ECE 301 Digital Electronics
Laboratory Report Format

Revised Spring 2016
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I. Cover Page

a. Course Number
b. Experiment Number and Title
c. Your Name
d. The Date of Submission

II. Objectives and Theoretical Background

State the objective and what you are trying to prove. This should be general and is intended for a reader with moderate background knowledge.

III. Materials and Equipment

a. List the particular electrical components that are used and their values using the correct nomenclature
b. List the testing and measurement equipment used and the model numbers

IV. Laboratory Data

This section is for your collected data, along with any plots, tables, or illustrations. Scans of hand drawings are not acceptable. Utilize electronic computer aided design (CAD) tools, spreadsheets, graphing, and word processing in preparation of your report.

V. Theoretical Data

Include any data that you can predict using mathematical models and laws.

VI. PSPICE Simulation Results

Place all PSPICE simulation results, including the simulation profile (showing the time and date of simulation), in this section.

VII. Comments and Conclusions

Discuss what went as expected and what did not. Compare and contrast your theoretical, simulation (PSPICE), and laboratory results. Are they the same? Why or why not?

Make sure that all of the questions in the lab manual are answered completely. Be creative. Think of this as a technical report that you are submitting to your boss at work. Try to explain as much as possible, yet be concise. Remember that this report should be targeted to an audience with mid-level expertise. Anyone with some background knowledge in the subject should be able to understand it.

Tutorial (partial) Example of Some Elements

1. Problem Statement and Design

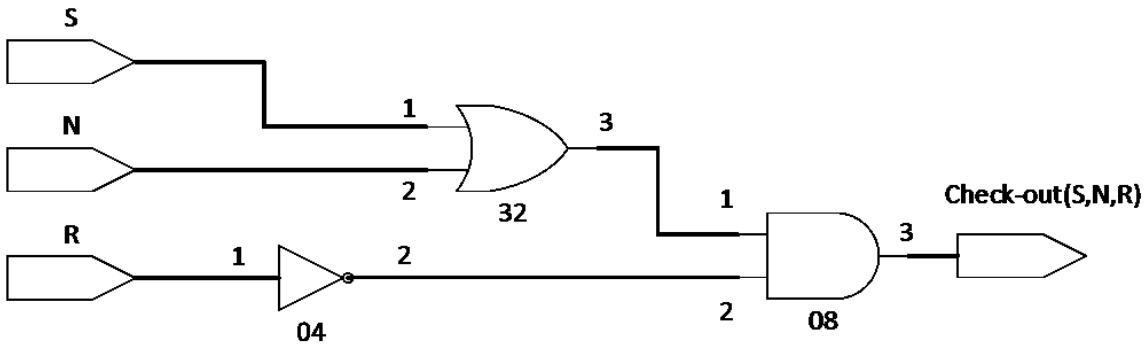
Design a combinational circuit that implements the following assertion:

> *Allow a library book to be checked out if the book is in the stacks or this is a renewal and the book is not a reference book.*

In this case the necessary design equation can be determined directly from the problem statement.

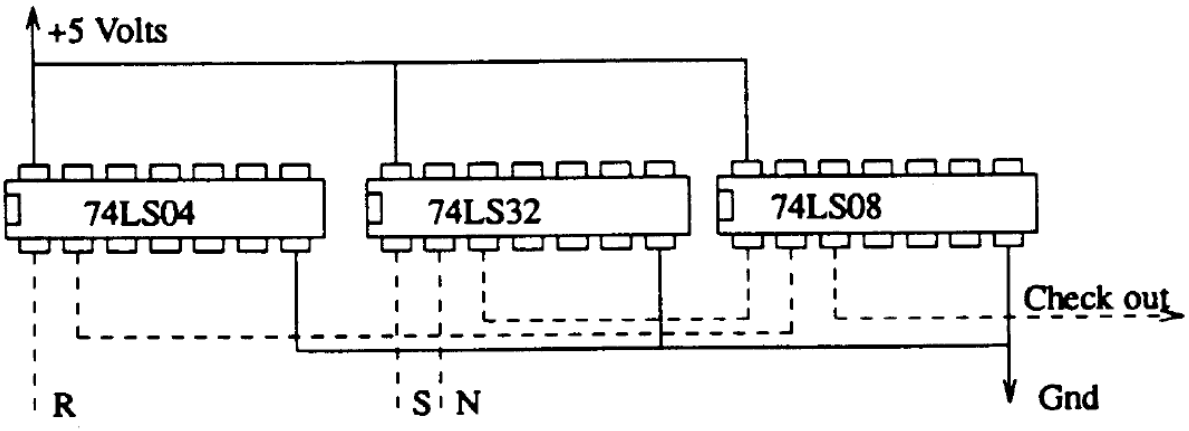
$$\text{Check-out} = (S + N) \bullet \overline{R}$$

where *S* represents the book is in the stacks, *R* the book is a reference book, and *N* the book is being renewed.



2. Implementation

The needed IC's and their interconnection are shown below. Pin numbers have been shown on the previous schematic.



3. Test

Apply all input combinations and check that the output agrees with the expected operation as described in the problem statement and in the following truth-table using the logic indicators and the binary data switches of the ET1000 trainer.

Stacks	Reserve	Renewal	Check-out
OUT (0)	NO (0)	NO (0)	NO (0)
OUT (0)	NO (0)	YES (1)	YES (1)
OUT (0)	YES (1)	NO (0)	NO (0)
OUT (0)	YES (1)	YES (1)	NO (0)
IN (1)	NO (0)	NO (0)	YES (1)
IN (1)	NO (0)	YES (1)	YES (1)
IN (1)	YES (1)	NO (0)	NO (0)
IN (1)	YES (1)	YES (1)	NO (0)

4. Conclusion

The conclusion is your interpretation of the results of the experiment and is therefore inherently subjective in nature. The conclusion should not be considered unimportant because of its subjective nature. A careful study of this example should bring into question several shortcomings of the proposed solution.

- How is it possible that a book can be both in the stacks and being renewed by a library patron simultaneously?
- How does this impossibility affect the design?
- Has the problem statement been interpreted incorrectly or is it incomplete?
- Does the specification consider all the possibilities?
- What corrections or changes are necessary?

Your conclusions should pose and answer similar questions.