CS3205: HCI in SW Development

Readings:

- Some material on windows and icons are discussed in Section 6.2.2
- •Design patterns, Section 12.3

Where Are We?

- We know about...
 - Learning about users and tasks
 - Conceptual models, mental models, metaphors, interaction styles/modes
 - Lo-fidelity prototyping, wire-frames, hi-fidelity prototypes
 - Evaluation basics
- Next we want to get more detailed...
 - Often referred to as "physical" design (even for screen interfaces)

Outline

- Outline:
 - (Reminder) Designing overall UI flow
 - Windows
 - Widgets / Controls

Overall UI Flow

- Major UI elements are probably windows or screens (on handhelds)
 - What are they? How are they organized?
 - Do they "match" users' mental models of how they want to achieve tasks?
 - Compare to SW architecture design
 - Major components and their roles
 - How they' re related
 - Save detailed design (inside modules) for later

Goal of Modeling UI Flow

- Identify major UI components (windows)
 High-level description of their role
- Interactions between these – Conditions?
- Two levels possible

 At conceptual design (more abstract)
 At physical design (what will be windows)

UI Flow Diagrams

- We can do less than this and still benefit
- Prototype often called a UI Flow Diagram or Navigation Diagram in the Unified Process methodology
 - Post-its or boxes represent major UI elements (e.g. Windows)
 - Each has a title (or short description) and often an ID
 - ID used to refer to a more detailed diagram (perhaps done later)
- Goals:
 - Get high-level overview
 - Trace through use-cases or scenarios

Example: UI Flow Diagram



• From: http://www.agilemodeling.com/artifacts/uiFlowDiagram.htm

Related Idea: Menu Trees

- We can wander through pages, we wander through <u>nested menu items</u>
- Menu trees often used as a form of user documentation
 - You can see how the earlier design representations lead to these
- Forms of menu trees may indicate problems (see next slide)

Forms of Menu Trees







Menu Tree for an MP3 Player



Summary on UI Flow

- Plan overall structure of your major UI elements
 - Windows or screens
 - Menus (problably later)
- Some lo-fi methods are quick and potentially useful
 - If you base these or evaluate these using your scenarios or use-cases

In-Class Exercise

- Diagram something complex or confusing
 - Suggestions about confusing page structure on a web site?
 - Others? Web sites, wikis, apps with deep menus?

UI Patterns

- Find out more:
 - Section 12.3 in ID textbook
 - Website (next)

Book: Patterns for Effective Interface Design

- Interesting book!
 - Publisher's site:



http://www.oreilly.com/catalog/designinterface s/index.html

- Author's page: <u>http://designinginterfaces.com/</u>
 - Samples!
- Full book available in Virgo through Safari
- Book's goal: document a collection of interface patterns
 - from large-scale idioms to small-scale controls

Sample Chapter Titles

- Information Architecture and Application Structure
- Navigation, Signposts and Wayfinding
- Layout of Page Elements
- Actions and Commands
- Showing Complex Data
- etc.

Example: Organizing Content

- What might the following be?
 - Two-panel selector
 - Center-Stage
 - Extras on demand
 - One-window drill-down
- Examples?

Windows

- We know a lot about these already, eh?
- Primary Windows
- Secondary Windows
 - modal vs. modeless
 - dialog boxes
 - configuration, tabs
- Mouse focus

Organizing a Windowing Interface

A window is a container that designers use to organize the information that users see in an application

- Window interface actions include
 - Open action
 - Close action
 - Resize action
 - Move action
 - Bring forward or activation

Multiple Windows Design

-Advantages

- Windows optimize the use of limited display space:
 - More information can be accessible
- Users can use multiple sources on screen simultaneously to complete a task:
 - They give the user freedom to multitask
- Windowing Systems allow standardization of interfaces
 across many applications
 - The user moves easily between applications and quickly learns to use new applications.
- Automatic facilities for organizing window working sets:
 - save time and make large collections of windows easier to manage
- They lend themselves to direct manipulation

Multiple Windows Design

- Disadvantages:
 - Users perform some tasks slower
 - Due to the need to switch windows
 - Due to getting lost
 - Display screen size and resolution are limitations
 - Time can be lost in rearranging windows
 - User can be confused by user switches context

Windows are like...

- Pages on websites
- Screens on mobile devices
- From a UI design, what's similar? What's different?

Window/Screen design

Two aspects:

- •How to split things across screens
 - moving around within and between screens
 - •how much interaction per screen?
 - •serial or workbench style?
- •Individual screen design
 - white space: balance between enough information/interaction and clarity
 - grouping items together: separation with boxes? lines? colors?

