**Overview**
Name of Application: REvaluate
Type of Application: Web

**Problem Formulation**

Motivation

Housing affordability is a key social concern of residents of Singapore. In a survey done in December 2022 by multinational market-research company YouGov, two out of three Singaporens expressed a need for the government to place greater emphasis on the affordability of housing.

As Singapore strives towards a Smart Nation, the government has open-sourced various data, including real estate transactions. However, the real estate transactions data are currently not translated into a digestible manner for the mass public. Potential home sellers/buyers may find it difficult to estimate their property value when they are trying to sell/buy the house.

Aim

We aim to complement the Smart Nation efforts in creating a Digital Society by translating the open-source data into insights so that:
1. Buyers can have a benchmark pricing of their desired flats and avoid overpaying
2. Sellers can have a benchmark pricing of their flats and avoid undervaluing
3. Public have a clearer idea of how different features (e.g. level, proximity to train station) affect house prices
4. Enhance transparency to the housing market to deter unscrupulous house brokers

Constraints

This project will currently only apply to the public housing flats.

**Project Mission Statement**
The Z57 team will develop a web application that translates data.gov open-source housing resale transaction information for potential home buyers/sellers to gain data insights and perform ad-hoc queries on resale houses pricing. This project will be considered completed when it has been tested internally by the Z57 team and approved by the Lab TA. This project serves to enhance transparency in the housing market and help potential buyers/sellers make more informed pricing decisions.

Problem   Stakeholders   Developers   Users   Outcomes and benefits

## 1. Functional Requirements

1. Users will be able to view the housings on a dynamic map and see pop up pins after making a search.
   1.1. Users will be able to view more detailed information of a housing transaction by clicking on a pin
2. The system must be able to search for housing transactions based on specific flat type and town or postal code
   2.1. The system must be able to prevent a search if there are missing fields in the 'Get Price" form
   2.2. The system must be able to prevent a search if the postal code provided in the 'Get Price' form is invalid.
3. The system must show all past housing transactions as per the user's query
   3.1. The system must be able to filter the houses by price range set by user
4. The system must be able to provide additional data insights as to how different each house is based on neighbourhood, nearby facilities.
5. User must be able to understand services provided by the system
   5.1. There must be an 'About Us' page with information on services provided by system
6. User must be able to get insights on the Singapore housing market
   6.1. There must be an 'Get Insights' page with charts based on past housing transaction data
      6.1.1. There must be a chart to show the most valued neighbourhoods
      6.1.2. There must be a chart to show the average resale price across the years
      6.1.3. There must be a chart to show the most affordable neighbourhoods
      6.1.4. There must be a chart to show details of an average resale house transaction according to flat type
7. User must be able to log in if they have a valid Google or Facebook account
8. System must prompt the user to enter correct details until they have done so.
9. User must be able to compare neighbourhoods by clicking on the dropdown boxes in the neighbourhood comparator
10. User must be able to receive recommendations based on their housing needs
11. User must be able to utilise forum services
    11.1. User must be able to create a post
    11.2. User must be able to add a comment
    11.3. User must be able to view a post with its comments
    11.4. User must be able to filter posts by topics
12. User must be aware of a network error
    12.1. There must be a error page when there is a network error

**2. Non-Functional Requirements**

Performance Requirements
1. Users must be able to search for records and get results within 3 seconds.
2. The system should be able to support 1000 simultaneous users.
3. The database should be able to store more housing records as the Resale Prices API updates with new data.
4. The map should be able to render all locations within Singapore.
5. The average time to load a webpage over a 56Kbps modem connection will not exceed 3 seconds.
6. The application will run on all web browsers
7. The user interface should be readable and easy for the user to navigate.
8. The system shall be available in simple English
9. The selected pin must be highlighted in a different colour to make the user's selection known to him/her.
10. The user interface should be consistent with a colour palette across pages

Safety Requirements
1. Users can only register for an account using their existing Google or Facebook accounts. As the minimum age required to register for Google and Facebook accounts is 13 years old, this implies that users, at the minimum, must be at least 13 years old to create an account on REvaluate.

Security Requirements
1. Users must keep their account details confidential and not share them with others.
2. Users must be civil on the forums and not post derogatory remarks.
3. Users must not share their personal information on the forums.