



CI-M



Some slides are derived from slides presented by Leslie C. Perelman Feb. 28, 2001

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Documentation and Precision



- **Documentation solidifies ideas and procedures.**
 - For you the designer and others
- **Documentation is a record of the project.**
 - For further changes
 - For debugging or troubleshooting
- **Sloppy facts and lack of precision can destroy things.**
 - Confusion over units of measure destroyed a MARS lander.
 - NASA designers used metric units: newtons per second for thrust.
 - Lockheed Martin builders programmed the thrust in pounds per second.
 - The craft was about 60 miles (96 km) off course and went into oblivion.

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6.111 Lab Report



- **Elements of a 6.111 lab report**
 - Title
 - Abstract
 - Table of Contents
 - List of Figures and Tables
 - Overview
 - Description
 - Testing and Debugging
 - Conclusions
 - Appendices
- **Read appropriate sections in The Mayfield Handbook.**
 - This is accessible from the 6.111 web page.



How to Write the Report



- **Write it in stages.**
 - Title
 - Overview
 - Figures
 - Tables
 - Description
 - Testing and Debugging
 - Conclusion
 - Appendices
 - Lists of Tables and Figures
 - Table of Contents
 - Abstract – Note that this is written last.



Report Components



- **Title – Entice a reader into going further.**
 - Don't use “Lab 2” or “report 1224”.
- **Overview**
 - Describe briefly the device's
 - purpose. What does it do?
 - use. How does one use it?
 - subsystem organization.
 - Give a plan or road map for the report.
- **Figures – Use a template and straight edge or a graphics program.**
 - Circuit diagrams convey information about design elements, making building, testing, and debugging easier.
 - Information flows in normal reading order.
 - Label all signals.
 - Show connection points with a dot.
 - Omission of a dot implies no connection. Do not use a “hop-over”.



Report Components - 2



- **Figures (continued)**
 - Timing diagrams show cause-and-effect relationships.
 - Show only relevant signals. Label them.
 - Include a clock signal in synchronous systems.
 - Abbreviate data bus contents.
 - Usually, do not show propagation delays.
- **Description**
- **Describe the device in enough detail so a skilled engineer can understand, replicate, and verify your results.**
 - Give functional specifications.
 - Describe, in detail, how the design works, i.e., how the design implements each function.
 - Organize the design description to mirror the organization of the design itself.
 - Document fully any non-standard, clever, or hack design elements, both to help others understand and to help you remember why you did this.
 - Illustrate with tables and figures. Organizing the figures and then describing them is a good way to create your description.
 - Put detailed logic diagrams, VHDL code, etc., in appendices.



Report Components - 3



■ Testing and Debugging

- Describe the procedure for testing each subsystem.
- Describe what you did to get each subsystem to work, i.e., how did you go about fixing problems.
- If you couldn't get all functions to work:
 - Describe which subsystems did work and to what extent.
 - If you fixed a problem, describe how.
 - If you didn't fix it, describe the problem and what your next testing and debugging steps would have been.

■ Conclusion

- Summarize the most important or innovative design features.
- Describe (briefly) the test results.
- Discuss problems with your initial design and the solutions you implemented.
- Suggest improvements to the design (and specification).

■ Abstract

- In one paragraph, describe your project and the results.
- Do not say what is contained in each section of the report,



When You Are All Done



Check the spelling.

■ Read your report over again.

- Hand written corrections are ok (if legible).