

## **Mission Statement**

The Fantastic Four team will develop a website that enables apartment owners and potential apartment buyers in Singapore to look at current prices in their town or town. The website will provide a predictive algorithm looking one year into the future of how the prices might develop and therefore help the owners/buyers to make an informed decision. The project is complete when it has been tested and approved by the project team.

## **Target Users**

- Owners of Singapore apartments
- Potential buyers of Singapore apartments
- Administrator

In this document the owners and potential buyers will be addressed as users.

## **1 Functional Requirements**

1.1 When a user connects to the webpage it must display a map of Singapore split into the different towns.

1.1.1 The different towns have to be marked in different colours.

1.1.2 The user has to be able to click on any of these towns and show a current mean price in SGD of the all apartments in that town.

1.1.2.1 When a town is selected a graph should be displayed showing the development of the prices. It should show at least 24 month in the past.

1.1.2.2 The detailed view of a town must also show a prediction of how the prices might develop over the next 12 months.

1.1.2.3 The graph must be a line graph.

1.1.2.4 The graph has to show on the Y-axis the Prices in SGD. On the X-axis the graph shall show the months in the format MM.YYYY.

1.1.2.5 The detailed view of a town must contain a filter to show only the prices of specific apartment sizes or room count.

1.1.3 The user must to be able to select multiple towns in order to compare their current pricing next to each other.

1.1.3.1 The selected towns shall be displayed next to each other, showing the same information as in requirement 1.1.2.

1.1.3.2 The comparison must also have the same filter options as in the detailed view of one town.

- 1.2 There must be a search function displayed on the map for the user to use.
  - 1.2.1 The search function must contain the following fields: town, room number, floor area, flat model, lease commence date
    - 1.2.1.1 The town must be a text field with less than 512 characters, and an autofill dropdown selection. It can be empty.
    - 1.2.1.2 The room number must be a full number greater than 0 and smaller than 10.
    - 1.2.1.3 The floor area is a full number defined in square meters, it must be greater than 0 and smaller than 500.
    - 1.2.1.4 The flat model must be a text field with at least one character and less than 512, and an autofill dropdown selection.
    - 1.2.1.5 The lease commence date must be a year, greater than current year minus 100 and equal or smaller than the current year.
  - 1.2.2 The search results must contain a filter and sorting function.
    - 1.2.2.1 The filter and sorting function must be able to filter and sort according to the following fields: town, room number, floor area, flat model, lease commence date, price
- 1.3 The users must have a function to fill in a feedback form or contact the support staff / administrator.
  - 1.3.1 The feedback form must be composed of the following fields: Name, email address, Text field and submit button.
  - 1.3.2 The Name field must contain text with at least one character, at least one white space and a maximum of 50 characters.
  - 1.3.3 The email field must be in the format of a valid email address.
  - 1.3.4 The Text field must contain at least one character and a maximum of 1000.
- 1.4 The administrator must be able to access the backsystem in order to perform maintenance
  - 1.4.1 There must be a logon page for the administrator to use.
    - 1.4.1.1 The logon page for the administrator must contain: Username field, password field and submit button.

## **2 Non-Functional Requirements**

- 2.1 The system should display all text in english.
- 2.2 When a search action is performed, the results must be provided within 5 seconds.
- 2.3 Previous searches of a user should be saved in the browser cache.

### 3 Out of Scope

3.1 There will be no function to create a user account.

### Use Case Diagram



### Use Case Description

Use Case ID:	FF01		
Use Case Name:	Request System Access		
Created By:	Sandro Mero	Last Updated By:	Minjuan Luo
Date Created:	22.08.2022	Date Last Updated:	22.08.2022
Actor:	User (potential buyer or seller), System		

Description:	The use case that shows the user requesting access to the system		
Preconditions:	User must have a computer device and Internet connection.		
Postconditions:	The System must allow the user to access the service.		
Priority:	High		
Frequency of Use:	Multiple times a day		
Flow of Events:	1. The user opens any internet browser in his computer device. 2. The user enters the URL of the Service 3. The internet browser sends an access request to the service. 4. The system of the service will check the request and allow it. 5. The service sends required information to the browser on the users device 6. The browser displays the webpage.		
Alternative Flows:	AF-S2: The user does not know the URL 1. The user searches for the service through a search engine. 2. The search engine provides a link to the URL of this webpage 3. Continue with step 3.		
Exceptions:	EX1: If the browser can not reach the service 1. The browser will display an error message "The service is temporarily not available, please try at a later time."  EX2: Access to the service has been denied 1. The browser will display an error message: "Access Denied. Please contact an administrator."		
Includes:	-		
Special Requirements:	-		
Assumption:	-		
Notes and Issues:	-		
Use Case ID:	FF03		
Use Case Name:	Provide resale information		
Created By:	Sandro Mero	Last Updated By:	Minjuan Luo
Date Created:	22.08.2022	Date Last Updated:	22.08.2022
Actor:	User (potential buyer or seller), System		
Description:	The use case that describes the user getting resale information from the system		
Preconditions:	The user must get the access to the resale system and have no internet faliure		

