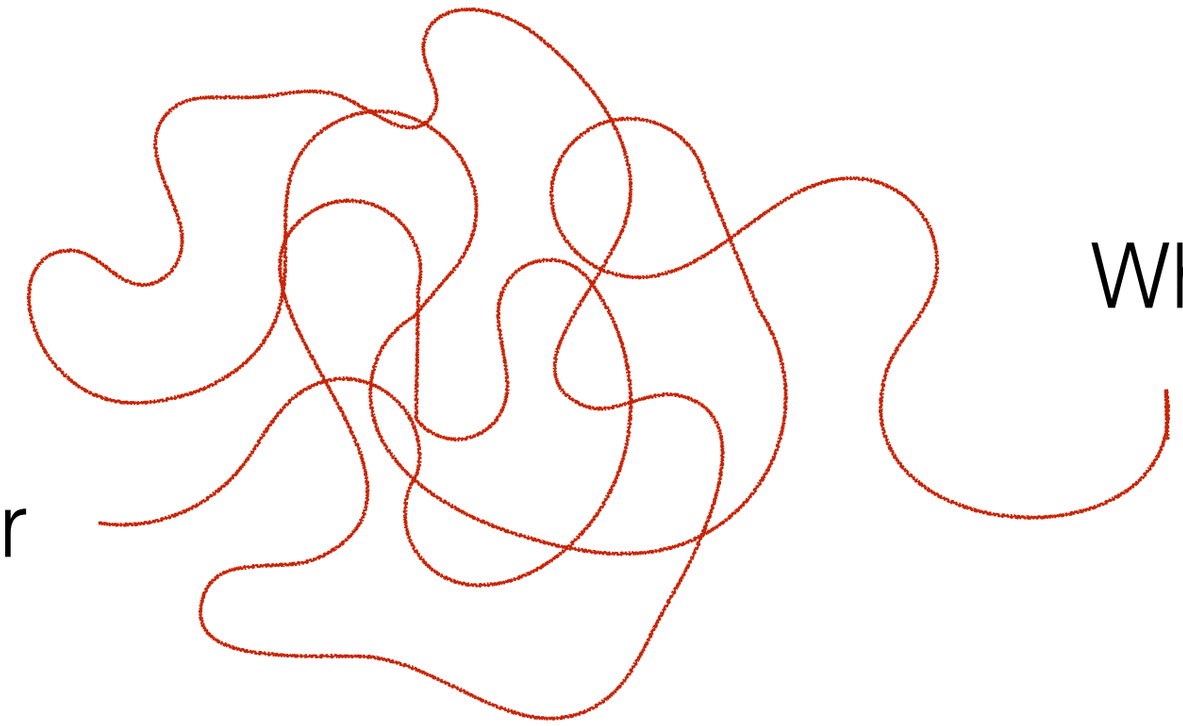
Lecture 5

Usability

10 February 2017

User



What they want

Your Software

Four Rules:

- don’t make me **think**
- don't make me **wait**
- don't make me **work**
- don’t make me **cry**

Don’t Make Me Think

- How to do X?
- What does this button do?
- etc.

Don’t make me think

- Give clear, simple, useful, readable message/info/update/ feedback to users
- Guide users on what to do
- Be consistent with what users expect
- Don’t hide things that user may need
- Provide help, inline
- Place items logically (grouped, hierarchical, etc)
- Primary purpose of each view/page should be clear

To hibernate your PC:

1. Open power options:

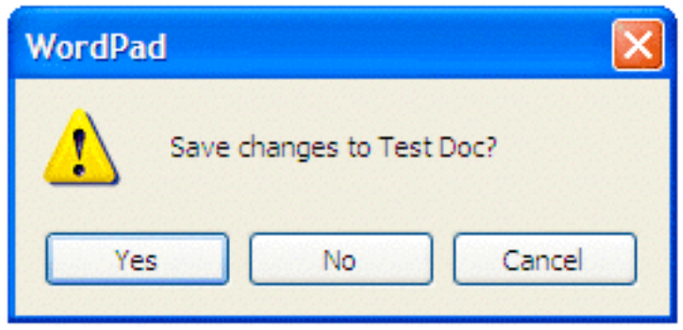
   - For Windows 10, in the search box on the taskbar, type **power options**, and then select **Power Options**.
   - For Windows 8.1 / Windows RT 8.1, swipe in from the edge of the screen, tap **Search** (or if you're using a mouse, point to the upper-right corner of the screen, move the mouse pointer down, and then click **Search**), enter **Power options** in the search box, and then tap or click **Power options**.
   - For Windows 7, click the Start button, click **Control Panel**, click **System and Security**, and then click **Power Options**.

2. Select **Choose what the power button does**, and then select **Change settings that are currently unavailable**. Under **Shutdown settings**, select the **Hibernate** checkbox (if it's available), and then select **Save changes**.

