

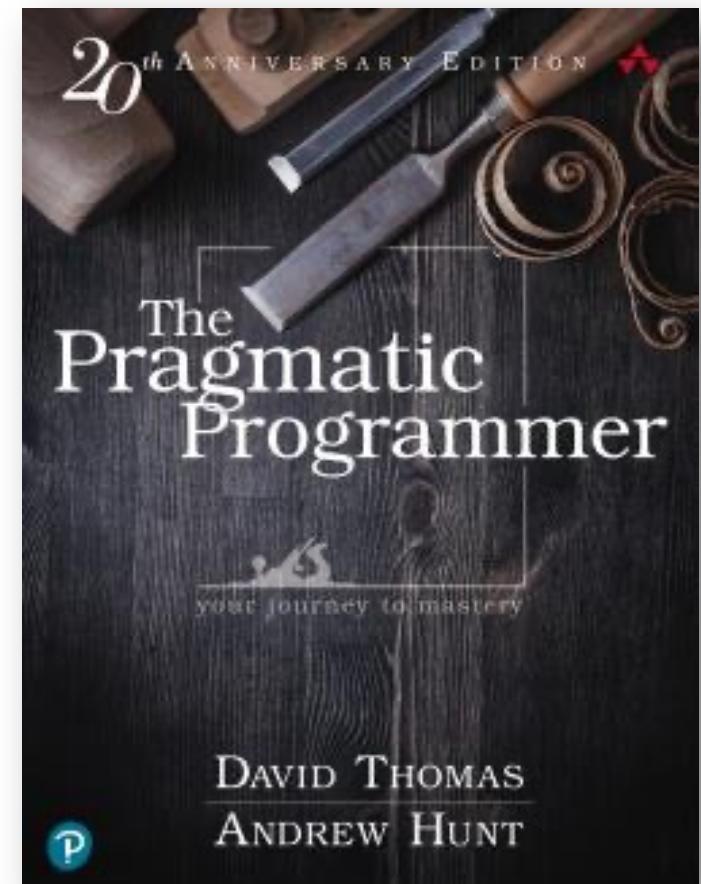
# Misc.

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## 1) Reading for this week:

- 1) *Pragmatic Programmer*, pp. 191-213 (While You Are Coding, Part I)
- 2) Catch up on *Head First Design Patterns*, Ch 5 (Singleton).

## 2) Your first online quiz(zes) are posted and due Oct 24 (Tuesday next week)



# Sprint 1 due

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Set a **code freeze**. When is the last time to submit a Pull Request?

- Allow yourselves plenty of time to resolve merging issues and errors.

**By Wednesday night @11:59pm**, your code must be merged into the *main* branch via Pull Request.

- Direct commits to the main branch are not permitted.
- Merging your branch into main without a PR are not permitted.
- Your code must not “break the build”. Not contributing code will lose points, but knowingly breaking the build will earn you a full 0 for the Sprint.

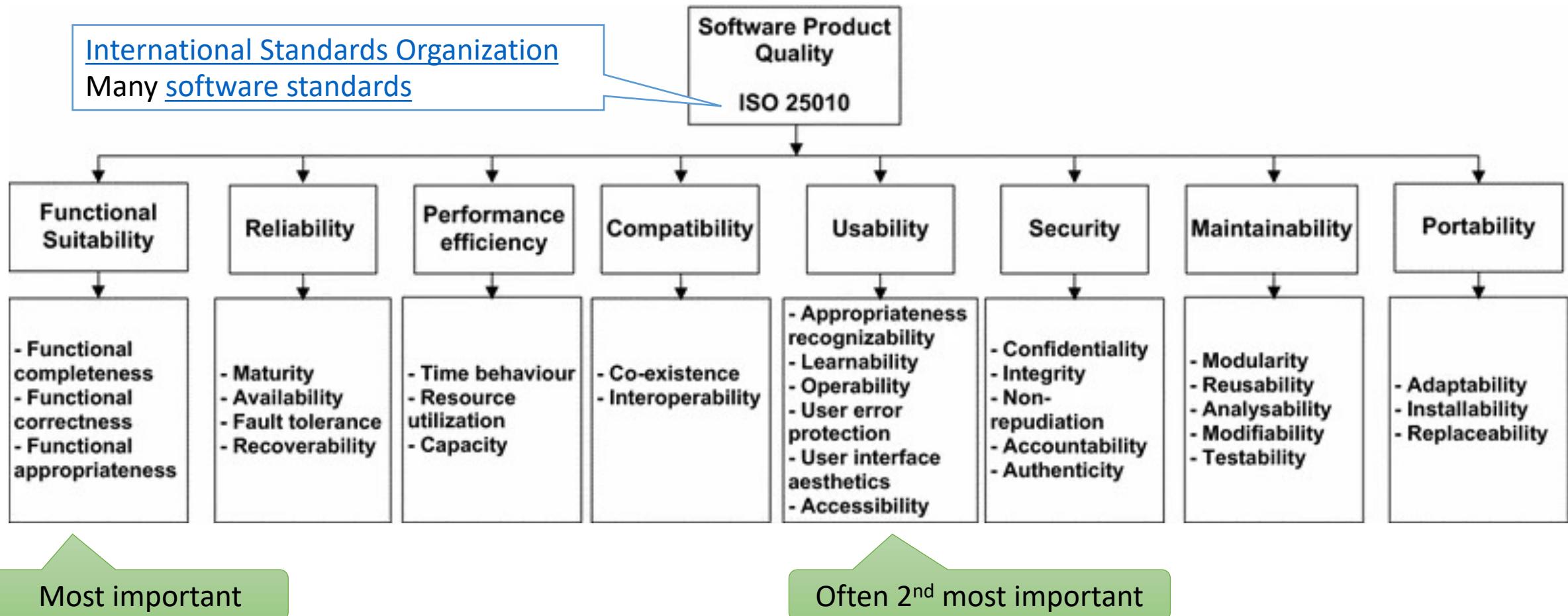
**In class Thursday**, one person will run your project from the *main* branch to **demonstrate** your progress.

