



CAB230 Stock API - Client Side

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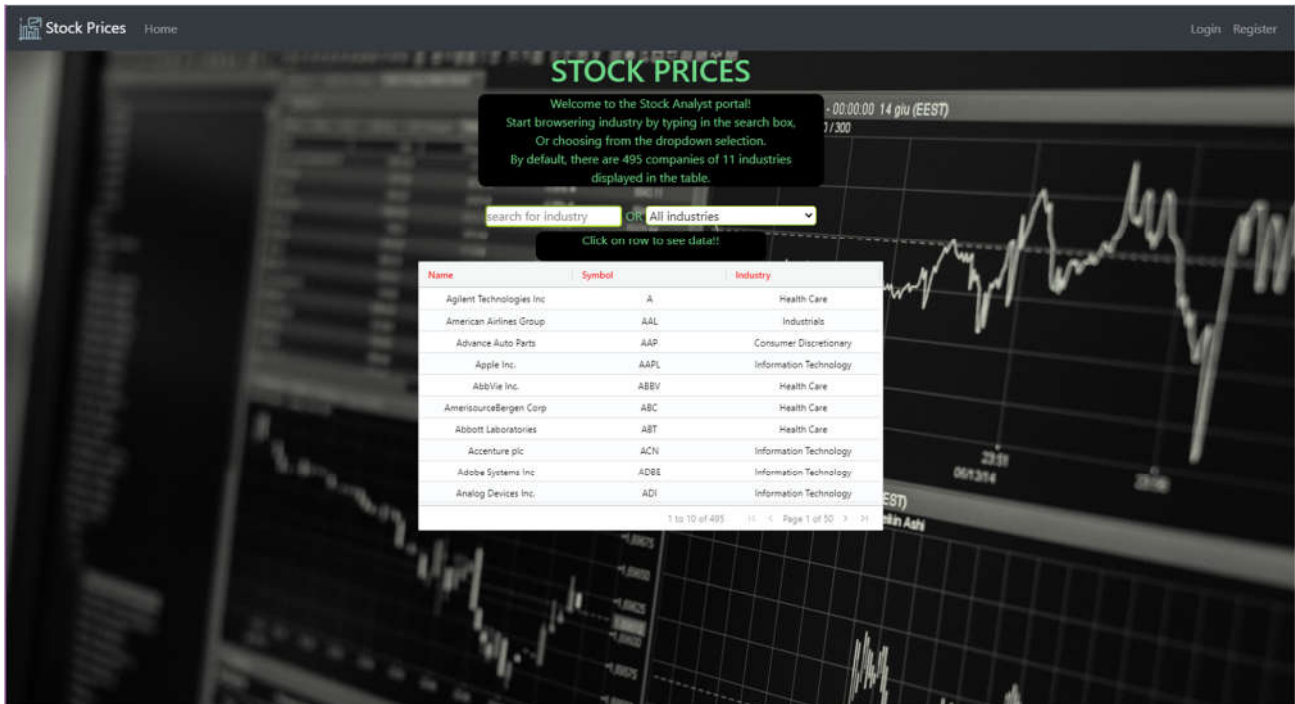
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INTRODUCTION

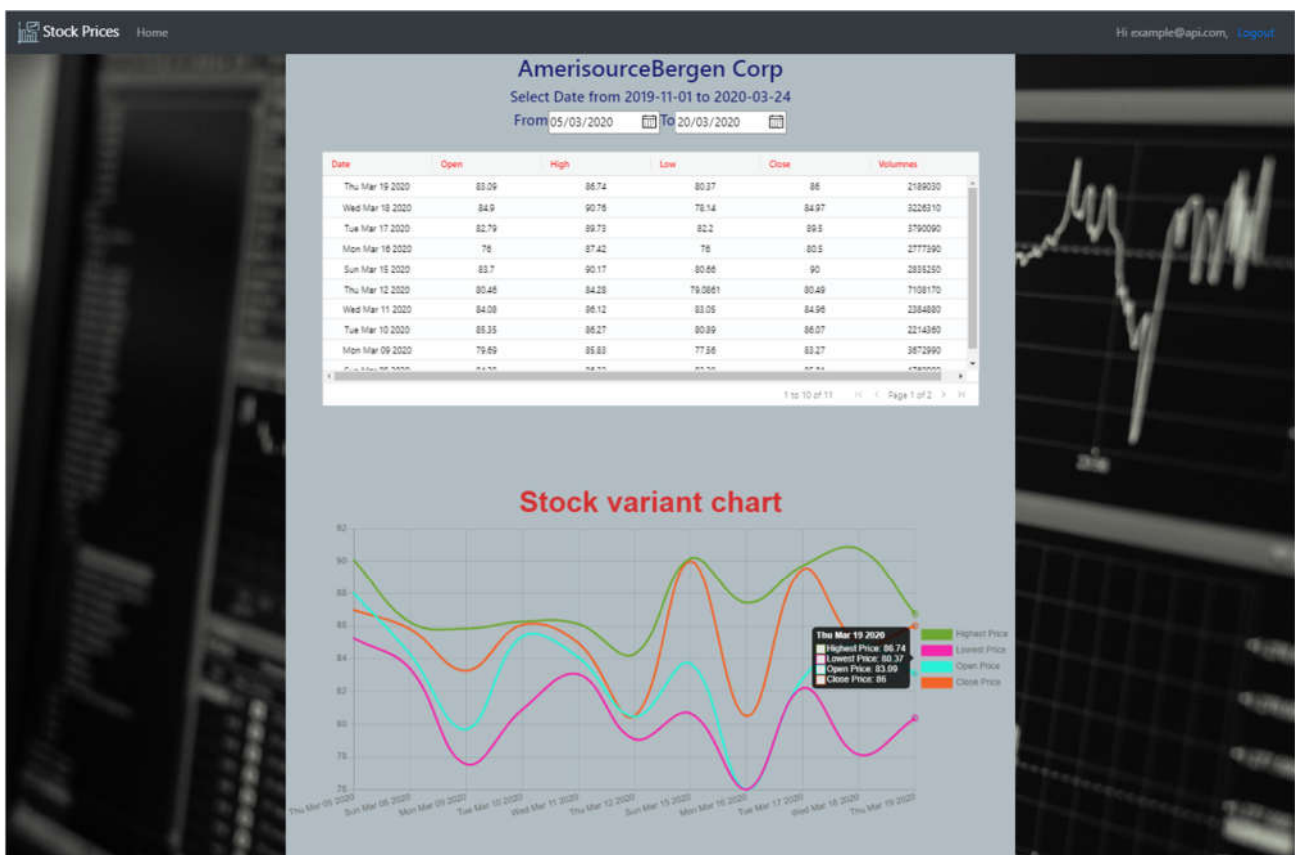
Purpose & description

The main purpose of this project is to develop a React-based web application which retrieved stock information from a designed database. Users are allowed to view and visualize stock market history from November 2019 to March 2020. Besides, a validating authentication should be developed to confirm the privilege of users to access the right data.

There are several functions developed to satisfy assignment specifications and even go beyond the tasks. The first thing should be noticed is filtering technique applied in this application. A dedicate search box and dropdown selection are used to help users filter the company by industry, and sorting function for the table to sort the data ascending or descending. The second thing is a convenient data presentation in Ag-grid table modules. The data was organized to 2 separate pages, the company information and its stock history. Especially a line chart provided by react-chartJs-2 module was chosen to show the varying stock price by time. This allows users to select to view open, close, highest, or lowest price, which helps them analyze the data more efficiently. The next thing is a well-designed validating functionality, which provides users to login and create an account by inputting their email (as username) and password. The last module applied in this project is react bootstrap. By using this external library, developer can not only keep the styling part of this webpage basic, but also delivery a cool and straightforward website.



