

Presentation: Designing GUI visual components IAT351

Week 8 Lecture 1
22.10.2012

Lyn Bartram
lyn@sfu.ca

Many slides adapted from Saul Greenberg, CS 481, University of Calgary

Administrivia

- Shift in focus
- DESIGN AND PLAN BEFORE YOU BUILD
- TSSU and you (and me)
- Final project ideas this week

In a (code) hole???



- Plan before you dig..er..code
- DESIGN your architecture before you build it
- Write your design doc BEFORE your application

Let's review: GUI characteristics

Characteristic	Function
Windows	Multiple windows allow different information to be displayed simultaneously on the user's screen.
Icons	Icons different types of information. On some systems, icons represent files; on others, icons represent processes.
Menus	Commands are selected from a menu rather than typed in a command language.
Pointing (direct manipulation)	A pointing device is used for selecting choices from a menu or indicating items of interest in a window.
Graphics	Graphical elements can be mixed with text on the same display.

Interaction style	Main advantages	Main disadvantages	Application examples
<ul style="list-style-type: none"> • Direct manipulation 	<ul style="list-style-type: none"> • Fast and intuitive interaction • Easy to learn 	<ul style="list-style-type: none"> • May be hard to implement • Only suitable where there is a visual metaphor for tasks and objects 	<ul style="list-style-type: none"> • Video games • CAD systems
<ul style="list-style-type: none"> • Menu selection 	<ul style="list-style-type: none"> • Avoids user error • Little typing required 	<ul style="list-style-type: none"> • Slow for experienced users • Can become complex if many menu options 	<ul style="list-style-type: none"> • Most general-purpose systems
<ul style="list-style-type: none"> • Form fill-in 	<ul style="list-style-type: none"> • Simple data entry • Easy to learn 	<ul style="list-style-type: none"> • Takes up a lot of screen space 	<ul style="list-style-type: none"> • E-commerce
<ul style="list-style-type: none"> • Command language 	<ul style="list-style-type: none"> • Powerful and flexible 	<ul style="list-style-type: none"> • Hard to learn • Poor error management 	<ul style="list-style-type: none"> • Operating systems
<ul style="list-style-type: none"> • Natural language 	<ul style="list-style-type: none"> • Accessible to casual users • Easily extended • Can be Voice 	<ul style="list-style-type: none"> • Requires more typing • Natural language understanding systems are unreliable 	<ul style="list-style-type: none"> • WWW information retrieval systems • Siri

Design principles redux

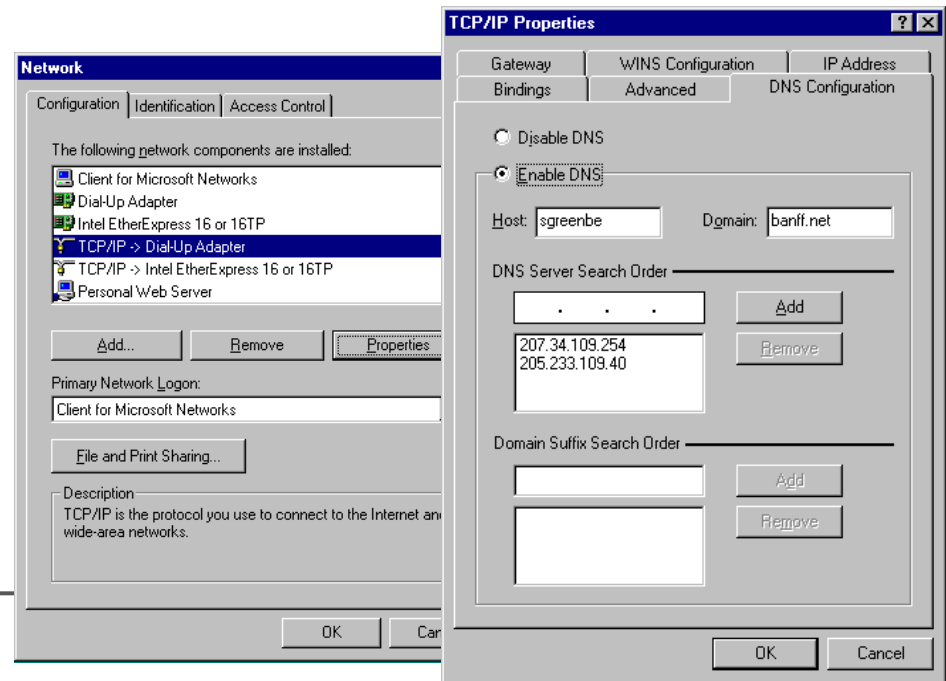
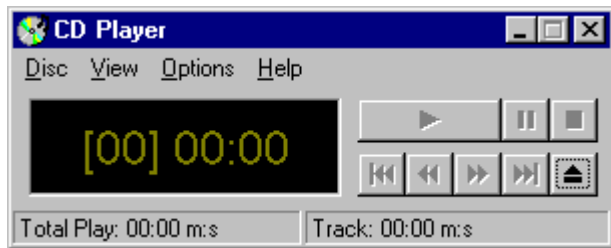
1. Simple and natural flow
 2. Talk the user's language
 3. Minimise memory load
 4. Design for perception and attention
 5. Be consistent
 6. Provide feedback
 7. Provide exits
 8. Provide shortcuts
 9. Manage errors
 10. Provide help
- Minimise effort
 - Minimise surprise!
 - Appropriate layout
 - Readability
 - Imagery
 - mistakes
-

But which user(s)?

- Novice users vs. experienced users.
 - different behaviour patterns!
 - The priority of novice users is
 - The priority of experienced users is
 - The user interface must provide a balance between quick access to commonly used functions and guidance through less well-known functions.
-

Simple and natural dialogue: flow

- use the user's conceptual model
- match the users' task sequence
- minimize mapping between interface and task semantics



Simple and natural dialogue

Present exactly the information the user needs

- less is more
 - less to learn, to get wrong, to distract...

information should appear in natural order

- related information is graphically clustered (*factoring*)
- order of accessing information matches user's expectations

remove or hide irrelevant or rarely needed information

- competes with important information on screen

remove modes

- use windows frugally
 - don't add unneeded navigation and window management

Dr. Drugs Pharmacy Master

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W

X

Y

Z

Davison, Thomas

Edit Customer

New Customer

First Name: Thomas

Alberta Health Care #: 45688-3357

Last Name: Davison

Doctor: Jane Yang

Address: 4 BRADEN CRS NW

Insurer: FARMERS INSURANCE AGE

City: Prudhoe

Policy #: 4215487-56

Province: Alberta

Notes:

Postal Code: F4T6H8

Phone Number: 403 282-9759

Prescriptions

See List View

Edit Prescription

New Prescription

Alprazolam

Citalopram

Ranitidine

Folic Acid

Levothyroxine

Celecoxib

Omeprazole

1999

< Year > 2001

Feb

Mar

Apr

May

Jun

Jul

Aug

Sep

Oct

Nov

Dec

ACTIVE LOG

Good: information all in the same place

By Saul Greenberg's CS 481 students Brant LeClercq, Lloyd Yoon, Amy Yang (with permission)

Dr. Pharmacy Master

First Name: **Alberta Health Care #:**

Last Name: **Doctor:**

Address: **Insurer:**

City: **Policy #:**

Province: **Notes:**

Postal Code:

Phone Number:

Prescriptions

Medication	Start Date	End Date
Alprazolam	Jan 1999	Feb 1999
Citalopram	Feb 1999	Mar 1999
Ranitidine	Mar 1999	Apr 1999
Folic Acid	Jun 1999	Jul 1999
Levothyroxine	Aug 1999	Sep 1999
Celecoxib	Oct 1999	Nov 1999
Omeprazole	Nov 1999	Dec 1999

1999 < Year > 2001 | Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Good: information all in the same place

Bad: special edit mode

[illegible]

New Customer

Dr. Drugs Pharmacy Master

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z

Davison, Thomas

Edit Customer New Customer

First Name: Thomas Alberta Health Care #: 45688-3357
Last Name: Davison Doctor: Jane Yang
Address: 4 BRADEN CRS NW Insurer: FARMERS INSURANCE AGE
City: Prudhoe Policy #: 4215487-56
Province: Alberta Notes:
Postal Code: F4T6H8
Phone Number: 403 282-9759

Prescriptions

See List View Edit Prescription New Prescription

Drug Name
Manufacturer Doctor
Quantity Units
Price/Unit Refill Quantity

Save Cancel

ACTIVE LOG

Good: Stable parts of the window
Bad: Prescriptions separate from graphics

Davison, Thomas

First Name: Thomas
Last Name: Davison
Address: 4 BRADEN CRS NW
City: Prudhoe
Province: Alberta
Postal Code: F4T6H8
Phone Number: 403 282-9759

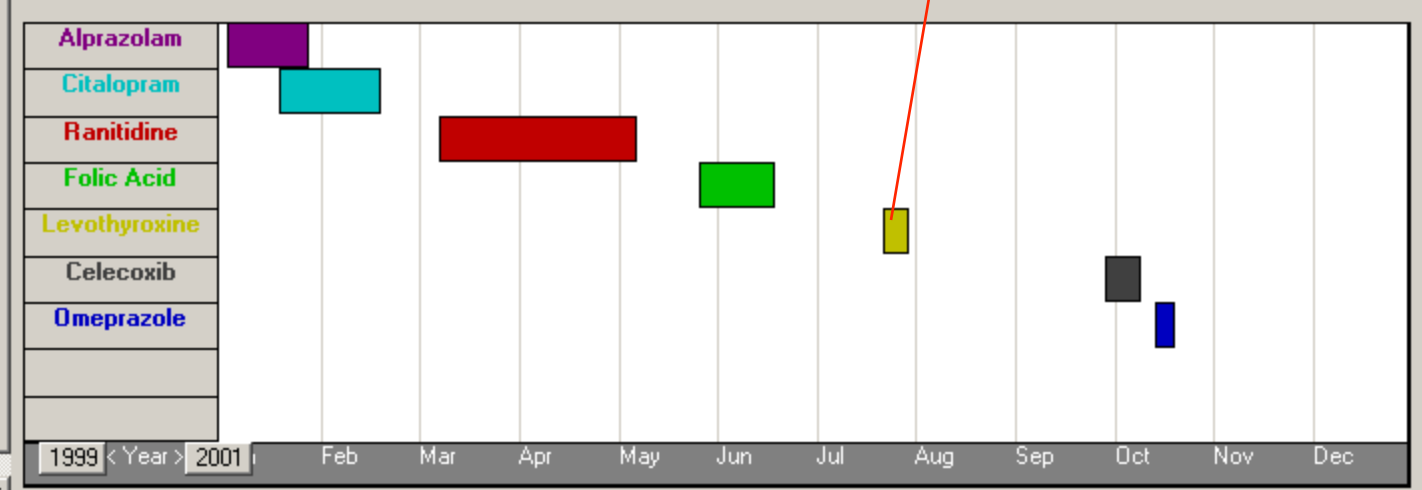
Health Care #: 45688-3357
Doctor: Jane Yang
Insurer: FARMERS INSURANCE AGE
Policy #: 4215487-56
Notes:

collapsed onto
one screen
(needs formatting)

Click to get info

**Double click to edit
(mode buttons gone)**

Add Undo



Layout and flow

- The screen should be divided into areas that are used consistently for the same purpose, e.g. top for commands and navigation, middle of the screen for input/output.
- The screen should be divided so as to provide natural intuitive flowment , support reading patterns of eye movement and minimize the user's search.

