Final Project Report: Habit Tracker by Apperture Laboratories

CSE 210

Overview

- Introduction to our Team
- Our Final Architecture
- Process & Ceremonies
- CI Pipeline - Testing, Code Coverage, and Documentation
- UI - Before and After
- App Demo
- Retrospectives - The Good
- Retrospectives - The Bad
- Proposed Undergraduate Schedule Overview
- Q&A

Apperture Labs - A Trusted Friend in Science

- Developed relationships and a rapport
- Communication was excellent, everyone was accountable
- Division of labor was a strength
  - **Daniel** - client habit logging, creation & deletion
  - **Jared** - Database manager, CI Pipeline
  - **Fan** - REST API endpoint behavior
  - **Li** - testing (end-to-end)
  - **Ted** - client progress visual, scrum master, spokesperson
  - **Mary Anne** - frontend HTML
  - **Zhongdao** - user management

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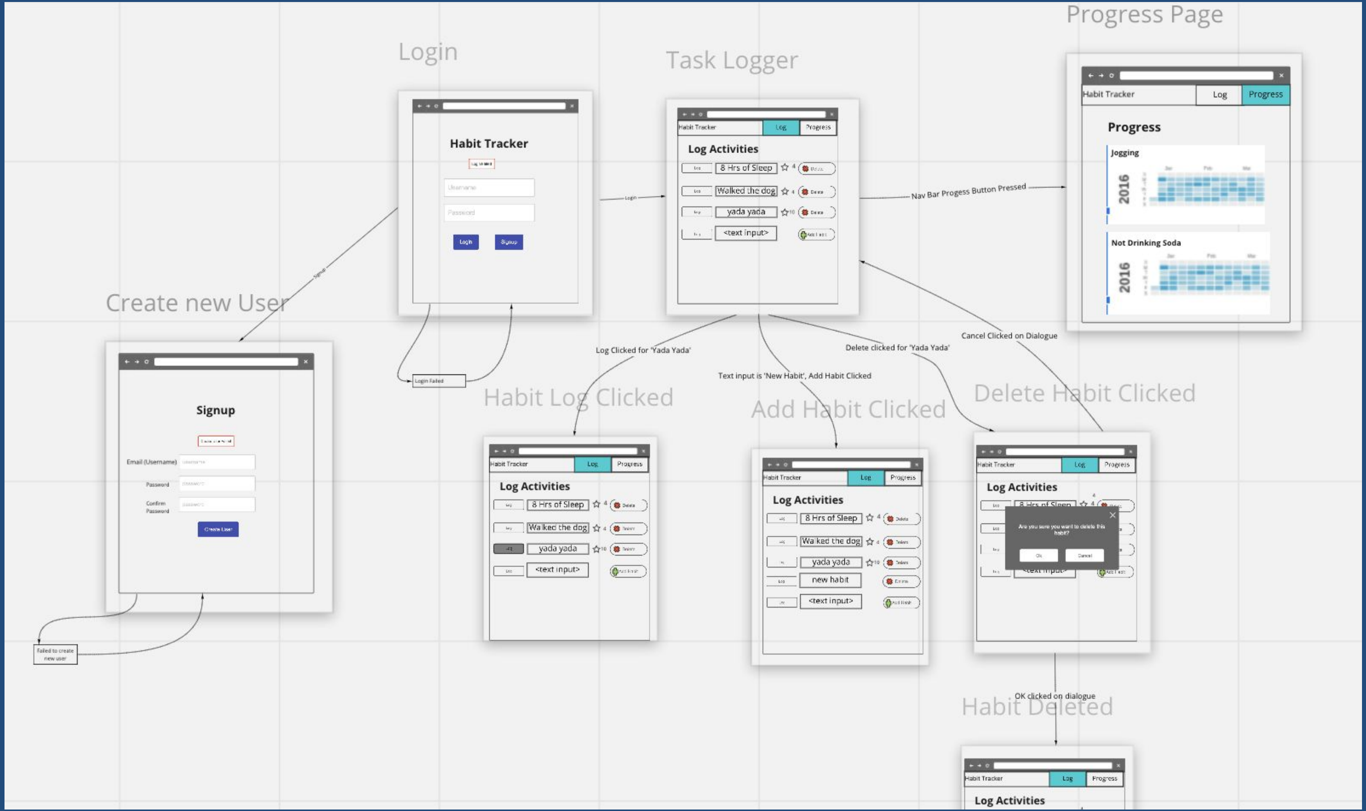
Architecture - Wireframes



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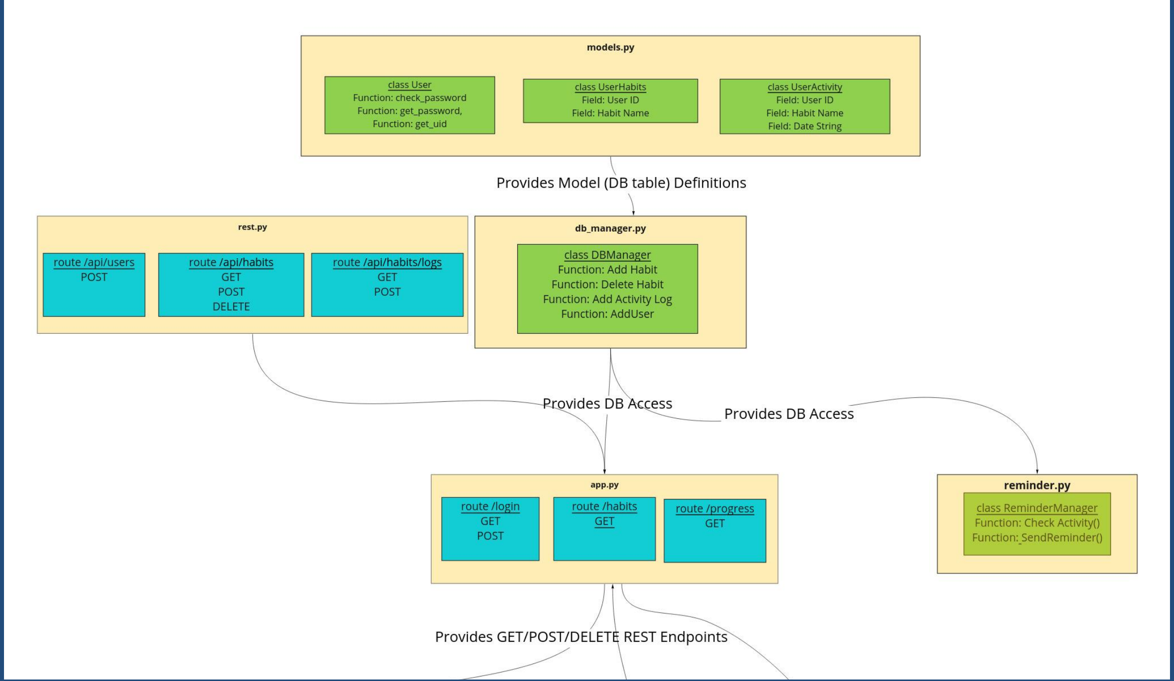
Our Architecture - Back End Diagram



