CS 121 - Intro to Java - Lecture 27

Announcements

Program 8 1 or 2 due next Wednesday at 5

Final Exam: 5/11, 130, Totman

Special arrangements? Let me hear from you!
What's on the final? - Obvious emphasis on material from last half of class, esp last third:

Arrays
Inheritance

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Files
Interfaces
Graphics

The event Model

Also: randomness, exceptions, layouts, methods
Other possible topics:

- Recursion
- ArrayLists
- Menus
Two sample exams, with solutions

At

Course website, CourseAdministration link
An ambitious example:

The Photosheded problem (ProEight2)

(Doing this is a great warm-up for the final)
An ambitious program - within range:

Read an external text file using JFileChooser, then report all words and their frequencies. Give application a search capability.

Will post full code, sample Qs, for final class on Tuesday

Understanding this example thoroughly (almost) guarantees a strong performance on the final!
```java
import java.awt.*;
import javax.swing.*;
import java.io.*;

public class FileFreqDriver{
    public static void main(String[] args{ 
        try{ 
            try{
                DisplayWindow display = new DisplayWindow();
                WordVault vault = new WordVault();
                FreqPanel p = new FreqPanel(vault);
                display.add(p);
                display.showFrame();
            }
            catch(Exception e){e.printStackTrace();}
        }
    }
}
```
public class FreqPanel extends JPanel implements ActionListener {

    JTextArea textarea = new JTextArea(40,50);
    JScrollPane scroller = new JScrollPane(textarea);
    JFileChooser chooser;
    WordVault vault;
    WordFetch fetcher;
    JButton file = new JButton("Choose File");
    JButton quit = new JButton("Quit");
    JButton search = new JButton("Search");
    JButton clear = new JButton("Clear");
    JButton all = new JButton("Show All Words");
    JTextField theWord = new JTextField(20);

    public FreqPanel(WordVault v){

    }
public FreqPanel(WordVault v) {
    setPreferredSize(new Dimension(800, 800));
    vault = v;
    textarea.setEditable(false); // can't edit text area
    this.add(file);
    this.add(all);
    this.add(clear);
    this.add(theWord);
    this.add(search);
    this.add(quit);
    this.add(scroller); // scrollable text area to panel
    file.addActionListener(this);
    clear.addActionListener(this);
    search.addActionListener(this);
    all.addActionListener(this);
    quit.addActionListener(this);
}
else if (e.getSource() == search){
    clearArea();
    String s = theWord.getText();
    WordInfo i = vault.findWord(s);
    if (i == null) textarea.append(s + "  " + 0);
    else {textarea.append(i.toString());}
}
public class WordVault{

    private ArrayList<WordInfo> words =
        new ArrayList<WordInfo>();

    public void updateWords(String w){
        WordInfo which = findWord(w);
        if (which != null) which.incCount(); else addWord(w);}

    public void clearVault(){words = new
        ArrayList<WordInfo>();}

    public WordInfo findWord(String w){
        for(WordInfo i : words){
            if(i.getWord().equals(w))return i;}
        return null;}
}
Some further exam-style examples...
import java.util.*;
public class RanNames{
    public static void main(String[] args){
        String[] names =
            { "Jo", "Mo", "Zack", "Ned", "Dana", "Zeb"};
        Scanner scan = new Scanner(System.in);
        int N = scan.nextInt();
        Random r = new Random();
        for(int j = 0 ; j < N; j++)
            System.out.println(names[r.nextInt(6)]);
    }
}
How many times can an int value be divided by 3 before 0 is reached (via integer division)? For example, 10 requires 3 such divisions: 10/3 = 3; 3/3 = 1; 1/3 = 0.

```c
int div3(int k){
    int ct = 0; int n = k;
    while(n > 0){
        n = n/3;
        ct++
    }
    return ct;
}
```
Write a static method called `majorityLong` that is passed an array of Strings, and returns true if a strict majority of strings in the array are longer than 10 characters.

```java
static boolean majorityLong(String[] str){
    int ct = 0;
    for(String s : str)
        if(s.length() > 10) ct++;
    return(ct > (str.length/2));
}
```
mystery = false;
for (Shirt s : shirts)
    if (s.getPrice() > 100) mystery = true;
System.out.println(mystery);

--

int j = 0;
while (j < shirts.length){
    if (s[j].getPrice() > 100) mystery = true;
    j++
}
System.out.println(mystery);
public class GreetPanel extends JPanel implements ActionListener {

private JButton greeting = new JButton("Greet");
private int vPos = 20;

public GreetPanel() {
    setPreferredSize(new Dimension(700, 300));
    this.add(greeting);
    greeting.addActionListener(this);
}

public void paintComponent(Graphics g) {
    super.paintComponent(g);
    g.drawString("hello", 200, vPos);
}

public void actionPerformed(ActionEvent e) {
    if (e.getSource() == greeting) {
        vPos += 20;
        repaint();
    }
}
}
a. Sketch the DisplayWindow when you run the WordDriver/GreetPanel application.

b. The application prints hello when you click the Greeting button. Describe what happens when you click the button multiple times.

c. When you run WordDriver, what object serves as the listener for the greeting button?

d. If you change the call to drawstring in paintComponent to `g.drawString("hello", vPos, 200)`, what happens when you click the Greet button repeatedly?
e. (15) Now add a new Flip button to the WordDriver/GreetPanel application. The flip button works this way.

The application begins, as before, by printing Hello whenever you click on Greet.

Then, when you click on Flip, the application will print Goodbye, and will continue printing Goodbye on every Greet click, until you click flip again. Thus the flip button switches the displayed method back and forth between hello and goodbye.
Which statement makes the GreetingPanel object the listener for the greeting button?

How many methods must be implemented in the GreetingPanel class to ensure that the class meets the terms of the ActionListener Interface?