

Announcement

- C Workshop
 - 7:00 – 7:50 p.m. Monday – Wednesday
 - MECC 127
 - Required (need to attend only one)
 - Topic: String operations in C

Lecture 5

Integer Representations

CPSC 275
Introduction to Computer Systems

Encoding Integers

x : w -bit binary representation of an integer

Unsigned

$$\sum_{i=0}^{w-1} x_i \cdot 2^i$$

Two's Complement

$$-x_{w-1} \cdot 2^{w-1} + \sum_{i=0}^{w-2} x_i \cdot 2^i$$

Sign
Bit



Encoding Integers, cont'd

```
short int x = 15213;  
short int y = -15213;
```

- **C short** – 2 bytes long

	Decimal	Hex	Binary
x	15213	3B 6D	00111011 01101101
y	-15213	C4 93	11000100 10010011

- Sign Bit
 - For 2's complement, MSB indicates sign
 - 0 for nonnegative
 - 1 for negative

