

TRADE HARBOR: Learn, Analyze, Invest

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TRADE HARBOR

— LEARN, ANALYZE, INVEST. —

1. Introduction & Motivation

TradeHarbor represents a pioneering initiative set to transform the stock market investment arena by furnishing users with unmatched insights and predictive analytics for long term. The platform unveils an advanced algorithm that can evaluate the future performance of listed companies through meticulous testing across 24 critical parameters. This algorithm empowers users with a thorough assessment of different companies, thereby facilitating informed investment choices with assurance.

1.Introduction & Motivation

SDG's Incorporated

- SDG 4: Quality Education
- SDG 8: Decent Work & Economic Growth

2.Problem Statement

1. **Lack of Financial Literacy:** A considerable segment of the population lacks essential knowledge about the stock market, inhibiting their capacity to make informed investment choices.

2. Problem Statement

Let's consider the balance sheet of Reliance Industries

Reliance Industries		Previous Years »				
Standalone Balance Sheet		----- in Rs. Cr. -----				
	Mar 23	Mar 22	Mar 21	Mar 20	Mar 19	
	12 mths	12 mths	12 mths	12 mths	12 mths	
EQUITIES AND LIABILITIES						
SHAREHOLDER'S FUNDS						
Equity Share Capital	6,766.00	6,765.00	6,445.00	6,339.00	6,339.00	
Total Share Capital	6,766.00	6,765.00	6,445.00	6,339.00	6,339.00	
Reserves and Surplus	472,328.00	464,762.00	468,038.00	384,875.00	398,983.00	
Total Reserves and Surplus	472,328.00	464,762.00	468,038.00	384,875.00	398,983.00	
Total Shareholders Funds	479,094.00	471,527.00	474,483.00	391,214.00	405,322.00	
Equity Share Application Money	0.00	0.00	0.00	1.00	0.00	
NON-CURRENT LIABILITIES						
Long Term Borrowings	135,561.00	167,231.00	160,598.00	194,402.00	118,098.00	
Deferred Tax Liabilities [Net]	33,968.00	30,832.00	30,788.00	50,556.00	47,317.00	
Other Long Term Liabilities	3,370.00	6,504.00	4,518.00	3,434.00	504.00	
Long Term Provisions	1,296.00	1,598.00	1,499.00	1,410.00	2,483.00	
Total Non-Current Liabilities	174,195.00	206,165.00	197,403.00	249,802.00	168,402.00	
CURRENT LIABILITIES						
Short Term Borrowings	80,262.00	27,332.00	33,152.00	59,899.00	39,097.00	
Trade Payables	110,722.00	134,005.00	86,999.00	71,048.00	88,241.00	
Other Current Liabilities	45,366.00	38,749.00	80,735.00	198,662.00	73,900.00	
Short Term Provisions	926.00	896.00	901.00	1,073.00	783.00	
Total Current Liabilities	237,276.00	200,982.00	201,787.00	330,682.00	202,021.00	
Total Capital And Liabilities	890,565.00	878,674.00	873,673.00	971,699.00	775,745.00	
ASSETS						
NON-CURRENT ASSETS						
Tangible Assets	232,238.00	223,824.00	292,092.00	297,854.00	194,895.00	
Intangible Assets	12,926.00	15,802.00	14,741.00	8,624.00	8,293.00	
Capital Work-In-Progress	30,958.00	19,267.00	20,765.00	15,638.00	105,155.00	
Intangible Assets Under Development	17,957.00	15,395.00	12,070.00	12,327.00	6,402.00	
Fixed Assets	294,079.00	274,288.00	339,668.00	334,443.00	314,745.00	
Non-Current Investments	303,558.00	330,493.00	252,620.00	421,793.00	272,043.00	
Long Term Loans And Advances	22,448.00	41,951.00	65,698.00	44,348.00	31,806.00	

2. Problem Statement

Trade Receivables	16,898.00	14,394.00	4,159.00	7,483.00	12,110.00
Cash And Cash Equivalents	56,811.00	21,714.00	5,573.00	8,485.00	3,768.00
Short Term Loans And Advances	595.00	161.00	993.00	15,028.00	4,876.00
OtherCurrentAssets	56,628.00	61,902.00	67,892.00	26,826.00	28,326.00
Total Current Assets	265,932.00	222,398.00	210,719.00	166,654.00	152,864.00
Total Assets	890,565.00	878,674.00	873,673.00	971,699.00	775,745.00

https://www.moneycontrol.com/stocks/company_info/print_main.php

1/2

4/18/24, 12:55 PM

Reliance Industries | Standalone Balance Sheet > Refineries > Standalone Balance Sheet of Reliance Industries - BSE: 500...

