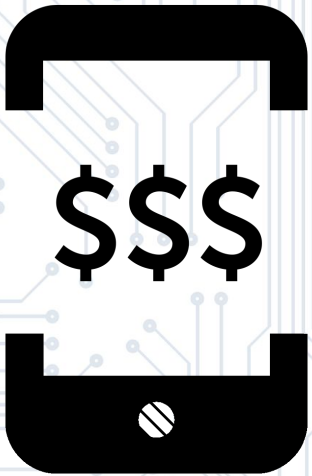
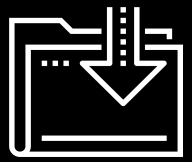


Projects & Collaboration with Git

FinTech



Project Week Overview

Class Objectives

- Articulate the requirements for Project 1.
- Draw and interpret diagrams of Git branching workflows.
- Create new branches with Git.
- Push local branches to GitHub.

Project Week! (This Week)

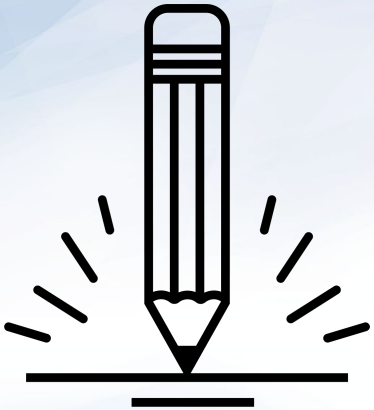
Day 1	Day 2	Day 3
Form groups	Hardcore development	Hardcore development
Outline project ideas		
Initial data exploration		
Begin research of datasets		
Submit project proposal for approval		

Project Week! (Next Week)

Day 4	Day 5	Day 6
Hardcore development	Hardcore development	Presentation day
	Presentation prep	

Time to divide into teams!

Collaboration with Git



Activity: Create a Repository

In this activity, each project group will create a project repo and invite all group members as collaborators.

(Instructions sent via Slack.)

Suggested Time:

Pull Requests and Code Review

New code should be reviewed before getting merged into the main branch.

01

It's important to make sure that all new code gets reviewed by at least one other team member before getting merged into the main branch.

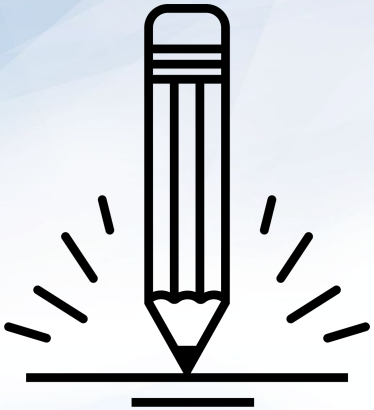
02

Reviewing new code decreases the chances that broken code will accidentally be introduced into the main branch.

03

Code review helps group members who didn't write the code understand how it works.

Protecting the **main branch** means we will configure the repo to prohibit changes made without another team member's review.



Activity: Protect Main Branch

In this activity, groups will protect their main branches.

(Instructions sent via Slack.)

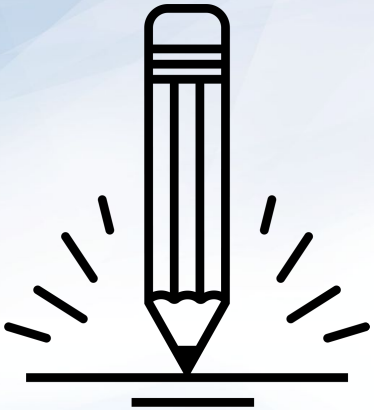
Suggested Time:

Branching

- Every Git repo starts with a main branch, which is there to hold the production version of the repo's code.
- When we want to work on the code, we start by creating a new feature branch off the main.
- This creates a self-contained copy of all of the main branch's code for us to work in.
- When the work is complete, a pull request is submitted from the feature branch to the main branch
- A pull request is a request to merge the changes from the feature branch to the main branch.

Branching

Our repos are configured so another group member must look at and approve the pull request before its changes can be merged into the main branch.



Activity: Git Branching, Pushing

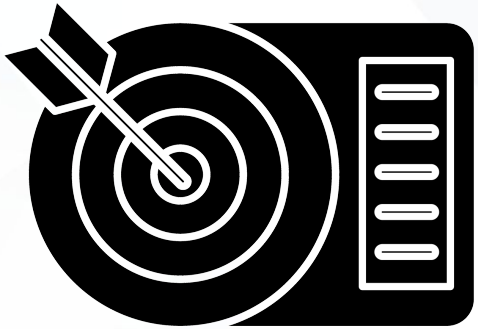
In this activity, students will create branches, submit pull requests, and perform code reviews before merging.

(Instructions sent via Slack.)

Suggested Time:

