Working with People! Relationships in Software Development

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CMPT140
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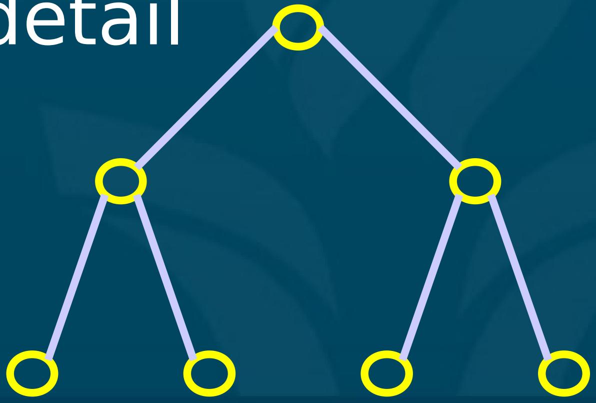
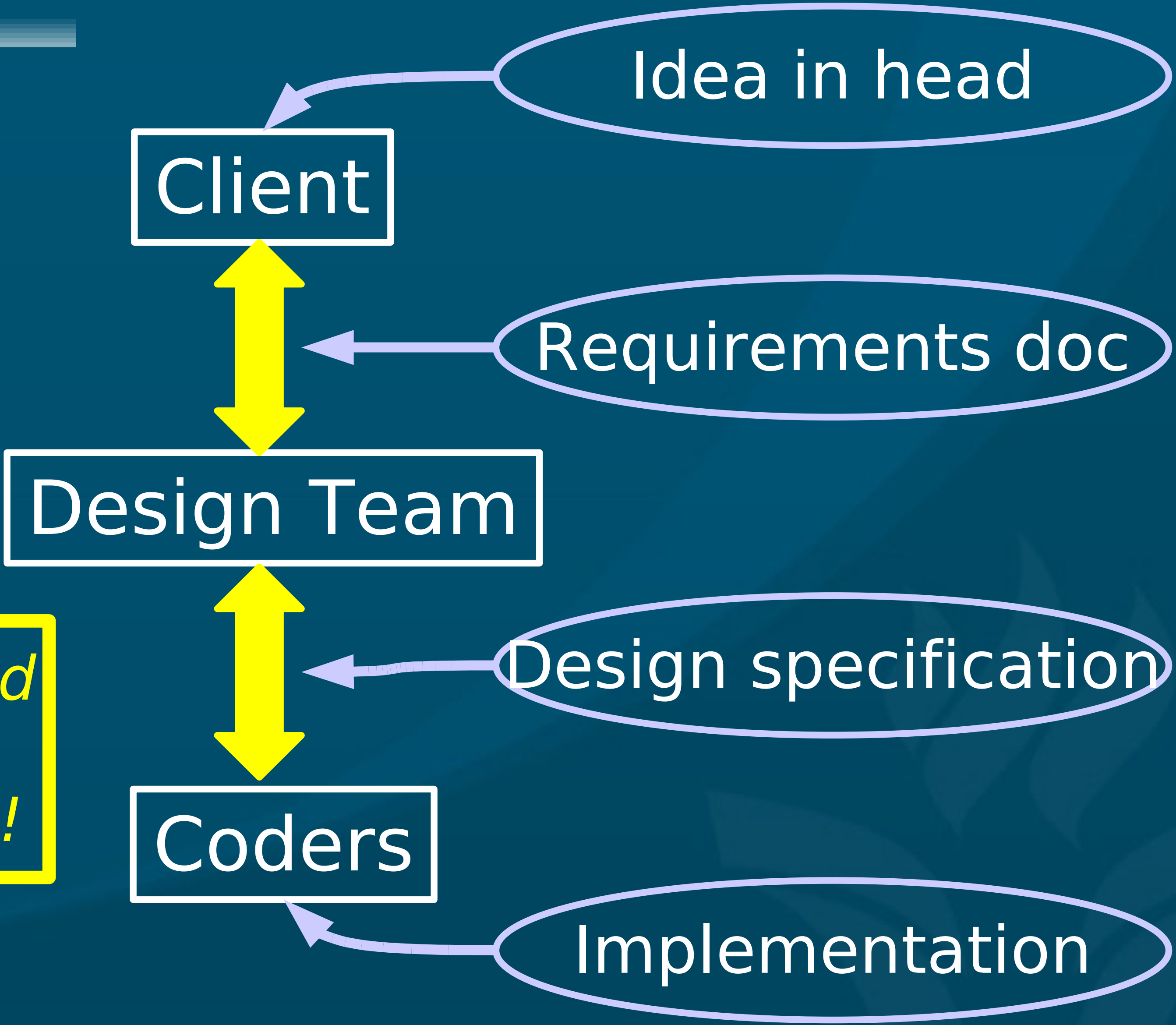
Review