Screen design: splitting functions across screens •Task analysis as a starting point

- •Each screen contains a single simple step?
- •Frustration if too many simple screens

•Keep information available: multiple screens open at once

Screen design: individual screen design

- •Draw user attention to salient point, e.g. colour, motion, boxing
- Animation is very powerful but can be distracting
- Good organization helps: grouping, physical proximity
- •Trade off between sparse population and overcrowding

Information display

- •Relevant information available at all times
- •Different types of information imply different kinds of display
- •Consistency between paper display and screen data entry

Types of Windows

– Primary window:

- is a window in which the user's main interaction with the data or document takes place
- An application can use any number of primary windows, which can be opened, closed, minimized, or resized independently



Types of Windows

- Secondary window:
 - is a supportive window that is dependent on
 - a primary window or
 - another secondary window

nactive Window Active Window				
				_ 🗆 🗙
Normal	Disabled	Selected		
Window	Text			-
Messag	ge Box		×	
Message Message			×	- -



Microsoft PowerPoint

To add a slide number to this slide only, first position the insertion point in a text placeholder or text box where you want it to go. To add a slide number to every slide, use the Header and Footer command on the View menu. Do you want to choose the Header and Footer command now?



Types of Secondary Windows

- Message boxes
 - Often modal: must exit or OK before continuing
 - Problems?
 - search in Excel; overlapping
- Dialog boxes
 - Enter additional information
 - Sometimes modal, sometimes modeless
 - Comments?

Example of bad text: what does "wait" mean we should do?

HUMAN RESOURCES JOBS @ UVA					
USERS CREATE USER ACCOUNT	User Log ¹ This site is for UVa Jobs@ Login as existing GUEST USER I If you are a part of a hiring committee and have been given a Guest Use	jobs.virginia.edu says: The system is processing your information. Please wait. Prevent this page from creating additional dialogs.			
	User Name: GU110126 Password: ••••••• LOGIN You are about to log in to a secure When you are finished, please click ensure that others with access to y cannot view the information in the	s Logout to			

Types of Windows

- Utility window:
 - is a window whose contents affect an active primary window
 - Unlike secondary windows, utility windows remain open when primary windows are closed or minimized.
 - e.g. tool palette that is used to select a graphic tool.



Types of Windows

- Plain window:

- · is a window with no title bar or window controls
- typically used for splash screens



Wizards

- A **wizard** is really a sequence of dialog boxes to achieve a certain goal
 - Install, configure, etc.
- An example of the *conversational* interaction mode
- Issues to consider:
 - Modal or modeless?
 - Navigation: just next and back, or
 - allow users to see the complete set and jump directly to a screen

Tabs in Windows

- Why use tabs?
- Irritations?
- Alternatives?

(See text or reflect on the discussion we had in class)

Some Examples

- Following screen shots discussed in class
- Some of these deal with configuration
 - Interesting problem: large number of choices, infrequently used, important for novice and expert
 - Note variety of approaches
Simeon Options

User	Check for New Mail E	very 10 Minute(s)	
Helper	Clean Mailbox on Exit		
Ac	C Never	C Always	Prompt
Fonts	After Deletion Select		
Message Diganizer	Next Message	Previous Message	
Compose	Enable Priority Heade	IS	

Netscape Preferences

Category: - Appearance	Mail Servers	P
-Fonts		Specify servers for ma
L. Colors	Incoming Mail Servers	
🗄 Navigator	ares.cs.virginia.edu (Default) polaris.cse.fau.edu	Add
Mail & Newsgroups	polaris.cse.rad.eud	Edit
Identity <mark>Mail Servers</mark> Newsgroup Servers Addressing Messages		
		Delete
	To set server properties (such as checking for new messages automatically), select a server and then click Edit.	
- Window Settings Copies and Folders	Outgoing Mail Server	
- Formatting	Outgoing mail (SMTP) server: ares.cs.virginia.ec	du
 Polinating Return Receipts Disk Space E Roaming Access E Composer E Offline E Advanced 	Outgoing mail server user name: horton	
	Use Secure Socket Layer(SSL) or TLS for outgoing	n messages:
	Standard Cal	dways
	Never in rossible i A	nvidys
	Local mail directory:	
	C:\Program Files\Netscape\Users\horton\mail	Choose
	C:\Program Files\Netscape\Users\horton\mail	Choose
	OK Canc	el Help