models.py

class User
Function: check_password
Function: get_password,
Function: get_uid

class UserHabits
Field: User ID
Field: Habit Name

class UserActivity
Field: User ID
Field: Habit Name
Field: Date String

Provides Model (DB table) Definitions

rest.py

route /api/users
POST

route /api/habits
GET
POST
DELETE

route /api/habits/logs
GET
POST

db_manager.py

class DBManager
Function: Add Habit
Function: Delete Habit
Function: Add Activity Log
Function: AddUser

Provides DB Access

Provides DB Access

app.py

route /login
GET
POST

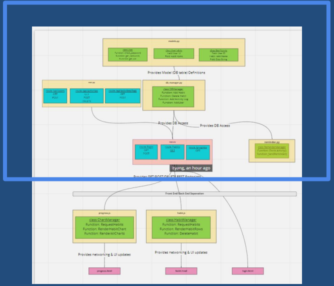
route /habits
GET

route /progress
GET

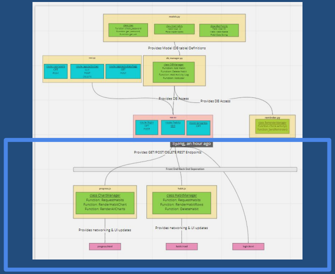
reminder.py

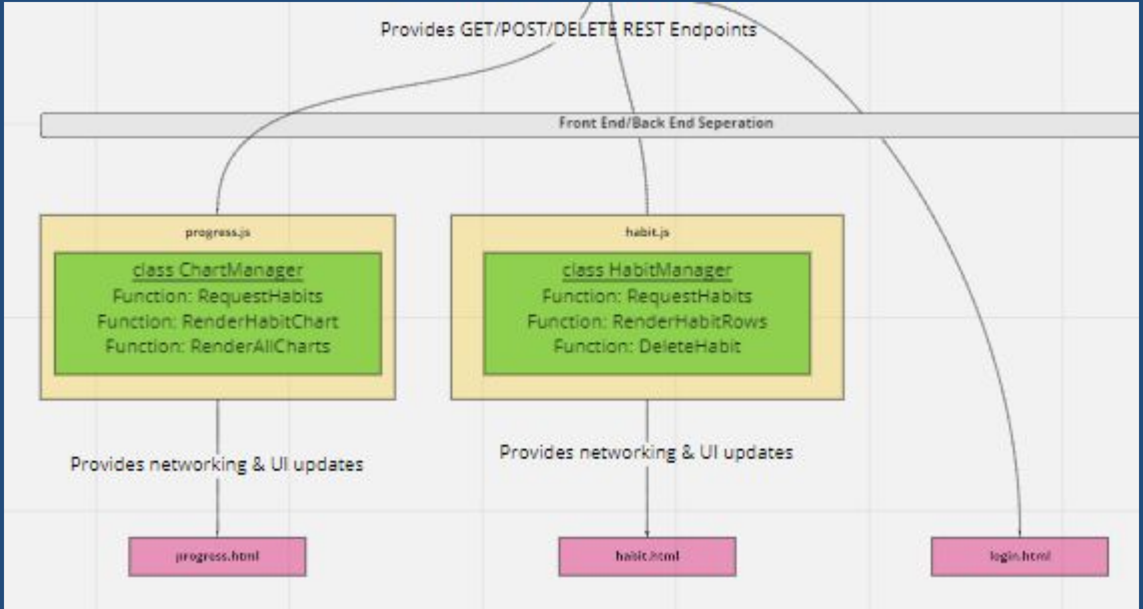
class ReminderManager
Function: Check Activity()
Function: SendReminder()

Provides GET/POST/DELETE REST Endpoints



Our Architecture - Front End Diagram





Provides GET/POST/DELETE REST Endpoints

Front End/Back End Seperation

progress.js

class ChartManager
Function: RequestHabits
Function: RenderHabitChart
Function: RenderAllCharts

habit.js

class HabitManager
Function: RequestHabits
Function: RenderHabitRows
Function: DeleteHabit

