EECS150 Term Project: Guidelines for Writing the Final Report

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Fall 1997

The final report is a technical description of the device that you have designed and built in your term project. The main purposes of documentation are to allow users to understand and operate your system, and for your fellow engineers to understand your design so it can be upgraded, improved, and maintained. Your goal should be to ensure that your design will be useful even if you are no longer around to explain its function. Without adequate documentation, many great designs are sent to the scrap heap.

Leave time for editing, typing, and proof–reading.

Your report should follow this general outline:

1. Title.
2. Abstract (1 paragraph).
3. Overview (1–2 pages).
   (a) Purpose and Use of Project.
   (b) Design (Block Diagram).
   (c) Brief Description of Major Sub–Modules.
4. System Description (3–5 pages) + figures.
   (a) Subsystem 1- Data Path.
      i. Module 1 through –
      ii. Module n.
   (b) Subsystem 2- Control Unit.
      i. Module 1 through –
      ii. Module n.
5. Design Metrics (1 page max)
   (a) Critical timing path for your design, and maximum clock rate.
   (b) number of CLBs, IOBs, etc.
   (c) Design and debugging time estimates ("engineering cost")
6. Conclusion (1 page).
   (a) Summary of main features.
   (b) Future Improvements.
   (c) Problems Encountered.

For the overview section, try to give a "breadth before depth" introduction to your project. Readers need to get a general picture of your system before they can understand the details. Describe the user–visible features; save the detailed inner workings for the system description section. The block diagram you prepared in the beginning of the project belongs in this section.

The detailed system description can start with functional and input/output specifications. Modules can be described in order from input to output, or from most to least important module. Illustrate the descriptions with the logic diagrams and timing diagrams you have prepared; refer to these as figures.

For the conclusion, summarize the key design features. What will the reader need to be careful about if they were to attempt to duplicate or modify your design? And, what are possible improvements which could be made to the design?

Standard hints for the Final Project Report:

1. DO NOT hand write or hand draw anything (some exceptions are allowed for diagrams and other drawings).

2. Use standard 8.5 by 11 paper throughout the report, except for diagram pages, which can be on larger sheets. (Larger sheets for diagrams are easier to follow, and can be neatly folded to fit in a standard binder.)

3. Make a copy of your report for safety.

4. Include block diagrams, logic diagrams, timing diagrams, flowcharts and tables as appropriate and on or as near as possible to the page in which they are referenced.

5. Put titles on all figures and diagrams.

6. Be sure to make your logic diagrams neat (template is required if done by hand) and complete:

   Include all components, pin numbers, chip types, resistor and capacitor values, LED's, switches and debounce circuitry, your name, the diagram name, the date, helpful comments (e.g. "SYSCLOCK frequency = 5MHz","all resistors 5.1KΩ except as noted", etc.), and any other things which help to make the functioning of the system more clear.

7. Control Unit documentation

   (a) Explain fully the formats of the different micro-instructions and/or control signals you are using.

   (b) Use a Mnemonically Documented State Diagram, and INCLUDE COMMENTS! Since notation of the form 00/100 is hard to follow for state transitions, instead use
   $\overline{In}\ \ \overline{Done}/LoadA\ \ \overline{ClrB}\ \ \overline{OutEnA}$