Postconditions:	The resale system must show relevant information within seconds		
Priority:	Very High		
Frequency of Use:	Multiple times a day		
Flow of Events:	<div>1. The user input the region of the house/flat that he want to look for</div> <div>2. The user input the budget range of the house/flat that he want to look for</div> <div>3. The user input the time range of the resale price that he want to look for (not necessary)</div> <div>4. The internet server sends a request to the system</div> <div>5. The system sends back the results to the internet server</div> <div>6. The server display messages in a new web page</div>		
Alternative Flows:	<div>AF-S2: The user don't know how to use the system</div> <div>1. The user look for the online consultation button in the web page</div> <div>2. The resale system provide a chatbox for the user to contact administrator</div> <div>3. The administrator give suggestions to the user</div>		
Exceptions:	<div>1. The system don't recognize the region that the user is looking for and send back messages to ask for another attempt</div> <div>2. The system don't have the information that the user is looking for and send back an apologize</div> <div>3. The server have an internet faliure and send back the error message to the user</div>		
Includes:	maps, filters, search bar and customer service		
Special Requirements:	NULL		
Assumption:	The system may crash and fail to operate		
Notes and Issues:	The system may not have enough vacancy for a large amount of access		
Use Case ID:	FF02		
Use Case Name:	System maintenance		
Created By:	Sandro Mero	Last Updated By:	Minjuan Luo
Date Created:	22.08.2022	Date Last Updated:	22.08.2022
Actor:	Administrator, System		
Description:	The use case that shows the admin may fix the system problems when there is a crash		
Preconditions:	The system was crashed or the admin check the system once a week		
Postconditions:	The system is fully prepared for next week's operation		

Priority:	Extremely High/Median
Frequency of Use:	Once a week
Flow of Events:	1. The system was crashed due to unknown reason and require maintenance ASAP 2. The admin check the system once a week 3. The system was fully checked and fixed by the admin 4. The system back to normal situation
Alternative Flows:	NULL
Exceptions:	The admin is unable to fix the system and require further help
Includes:	NULL
Special Requirements:	The admin is well experienced in system maintenance
Assumption:	The system may not be able to operate because of some physical damage
Notes and Issues:	The physical system maintenance may require a large amount of time and component replacement

### Data Dictionary

Term	Definition
Administrator	A person who ensures a safe and efficient user experience.
Algorithm	A process or set of rules to be followed in calculations or other problem-solving operations
Backsystem	The code that runs on the server, that receives requests from the clients, and contains the logic to send the appropriate data back to the client
Buyer	A person who makes a purchase with the intention of making a profit.
Cache	A hardware or software component that stores data so that future requests for that data can be served faster
Consultation	A meeting session with the objective of providing advice to buyers.
Comparison	The act of examining prices in a competitive manner, to see if they are similar or different
Customer	A person who purchases a flat for private utilization.
Filter	A piece of software that processes data before passing it to another application, to remove unwanted results.
Graph	A diagram showing the relation between variable quantities, typically of two variables, each measured along one of a pair of axes at right angles.
Mean	The average of a data set is found by adding all numbers in the data set and then dividing by the number of values in the set.

Maintenance	System software upgrades, repairs, patches or configuration changes.
Neighbourhood	A district or community within Singapore
Owner	A person who has the legal or rightful title to the flat.
Prediction System	Estimation of some variable of interest at some specified future date.
Resale Flat	Flats that are currently owned by someone else.
Search Time	The amount of time taken by an algorithm to run, as a function of the length of the input.
Search Bar	A single-line text box with the dedicated function of accepting user input to be searched for in a database.
System	A group of related hardware units or programs or both, especially when dedicated to a single application.
Town	The central part of a neighbourhood, with its business or shopping area.
User	Terminology for owners and potential buyers.

Dataset:

[https://data.gov.sg/dataset/resale-flat-prices?resource\\_id=1b702208-44bf-4829-b620-4615ee19b57c](https://data.gov.sg/dataset/resale-flat-prices?resource_id=1b702208-44bf-4829-b620-4615ee19b57c)