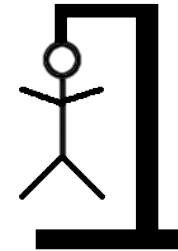


## PFtTBSB

- **Files and formats: how to read and store data**
  - Python, GoogleDocs, Excel, Cloud, ...
  - CSV, XML, ...
- **Tuples and Lists and Sets and Strings**
  - Mutable and immutable collections, iterables
  - How to create and access, when to use each
- **Interactivity: playing games using protocols**
  - Playing solitaire games like hangman
  - Playing networked games like WWF

## Generic game-playing loop (solitaire)

```
while not game_over():
    take_turn()
    update_state()
    if lost:
        update_loser()
    elif won:
        update_winner()
```



- **Determine state**
  - Local variables
  - Parameters to functions
  - Initialize appropriately

## Programming idioms

- **Use boolean variables to keep some state: flags**
  - `done = True, ok = False, ...`
  - Initialize, update, check
- **Keep loops small, use functions to do work**
  - Pass parameters, return values, update parameters
  - `process_guess(move, state), if game_over(state),`
- **Use lists when modifying/mutating**
  - Can convert from strings to lists and vice versa

## Reading data from files

- **What does `open()` do? What does `close()` do?**
  - What do they return?
- **How to read data from a file**
  - `f.read()` returns entire file as one string, next steps, ...
  - `f.readlines()` returns list of lines in file, loop-it
  - Looping idiom similar, list not created

```
f = open("name")
for line in f:
    process line
```

```
f = open("name")
for line in f.readlines():
    process line
```

## Functions, parameters, communication

- Lists, sets, strings objects/state created somewhere
  - After creation, pass state to other functions
  - Some state belongs together, collect/create in same place
  - Group together in tuples, group in class (later)
- In Python default and named parameters

```
def make_letter(name='John' title='Doctor'):  
    print Dear,title,name,":"  
  
make_letter('Susan', 'President')  
make_letter(name='Fred')  
make_letter(title='Loser', name='Xerxes')  
make_letter('Emperor', 'Jones')
```

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8.5

## Latanya Sweeney

I am a computer scientist with a long history of weaving technology and policy together to remove stakeholder barriers to technology adoption. My focus is on "computational policy" and I term myself a "computer (cross) policy" scientist. I have enjoyed success at creating technology that weaves with policy to resolve real-world technology-privacy clashes.



<http://latanyasweeney.org/>

Identify 87% of US population using (dob,zip,gender). Director of Harvard Data Privacy Lab, instrumental in HIPAA because of *de-identification* work

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## Toward playing hangman

- In the WordLoader.py file some idioms in use:
  - Global variables: maintain value over many function calls, e.g., from client code calling WordLoader methods
  - How is this similar to cookies in web browsing?
  - Is file-reading code line-oriented? What are repercussions?
- Which of these will you use in writing Hangman.py
  - No global variables, practice makes perfect
  - Separate concerns by developing functions with parameters and return values

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## Use cases for playing hangman

- What state is used during the game, how updated?
  - Letters used, checked, purpose?
  - Miss-count kept, updated
  - Secret word, initialized, used?
  - Displayed guess-so-far, e.g., \_ \_ \_ \_ t
  - Other state?
- Iterative development of program, start small
  - Make something work, add to it
  - Always lose, always win?
  - Let's write some code

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