Project 1

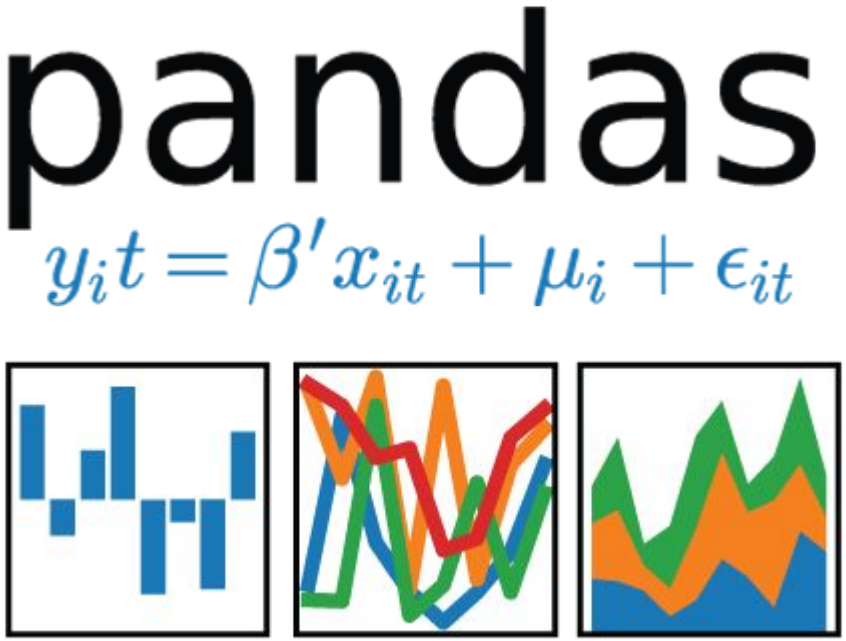
FinTech Financial Programming and Quantitative Analysis



Project Requirements

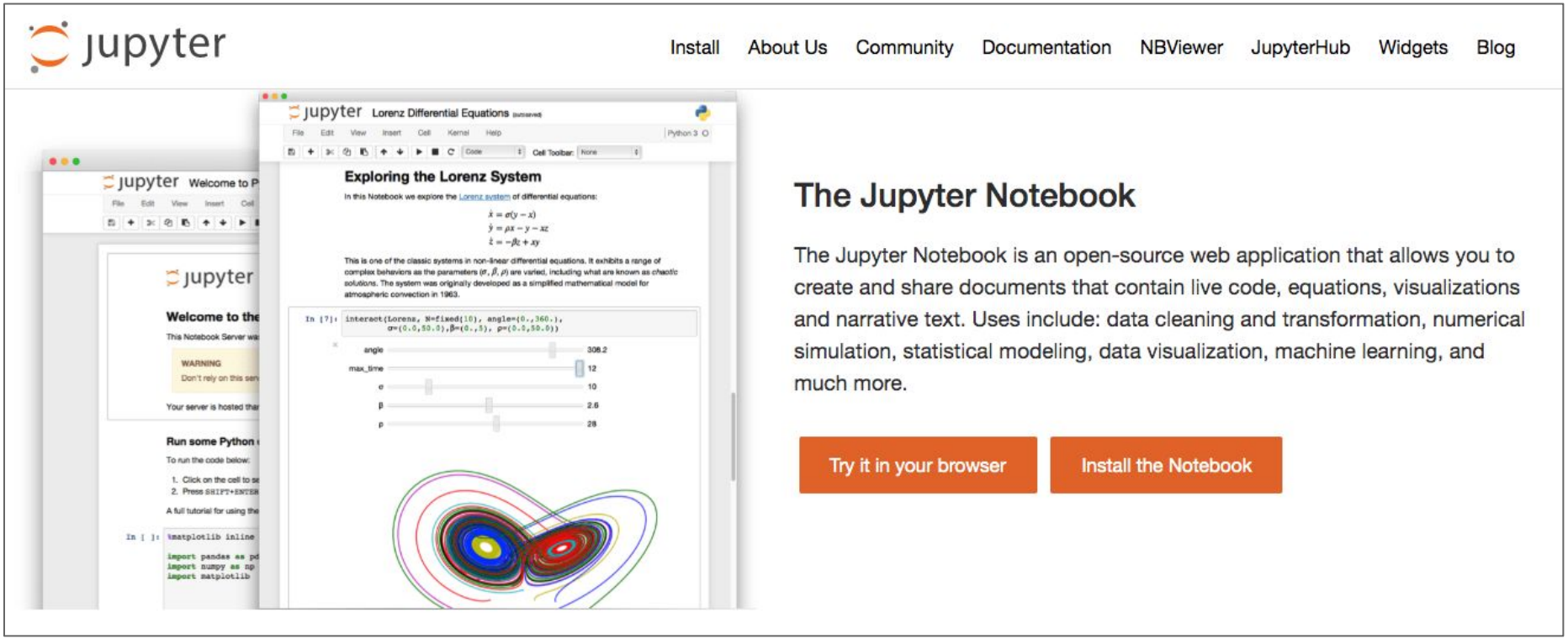
Development Requirements

Use Pandas to **clean and format** your dataset(s).



Development Requirements

Create a Jupyter Notebook describing the **data exploration and cleanup** process.