(1.1 Main page)



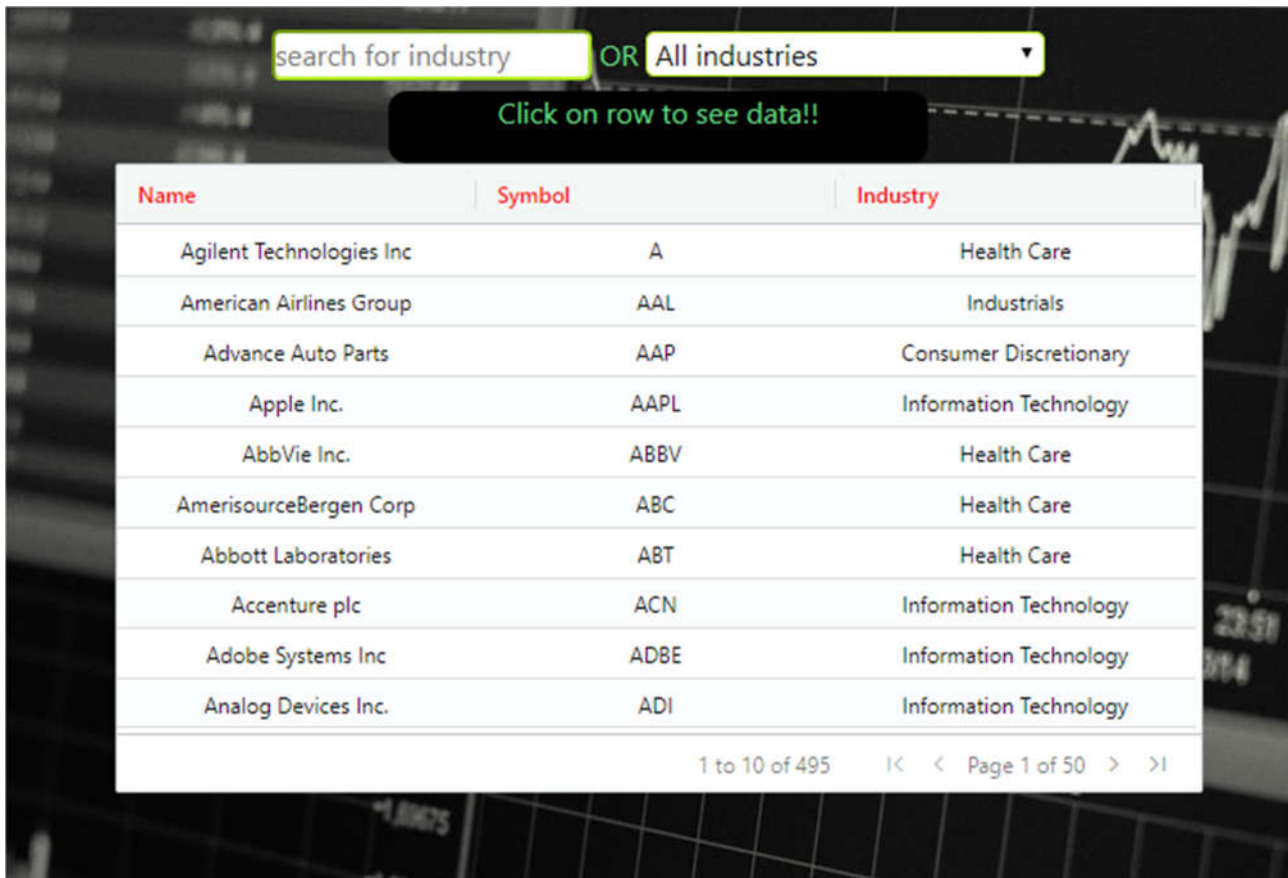
(1.2 Stock history and Chart)

Completeness and Limitations

The assignment is at grade of 6 and 7 level, which has successfully implemented the user endpoints and authenticated query route. The table component and client-side processing work smoothly by using ag-grid-react module, which allow users to view, sort, and interact with data retrieved from REST API. The data in table only updates when searching elements changing without any latency. Furthermore, users can navigate what they need effortlessly and conveniently by access the top navigation bar which used React Router to link routes. Data are displayed well structured in table components and represented visually via react chart-js 2. Nevertheless, there are still some uncaught errors of react-bootstrap module, which used to decorate the webpage.

USE OF END POINTS

/stocks/symbols



search for industry OR All industries ▼

Click on row to see data!!

Name	Symbol	Industry
Agilent Technologies Inc	A	Health Care
American Airlines Group	AAL	Industrials
Advance Auto Parts	AAP	Consumer Discretionary
Apple Inc.	AAPL	Information Technology
AbbVie Inc.	ABBV	Health Care
AmerisourceBergen Corp	ABC	Health Care
Abbott Laboratories	ABT	Health Care
Accenture plc	ACN	Information Technology
Adobe Systems Inc	ADBE	Information Technology
Analog Devices Inc.	ADI	Information Technology

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(2.1 All data display in landing page if user do not filter anything)

Real Estate OR Real Estate

Click on row to see data!!

Name	Symbol	Industry
Apartment Investment & Mana...	AIV	Real Estate
American Tower Corp A	AMT	Real Estate
Alexandria Real Estate Equities I...	ARE	Real Estate
AvalonBay Communities Inc.	AVB	Real Estate
Boston Properties	BXP	Real Estate
CBRE Group	CBG	Real Estate
Crown Castle International Corp.	CCI	Real Estate
Digital Realty Trust Inc	DLR	Real Estate
Duke Realty Corp	DRE	Real Estate
Equinix	EQIX	Real Estate

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(2.2 User filter company by Real Estate industry))

/stocks/{symbol}

American Airlines Group

Date	Open	High	Low	Close	Volumes
Mon Mar 23 2020	10.9	11.36	10.01	10.25	55494100

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(2.3 Latest data display when no account logged)

/stocks/authed/{symbol}

Adobe Systems Inc
Select Date from 2019-11-01 to 2020-03-24
From To

Date	Open	High	Low	Close	Volumes
Thu Mar 19 2020	291.77	318.705	281.1	307.51	6023840
Wed Mar 18 2020	290	296.87	255.131	294.61	7278980
Tue Mar 17 2020	291.2	312.95	278.35	311.81	6189140
Mon Mar 16 2020	288.356	307.11	283.25	286.03	7140140
Sun Mar 15 2020	312.88	336	298	335.5	8935220

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(2.4 Default data when there is an account logged)

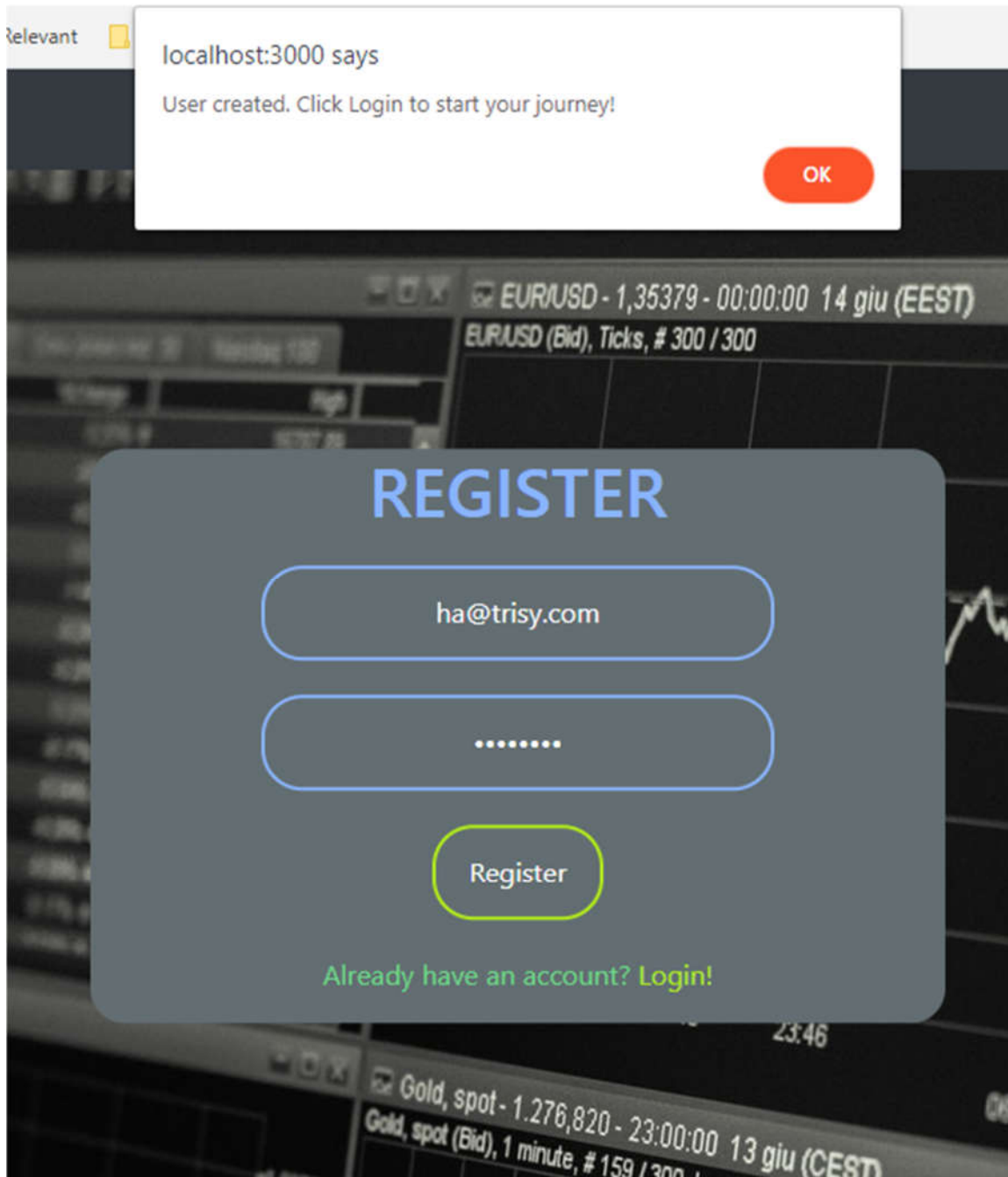
Adobe Systems Inc
Select Date from 2019-11-01 to 2020-03-24
From To