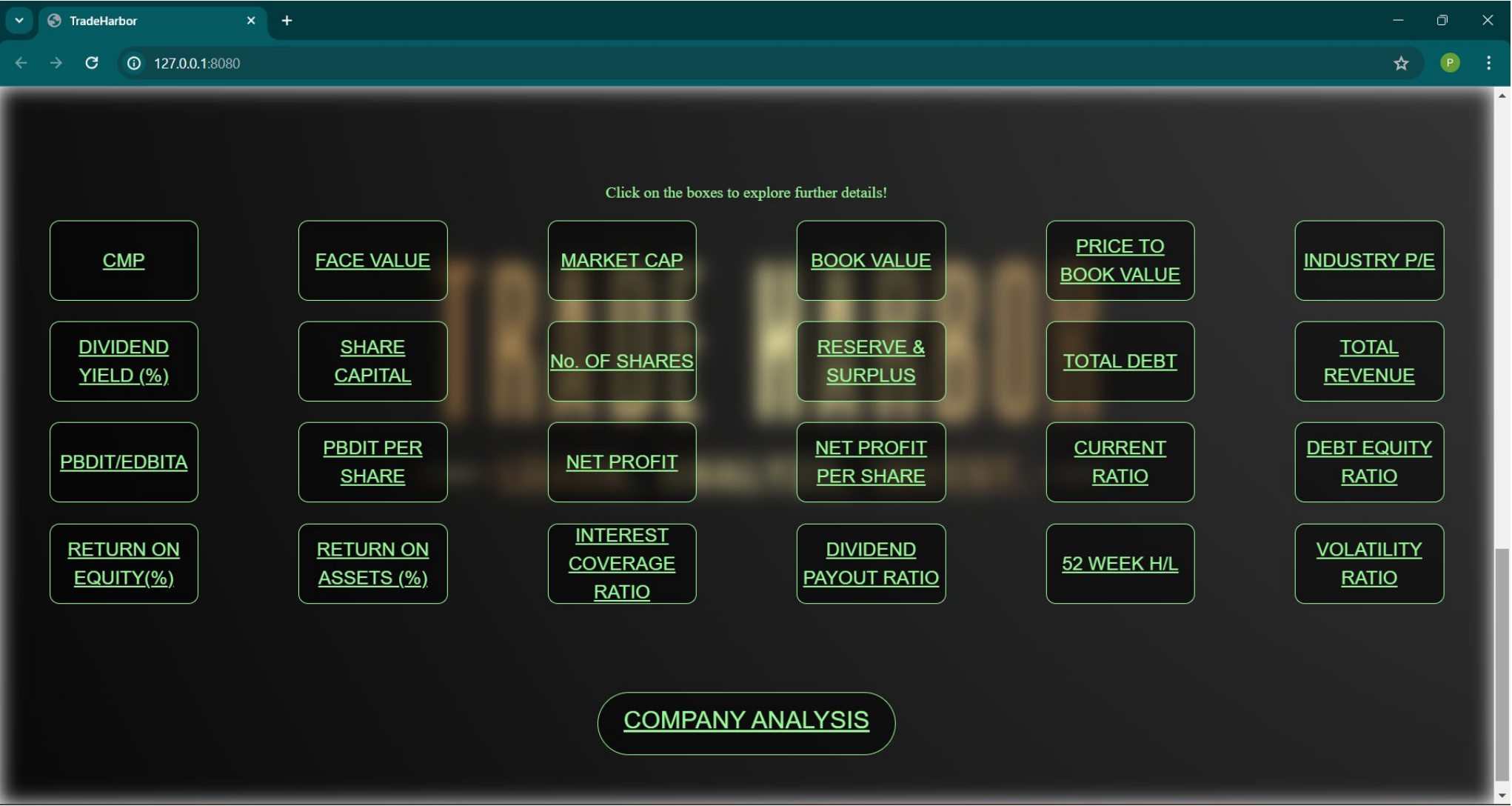
OTHER ADDITIONAL INFORMATION					
CONTINGENT LIABILITIES, COMMITMENTS					
Contingent Liabilities	27,421.00	30,426.00	25,921.00	45,924.00	111,869.00
CIF VALUE OF IMPORTS					
EXPENDITURE IN FOREIGN EXCHANGE					
Expenditure In Foreign Currency	413,231.00	321,119.00	134,436.00	260,280.00	307,558.00
REMITTANCES IN FOREIGN CURRENCIES FOR DIVIDENDS					
Dividend Remittance In Foreign Currency	-	-	-	-	-
EARNINGS IN FOREIGN EXCHANGE					
FOB Value Of Goods	-	-	-	-	-
Other Earnings	576,842.00	245,752.00	179,929.00	284,196.00	214,337.00
BONUS DETAILS					
Bonus Equity Share Capital	5,188.89	5,188.89	5,188.89	5,188.89	5,188.89
NON-CURRENT INVESTMENTS					
Non-Current Investments Quoted Market Value	2,934.00	62,401.00	21,240.00	27,475.00	12,937.00
Non-Current Investments Unquoted Book Value	303,180.00	273,377.00	235,348.00	394,521.00	259,314.00
CURRENT INVESTMENTS					
Current Investments Quoted Market Value	65,984.00	21,471.00	36,303.00	31,814.00	24,017.00
Current Investments Unquoted Book Value	20,090.00	56,833.00	58,362.00	38,216.00	35,623.00