- You **do not** need to have a User Story completed.
- You must have a functionality contribution in the project demonstration.

# Usability

Dr. Lucas Layman  
CSC 450 – Software Engineering

# Software Product Quality



# Usability Definitions

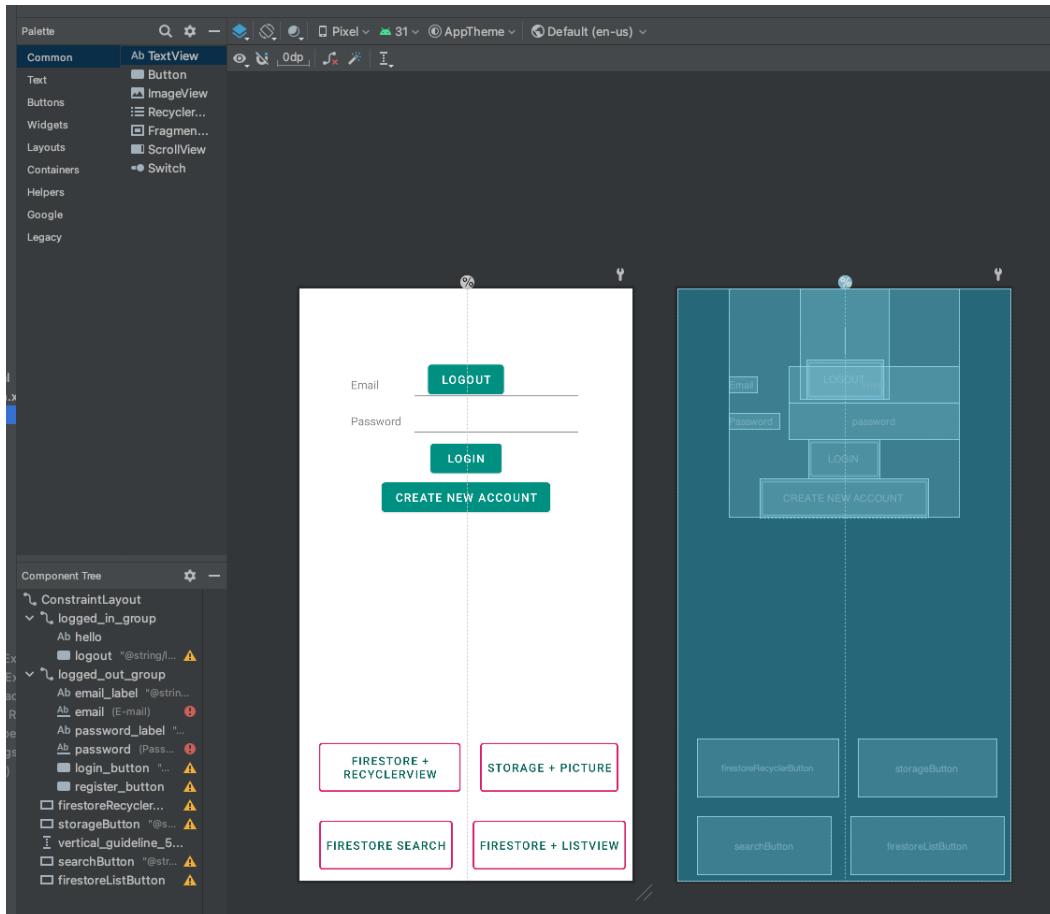
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*Usability* – a multi-dimensional quality attribute *of the UI* that includes learnability, efficiency, memorability, low error rate, and satisfaction

*User interface (UI)* – the set of mechanisms through which the user interacts with a system

*User experience (UX)* – all aspects of the end-user's interaction with the company, its services, and its products.