Provides networking & UI updates

Provides networking & UI updates

progress.html

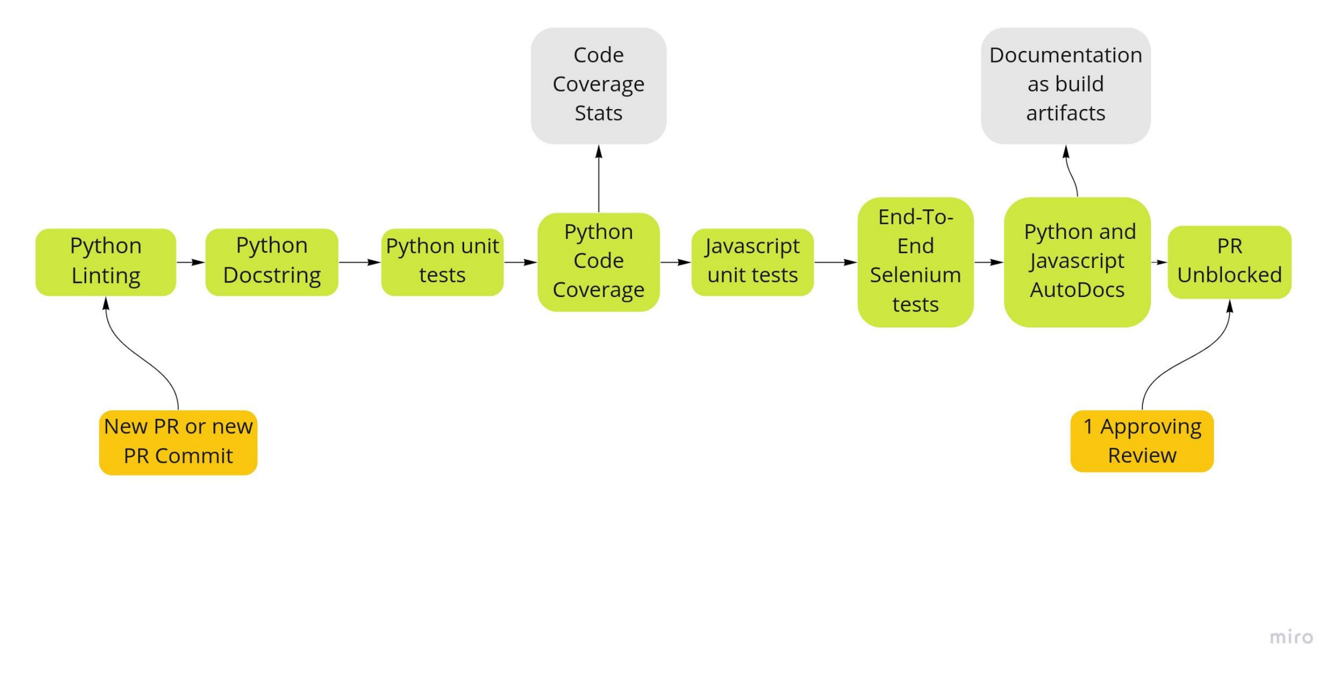
habit.html

login.html

Process, Tools, & Ceremonies

- 4x Meetings per Week
  - 3 shorter, stand-up type meetings
  - 1 longer, more robust meeting
    - Sprint planning, Retrospectives, Iteration Review (informal)
- Tools we used throughout
  - Slack
  - Zoom
  - GitHub
  - Google Docs & Slides
- Tools that faded
  - Clubhouse
  - StatusHero

Execution - CI Pipeline with Github Actions



New PR or new PR Commit

Python Linting

Python Docstring

Python unit tests

Python Code Coverage

Code Coverage Stats

Javascript unit tests

End-To-End Selenium tests

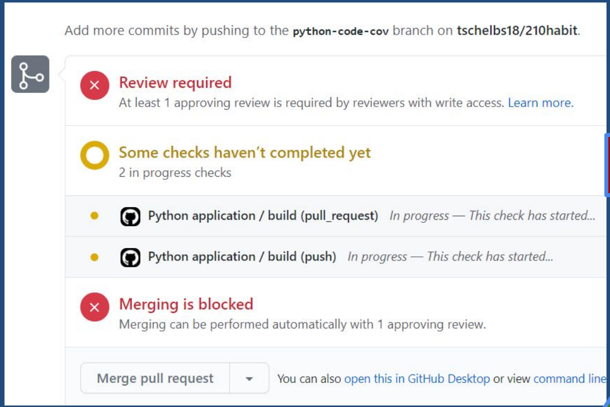
Python and Javascript AutoDocs

Documentation as build artifacts

PR Unblocked

1 Approving Review

Execution - CI Pipeline with Github Actions



Add more commits by pushing to the `python-code-cov` branch on **tschelbs18/210habit**.

☒ **Review required**
At least 1 approving review is required by reviewers with write access. Learn more.

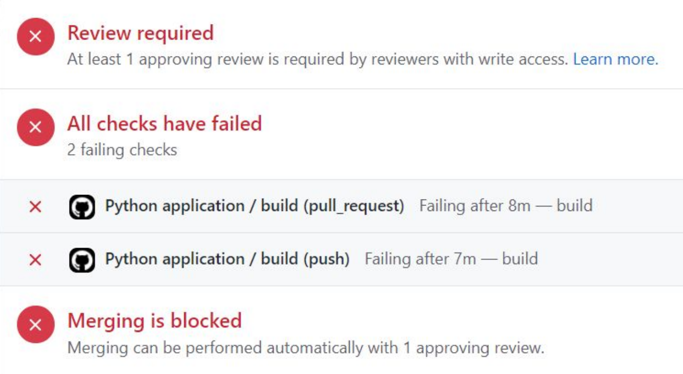
○ **Some checks haven't completed yet**
2 in progress checks

● Python application / build (pull_request) *In progress — This check has started...*

● Python application / build (push) *In progress — This check has started...*

☒ **Merging is blocked**
Merging can be performed automatically with 1 approving review.

You can also open this in GitHub Desktop or view command line



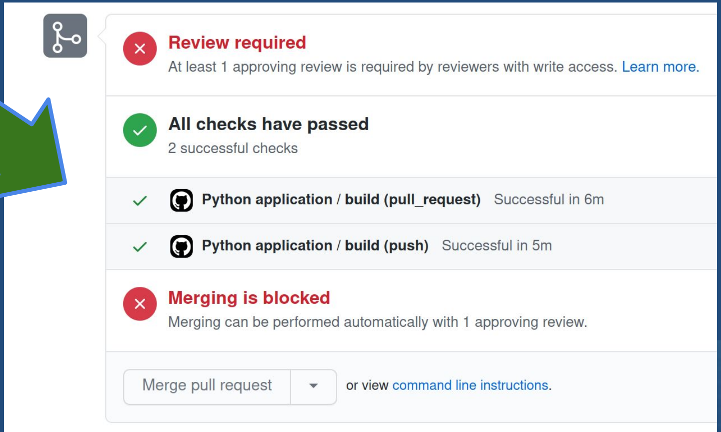
☒ **Review required**
At least 1 approving review is required by reviewers with write access. Learn more.