Date	Open	High	Low	Close	Volumes
Tue Mar 17 2020	291.2	312.95	278.35	311.81	6189140
Mon Mar 16 2020	288.356	307.11	283.25	286.03	7140140
Sun Mar 15 2020	312.88	336	298	335.5	8935220
Thu Mar 12 2020	290.41	310.13	283	285	7230150
Wed Mar 11 2020	324.32	326.357	309	315.23	4874330
Tue Mar 10 2020	318.98	332.94	309.31	332.38	5973670
Mon Mar 09 2020	311.68	322.44	305.33	305.79	5291910
Sun Mar 08 2020	340.45	344.16	326.6	336.77	5622910
Thu Mar 05 2020	355.06	360.45	347.19	351.03	3199010

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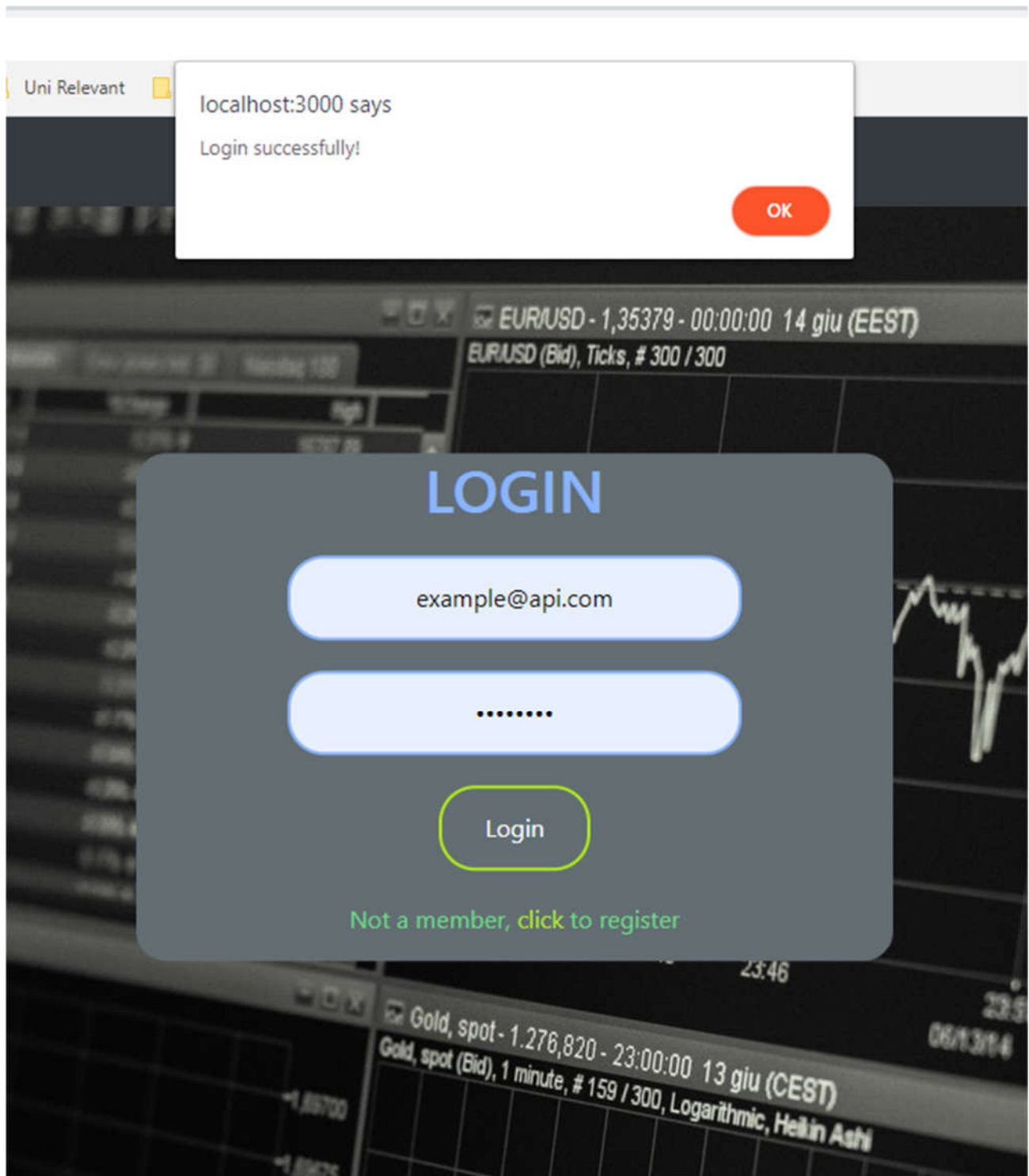
(2.5 User input start and end date)

/user/register



(2.6 Account registered)

/user/login



(2.7 user logged in successfully)

MODULES USED

This is the list of modules used in this project.

1. Ag-grid-react

Module to provide fully-featured table components, including sorting and filtering.

<https://www.ag-grid.com/react-grid/>

2. React-chartJs-2

This is react wrapper for chart.js 2. Module provides full-featured chart components.

<https://www.npmjs.com/package/react-chartjs-2>

3. React-bootstrap

Bootstrap 4 components build with React. This provides CSS framework for developers to design webpage.

<https://react-bootstrap.github.io/>

4. React-router-dom

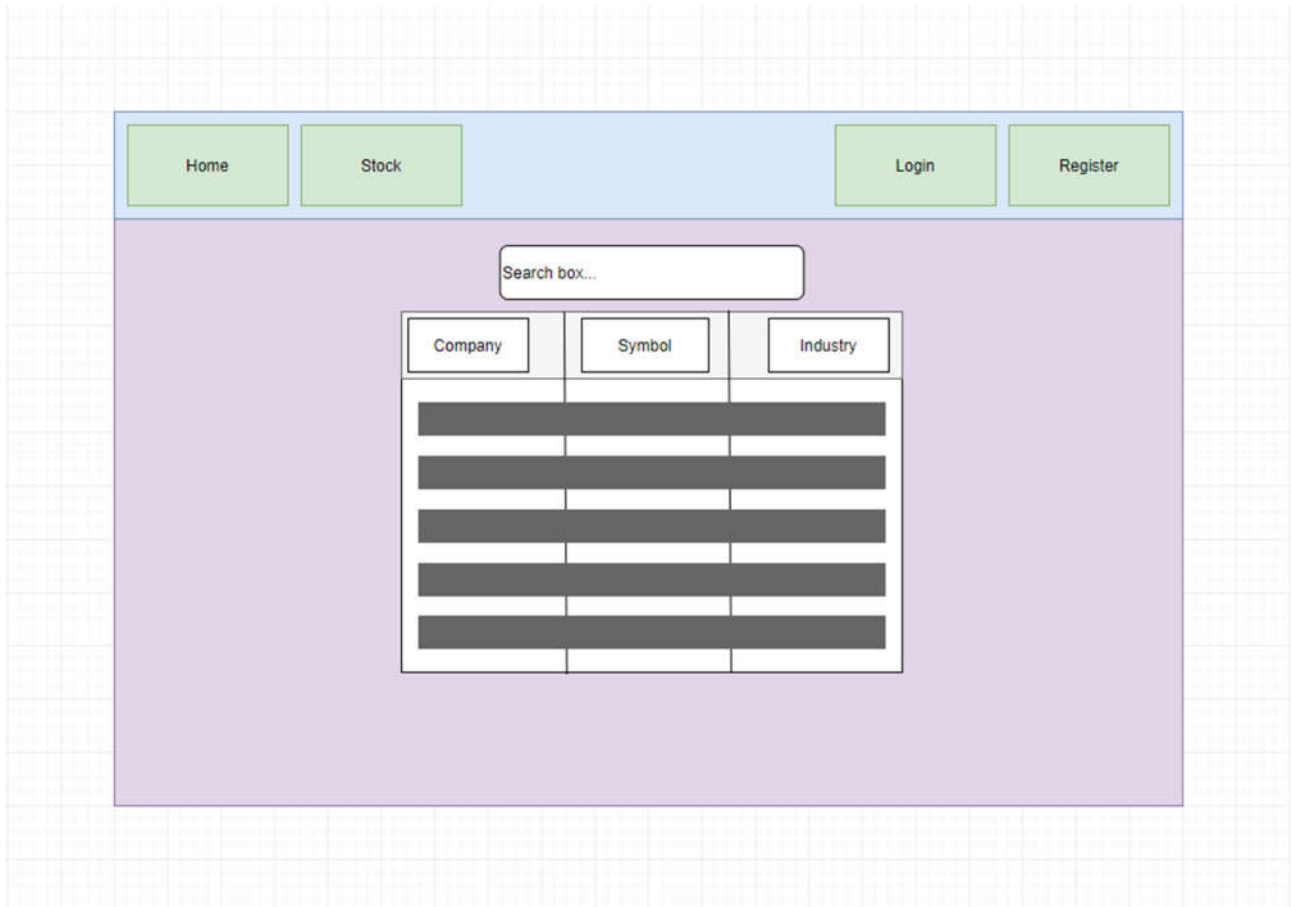
React Router is a collection of navigational components that compose declaratively with application.