Spatial organisation: grids

Horizontal and vertical lines to locate window components

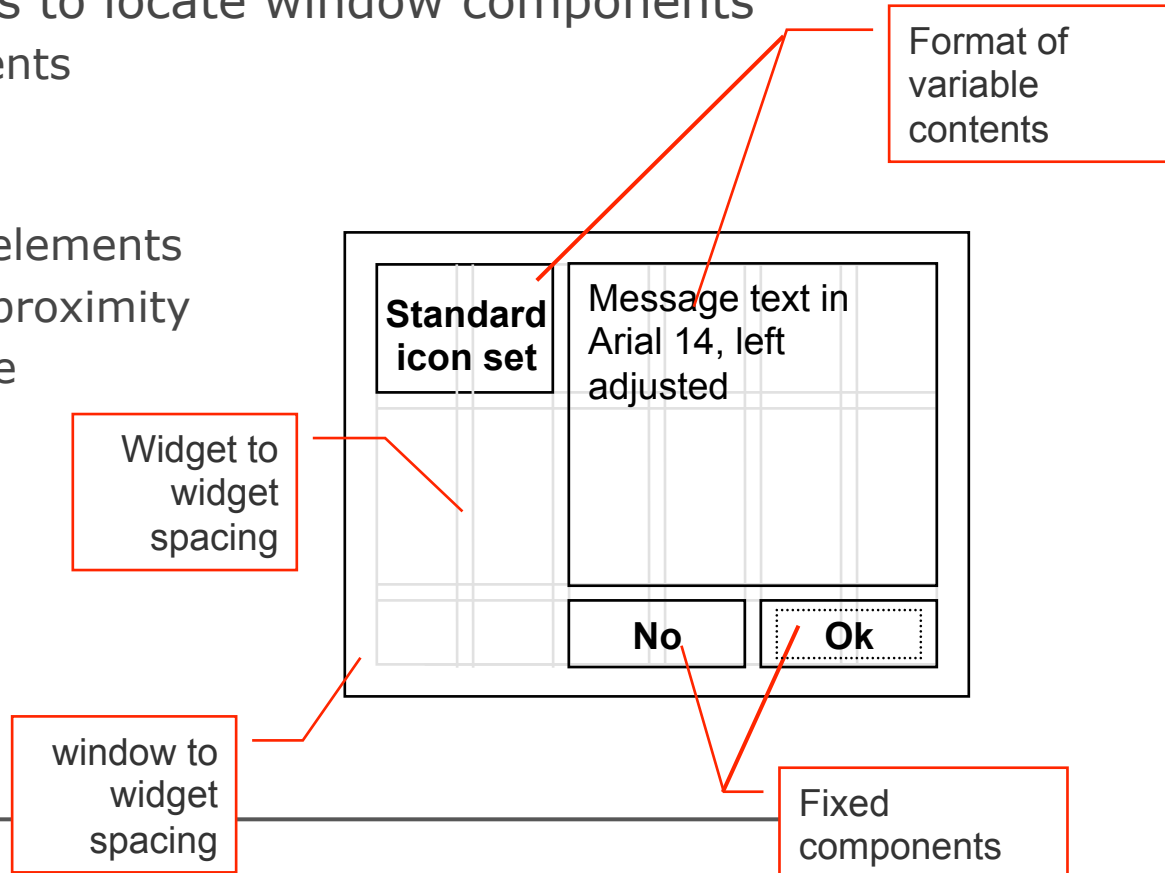
- aligns related components

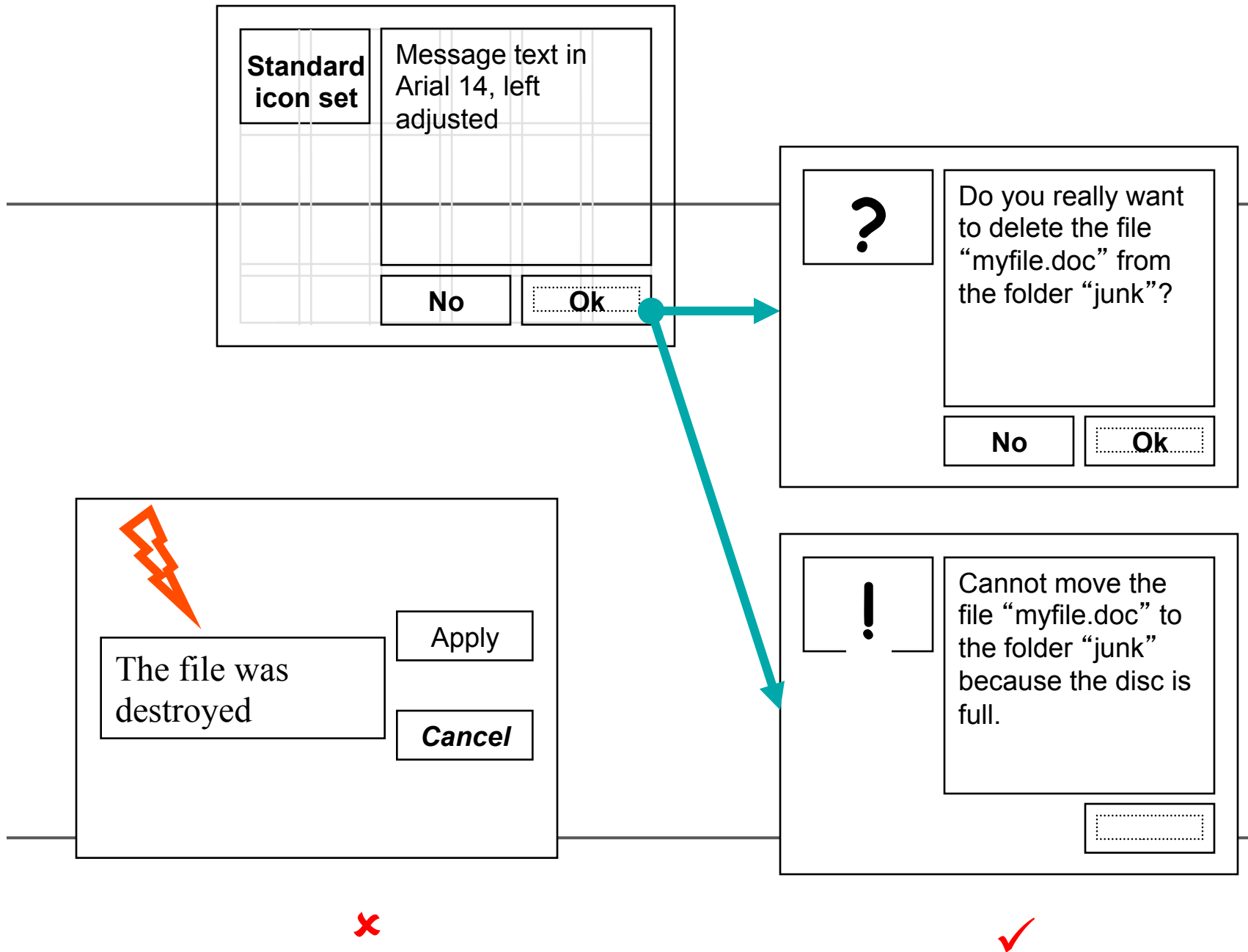
Organization

- contrast for dominant elements
- element groupings by proximity
- organizational structure
- alignment

Consistency

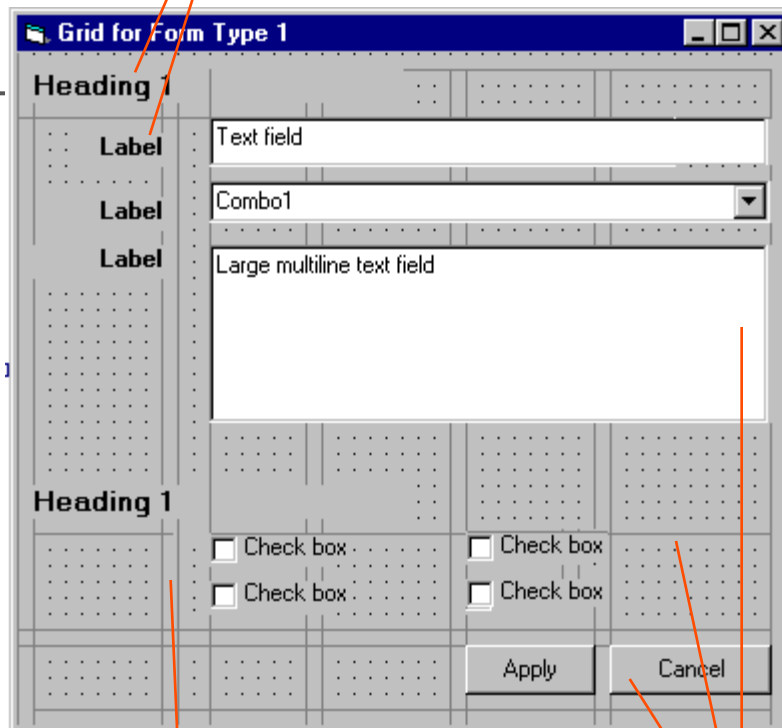
- location
- format
- element repetition
- organization



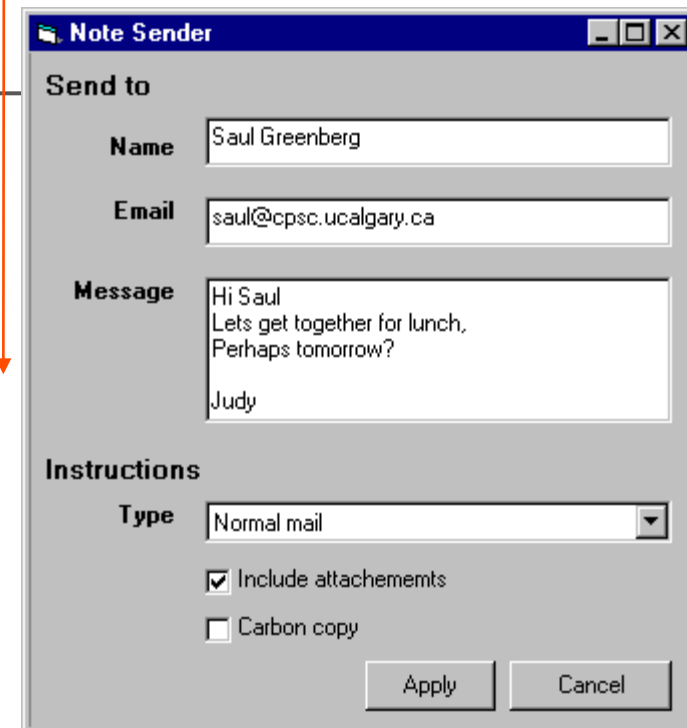


Two-level Hierarchy
• indentation
• contrast

Logic of organizational
flow



A wireframe diagram of a form titled "Grid for Form Type 1". It features a grid layout with two main sections, each starting with a "Heading 1". The first section contains three labels followed by a text field, a combo box, and a large multiline text field. The second section contains four checkboxes arranged in two columns, followed by "Apply" and "Cancel" buttons. Orange lines connect this wireframe to the final form on the right, illustrating the design process.



A final form titled "Note Sender". It includes a "Send to" section with "Name" (Saul Greenberg) and "Email" (saul@cpsc.ucalgary.ca) fields. A "Message" section contains the text: "Hi Saul", "Lets get together for lunch, Perhaps tomorrow?", and "Judy". An "Instructions" section has a "Type" dropdown set to "Normal mail", and checkboxes for "Include attachments" (checked) and "Carbon copy" (unchecked). "Apply" and "Cancel" buttons are at the bottom right.

Alignment connects
visual elements in a
sequence

Grouping
by white
space

Layout: Relating screen elements

proximal clusters

alignment

white (negative) space

explicit structure

Mmmm:

Mmmm:

Mmmm:

Mmmm:

Mmmm:

Mmmm:

Mmmm:

Mmmm:

Mmmm:

Mmmm:

Mmmm:

Mmmm:

Mmmm:

Mmmm:

Mmmm:



Form Title -- (appears above URL in most browsers and is used by W/W/W search)		Background Color:
Q&D Software Development Order Desk		FFFBF0
Form Heading -- (appears at top of Web page in bold type)		Text Color:
Q&D Software Development Order Desk <input checked="" type="checkbox"/> Center		000080
E-Mail responses to (will not appear on)	Alternate (for mailto forms only)	Background Graphic
dversch@q-d.com		
Text to appear in Submit button	Text to appear in Reset button	<input type="radio"/> Mailto
Send Order	Clear Form	<input checked="" type="radio"/> CGI
Scrolling Status Bar Message (max length = 200 characters)		
WebMania 1.5b with Image Map Wizard is here!!		
<< Prev Tab		Next Tab >>

