Team Atmosphere

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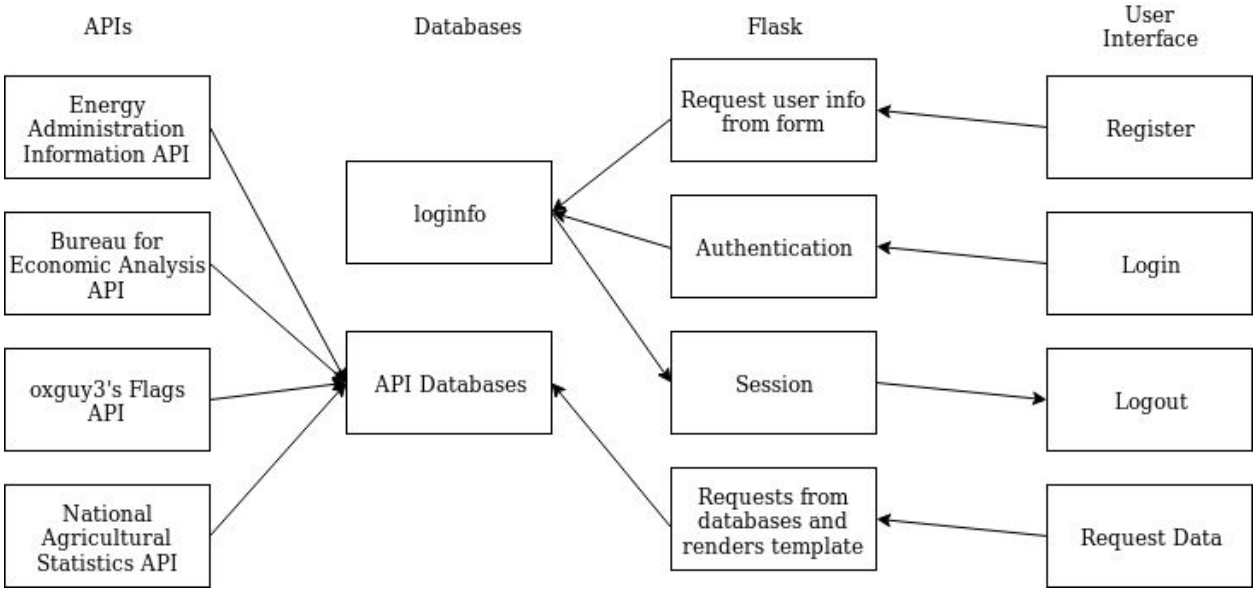
ROLES:

Alice - PM, Bootstrap
Moody - Database, python
Joseph - API, Bootstrap
David - Python, HTML

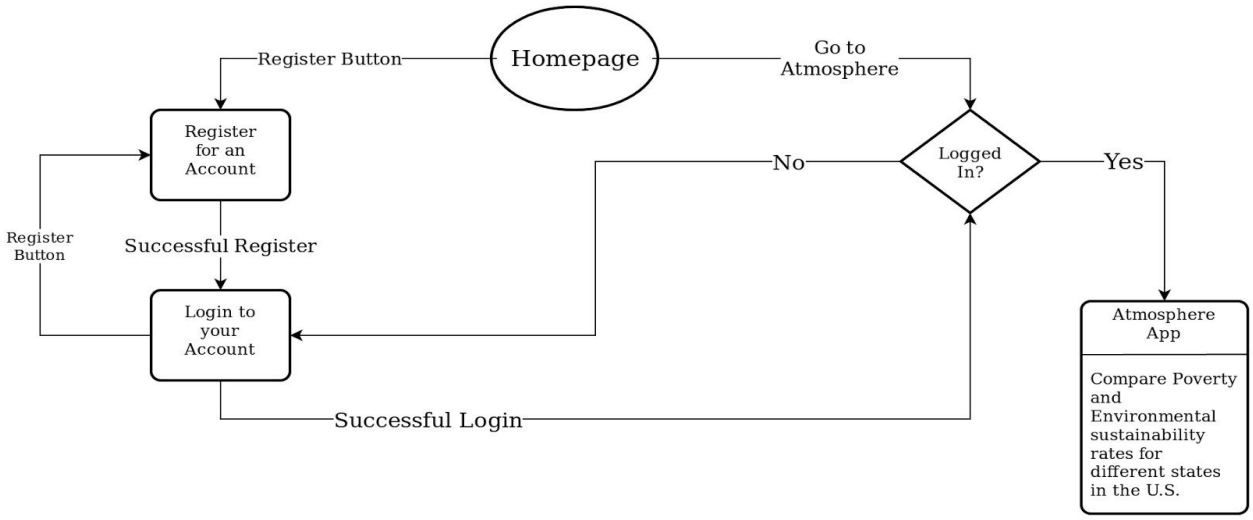
Functionality

- Interactive website that allows users to view and compare data from different states
- A few built-in data variables, stored as JSON files in a JSON file folder
    - Population per state
    - Income rates
    - Carbon emissions
- Users can choose the variables they want to compare, making a request to a Flask app that reads from the databases. If the data is not in the database, the app makes a request to the API that has the specified data.
- The data will be stored in databases relative to each API used. API information will be cached into the databases as they are requested by users.
- Scattergrams and charts will be generated by the parameters specified by the user. Displays information in a table numerically as well.
- Sliders on the scattergram allow the user to choose which years they want to see. They can move across time periods to see how data trends shifted. (extra)
- Implements bootstrap
    - Navbar
    - Charts
    - https://getbootstrap.com/docs/4.0/examples/dashboard/ - good example of what ours should look like