<https://www.npmjs.com/package/react-router-dom>

APPLICATION DESIGN

Navigation and Layout

The very first design for my page is designed through draw.io, The aim of design is straightforward, basic, but provide all the necessary functionalities for users. The layout is simple and easy-locating position to help users navigate the main features of the application.



(4.1 Sketch for home page)

The next process is creating each page design for what will be display when users clicked to each element in the top navigation bar.



(4.2 Sketch for stock price history page)

The implement design for login and register pages is mostly the same. They include 2 forms for inputting username and password, and 1 button for submitting it.



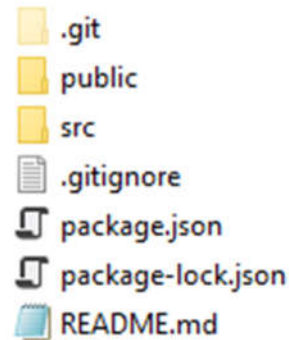
(4.3 Sketch for login and register page)

TECHNICAL DESCRIPTION

Architecture

The overall architecture of this application at source code level:

There are 2 main folders: “/public” and “/src”. The public directory contain index.html and manifest.json to execute the web page.









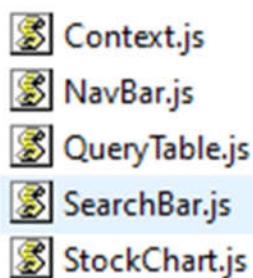
In src directory, the main script to render components and pages are located here.

The components folder contains components required for each page to display data.

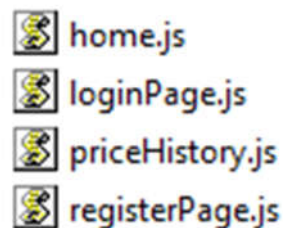
The pages folder contains pages of the web application.

The last folder, media, contains images for background and icons in navigation bar.

 components	Date modified: 12/05/2020 4:23 PM
 media	Date modified: 12/05/2020 4:23 PM
 Pages	Date modified: 12/05/2020 4:23 PM
 App.js Type: JavaScript File	Date modified: 12/05/2020 3:27 PM Size: 1.13 KB
 index.js Type: JavaScript File	Date modified: 11/05/2020 10:30 AM Size: 245 bytes
 style.css Type: CSS File	Date modified: 11/05/2020 10:40 PM Size: 1.80 KB



Components folder



Pages folder

Test plan

There are 21 test cases conducted in this project. All of them passed and no failures.

Below are the test detail:

1. Validating authentication

Test	Expected Outcome	Result	Screenshots Appendix
Register successfully	Alert outcome to users	PASS	Image 2.6
Register unsuccessfully. (Lack of information or user existed)	Alert error to users	PASS	Screenshot 01, 02, 03
Login successfully	Redirect to home page and alert users	PASS	Image 2.7
Login unsuccessfully. (Wrong password, lack of information, user not existed)	Alert error to users	PASS	Screenshot 04, 05
Logout successfully	Clear token and local storage, re-display login and register path in top navbar. Alert to user.	PASS	Image 7.10

2. Query endpoints

Test	Expected Outcome	Result	Screenshots/Appendix
Display all companies successfully on the landing page	A table with all stock information	PASS	Image 7.1
Display nothing as the server is not respond	No data appears in the table (a note for user is required)	PASS	Screenshot 06
Filter industry by input text in search box	Correct input to search box, the table will display all companies in the industries that contains the input	PASS	Image 7.2

Filter unsuccessfully due to the wrong key word input to search box	Alert users for wrong input	PASS	Screenshot 07
Display all companies after clear search box	Search bar is clear and all companies are displayed in the table	PASS	Demonstrate in recording video
Filter industry by selecting in dropdown box	Display table contain the industry selected	PASS	Image 7.3
Select a row to view the latest data of that company	Redirect to Price History page with only one row of the latest API data retrieved	PASS	Image 7.4
Select a row to view the history price while logged in.	Table and chart display 5 default day of the history price successfully.	PASS	Image 7.5
Modify date input to customize timestamps	User is able to click in to dropdown to select date or manual input	PASS	Image 7.9
Display error if user picks an end-date before start-date	Alert users by an error	PASS	Screenshot 08
Select each price displays in the line chart.	Only display data selected in chart	PASS	Screenshot 09, 10

3. Navigation

Test	Expected Outcome	Result	Screenshots Appendix
Return to landing page if user clicks to stock icon in top navigation bar	Redirect to lading page	PASS	Demonstrate in recording video
Return to landing page if user clicks to Header "Stock Prices" in top navigation bar	Redirect to lading page	PASS	Demonstrate in recording video
Return to landing page if user clicks to "Home" in top navigation bar	Redirect to lading page	PASS	Demonstrate in recording video
Redirect to login page if user clicks to login in top navigation bar	Redirect to login page	PASS	Demonstrate in recording video

Redirect to register page if user clicks to register in top navigation bar	Redirect to register page	PASS	Demonstrate in recording video
Display username logged and logout while clear login and register in top navigation bar if user logged	Display Hello sentence if user logged	PASS	Image 7.10

Difficulties / Exclusions / unresolved & persistent errors /

To finish the project, many difficulties has been solved. The first thing should be listed is Asynchronous. This roadblock obstructs the implement of fetch function to retrieve data from REST API. By researching more about async-await feature updated recently, the problems have been solved with the application of this feature and react hook.

However, there are some uncaught errors of react-bootstrap module that can not be solved due to the lack of developer's technical skills, which maybe can resolve in the near future.



```

Uncaught TypeError: Cannot read property 'appendChild' of null
    at fr (react-bootstrap.min.js:31)
    at new e (react-bootstrap.min.js:31)
    at Module.<anonymous> (react-bootstrap.min.js:31)
    at n (react-bootstrap.min.js:1)
    at react-bootstrap.min.js:1
    at react-bootstrap.min.js:1
    at react-bootstrap.min.js:1
    at react-bootstrap.min.js:1

Uncaught ReferenceError: ReactBootstrap is not defined
    at VM19:38
  
```

(5.1 Uncaught errors of react-bootstrap)

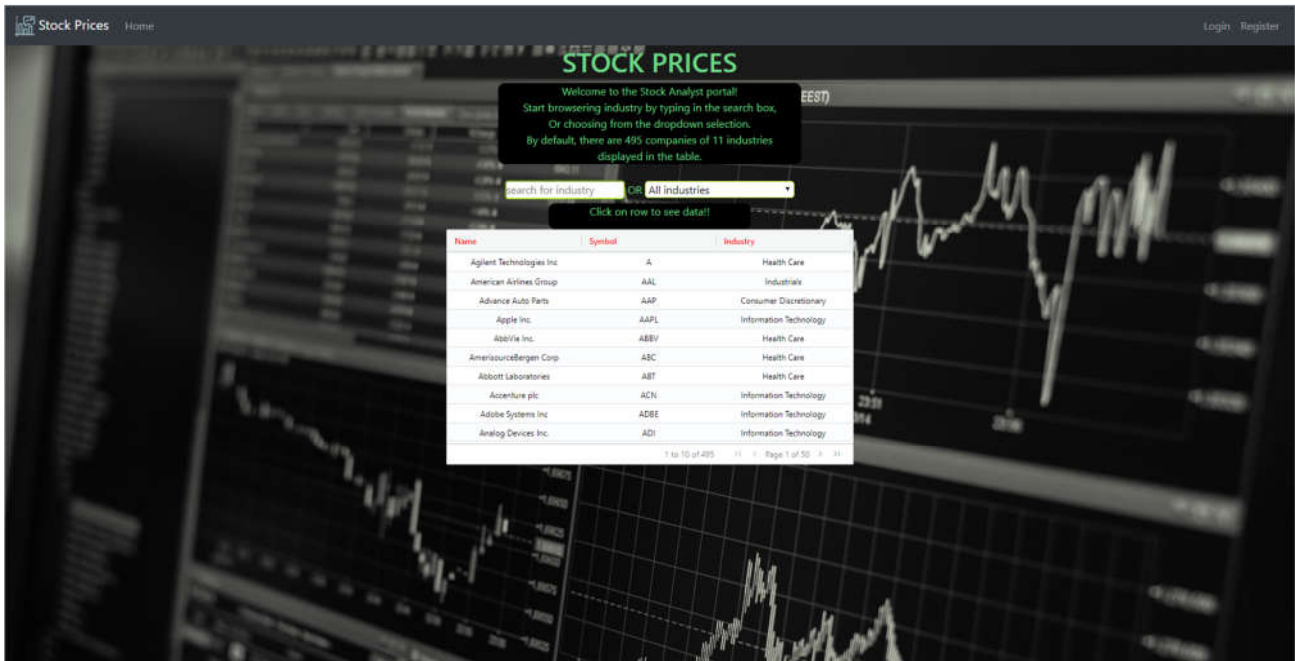
Extensions (Optional)

The current webpage has already developed all the necessary functionalities, which can be developed more in the future.

If time permits, the project could allow users to select many types of chart to display data, and animation could be applied to the application.

