CS 161
Intro to CS I

Arrays vs. Structs
Chap. 6.1
Odds and Ends...

• NULL vs. ‘\0’
• string vs. array of characters
• Freeing memory/Dynamic arrays
• The difference between argv[] and argv[][]
• Grades...
Structures

• Data Structures So Far...
  – Variables
  – Arrays

• What if we want mixed types?
  – Record: name, age, weight, etc.
  – Use `struct` type
Struct/Members

```c
struct doc_record {
    char name[50];
    int age;
    float weight;
};
```

- What does this do?
- How do we use it?
struct doc_record {
    char name[50];
    int age;
    float weight;
}
austin;

OR

struct doc_record {
    char name[50];
    int age;
    float weight;
};

doc_record austin;
#include <iostream>

using std::cout;
using std::endl;

struct doc_record {
    char name[10];
    int age;
    float weight;
};

void using_structs(doc_record &);

int main() {
    doc_record austin;

    austin.name[3] = '\0';
    austin.age = 5;
    austin.weight = 37.5;
    using_structs(austin);
    cout << "Name1: " << austin.name << " , Age: " << austin.age << endl;

    return 0;
}

void using_structs(doc_record &a) {
    a.name[0] = 'P';
    cout << "Name: " << a.name << endl;
}
```cpp
#include <iostream>

using std::cout;
using std::endl;

struct doc_record {
    char name[10];
    int age;
    float weight;
};

text void using_structs(doc_record *);

int main() {
    doc_record austin;
    austin.name[0] = 'A';
    austin.name[1] = 'K';
    austin.name[2] = 'M';
    austin.name[3] = 'O';
    austin.age = 5;
    austin.weight = 37.5;
    using_structs(&austin);  // Pass address of to pointer
    cout << "Name1: " << austin.name << ", Age: " << austin.age << endl;
    return 0;
}

// Pass by pointer to struct, and use -> for dereference
void using_structs(doc_record *a) {
    a->name[0] = 'P';
    cout << "Name: " << a->name << endl;
}
```
Quiz #7

• Get into groups of 3-4.
• Draw the picture and pseudo code for creating an int ****p; that points to int i;
• Describe an example structure you might define.
• How would you return a struct from a function?
• How you would you create an array of these structures?