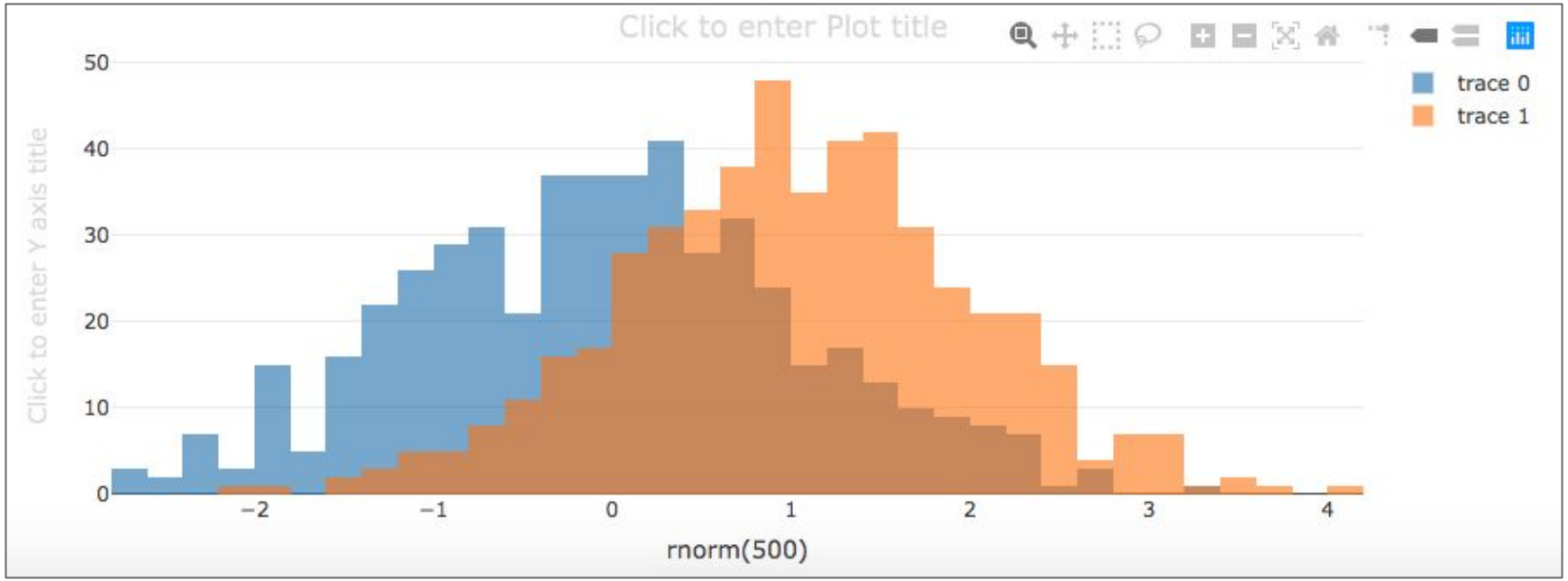


Development Requirements

Create a Jupyter Notebook illustrating the **final analysis**.

Development Requirements

Use PyViz, Panel, Plotly Express, and Hvplot to create a total of six to eight visualizations of your data (ideally, at least two per “question” you ask of your data) and then aggregate these visualizations into a dashboard.

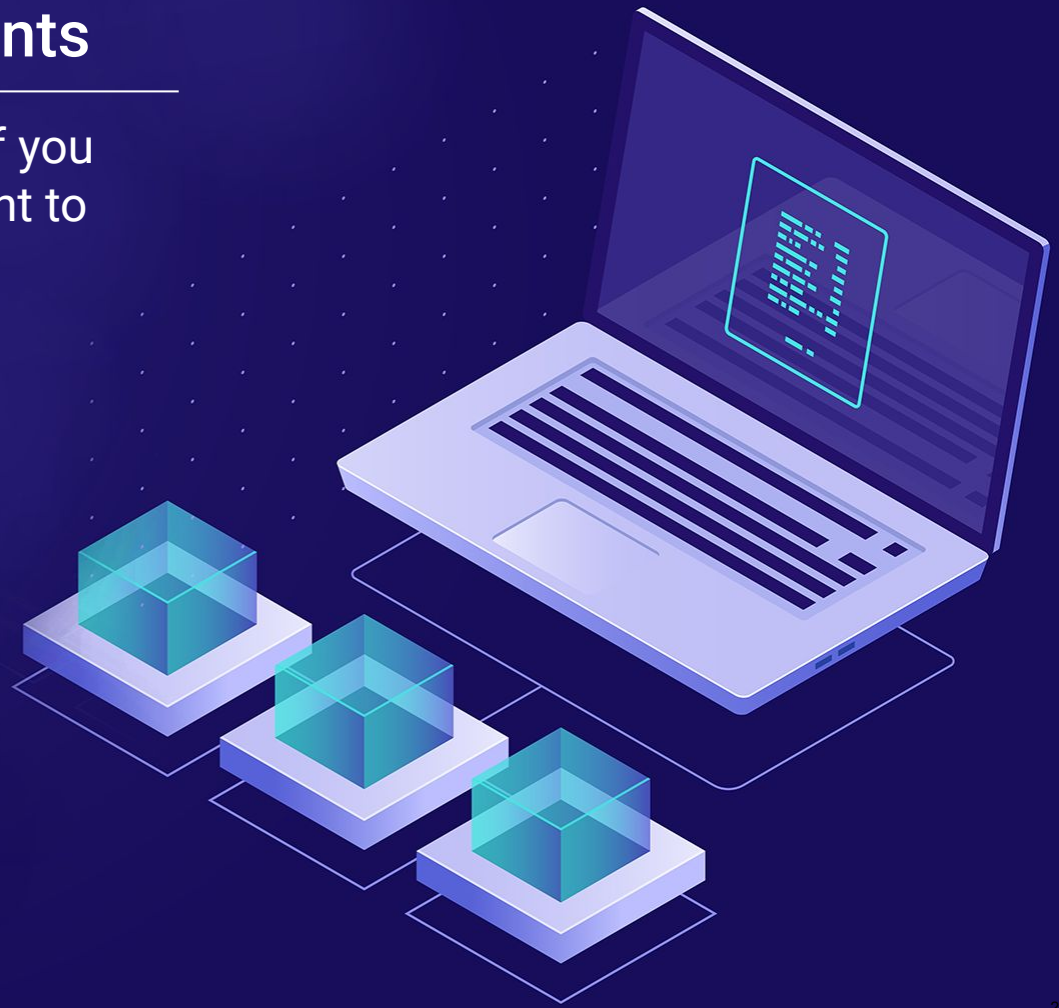


Development Requirements

Save PNG images of your visualizations to distribute to the class and instructional team. Also include them in your presentation and your repo's `README.md` file.

