README

Group 34 Quadruple Z
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Youtube：https://www.youtube.com/watch?v=6R6YwJdbNWQ

- **What can it do?**
  - Our product can decide whether a district in US is a good place for families to make property investment, as well as to let their children study here. The information we provide includes pricing changes, predicted returns, schools, race distribution, etc.
  - We need users to input a valid zip code, as well as whether they want us to do live-scraping for the data.
  - Then we go web scrapping, collect and analyze the data, and show below information to the users:
    - The information of schools located in this area. (Scrap from publicschoolreview.com)
    - "School quality score" of every school, we derive that according to its attributes.
    - The information of houses located in this area. (Scrap from trulia.com)
    - "house quality score" of every house, we derive that according to its attributes.
    - A pie-chart representing the distribution of # people with different races. Its score will be higher if it has more variety.
    - A time-series plot of the average monthly house price in the past 10 years in this district. An auto-arima model is implemented to forecast the house price for future 6 months using ARIMA model.
    - Our summary (quantitative analysis) of the value for the families of this district

- **How to install - Prerequisite tools for this program**

To execute selenium web driver, you may need to install **Google Chrome**. This program does not require other external API or applications to be run. However, you may still need to do install some common packages that not be included in Anaconda. Here are these packages and ways to install them.

- **matplotlib**
  We use matplotlib package to plot the pie-chart of race distribution and time series of house price. You can simply install it by executing this on your console:
  pip install matplotlib
- **pmdarima**
  We use pmdarima package to create time series for monthly house price, and use 'autoarima' function to automatically create an ARIMA model and make forecasting. You can simply install it by executing this on your console:
  pip install pmdarima
- **bs4**
  According to our class about web scraping, we use bs4 to get the plain text from a website, as well as search for the elements we want by identifying different kinds of http labels. You can simply install it by executing this on your console:
  pip install bs4

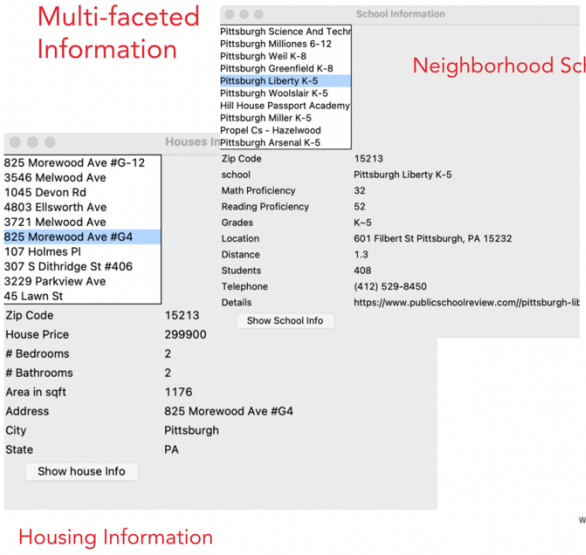
- **selenium**
  Some websites are really fancy and hard to be scrapped, for instance, housing agents like Zillow or Trulia have Flash-like UI and really hard to find a text element. So we use selenium to simulate human action to these websites. You can simply install it by executing this on your console:
  pip install selenium
  (This package may automatically install a webdriver when initializing)
- **tkinter**
  This is our tool for the frontend. We use tkinter to create windows and diagrams for the users to input their query and see the result. You can simply install it by executing this on your console:
  pip install tkinter
- **PIL**
  We use PIL to load and show image on our frontend. You can simply install it by executing this on your console:
  pip install PIL

****NOTE on the UI- The front-end

Please refer to frontend.py for the UI we designed particularly for our product. We have finalized the interface, the buttons, and the logic links for each search operation. We have encountered some problems regarding extracting user input as values and pass on to our backend codes to generate expected results to be displayed in our UI. We have tried converting get() to global variable, StringVar(master = window), and breaking down the values and the function etc.. and more, and we approached you (TAs and Professor Oustlund) for some relevant tips, due to time constraints and perceived complexity, we still haven' t managed to move the results perfectly on our UI. But we still include it in our file for your reference to understand our product logic.
To show our efforts, you can run the frontend and load some existing local files.

PRODUCT DEMO

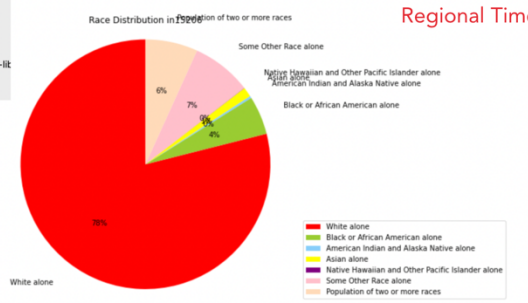
Multi-faceted Information

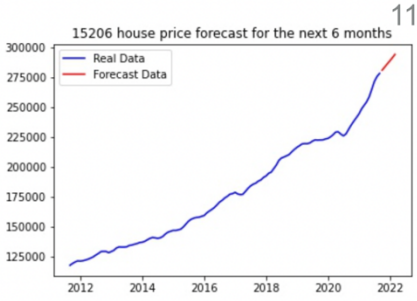


Housing Information

Neighborhood School Information

Neighborhood Demographics





Regional Time-series Housing Price

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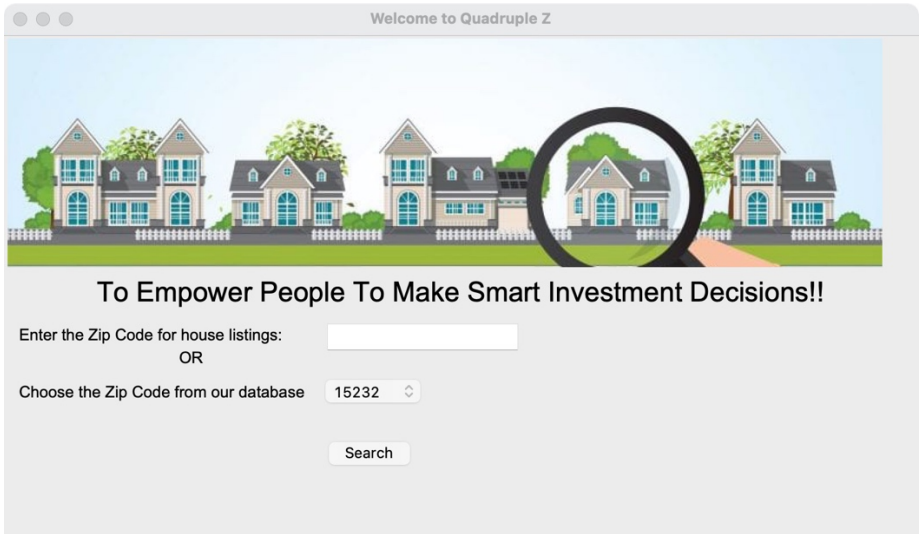

Sample Search Result