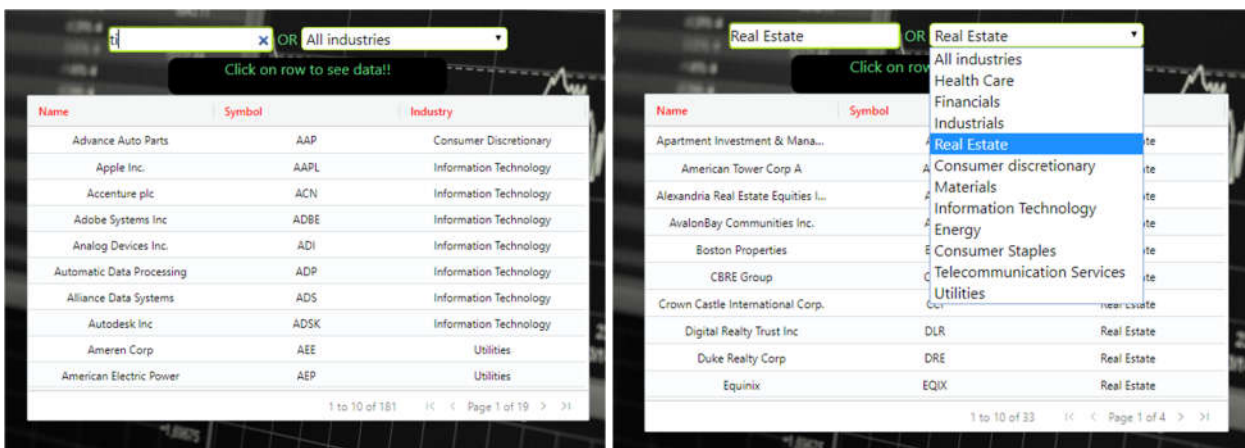
USER GUIDE

When user opens the webpage, all the data will be displayed in the home page as picture below:



(7.1 Landing page)

Now, user can start filtering companies by industry by input to search box or select in dropdown box:



(7.2 - 7.3 Filter for company)

Then, user can click to a row to select what stock to view.

displayed in the table.

search for industry OR All industries ▼

Click on row to see data!!

Name	Symbol	Industry
Agilent Technologies Inc	A	Health Care
American Airlines Group	AAL	Industrials
Advance Auto Parts	AAP	Consumer Discretionary
Apple Inc.	AAPL	Information Technology
AbbVie Inc.	ABBV	Health Care
AmerisourceBergen Corp	ABC	Health Care
Abbott Laboratories	ABT	Health Care
Accenture plc	ACN	Information Technology
Adobe Systems Inc	ADBE	Information Technology
Analog Devices Inc.	ADI	Information Technology

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(7.4 Click to a row)

However, to view all the stock history in the database, user need to login for the premium feature.

Apple Inc.

Date	Open	High	Low	Close	Volumes
Mon Mar 23 2020	228.08	228.5	212.61	224.37	83134900

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(7.5 Price History when no account is logged)

To login (or register if user do not have an account), user need to click to login in the navigation bar to redirect to login page (or register page).

LOGIN

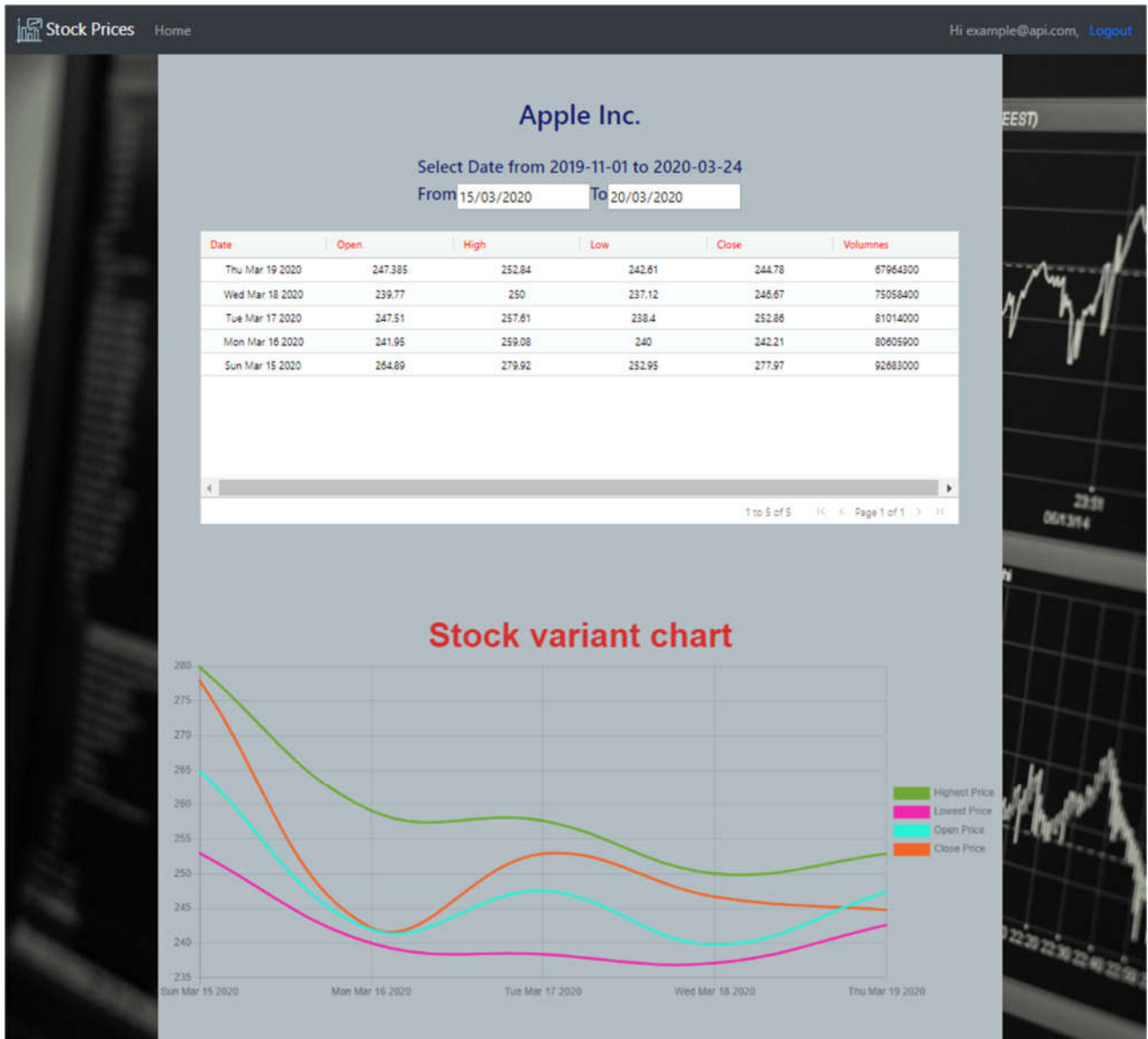
Not a member, [click to register](#)

REGISTER

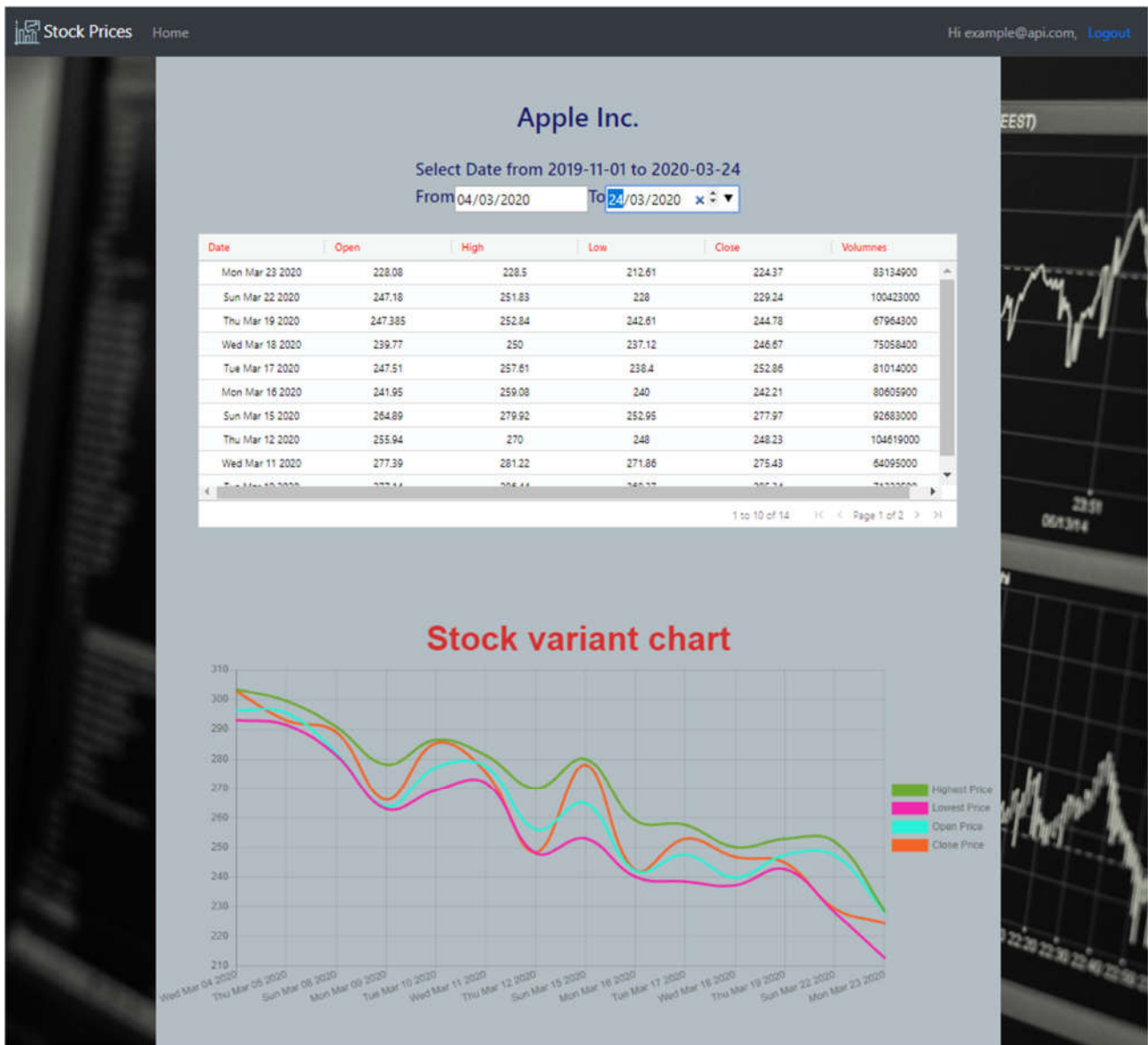
Already have an account? [Login!](#)