Tabbed Menus



IBM Thinkpad Config



Multiple Rows of Tabs

tions				?
Track Ch View	anges (General	Jser Information	Compatibility	File Locations
General o Back Blue Prov Prov Prov Conf Conf Conf Gupda Mail Rece Help Navi	ptions ground repaid background, ride feedback ride feedback firm conversion ate automatic as a <u>t</u> tachmen ently used file for <u>W</u> ordPeri igation keys fi	ination white text with <u>s</u> ound with a <u>n</u> imation on at Open inks at Open it	entries	opelling & Grammar
Incl		▼ or HTML features Web Op	itions E	-maji Options Cancel

Visual C++ Settings

Project Settings	?×
Settings For: Win32 Debug	General Debug C/C++ Link Resource
	Microsoft Foundation Classes: Not Using MFC Output directories Intermediate files: Debug
	Output files: Debug Allow per-configuration dependencies
	OKCancel

Outlook

🔯 Calendar - Micr	osoft Out	look				×
Eile Edit View F	⁻ av <u>o</u> rites]	Lools <u>A</u> ctions <u>H</u> elp	i			
← → 🕺 🖻	🖾 🔕	outlook:\\Personal	%20Folders\Calendai	· .		
] <u>∎</u> New • ×	Go to To <u>d</u> a	y 🚺 Day 🚺 Wo	rk Week 🚮 Month	🚰 Organize	😤 🛛 Day/Week/N	1onth 🔹 🥇
Outlook Shortcuts	Calen	dar.				July 15 - July 19 🧐
<u>.</u>		Mon, Jul 15	Tue, Jul 16	Wed, Jul 17	Thu, Jul 18	Fri, Jul 19 🔺
4				nn TNC orientation		R. Braves in town
Outlook Today	8 am					
2						
Calendar	9					
	10.00					
Contacts		€ 10:30am-11: CS305 class	€ 10:30am-11: CS305 class	€ 10:30am-11: CS305 class	€ 10:30am-11: CS305 class	CS305 class
contacts	11-00		0.000.000.000	mage elemente	100000000000000000000000000000000000000	
(12 ^{pm}	€ CS Dept.		1		
Tasks		Mtg				
	1	€ Office Hours		€ Office Hours	Mtg w Noah M	
Notes	2.00		€ Aspect-orient			
(VOLCS	1272		seminar			
S 🖸	3 <u></u>					
My Shortcuts	400					边ś Hair appt. wi
Other Shortcuts						•
13 Items						

Windows Media Player



Windows Media Player



General guidelines for arranging windows

- Ensure window arrangement is only changed by the user
- Keep secondary windows to only one level and limit their number
 - Secondary windows can be:
 - Windows within windows
 - Separate windows that depend on a primary window
- Make the use of secondary windows optional
- As alternatives use multiple primary windows or menus

Window Focus

- Which window gets events like key-presses?
- Two approaches have been used:
 - "Mouse focus" vs. "click-to-focus"
- Mouse focus
 - Typical of original UNIX X-windows windows managers
 - Input goes wherever the mouse is pointing
 - Windows doesn't have to be on top
 - Input can go into a partly obscured window
- Comments?

Mouse Focus: pros/cons

- Disadvantages
 - -Harder for novices
 - -Not-consistent with other platforms
- Advantages:
 - Allows easier interaction with multiple windows without rearranging
 - Faster interaction in many cases

Click-to-Focus

- Click to focus
 - Default in MS-Windows and Macintosh
 - A window must be brought to the front before it will accept input
 - Input goes to that window regardless of where the mouse is pointing
 - Advantage:
 - Input cannot accidentally input to the wrong window

Focus within Applications

- Many apps have multiple panes or panels
- Case study: Thunderbird/Mozilla email client
 - message-list pane and message-pane
 - change of focus for key-input after one of the two scroll-bars has been used
 - Demo' d in class, but some screen captures next
- What are the issues is usability terms?
 - Your answers are:
 - Visibility: Can I easily see which pane has focus?
 - Consistency: Clicking message-list scroll-bar assigns key-focus to message list, but not the other way

Two panes, Two scroll-bars



Select message first. What does PageUp change? The message-list.

Two panes, Two scroll-bars



Select text in message, then hit PageUp. What changes? The message.