- Toolsmiths must know their toolboxes
  - (what does it mean for a computing scientist to be a toolsmith?)
- Top-down vs. bottom-up
- First step in problem-solving? (don't code yet!)
- ***WADES*** *(Write, Apprehend, Design, Execute, Scrutinize)*
- Levels of abstraction / levels of detail

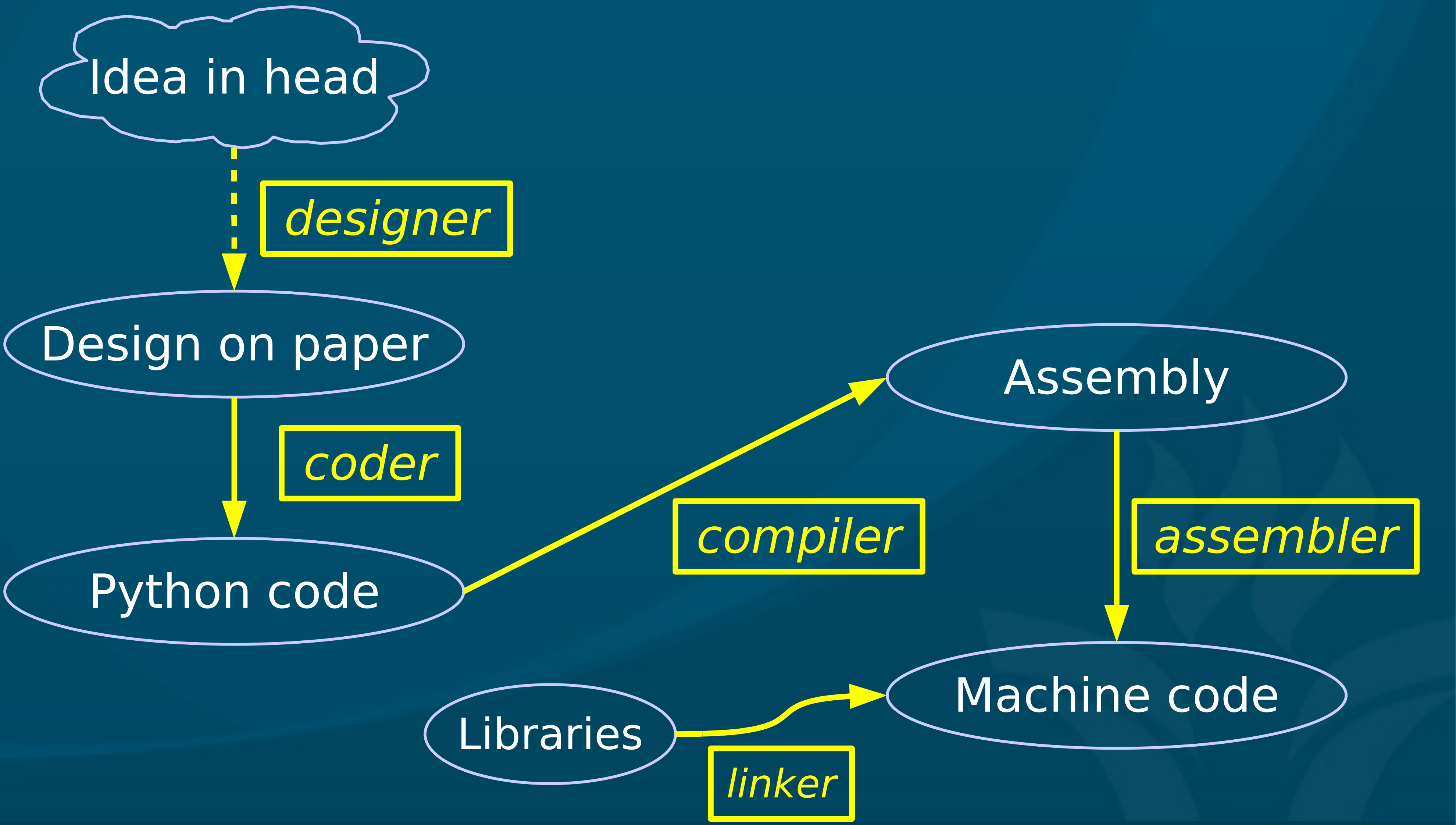


Interfaces in software development



Both vertical and horizontal communication!