(7.6 - 7.7 Login and Register form)

Finally, user can view all the stock history by edit 2 date inputs.

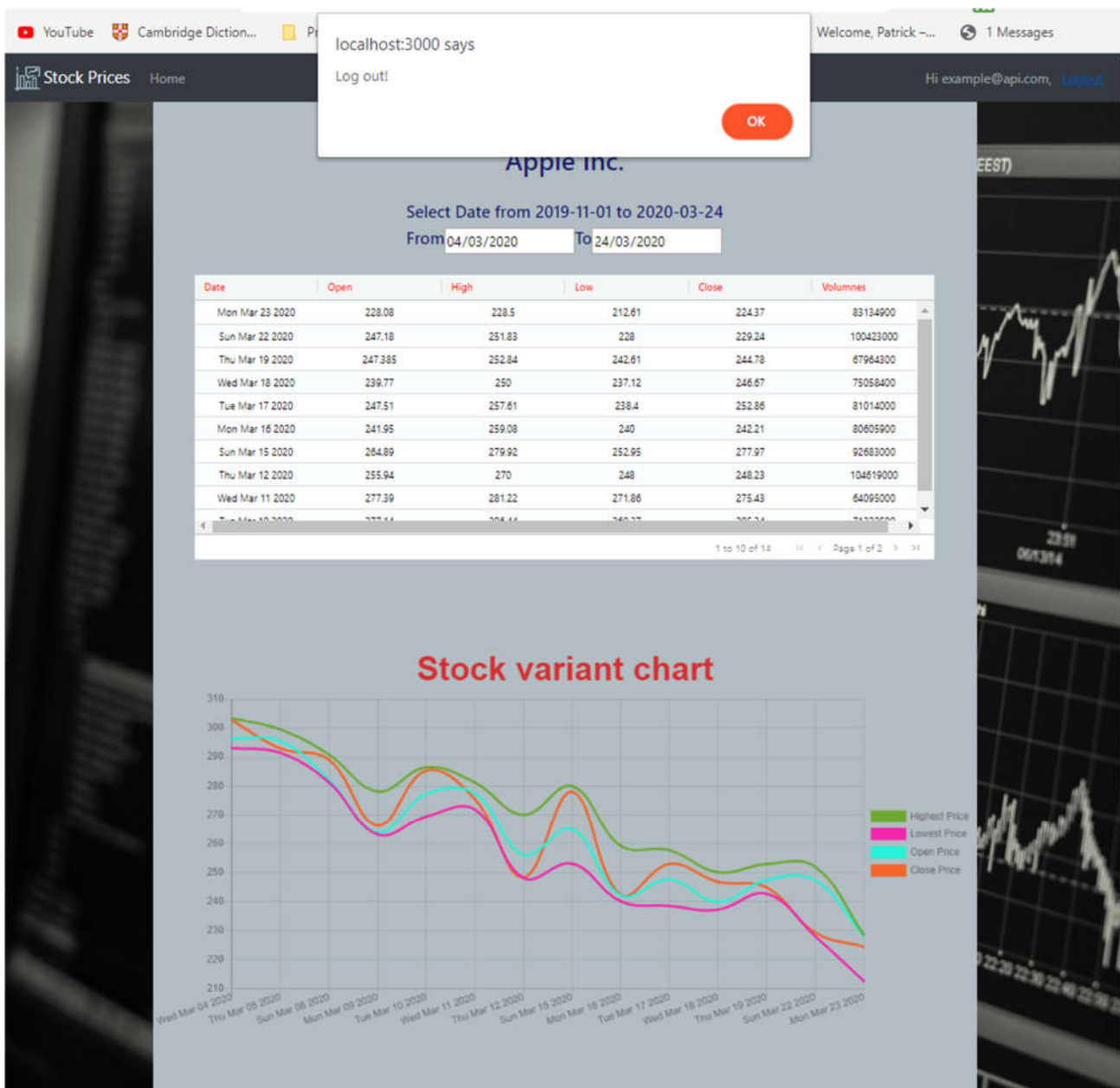


(7.8 Price History when an account is logged)



(7.9 Customize data by modify date)

To end the session, user can press logout in the top right of navigation bar.



(7.10 Session end, user logged out)

REFERENCES

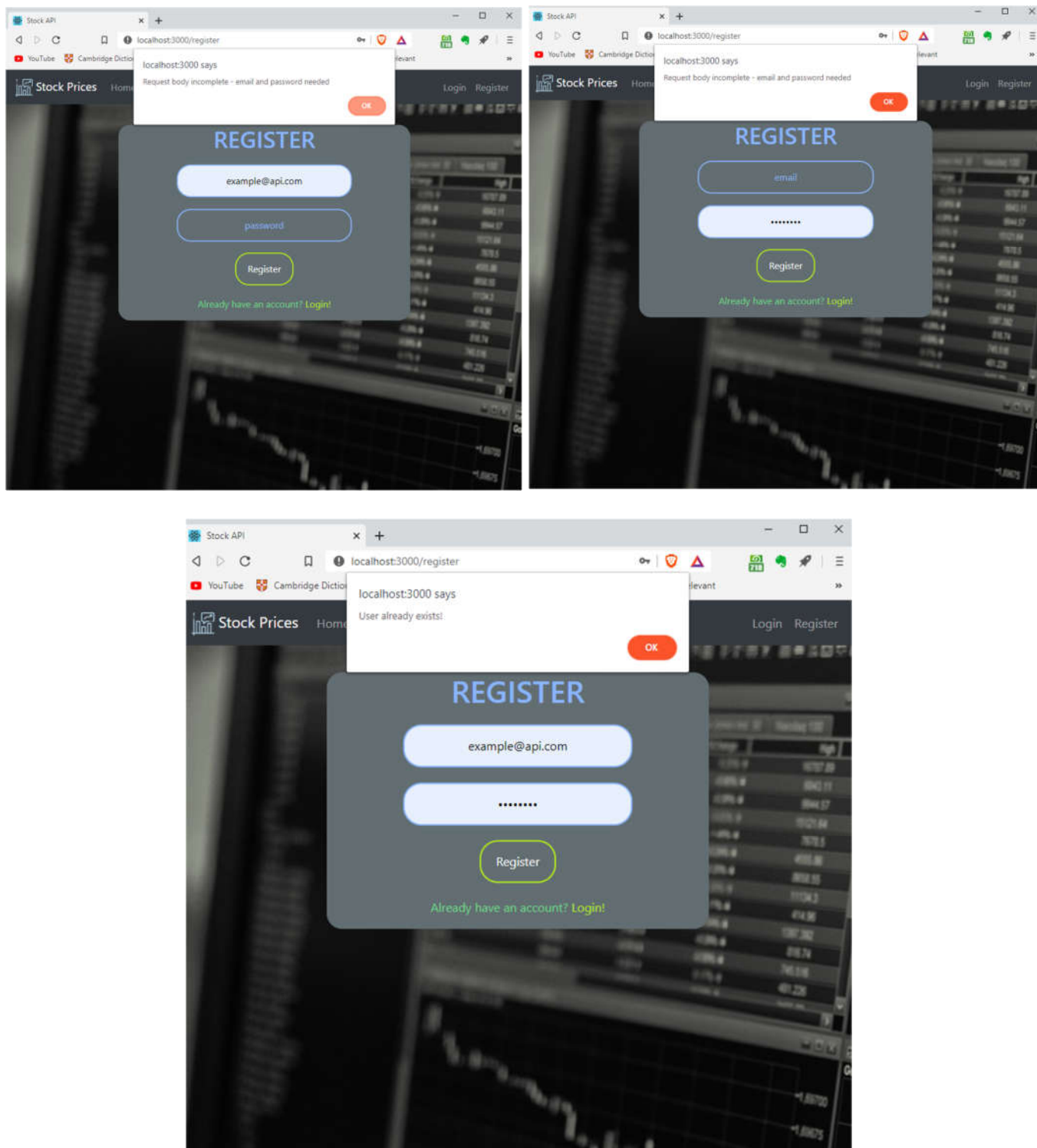
Lorenzo (2016). *Turned-on Monitor Displaying Frequency Graph*. Pexels.