Two panes, Two scroll-bars

jile <u>E</u> dit <u>V</u> iew <u>G</u> o <u>M</u> essage	<u>T</u> ools <u>H</u> elp
et Mail Write Address Book	Reply Reply All Forward Delete Next Junk
Folders	View: All
horton@cs.virginia.edu Inbox (108) Drafts (24) Sent Junk (4553) Trash (13809) 216wanabees abet05-serv abet-visit advisees	Subject Sender Image: Constraint of the sender
	 To: tbh3f@virginia.edu I'm looking for 10-12 more hard working UV students for a paid summer internship. The internship pays between \$600 and \$1000 per week, depending on

Move message scroll-bar, then hit PageUp. What changes? Surprise! The message-list!

Widgets within Windows

- Terminology:
 - widgets, controls (.NET), components (Java)
 - Here I mean: "smaller" GUI objects in a window that the user directly interacts with
 - Input, output, display, control,...
- menus, toolbars, buttons
- option buttons, check-boxes, list-boxes, text-boxes, combo-boxes
- Others too

Commands

- Menus and menu-structure
- Buttons
- Toolbars

Buttons

- Maybe the simplest widget?
- But
 - What labels? Too often defaults to OK, Continue, Accept, etc. when that is ambigious in the context
 - Where positioned? Consistency, prominent position
 - Size and shape: pretty vs. visible

Toolbars

- Alternatives to menu hierarchies
 - Why have them? Your answers are:
- Location: tool bar at top of window, or secondary window (floating)
- Key issue: the icons
 - Problems, issues?

Desirable Icon Properties

- Easily distinguished
- Easily recognized and understood
- Visually simple
- Easy to perceive
 - Use of color, detail, not to complex
- Informative
 - Good example: text-justification icons
- Should represent concrete objects

 Home, printer
- From Horton, 1991 (no relation)

More on Icons

- See ID-book, Chaper 6 figure 6.9 and after.
- Note icon design for handheld devices
 - Digital cameras
 - Phones
- Let's discuss some examples!









Menus

- Types
 - Permanent (menu bar, in a form, toolbar)
 - Pull-down
 - Pop-up
 - Roll-up
 - Modal: Each menu is a complete screen or Web page
- Note: there are equivalents to menus on webpages, hand-held devices
 - Many principles that follow apply to these too!

Roll-up Menu Example

- - - -

	iew Tools Help chSmith	
	NAGIT	Tour
A scrolling window An object on the screen The entire screen Other Capture Profiles (6) My Profiles (C)	Select a Profile then click Capture. Forure Select a Profile then click Capture. Basic Capture Profiles (6) A region to File A region to Clipboard A region to Clipboard A scrolling window A scrolling window A n object on the screen The entire screen Other Capture Profiles (6) A freehand region A menu with time delay option M Text from a window Record a video of the screen A li images from a Web site A DirectX application (e.g. games) My Profiles (0) Add New Profile Wizard	Capture Capture Settings Profile: (Unsaved) Capture Settings Profile: (Unsaved) Capture Settings Profile: (Unsaved) Capture Solution: Control Control Capture Save Profile Capture Save Profile
11035	sent since the second of	

Menus

- Meaningful organization demonstrated to reduce error rates, think time
 - Organize based on task-related objects and actions
 - Repetition of items in menus? (Creates a acyclic network.)
 - Confusing to some. See this on the Web.
 - Why?

– Harder mental model with no "level".

Menu Dimensions

- How to measure "size" or "complexity"?
- Menu items, nested menu items, nested menu items...
 - Many forms of this:
 Pull-down, screens, tabs, etc.
 - All are just different organizations of a multidimensional structure
- How to cope? Are there rules?

Menu Depth vs. Breadth

- Depth: number of levels
 Breadth: number of items per level
- Empirical studies show: *Prefer menu breadth over depth.*
 - Limit menu trees to three levels
 - User-stress has been tested in one study

Menu Content Organization

- Item Presentation Sequence
 - The order of items in the menu is important, and should take natural sequence into account when possible:
 - Time
 - Numeric ordering
 - Physical properties
 - When cases have no task-related orderings, the designer must choose from such possibilities as:
 - Alphabetic sequence of terms
 - Grouping of related items
 - Most frequently used items first
 - Most important items first.

Menu Content Organization

- Item Presentation Sequence
 - The order of items in the menu is important, and should take natural sequence into account when possible:
 - Time
 - Numeric ordering
 - Physical properties
 - When cases have no task-related orderings, the designer must choose from such possibilities as:
 - Alphabetic sequence of terms
 - Grouping of related items
 - Most frequently used items first
 - Most important items first.