# Types of UIs



```
Python 3.9.7 (default, Oct 12 2021, 22:38:23)  
[Clang 13.0.0 (clang-1300.0.29.3)] on darwin  
Type "help", "copyright", "credits" or "license" for more information.  
>>> 
```



# Usability - definition

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Usability – a multi-dimensional quality attribute of the User Interface that includes:

- Learnability
- Efficiency
- Memorability
- Low error rate
- Satisfaction

But first, is  
it correct?

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### Find Hotels by Map

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# Learnable?

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Usability includes:

- Learnability
- Efficiency
- Memorability
- Low error rate
- Satisfaction

## Help: Change Password

Because you have logged in successfully, you can change your password here by entering your password in the **Current Password** field, entering the new password in the **New Password** field, and confirming the new password by entering it again in the **Confirm New Password** field. Then click **Submit**.

Remember that the new password must fulfill these requirements:

1. The password must be **exactly 8** characters long.
2. It must contain **at least** one letter, one number, and one special character.
3. The **only** special characters allowed are: @ # \$
4. A special character must **not** be located in the first or last position.
5. Two of the same characters sitting next to each other are considered to be a "set." No "sets" are allowed.
6. Avoid using names, such as your name, user ID, or the name of your company or employer.
7. Other words that cannot be used are Texas, child, and the months of the year.
8. A new password cannot be too similar to the previous password.
  - a. Example: previous password - abc#1234, acceptable new password - acb\$1243
  - b. Characters in the first, second, and third positions cannot be identical. (abc\*\*\*\*\*)
  - c. Characters in the second, third, and fourth positions cannot be identical. (\*bc#\*\*\*\*)
  - d. Characters in the sixth, seventh, and eighth positions cannot be identical. (\*\*\*\*\*234)
9. A password can be changed voluntarily (no Help Desk assistance needed) once in a 15-day period. If needed, the Help Desk can reset the password at any time.
10. The previous 8 passwords cannot be reused.

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# Efficient?

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Usability includes:

- Learnability
- **Efficiency**
- Memorability
- Low error rate
- Satisfaction



# Memorable?

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Usability includes:

- Learnability
- Efficiency
- **Memorability**
- Low error rate
- Satisfaction

List<String> list = ???

# Low error rate?

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Usability includes:

- Learnability
- Efficiency
- Memorability
- **Low error rate**
- Satisfaction



# Satisfying?

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Usability includes:

- Learnability
- Efficiency
- Memorability
- Low error rate
- **Satisfaction**



# Theoretical Underpinnings

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Perceived “affordance” – the UI design implies to the user what actions are possible. The edges, contours, silhouettes, proximity, shape, color, and context of UI elements contribute to affordance.



Cognitive load – the amount of effort used in working memory to accomplish a task. The tasks' complexity, mechanics, and *presentation* contribute to load.

Satisfaction – fulfilment of needs and or pleasure. Enjoyment, achievement, beneficence, and aesthetic pleasure contribute to satisfaction.



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Your gift of £102.00 will soon be helping us provide vital protection like vaccinations, clean water and education so that more children can grow up safe and healthy.

# Achieving usability

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Each of these are complex and interconnected.

Where do I begin?



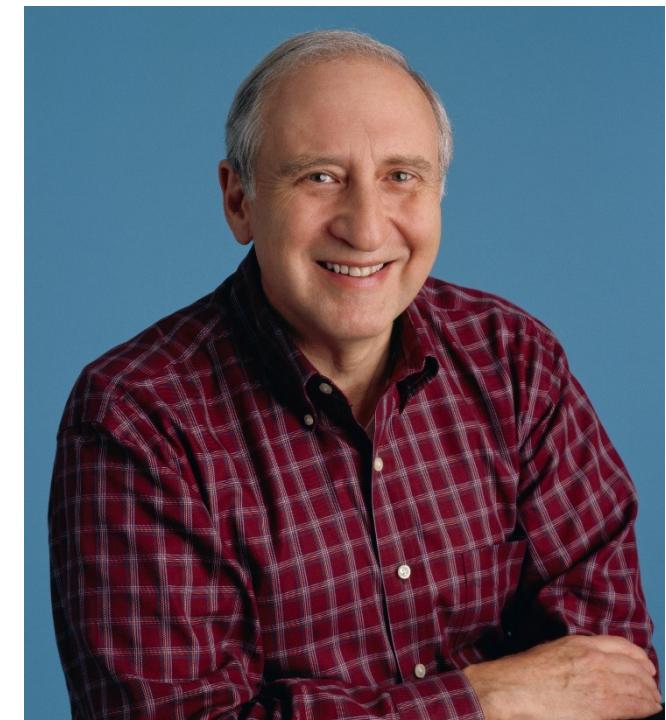
# 8 Golden Rules of Interface Design

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Ben Schneiderman (1987), *Designing the User Interface*

<https://www.cs.umd.edu/users/ben/goldenrules.html>

Shneiderman, B., Plaisant, C., Cohen, M., Jacobs, S., and Elmquist, N., *Designing the User Interface: Strategies for Effective Human-Computer Interaction: Sixth Edition*, Pearson (May 2016)



