Announcements

• Homework 1 is due next Tuesday at 5pm (no email when you submit).
  Homework is graded for effort.
• Take-home quiz released next Wednesday 9/11 at 1pm, due Thursday 9/12 at 11:59pm.
  3 points, graded for correctness.
• Similar in format to a homework assignment.
• If you receive 0/3, you will need to talk to the course staff or be dropped.
  Open-computer: You can use the Python interpreter, watch course videos, and read the
  online text (http://composingprograms.com).
• No external resources: Please don’t search for answers, talk to your classmates, etc.
• Project 1 posted this Friday, due Thursday 9/19 at 11:59pm.
• Demo during next lecture
Multiple Environments in One Diagram!

An environment is a sequence of frames:
- The global frame alone
- A local, then the global frame

Examples: [Link](http://goo.gl/XVtEms)

Names Have No Meaning Without Environments

Every expression is evaluated in the context of an environment.
- The global frame alone
- A local, then the global frame

Examples: [Link](http://goo.gl/XVtEms)

Miscellaneous Python Features

Operators
Multiple Return Values
Docstrings
Doctests
Default Arguments

(Demo)

Conditional Statements

A statement is executed by the interpreter to perform an action

Compound statements:

The first header determines a statement's type

The header of a clause "controls" the suite that follows

def statements are compound statements

A suite is a sequence of statements

To "execute" a suite means to execute its sequence of statements, in order

Execution Rule for a sequence of statements:
- Execute the first statement
- Unless directed otherwise, execute the rest
### Conditional Statements

#### Syntax Tips
1. Always starts with "if" clause.
2. Zero or more "elif" clauses.
3. Zero or one "else" clause, always at the end.

#### Execution rule for conditional statements:
- Each clause is considered in order.
- 1. Evaluate the header's expression.
- 2. If it is a true value, execute the suite & skip the remaining clauses.

### Boolean Contexts

#### False values in Python:
- False, 0, '', None

#### True values in Python:
- Anything else (True)

#### Reading
- Read Section 1.5.4!
- [Read Section 1.5.4](http://composingprograms.com/pages/15-control.html#conditional-statements)

### Discussion Question

Complete the following definition by placing an expression in

```python
def choose(total, selection):
    """Return the number of ways to choose SELECTION items from TOTAL."
    choose(n, k) is typically defined in math as:  n! / (n-k)! / k!
    >>> choose(5, 2)
    10
    >>> choose(20, 6)
    38760
    ...```

- ways = 1
- selected = 0
- while selected < selection:
  - selected = selected + 1
  - ways, total = ways *
- return ways

#### While Statements

#### Execution rule for while statements:
1. Evaluate the header's expression.
2. If it is a true value, execute the (whole) suite, then return to step 1.