

# E85: Digital Design and Computer Architecture

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