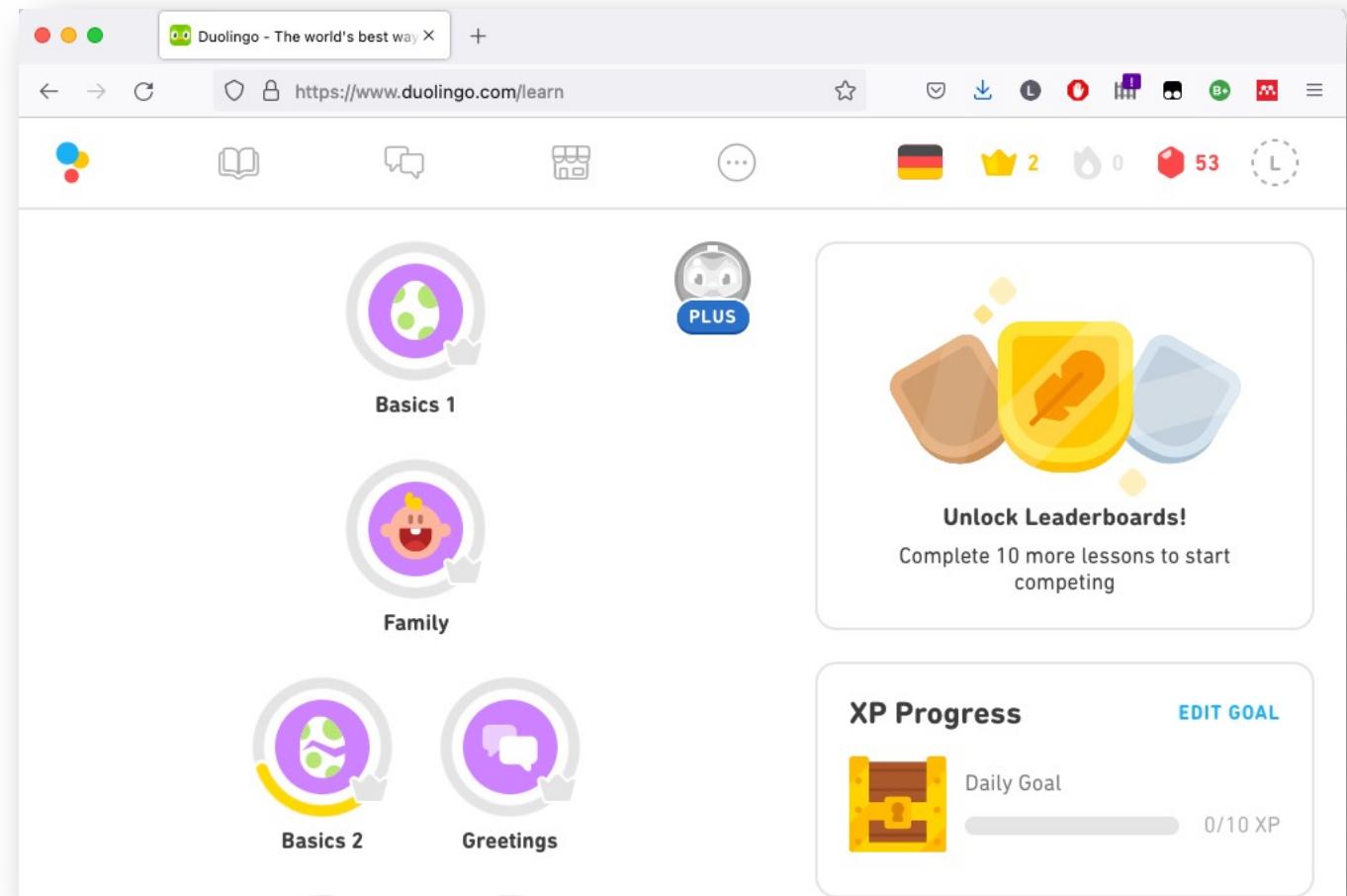
# 1) Strive for consistency

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Consistent sequences of action, terminology, color, layout, emphasis, font, etc.

Exceptions, such as required confirmation of the delete, should be comprehensible and limited in number.

# 1) Strive for consistency



## 2) Seek universal usability

Recognize the needs of diverse users and design for plasticity, facilitating transformation of content.

Novice to expert differences, age ranges, disabilities, international variations, and technological diversity.