Source : **Dion Global Solutions Limited**

Very hard to understand for everyone except trading experts.

Balance sheet taken from:
<https://www.moneycontrol.com/financials/relianceindustries/balance-sheetVI/RI>

Solution



2.Problem Statement

2. **Influence of Large Corporations**: The dominance of big companies in the stock market can skew the perceived value of smaller companies, leading to market fluctuations that may mislead investors.
3. **Lack of Analytical Skills**: Many individuals lack the necessary analytical skills to evaluate investment opportunities accurately, resulting in suboptimal investment decisions and missed opportunities for financial growth.

Solution



3. Background Study

Stock market prediction, once reliant on traditional methods and human intuition, is now being transformed by sophisticated algorithms capable of processing vast amounts of data and identifying complex patterns.

1.Understanding Stock Market Dynamics:

The stock market is a complex system influenced by a myriad of factors, including economic indicators, company performance, investor sentiment, and global events.

3. Background Study

2. Programming Languages for Financial Analysis:

Python: Python's versatility, extensive libraries (e.g., Pandas, NumPy, Matplotlib), and readability make it a popular choice for financial analysis and data science tasks.

3. Data Fetching Techniques:

Google Finance: With the help of google finance real time stock price data , the real time stock pricing can be shown on our webpage.

3. Background Study

3.Database Integration:

Integration techniques allows for structured storage of data of companies.

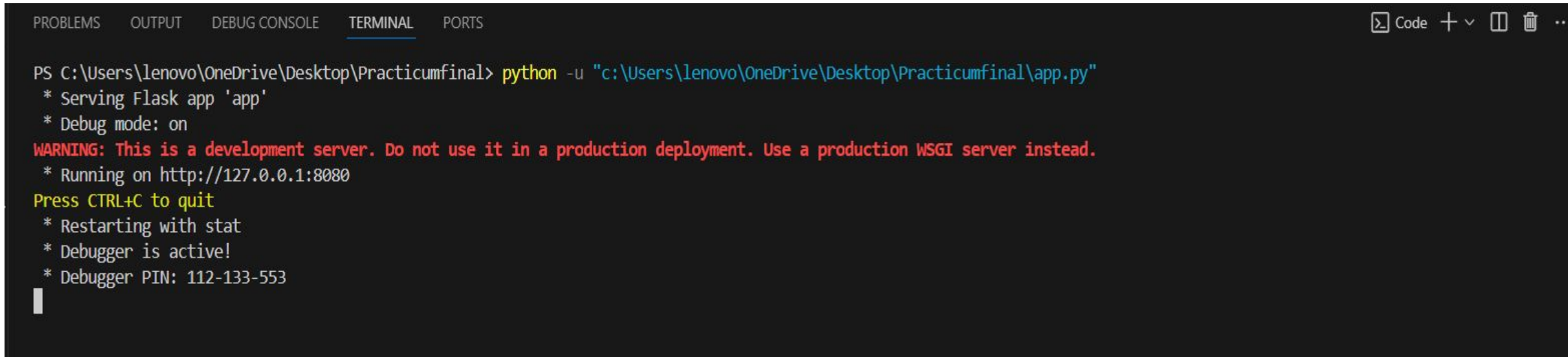
Incorporating an understanding of stock market dynamics, selecting appropriate programming languages, and employing effective data fetching techniques are essential steps in the development of projects aimed at predictive analysis and stock price forecasting.

