Software Design Document

<Project Name>

Student Names

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# System Vision

## Problem Background

## System Overview

## Potential Benefits

# Requirements

## User Requirements

In this section you detail how a user is supposed to interact with or use your program. What do they ***need*** to be able to do? This should all be from the end users perspective. Can be a combination of narrative text and listing of needs.

**Assignment note: You have not been given a client/user, so you can make one up. Who do you think would be using your software?**

## Software Requirements

In this section you detail what the requirements for the software are. What functionality will it provide? This is usually a formal listing, with requirements often using the word ‘Shall’. IE:

R1.1 The program shall accept multiple file names as arguments from the command line.

R1.2 Each file name can be a simple file name or include the full path of the file with one or more levels.

etc …

Can be primarily functional requirements, though you may include other types if you think of them.

## Use Cases & Use Case Diagrams

In this section you provide some use cases showing how people may use your software.

# Software Design and System Components

## Software Design

A block diagram/flowchart of how your software might work

## System Components

### Functions

Preliminary list of all functions in the software. For each function in the list the following information is provided:

* a brief description of what it does (1 or 2 sentences);
* a list of the input parameters, and their data types, and what they are used for;
* a list of any side effects caused by the function (ie change global or member variables, changes data passed by reference from calling function etc)
* a description of the function’s return value

### Data Structures / Data Sources

List of all data structures in the software (eg linked lists, trees, arrays etc) or eternal data sources. For each data structure in the list the following information is provided:

* Type of structure (tree, list etc),
* Description of where and how it is used
* List of data members, and what each one is for do
* List of functions that use it

### Detailed Design

Pseudocode for all non-standard / non-trivial algorithms that operate on data structures

# User Interface Design

This is your initial interface design. Describe the tools you used for this design stage and any key findings that informed your design. This introduction is descriptive and should explain what you have completed for the actual design work you will present in the sub-sections below.

## Structural Design

**Home Page:**

**Search Functionality:**

* Users use search bar to input their preferred suburb.
* Users can enter the date range they want to look at in the form DD/MM/YYYY to DD/MM/YYYY

No data will be displayed unless Suburb is entered. Users can initiate the search by clicking the "SEARCH" button.

**Result Display:**

A list of Airbnb listings matching the chosen suburb and date range is displayed.

Basic listing information is presented, including:

* Name
* Number of bedrooms
* Number of bathrooms
* Occupancy capacity
* Rating
* Price
* Property type (e.g., apartment, house, etc.)
* Superhost status

Users can access more details by clicking the "View More" button associated with each listing which will open the URL of the AirBnB listing in their preferred browser.

**Filters and Sorting:**

A sidebar accommodates filtering options for result refinement:

* Price Range: Users can set minimum and maximum price limits for result filtering.
* Rating: Users can exclude lower-rated listings by specifying a minimum rating.
* Property Type: Users can opt for specific accommodation types (e.g., apartments).
* Room Type: Users can opt for specific accommodation types (e.g., apartments).

Once entered, user will click on the “Apply” button and the dataset will be updated.

Sorting preferences can be tailored via dropdown menus when the title of a column in the dataset is clicked on:

* Name: A-Z or Z-A
* Type: A-Z or Z-A
* Bedrooms: Smallest to Largest or Largest to Smallest
* Bathrooms: Smallest to Largest or Largest to Smallest
* Occupants: Smallest to Largest or Largest to Smallest
* Rating: Smallest to Largest or Largest to Smallest
* Price: Smallest to Largest or Largest to Smallest

**Results Overview:**

An information snippet at the bottom right corner provides the count of listings that match the current filters.

**Open new window buttons (orange boxes on wireframes):**

* Price Distribution Chart
* Keyword Search
* Suburb Insights

**Price Distribution Chart:**

* Displays a visual diagram of the price range for all previously selected filters by user (suburb, date range, min rating, property type and room type)

**Keyword Search:**

* Users can search for specific terms or select predefined keywords (e.g., cleanliness, pool, parking, wi-fi, air conditioning, etc.).
* Once selected, user clicks “Go” button which displays data filtered by their keyword choice.

When the user clicks on the **“cleanliness”** checkbox, the dataset will display all listings that contain the following words:

* Clean
* Cleanliness
* Hygiene
* Tidy
* Tidiness
* Sanitary
* Neat
* Spotless
* Well-kept
* Dust
* Dirty
* Cleaned
* Unclean
* Dusty
* Unsanitary
* Messy
* Filthy
* Disgusting
* Shiny
* New

When the user clicks on the **“pool”** checkbox, the dataset will display all listings that contain the following words:

* Pool
* Swim
* Swimming
* Spa
* Jacuzzi

When the user clicks on the **“parking”** checkbox, the dataset will display all listings that contain the following words:

* Parking
* Garage
* Carport
* Vehicle
* Bike
* Automobile
* Parked
* Driveway
* Car
* Van
* Bus

When the user clicks on the **“wifi”** checkbox, the dataset will display all listings that contain the following words:

* WiFi
* Wi-Fi
* Internet
* WLAN
* Wireless
* Network
* Online
* Web
* NBN
* Broadband
* Hotspot

When the user clicks on the **“airconditioning”** checkbox, the dataset will display all listings that contain the following words:

* Airconditioning
* Aircon
* AC
* A/C
* Heating
* Cooling
* Fans
* Cold
* Hot
* Temperature
* Climate
* Air

**Suburb Insights:**

* User selects property type and room type then clicks Search button.
* Window displays a list containing all suburbs in original dataset sorted by average price for the user specified property type and room.
* Window displays a list containing all suburbs in original dataset sorted by average rating for the user specified property type and room.

**Justification:**

**Search Functionality:**

The search functionality is the core feature of the program. It allows users to find Airbnb listings based on their preferences. By including options to input the suburb and date range, it provides users with the flexibility to narrow down their search results.

**Results Display:**

The displayed information about each listing is concise and relevant, giving users a quick overview of what they can expect from the listings. Providing essential details like number of bedrooms, bathrooms, occupancy capacity, rating, price, and property type helps users make informed decisions without having to look through a gigantic dataset to find what they are looking for.

**Filters and Sorting:**

Filters and sorting options enhance the user experience by allowing users to refine their search results according to their specific criteria. This flexibility increases the likelihood of users finding listings that best match their preferences and requirements.

**Price Distribution Chart:**

The price distribution chart is an visual aid to help users understand the pricing landscape of the available listings. This feature can be especially helpful for users who want to see the range of prices within their chosen filters visually rather than in a dataset.

**Keyword Search:**

Including a keyword search feature helps users find listings with specific amenities or features that are important to them. This allows users to quickly narrow down their choices based on their preferences, saving time and effort.

**Suburb Insights:**

The suburb insights feature offers users valuable data for decision-making. Sorting suburbs by average price and average rating based on specific property and room types helps users identify potential suburbs that align with their budget and preferences.

**UI Design Choices:**

The use of checkboxes and dropdown menus for filtering and sorting offers a user-friendly interface. The layout of the filters and sorting options is designed to help users easily navigate and adjust their search criteria.

**View More Button:**

Providing a "View More" button that opens the Airbnb listing URL in the user's preferred browser ensures that users have easy access to detailed information about a listing. This button is designed to encourage users to explore the listing further and pull more traffic to the AirBnB website.

## Visual Design

Detail your visual design: Layout, visual elements, icons, graphics, style, colour, fonts general screen designs. This can be sketches, wireframes, mockups etc, supported by a discussion, explanation, and justification of your choices.