Randomness
Being Random
Random Number Generators
RandomGenerator

• The class RandomGenerator acts as a random number generator.
  • Need to import acm.util.*;
• An instance of RandomGenerator can be used to generate random numbers.
Time-Out for Announcements
Assignment 2

• Assignment 2 is due Friday.

• Have questions?
  • Stop by the LaIR between 6PM – Midnight tonight or on Thursday.
  • Visit Keith's office hours today from 4:30PM – 6:30PM.
  • Visit Vikas's office hours tomorrow from 2:15PM – 4:15PM.
  • Email your section leader.
  • Ask on QuestionHut.
CS and Journalism
“Awarded to the Sun Sentinel, Fort Lauderdale, FL, for its well documented investigation of off-duty police officers who recklessly speed and endanger the lives of citizens, leading to disciplinary action and other steps to curtail a deadly hazard.”

http://www.pulitzer.org/citation/2013-Public-Service
The Brown Institute for Media Innovation

http://brown.stanford.edu/
Google Journalism Fellowship

http://www.google.com/get/journalismfellowship/
Back to CS106A!
A Snowfall Simulation
Let it Snow!
Accessing the Canvas

• It is possible to determine what, if anything, is at the canvas at a particular point.

• The method

```java
GObject getElementAt(double x, double y);
```

returns which object is at the given location on the canvas.

GObject is the return type, as we don't know what specific type (GRect, GOval, etc.) is really there.

If no object is present, the special value `null` is returned.
Accessing the Canvas

- It is possible to determine what, if anything, is at the canvas at a particular point.
- The method
  ```
  GObject getElementAt(double x, double y);
  ```
  returns which object is at the given location on the canvas.
- The return type is `GObject`, since we don't know what specific type (`GRect`, `GOval`, etc.) is really there.
- If no object is present, the special value `null` is returned.
A Simple Collision Detector

(x, y)

(x + 2r, y + 2r)
A Simple Collision Detector

(x, y)
What Went Wrong?
A Simple Collision Detector

\[(x, y)\] \quad (x + r, y + 2r) \quad (x + 2r, y + 2r)
What Went Wrong (This Time)?
A Simple Collision Detector
A Simple Collision Detector
A Simple Collision Detector
A Simple Collision Detector
A Simple Collision Detector
A Simple Collision Detector
Reordering Objects

• Each GObject can have its z-order adjusted.

• The method
  
  ```java
  object.sendToBack();
  ```
  
  moves the object to the back of the z-order.

• getElementType will return the topmost object where it hits.
A Simple Collision Detector
A Simple Collision Detector
A Simple Collision Detector
A Simple Collision Detector
A Simple Collision Detector
A Simple Collision Detector