4. Technology Stack

1. Flask Web Application:

Flask is a micro web framework for Python, used to build web applications quickly and with minimal code.

It provides routing mechanisms to map URLs to Python functions, allowing you to define the behavior of your web application.

A screenshot of a terminal window with a dark background. At the top, there are tabs for 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL' (which is selected), and 'PORTS'. On the right side of the terminal, there are icons for 'Code', a plus sign, a minus sign, a square, a trash can, and two dots. The terminal content shows a command prompt 'PS C:\Users\lenovo\OneDrive\Desktop\Practicumfinal>' followed by the command 'python -u "c:\Users\lenovo\OneDrive\Desktop\Practicumfinal\app.py"'. The output includes: '* Serving Flask app \'app\'', '* Debug mode: on', a red warning message 'WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.', '* Running on http://127.0.0.1:8080', 'Press CTRL+C to quit', '* Restarting with stat', '* Debugger is active!', and '* Debugger PIN: 112-133-553'. A white cursor is visible at the bottom left of the terminal area.

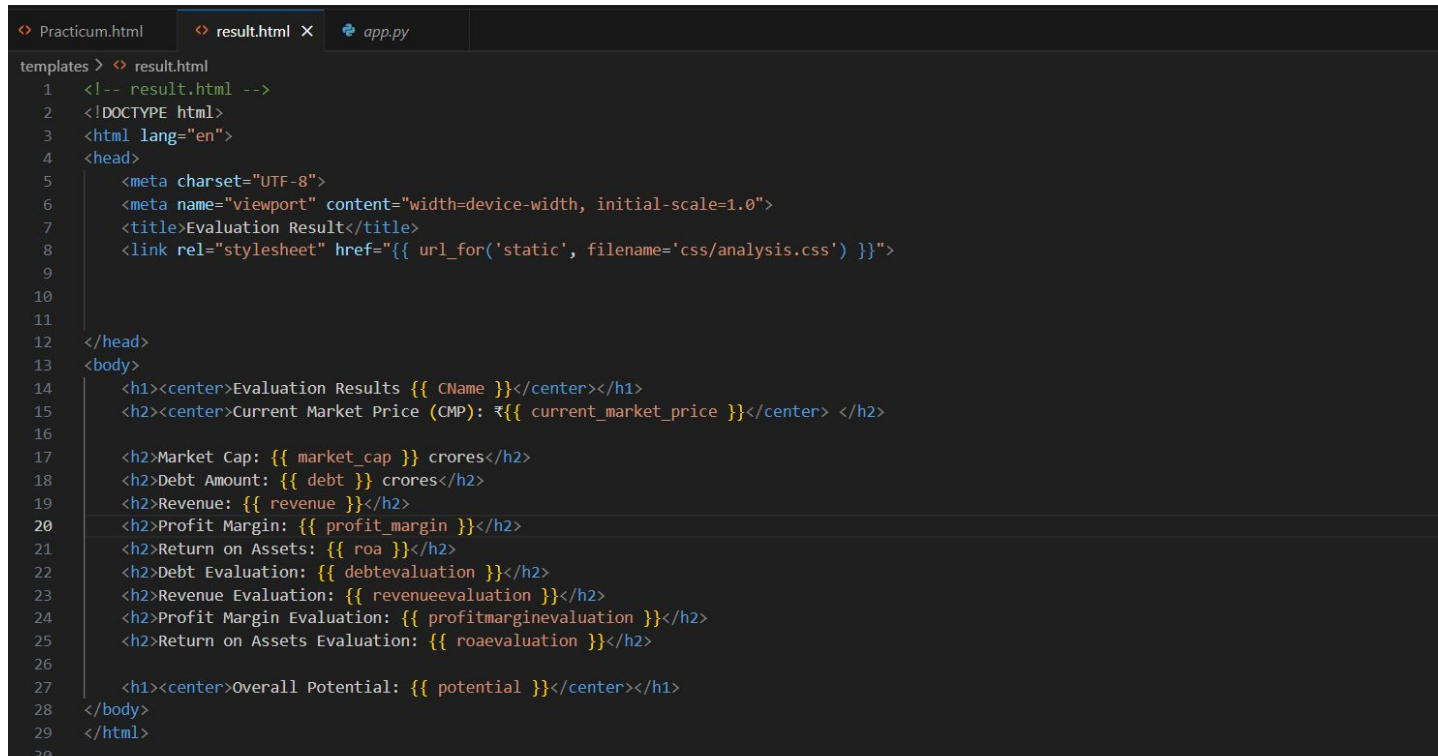
```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS Code + - [] {} ..

PS C:\Users\lenovo\OneDrive\Desktop\Practicumfinal> python -u "c:\Users\lenovo\OneDrive\Desktop\Practicumfinal\app.py"
* Serving Flask app 'app'
* Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on http://127.0.0.1:8080
Press CTRL+C to quit
* Restarting with stat
* Debugger is active!
* Debugger PIN: 112-133-553
```