☒ **All checks have failed**
2 failing checks

× Python application / build (pull_request) Failing after 8m — build

× Python application / build (push) Failing after 7m — build

☒ **Merging is blocked**
Merging can be performed automatically with 1 approving review.



☒ **Review required**
At least 1 approving review is required by reviewers with write access. Learn more.

✓ **All checks have passed**
2 successful checks

✓ **Python application / build (pull_request)** Successful in 6m

✓ **Python application / build (push)** Successful in 5m

☒ **Merging is blocked**
Merging can be performed automatically with 1 approving review.

or view command line instructions.

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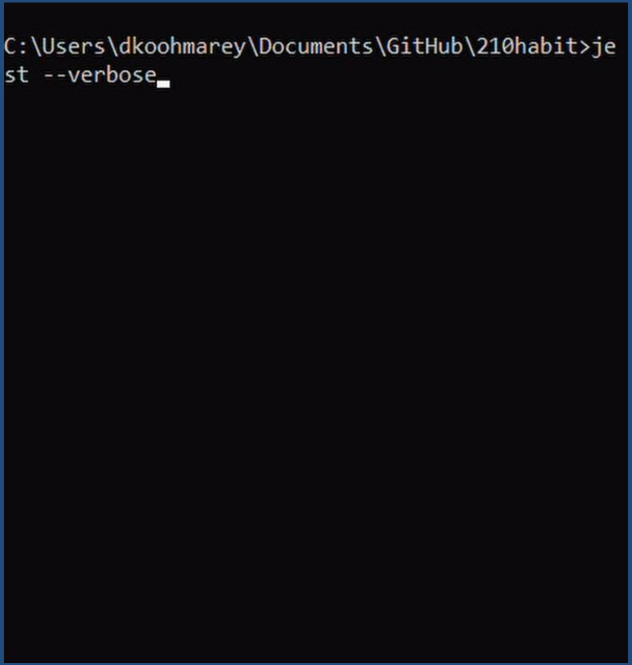
Execution - Unit Testing with Pytest and Jest

```
C:\Users\dkoohmarey\Documents\GitHub\210habit>
```



```
C:\Users\dkoohmarey\Documents\GitHub\210habit>je
st --verbose
```

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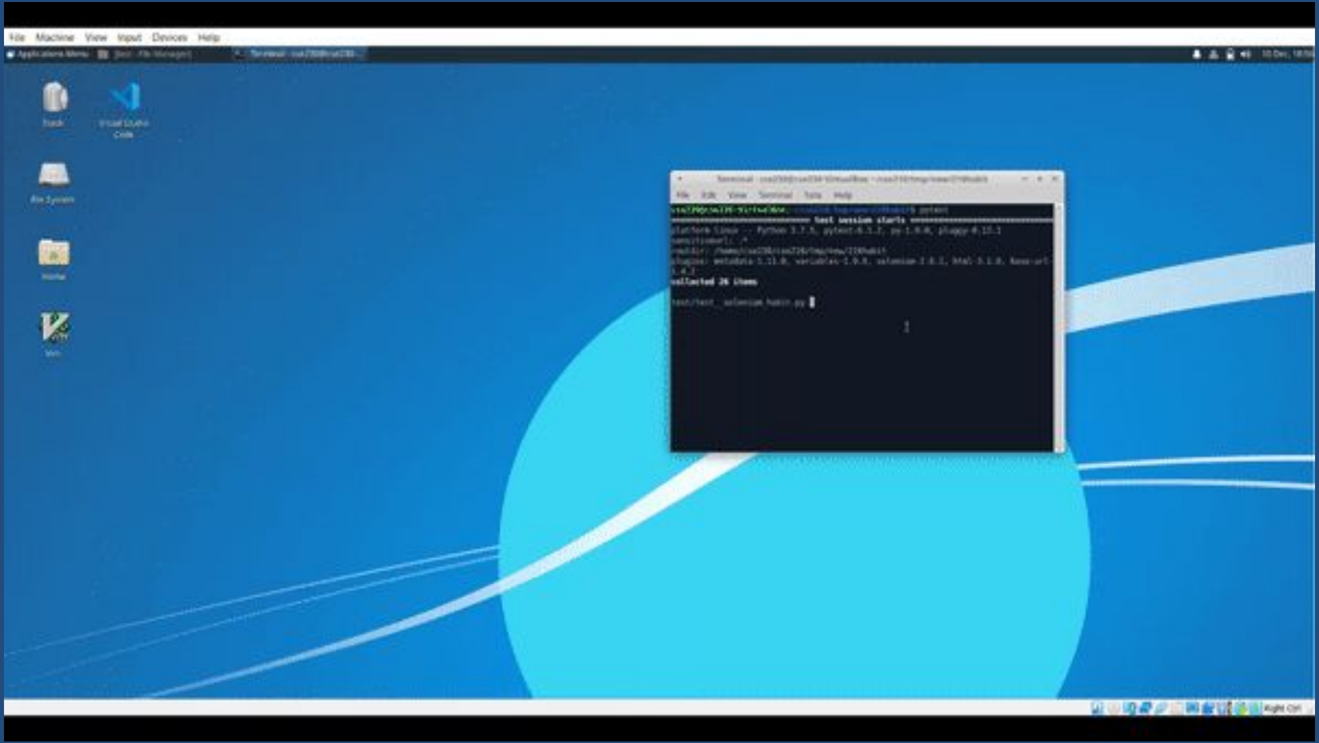
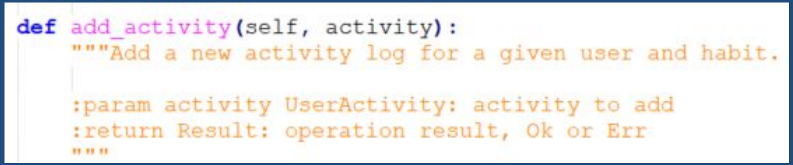
Execution - End-To-End Testing with Selenium



```
csa230@csa230-VirtualBox:[illegible]$ pytest
=============================== test session starts ===============================
platform linux -- Python 3.7.5, pytest-6.1.2, py-1.9.0, pluggy-0.13.1
sensitiveurl: .*
rootdir: /home/csa230/csa230/tmp/new/230habit
plugins: metadata-1.11.0, variables-1.9.0, selenium-2.0.1, html-3.1.0, base-url-
1.4.2
collected 26 items

test/test_selenium_habit.py
```