Terrible alignment

- no flow

Poor contrast

- cannot distinguish colored labels from editable fields

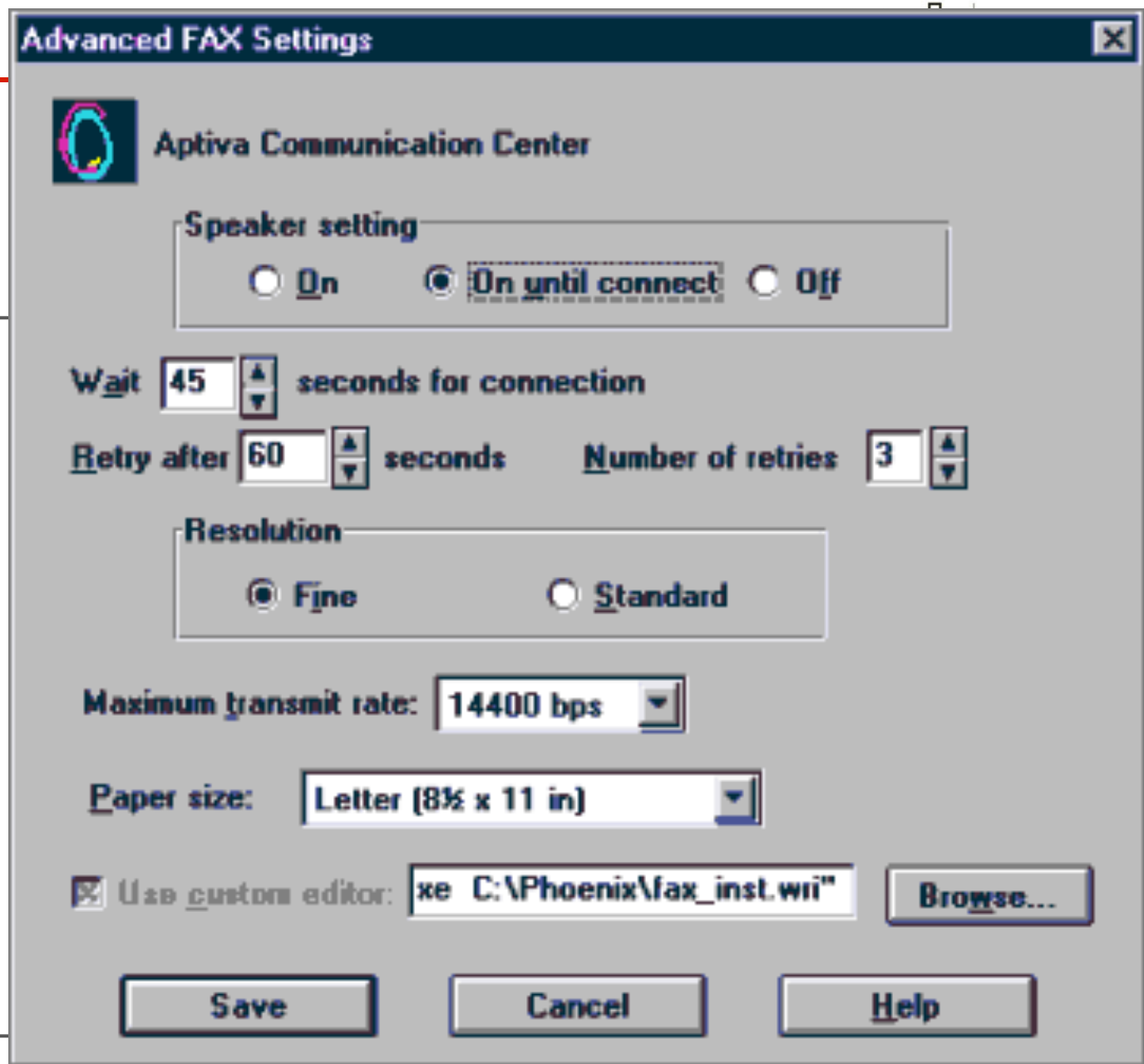
Poor repetition

- buttons do not look like buttons

Poor explicit structure

- blocks compete with alignment

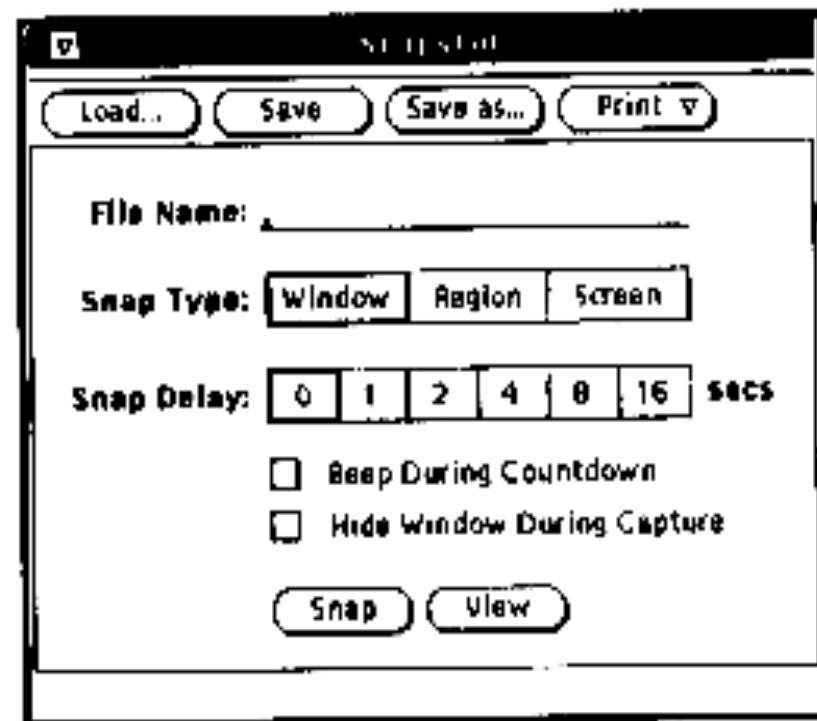
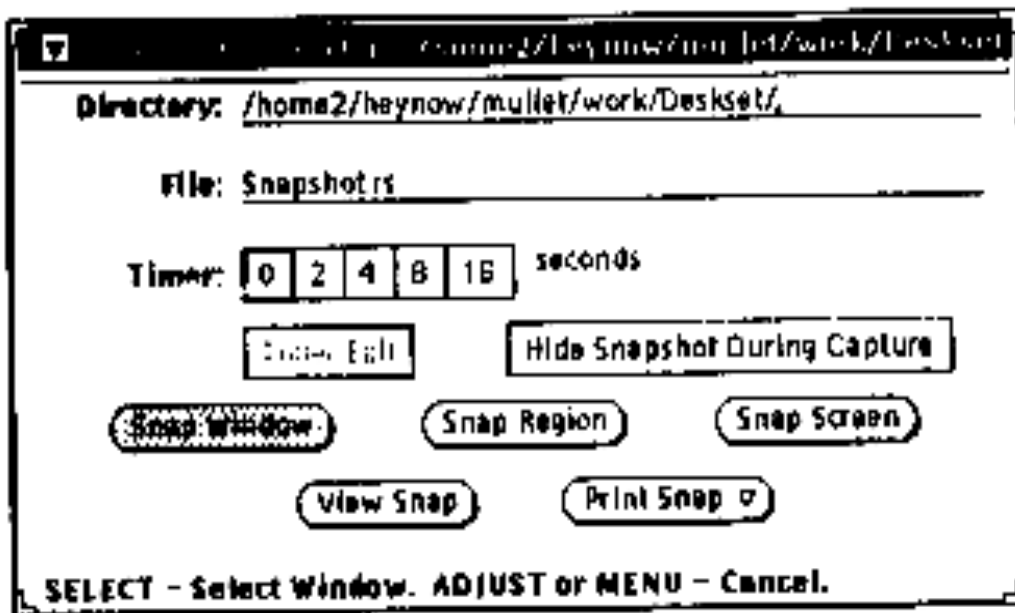
No regard for
order and
organization



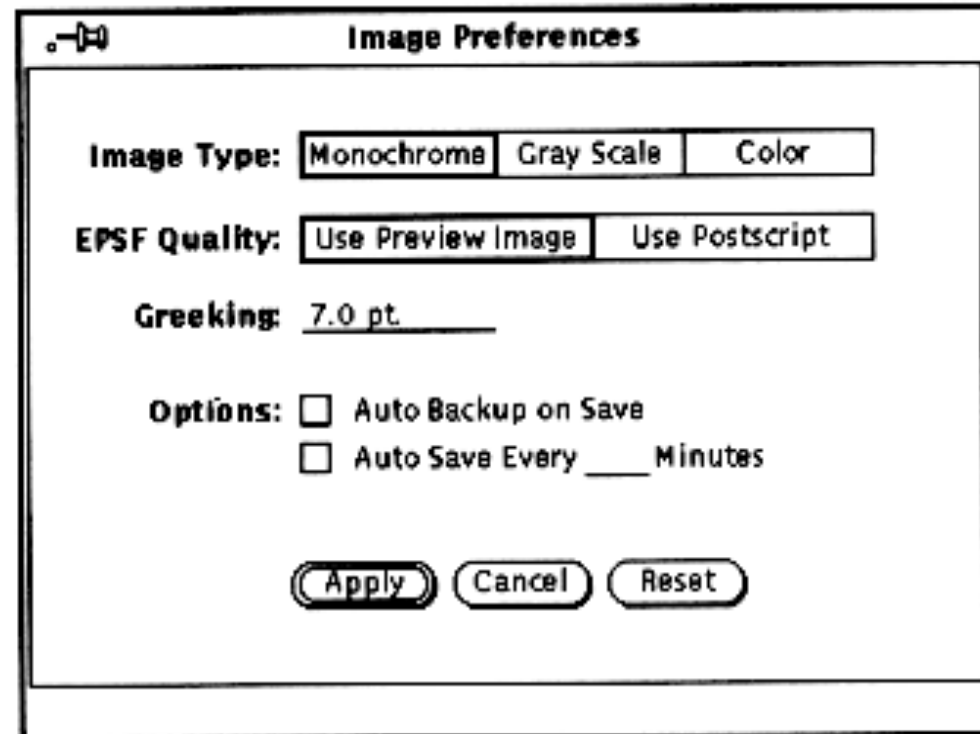
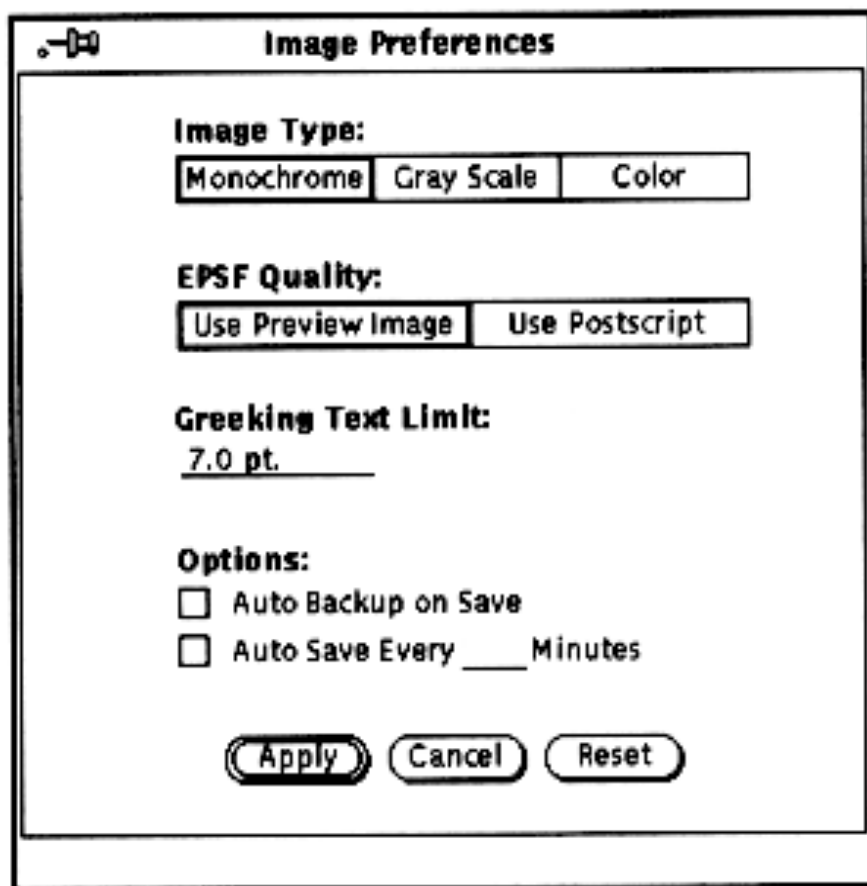
Factoring

- Principle of visual organisation
 - Group elements and actions together in hierarchical, logical structures
 - Hide away unnecessary detail
 - Facilitate finding more information
-

Factoring



Redesigning a layout using alignment and factoring



The importance of negative space and alignment

xbugtool 2.0 Beta 2 **Server: elmer-bb.Corp**

Bug Id: _____ Cc: _____ Mode:

Category: _____ Priority:

1	2	3	4	5
---	---	---	---	---

Subcategory: _____ Severity:

1	2	3	4	5
---	---	---	---	---

Resp Mgr: _____ Bug/Rfe:

bug	rfe
-----	-----

State: _____ Responsible Engineer: _____

Synopsis: _____

Keywords: _____

State triggers:

Duplicate of: _____ Interest list: _____

Patch id: _____ See also (bugids): _____

History:

Submitter : _____ Date: _____

Generic SVR4 problem?:

Dispatch operator : _____ Date: _____

Evaluator : _____ Date: _____

Commit operator : _____ Date: _____

Fix operator : _____ Date: _____

— Haphazard layout —

Repairing the layout

Factored into tabs

Bugtool

Report ▾ View ▾ Props ▾ Help ▾ Mode: Create Edit

Bug ID: ▾ _____ Type: Bug RFE

Category: ▾ XView Priority: 1 2 3 4 5

Subcategory: ▾ library Severity: 1 2 3 4 5

Release: ▾ 1.0 Status: Submitted

Synopsis: _____

Keywords: _____

Pub Summary: _____

See also: _____

Interest List: _____

Description Work Around Suggested Fix Comments Evaluation

Root Cause: ▾ documentation-confusing

Same as: _____

Resp Mgr: ▾ none Hook 1: _____

Resp Engr: ▾ none Hook 2: _____

Flags: ☐ Fix Affects Documentation
☐ Generic SVR4 Problem

Problem: Easily missed information

- Software developers often assume that if information is displayed users will see it. Not so!
 - Common flaw: not focusing user's attention
 - People scan for information, left to right, top to bottom
 - Should design for how human perception works
 - Examples users can miss:
 - Status or mode indicators
 - Prompts for input
 - Results
 - Error or status messages
 - Controls
-

Examples

- Information too small or not where the user is looking

Invalid Pin No. Please try again.

Login

ID

Pin No

[Change your P.N](#)

Client Web application: error message is easy to miss. See it?

Invalid member name or password.

.Mac login

.Mac Members
Enter your .Mac ID (membername@mac.com) and password to log in now.

