Object Oriented Programming – Implementation
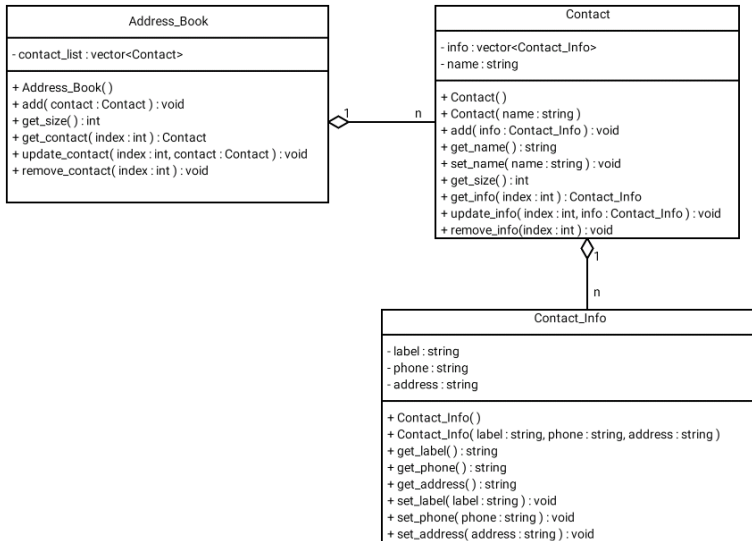
Dr. Robert Lowe

Division of Mathematics and Computer Science
Maryville College

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Address_Book

- contact_list : vector<Contact>

+ Address_Book( )
+ add(contact : Contact) : void
+ get_size( ) : int
+ get_contact(index : int) : Contact
+ update_contact(index : int, contact : Contact) : void
+ remove_contact(index : int) : void

1   n

Contact

- info : vector<Contact_Info>
- name : string

+ Contact( )
+ Contact(name : string)
+ add(info : Contact_Info) : void
+ get_name( ) : string
+ set_name(name : string) : void
+ get_size( ) : int
+ get_info(index : int) : Contact_Info
+ update_info(index : int, info : Contact_Info) : void
+ remove_info(index : int) : void

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Contact_Info

- label : string
- phone : string
- address : string

+ Contact_Info( )
+ Contact_Info(label : string, phone : string, address : string)
+ get_label( ) : string
+ get_phone( ) : string
+ get_address( ) : string
+ set_label(label : string) : void
+ set_phone(phone : string) : void
+ set_address(address : string) : void

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  void load(Address_Book &book);
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Objects as Function Parameters

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  - An object will usually need to maintain state across the function call. (If not, we use `const`).
  - Polymorphism only works on on references and pointers (more on this later)!

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void Contact::set_name(const std::string& name)
{
    this->name = name;
}
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Shadowing of Member Variables

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- We should do this! Inventing other names would make the code less readable.
- The keyword `this` provides a pointer to the current object.
- We will talk about pointers next semester. For now, we will just use `this` to distinguish the member from the parameter as shown above.

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- We do this by specifying constructors with parameters.
- Most of the time, we have a no-argument constructor and one that requires arguments:
  - `Contact();`
  - `Contact(std::string name);`
- We use this when we create an object:
  `Contact mom{"Mom"};`

1. `mkdir labs/address`
2. `cp examples/21-OOP/* labs/address`
3. Compile the program:
   `g++ main.cpp contact.cpp iofun.cpp -o address`
4. Run the program. Notice how it does very little.
5. Implement the missing classes.
6. Implement the missing functions in main.