



Department of Electrical and Computer Engineering

CPE 324 Advanced Logic Design Laboratory

Introduction to Lab Report Writing

Introduction

A laboratory report is intended to carry back to the reader information about what was done in the laboratory experiment. It should be neat, concise, well organized, and clear. Avoid writing a report that contains material non-relevant to the experiment. Laboratory reports are graded on quality, not on quantity.

An admirable report can be written by considering the reader and what they need to know. A simple check for evaluating your report is to give it to an engineering student and ask them to read it and answer the following questions:

- What was the objective of the lab?
- What steps were taken to realize the objective?
- What were the results of the lab?
- What conclusions were drawn from the results?

If the answers are clear and complete, you probably have a good report. If the answers were vague and incomplete, then it is recommended that you rewrite your report.

Laboratory Report Format

The laboratory report that you turn in must be typed. Use complete sentences and make it easy to read. Follow the format given to you in this manual. The major criteria used in evaluating a report include; good procedure and results, report accuracy, good organization and data presentation, and the reporter's ability to form meaningful conclusions.

You may use the word-processing and graphic facilities located in Room EB 228 (or other campus computer labs) to write your report.

The following is a general report format. It is necessary for your lab reports to include all sections in bold type as titles and subtitles. However, each student's writing style will vary and you are not expected to follow a canned writing format that may be awkward for you.

Cover Page

Your name and the date the experiment was performed.
Course Number and Section.
Experiment Number and Title.

Sections and information to be included in all reports

1. Introduction

This section should consist of a paragraph or two stating the objective of the experiment and how the objective is to be reached. Avoid writing long, vague and unrelated sentences. Show your communication skills and get the meaning across. The introduction should answer the questions:

What is to be studied?

What is the purpose of this experiment?

How the purpose is to be accomplished?

2. Experiment Description

This section should consist of related theory and your prelab or theoretical analysis results. Include any mathematical expressions and laws related to the experiment here. The theory section of the laboratory manual, your text books, and material presented by your lab instructor are good sources of information needed to complete this section. If you had to look in other sources for additional information, be sure to reference the source you used.

The procedures for the experiment are given in the laboratory manual. Restate in your own words the purpose of Laboratory Exercise and the design and Implementation Procedure. Be sure to mention any procedural deviation from the Manual.

3. Results

In this section, the data obtained during the experiment should be presented. The presentation of the data should be in the form of tables or graphs. You may need to include the truth table and the wave diagram. The main idea of this section is to present the results of the data collection as clearly as possible. Anything unusual, which happened during the course of the experiment, must be mentioned here.

In addition, any calculations that were necessary to obtain the results should be presented here. It is not necessary to write down all calculations made. A sample calculation and explanation should be presented. **Be sure to indicate the units in both the results and example calculations.**

Create a subsection for post lab questions and answer all the questions from the manual. Be sure to include the questions as well.

4. Discussion and Conclusion

This section discusses the significance of the results. The similarities and differences between your prelab (or analysis), simulations, and experimental results should be noted and discussed. Specifically, what were the differences, their causes, and do your results fall within operational boundaries?

Your conclusions should be an extrapolation of the experimental results into the “real world”. They should answer the question, “How can the techniques demonstrated or the results obtained effectively be utilized by a practicing engineer?” The answer requires some thinking and insight into the experiment. Remember that your report should contain your own engineering judgements, discussions, conclusions and possibly recommendations. Do not simply restate the highlights of the results without adding your own thoughts.

Note: Any subsets of the main sections should carry a (Section.Subsection) heading. For example:

Experiment Description

2.1 Theory and Analysis

2.1.1 OR Gate

2.2.1 OR Gate Table

2.2.2 Timing Analysis

2.2 Procedure

Appendices

All the information that supports your report, but is not included in the text of the report should be here. This information may include the prelab (or analysis), Verilog code simulations, raw data and repetitive calculations.

DATA PRESENTATION HINTS

1. In general, data is best presented in either tabular or graphical form. This organization gathers all the data so that the reader can make comparisons and draw conclusions on their own.
2. Spreading data over several pages of the report is unprofessional and must be avoided. No reader likes to hunt for the data he is supposed to compare. If you reference a graph or table in the text of your report, tell the reader where it is.
3. Tables and graphs should be readable. Do not attempt to put them very close to the bottom or next to the binding.

Tabular Format:

- a) Tables are a good means of comparing several measured values. For example, voltage across different elements of a circuit is easy to compare if they are presented in a table.
- b) All tables should be given a designation (i.e. Table XXX) and a title (for e.g., Truth table for AND gate).

c) An example of an acceptable table is given below.

INPUT		OUTPUT
X	Y	OUT
0	0	0
0	1	0
1	0	0
1	1	1

Truth Table 1: AND Gate

CPE 324 Lab Report Format

Content	Points
<p style="text-align: center;">1. Cover Page</p> <ul style="list-style-type: none"> • Title • Student Name • Course Name • Section No. (CPE 324 01, CPE 324 02, CPE 324 03, or CPE 324 04) • Due date 	5
<p style="text-align: center;">2. Experiment Description</p> <p>Restate in your own words:</p> <ul style="list-style-type: none"> • Theory and Analysis and the Purpose of Laboratory Exercise • Design and Implementation Procedure 	10
<p style="text-align: center;">3. Demonstration and Correct Operation of the Laboratory Assignment</p> <ul style="list-style-type: none"> • Demonstration to the laboratory instructor with clear explanation of the design idea and implementation method. 	50
<p style="text-align: center;">4. Experimental Results</p> <p>Grading Criteria Include:</p> <ul style="list-style-type: none"> • Adherence to laboratory procedures • Observations in report • Answers to questions that are present in the laboratory assignment • Result and adequacy of pre-laboratory assignment and/or simulations (where appropriate). • Inclusion as appropriate of the major schematic/Verilog HDL representation of the design, simulation waveforms, etc. Post lab Question 	25
<p style="text-align: center;">5. Conclusions</p> <ul style="list-style-type: none"> • Clear statement of the results and lessons learned during the laboratory assignment and how this relates to the overall objectives of the laboratory assignment 	10
	100