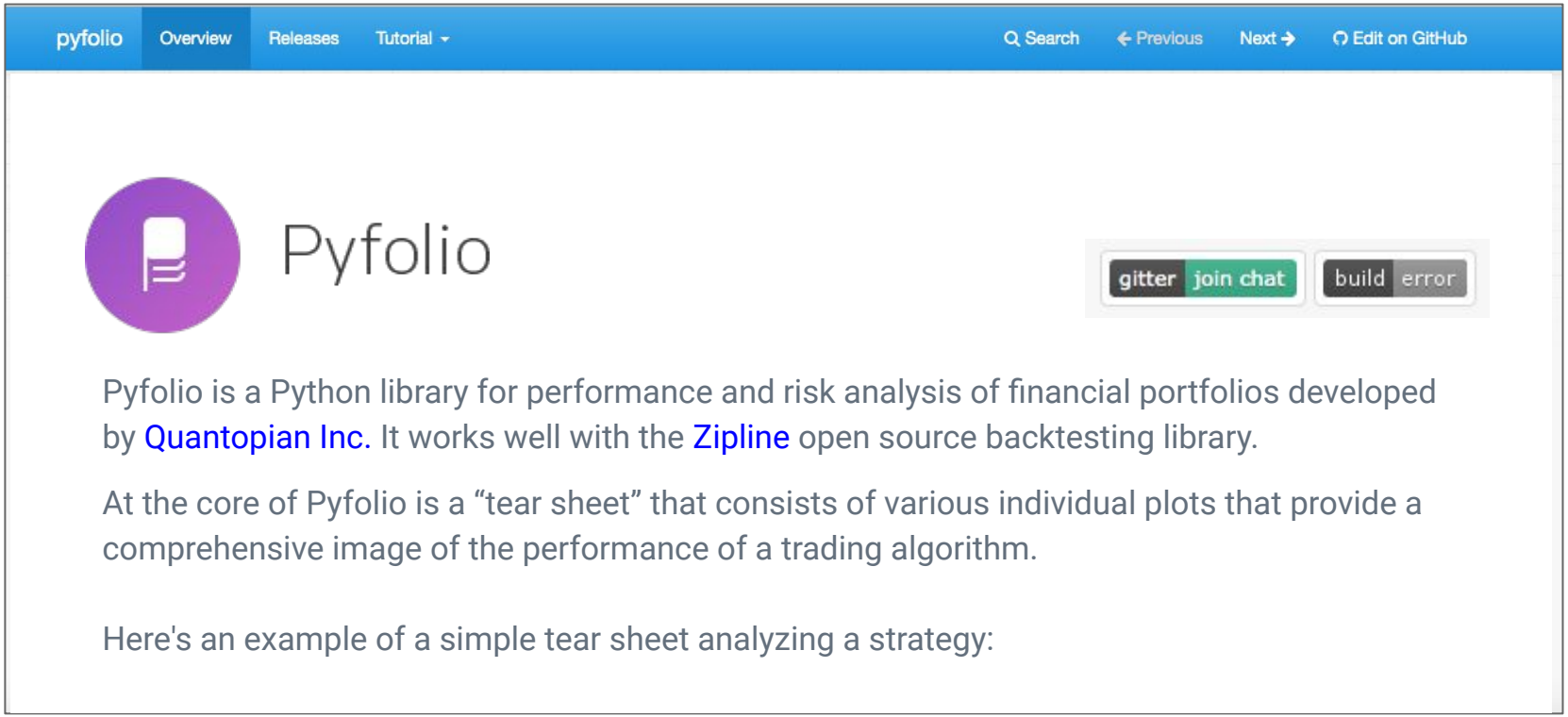
Development Requirements

Optionally, use at least one API, if you can find an API with data pertinent to your primary research questions.