4. Technology Stack

2. HTML (Hypertext Markup Language):

HTML provides the structure and content of a webpage. It defines the elements that make up a webpage, such as headings, paragraphs, images, links, and forms.

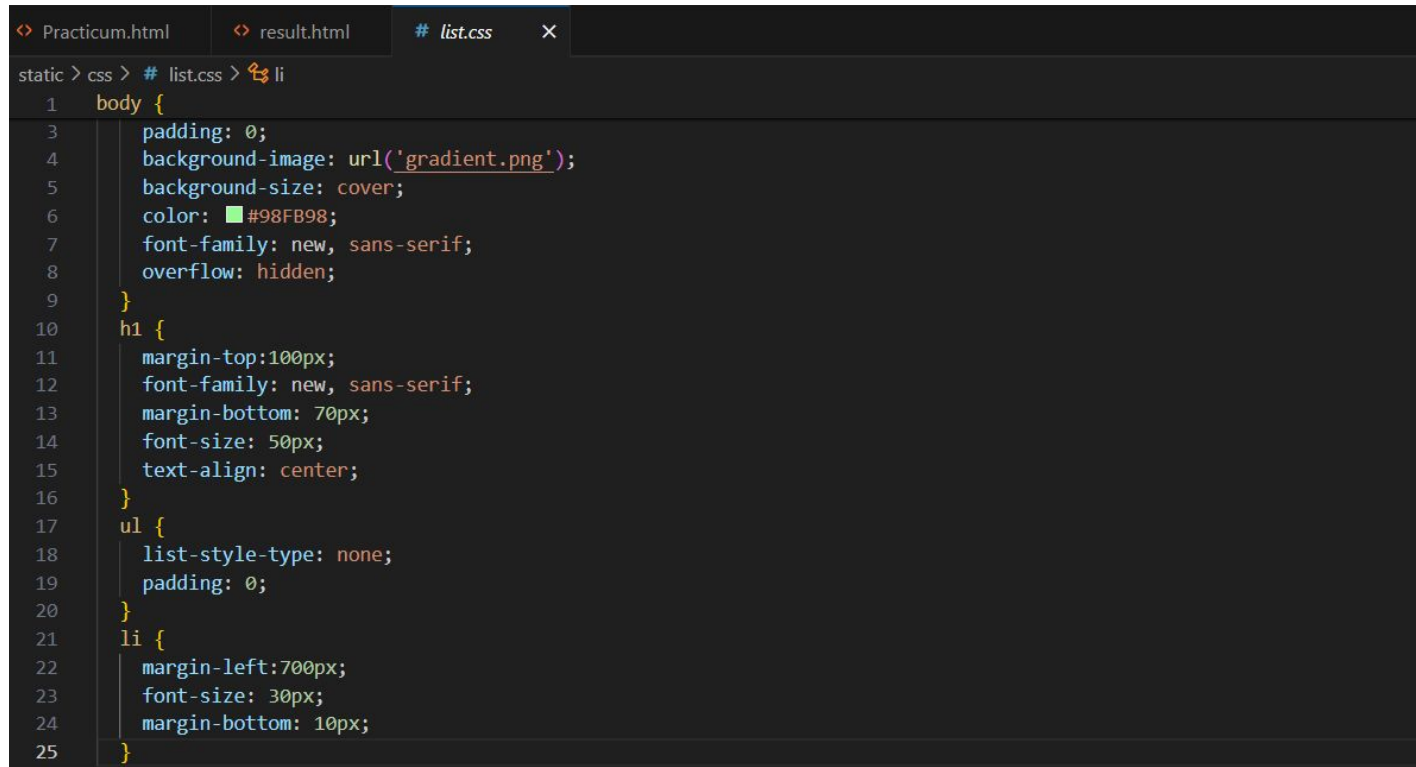


```
Practicum.html result.html x app.py
templates > result.html
1 <!-- result.html -->
2 <!DOCTYPE html>
3 <html lang="en">
4 <head>
5   <meta charset="UTF-8">
6   <meta name="viewport" content="width=device-width, initial-scale=1.0">
7   <title>Evaluation Result</title>
8   <link rel="stylesheet" href="{{ url_for('static', filename='css/analysis.css') }}">
9
10
11
12 </head>
13 <body>
14   <h1><center>Evaluation Results {{ CName }}</center></h1>
15   <h2><center>Current Market Price (CMP): ₹{{ current_market_price }}</center> </h2>
16
17   <h2>Market Cap: {{ market_cap }} crores</h2>
18   <h2>Debt Amount: {{ debt }} crores</h2>
19   <h2>Revenue: {{ revenue }}</h2>
20   <h2>Profit Margin: {{ profit_margin }}</h2>
21   <h2>Return on Assets: {{ roa }}</h2>
22   <h2>Debt Evaluation: {{ debtevaluation }}</h2>
23   <h2>Revenue Evaluation: {{ revenueevaluation }}</h2>
24   <h2>Profit Margin Evaluation: {{ profitmarginevaluation }}</h2>
25   <h2>Return on Assets Evaluation: {{ roaevaluation }}</h2>
26
27   <h1><center>Overall Potential: {{ potential }}</center></h1>
28 </body>
29 </html>
30
```


