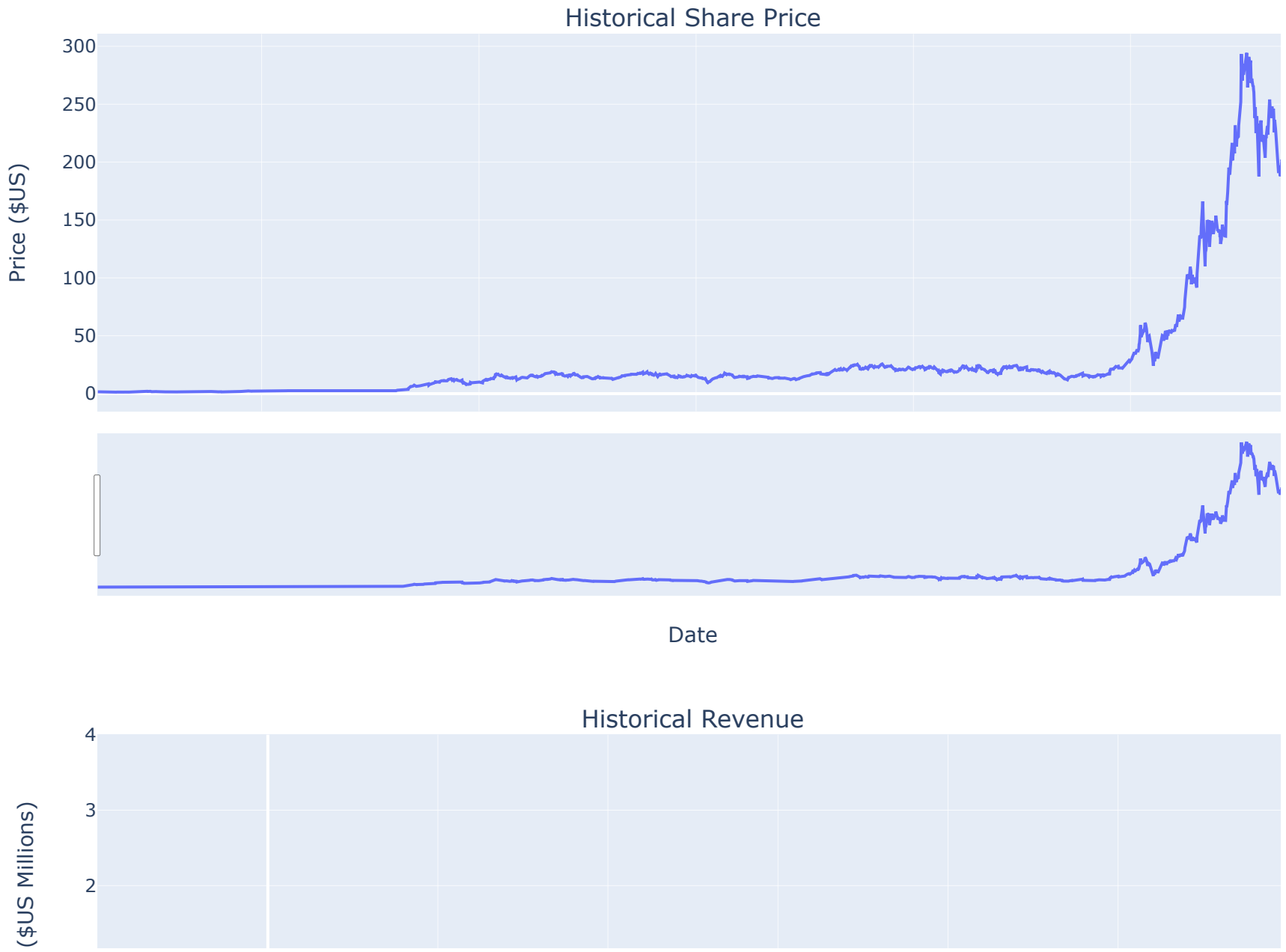
	Date	Revenue
52	2010-01-31	3524
53	2009-10-31	1835
54	2009-07-31	1739
55	2009-04-30	1981
56	2009-01-31	3492

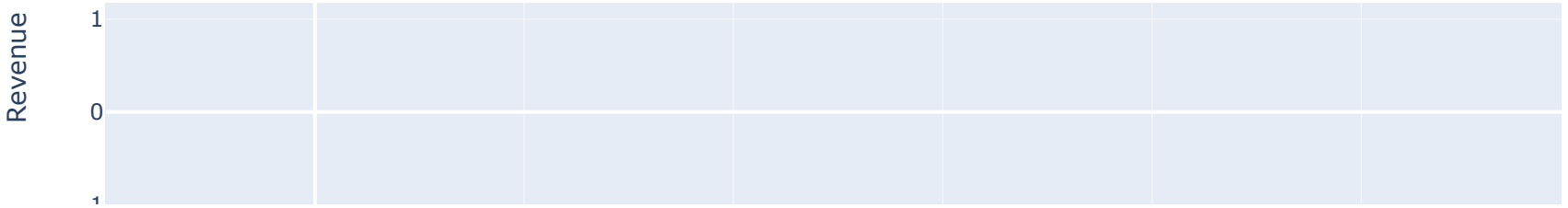
Question 5: Plot Tesla Stock Graph

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

In [25]:
```
make_graph(tesla_data, tesla_revenue, 'Tesla')
```

Tesla


Historical Share Price
Price ($US)
300
250
200
150
100
50
0
Date
Historical Revenue
($US Millions)
4
3
2

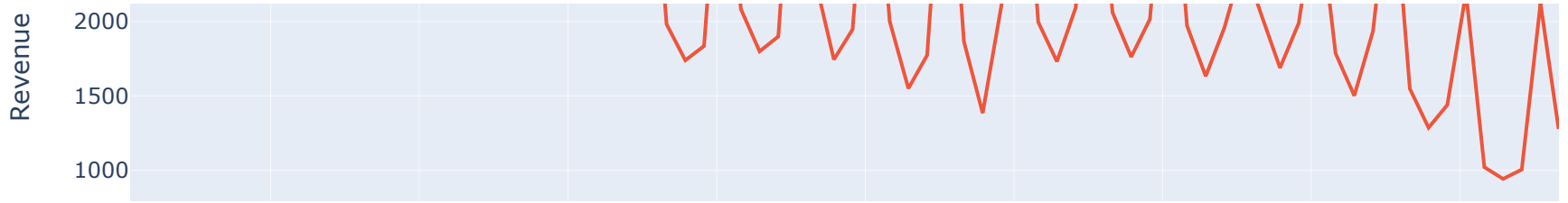


Question 6: Plot GameStop Stock Graph

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.

In [26]:
```
make_graph(gme_data, gme_revenue, 'GameStop')
```


GameStop
Historical Share Price
Price ($US)
80
60
40
20
0
Date
Historical Revenue
($US Millions)
3500
3000
2500



About the Authors:

Joseph Santarcangelo (https://www.linkedin.com/in/joseph-s-50398b136/?utm_medium=Exinfluencer&utm_source=Exinfluencer&utm_content=000026UJ&utm_term=10006555&utm_id=NA-SkillsNetwork-Channel-SkillsNetworkCoursesIBMDeveloperSkillsNetworkPY0220ENSkillsNetwork900-2022-01-01) 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.

Azim Hirjani

Change Log

Date (YYYY-MM-DD)	Version	Changed By	Change Description
2022-02-28	1.2	Lakshmi Holla	Changed the URL of GameStop
2020-11-10	1.1	Malika Singla	Deleted the Optional part
2020-08-27	1.0	Malika Singla	Added lab to GitLab