Software Design Document

<Accident Data User Interface (Placeholder)>

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# System Vision

A simple data analysis and visualization tool for a dataset. You will need to design and implement this tool, and it must provide a graphical user interface that will handle the analysis and visualization of the data

## Problem Background

What’s the dataset?

Victora state accident dataset, crash statistics from 2015-2020 for Victoria. A way to analyse and represent this data in an easy to use and fast manner. An application that allows users to manipulate the dataset compare different parts of the dataset. Use keywords to compare and contrast different data points. Graph relevant data points and trends over time and display correlations between different factors.

What sort of data input/ouput is needed?

Mouse clicks and text input.

What problem does this solve?

Who’s going to use it and why?

## System Overview

What will the system do?

The proposed system will allow end users to manipulate the Victora state accident dataset. Displaying information in an accessible and easy to use manner. The key features of the system are as follows:

* Allow users to display all accidents that happened in a specific time-period.
* Produce a bar graph that displays the average number of accidents in each hour of the day for a selected period.
* Search a selected period by a keyword (e.g. collision) and retrieve all accidents caused by this accident type.
* Enable the user to examine, the impact of alcohol on accidents (e.g. most common accident type associated with alcohol).
* Allow users to graph the accident fatalities over the 5-year period to investigate data trends.

For a user-selected period, display the information of all accidents that happened in the period.

For a user-selected period, produce a chart to show the number of accidents in each hour of the day (on average).

For a user-selected period, retrieve all accidents caused by an accident type that contains a keyword (user entered), e.g. collision, pedestrian.

Allow the user to analyze the impact of alcohol in accidents – ie: trends over time, accident types involving alcohol, etc.

Features, functions

Graphic user interface (GUI) for

What can’t it do?

## Potential Benefits

How will this create a benefit?

# 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?**

Insurance companies

## 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

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.