Member name

Password

[Forgot your password?](#)

For your security
Please log in. Why is this required?

.Mac Security Policy
© Copyright 2006 Apple Computer, Inc. All rights reserved.

Mac login: error message is easy to miss, even though it is displayed in orange.

Examples

- Information buried in noise
 - Consider these prompts:
 - Enter filename and press ENTER
 - Enter username and press ENTER
 - Only difference is the second word which has the only real information:
 - Filename:
 - Username:
-

Avoiding missed information

- Construct a visual hierarchy
 - Organize information displays in hierarchical chunks; users ignore irrelevant chunks and find what they want much faster
 - Make important information bigger
 - Put important information where the user is looking
 - Center of field, not periphery
 - Use color to highlight
-

Uses of Color

- Call attention to specific data or information
 - Identify elements of structure and processes
 - Portray natural objects realistically
 - Depict the logical structure of ideas and processes
 - Portray time and progress
 - Increase appeal, memorability, and comprehensibility
 - Reduce errors of legibility or interpretation
 - Increase the number of dimensions for coding data
-

Pitfalls of Color

- May cause problems for color deficient vision (8-13% of Caucasian males)
 - May cause visual fatigue with strong colors
 - May contribute to visual confusion if too complex
 - May have negative cultural or historical associations
 - E.g., using black in master/slave controller diagram
 - May exhibit confusing cross-disciplinary or cultural connotations
 - E.g., Red in Chinese = Warm/Happy, America = Hot/Flashy
-

Fractal Test Page - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://www.kencole.org/frctiles.htm

Getting Started Latest Headlines ESPN.com: NBA Google Scholar Yahoo! Finance - My... Yahoo! Mail - macha... gmail.google.com

Blogging Tools Directory Course Calendar and Lecture Notes Web Pages That Suck -- Examples of ... Fractal Test Page

Fractal Project Questions

This is a fractal background test page. If you are in Mr. Cole's Emerging Technology Class, answer the following questions and email them to Mr. Cole at kenneth.cole@comcast.net by TBA.

*****Copy Below This Line*****

1. Do the colors add to the page or detract from the page?
2. How many pixels long and wide is the fractal used in the background?
3. How many pixels are in the whole fractal image?
4. What geometric term do we use to call the concept in the previous question?
5. Describe your fractal which you chose for your background.
6. Why do we have to use two different software tools for this project?
7. On a coordinate plane, what is the horizontal axis called?
8. What is the vertical axis called?
9. Which transformation below could be described as (A) a turn, (B) a flip, or (C) a slide
i. a rotation
ii. a reflection
iii. a translation
10. What does the mathematical term to tessellate mean?

*****Copy Above This Line*****

Email your answers to these questions to Mr. Cole at: kenneth.cole@comcast.net by TBA.

Last update: 14 May 2004
Lesson by
[Kenneth Cole](#)

[How to Make a Seamless Background](#)

Find: fractal Find Next Find Previous Highlight Match case



Suggested Color Selections

- Screen background: subdued, receding color such as grayish blue.
- Window background: a dark color or off-white.

Suggested Color Selections (continued)

- Icons and menus:
 - **Nonselectable** items – eliminate or minimal contrast with background.
 - **Selectable** items – contrast with background.
 - **Selected** items – reverse video, contrasting color, or outline box as the cursor passes over them.
 - **Activated** items – change from an outline box to reverse video or a color bar.

Suggested Color Selections (continued)

- Menus and dialogue areas: backgrounds should be subdued white, black, or dark blue to provide adequate contrast.
 - Scroll bars: a solid or outline color which keeps them from being too visually dominant.
-

Suggested Color Selections (continued)

- **Titles and key window information:**
 - **off-white inside a black or dark-colored band or**
 - **an inset in black, a dark color, or a contrasting color inside a colored or textured band.**

Suggested Color Selections (continued)

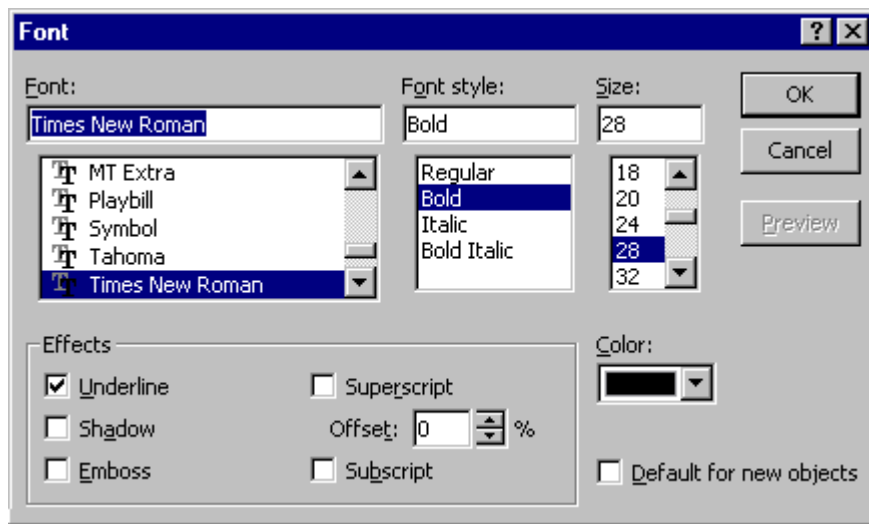
- Alert areas:
 - A red border or graphic indicator
 - If small, near the center of the screen
- Issues?

Minimize user's memory load

Promote recognition over recall

menus, icons, choice dialog boxes vs commands, field formats
relies on visibility of objects to the user

(but less is more!)



Economy of visual elements

minimize number of controls

include only those that are necessary

eliminate, or relegate others to secondary windows

minimize clutter

so information is not hidden

A diagram of a cluttered form layout. It features a large rectangular frame containing several overlapping sections. At the top, a section labeled MMMM contains four rows of labels 'xxx:' followed by a horizontal line, arranged in two columns. Below this, another section labeled NNNN also contains four rows of 'xxx:' labels in two columns. At the bottom, a third section contains three empty rounded rectangular input fields. The overlapping nature of these sections illustrates poor visual economy.

A diagram of a clean form layout. It shows a single, well-defined rectangular window. At the top, a section labeled NNNN is partially visible. Below it, a section labeled MMMM contains three rows of labels 'xxx:' followed by a horizontal line. At the bottom right, there are two empty rounded rectangular input fields. This layout is more organized and easier to navigate than the cluttered version.

bugtool properties

Update tool Reset values in properties sheet Update tool and .bugtraqrc file

Configurable Fields

Create	Edit	Create	Edit
<input checked="" type="checkbox"/>	<input type="checkbox"/> Keywords	<input type="checkbox"/>	<input checked="" type="checkbox"/> Evaluation
	<input checked="" type="checkbox"/> Responsible Manager	<input type="checkbox"/>	<input checked="" type="checkbox"/> Commit to fix
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Responsible Engineer	<input type="checkbox"/>	<input checked="" type="checkbox"/> Fixed in
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Work Around	<input type="checkbox"/>	<input checked="" type="checkbox"/> Integrated in
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Suggested fix	<input type="checkbox"/>	<input type="checkbox"/> Verified in
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Comments		<input checked="" type="checkbox"/> Closed because
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> See also		<input checked="" type="checkbox"/> Incomplete because
<input type="checkbox"/>	<input type="checkbox"/> Hook 1	<input checked="" type="checkbox"/>	<input type="checkbox"/> Submitter
<input type="checkbox"/>	<input type="checkbox"/> Hook 2	<input checked="" type="checkbox"/>	<input type="checkbox"/> Dispatch operator
<input type="checkbox"/>	<input checked="" type="checkbox"/> Root Cause	<input type="checkbox"/>	<input type="checkbox"/> Evaluator
<input type="checkbox"/>	<input checked="" type="checkbox"/> Fix affects documentation	<input type="checkbox"/>	<input type="checkbox"/> Commit operator
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Interest list	<input type="checkbox"/>	<input type="checkbox"/> Fix operator
<input type="checkbox"/>	<input type="checkbox"/> Patch Id	<input type="checkbox"/>	<input type="checkbox"/> Integrating operator
<input type="checkbox"/>	<input checked="" type="checkbox"/> Company	<input type="checkbox"/>	<input type="checkbox"/> Verify operator
<input type="checkbox"/>	<input checked="" type="checkbox"/> Employee	<input type="checkbox"/>	<input type="checkbox"/> Closeout operator
<input type="checkbox"/>	<input checked="" type="checkbox"/> OS version	<input type="checkbox"/>	<input type="checkbox"/> Duplicate of
<input type="checkbox"/>	<input type="checkbox"/> SO number	<input type="checkbox"/>	<input type="checkbox"/> Old name
<input type="checkbox"/>	<input type="checkbox"/> Sun contact	<input type="checkbox"/>	<input type="checkbox"/> Change log

Default Field Values

Category... deskset
 Subcategory... filemgr
 Release... 3.0.0w_prefs
 Hardware ... sun4c_75
 OS version... 4.1.1revb

Priority:

1	2	3	4	5
1	2	3	4	5

 Severity:

1	2	3	4	5
1	2	3	4	5

 Bug/Afa:

bug	afa
-----	-----

 Responsible engineer: _____
 Company: Sun Microsystems, Inc. _____
 Employee: _____
 Sun contact: _____
 Cc: _____
 Miscellaneous: _____
 Number of r: 30 5 4
 Text subw: _____
 Auto upda: _____
 View wind: _____
 Start in mo: _____
 BugTraq s: _____
 Server ma: _____

(a)

Repairing excessive display density

(b)

Bugtool: Properties

Category: ☒ Default Submission Info

Hardware Model: ☒ SPARCstation SLC

OS Version: ☒ SunOS 4.1

Window System: ☒ OW 3.0

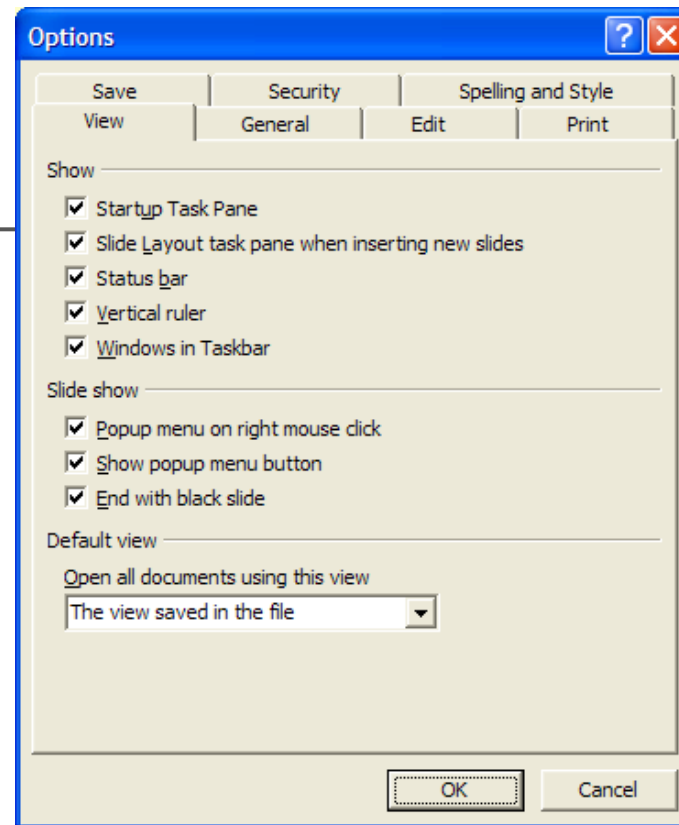
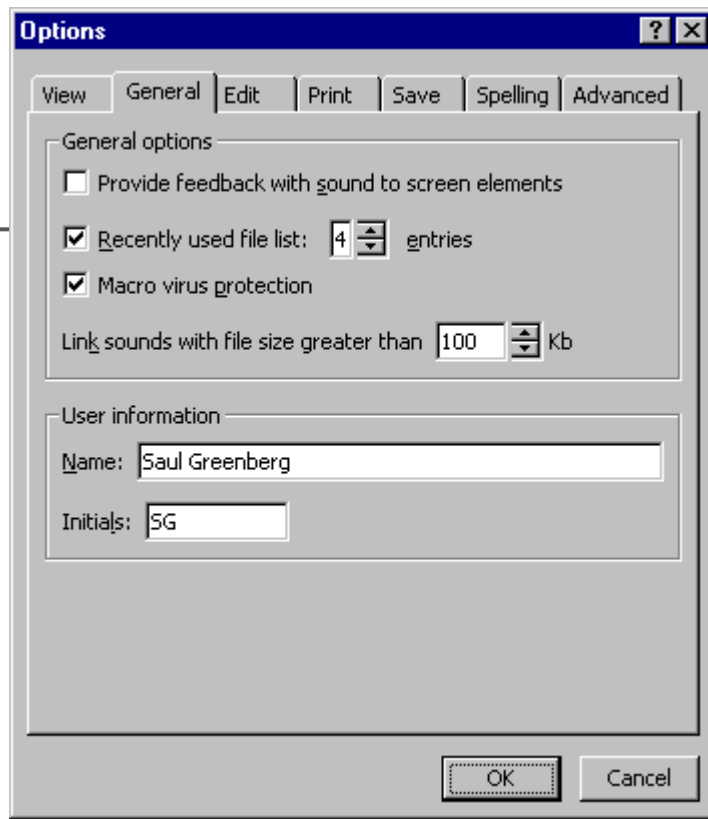
Company: _____

Employee: _____

SalesOffice: _____

Sun Contact: _____

Apply Reset



Tabs

excellent means for factoring related items
but can be overdone

Problem: control spacing

- Example:
- Related radio buttons should be grouped closely

Display:

☒ Summary

☐ Details

Cheese ☒ Mozzarella

☐ Jack

☐ Swiss

Meat: ☐ Sausage

☒ Ham

☐ Pepperoni

Spiciness: ☐ Mild

☐ Medium

☒ Hot

Crust: ☐ Whole Wheat

☒ White

☐ Sourdough

Improved Spacing

Cheese: ☒ Mozzarella ☐ Jack ☐ Swiss

Meat: ☐ Sausage ☒ Ham ☐ Pepperoni

Spiciness: ☐ Mild ☐ Medium ☒ Hot

Crust: ☐ Whole Wheat ☒ White ☐ Sourdough

Poor spacing: Examples

E-Notice

If you received an e-mail message from the IEEE San Francisco Bay Area Council and you wish to unsubscribe, please complete and submit the following form:

IEEE Member Number: (included in your e-mail message)

Member Name:

List Name:

Unsubscribe: ☐

If you would like to subscribe to the IEEE San Francisco Bay Area Council e-Notice, be sure to include your e-mail address.

