2110: Announcements

Grades for Prelim 1 are now available. You should have received an email from Gradescope about accessing them.

Regrade requests will be open starting tomorrow morning.

Lunch with Professors. People have forgotten about this. There's lots of room, today and later dates.

TODAY is GIVING DAY

2110:Next week's recitation

Making a class that maintains a collection of values "iterable"

Interfaces Iterator and Iterable. Watch about 15 minutes of videos beforehand.

int[] b= ...;

// Print all elements b[i]
for (int e : b) {
 System.out.println(e)

// Print the elements in the set for (Integer e : hs) { System.out.println(e);

HashSet<Integer> hs= ...;

}

In recitation, make your solution to A3 iterable Dlist<String> dl= ...; ... for (String e : dl) {

System.out.println(e);

2

2110: GUIS: Graphical User Interfaces

Their mouse had a mean time between failure of ... a week ... it would jam up irreparably, or ... jam up on the table-- ... It had a flimsy cord whose wires would break. Steve Jobs: "... Xerox says it can't be built for < \$400, I want a \$10 mouse that will never fail and can be mass produced, because it's going to be the primary interface of the computer ..."

... Dean Hovey ... came back, "I've got some good and some bad news. Good news: we've got a new project with Apple. Bad news: I told Steve we'd design a mouse for 10 bucks."

... year later ... we ... filed ... and were granted a patent, on the electromechanical-optical mouse of today; ... we ended up ... [making] the mouse as invisible to people as it is today.

Steve Sachs interview on first computer with GUI: Apple Lisa (~\$10K in 1982). web.stanford.edu/dept/SUL/sites/mac/mouse0.htmL

GUI (Graphical User Interface)

- · Provides a friendly interface between user and program
- Allows event-driven or reactive programming: The program reacts
 to events such as button clicks, mouse movement, keyboard input
- Often is multi-threaded: Different threads of execution can be executing simultaneously. We study concurrency and threads in April.

Two aspects to making a GUI:

 1. Placing components (buttons, text, etc.) in it.
 TODAY

 2. Listening/responding to events
 Next Lecture

Lecture notes page of course website, rows for GUI lectures: will contain guiDemo.zip. Filled with short demos of GUI features including demos for today and next lecture. Download it and look at demos in DrJava or Eclipse.

GUI (Graphical User Interface)

There are three GUI packages in Java:

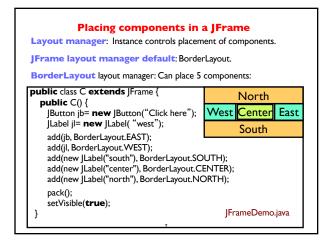
•AWT (Abstract or Awful Window Toolkit) —first one. Some parts are implemented not in Java but in code that depends on the platform. Came with first Java.

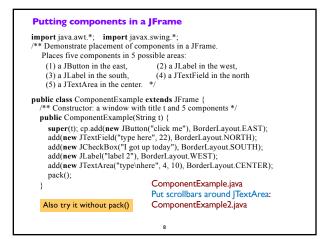
•Swing —a newer one, which builds on AWT as much as possible. It is "lightweight": all code written as Java classes/interfaces. Released in 97-98.

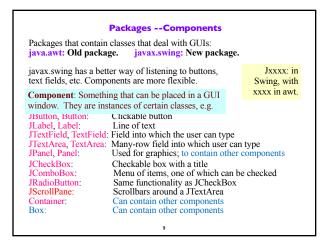
•JavaFX —completely new! Much more functionality, flexibility, but far too complicated to teach in CS2110. (Released first in 2008)

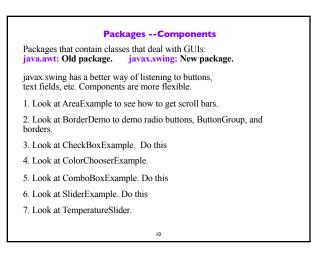
We use Swing (and parts of AWT)

Class JFrame JFrame object: associated with a window on your monitor. Generally, a GUI is a JFrame object with various components placed in it Some methods in a JFrame object hide() show() setVisible(boolean) getX() getY() (coordinates of top-left point) getWidth() getHeight() setLocation(int, int) getTitle() setTitle(String) getLocation() setLocation(int, int) Over 100 methods in a JFrame object! Class JFrame is in package javax.swing 6









Basic Components Component: Something that can be Component Button, Canvas placed in a GUI window. These are Checkbox, Choice the basic ones used in GUIs Label, List, Scrollbar TextComponent TextField, TextArea Container JComponent Note the use of subclasses AbstractButton to provide structure and JButton efficiency. For example, JToggleButton there are two kinds of JCheckBox JToggleButtons, so that RadioButton class has two subclasses. JLabel, JList JOptionPane, JPanel JPopupMenu, JScrollBar, JSlider JTextComponent JTextField, JTextArea

п