Execution - Documentation



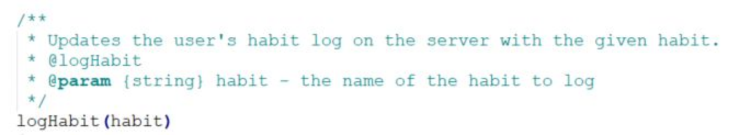
```python
def add_activity(self, activity):
    """Add a new activity log for a given user and habit.

    :param activity UserActivity: activity to add
    :return Result: operation result, Ok or Err
    """
```

SPHINX

Python Documentation Generator

PDF



```javascript
/**
 * Updates the user's habit log on the server with the given habit.
 * @logHabit
 * @param {string} habit - the name of the habit to log
 */
logHabit(habit)
```

JSDoc

HTML

</>

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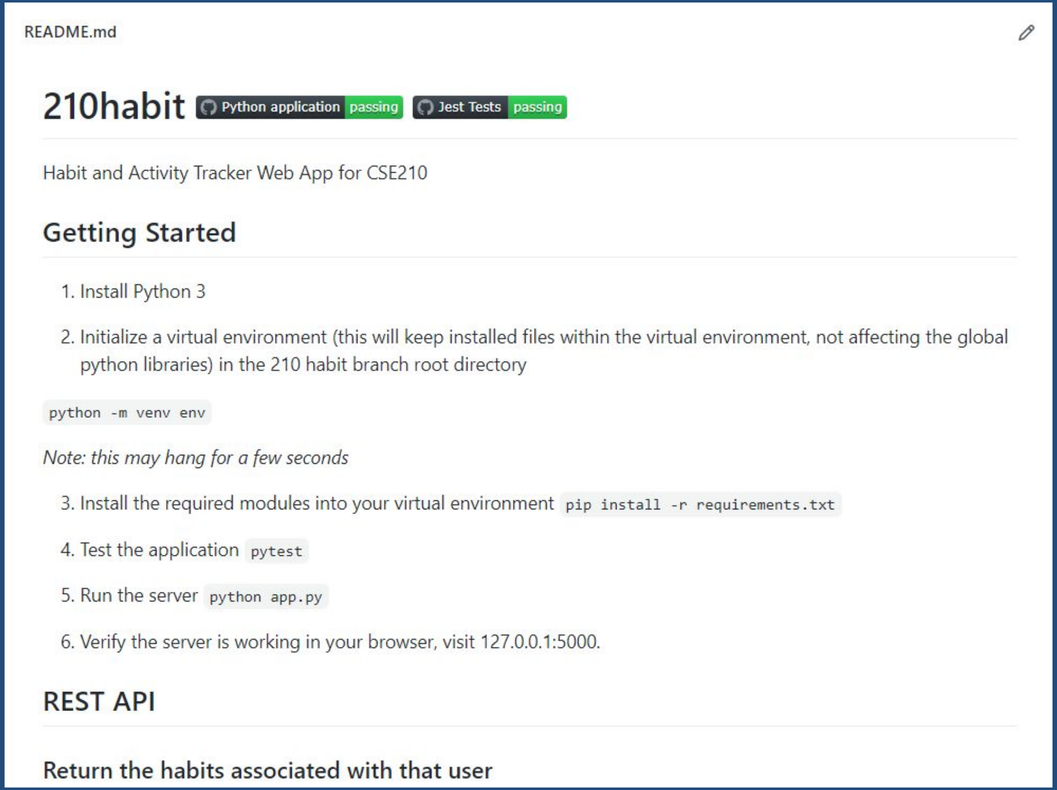
Execution - Documentation



README.md

210habit

Habit and Activity Tracker Web App for CSE210

Getting Started

1. Install Python 3
2. Initialize a virtual environment (this will keep installed files within the virtual environment, not affecting the global python libraries) in the 210 habit branch root directory

```
python -m venv env
```

Note: this may hang for a few seconds

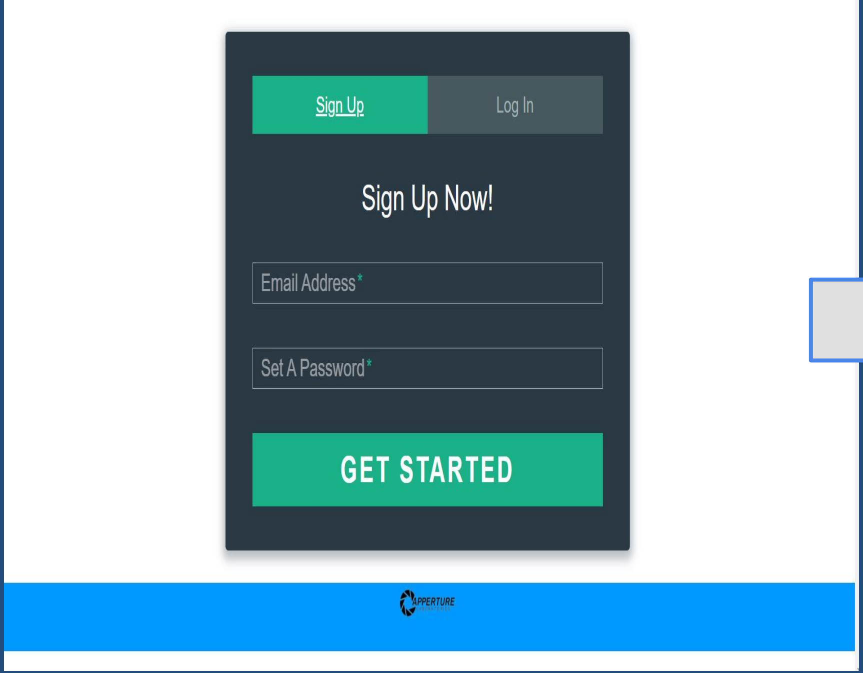
3. Install the required modules into your virtual environment `pip install -r requirements.txt`
4. Test the application `pytest`
5. Run the server `python app.py`
6. Verify the server is working in your browser, visit 127.0.0.1:5000.