Programming is translation


Idea in head

designer

Design on paper

coder

Python code

compiler

Assembly

assembler

Machine code

Libraries

linker

“There's no 'I' in 'Team'!”

- Individual competency
  - Have something to contribute
  - Know how your niche fits in the whole
  - Appreciate other people's specialties
- Team comptetency
  - Mutual trust and respect
    - “Think of others as better than yourselves”
  - Self-organization into roles (may change)
  - Initiative – don't wait for others to do it
  - Constant communication

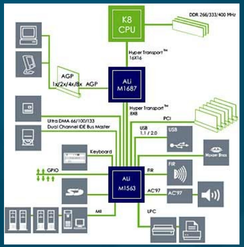
Roles: producer vs. director

- *(This is just one way of organizing a team)*

- Executive Producer
  - Process, flow, keep team on-task, on-time
- Technical Director
  - Vision, artistic, technical integrity
  - Prevent “feature creep”
- Engineers: implementers, make it happen
- Architects/designers: give it purpose, make it beautiful

Hardware abstractions

- Generally, most computers have these basic hardware components:
  - Input
  - Memory
  - Processing
  - Control
  - Output



- Together with the software, the environment presented to the computer user by these is the virtual machine

Software abstractions

- Instructions: basic commands to computer
  - e.g., ADD x and y and STORE the result in z
- Programming language: set of all available instructions
  - e.g., Python, C++, machine language
- Program: sequence of instructions
  - e.g., your “Hello World” program
- Software: package of one or more programs
  - e.g. Microsoft Word, Microsoft Office
- Operating system: software running the computer: provides environment for programmer
  - e.g., Windows XP, Mac OSX, Linux, etc.

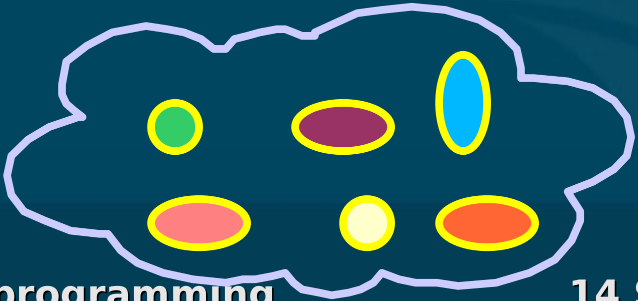
Data representation

```
01000100100101110111010001001000
10100100110011110100100100001110
10111011101010101111110001001001
10111101011000001110001001111000
10001000100100101000111001000100
10010010100010101011101110101101
01010101001001010100010001001110
11111111101010101111110001000001
10101010000001011000010011111001
10000010001011110011010101000010
11111010101010101010101010111001
00101000111000001111100010001011
```

- Data vs. information, knowledge vs. wisdom
- Raw data (factoids, memorized mantras) are useless unless you know what they mean!
- “There are 10 kinds of people in the world: those who know binary, and those who don't.”
  - (what does “10” mean?)

Atomic vs. compound data

- Atomic: represents a single entity
  - e.g., 8, π, 6.022×10^{23}, z
- Compound: entity that also is a collection of components: e.g.,
  - Set: {43, 5, -29.3}
  - Ordered tuple: (3,9) *(vs. set?)*
  - Complex number: 4.63+2i *(set or tuple?)*
  - Aggregate: (name, age, address, phone#)
- Singleton: {43}



TODO items

- Familiarize yourself with the course website:
  http://cmpt140.seanho.com
- Do the Python/IDLE intro by Fri
  (nothing to turn in, not graded)
  - Lab1 is due the following Wed after that
- Read ch1 of the textbook
- HW01 due Wed before start of class
  - Electronic turn-in: upload to myCourses