

Object Oriented

quick survey

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Orientation

- 1 Remember C.
- 2 Object-Oriented Ideas
- 3 Many Languages & Competing Implementations
- 4 Simulation Libraries

Sequential Information Processing

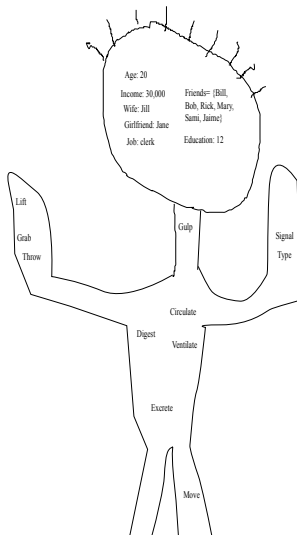
- Programs in C (or other non-object-oriented languages) process information in a straight line.
- Functions divert information streams, but don't really alter sequential nature of information
- Recall passing pointers to functions declared like

```
int manage(int * input , int * output)
```

- The input gets mangled into output, but manage does not keep track of where input came from, or where output went.
- Possible re-design C to be more object-oriented

Object=Information and Capability

- See Bob?
- Bob has information
- Bob has abilities



An O-O Program is a Bunch of Bobs

Instance: Bob is an “instance” (or an “instantiated object”)

- A “specific” “living?” thing
- Specific: with values that can be
 - altered
 - disclosed
- Living: able to adjust, change, interact
- Create a bunch of more-or-less living things like Bob, and you have an Object-Oriented Program

Objects and Classes

- Class: General framework from which objects can be created

- Usually:

instance variables: variables that may differ among objects from a class

class variables: variables that are common among all objects from the class

methods: abilities of the objects, like “function” in C, except that a method is tied to a particular object.

Class Hierarchy & Inheritance

- Inheritance.
- Subclass—begin with Class, add new variables and/or methods
- Contention: Subclass allows for “re-usable” code
- All OO languages provide a generic class from which all objects are derived

Privacy and Messaging

- Each agent “keeps its own information”
- Information gathered and changed through well defined “interface”
- Interface: Variable lists and methods in a “header” file.
- Messaging metaphor for communicating with objects

Objective C style	C++/Java Style
[bob doThis];	bob.doThis();
[bob run:5];	bob.run(5);

Agent-Based Model

- Each “substantively important” individual “actor” is an instance object
- Each agent has its own data and capabilities
- Model framework
 - Creates a Structure in which agents can “step” through time
 - adjust/adapt/interact
- Model Also its own objects that “monitor” and “report” on the simulation.

Quick Overview Of Information

- Micro-network
 - Each Agent reveals what it wants to
 - Each Agent gains information from specific interaction with particular others
- External/Involuntary information
 - Agent has “tag” or “marker” that each individual other may take note of
- Agents base behavior on “aggregates” that are available to them.