REST API

Return the habits associated with that user

How to run it if you just pulled the repo?

UI - Before & After: Login/Register



Sign Up | Log In

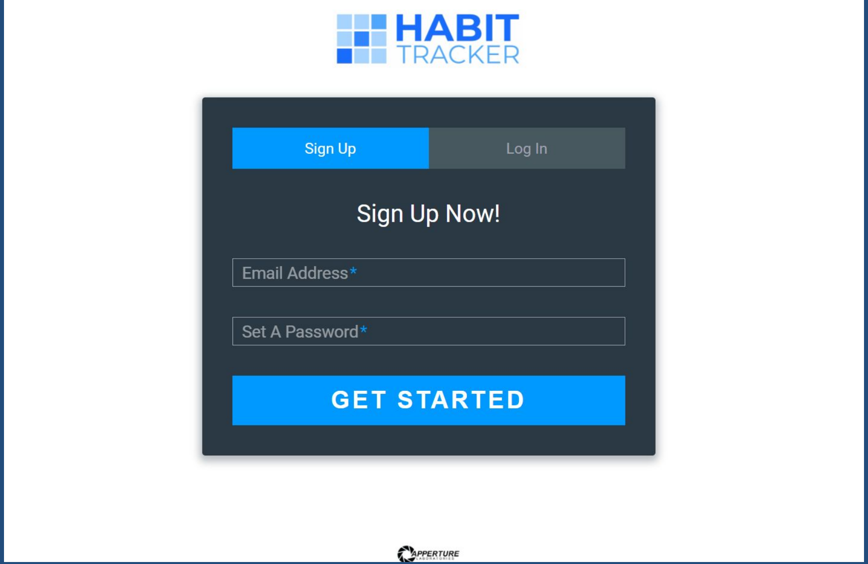
Sign Up Now!

Email Address*

Set A Password*

GET STARTED

APPERTURE



HABIT TRACKER

Sign Up | Log In

Sign Up Now!

Email Address*

Set A Password*

GET STARTED

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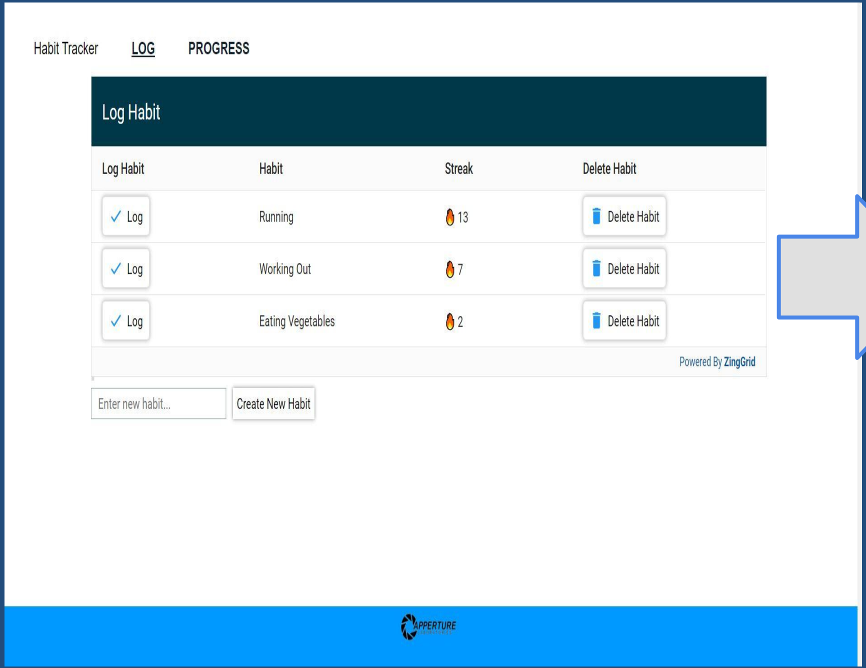
UI - Before & After: Habits Log



Habit Tracker LOG PROGRESS

Log Habit

Log Habit	Habit	Streak	Delete Habit
✓ Log	Running	🔥 13	🗑 Delete Habit
✓ Log	Working Out	🔥 7	🗑 Delete Habit
✓ Log	Eating Vegetables	🔥 2	🗑 Delete Habit

Powered By ZingGrid

Enter new habit... Create New Habit

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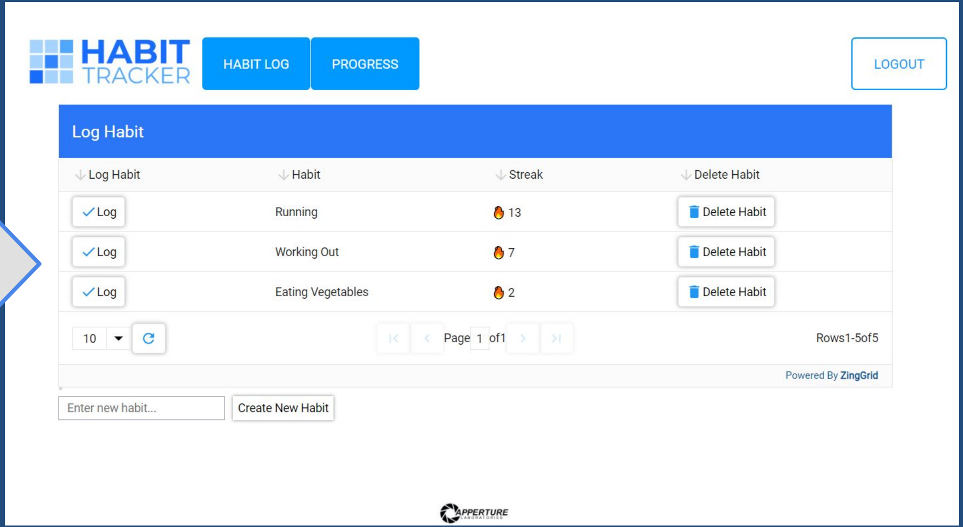