<https://www.pexels.com/photo/black-and-white-business-chart-computer-241544/>

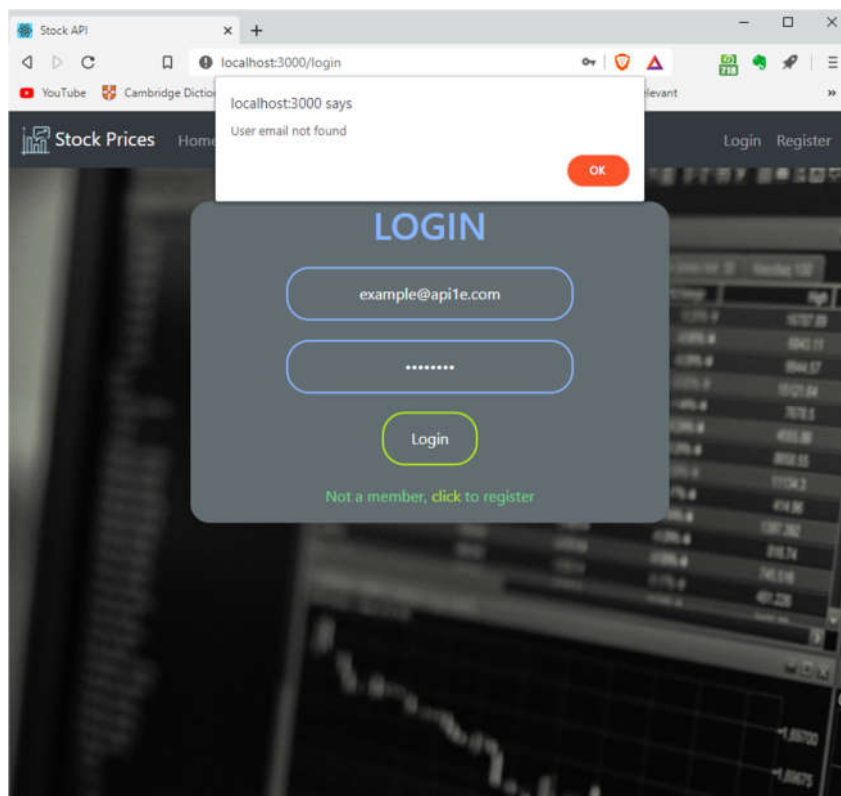
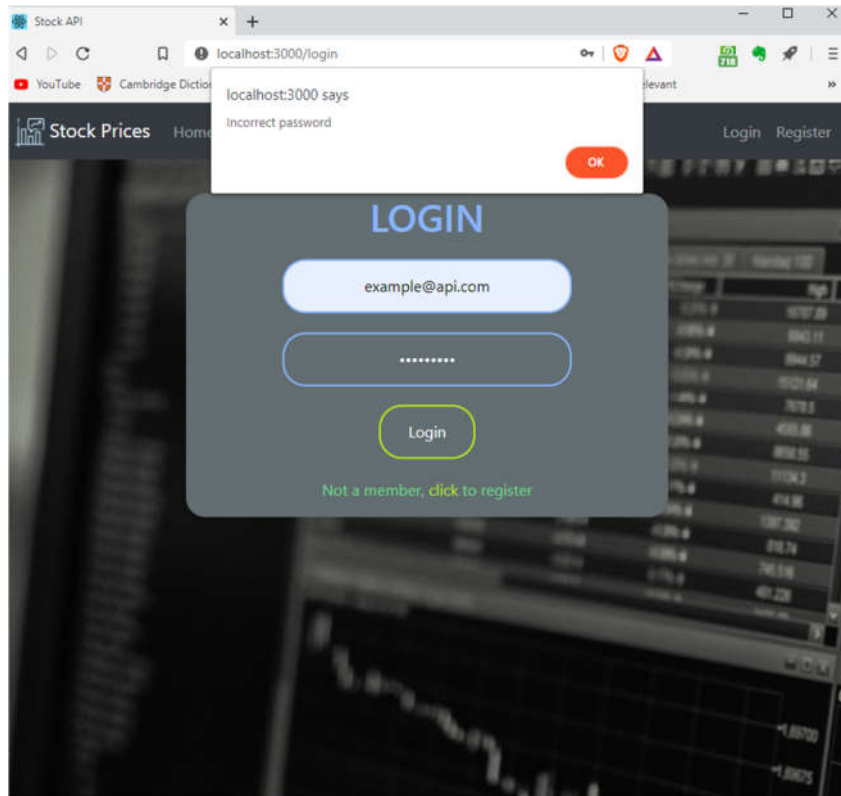
React bootstrap. *Components document*. <https://react-bootstrap.github.io/components/alerts/>

