

Patent Investor

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Description

Patent Investor is web application allowing users to review current patented stocks, and create their portfolios wish list. Users can create an account, search a stock, track it into their portfolio, and categorize it through custom investment fields.

This app places a focus on the “patents footprint” of each stock, which allows users to gain a better understanding of **protected investments**.



Description (continued)

This project relies on the following APIs resources:

- The United States Patent and Trademark Office (USPTO) API (<https://developer.uspto.gov/api-catalog/patentsview>)
- IEX Cloud is an online platform that makes financial data and services accessible to everyone through their API (<https://cloud.iexapis.com/>)



Features

- Custom authentication.
- Search a particular stock and get a detailed view.
- Sort listings of stocks by different criteria (ticker symbol, corporation name, last price, patents portfolio size)
- Track projected stocks through adding to a portfolio.



Features (Continued)

- Categorize stocks through creation of custom tags
- Simulate number of shares, the net worth and the **adjusted patents coverage** in a detailed portfolio view with custom investments fields and breakdown of equity by stock from latest stock quote AND current patents portfolio size.
- IP30 stock index: a custom patents-weighted index covering the 30 most patented companies (a challenger to other popular stock indexes such as S&P500, DJIA, IXIC etc.)



Planning - User Stories

- Users can log in to the site, creating an account if necessary
- Once logged-in, users may:
 - Track stocks through a portfolio.
 - Create “investment fields” to categorize their stocks
 - Update the number of shares and simulate net worth
- Search a particular stock and get a detailed view.
- Manually update the stock data by querying the latest quotes and patents footprints.



Planning - Database

Model classes / tables:

- **User** - a generic user with an account: has *one-to-one* relationship to **Portfolio**
- **Portfolio** - identifies a user: has a *one-to-many* relationship to **StockShare** and **Tag**
- **StockShare** – the number of shares: has a *many-to-one* relationship to **Stock** and **Portfolio**
- **Stock** – has *one-to-one* relationship to **StockDetails**, a *one-to-many* relationship to **StockShare** and a *many-to-many* relationship to **Tag** (investment fields)
- **Tag** (investment fields) has a *many-to-many* relationship to **Stock** and a *many-to-one* relationship to **Portfolio**




Technology Stack

- Java
- Spring Boot w/ Thymeleaf templates
- Bootstrap (version 4)
- MySQL
- JavaScript



Demo – Create User 1

**Patent Investor**[Search stock](#) [All Stocks](#) [All Investment Fields](#) [Portfolio](#)

[Log in](#) [Register](#)

Register

Username

Password

Verify Password

[Register](#)

Already have an account? [Log in instead.](#)

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Data provided by [IEX Cloud](#) and [USPTO](#)



Demo – Create User 2



Patent Investor

[Search stock](#) [All Stocks](#) [All investment fields](#) [Portfolio](#)

[Log Out](#)

Home

Welcome, websurfer. You are now logged in.

- [Search stock](#)
- [All Stocks](#)
- [All investment fields](#)
- [Portfolio](#)



Demo – Create User 3

Information

Table: user

Columns:

- id** int(11) PK
- pw_hash varchar(255)
- username varchar(255)
- portfolio_id** int(11)

<

Result Grid | Filter Rows: | Edit: | Export/Import:

	id	pw_hash	username	portfolio_id
▶	1	\$2a\$10\$G/XCE6I/YnviN7pEWupqD....	websurfer	2
*	NULL	NULL	NULL	NULL



Demo – Listing of Stocks

All Stocks

Refresh stock data

Ticker ↑ (Corporation name ↓)	Last Price ↑	Patents Footprint ↑	Track stock
IP30 30 most patented companies	129.68 May 15, 2020	109,817 May 18, 2020	
KR Kroger Co.	33.88 May 15, 2020 NYS	32 May 18, 2020	Add to portfolio
INTC Intel Corporation	60.67 May 15, 2020 NAS	1 May 18, 2020	Add to portfolio
AMKR Amkor Technology Inc.	9.69 May 15, 2020 NAS	1 May 18, 2020	Add to portfolio
MEI Methode Electronics Inc.	28.16 May 15, 2020 NYS	1 May 18, 2020	Add to portfolio

List of stocks

1 2 3 4 5 ... 489



Demo – Updating the database

All Stocks

Refresh stock data

20% Complete

Currently running API calls to refill the entire database with the latest stock data.
Do not navigate away from this page.
Approximately **8 minutes** left. Please wait...