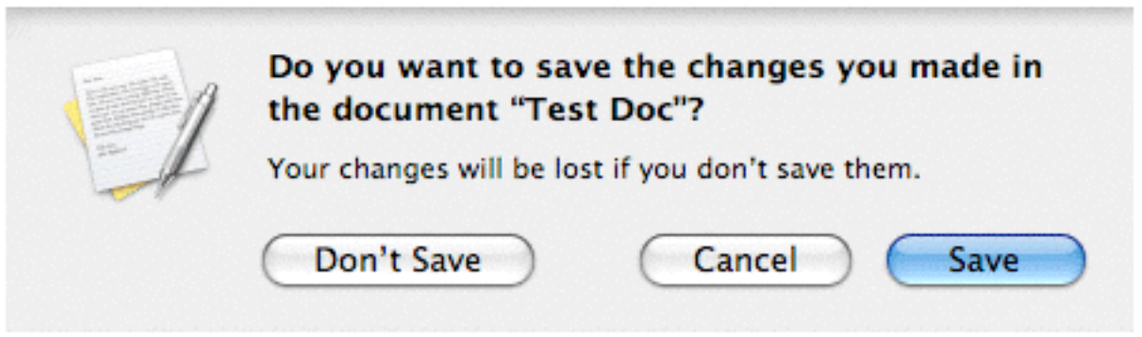
Now you'll be able to hibernate your PC in a few different ways:

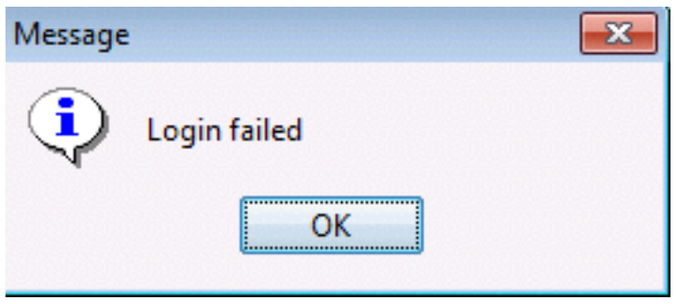
- For Windows 10, select the Start button, and then select **Power** > **Hibernate**. You can also press the Windows logo key + X on your keyboard, and then select **Shut down or sign out** > **Hibernate**.
- For Windows 8.1 / Windows RT 8.1, move your mouse to the lower left-hand corner of the screen and right-click the Start button or press Windows logo key + X on your keyboard. Tap or click **Shut down or sign out** and choose **Hibernate**. Or, swipe in from the right edge of the screen and then tap **Settings**. (If you're using a mouse, point to the lower-right corner of the screen, move the mouse pointer up, and then click **Settings**.) Tap or click **Power** > **Hibernate**.
- For Windows 7, click the Start button, click the arrow next to the **Shut down** button, and then click **Hibernate**.

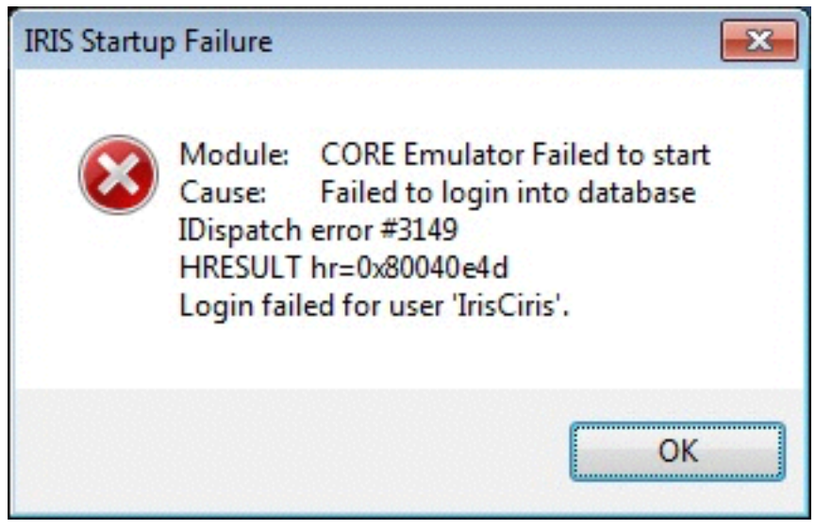
Windows XP WordPad save dialog:



OS X TextEdit save dialog:




Message
Login failed
OK


IRIS Startup Failure
Module: CORE Emulator Failed to start
Cause: Failed to login into database
IDispatch error #3149
HRESULT hr=0x80040e4d
Login failed for user 'IrisCiris'.
OK

Problemo, the passcode you provided doesn't match. Wanna try that again?

