

University of Illinois at Urbana-Champaign
Dept. of Electrical and Computer Engineering

ECE 220: Computer Systems & Programming

Pointers

A Pointer is Simply a Memory Address

As you know, it's often convenient

- to use **pointers** to values (**memory addresses**)
- rather than the values themselves.

Examples of use include

- arguments that can be modified,
- strings, and
- “events” (or any structured data).

Pointer Types Used in the Same Way as Primitive Types

In **C**,

- a **pointer to a type X**
- **has type X***.

The following thus declare...

```
int*  iptr; // pointer to int, and
char* cptr; // pointer to char.
```

Note: read pointer types from right to left.

Declaring a Pointer Only Makes Space for a Pointer

```
int* iptr; // iptr points to an int
```

Three important points about pointer types:

- **iptr is a memory address** (bits required depends on addressability of memory);
- **compiler** knows type and thus **can interpret bits at memory address iptr**;
- **if program needs storage for int** (something to which **iptr** might point), **declare it separately**.