Ticker ↕ (Corporation name ↕)	Last Price ↕	Patents Footprint ↕	Track stock
IP30 30 most patented companies	138.68 May 15, 2020	168 917 May 18, 2020	
KR Kroger Co.	33.88 May 15, 2020 NYS	32 May 18, 2020	Already in portfolio
INTC Intel Corporation	60.67 May 15, 2020 NAS	1 May 18, 2020	Add to portfolio
AMKR Amkor Technology Inc.	9.69 May 15, 2020 NAS	1 May 18, 2020	Add to portfolio
MEI Methode Electronics Inc.	28.16 May 15, 2020 NYS	1 May 18, 2020	Add to portfolio

List of stocks

1 2 3 4 5 ... 489



Demo – View of my Portfolio

Stocks portfolio of websurfer

Click on the number of shares to adjust it for each stock



Net worth: \$ 6,116.42

2,052.62 adjusted patents
(27,115 total patents)

Ticker  ( Corporation name )	# of shares 	% in portfolio 	Last Price 	Patents Footprint 	List of tags	Divest stock
AAL American Airlines Group Inc.	68	10.22 %	9.19 May 15, 2020 NAS	88 May 18, 2020	#Nanotech	remove from portfolio
AAPL Apple Inc.	4	20.23 %	309.38 May 15, 2020 NAS	20,282 May 18, 2020	#Nanotech	remove from portfolio
KR Kroger Co.	0	00.00 %	33.88 May 15, 2020 NYS	32 May 18, 2020	#Example tag	remove from portfolio
RTX Raytheon Technologies Corporation	47	40.74 %	53.02 May 15, 2020 NYS	6,678 May 18, 2020	No tags found	remove from portfolio

List of stocks in my portfolio



Demo – Edit number of shares

Edit number of shares for AAPL

The number of shares must be a number between 0 and 1000



Number of shares for AAPL

Update number of shares

Cancel



Demo – Updated shares

This value shows
“how protected” the
portfolio is.

Stocks portfolio of websurfer

The number of shares has been updated successfully for AAPL



Net worth: \$ 17,254.10

4,881.32 adjusted patents
(27,115 total patents)

Ticker ↕ (Company name ↕)	# of shares ↕	% in portfolio ↕	Last Price ↕	Patents Footprint ↕	List of tags	Divest stock
AAL American Airlines Group Inc.	68	03.62 %	9.19 May 15, 2020 NAS	88 May 18, 2020	#Nanotech	remove from portfolio
AAPL Apple Inc.	40	71.72 %	309.38 May 15, 2020 NAS	20,282 May 18, 2020	#Nanotech	remove from portfolio
KR Kroger Co.	0	00.00 %	33.88 May 15, 2020 NYS	32 May 18, 2020	#Example tag	remove from portfolio
RTX Raytheon Technologies Corporation	47	14.44 %	53.02 May 15, 2020 NYS	6,678 May 18, 2020	No tags found	remove from portfolio

List of stocks in my portfolio



Creating a new Tag

Create investment field

'Investments fields' help categorize stocks. Keep the 'Field name' short, ideally a single word of less than 10 characters. You may be more descriptive in the property 'Description of the investment field'. ×

Field name

Biotech

Description of the investment field

Biotechnologies and
related technologies

Create

Cancel



Demo – Listing of Custom Tags

All investment fields of websurfer

New investment field #Biotech created



Create new field

Delete existing field

Investment field 	Description	Edition
#Nanotech	Nanotechnologies	Edit #Nanotech
#AI	Artificial Intelligence	Edit #AI
#Fintech	Finance and related technologies	Edit #Fintech
#AirTravel	Airlines	Edit #AirTravel
#Biotech	Biotechnologies and related technologies	Edit #Biotech

List of investment fields



Add tag to Stock

Add Tag to: AAPL

Up to a maximum of 3 tags may be added to a stock. You may add 2 more tag(s).



AI



Add Tag

Cancel



Demo – Details of a stock

Summary of 'AAPL'

The stock 'AAPL' is currently in your **portfolio**

×

New investment field #AI added to stock 'AAPL'

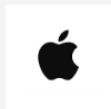
×

\$ 309.38

Last Trade : May 15, 2020

20,282 patents registered

Last update : May 18, 2020



Description of AAPL:

Apple, Inc. engages in the design, manufacture, and sale of smartphones, personal computers, tablets, wearables and accessories, and other variety of related services. It operates through the following geographical segments: Americas, Europe, Greater China, Japan, and Rest of Asia Pacific. The Americas segment includes North and South America. The Europe segment consists of European countries, as well as India, the Middle East, and Africa. The Greater China segment comprises of China, Hong Kong, and Taiwan. The Rest of Asia Pacific segment includes Australia and Asian countries. Its products and services include iPhone, Mac, iPad, AirPods, Apple TV, Apple Watch, Beats products, Apple Care, iCloud, digital content stores, streaming, and licensing services. The company was founded by Steven Paul Jobs, Ronald Gerald Wayne, and Stephen G. Wozniak on April 1, 1976 and is headquartered in Cupertino, CA.

Full name of company :	Apple Inc.
Primary listing exchange :	Nasdaq Stock Market
Industry / Sector :	Telecommunications Equipment / Electronic Technology
Employees :	137,000 people
CEO :	Timothy Donald Cook
Website :	http://www.apple.com
Address :	One Apple Park Way Cupertino CA 95014-2083 US
Phone :	1.408.996.1010
List of tags :	#Nanotech #AI
Number of shares in portfolio :	40

Add tag

Remove tag



Demo – View of a Tag




Investment field: #AI

#AI is currently set to 1 stock(s).



