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| Faculty of Engineering  Department of Electrical and Electronics Engineering | | |
| **EE 401 Senior Project**  **FINAL REPORT** | | |
| Fall 2021 | | |
| **Student First and Last Name** | | |
| **PROJECT NAME** | | |
|  | | |
| **Jury Members** | | |
| **Supervisor:** | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Jury Member 2:** | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Jury Member 3:** | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |

ABSTRACT

In this section, a short descriptive summary of the report is given. It aims to reveal the basic idea of the main text and helps readers decide whether they want to read the report or not. The abstract is intended to tell the readers about the report’s information.

This section can be up to three paragraphs maximum.

1. The first paragraph may contain an introduction to the topic of your report;
2. the other paragraph(s) includes the methodology.
3. The last paragraph provides the work done in the report

You should provide more specific information from the report, cite results, and provide conclusions, or recommendations.

**Notes:**

* In total, the abstract should be between 250 and 300 words.
* Although it is the first section to read, it is the last section written.
* Abstract must be one paragraph.

ACKNOWLEDGMENT (optional)

The purpose of this section is to thank all of the people who helped with the research, such as the supervisor, instructors, classmates, etc.

There is no specific formula to follow while writing this section, but it is preferred to be around 30 words max per person.

You may write an acknowledgement to more than one person in this section ( a sentence for each).

**Example:**

I would like to express my very great appreciation to Dr. XXX for his extensive efforts in making this project a success.

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LIST OF SYMBOLS AND ABBREVIATIONS (if available)

|  |  |
| --- | --- |
| 5G | Fifth Generation |
| AP | AP Access Point |
| AWGN | Additive White Gaussian Noise |
| BC | Broadcast Channel |
| BD | Block Diagonalization |
|  |  |

INTRODUCTION

In this section, you will explain what this report is about, and what you aimed to achieve. You should start this section by briefly explaining what is already known about this subject in general. This should be done with appropriate references that can support your claims.Then, you may narrow the field down somewhat and identify the topic you are working on. This part may be extended to include a literature review, in which you refer to several studies that you depended on as a basis for the project. This includes:

* + Definitions of the basic concepts
  + Models and formulas done by scholars that are well-known in this field
  + Similar studies that have been conducted in other contexts

After explaining the literature part, you should clearly state your working hypothesis, followed by your objective(s), and very briefly, the strategy implemented to achieve these goals.

**Notes:**

Use simple wording, be smooth, and precise when writing this section. As far as possible, try to avoid diverging from the subject at hand. Every sentence should serve a purpose.

*Use different chapter titles in your report. Do not use “Introduction”, for example, you might use Problem Definition as a chapter title.*

*You need to include one section/subsection about previous works done.*

*Any chapter should be a minimum of two pages.*

METHODOLOGY

The objective of the methodology section is to describe exactly what, and how you carried your research work.

It should be a method described for every result you intend to include in your results section – i.e., you cannot present the results of a test or analysis that was not mentioned in the methods. Remember to cite any closely related works/projects you relied on when writing this section.

The project should have the following aspects:

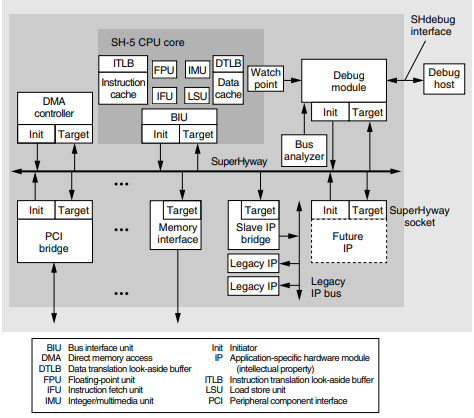
* **Research method** used in this project (qualitative, quantitative, experimental, etc.). This includes:
  + Explanation and definition of the method
  + The rationale behind using it
  + The significance of implementing it in the study.
* **Research tools** used in this project (experimental setup, laboraorty tools, measurement tolls, software(s), etc.). This includes
  + Explanation and definition of each tool used in the report.
  + The rationale behind using each one.
  + The significance of implementing these tools in the report.
* Context of the report, which is the place where the study was held and its features that enable you to conduct the study (university, school, etc.)
* The engineering problem you are addressing.

# Problem Formulation

In this section describe the problem you are targeting to solve. Provide the basics and the details of the problem so the reader understands what is the parameter you trying to improve, or you may highlight an existing problem in the system you are working on. This section can have other subsections as well.

# Proposed Solution

The purpose of this part of the study is to present the engineering solution you propose to solve the problem stated above. This solution should be given in a model that includes the components to be used. In this section, you should talk about the system you are building in general and show the big picture of your work, such as its main blocks, connections between these blocks. For example, Figure 1 presents a sample system. Each of its components should be explained in detail to enable the reader understand the functionality of each part.