HABIT TRACKER HABIT LOG PROGRESS LOGOUT

Log Habit

Log Habit	Habit	Streak	Delete Habit
✓ Log	Running	🔥 13	🗑 Delete Habit
✓ Log	Working Out	🔥 7	🗑 Delete Habit
✓ Log	Eating Vegetables	🔥 2	🗑 Delete Habit

10 Page 1 of1 Rows1-5of5

Powered By ZingGrid

Enter new habit... Create New Habit

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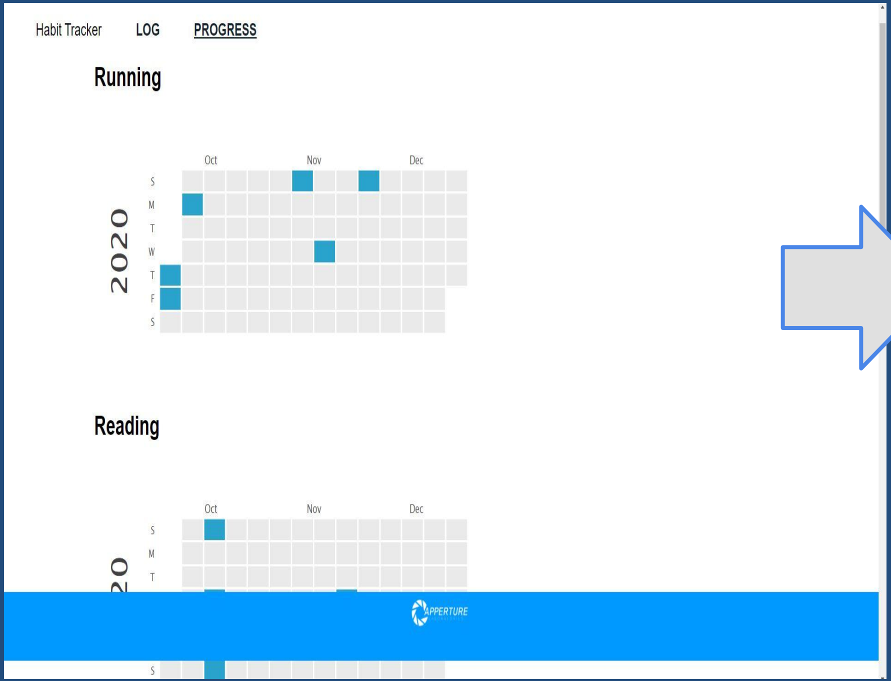
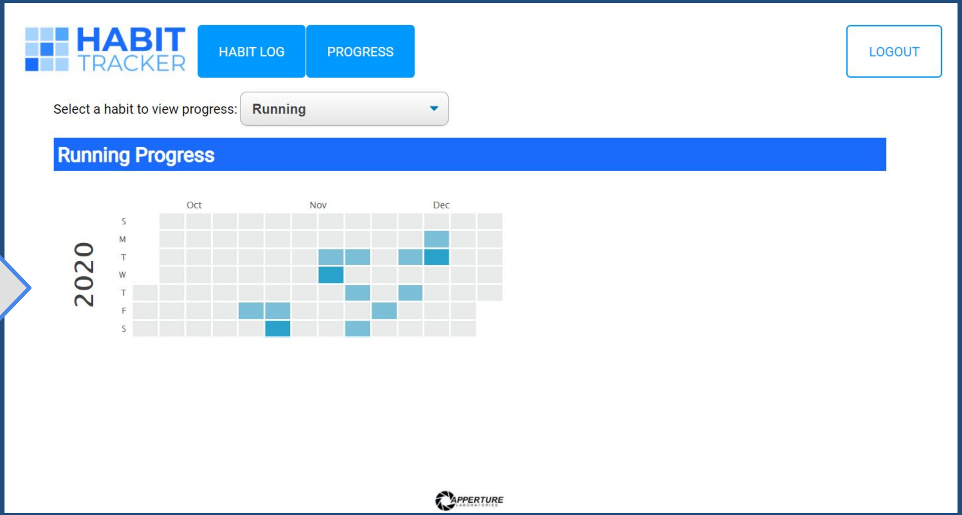
UI - Before & After: Progress Visual