Description of #AI :

Artificial Intelligence

Ticker  (Corporation name )	Last Price 	Patents Footprint 	Track stock
IP30 30 most patented companies	128.68 May 15, 2020	108,917 May 18, 2020	
AAPL Apple Inc.	309.38 May 15, 2020 NAS	20,282 May 18, 2020	Already in portfolio

List of stocks for #AI



IP30 Index

IP30

\$ 128.68 average value

Last Trade : May 15, 2020

109,917 aggregated patents registered

Last update : May 18, 2020

Description of IP30 :

IP30 stock index is a patents-weighted index serving as a benchmark covering the 30 most patented companies. It measures the stock performance of 30 companies listed on stock exchanges in the United States that hold the largest number of patents portfolio. IP30 is a challenger for other popular stock indexes covering other purposes including: S&P500, DJIA, IXIC etc.

Below is a list of the companies currently making up IP30 ranked in descending order by the size of the patents portfolio

Full name of company	Ticker	Primary listing exchange	Latest price	# of patents
1: Apple Inc.	AAPL	Nasdaq Stock Market	309.38	20,282
2: General Motors Company	GM	New York Stock Exchange	22.76	11,204
3: Raytheon Technologies Corporation	RTX	New York Stock Exchange	53.02	6,678
4: United Microelectronics Corp. Sponsored ADR	UMC	New York Stock Exchange	2.63	5,198
5: Agilent Technologies Inc.	A	New York Stock Exchange	81.83	4,400
6: Eli Lilly and Company	LLY	New York Stock Exchange	165.29	4,172
7: Xilinx Inc.	XLNX	Nasdaq Stock Market	85.84	4,032
8: NCR Corporation	NCR	New York Stock Exchange	16.97	4,027
9: NVIDIA Corporation	NVDA	Nasdaq Stock Market	353.44	3,546
10: Analog Devices Inc.	ADI	Nasdaq Stock Market	106.4	3,503



Search a stock

Search stock by:

☐ All ☐ Ticker ☒ Company Name

Keyword:

Search

3 stocks found for 'airlines'

Ticker  (Corporation name )	Last Price 	Patents Footprint 	Track stock
UAL United Airlines Holdings Inc.	20.52 May 15, 2020 NAS	18 May 18, 2020	Already in portfolio
AAL American Airlines Group Inc.	9.19 May 15, 2020 NAS	88 May 18, 2020	Already in portfolio
LUV Southwest Airlines Co.	24.16 May 15, 2020 NYS	17 May 18, 2020	Already in portfolio

List of stocks search results for 'airlines'



Demo – Code Example 1

```
1 package org.launchcode.patentinvestor.models;
2
3 import java.util.Comparator;
4
5 /**
6  * Created by kamdem
7  */
8 public class Comparators {
9
10     public static Comparator<Stock> tickerComparator
11         = (s1, s2) -> s1.getTicker().compareTo(s2.getTicker());
12
13     public static Comparator<Tag> tagComparator
14         = (t1, t2) -> t1.getName().compareTo(t2.getName());
15
16     public static Comparator<Stock> companyNameComparator
17         = (s1, s2) -> s1.getStockDetails().getCompanyName()
18             .compareTo(s2.getStockDetails().getCompanyName());
19
20     public static Comparator<Stock> latestPriceComparator
21         = (s1, s2) -> (s1.getStockDetails().getLatestPrice()
22             - s2.getStockDetails().getLatestPrice() == 0) ? 0 : ((s1.getStockDetails().getLatestPrice()
23             - s2.getStockDetails().getLatestPrice() < 0) ? -1 : 1);
24
25     public static Comparator<Stock> patentsPortfolioComparator
26         = (s1, s2) -> (s1.getStockDetails().getTotalNumberOfPatents()
27             - s2.getStockDetails().getTotalNumberOfPatents() == 0) ? 0 : ((s1.getStockDetails().getTotalNumberOfPatents()
28             - s2.getStockDetails().getTotalNumberOfPatents() < 0) ? -1 : 1);
29
30     public static Comparator<StockShare> percentInPortfolioComparator
```



Demo – Code Example 2

The code from previous slide handles the sorting of stock, tags and shares listings by various criteria for **Stock**, **StockShare** and **Tag** classes:

- Ticker symbols.
- Corporation names
- Latest stock quotes
- Patents footprints
- Percentage of shares in the portfolio
- Number of shares in the portfolio
- Tags (investment fields) names



What I Learned

- Bootstrap version 4
- Spring Security
- Merging information from different APIs (IEX and USPTO) and Querying APIs
- Processing JSON data
- Changing results sort order interactively for multiple criteria
- Pagination of data on the screen
- Publishing a website



What's Next

- Using multi-selects to enable many-to-many relationship editing
- Automate the fetching of remote API data from manually updating
- Auto-generated emails based of user's constraints, for example to let them now that a stock has met a certain constraints from recent market shifts reflected in the latest quotes automatically updated.
- Set up a curve view of IP30 from a time-series data.