Menu Organization and Frequency of Use

- Question: What do you think about Windows technique of hiding infrequently used items?
 - These are known as *adaptive menus*
- What's the goal here? – Improve efficiency
- At what cost?
 - Consistency
- Users vary in their preference!
 - Possible to allow users to customize menu order
 - Or, mix frequency with standard order (e.g. fonts)

Content Organization and Freq.

Insert Break... Symbol...

<u>P</u>icture Te<u>x</u>t Box ¥

1.7	
	<u>B</u> reak
	Page N <u>u</u> mbers
	Date and <u>T</u> ime
	AutoText
	<u>F</u> ield
	<u>S</u> ymbol
<u>1</u> 2	Co <u>m</u> ment
	Refere <u>n</u> ce
1	Web Component
	<u>P</u> icture ►
82	Diagram
	Text Box
	Fi <u>l</u> e
	<u>O</u> bject
	Boo <u>k</u> mark
4	Hyperl <u>i</u> nk Ctrl+K

Insert

۲

۲

Arial 👻	
n Arial	
Times New Roman	
№ Comic Sans MS	
Tr Arial Unicode MS	
Tr Arial Unicode MS	
👁 Batang	
≖ MS Mincho	
☞ PMingLiU	
₩ SimSun	-

Menu guidelines to assist users

- Keep menus self-explanatory
 - Give items meaningful labels
 - Be consistent in grammar and pattern in sets of menu labels
 - e.g. the following set of labels is bad!
 - 'up', 'go down', 'forward', 'reverse'
 - Ensure all items correspond to the name of the menu
 - i.e. menu items should be meaningfully organized
 - e.g. on an 'insert' menu, all items should be things to insert

Menu guidelines to assist users

- When standards or conventions exist, follow them
 - e.g. 'file', 'edit' and 'window' menus
- Ensure items only correspond to the name of this menu (not any other)
 - i.e. make sure the each item can only logically be in one place
 - rename the item or the menus if necessary
 - Prevent users from searching the wrong menu
- Use checkmarks to show state of toggles
- Use a triangle to show when there is a submenu
- Use an ellipsis to show when the action cannot be completed without further input
 - e.g. 'save as...'
 - Means a modal dialog box must be filled in
 - But don't use an ellipsis when just opening a new nonmodal window
- Group related menu items
 - Separate groups by horizontal lines
 - This allows users to focus attention
 - An ISO rule: $g = \sqrt{n}$ (Fig. 6.3, p. 235 in ID-Book)
 - Good grouping can allow the total number of items to be increased to 15-20

- Disable items that are not valid in the current context
 - 'Grey them out'
 - Do not remove them unless the user persistently works in a context where a set of items is never valid (e.g. beginner mode)
 - Provide tool tip help even on disabled items

- Provide a facility to back up to the previous level in multi-level modal menus
 - E.g. to go to the home page or parent page
- Provide visible feedback so users know where they are in a menu hierarchy
 - e.g. when displaying a lower-level web page
 - Allow the user to pick from higher levels directly
 - For screens displayed as a result of menu choices, display the menu item that led to the screen
 - The above always ensures the user keeps a mental model of where they are
- Provide a menu map, equivalent of a site map on a Web site

- Use modal menus only for systems that are used for searching through categories of information
 - E.g. directories on the web
 - Design most applications so users have access to all commands at all times
- Consider providing 'beginner' menus with fewer choices

- Provide a way of accessing help on each menu and item
 - This facilitates exploring and building the user's mental model
 - Dynamic tool-tip/balloon help when cursor pauses over the item
 - One-key access to context-sensitive help about whatever the cursor is pointing to

- Allow direct picking of items from menus
 - ... as opposed to 'choose the number' of the menu item
 - On a character-based display, use cursor keys to select.
 - This only works if the number of items is few
 - Where there are too many items to allow cursor movement, preferably use mnemonic alphabetic choices
 - as well as cursor movement

- Help the user perform frequent and repetitive actions
 - Place the most used menu items near the top
 - If frequencies are equal, order by natural sequence or sequence performed in the task
 - If still equal, order alphabetically
 - But never sacrifice good grouping
 - Provide keyboard shortcuts and display them on the menu
 - Allow tailoring of shortcuts

- Provide pop-up menus for key actions
 - Especially if context sensitive
 - i.e. action depends on what is selected
 - But in general, permanent menus are better
- Consider providing history tracking:
 - When a menu is displayed, place the cursor on the most recent item chosen from this menu
 - Palm OS does this

Summary of What We Covered

- Planning Overall Flow, Design
 - Patterns
 - Interaction Styles
- What goes into screens, menus?
- Types of Windows
- Commands
 - Buttons, Toolbars (icons)
 - Menus

