

CS1007 lecture #15 notes

tue 29 oct 2002

- news
- networks
- applets
- GUIs
- reading: ch 8.1-8.4

networks (1).

- two or more computers connected to each other
- networked computers can share information
- and resources, e.g.:
 - printer
 - file server
- example: CUNIX system
- connections:
 - *point-to-point* — computers are directly connected to each other
 - * message speed is fast
 - * adding computers is expensive
 - single communication line
 - * message speed can be slow
 - * adding computers is cheap

networks (2).

- *network address*
 - uniquely identifies each computer on the network
- *packet*
 - long messages are split into pieces
 - each piece is a packet, sent individually along the network
 - improves message speed
- *local-area network (LAN)*
 - designed to span short distances
- *wide-area network (WAN)*
 - designed to span longer distances
 - connects multiple LANs

networks (3).

- the *Internet*
 - developed in the 1970s as ARPANET
 - the ultimate WAN — a network of networks
- *protocol*
 - set of rules governing communication
 - TCP/IP (transmission control protocol / internet protocol)
- IP address = network address on the Internet
 - numeric, e.g., 204.192.116.2
 - also have text equivalents called *Internet addresses*, which are comprised of local computer names (i.e., name of computer on LAN) plus domain names (i.e., name of LAN on WAN)
 - domain names are controlled by the Internet Naming Authority
- *domain name system (DNS)*
 - translates between IP address and Internet address

networks (4).

- the *World Wide Web* (WWW)
- provides standard method of interfacing to the Internet from the user level
- uses *hypertext*
 - non-linear method of organizing information
 - refers only to textual information
- *hypermedia*
 - refers to non-textual information, such as sound, video and graphics
- *browser*
 - user program that provides method of viewing WWW documents
 - early browsers included: Archie, Gopher
 - *Mosaic*
 - * first graphical WWW browser
 - * released in 1993
 - * became Netscape

networks (5).

- *HyperText Markup Language* (HTML)
 - standard format for WWW documents
- *Uniform Resource Locator* (URL)
 - unique document address on the WWW
- *HyperText Transfer Protocol* (http)
 - protocol used for transferring HTML documents
 - provides *one-way* transfer from *server* to *client*
- other protocols include: ftp, telnet
 - these provide *two-way* transfer between *server* and *client*
- Java
 - grew out of the above
 - allows *two-way* transfer
 - text, graphics, sound

networks (6).

- *client-server* architecture
- comes from operating system design
- methodology by which tasks are divided onto different processors according to functionality
- programs can be divided into:
 - computation portion
 - drawing or output portion
- each portion can be executed on a different CPU
- X windows
 - windowing system used under UNIX
 - with X windows, the drawing is done on the *client*, although the execution may be happening on a different physical machine, the *server*

applets (1).

- Java programs can run as *applications* or *applets*
- *application*:
 - executed using the *java* command
 - server and client can be the same machine or different machines
 - client invokes JVM which interprets classes and runs them
- *applet*:
 - must be executed using a browser, like Netscape, or the *appletviewer* command
 - server sends applet to the client, in the form of class files; applet invokes JVM which interprets classes and runs them on the client
 - there are two parts:
 - * an HTML file used to invoke the applet
 - * Java class file(s) that contain the applet code

applets (2).

- file name = hi.html

```
<html>
<title>
sample applet page
</title>
```

the applet will be shown below...

```
<applet code="hi.class" width=400 height=400>
</applet>

</html>
```

applets (3).

- file name = hi.java

```
import java.awt.*;
import java.applet.Applet;

public class hi extends Applet {

    public void paint( Graphics g ) {

        g.drawString( "hi",10,10 );

    } // end of paint()

} // end of class hi
```

applets (4).

- java.awt package
 - *Abstract Windowing Toolkit* (AWT)
 - classes that support graphical user interfaces (GUI)
 - includes java.awt.Component method:
 - * public void paint()
- java.applet.Applet class
 - public void init()
 - public void start()
 - public void stop()

GUIs (1).

- Graphical User Interface
- topics:
 - components
 - containers
 - layout managers
 - events
 - listeners

GUIs (2).

- *components*
- a component is a building block of any GUI
- here are some examples:
 - Label
 - TextField, TextArea
 - PushButton
 - CheckBox
 - RadioButton
 - ComboBox
 - List
 - PulldownMenu
 - ... and many more!!

GUIs (3).

- *containers*
- a container is a special component that can hold other components
- here are some examples:
 - Applet
 - Frame
 - Panel

GUIs (4).

- *layout managers*
- a layout manager describes where the components are laid out within a given container
- you need to “set” the layout manager for each container
- you can “nest” containers (and their layout managers)
- BorderLayout — simplest layout manager
- looks like this:

north		
west	center	east
south		