Subscribe: ☐

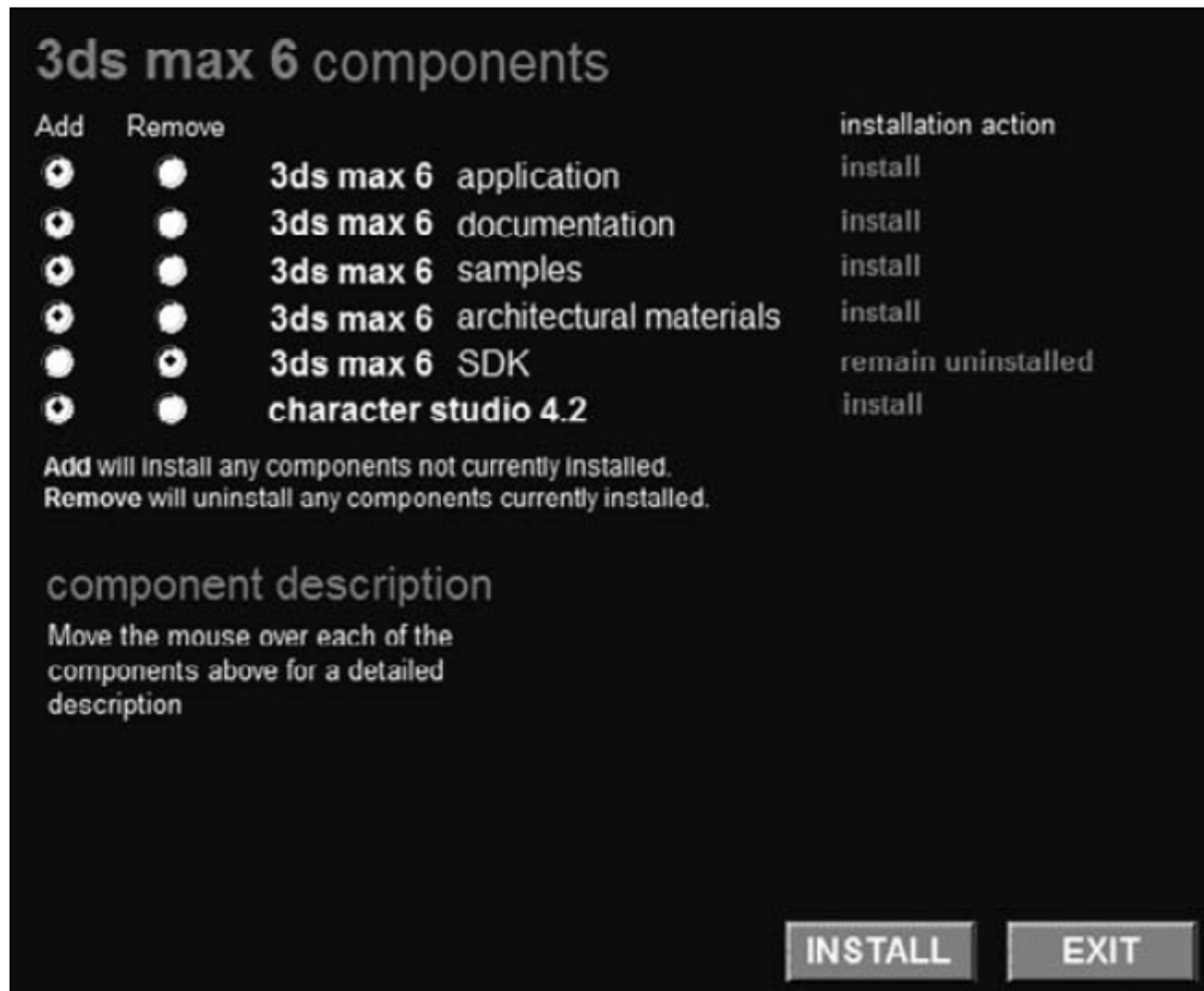
E-Mail Address:

SUBMIT

START OVER

IEEE.org: radio buttons spaced too far apart to be seen as related.

Poor spacing: Examples



Your name:

E-mail address:

Zipcode (if applicable):

How you heard of us:

Username:

Password:

Re-type your password:

Password hint (this will be sent to you if you forget your password):

Would you like to receive the quarterly IOBABooks.com newsletter?

☐

[Already have a IOBABooks.com account?](#)

Create Account!

Stranded Labels: Example

1. Social Security Number (SSN) or EDD Client Number (ECN) [Help](#)

- -

1a. Confirm the last 4 digits of your SSN

1b. Did the Social Security Administration issue this SSN to you? [Help](#) ☐ Yes ☐ No

2. Date of Birth (mm/dd/yyyy)

3. Gender ☐ Female ☐ Male

4. Claimant Name.

4a. First Name

4b. Middle Initial

4c. Last Name

5. Is this the name that appears on your social security card? ☐ Yes ☐ No

If No, please provide the name that appears on your social security card.

5a. First Name

5b. Middle Initial

5c. Last Name

6. If you have used any other Social Security Numbers, please list them

6a.

6b.

7. If you have used any other names, please list them [Help](#)

7a.

7b.

7c.

8. Do you have a state-issued Driver's License or ID card? ☐ Yes ☐ No

CA.gov unemployment insurance form: "Yes"/"No" radio buttons are too far from their labels.

City	<input type="text"/>	State	<input type="text" value="select"/>	ZIP	<input type="text"/>	-	<input type="text"/>
------	----------------------	-------	-------------------------------------	-----	----------------------	---	----------------------

City	<input type="text"/>	State	<input type="text" value="select"/>	ZIP	<input type="text"/>	-	<input type="text"/>
------	----------------------	-------	-------------------------------------	-----	----------------------	---	----------------------

.....

Solutions

- Don't attach labels and data fields to opposite edges of a form or control panel
 - Don't allow a few long labels to dictate the alignment of the entire form
 - Labels should be closer to their own field than to other fields
 - Put labels above fields
-

Title* First name* Middle initial Last name*

Address* ☒ Home ☐ Business

Street address*

City*

State/prov* Postal code* Country*

United States

required for USA/Canada

Phone* ☒ Home ☐ Business

Country code* Telephone*

001 () - Ext.

Birthdate (optional)

Month Day YYYY [About birthdate](#)

United.com: labels above fields.

Problem: Inconsistent Label Alignment

- Labels should be consistent in where they are placed throughout the application
- Extreme case:

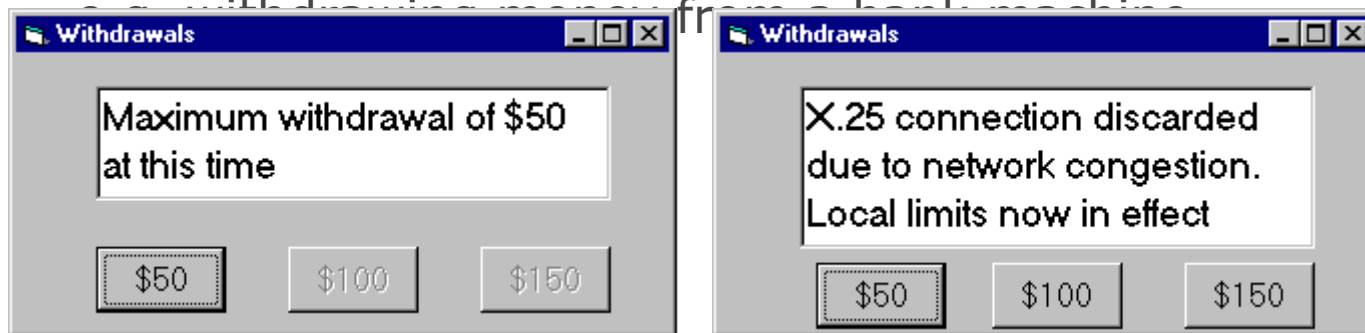


Repeat


Until

Speak the users' language

Terminology based on users' language for task



Use meaningful mnemonics, icons & abbreviations

- eg File / Save
 - Ctrl + S (abbreviation)
 - Alt FS (mnemonic for menu action)
 -  (tooltip icon)



Speak the users' language

Battery Empty Warning

The battery is detected will be run out in several minutes or not present!

If battery is not plugged-in now, you can disable the battery diagnosis in <Battery> page of Configure Notification.

Close

Cheap Shop Catalog Store

Dandery software, screen A1.1

Purchaser

Name: Phone:

Postal Code: Province: City:

Delivery Address:

Today's date:

Credit Card No.: **for dept use: validation id:**

Catalog Item

Number: Quantity: Cost/item: Total:

Balance Owing:

Next Catalog Item (PF5)

Trigger Invoice (PF8)

TurboTax for Windows

User cancelled

OK

GUI Visual Design | IAT 351 | 22.10.2012

Minimize user's memory load

Give input format, example and default

Form1

Date:

Month Day Year

May 22 1997

Month Day Year

May 22 1997

Appointment

General Attendees Notes Planner

When

Start: 8:30AM Wed 5 /14 /97

End: 4:30PM Wed 5 /14 /97

☐ All day

Description:

Smart Technology Ser

Where:

May 1997

S	M	T	W	T	F	S
27	28	29	30	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7

Minimize user's memory load

Promote recognition over recall

menus, icons, choice dialog boxes vs commands, field formats
relies on visibility of objects to the user (but less is more!)

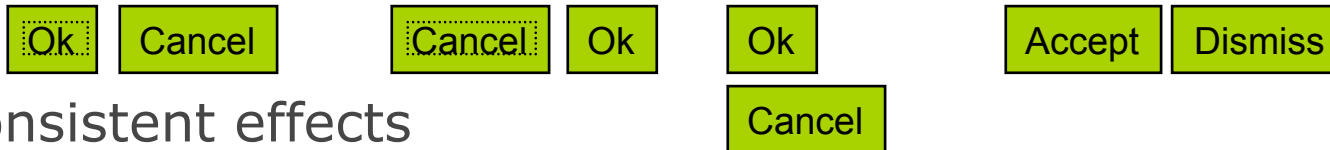


Be consistent

Consistent syntax of input

Consistent language and graphics

- same visual appearance across the system (e.g. widgets)
- same information/controls in same location on all windows



Consistent effects

- commands, actions have same effect in equivalent situations
- Predictability

Terrible real-world examples??