Component Map



Site Map



Atmosphere Site Map

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Database Layout

loginfo

username TEXT	password TEXT
“jimbob”	“cooljoe23”
“hamlet”	“macbeth”

username: displayed name for each account, entered by the user
password: entered by the user

Energy

Agriculture

Economy

Front End

- base.html
    - Base template for all the pages
- index.html
    - Extends base.html
    - User **must** login or register for an account before viewing the site
    - Instructions on how to navigate the site
    - Buttons to register/login
- login.html
    - Extends base.html
    - Form for submitting an existing username or password
- register.html
    - Extends base.html
    - Form for creating an account
- welcome.html
    - Extends base.html
    - Home page that displays real-time data for the U.S. as a country (total U.S. population, carbon emissions, etc.)

    - "Stats by State" button- Option for user to select a single state and view all the available statistics for that state via a radio form
    - "Analysis by Indicators" button - Option for user to select and compare two variables via a form
    - Submit button brings the user to another page that displays all the requested data
- lookup.html
    - Page that displays the specified state(s) and data in a table
    - *Sliders that allow the user to move around different years (optional)*
    - Generates a scattergram showing relation between selected data
    - If user wants to request specific data, they can enter it into a form
        - If data does exist in APIs, add data to the database
- analysis.html
    - Extends base.html
    - Allows users to choose independent and dependent variables
    - Generates a scattergram and graph that displays the requested variables and the 50 states are the points on the scattergram

Back End

- app.py
    - Login system
    - Registration system
    - Routes
        - "/"
            - Renders "index.html" if user not logged in
            - Renders "welcome.html" if user logged in
        - "/login"
            - Renders "login.html"
            - Redirect to "/home"
        - "/register"
            - Renders "register.html"
            - Redirect to "/"
        - "/welcome"
            - If user is not logged in, redirect to "/"
            - Renders "welcome.html"
            - Displays user specific info
        - "/lookup"
            - Renders "lookup.html"
            - Displays user's recently viewed comparisons
        - "/analysis"
            - Renders "analysis.html" using data from cache file
            - Processes User-inputted arguments for the graph
        - "/logout"

                - Removes user from Sessions
                - Redirects to “/”
            - “/auth”
                - Will never be displayed to user
                - Checks if user is in session
- Cache.py
    - Enters all relevant data points into a JSON cache every time that the server is started, and alerts the user when caching is complete.

Functions

- login()
    - @param: username
    - @param: password
- register()
    - @param: username
    - @param: password
    - Cannot register a username already in use
- welcome()
    - @param: username
- login()
    - Renders index.html
- auth()
    - @param: username
    - Checks if user is in session
- lookup()
    - @param: username
    - Makes requests to the API depending on the request the user makes
- analysis()
    - @param: username
    - Generates a graph and a table based on what the user requested through the data form. Takes in the states and the data types
- logout()
    - Logs out the user

APIs

- U.S. National Agricultural Statistics API
- U.S. Bureau for Economic Analysis API
- U.S. Energy Information Administration API
- oxguy3's "flags" API
- CanvasJS Graphing API

Important Links:

National Agricultural Statistics API - https://quickstats.nass.usda.gov/api

Key: 79900EE9-743F-3CBA-AD8A-26063F956065
https://quickstats.nass.usda.gov/api/get_param_values/?key=79900EE9-743F-3CBA-AD8A-26063F956065&param=sector_desc

Example of GET request of all the corn produced by Virginia since 2012
http://quickstats.nass.usda.gov/api/get_counts/?key=79900EE9-743F-3CBA-AD8A-26063F956065&commodity_desc=CORN&year__GE=2012&state_alpha=VA
Returns: {"count":13048}

Global Climate API --
https://datahelpdesk.worldbank.org/knowledgebase/articles/902061-climate-data-api

Working request:
http://climatedataapi.worldbank.org/climateweb/rest/v1/country/mavg/tas/1980/1999/FRA

General format:
http://climatedataapi.worldbank.org/climateweb/rest/v1/country/**type/var/start/end/ISO3[.ext]**

Census Bureau:
https://api.census.gov/data/2018/acs/acs1?get=NAME,group(B01001)&for=us:1&key=07626e3b3578edd0e55ba15cb38770a85aedd31d

https://www.census.gov/data/developers/data-sets/acs-1year.html

Bureau for Economic Analysis:
https://apps.bea.gov/API/signup/index.cfm

Graphs: https://canvasjs.com/docs/charts/basics-of-creating-html5-chart/

Energy Information Administration:

Single-stat graph for a region over time:
https://www.eia.gov/opendata/embed.php?type=chart&series_id=EMISS.CO2-TOTV-TT-TO-AL.A