Android (2.2) Gmail App

10 🤤	🔀 📶 💶 3:15 PM
Inbox (991)	tomhortongmail.com
Rocky the Flyi	ng Squirrel - T 😭
» Overton, Ann M	. 3:07pm
dawgs sprung	- I let the dog 😭
» Ann, Me (2)	2:58pm
Play Baaaaalll	II! FW: Gove 😭
» Ann, Me (2)	Ø 2:57pm
38th Annual Ho	ome and Gar 😭
» BRHBA	10:54am
Order receipt from a second	rom YAMAS 😭 9:58am
bball coaching	changes - NC S 😭
» Me, Paul (2)	Apr 4
bball coaching	changes - Inter 🚖
» Me, Mark (2)	Apr 4
FW: Senator Ma	ark Obenshai 🚖

聩 , 🛛 🚺 💶 3:15 PM

Play Baaaaallill! FW: Governor Bob McDonnell Welcomes Baseball Season Back to the Commonwealth

Inbox

1



Ann M. Overton I Public Affairs Manager Virginia Center for Transportation Innovation and Research

A division of the Virginia Department of Transportation 530 Edgemont Road I Charlottesville, VA 22903-2454 (434) 293-1912 I fax <u>(434) 293-1990</u> Ann.Overton@VDOT.Virginia.gov I www.vtrc.net



Android (2.2) Gmail App



"Overton, Ann M." <Ann. Overton@vdot.virginia.gov>,

Re: Play Baaaaalllll! FW: Governor B

Compose Mail



Android, Samsung Touch Email App

100	-	▝▙▖▖▖▏▎▌	3:16 PM
Inbox[4]	[Gmail]/All	[Gmail]/Dra	[Gmail]/Se
tomhorto	nva@gmail.c	om	3 15
Today			
	y the Flyin	g Squirrel	* 3:07 PM
	gs sprung		*
	con, Ann M."		2:58 PM
	Baaaaallill :on, Ann M."	! FW: Go	. ★ 2:57 PM
38th "BRHB	Annual Ho	ome and	. * 10:54 AM
	er receipt f bid Market"	rom YAM.	★
Yesterday	-		
	ball coach McSorley"		*

10 🔤

📆 "III 💶 3:16 PM

Rocky the Flying Squirrel

They may be our neighborhood's unofficial mascot ;-)

Ann M. Overton I Public Affairs Manager Virginia Center for Transportation Innovation and Research A division of the Virginia Department of Transportation 530 Edgemont Road I Charlottesville, VA 22903-2454 (434) 293-1912 I fax (434) 293-1990 Ann.Overton@VDOT.Virginia.gov I WWW.vtrc.net

-----Original Message-----From: Tom Horton [mailto:tomhortonva@gmail.com] Sent: Tuesday, April 05, <u>2011 3</u>:06 PM To: Overton, Ann M. Subject: Re: Play BaaaaallIII! FW: Governor Bob McDonnell Welcomes Baseball Season Back to the

Android, Samsung Touch Email App



ኼ 📶 🚺 3:17 PM

Rocky the Flying Squirrel

Ann M. Overton I Public Affairs Manager Virginia Center for Transportation Innovation and Research A division of the Virginia Department of Transportation 530 Edgemont Road I Charlottesville, VA <u>22903-2454</u> (434) 293-1912 I fax (434) 293-1990 Ann.Overton@VDOT.Virginia.gov I www.vtrc.net

-----Original Message-----From: Tom Horton [mailto:tomhortonva@gmail.com] Sent: Tuesday, April 05, <u>2011 3</u>:06 PM





Top Screen: Message List

Inbox (991)	tomhortongmail.com
Rocky the Flyir	ng Squirrel - T 😭
» Overton, Ann M.	3:07pm
dawgs sprung -	- I let the dog 🔶
» Ann, Me (2)	2:58pm
Play Baaaaaliii	!! FW: Gove 😭
» Ann, Me (2)	🖉 2:57pm
38th Annual Ho	me and Gar 😭
» BRHBA	10:54am
Order receipt fr	om YAMAS 😭
» Android Market	9:58am
bball coaching of which we have a second	changes - NC S 😭 Apr 4
bball coaching of which we have a second	changes - Inter 😭 Apr 4
FW: Senator Ma	rk Obenshai 🔶