<https://microsoftedgetips.microsoft.com/en-us/?source=updatefirstrunrs4>

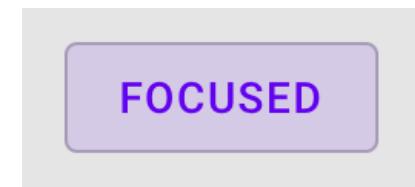
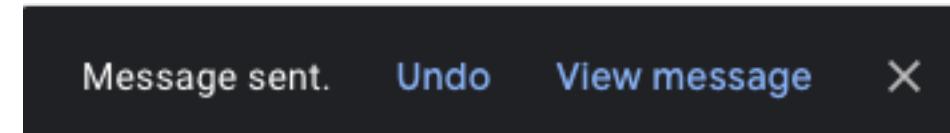


# 3) Offer informative feedback

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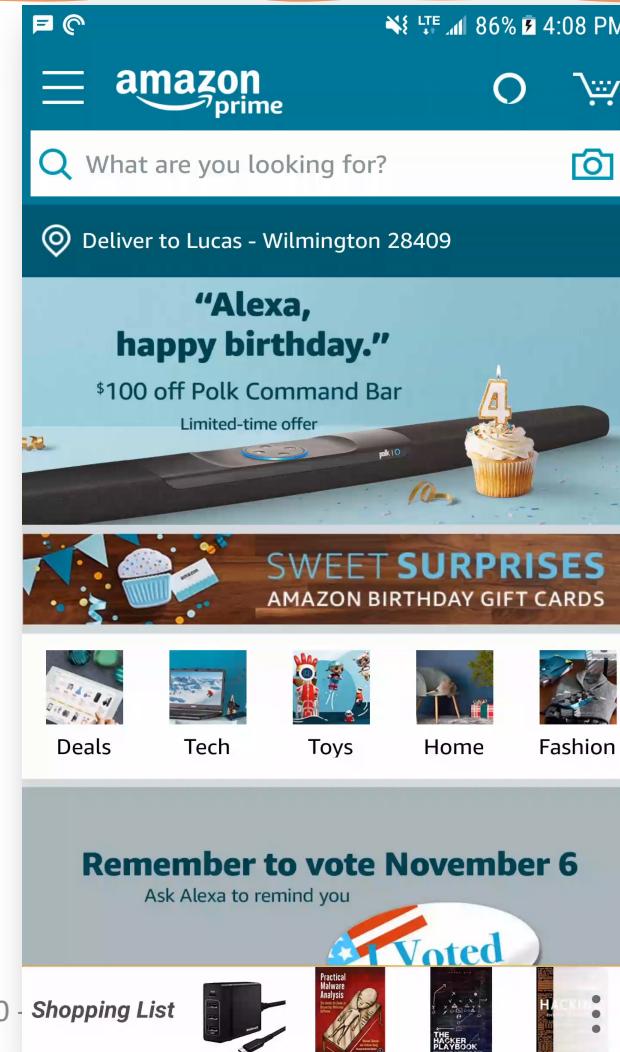
For every user action, there should be an interface feedback.

Visual presentation of the objects of interest provides a convenient environment for showing changes explicitly.



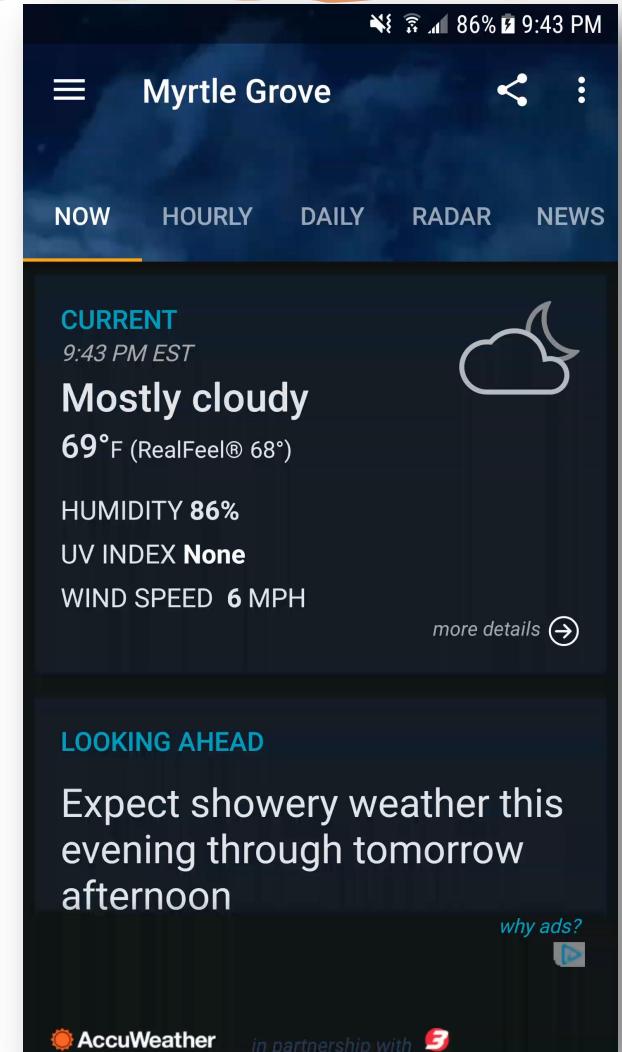
# 4) Design dialogs to yield closure

Sequences of actions should be organized into groups with a beginning, middle, and end.



CSC 450

Shopping List



AccuWeather

in partnership with 

# 5) Prevent errors

Design the interface so that users cannot make serious errors.