APPENDICES

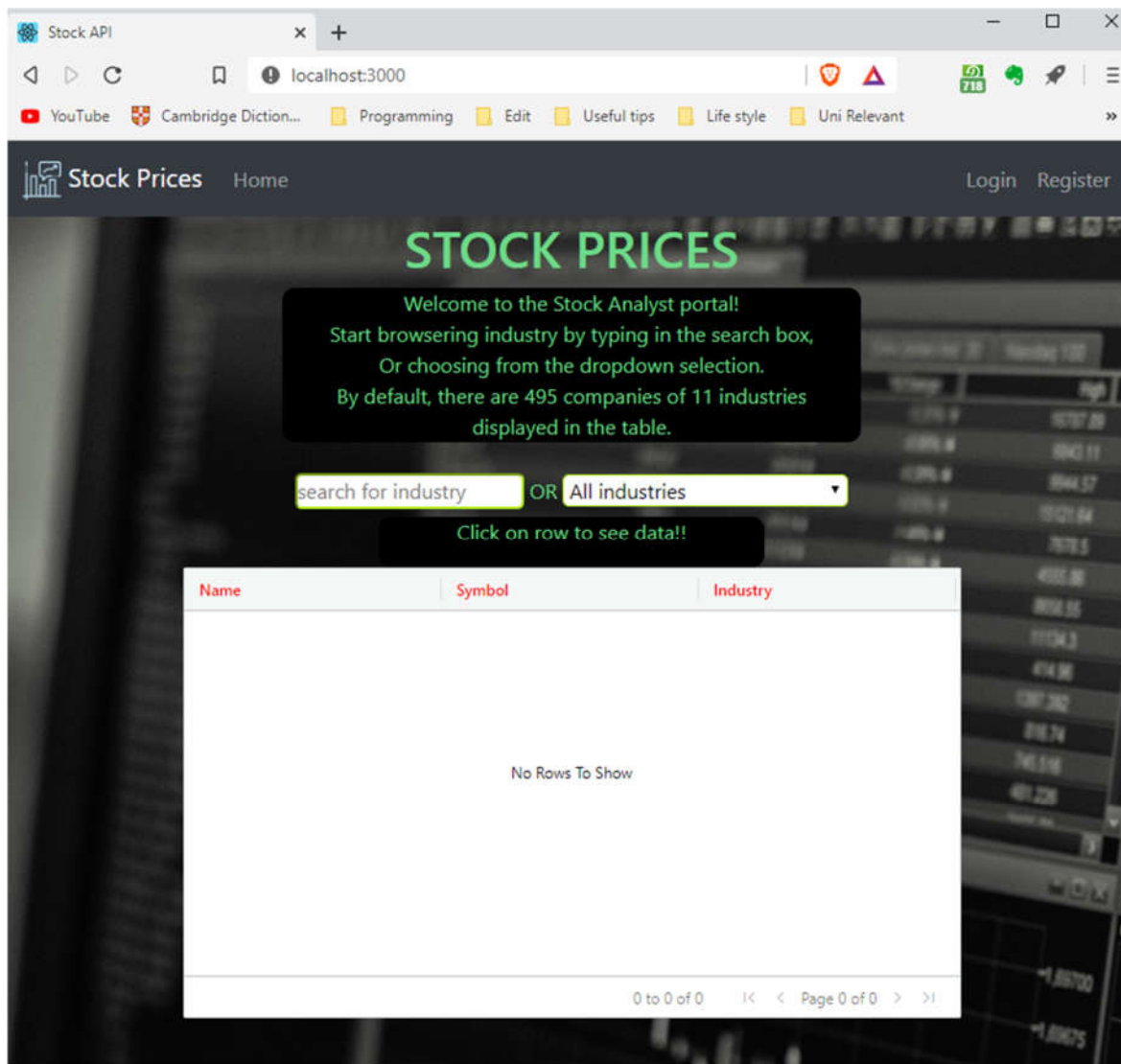
Screenshot for test plan



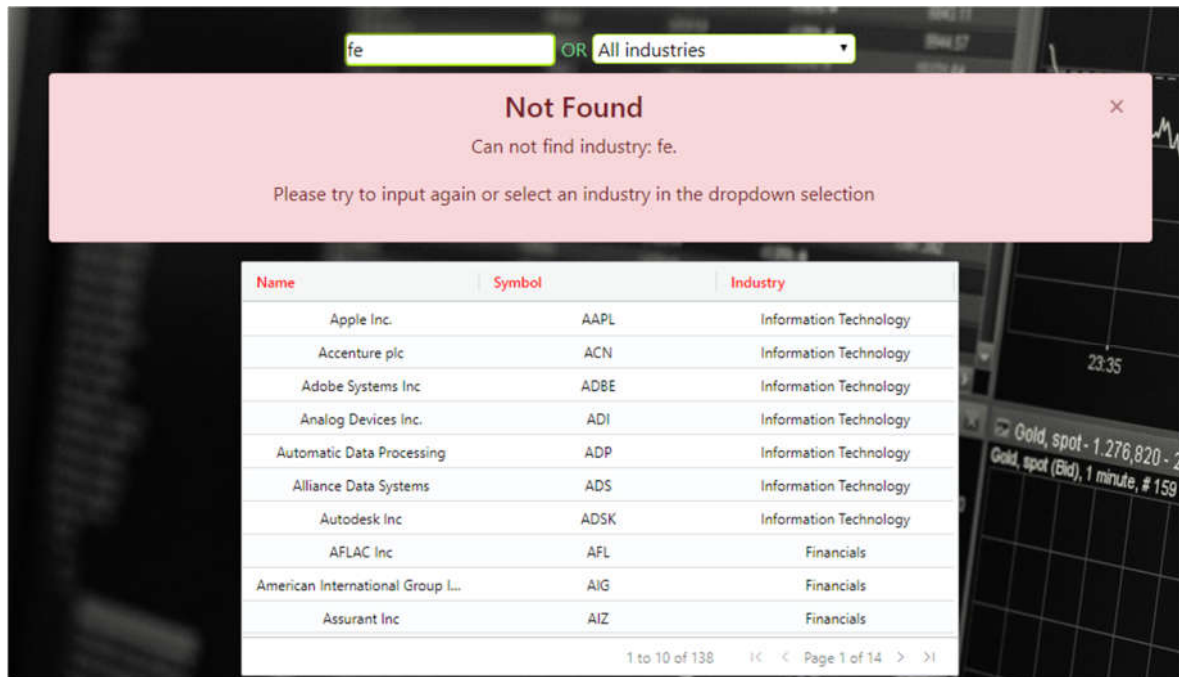
(Screenshot 01, 02, 03)



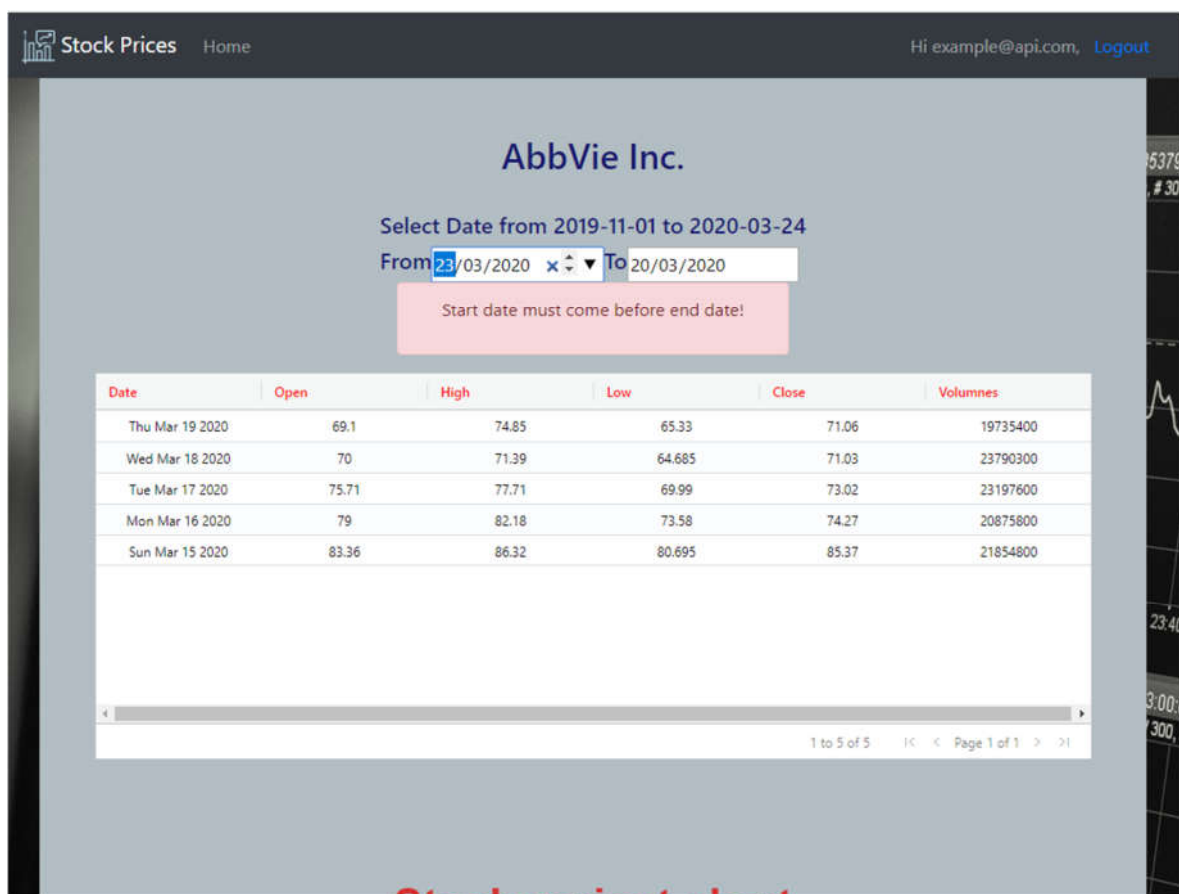
(Screenshot 04, 05)



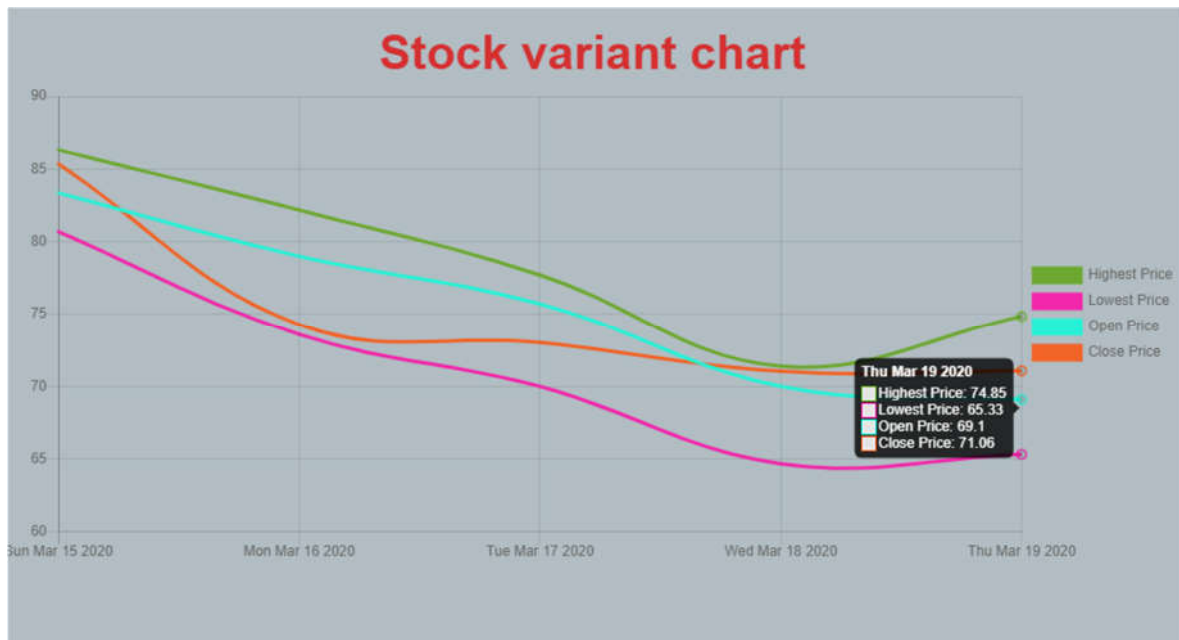
(Screenshot 06)



(Screenshot 07)



(Screenshot 08)



(Sceenshot 09, 10)