# EECE.3170: Microprocessor Systems Design I

Summer 2017

Lecture 1: Key Questions
May 15, 2017

1. Briefly describe data types: what they specify, and what the different possibilities are for each aspect of a data type.

2. Explain the difference between how data can be interpreted as a signed or unsigned integer. Show the difference by interpreting the 8-bit value $1001\ 1111_2$ as both a signed and unsigned value.

3. Describe the basic characteristics of processor registers.

4. Describe the basic characteristics of processor memory.

5. What does it mean for data to be aligned? What is the impact of mis-aligned data?

6. What are “little endian” data?

7. **Example:** Given the memory contents shown below:

| | Lo | | | Hi |
|---|---|---|---|---|
| **0x200C** | 40 | 96 | 2C | 00 |
| **0x2010** | 55 | 12 | CD | AB |
| **0x2014** | 01 | 23 | 88 | 99 |

What is the value of:

- The word at address 0x200D?
- The double word at address 0x2012?

Are these data aligned?