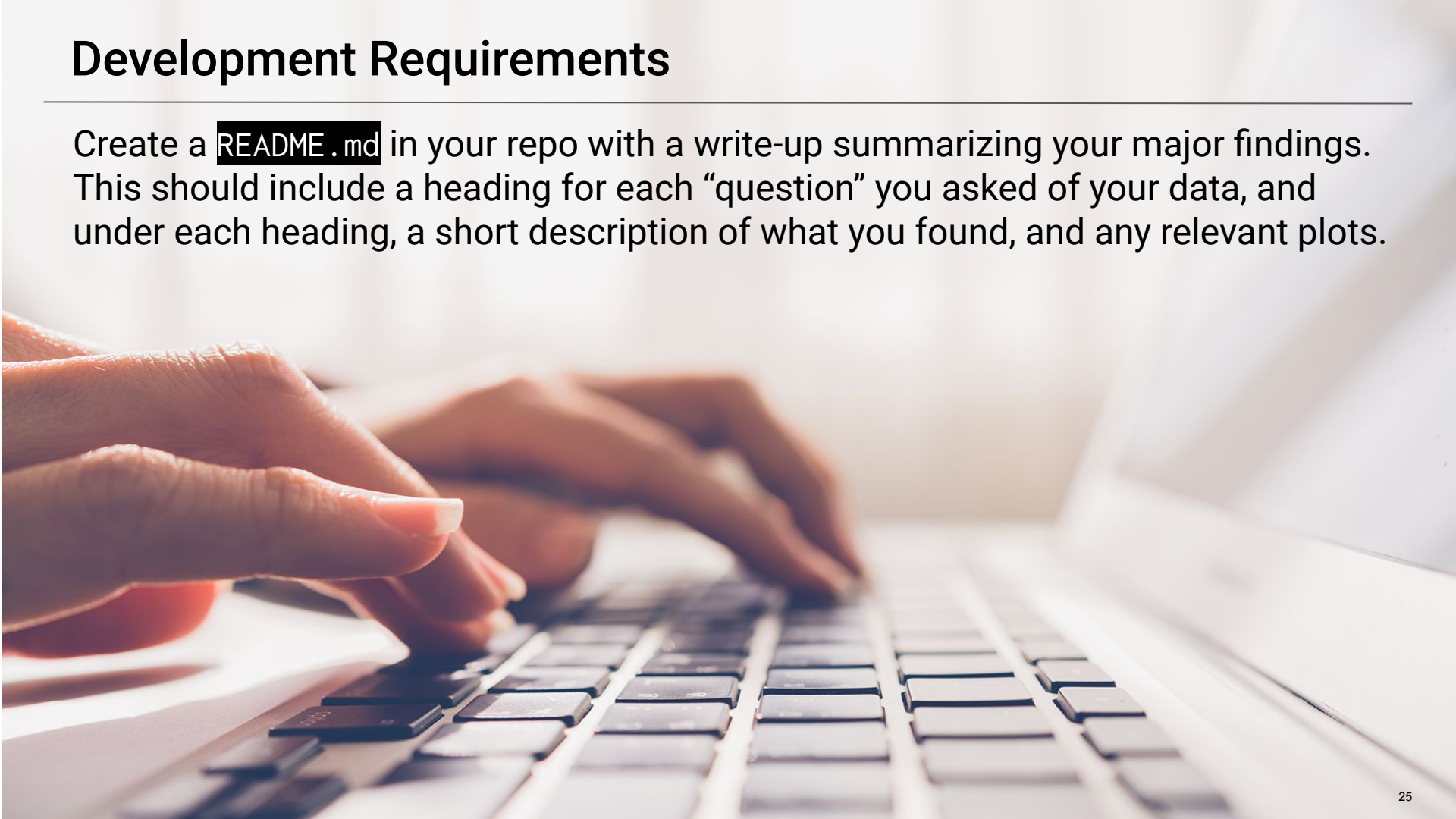
Development Requirements

Use one new Python library that hasn't been covered in class.



Development Requirements

Create a `README.md` in your repo with a write-up summarizing your major findings. This should include a heading for each “question” you asked of your data, and under each heading, a short description of what you found, and any relevant plots.



Presentation Requirements

You will be responsible for preparing a formal, 10-minute presentation that covers:

- Questions you found interesting and what motivated you to answer them.
- Where, and how, the data was found to answer these questions.
- The data exploration and cleanup process (accompanied by your Jupyter Notebook).
- The analysis process (accompanied by your Jupyter Notebook).
- Your conclusions, which should include a numerical summary and visualizations of the summary.
- The implications of your findings: What do the findings mean? How do they impact finance?

Suggested Data Sources

Suggestions for Data Sources

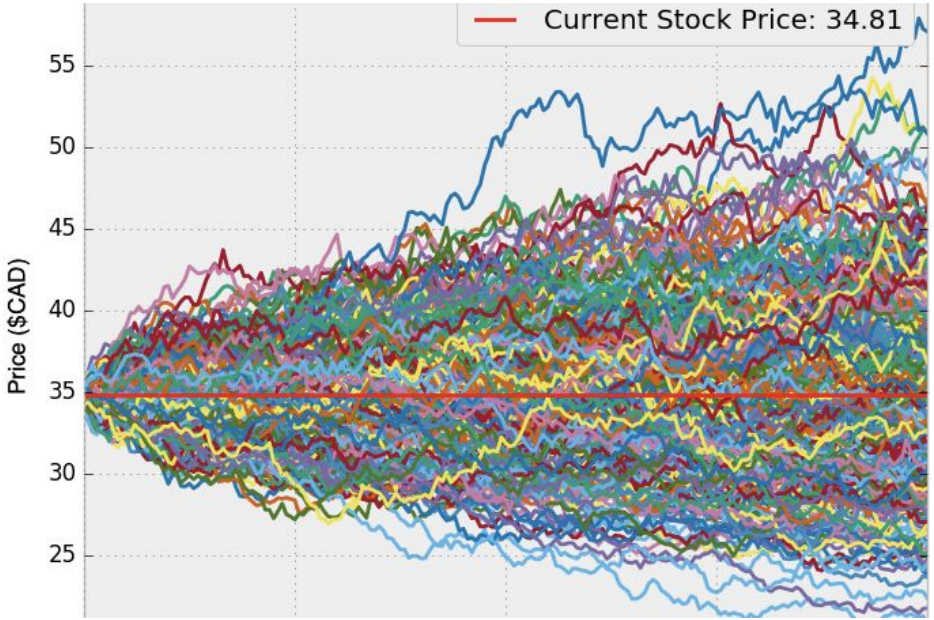
Feel free to ask the instructional staff for input, but our general advice is to stick to data sources that:

- Are sufficiently large.
- Have a consistent format.
- Ideally, contain more data than needed.
- Are well documented.

Example Project Ideas

Portfolio Analyzer

Prepare a tearsheet for a portfolio that includes calculations, tables, charts, financial models, Monte Carlo simulations and statistical analysis of portfolio performance for a given portfolio.

