CS 161
Intro to CS I

Arrays vs. Structs
Structures

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

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

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

• What does this do?
• How do we use it?
Struct Type

```c
struct doc_record{
    char name[50];
    int age;
    float weight;
};  //creates a user defined type, doc_record

int main() {
    doc_record jen;  //use it as a type
    ...
}
```
Creating Struct Demo...
Why is it good to have an array of structs?

• What happens if you have two arrays with first names and last names, and you want to sort by first name?

• What happens if you put the first name and last name in a struct?
Things to think about...

• Describe an example structure you might define.
• How would you return a struct from a function?
• How would you pass a struct to a function?
• How would you create an array of these structures?
Returning Pointers, Arrays, Structs...

```c
int * create_1darray(int );

int main() {
    int *array;
    ...
    array = create_1darray(5);
    ...
}

int * create_1darray(int n) {
    return new int[n];
}
```
Returning Pointers, Arrays, Structs...

```c
int ** create_2darray(int, int);

int main() {
    int **array;
    ...
    array = create_2darray(5, 5);
    ...
}
int ** create_2darray(int n, int m) {
    //What goes in here?
}
```
Returning Pointers, Arrays, Structs...

```cpp
struct contact_info {
    std::string name;
    std::string address;
    unsigned int phone;
};

int main() {
    contact_info address_book[50];
    address_book[0] = create_contact();
}

contact_info create_contact() {
    contact_info contact;
    contact.name = "Jennifer";
    return contact;
}
```
What about passing structs to functions?
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