Title: People Counter  
Area: Computer hardware  
Prerequisites: EE 354  
Build a device which will count the number of people coming into and going out of a room. Your device should have a display which shows the count of the number of people in the room up to 8. You may assume that the room has no people initially and that there is only one door into or out of the room.

Title: Automobile tailights  
Area: Computer hardware  
Prerequisites: EE 354  
Design and build a sequential tail light system for an automobile. Use 5 LED's to take the place of tail lights. Use 3 push button switches to simulate "left turn", "right turn", and "turn complete" signals from a car. Your system should look like that shown below. The LEDs should flash at approximately 1/8 second intervals and should begin at the middle and flash to the outside. The flashing should continue until the turn complete button is pressed at which time all lights should go off.

Title: Roulette generator  
Area: Computer hardware  
Prerequisites: EE 354  
Design and build a roulette generator system. The system should have 8 LEDs a stop switch, a restart switch, and such other components as necessary. The LEDs should flash sequentially at a high rate of speed until the stop switch is pushed. At that time, the flashing should stop with only one LED remaining lit. That condition should remain until the restart switch is pushed. Minimum component count will be considered in grade determination.
**Title:** Programmable timer  
**Area:** Computer hardware  
**Prerequisites:** EE 354  
Design a long period programmable timer that is capable of driving a 120 volt, 100 watt light bulb. Your timer should have a switch (push button) to start it and potentiometer (or other mechanism) to dial in the delay time. When the switch is pushed the light should go on for an amount of time $T_D$ proportional to the pot setting where 1 minute $\leq T_D \leq$ 1 hour.

**Title:** College Bowl  
**Area:** Computer hardware  
**Prerequisites:** EE 354  
Design and build a "college Bowl" system which has 4 push button inputs, 4 LED designators, a master reset switch, an audible indicator, and such other components as are necessary for its function.

The system should monitor the four input buttons. When any button is pressed the LED designator corresponding to that button should light and all other buttons should be disabled. A tone should sound briefly to indicate that someone has pushed a button. The light should remain on until the master reset switch is pushed. In no case should more than one light be on at any time.

**Title:** Digital waveform generator  
**Area:** Computer hardware  
**Prerequisites:** EE 354  
Design and build a system which will produce an arbitrary waveform of a periodic function. The period of the function should be fixed at 1 msec. The waveform should have a voltage range of from 0 to +5 volts. The user should be able to enter waveforms by reprogramming with the data in the program memory space.