4. Technology Stack

3.CSS (Cascading Style Sheets):

CSS is used for styling and layout of HTML elements. It allows you to control the presentation of elements, including colors, fonts, spacing, and positioning

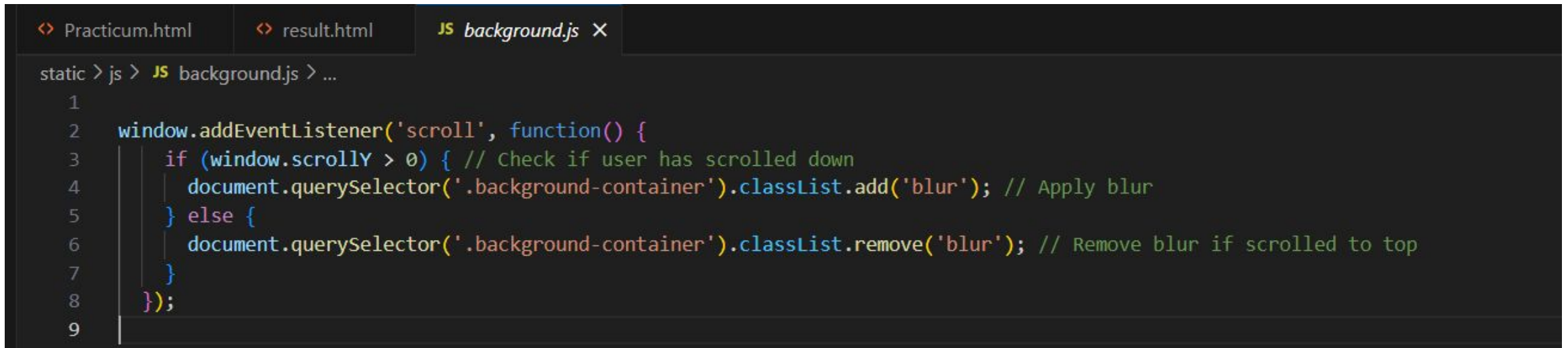
A screenshot of a code editor with a dark theme. The editor has three tabs at the top: 'Practicum.html', 'result.html', and '# list.css'. The active tab is '# list.css'. Below the tabs, the breadcrumb 'static > css > # list.css > li' is visible. The main area contains CSS code for a list. Line numbers 1 through 25 are on the left. The code defines styles for the body, h1, ul, and li elements. The body has a gradient background, a color, font-family, and overflow. The h1 has a top margin, font-family, bottom margin, font-size, and text-align. The ul has no list-style-type and no padding. The li has a left margin, font-size, and bottom margin.

```
1  body {
2
3      padding: 0;
4      background-image: url('gradient.png');
5      background-size: cover;
6      color: #98FB98;
7      font-family: new, sans-serif;
8      overflow: hidden;
9  }
10 h1 {
11     margin-top: 100px;
12     font-family: new, sans-serif;
13     margin-bottom: 70px;
14     font-size: 50px;
15     text-align: center;
16 }
17 ul {
18     list-style-type: none;
19     padding: 0;
20 }
21 li {
22     margin-left: 70px;
23     font-size: 30px;
24     margin-bottom: 10px;
25 }
```

4. Technology Stack

3. Javascript:

JavaScript adds interactivity and dynamic behavior to web pages. It allows you to manipulate HTML elements, handle events, perform calculations, and make asynchronous requests to servers.