**Figure 1** System block diagram [1].

# Design Methods and Tools

You need to include a detailed explanation of the components, implementation, and system measurement. For instance, you should go deeper and explain why you used each connector in this position to solve the problem. Express fine details of your implementation. The description should be very detailed and explains every aspect; it is not appropriate to assume that the reader knows what you are talking about. Rather, you should give all the details of how you implemented, modified, updated, or designed the sub-blocks of your system as.

You can use a sub-block diagram for each section you talk about. For instance, if the main components of the model include 4 blocks, you should have four sub-block system sections in which you explain each part’s components and functions in detail.

**Formating Notes**

When writing a paragraph use 12pt, Times New Roman, 1.5-line space, After space 6pt, Before space 0pt writing style. This style is called *Normal* in this template. After writing your paragraph, highlight a section that you want to designate with a certain style, then select the appropriate name on the style menu. The style will adjust your fonts and line spacing. Do not change the font sizes or line spacing to squeeze more text into a limited number of pages.

To start a new paragraph tab *Enter* on your keyboard. The space between two paragraphs is adjusted automatically. Similarly, no need to add space between paragraph and subsection also.

If you are importing your graphics into this Word template, please ensure to include high quality, saved with no compression, and within 600 dpi resolution graphics. Figures are centered and labeled using the style “Figure Caption” as shown in Figure 2. To cite a figure or a table, go to the *References* tab, under Cross-reference choose the reference tab Figure/Table, and include only *Label and number.*

Tables need to be centered within the margin of the page. If you have a large table, try to squeeze it and adjust it within the page, otherwise, include it in *Landscape* style on a separate page Tables are cited similarly as the figure, see Table 1 as an example.

**Table 1** Experimental result values

|  |  |
| --- | --- |
| **Item** | **Value** |
| Input Capacitor | 200 uH |
|  |  |
|  |  |

Add one line space after the table to start a new paragraph. Each chapter must end with a page break. To add a break, go to the *Insert* tab add *Page Break*. This break will hold your figures and tables at a fixed place for each chapter separately.

Use MathType add-on [2] for equations in your report. The equation should be right-numbered as in . To cite the equation, to MathType tab Insert reference and double-click on the equation you want to cite.



Notice that the subscript is formatted to be as *Text*; which is different from the subscript in  which is formatted to be as *Math*. In this case, the word “load” must be in the *Text* style. When writing a mathematical text inline within the sentence, use *Inline* style from MathType. Do not use Microsoft Equation Editor to write an equation.

Students should use IEEE 2006 citation style. From the Reference tab in Microsoft Word change reference style to IEEE. To add a new reference go to the Insert Citation tab | Add New Source, and enter all the required fields, and press Enter. When citing a webpage, you need to enter the date you accessed that website as shown on the following page. The references title should not be numbered, where the title of the other chapters is numbered.

RESULTS AND DISCUSSIONS

The results section simply describes the findings and lets the data speak for itself. Figures and tables appear here. You don’t need to include a reference at the bottom of your figures and tables when including your results, but you must include a reference for any figure/table/chart you are not producing yourself.

# Results

In case you are writing a report for EE 401, you need to present the simulation results of your work. Simulations may include but are not limited to voltage source variations, load transient, and parameter mismatch tests. On the other hand, if you are writing a report for EE 402, include the experimental results with different operation modes. During the presentation of the results, discuss and comment on the results, and show how your solution is a valid solution for this setup.

# Discussion

Generally speaking, most of the writers address the advantages of the used method but rarely talk about the disadvantages. Remember, mentioning the weakness of your report would highly improve your report quality and open the chances to improve your final project output, especially when we are talking about EE 401 project.

CONCLUSIONS AND FUTURE WORKS

In this section, you need to summarize and assess the work done and make generalizations, implications, and recommendations. Relate your conclusions to the problems raised in the Introduction. Interprets the results, and point out their underlying meaning and overall significance. The limitations of the study are also explained here.

In future works, the section addresses the sides/parts of this project that can be further developed. Provide the reader an idea of how this project can be implemented in an easier approach. You may recommend different tools/methods to implement the project. Discuss the remaining tasks to complete your work, and provide recommendations for future researchers who may work on the same project.

REFERENCES

|  |  |
| --- | --- |
| [1] | P. Biswas, A. Hasegawa, S. Mandaville, M. Debbage, A. Sturges, F. Arakawa, F. Saito and K. Uchiyama, "SH-5: the 64 bit superH architecture," *IEEE Micro,* vol. 20, no. 4, pp. 28-39, 2000. |
| [2] | 17 09 2021. [Online]. Available: http://www.mathtype.com. |

**Notes**

*-You may find more about citing different sources (books, journals, articles, projects, disertations, etc.) using the IEEE style from this link:* [*IEEE Citation Style Guide (ijssst.info)*](https://www.ijssst.info/info/IEEE-Citation-StyleGuide.pdf)

*-You must have at least two references which are not a web-based type of reference, e.g. books, magazines, and research papers.*

*-Consistency in your report is very important. If you used MOSFET as capital letter case don’t use it as Mosefet (small letter case) later. This comment is also important in the REFERENCE section as you are citing different resources.*

APPENDIX OR APPENDICES (if available)

Include your appendices here if there is any.