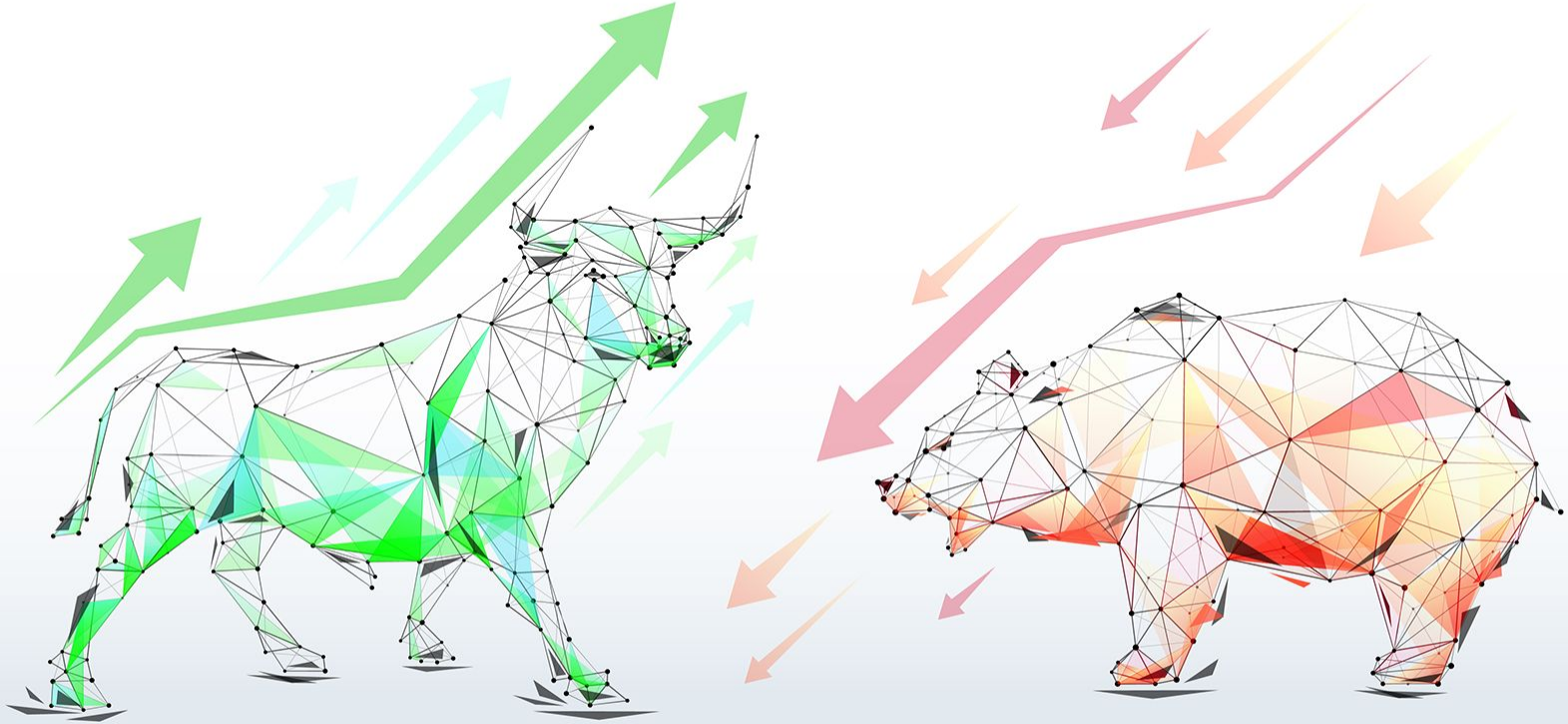


Portfolio Analyzer

Create and host a dashboard for the tearsheet with interactive visualizations and a storyboard interface.

Portfolio Analyzer

What do your results suggest about the current portfolio performance?
What would you recommend customizing to improve the portfolio?



Fund my FinTech!

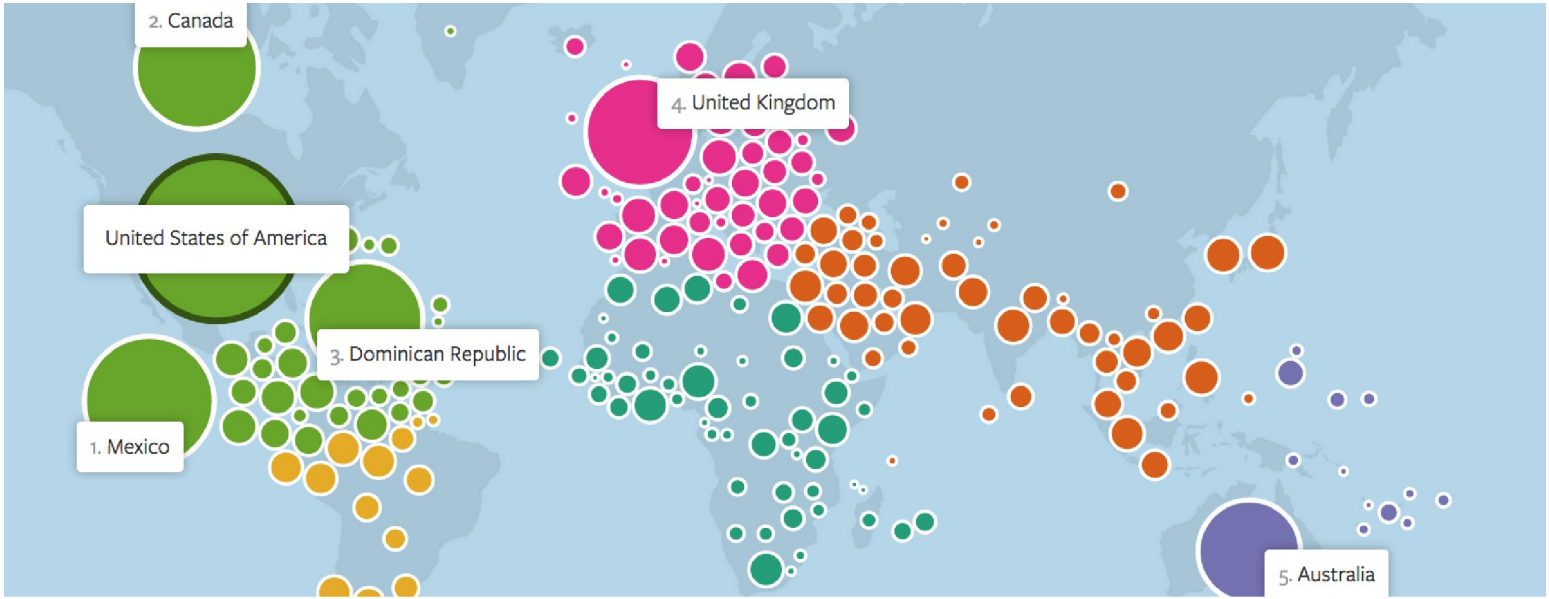
Fund my FinTech is a business valuation use case. Entrepreneurs would like to fund their new business with a crowdfunding platform. In order to do that, they need to prove to potential investors that their company is viable.