Select a habit to view progress: Running

Running Progress

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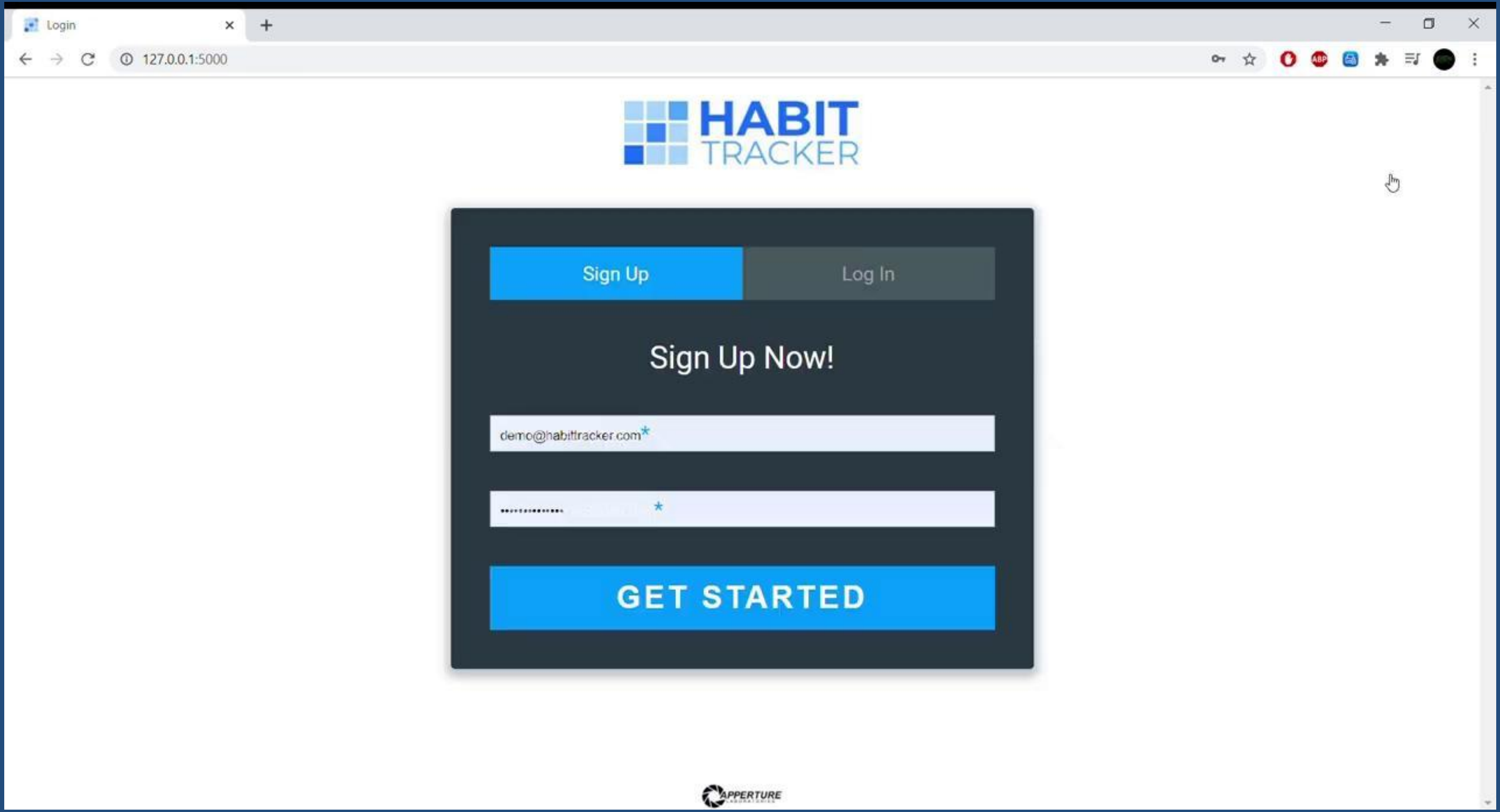
Demo



Sign Up Now!

demo@habittracker.com*

••••••••••••••*

GET STARTED

Lessons Learned (What Worked)

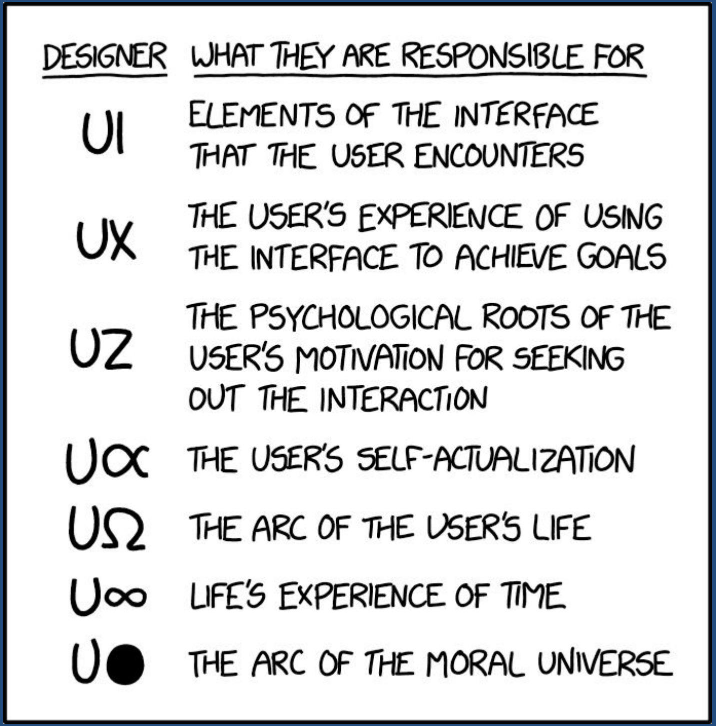
- Communication
  - 3x stand up and one longer meeting every week
  - Divide the work smoothly
- Division of work based on feature themes, classes and files
  - Parallel development
  - Easy to integration
- CI pipeline
  - Unified code style; Detailed comments
  - Catch bugs in early stage
- Tools:
  - Slack / Zoom / Miro / Github / Plan Poker

Lessons Learned (The Hard Way)

- Swagger file: Everyone knows how to use the endpoints
- JavaScript Frameworks > Vanilla JS
- Session management & authentication: A risky unknown
- UX: Don’t forget about the end user

What we would do differently (top 3)

1. Design all code with testing in mind
2. Spend more time on the spec with regards to solidifying REST endpoints (defining payload, behavior, testing, etc.)
3. Focus on the user experience more



DESIGNER	WHAT THEY ARE RESPONSIBLE FOR
UI	ELEMENTS OF THE INTERFACE THAT THE USER ENCOUNTERS
UX	THE USER'S EXPERIENCE OF USING THE INTERFACE TO ACHIEVE GOALS
UZ	THE PSYCHOLOGICAL ROOTS OF THE USER'S MOTIVATION FOR SEEKING OUT THE INTERACTION
Uα	THE USER'S SELF-ACTUALIZATION
UΩ	THE ARC OF THE USER'S LIFE
U∞	LIFE'S EXPERIENCE OF TIME
U●	THE ARC OF THE MORAL UNIVERSE

xkcd.com/2141/

APPERTURE LABORATORIES

Proposed Undergrad Schedule

- Week 1: Collaboration
  - Form your team and download tools
- Week 2: User Stories
  - Mock up initial UI
- Week 3: Web Dev
  - Get started with Flask
- Week 4: Build CI Pipeline
  - GitHub Actions
- Week 5: Connect DB
  - Templating + CRUD
- Week 6: Front End Pages
  - Forms and inputs
- Week 7: Testing
  - Pytest & Selenium
- Week 8: UI Polish
  - Design + CSS
- Week 9: Security
  - Ensure server side validation present
- Week 10: Deploying
  - Heroku

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Any Questions?