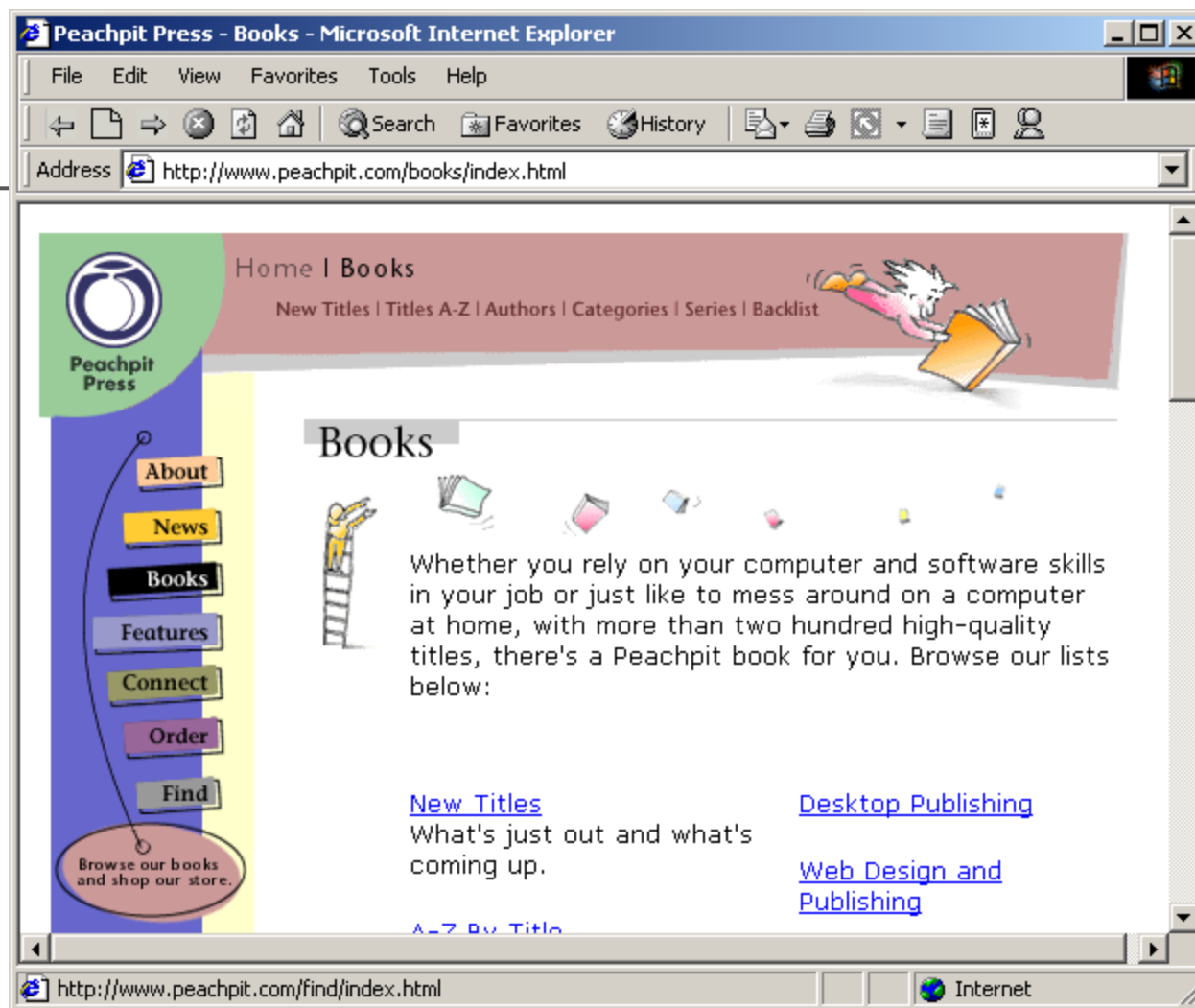
Be Consistent

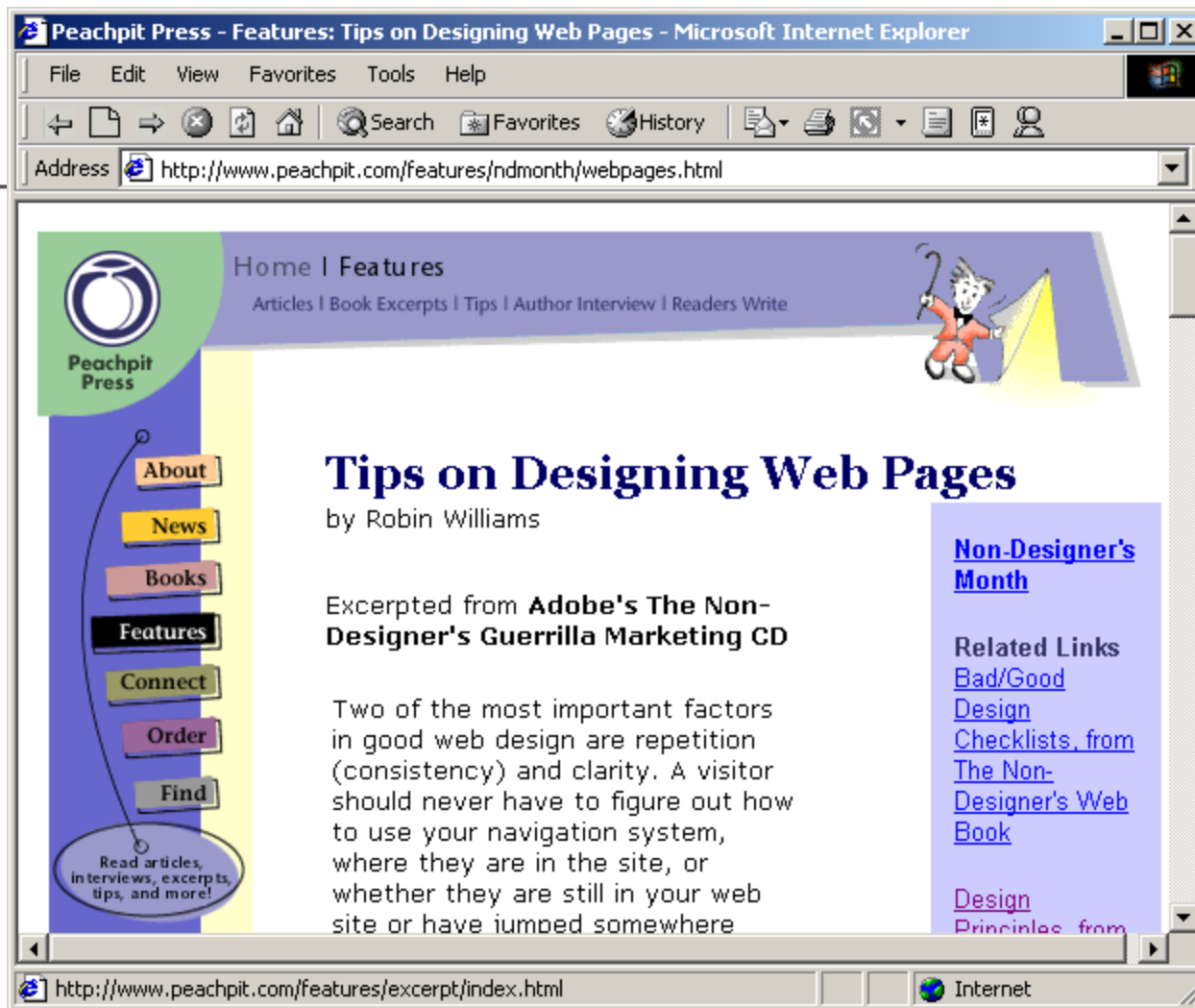
These are labels with a raised appearance.

Is it any surprise that people try and click on them?

The form is titled 'Subscriber' and 'Contact'. It contains the following fields and buttons:

- Subscriber** (Label)
- Name:** (Text input field)
- Account #:** (Text input field)
- Tech. Re** (Text input field)
- Status:** (Text input field)
- Contact** (Label)
- Telephone:** (Text input field)
- E-Mail:** (Text input field)
- Address:** (Text input field)
- Save** (Button)
- Cancel** (Button)





Anyone see a problem here?

Dr. Drugs Pharmacy Master

Davison, Thomas New Customer

First Name: Thomas
Last Name: Davison
Address: 4 BRADEN CRS NW
City: Prudhoe
Province: Alberta
Postal Code: F4T6H8
Phone Number: 403 282-9759

Drug Name
Manufacturer
Quantity
Price/Unit
Doctor
Units
Refill Quantity

Health Care #: 45688-3357
Doctor: Jane Yang
Insurer: FARMERS INSURANCE AGE
Policy #: 4215487-56
Notes:

New Prescription

Prescriptions

See List View

Alprazolam
Citalopram
Ranitidine
Folic Acid
Levothyroxine
Celecoxib
Omeprazole

1999 < Year > 2001
 Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Double click to edit
 (mode buttons gone)

Click to get info

GUI Visual Design | IAT 351 | 22.10.2012

Visual consistency (repetition)

internal consistency

elements follow same conventions and rules
set of application-specific grids enforce this

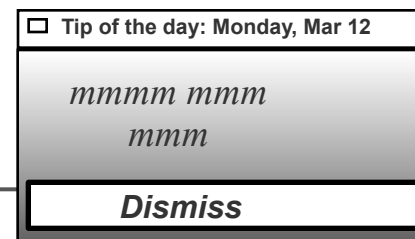
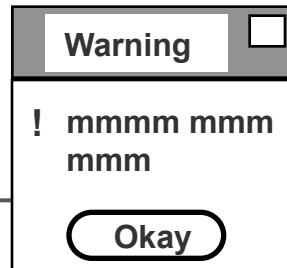
external consistency

follow platform and interface style conventions
use platform and widget-specific grids

World consistency

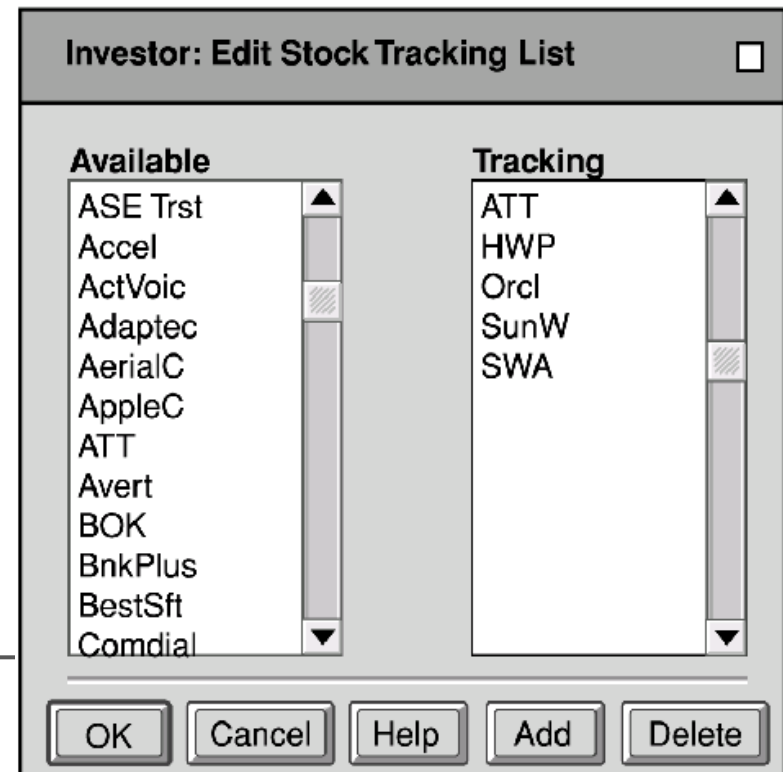
follow common symbols and conventions

deviate only when it provides a clear benefit to user



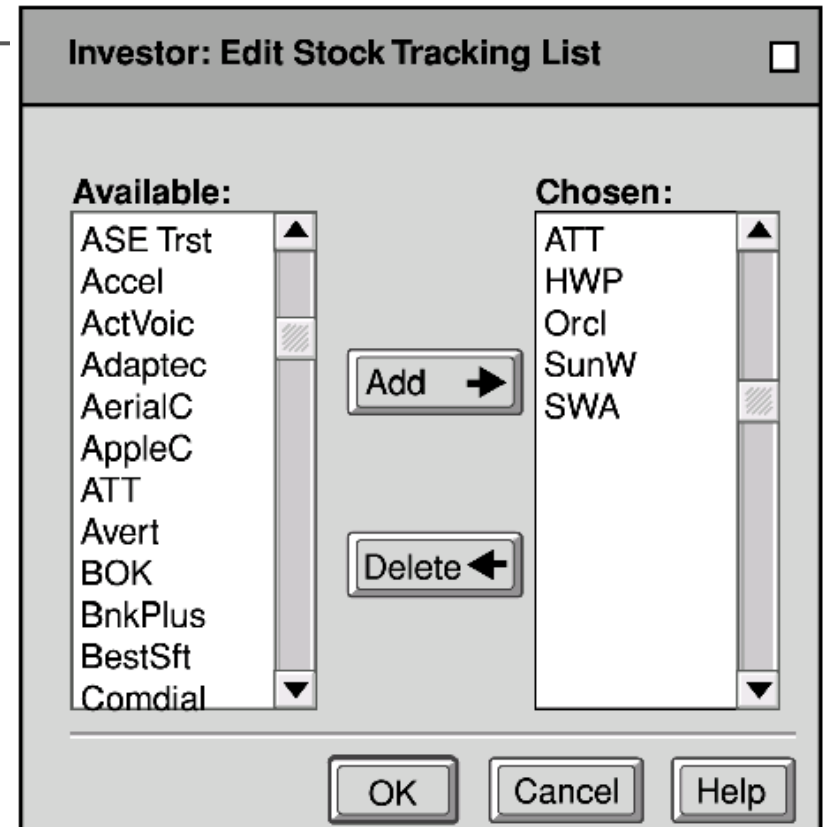
Problem: inappropriate consistency

- This happens when you add new buttons to the standard “OK”, “Apply”, “Close”, “Cancel” buttons
- Everything OK here?