If users make an error, the interface should offer simple, constructive, and specific instructions for recovery.

### Sign Up

Username:

Username must be between 3 and 25 characters.

Email:

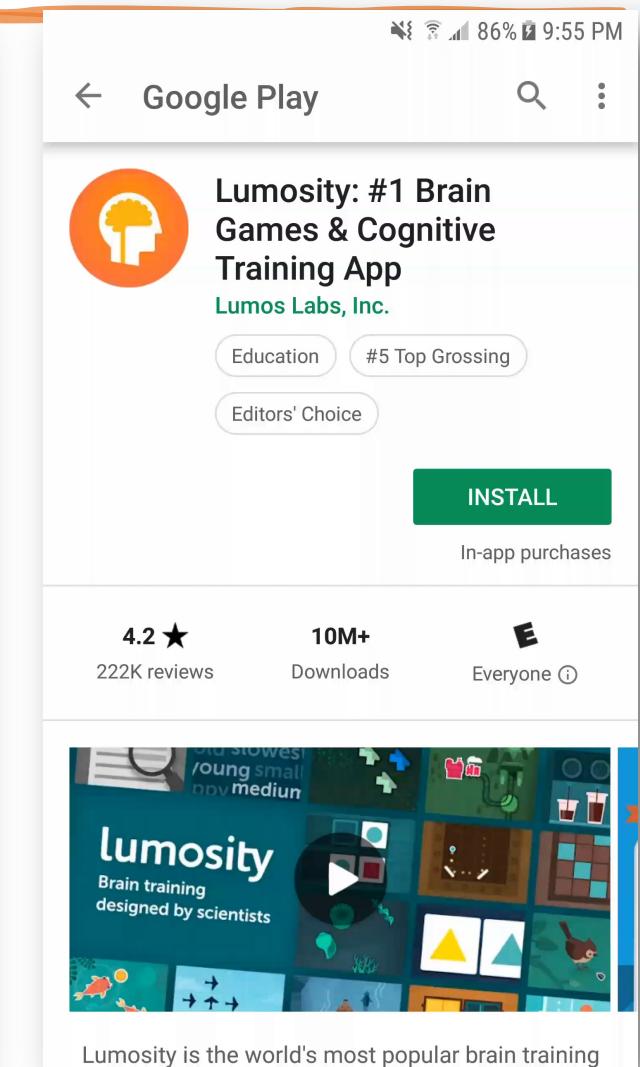
Password:

Password must has at least 8 characters that include at least 1 lowercase character, 1 uppercase characters, 1 number, and 1 special character in (!@#\$%^&\*)

Confirm Password:

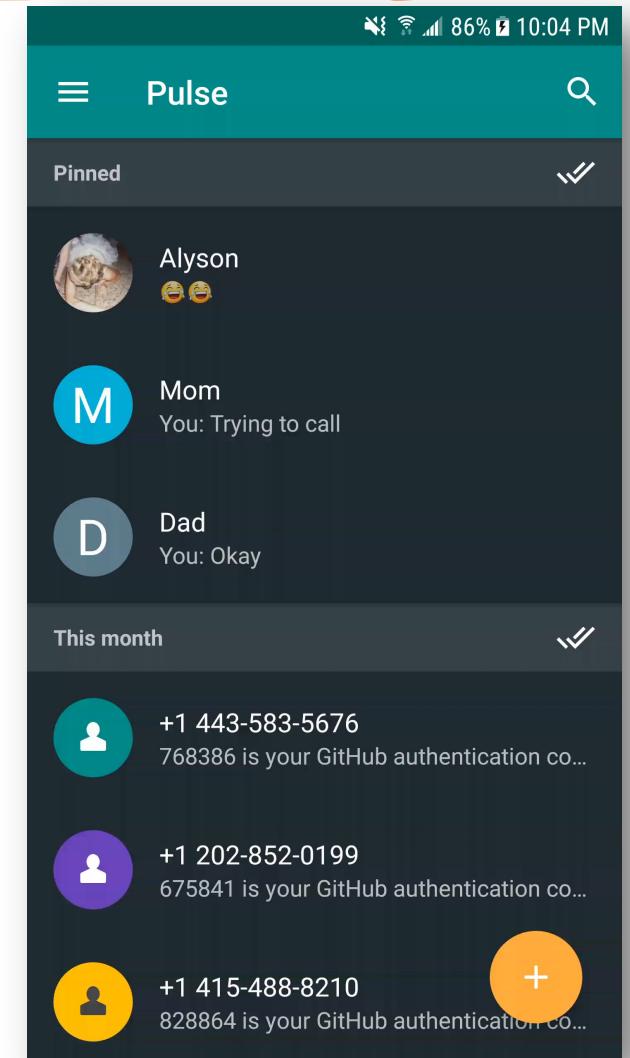
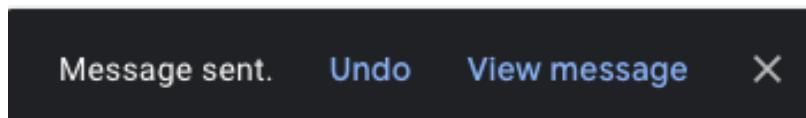
Please enter the password again