Fund my FinTech! Financial Valuation

What metrics, measures, and models can be used to show investors that the company idea is viable?

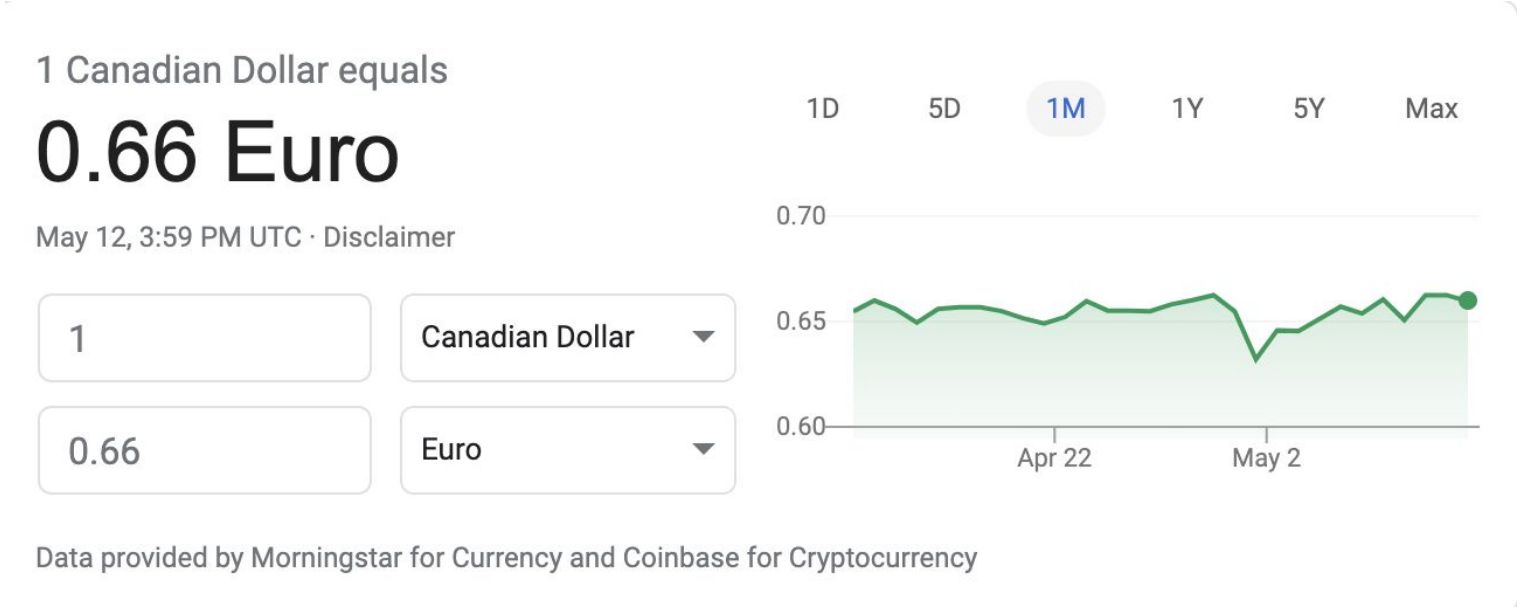
Fund my FinTech! Location Analysis

What analysis shows that the proposed location or country for the business will be profitable? Can you compare one location to another?