Align Buttons To Controls

- It can be hard to see the connection between the new buttons and data
- Make functions clear by separating content control buttons from window control buttons



Legibility and readability

Characters, symbols, graphical elements should be easily noticeable and distinguishable

Text set in
Helvetica

TEXT SET IN
CAPITALS

Text set in
Times Roman

**Text set in
Braggadocio**

Text set in
Courier



Legibility and readability

- Proper use of typography

- 1-2 typefaces (3 max)
- normal, italics, bold
- 1-3 sizes max

Large

Medium

Small

Large

Medium

Small

Readable

Design components to be
inviting and attractive

Design components to be
inviting and attractive

Unreadable

Design components to be
inviting and attractive

Design components to be
inviting and **attractive**



Legibility and readability

typesetting

- point size
- word and line spacing
- line length
- Indentation
- color

Readable

Design components to be
inviting and attractive

Design components to be
inviting and attractive



Unreadable: Design components
to be easy to interpret and
understand. Design components to
be inviting and attractive



If you wish to add/change network information, please select one of the following options.

- ☒ I WANT TO CONNECT TO AN EXISTING TIME & CHAOS WORKGROUP OR MODIFY THE CONNECTION SETTINGS.
- ☐ I WANT TO BUILD A BRAND NEW WORKGROUP.

These choices must be really important, or are they?

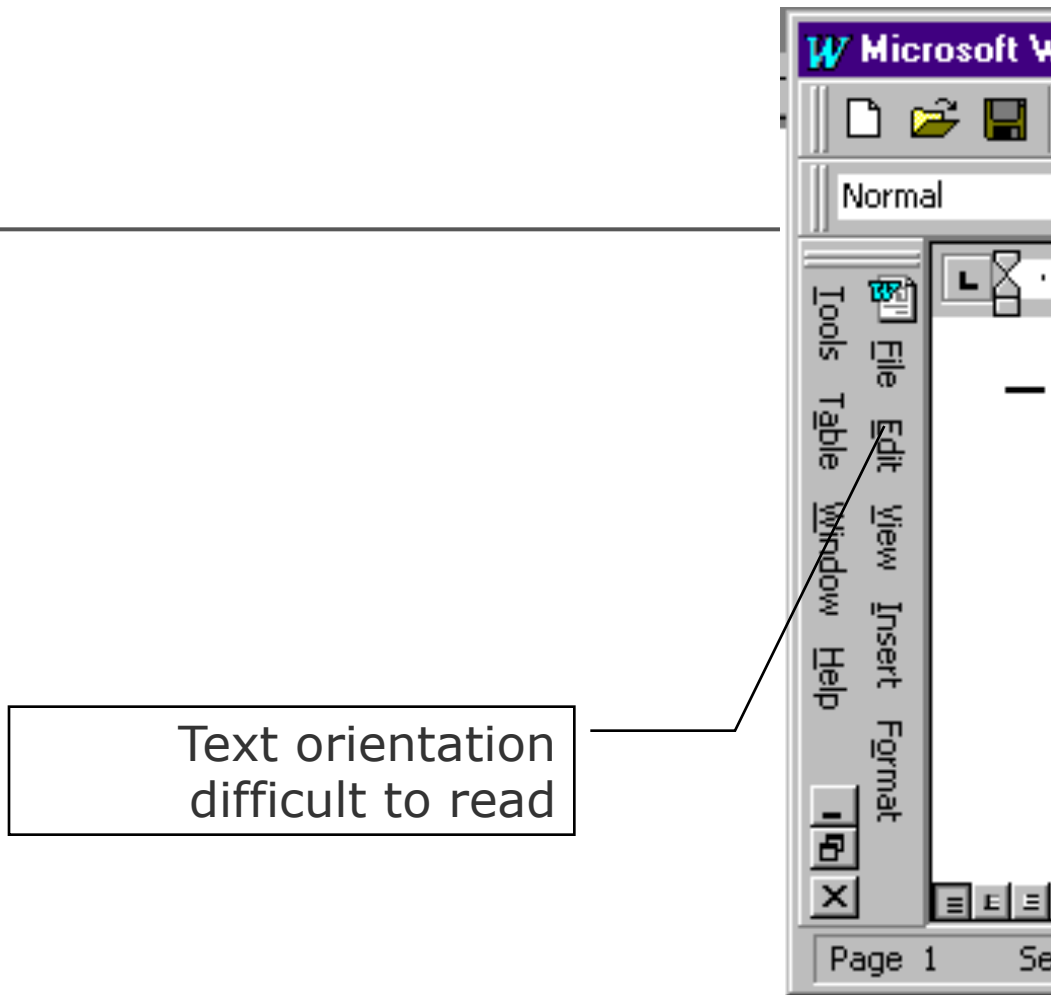
Greyed-out example text hard to read.
Why not make it black?

Appearance samples

Positive:	\$123,456,789.000	Negative:	(\$123,456,789.000)
-----------	-------------------	-----------	---------------------

Currency symbol: \$

No. of digits after decimal: 4



Imagery

Signs, icons, symbols

right choice within spectrum from concrete to abstract

Icon design *very* hard

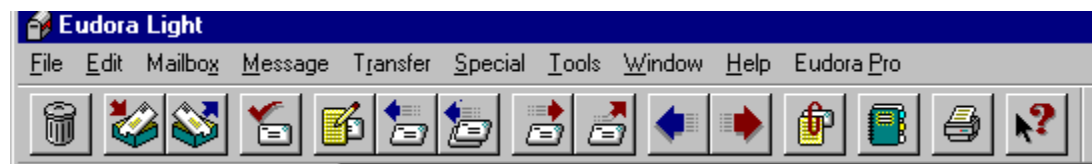
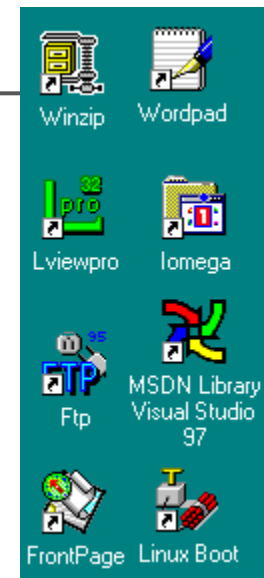
except for most familiar, always label them

Image position and type should be related

image “family”

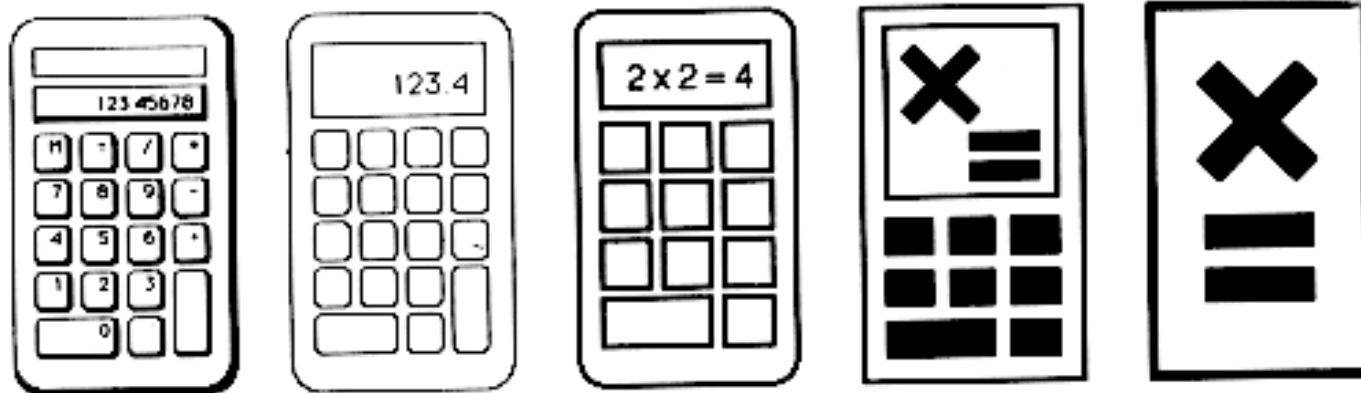
Consistent and relevant image use

identifies situations, offerings...

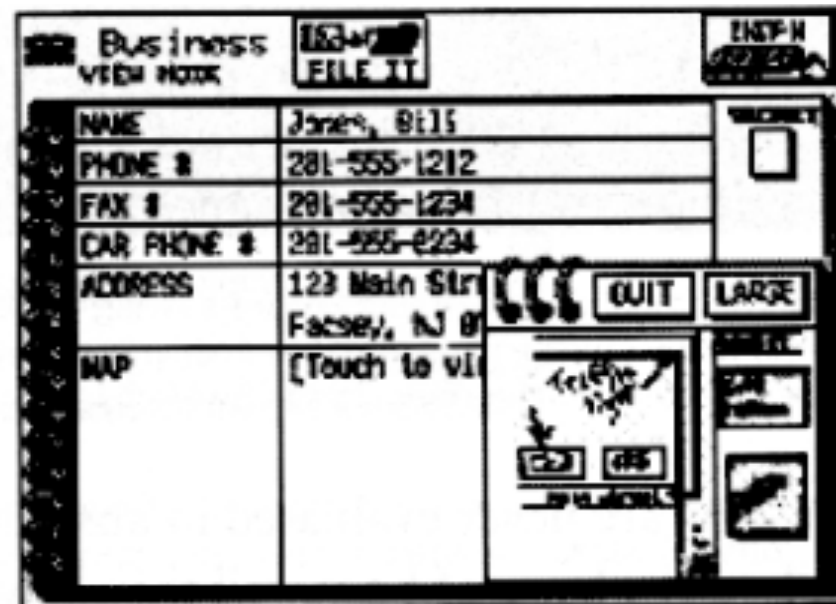
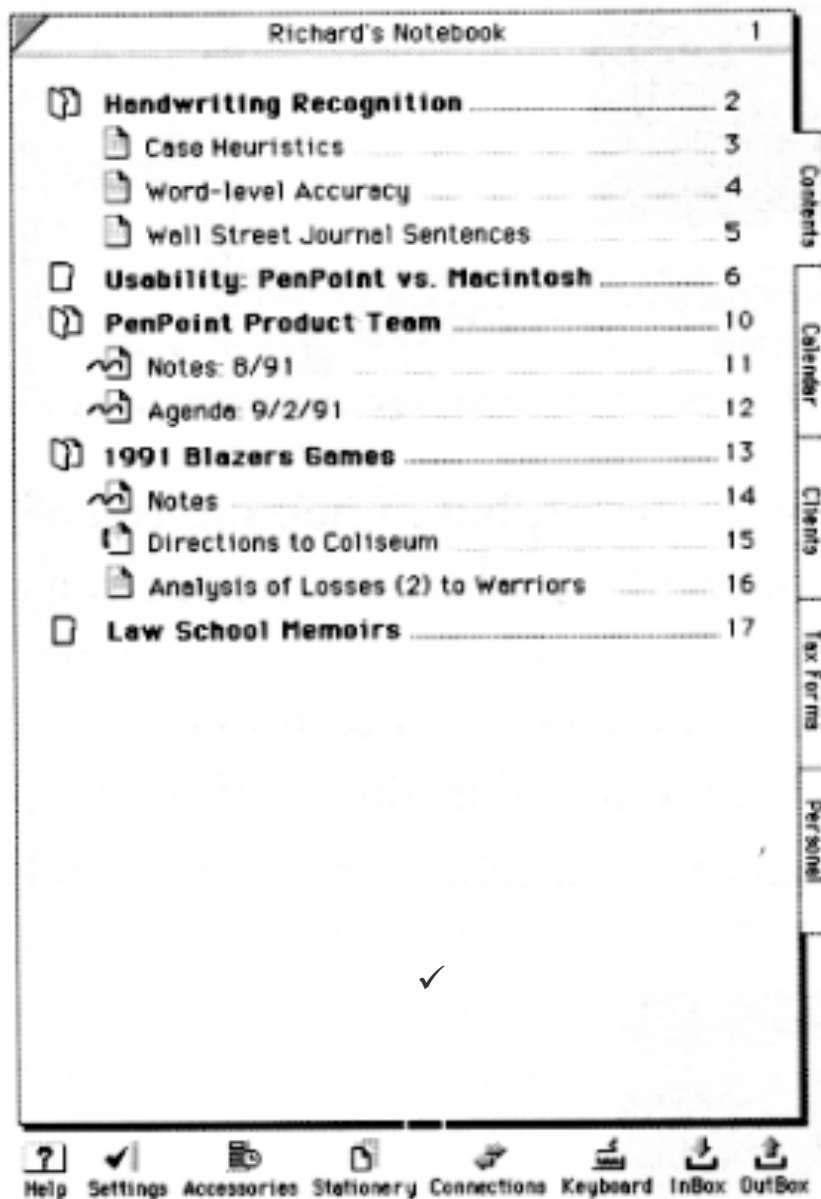


