ECS10
10/12

Announcements
- Midterm Fri Oct 16
  - Bring books, notes, program printouts
  - Bring a Scantron 2000 (buy at bookstore)
  - Bring a pencil
  - Know what section you are in (day and time)
  - Sample midterm on Web page (not on SmartSite)
  - Solutions up tonight

Today: complex program
- Structure built from loops.
- Control the loops using:
  - while statement
  - if-elif-else structures
  - Boolean expressions
  - state variables
  - break statement

State variable
- goodInput = False
- print ('Enter your height.
reply = raw_input('Feet: ')')
if cc.couldBeInt(reply):
  feet = int(reply)
goodInput = True
- Keeps track of what is going on. Not an input or output. Often Boolean.

Variables - cast of characters
- goodInput = False
- print ('Enter your height.
reply = raw_input('Feet: ')')
if cc.couldBeInt(reply):
  feet = int(reply)
goodInput = True
- reply - string. What the user typed.
- feet - float. Number of feet.
- goodInput - Boolean. Whether we have a good input string yet or not.

Rock, paper, scissors
- Play the game with your neighbor.
- Program structured like this:
  tie= True
  while tie:
    ....
    if ....: # Somebody wins
      tie= False
    ....
### The random module

```python
import random as random
```

Same as:
```
import random
```

- Gives us functions that compute different kinds of random numbers.

### Random module

- `random.randrange(3)`
  - Produces a random choice of \{0,1,2\}

### Play until somebody wins

- Use a state variable called **tie**.
- Assume it's a tie at the beginning.
- Play until it's not a tie any more.

### Who wins?

- Need to do different things if user has rock, something else if scissors, and something else if paper.
- `if…elif…else`
- `if…elif…elif` (don’t need an else)

### while-break loop

```python
while True:
    reply = raw_input("Enter r, p, or s:")
    if (reply == "r") or (reply == "p") or (reply == "s"):
        break
    else:
        print "not valid"
# now reply is one of r,p,s
```

- Loop continues until break statement, then jumps out
- Lets you eliminate state variable
- Can be confusing