100		₩.∥(3:16 PM
Inbox[4]	[Gmail]/All	[Gmail]/Dra	[Gmail]/Se
tomhorto	onva@gmail.c	om	₹ <mark>1</mark> 55
Today			
	t y the Flyin ton, Ann M."	ig Squirrel	* 3:07 PM
	gs sprung ton, Ann M."		2:58 PM
	BaaaaallII ton, Ann M."	l! FW: Go	. ★ 2:57 PM
38th "BRHE	Annual Ho BA"	ome and	. ★ 10:54 AM
\sim	er receipt f oid Market"	rom YAM.	★ 9:58 AM
Yesterday	/		
	ball coach McSorley"		* 04/04/2011

Display Message Screen

1

1 🛇 🤤

👪 _ብ 🚺 🚺 3:15 PM

Play Baaaaalllll! FW: Governor Bob McDonnell Welcomes Baseball Season Back to the Commonwealth

Inbox



Ann M. Overton I Public Affairs Manager Virginia Center for Transportation Innovation and Research

A division of the Virginia Department of Transportation 530 Edgemont Road I Charlottesville, VA 22903-2454 (434) 293-1912 I fax (434) 293-1990

Ann.Overton@VDOT.Virginia.gov | www.vtrc.net



🖫 ,,|| 💶 3:16 PM

Rocky the Flying Squirrel

They may be our neighborhood's unofficial mascot ;-)

Ann M. Overton I Public Affairs Manager Virginia Center for Transportation Innovation and Research A division of the Virginia Department of Transportation 530 Edgemont Road I Charlottesville, VA 22903-2454 (434) 293-1912 I fax (434) 293-1990 Ann.Overton@VDOT.Virginia.gov I

www.vtrc.net

-----Original Message-----From: Tom Horton [mailto:tomhortonva@gmail.com] Sent: Tuesday, April 05, <u>2011 3</u>:06 PM To: Overton, Ann M. Subject: Re: Play BaaaaallIII! FW: Governor Bob McDonnell Welcomes Baseball Season Back to the

Compose Reply (one on left vs. two on right)



X

In-Class Exercise

(Turn in with your names)

- Compare the two windows shown here.
- (1) Discuss differences in buttons in terms of:
 - Affordance of buttons
 - Use of color
 - Shape of buttons
 - Positioning of buttons
 - Wording of text in buttons
- (2) Compare window organization in terms of tasks supported on the two windows
- (3) Discuss in usability terms differences in physical layout

From In-class Exercise, Windows

Print	? 🔀
Printer Name: S pumpkin	▼ Properties
Status: Idle Type: Xerox Phaser 8200DP Where: pumpkin Comment:	Fin <u>d</u> Printer Print to file Manual duple <u>x</u>
Page range • <u>All</u> • C Selection • Pages: • Pages: • Enter page numbers and/or page ranges separated by commas. For example, 1,3,5–3 • • • • • • • • • • • • • • •	Copies Number of copies:
Print <u>w</u> hat: Document P <u>r</u> int: All pages in range	 Zoom Pages per sheet: 1 page Scale to paper size: No Scaling
Options	OK Cancel

From In-class Exercise, Mac OS

	Print
	Printer: Usability HP 4000
	Presets: Standard
	Copies & Pages
Copies:	1 ✓ Collated
Pages:	• All
	O Current page
	⊖ Selection
	O From: 1 to: 1
	O Page range:
	Enter page numbers and/or page ranges separated by commas (e.g. 2, 5–8)
? Pre	eview Save As PDF Fax Cancel Print

Print	
Printer: Usability HP 4000	
Presets: Standard	
Copies & Pages	
Copies: 1 Collated	
Pages: 💽 All	
O Current page	
O Selection	
O From: 1 to: 1	
O Page range:	
Enter page numbers and/or page ranges separated by commas (e.g. 2, 5–8)	? 🔀
(?) (Preview) (Save As PDF) (Fax) (Cancel	Print Properties
	lle Fin <u>d</u> Printer
	Where: pumpkin 🔽 Print to file
	Comment: Manual duplex
	Page range Copies Image: All Number of copies:
	C Current page C Selection
	C Pages: Collate
	Enter page numbers and/or page ranges separated by commas. For example, 1,3,5–12
	Print what: Document
	Print: All pages in range
	Scale to paper size: No Scaling
	Options OK Cancel

F	Print
Printer: OLSSON-228 Presets: Standard	↓ ▲
Copies & Pages	•
Assessment Report: Sept. 2010 BS in Computer Science University of Virginia	Copies: 1 Collated Pages: All Current Page Selection From: 1 to: 1
Land anther: Thomas B. Horten o-mail: hortonjozvitylein.olu	Page Range Enter page numbers and/or page ranges separated by commas (e.g. 2, 5-8)
t to 100 Showned Reper, Speeder 201 ▲ ▲ 1 of 44 ► ►► ✓ Show Quick Preview Page Setup	
? PDF V Preview	Cancel Print