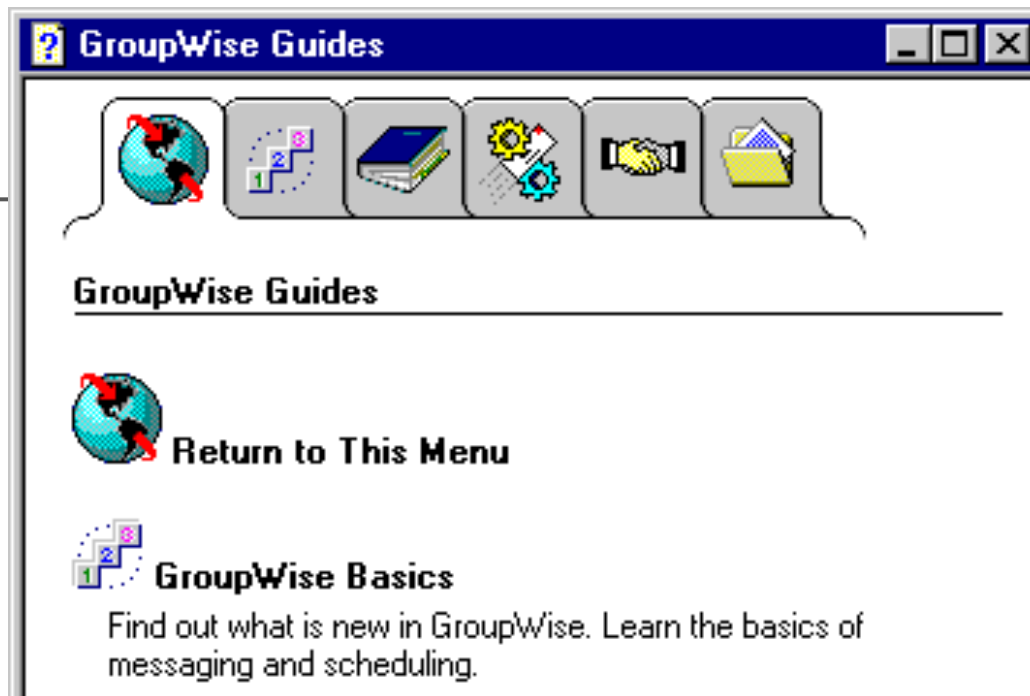
Partial icon family

Choosing levels of abstraction



Refined vs excessive literal metaphors



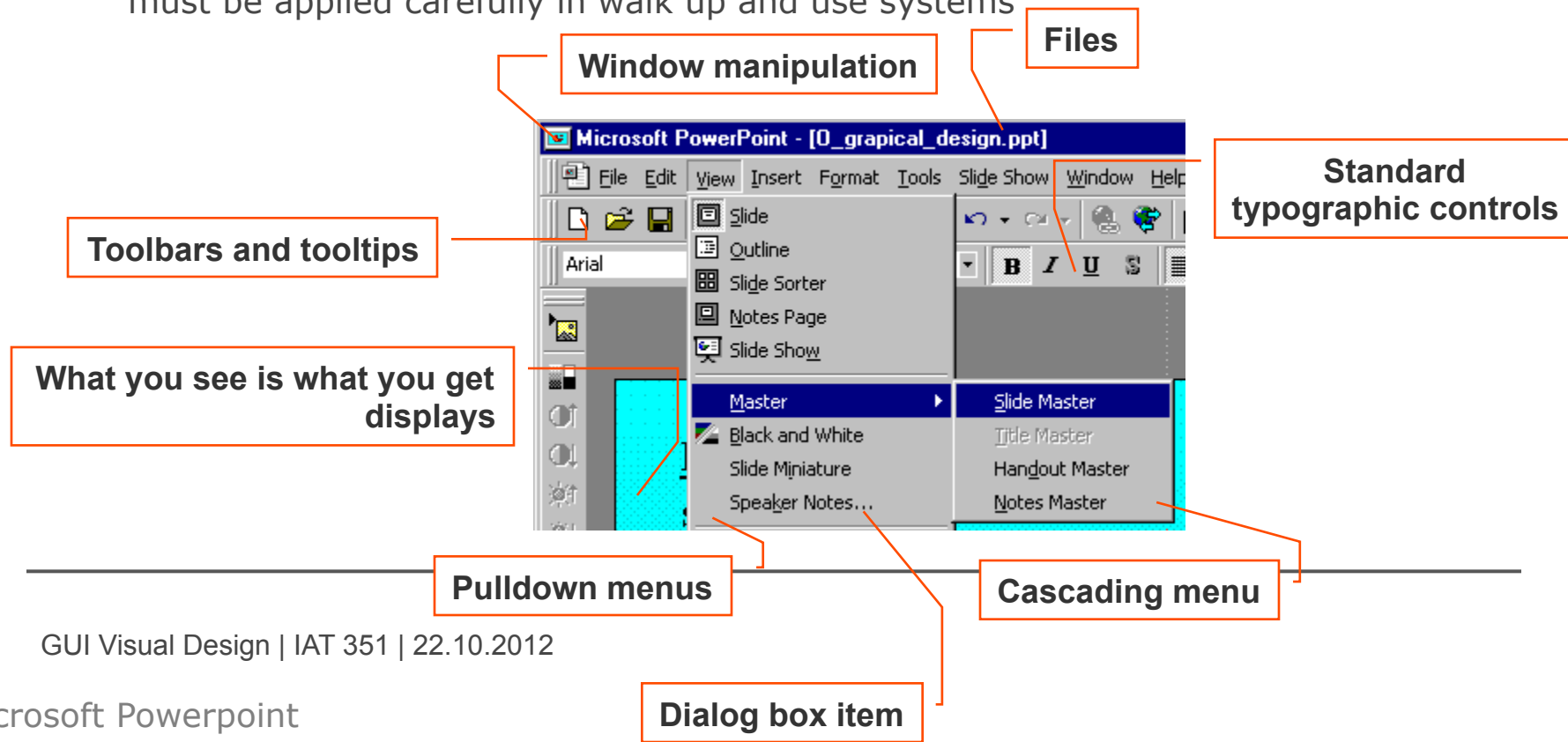


What do these images mean?

- no tooltips included
- one of the tabs is a glossary explaining these images! which one?

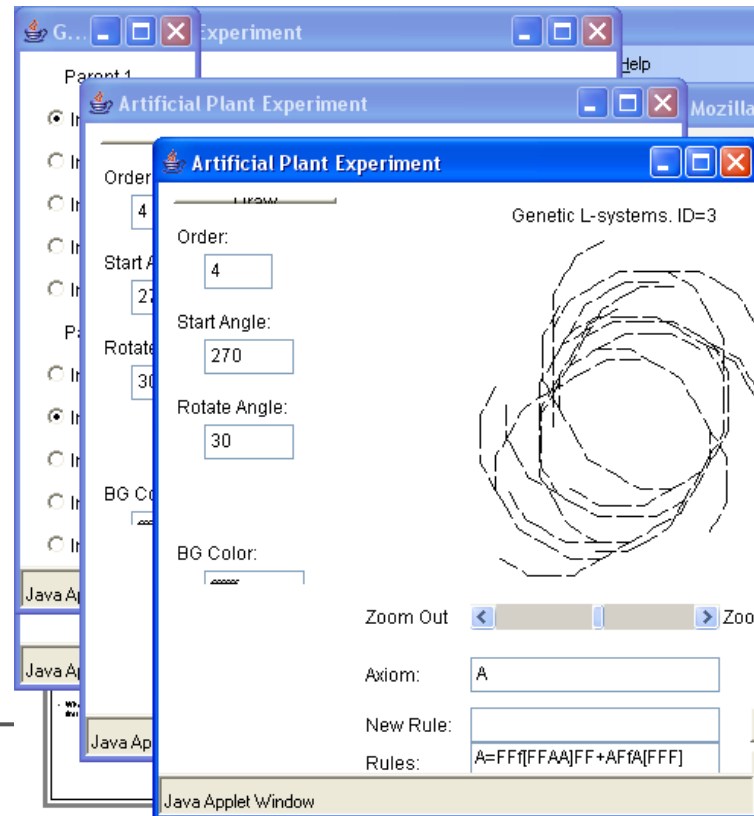
Idioms

Familiar ways of using GUI components
appropriate for casual to expert users
builds upon computer literacy
must be applied carefully in walk up and use systems



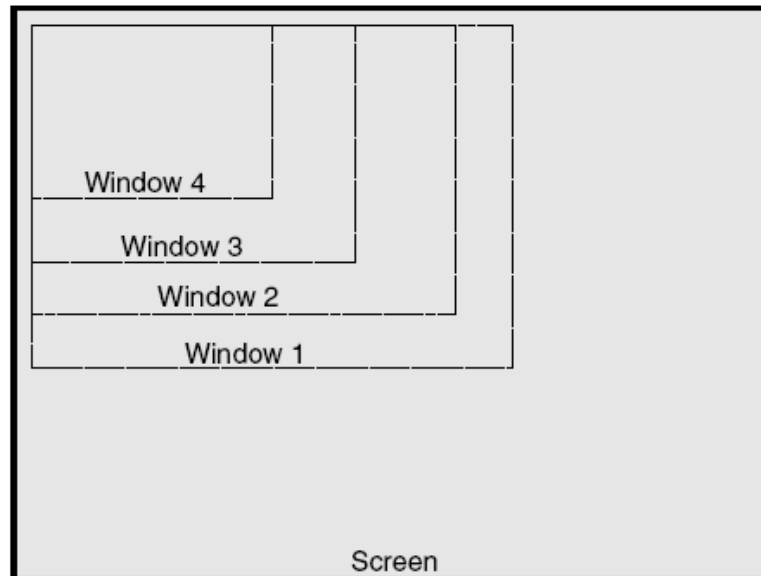
Problem: Poor Window Location

- Where should an application's windows first appear?
- Heuristics:
 - On-screen
 - Staggered
 - No occlusion



Window Location: Examples

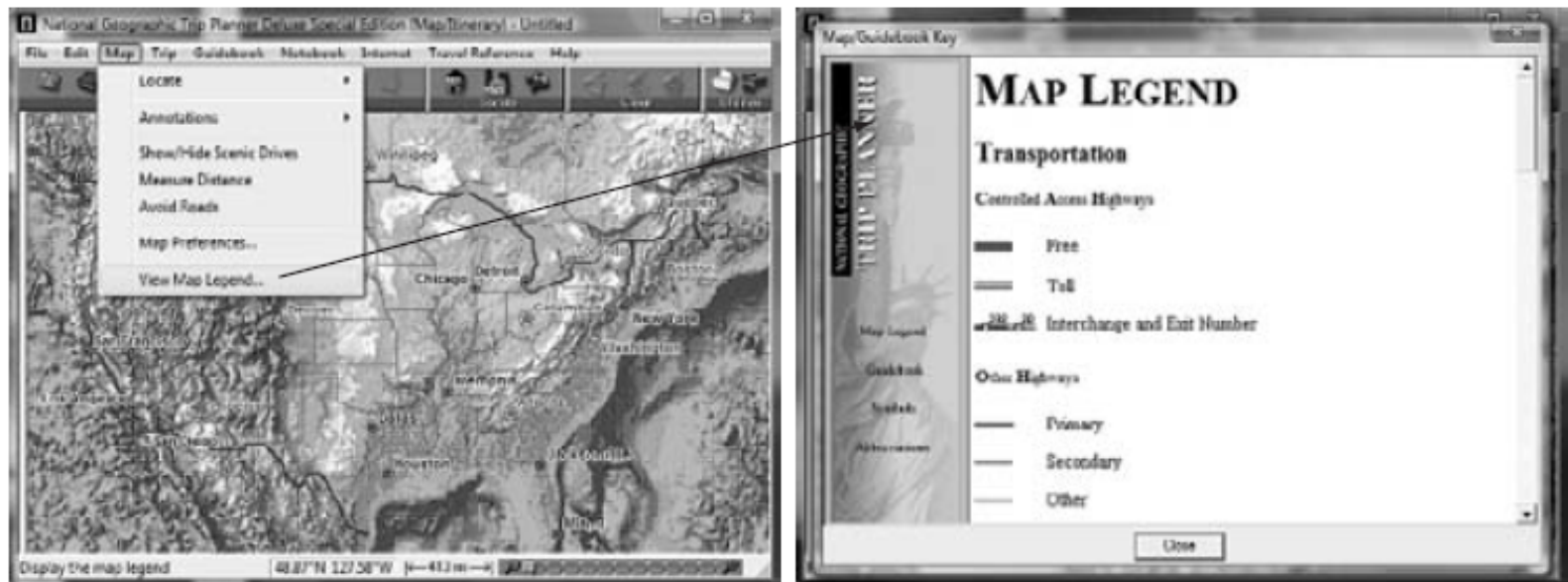
- Display all windows at the same coordinates



Bloomer: all of an application's windows open at position [0, 0].

Window Location: Examples

- Displaying subordinate windows in middle of parent



—— National Geographic Trip Planner: map legend opens over map, making users move it.

Solutions

- Decide where each window appears
 - Don't just let the OS decide or use [0,0]
 - Optimal position depends on the type of window
 - Primary or informational?
 - Stagger windows
 - Make sure child windows don't cover important information
 - Don't place windows directly on top of each other
-

Workshop Exercise

Graphical redesign of your journal

- large screen
- Small screen

Emphasise:

- visual consistency
- Organisational grid
- relationships between screen elements
- navigational cues
- economy
- legibility and readability
- imagery

- Pair up and sketch your designs
 - 15 minutes
 - Then pairs get together and critique each other's designs
 - What's wrong?
 - Why was <xyz> done that way?
 - Identify 3 main issues with each
 - Pair report
-