C - **Structures, Typecasting, Function Pointers**

CS238P: Operating Systems - Fall '18

Aftab Hussain

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University of California, Irvine

```
void func(char *s, char *t){
  while (*s++ = *t++);}
```

- Depending on how you declare the strings, you may or may not be able to update them in the same way.

Couple of points on pointers to strings

- Depending on how you declare the strings, you may or may not be able to update them in the same way.
- How they are declared affects how they are stored.

Structures

Structure size

Due to alignment requirements for different objects, there may be unnamed "holes" in a structure. For instance, if a char is one byte and an int is four bytes, the structure

```
struct {
char c;
int i;
} ;
```

might well require eight bytes, not five. The sizeof operator returns the proper value.

- Change the type of the object for a single operation

Typecasting Structure Types

- Change the type of the object for a single operation
- Pass generic objects

A more real structs example

A cool tip for initializing arrays

Designated Initializer

Designated Initializers[1] Initialize the array elements 0x3A, 0x45, 0x46 only [2]

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[1]http://gcc.gnu.org/onlinedocs/gcc-4.0.4/gcc/Designated-Inits.html
[2]sheet 77, xv6-rev9.pdf

Function Pointers

Dynamic registration with Function Pointers

- Declare a struct to hold function pointers [3]

- Declare a struct to hold function pointers [3]
- Register function pointer [4]

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[3]sheet 40 xv6-rev9.pdf
[4]sheet 82 xv6-rev9.pdf

Thank You