Print		×	
Printer			
Name:	OLSSON-228#:7	✓ Properties	
Status:	-		
	Type: TP PS Driver B99F51CD5A3D43568DBA656796A2D9F4 Where: 1:		
Comment:	Printer created by TPAutoConnec	ct 📃 Print to file	
Print range		Copies	
Al		Number of copies: 1	
Pages Selection	from: 1 to: 1	123 123 Collate	
Print Frame	es		
🔘 As laid	out on the screen		
The se	lected frame		
🔘 Each fi	rame separately	OK Cancel	

Р	rint	
Printer: OLSSON-228 Presets: Standard	↓	
Copies & Pages	\$	
Assessment Report: Sept. 2010 BS in Computer Science University of Virginia	Copies: 1 Collated Pages: • All Current Page Selection From: 1 to: 1	
Lend ander: Thomas R. Hertes o enzi: herosojica viginitadu 1	Page Range Enter page numbers and/or page ranges separated by commas (e.g. 2, 5-8)	Print Printer Name: Status:
I of 44 ✓ Show Quick Preview Page Setup		Type: Where: Comme Print ran
? PDF ▼ Preview	Cancel Print	 All Pag Sele
		Print Fra

int	x	
Printer		
Name: OLSSON-228#:7	▼ Properties	
Status: Ready		
Type: TP PS Driver B99F51CD5A3D43568DBA656796A2D9F4		
Where: 1; Comment: Printer created by TPAutoConner	ct Print to file	
comment. This of dealed by This comme		
Print range	Copies	
All	Number of copies: 1	
○ Pages from: 1 to: 1	123 123 Collate	
Selection	123 123 Collate	
Print Frames		
O As laid out on the screen		
The selected frame		
Each frame separately	OK Cancel	

Design Universal Windows Platform (UWP) app - Windows app development - Print X Print	nt X
Printer < 1 >	Printer Name: OLSSON-228#:7 Properties
Orientation Increase Microsoft P = see n Portrait V Windows Dev Center -	Status: Ready
Westewn repro 1 Greigin & U	Type: TP PS Driver B99F51CD5A3D43568DBA656796A2D9F4
Copies Design & UI A great app starts with a great user interface. Learn how to design and	Where: 1;
1	Comment: Printer created by TPAutoConnect
Pages	Print range Copies
All	
Scale	
Shrink to fit Universal Windov's Plate and Design	Pages from: 1 to: 1
Margins	
Normal	Print Frames
Headers and footers	
Off V	As laid out on the screen
More settings	The selected frame
	Each frame separately OK Cancel
Print Cancel	

	Print				Pr	rint	
Presets: De	S-BW2 refault Settings copies & Pages	Copies: 1		Printer: Presets:	OLSSON-228 Standard Copies & Pages	Copies:	 ↓ ↓
<text><text><text><text><text><text><text><text><text></text></text></text></text></text></text></text></text></text>	ram onice stable ram onice stable (of logicity general stable) (of logicity general stable) (of logicity general stable) (of logicity general stable) (of logicity)(of logicity) (of logicity)(of logicity)(of logicity) (of logicity)(of logicity) (of logicity)(of l	 Collated Pages: All Current Page Selection From: 1 to: 1 Page Range Enter page numbers and/ or page ranges separated by commas (e.g. 2, 5-8) 	SI	cent t	ence ia re Themas & Horne menogeney by interaction		
? PDF v		Cancel Print	?	PDF Prev	view		Cancel Print

😣 🖨 🗊 Print	
General Page Setup Page Hand	lling Job Color Advanced
Printer	Location Status
Brother_MFC-7820N CS-BW1	Host OS Host OS
CS-BW2 CS-COLOR1 CS-COLOR2 HP-Color-LaserJet-8500 Print_to_PDF_(Mac_Desktop)	Host OS Host OS Host OS ubuntu Host OS
Range All Pages Current Page Pages:	Copies: 1 − + Copies: 1 − + Collate 12 Reverse
	Preview Cancel Print

5	•	PH	
3		4	
1R		2	-
B	DNT	REAR	a la
	DO DA OPEN		SO OR OPEN
	(1000 (1000) (1000) (1000)		004 0056
	(JSH)		OP

