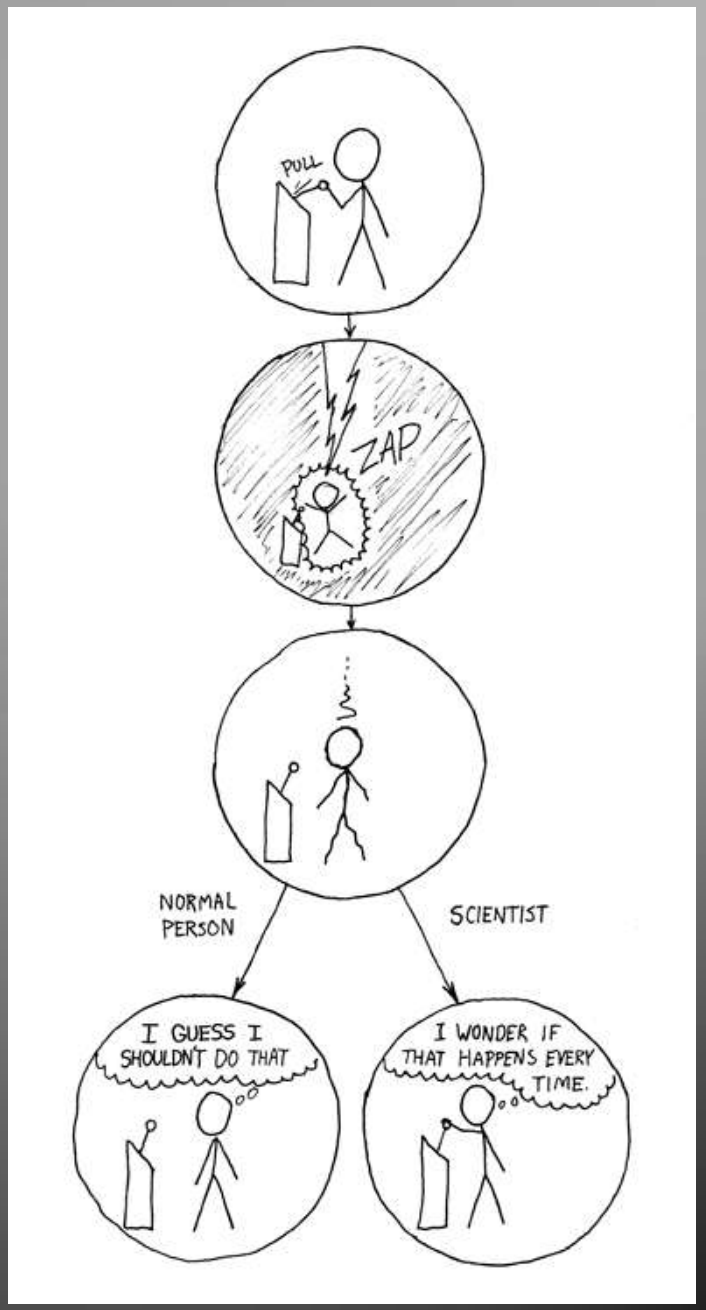
CSSE 220 Day 30

Generics
Course Evaluations

Checkout *Generics* project from SVN

Questions

Science!



http://xkcd.com/242/

Course Evaluations

- Your chance to improve instruction, courses, and curricula.

Generic Types

- Another way to make code more re-useful

Before Generics…

- Collections just stored **Objects**
  - Better than creating different collection classes for each kind of object to be stored
  - Could put anything in them because of **polymorphism**
- Used casts to get types right:
  - **ArrayList songs = new ArrayList();**
    songs.add(new Song("Dawn Chorus","Modern English"));
    …
    Song s = (Song) songs.get(1);
  - **songs.add(new Artist("A Flock of Seagulls"));**
    Song t = (Song) songs.get(2);

Q1

With Generics…

- Can define collections and other classes using type parameters
  - `ArrayList<Song> songs = new ArrayList<Song>();`
    `songs.add(new Song("Dawn Chorus", "Modern English"));`
    `…`
    `Song s = songs.get(1); // no cast needed`
  - ~~`songs.add(new Artist("A Flock of Seagulls"));`~~

compile-time error

- Lets us use these classes:
  - in a variety of circumstances
  - with strong type checking
  - without having to write lots of casts

Q2

Example

- Create a doubly linked list
- Include **min()** and **max()** methods
- Use **polymorphism** rather than null checks for the start and end of the list
- Include **fromArray()** factory method

Q3-Q5

Generics Recap

- Type parameters:
  - **class DLList<E>**
- Bounds:
  - **class DLList<E extends Comparable>**
  - **class DLList<E extends Comparable<E>>**
  - **class DLList<E extends Comparable<? super E>>**
- Generic methods:
  - **public static <T> void shuffle(T[] array)**

Q6-7, turn in