**SIGN UP**



# 6) Permit easy reversal of actions

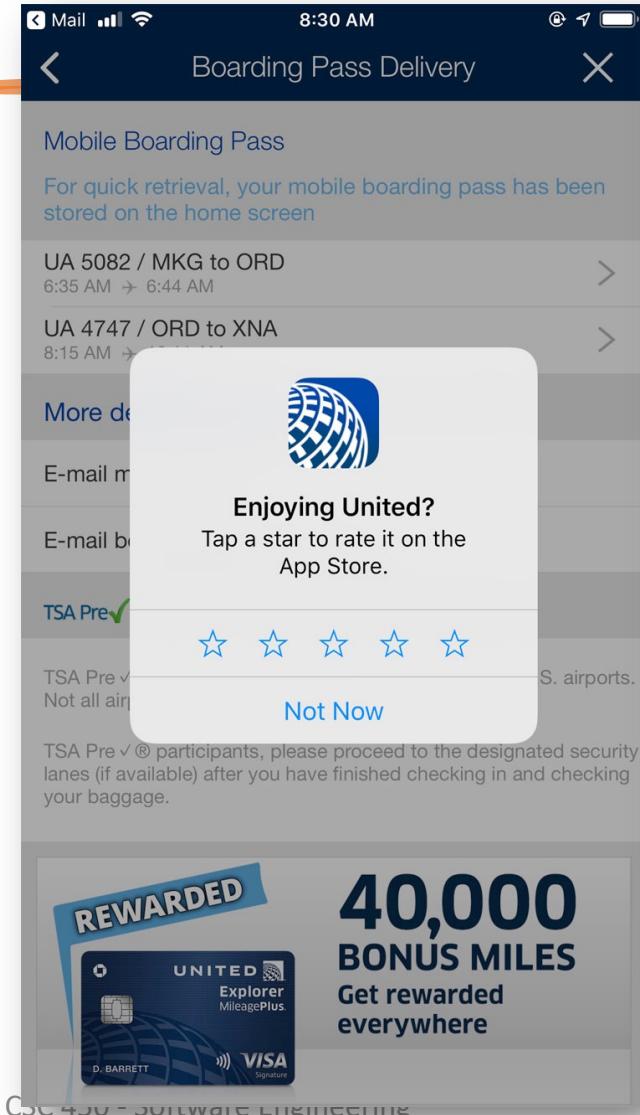
As much as possible, actions should be reversible.



