

## CPEG222 – Project 1 A Simple Counter

For this project, you will implement a counter, with an external 4-digit LED output display, that is capable of incrementing and decrementing based on user input (demo board switches). When a user presses the increment button, the counter, displayed on the 4-digit display, increments by 1, at a rate of ~60/second. A decrement button allows the user to decrement the counter at the same speed. A user should also be able to reset/clear the display.

As a “hint” of the design, you should, in theory, be able to scale your project to a 20-digit LED output with very little change in the basic design.

### 1. Display: 30 points

- Display Brightness – a sliding scale is given for the brightness of the display. A display that is bright enough to be seen easily will earn full points; an unacceptable display will earn few points.
- No flickering of display

### 2. Operation: 40 points

- Displays 0000 by default.
- Increment Button – increments the counter by ~60/second.
- Decrement Button – decrements the counter by ~60/second.
- Clear Button – Resets the counter and display to 0000.
- The display should halt when the upper and lower limits are reached:
  - Upper limit = 9999
  - Lower limit = 0000

### 3. Customer Satisfaction: 30 points

Points will be rewarded or deducted based on your customer’s satisfaction with the project.

- + Solid presentation – includes explaining your project at both a high and functional level.
- + Understanding of the extensibility of your project.
- - Quirky operation
- - Unfamiliarity with any aspect of your project
- + ingenuity / optimization of design

This project must be coded in your own, fully commented, C program! A **severe** penalty will be given for not fulfilling this requirement and University policies on plagiarism still do apply.