Major Project

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[Include any grant/funding information and a complete correspondence address.]

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Statement of Intent

Throughout the major work, I will develop the skills required in communication and project management, as well as the skills required for the design and development of a computer software program. I will do this through the development of a set of requirements that will clarify and enable the planning for the important constraints, features and architecture of the product. The requirements will form the basis for building a calculating engine in Fortran, an interface in Python and an integration layer to communicate between the two. The computer software solution will endeavour to perform physics calculations and solve physical problems. The aim is to embody the complex physical equations in Fortran. The Python front end will be used as the interface for the user to access these complex calculations.

I as my social and ethical responsibilities require of me will not utilise code or documentation developed by outside sources without acknowledging their use or implementation within my solution set. I will work and finish this project in a timely manner, meeting the requirements asked of me.

Keywords: [Click here to add keywords.]

Major Project

# Defining and Understanding the Problem

[The first two heading levels get their own paragraph, as shown here. Headings 3, 4, and 5 are run-in headings used at the beginning of the paragraph.]

## Generation of Ideas1

* Physics calculator

A program which allows a free from, notepad style workflow regarding solving HSC Stage 6 physics problems. This allows users to utilise all aspects of the HSC 2019 Data/Formula Sheet by providing an environment where they can access necessary data and formulas

* Mathematical Calculator

A program which provides an unobstructed and limitless environment for a multitude of mathematical and scientific calculations. This software will provide a base level HSC Formula sheet package, importable and utilisable within the base software package.

* Basic Calculator

A program which emulates the functioning of a standard basic calculator. This software could provide the same functionality as existing basic calculators while also providing new packages to expand the functionality of the program e.g. scientific calculator, units convertor.

## Gantt Chart

[To add a table of contents (TOC), apply the appropriate heading style to just the heading text at the start of a paragraph and it will show up in your TOC. To do this, select the text for your heading. Then, on the Home tab, in the Styles gallery, click the style you need.]

## Social and Ethical Issues

### Ethical(Disabilities etc.).

* Ergonomics

The developer of this software solution maintains a non-compulsory responsibility to develop and design their program to establish a healthy relationship between humans and their environments.

The design of a GUI establishes to be the largest factor effecting the users experience acting as the deciding factor between different products of similar functionality. GUIs should, if designed correctly, offer an intuitive environment which is both consistent and easily learnt.

Good practices include: following industry standards, correct utilisation of GUI elements, proper colour distribution and consistent pallets, readable fonts, undo/reversing actions e.g. back buttons, and Alt text for the visually impaired.

* Malicious Heuristics or Programming

The nature of the operation of this software is that it will need to access locations within memory to open, read, write and close files and data. While it is not a requirement for implementation of good file operation and handling procedures e.g. close files after utilisation, the developer should, for both the benefit of the user and themselves, apply hardware utilisation paradigms when handling externally stored data.

### Social(Law).

* Privacy

The product is stand alone and does not interact with the internet and does not gather personal data. The product will not collect any user data or distribute this data without the explicit consent of the user by providing an end user agreement that provides these terms of service.

* Regulatory

The provider makes available the product as is. Any regulatory requirements set out by authorities outside the bounds of the normal use of the product is the users responsibility to comply with. This does not exclude the providers responsibility to comply with any existing law or regulation or changes to those laws from time to time.

* Copyright

By providing functionalities that are already present in existing external solutions, the developed solution may breach certain copyrights held by the developers of such external solutions. These functionality infringements can include: replications of GUIs, in-house algorithms, the solution used within the product.

* Intellectual Property

The product explicitly names and replicates the terms of service of all third-party intellectual property as required by law to do so. The third-party intellectual property used will only be used within the strict obeyance of their licence agreement.

#### [Heading 4].

[When using headings, don’t skip levels. If you need a heading 3, 4, or 5 with no text following it before the next heading, just add a period at the end of the heading and then start a new paragraph for the subheading and its text.] (Last Name, Year)

##### [Heading 5].

[Like all sections of your paper, references start on their own page. The references page that follows is created using the Citations & Bibliography feature, available on the References tab. This feature includes a style option that formats your references for APA 6th Edition. You can also use this feature to add in-text citations that are linked to your source, such as those shown at the end of this paragraph and the preceding paragraph. To customize a citation, right-click it and then click Edit Citation.] (Last Name, Year)

References

Last Name, F. M. (Year). Article Title. *Journal Title*, Pages From - To.

Last Name, F. M. (Year). *Book Title.* City Name: Publisher Name.

Footnotes

1[Add footnotes, if any, on their own page following references. For APA formatting requirements, it’s easy to just type your own footnote references and notes. To format a footnote reference, select the number and then, on the Home tab, in the Styles gallery, click Footnote Reference. The body of a footnote, such as this example, uses the Normal text style. (Note: If you delete this sample footnote, don’t forget to delete its in-text reference as well. That’s at the end of the sample Heading 2 paragraph on the first page of body content in this template.)]

Tables

Table 1

[Table Title]

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Note: [Place all tables for your paper in a tables section, following references (and, if applicable, footnotes). Start a new page for each table, include a table number and table title for each, as shown on this page. All explanatory text appears in a table note that follows the table, such as this one. Use the Table/Figure style, available on the Home tab, in the Styles gallery, to get the spacing between table and note. Tables in APA format can use single or 1.5 line spacing. Include a heading for every row and column, even if the content seems obvious. A default table style has been setup for this template that fits APA guidelines. To insert a table, on the Insert tab, click Table.]

Figures title:

Figure 1. [Include all figures in their own section, following references (and footnotes and tables, if applicable). Include a numbered caption for each figure. Use the Table/Figure style for easy spacing between figure and caption.]

For more information about all elements of APA formatting, please consult the APA Style Manual, 6th Edition.