

Project 4
Electronic Holiday Decoration

Build a circuit with at least 15 LEDs in some kind of decorative pattern. Trigger the LEDs in a sequence. For example, you could light one, then three, then five, ... LEDs. The circuit must go through at least *three* different patterns before it repeats. It is not suggested that any randomness is necessary in this circuit. Since your circuit will require a clock, you will have to build the clock circuit using a 555 timer chip.

You must build the circuit and demonstrate its operation. Measure voltages at several points in the circuit and use this information in your explanation of how the circuit works. Suggest some modifications to your design that would significantly change its operation. It is not necessary to implement these changes.

Project Report: Your project report must address the questions and issues listed in the syllabus and should include most of the following information or address most of the following questions/issues:

1. Describe what your decoration will do.
2. Include a tentative diagram of the circuit(s) you are going to build. Include a parts list.
3. Discuss the operation of the circuit
4. Include your final design.
5. Simulate the circuit using PSPICE. Plot the voltage at the output of the clock and at the LEDs (You can use a normal diode to simulate the LEDs.)
6. How will you test your circuit? Write up a simple procedure that you will follow.
7. What changes in the circuit design would you suggest that could improve its performance?
8. Include personal responsibilities.
9. Have a TA or instructor verify the operation of your circuit, and sign below. Include this page with your report.

Witnessed _____ Date _____