C - POINTERS

BASIC IDEA

Q. What is a pointer? A. A different variable type that stores a memory address

- Associated with a specific variable type, aka
  - int pointer stores the memory address of an int
  - float pointer stores the memory address of a float
  - char pointer stores the memory address of a char

RELEVANT OPERATORS

- `&` -> reference, aka "address of" operator
  - used to get the memory address of a variable
  - using it is known as "referencing"
- `*` -> dereference, aka "value of" operator
  - used to get the actual value stored at the memory address pointed to
  - using it is called "dereferencing" a pointer

DECLARING POINTERS

```
int *iptr;
char *cptr;
float *fptr;
```

- Notice the * in front of the variable name (this is what makes a pointer)
- They don't have to have "ptr" in the name

ASSIGNING VALUES

- How do I change what value is stored at the memory address pointed to by a pointer?

```
int *iptr;
int *jptr;
int a, b, c;

a = 5;
b = 6;
jptr = &a;
iptr = &c;
*iptr = 100;
```

PRINTING POINTERS

- `printf` command
- printing memory address:
  - need to use a different formatter: `%p`
- printing value stored:
  - use appropriate formatter for datatype

BE CAREFUL

- C will let you do a lot of things
- You can easily do something other than what you intended...
- Pay attention to warnings - they can help