A screenshot of a code editor with a dark theme. The top of the editor shows three tabs: 'Practicum.html', 'result.html', and 'JS background.js'. The 'JS background.js' tab is active. Below the tabs, the breadcrumb 'static > js > JS background.js > ...' is visible. The main area contains JavaScript code with line numbers 1 through 9 on the left. The code defines a scroll event listener for the window. It checks if the user has scrolled down (window.scrollY > 0). If true, it adds the 'blur' class to the element with the selector '.background-container'. If false, it removes the 'blur' class. The code is as follows:

```
1
2 window.addEventListener('scroll', function() {
3     if (window.scrollY > 0) { // Check if user has scrolled down
4         document.querySelector('.background-container').classList.add('blur'); // Apply blur
5     } else {
6         document.querySelector('.background-container').classList.remove('blur'); // Remove blur if scrolled to top
7     }
8 });
9
```

5. Technology Stack

4. Libraries of Python:

Beautiful Soup:

Beautiful Soup is a powerful library used for web scraping. It allows you to extract data from HTML and XML files, parse the content, and navigate through the document tree using various methods.

Time:

The time module provides functions for working with time-related tasks, such as measuring execution time, formatting timestamps, and handling time intervals.

Matplotlib:

Matplotlib is a low level graph plotting library in python that serves as a visualization utility.

4. Technology Stack

4. Libraries of Python:

CSV:

The csv module facilitates reading and writing CSV (Comma-Separated Values) files. It provides functions for handling CSV data in a structured and efficient manner.

Pandas:

Pandas is a versatile library widely used for data manipulation and analysis. It provides data structures like DataFrame and Series, along with powerful functions for data cleaning, transformation, and visualization.

Requests:

Requests is a simple and elegant library for making HTTP requests in Python. It allows you to send HTTP requests and handle responses easily.

