

# E85: Digital Design and Computer Engineering

## Problem Set 7

### 1) Pointers

In the following code, suppose the `g` array is stored in memory starting at address `0x00001000`. What is the value of `sp`?

```
typedef struct grades {
    char name[64];
    unsigned long id;
    float scores[11];
} grades;

grades g[60]; // grades for class

float *sp = &g[7].scores[3];
```

### 2) Datasheets

Write a snippet of C code to turn on the clock in the RCC to the USART1 Universal Synchronous/Asynchronous Receiver/Transmitter on a STM32F042K6.

### 3) Impact on Society: Pick a sector such as consumer appliances, automotive, aviation, toys, military, etc. Write a thoughtful and evidence-based paragraph about how the availability of inexpensive microcontrollers has transformed the design of products in your sector.

How long did you spend on this problem set? This will not count toward your grade but will help calibrate the workload.