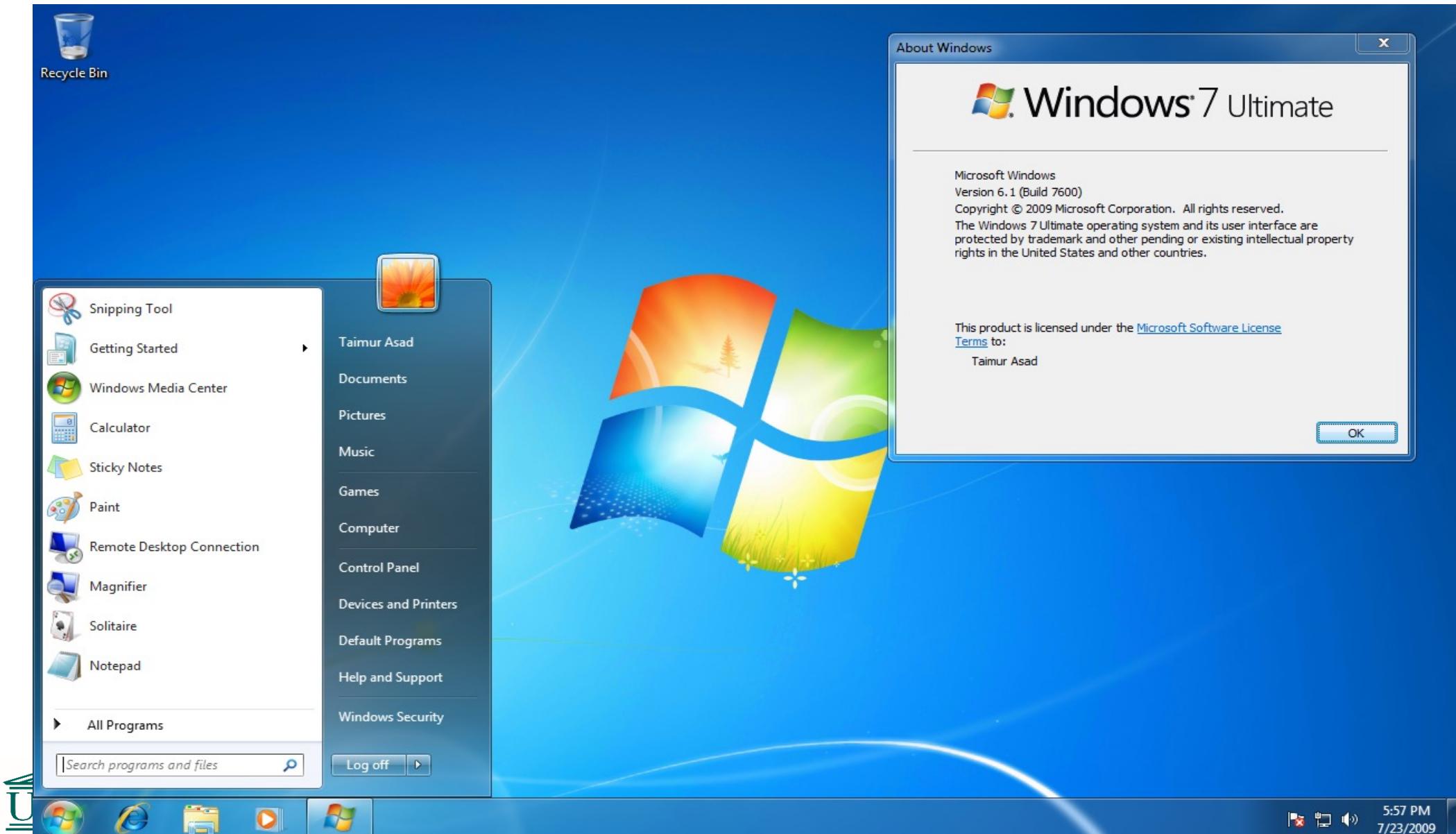
# 7) Keep users in control

Users want to feel in charge of the interface, and that the interface responds to their actions.

They don't want surprises or changes in familiar behavior.



# Windows 7 start screen



# Windows 8 start screen



## 8) Reduce short-term memory load

Avoid interfaces in which users must remember information from one display and then use that information on another display.

$7 \pm 2$  for about 20 seconds

### Compare with similar items



This item ATI Radeon HD 3450 256MB DDR2 PCI Express (PCI-E) DMS-59 Low Profile Video Card w/TV-Out & DMS-59 Cable

Add to Cart

VisionTek Radeon 5450 2GB DDR3 (DVI-I, HDMI, VGA) Graphics Card - 900861,Black/Red

Add to Cart

Diamond Multimedia AMD Radeon HD 5450 PCI Express GDDR3 1GB (DVI, HDMI, VGA) Low Profile Enhanced Heatsink Video Graphics Card (5450PE31G)

Add to Cart



MSI Geforce 210 1024 MB DDR3 PCI-Express 2.0 Graphics Card MD1G/D3

Add to Cart

Customer Rating	★★★★☆ (58)	Customer Rating	★★★★☆ (1693)	Customer Rating	★★★★☆ (392)	Customer Rating	★★★★☆ (588)
Price	\$39 <sup>75</sup>	Price	\$64 <sup>99</sup>	Price	\$54 <sup>49</sup>	Price	\$34 <sup>99</sup>
Sold By	Epic IT Service	Sold By	VisionTek Products	Sold By	BestData	Sold By	Amazon.com
Graphics Card Interface	PCI-E	Graphics Card Interface	PCI-E	Graphics Card Interface	PCI-E	Graphics Card Interface	PCI-E
Graphics Coprocessor	AMD Radeon	Graphics Coprocessor	AMD Radeon	Graphics Coprocessor	AMD Radeon	Graphics Coprocessor	Nvidia GeForce
Graphics Ram Size	256 MB	Graphics Ram Size	2 GB	Graphics Ram Size	1 GB	Graphics Ram Size	1 GB
Graphics Ram	DDR2 SDRAM	Graphics Ram	DDR3 SDRAM	Graphics Ram	DDR3 SDRAM	Graphics Ram	DDR3 SDRAM
Item Dimensions	5 x 8 x 3 inches	Item Dimensions	5.9 x 2.4 x 0.6 inches	Item Dimensions	6 x 1.2 x 4 inches	Item Dimensions	5.7 x 3.3 x 0.7 inches

# 8 Golden Rules of Interface Design

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- 1) Strive for consistency
- 2) Seek universal usability
- 3) Offer informative feedback
- 4) Design dialogs to yield closure
- 5) Prevent errors
- 6) Permit easy reversal of actions
- 7) Keep users in control
- 8) Reduce short-term memory load



# Usability in CSC 450 projects

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Usability is a required non-functional requirement every project.

As you implement user stories, ask:

- 1) Which of the 8 Golden Rules applies here?
- 2) Have I captured this rule in an acceptance criteria?
- 3) Should I create a sub-task (Issue) for my User Story to address usability?

# “Daily” Scrum Meeting

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# “Daily” Scrum meeting

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Scrum Masters (PMs) conduct the meeting + take notes on form.

Go around and answer three questions succinctly:

- 1) What did you do since the last team meeting?
- 2) What obstacles are you encountering?
- 3) What do you plan to accomplish by the next team meeting?

