Software Design Document

Unnamed Graphing Application

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# System Vision

## Problem Background

What problem does this project solve?

Description of the problem  
stakeholders affected  
impact of the problem  
  
benefits (on 1.3, as provided headers were sub optimal)

## System Overview

Perspective ( other products in the user environment, self contained, any other components?)  
capability summary (brief)

Assumptions and dependencies

## Potential Benefits

Benefits and the features they derive from

Capabilities

critical / important / useful

# 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?**

The user must be able to:

Open the software

Load in an existing CSV file or files

Link together CSV files if multiple are present

View the formatted information contained in the files, graphically and non-graphically presented

The user has made these specific requests:

For a user-selected period, report the information of all listings in a specified suburb

For a user-selected period, produce a chart to show the distribution of prices of properties

For a user-selected period, retrieve all records that contain a keyword (user entered), e.g. pool, pet.

Analysing how many customers commented on factors related to cleanliness (multiple key words may be associated with cleanliness – justify your selection).

One other ‘insight’ or analysis tool of your choice (modify this)

## 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.

The program executable shall be portable, and shall open and run on windows machines without any additional dependencies

The program shall be interacted with by the user through a GUI at all times

The program shall accept one or more CSV files as input, chosen through a file picker

Where multiple CSV files are provided, the program shall be able to link these together as long as they contain matching ID fields

When a CSV file is loaded, the program shall give the user the option to mark the ID field, as well as rename other fields

The program shall gracefully handle improperly formatted CSV files

The program shall display the loaded results in a raw or visual format

The program shall allow the user to filter the data in these ways:

-  
-  
\_

\_

-

The program shall allow the user to export a combined or filtered CSV file

The program shall allow the user to export a visual graph as a PNG file

The program shall allow the user to unload the files and return to the original prompt

The program shall allow the user to exit the program gracefully

## 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

In this section, data structures that would be used within the software mentioned, with a description of their role, data members, and the functions that interact with them.

**Database Array**

It will show the internal storage of data extracted from CSV files. This can function as a multidimensional array where each row represents a CSV item and each column has a particular attribute.

Data Members:

Rows: Entries from CSV.

Columns: Attributes of data.

Functions using it:

ReadCSV

MergeCSVFile

FilterData

MakeChart

ExportCSV

**Chart Data Structure**

Contains information that is expressly intended for visualisation, such as the values that will be plotted and their corresponding labels.

Data Members:

Labels: x-axis values or keys.

Data Points: y-axis values or numerical values to be plotted.

Functions using it:

MakeChart

ExportPNGChart

**Description of the ID Mapping Structure:**

Helps in connecting various CSV files. Stores the ID column's corresponding column in each CSV.

Data Members:

CSVName: The CSV's name or reference.

IDColumnName: The name of the column designated as the ID.

Functions using it:

MarkAsID

MergeCSVFile

**Filter Parameters**

Contains the user-defined parameters the user has set for the data. It could be a class or struct that stores the data type, the range of values to filter by, and the column to be filtered.

Data Members:

ColumnName: The name of the filtering column.

DataType: the type of data, such as date, text, or numeric.

ValueRange: Defines upper and lower filtering limits.

.

Functions using it:

FilterData

**External Data Source:**

CSV files are an external data source. As external data sources, CSV files are widely utilised by the programme. These are used for data export as well as input (reading data).

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

Structural design refers to the navigational and information structure of your product – the structure that supports the interface layout. How will you structure your product? How will you group your information? How will you navigate through your product? Why? This can take the form of a diagram showing structure and hierarchy, supported by a discussion and justification of your choices. Why have you made these design choices? Describe and outline the structure of your interface and of your information.

## 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.