4. Technology Stack

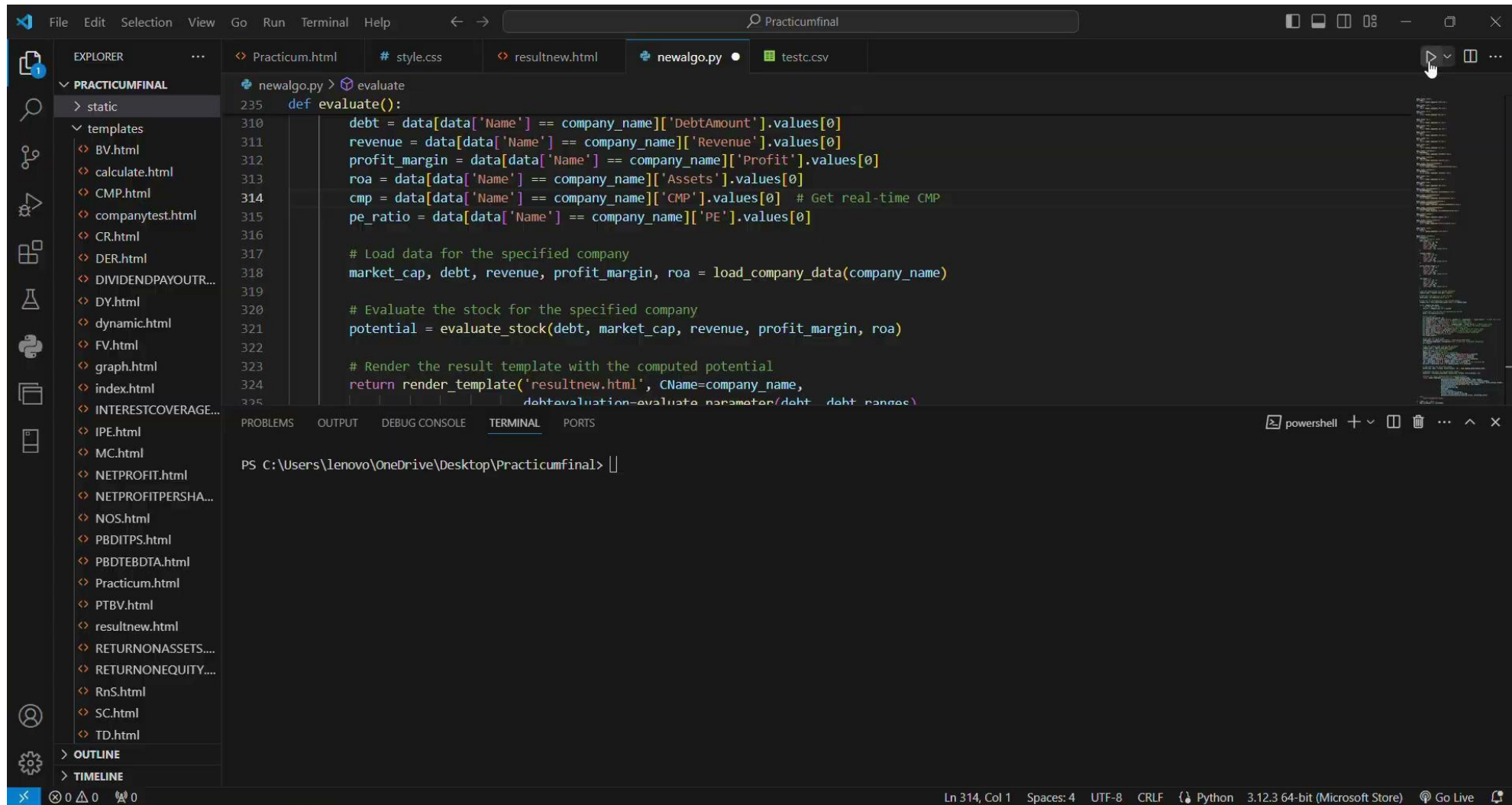
```
app.py > evaluate_stock
1  import pandas as pd
2  from flask import Flask, render_template, request, jsonify
3  import requests
4  from bs4 import BeautifulSoup
5  import time
6
7  app = Flask(__name__)
8  # Function to fetch real-time stock price for a given ticker and exchange
9  def get_real_time_price(ticker, exchange):
10     url = f'https://www.google.com/finance/quote/{ticker}:{exchange}?hl=en'
11     response = requests.get(url)
12     if response.status_code == 200:
13         soup = BeautifulSoup(response.text, 'html.parser')
14         # Find the element containing the price
15         price_element = soup.find(class_="YMlKec fxKbKc")
16         # Check if the element is found
17         if price_element:
18             price = float(price_element.text.strip()[1:].replace(",", ""))
19             return price
20         else:
21             return None # Element not found, return None
22     else:
23         return None # Error fetching the webpage, return None
24
25     response = requests.get(url)
26     if response.status_code == 200:
27         soup = BeautifulSoup(response.text, 'html.parser')
28         class1 = "YMlKec fxKbKc" # Class containing the price
29         price = float(soup.find(class_=class1).text.strip()[1:].replace(",", ""))
30         return price
31     else:
32         return None
33
```

```
34 # Update the CSV file with real-time stock prices before rendering
35 def update_csv():
36     data = pd.read_csv("testc.csv")
37     for index, row in data.iterrows():
38         ticker = row['Symbol']
39         exchange = 'NSE' # Assuming all stocks are from the same exchange
40         real_time_price = get_real_time_price(ticker, exchange)
41         if real_time_price is not None:
42             data.at[index, 'CMP'] = real_time_price
43     data.to_csv("testc.csv", index=False)
44
```

5. Implementation

- We have successfully incorporated SDG 4 by specifying the required information in technical as well as in layman language so that everyone know how to read and understand a real balance sheet of any company.
- We have developed an algorithm which predicts the potential of listed companies using real time data being fetched with the help of BeautifulSoup library of python and any user can invest accordingly which satisfies the motive of SDG 8.

Click on this image to see full working video.



6.Future Scope

- 1.Expansion of educational resources to cover advanced topics in finance, investment analysis, and portfolio management.
- 2.Integration of advanced analytical tools such as predictive modeling, sentiment analysis, and machine learning algorithms to enhance investment decision-making.
- 3.Collaboration with financial experts, industry professionals, and academic institutions to provide expert insights, webinars, and online courses.
- 4.Expansion into new markets, languages, and geographical regions to reach a broader audience of investors.

7. References

1. [https://www.moneycontrol.com/financials/relianceindustries/balance-sheet VI/RI](https://www.moneycontrol.com/financials/relianceindustries/balance-sheet-VI/RI)
2. <https://www.javatpoint.com/>
3. <https://www.geeksforgeeks.org/python-programming-language/>
4. <https://www.google.com/finance/?hl=en>

Thank You