Network Communication
In Java

Sept 13, 2019

Today’s Plan

Quick review of last class
More GUI components
Mechanisms for network communications

Announcements

 HW 1 due Monday in class
 Lab #2 is (almost) available on web site
   Please read it carefully before lab
 Other questions/comments/concerns?

Review

Java programs are composed of classes (one or more)
 Classes describe types of objects
 Objects have state and functionality
 Objects are accessed/changed through method invocation
 Key words (English)
   class, object, method, instance variable, construction, constructor, constant
 Key words (Java)
   class, extends, final, import, int, new, private, public, void
import squint.*;
import javax.swing.*;

public class Class-name extends GUIManager {
    ... instance variable declarations ...
    public Class-name () {
        ... constructor's body ...
    }
    public void some-method-name() {
        ... some-method's body ...
    }
    public void some-other-method-name() {
        ... some-other-method's body ...
    }
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**Method Invocation**

contentPane.add( new JLabel( "Click on the button below" ) );
this.createWindow( WINDOW_WIDTH, WINDOW_HEIGHT );

actor . thing-to-do ( ... details/parameters ... );

**Constructing New Objects**

new JLabel( "Click on the button below" )
new JButton( "Click Here" )
new JTextField( 8 )

new type-of-thing-to-create( ... details ... )

**Instance Variable Declarations**

private JTextField noun1;
private int count;
private JLabel counterLabel;

private type-of-thing-name-will-identify name;

**Assignment Statements**

firstNoun = new JTextField( 10 );
pluralNoun = new JTextField( 10 );

variable-name = expression-describing-value;
private JTextField noun;

noun = new JTextField( "width-in-letters" );
noun.getText( );
noun.setText( "New text to display" );
**JTextFields**

```java
private JTextField noun;

noun = new JTextField( width-in-letters );

noun.getText();
noun.requestFocus();
noun.setText("New text to display");
noun.selectAll();
```

**JTextAreas**

```java
private JTextArea story;

story =
    new JTextArea( height-in-lines, width-in-letters);

story.setText("New text");

story.append("Text to add");
```

**AngryWords Revisited**

See AngryWordsTextArea
Non GUI Components: NetConnections

- NetConnections are non-graphical objects
- Cannot “see” them like we see JLabels and JButtons
- NetConnection is like a “virtual two-way pipe” connecting two computers
- Each connection has an outgoing component and an incoming component

```java
private NetConnection toServer;

toServer = 
    new NetConnection( server, port );

toServer.close();
```
NetConnections

private NetConnection toServer;

toServer =
    new NetConnection( server, port );

display.append( toServer.in.nextLine() );
toServer.out.println( “USER jeannie” );
toServer.close();

Dictionary Protocol

- Connect to server on port 2686
- Client can send:
  - help
  - show db
  - define data-base-name word-to-define
- Handy server running at dict.org

Some examples

- WorldWideWebsters
- Online dictionary protocol
- See nextPopResponse
- SpammyWords
- AngryWords + fake spam
- SonOfSpammer
- AngryWords + real spam
Summary

We’ve covered a lot of ground in the last two days

Basic structure of a class
  - class header, constructor, methods
  - importance of {}
  - comments, style

Constructions
  - new typeOfObject ( actual params )

Variables
  - instance variables, local variables
  - declarations and assignments
  - (final) integer and String constants

Method invocations
  - objectName.methodName( actual params )
  - mutator methods (eg. setText), accessor methods (eg. getText)

GUI components
  - JLabel, JButton, JTextField, JPasswordField, JTextArea, JScrollPane, JPanel

Network components
  - NetConnection
  - if toServer is a NetConnection:
    - toServer.in.nextLine(), toServer.out.println()