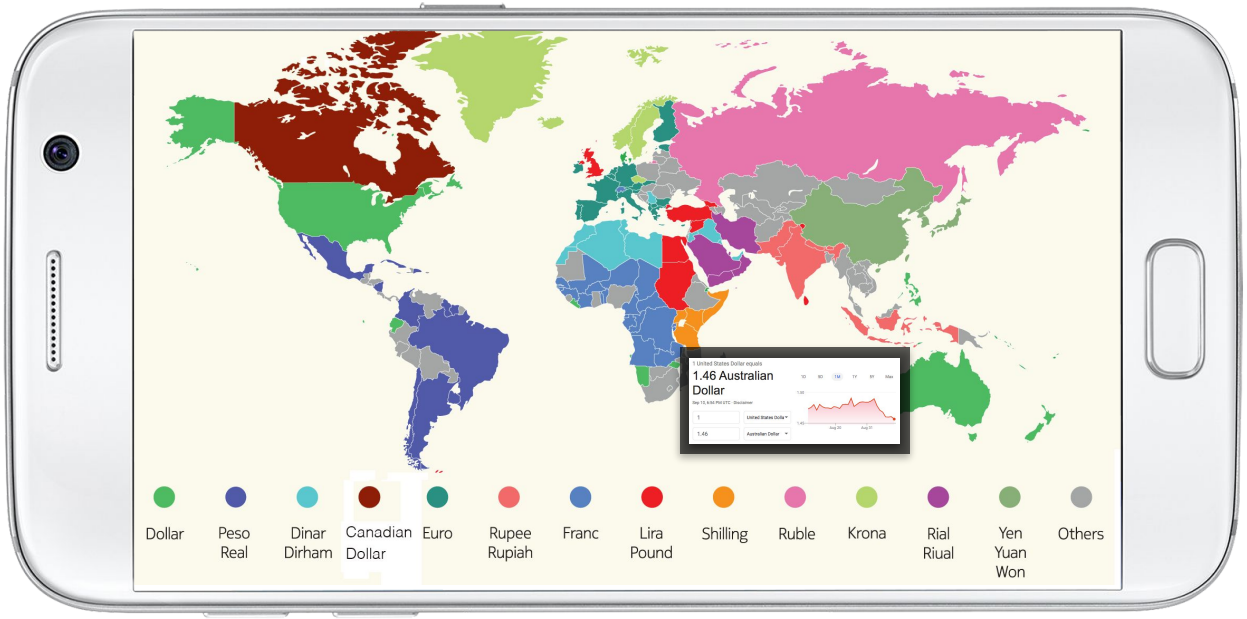
Currency Calculator

A travel agency has hired your team to build a currency calculator into their travel planner. This calculator will be hosted as an interactive dashboard application.



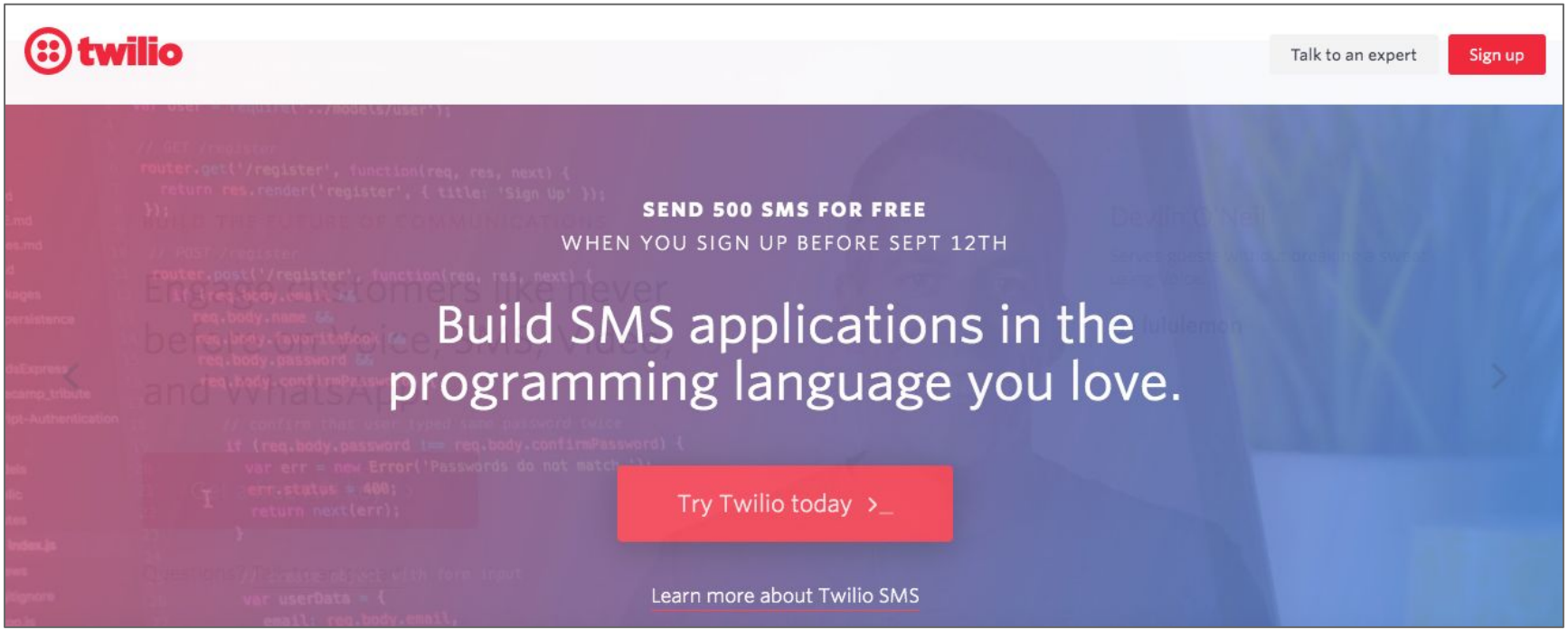
Currency Calculator

This calculator not only provides real-time conversions to/from a variety of currencies, but it also provides interactive maps that allow travelers to view and compare exchange markets for different locations.



Currency Calculator

The application will also prepare a report on the selected locations and send that to a registered mobile number using tools such as Twilio.



Today’s Focus

By the End of Today's Class:

- Brainstorm possible project ideas.
- Begin data research.
- Write a description of the scope of your research.

By the End of Today's Class:

Create a short, one-page project proposal that includes:

- Project title
- Team members
- Project description/outline
- Research questions to answer
- Datasets to be used
- Rough breakdown of tasks

Questions?