AlterEgo Passcode Required

Passcode

Log In Log in with SMS

Four Rules:

- don’t make me **think**
- don't make me **wait**
- don't make me **work**
- don’t make me **cry**

Don’t make me wait

- Provide visual feedback ASAP
- If not possible, tell users to wait
- Let user enjoy waiting

Expected Delay	Indication
1/2 to 2 seconds	Use animated mouse cursor or other "busy" indicator 
> 2 seconds	Tell them potential length of wait
> 5 seconds	Use an animated progress indicator  Process must end by the time indicator is full!
> 10 seconds	Keep users a) informed & b) entertained
> 15 seconds	Same as >10 plus add at end a noticeable sound & strong visual indication so users know to return

Don’t make me work

- Provide shortcut for experts
- Set reasonable defaults
- Make expected actions easy to reach
- Allow direct manipulation

the Sky terms & conditions and
privacy & cookies notice

Sky may contact you about products and services you may like unless you click to opt out

Cancel

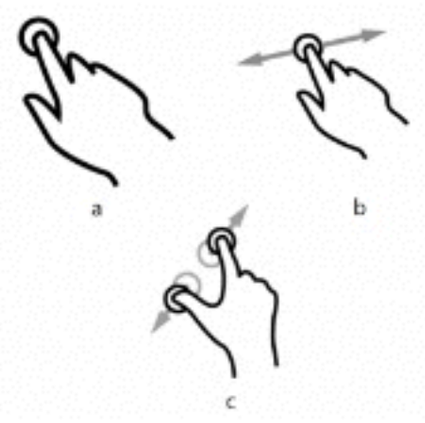
Create Sky iD

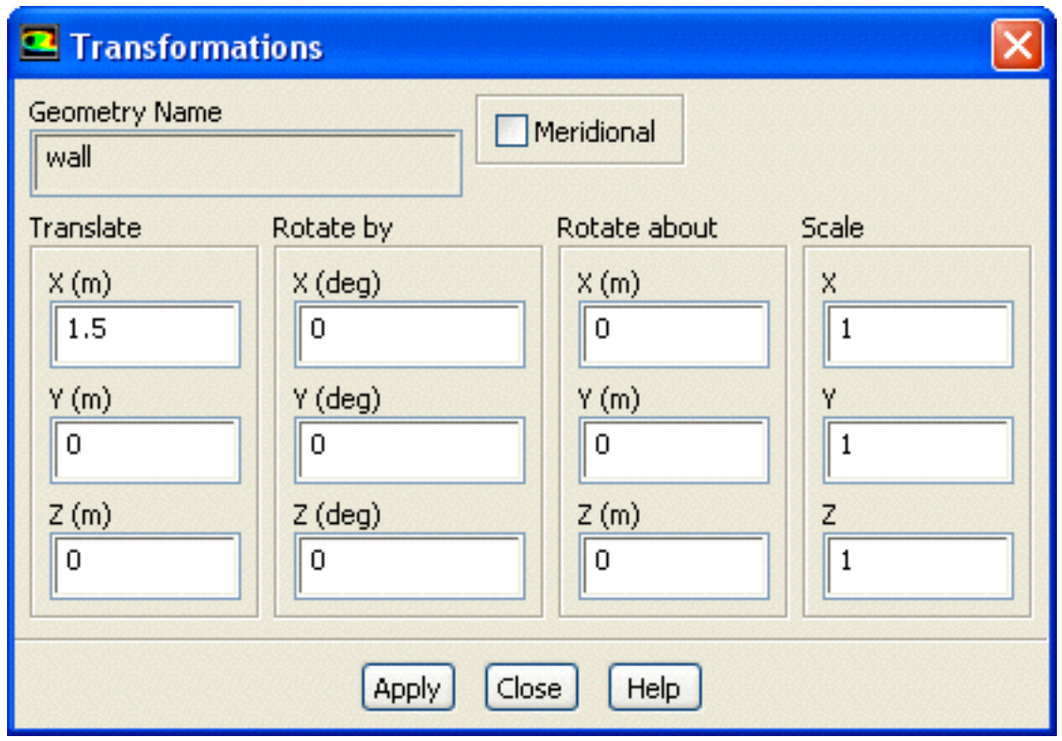
Direct Manipulation

Try to let your users **direct manipulate** objects in your app

Users can experience direct manipulation when they:

- **Rotate** or otherwise **move** the device to affect onscreen objects
- Use **gestures** to manipulate onscreen objects
- Can see that their actions have immediate, **visible results**




Transformations
Geometry Name
wall
Meridional
Translate
X (m)
1.5
Y (m)
0
Z (m)
0
Rotate by
X (deg)
0
Y (deg)
0
Z (deg)
0
Rotate about
X (m)
0
Y (m)
0
Z (m)
0
Scale
X
1
Y
1
Z
1
Apply
Close
Help


Messages
Calendar
Monday
10
9:41 AM
100%
Weather
Notes
Clock
Photos
Camera
Newsstand
Reminders
Maps
Videos
Compass
iTunes Store
Stocks
Settings
App Store
Game Center
Passbook
Phone
Mail
Safari
Music


Tue
9

Fitts' Law

$$T = a + b \log_2(D/W)$$

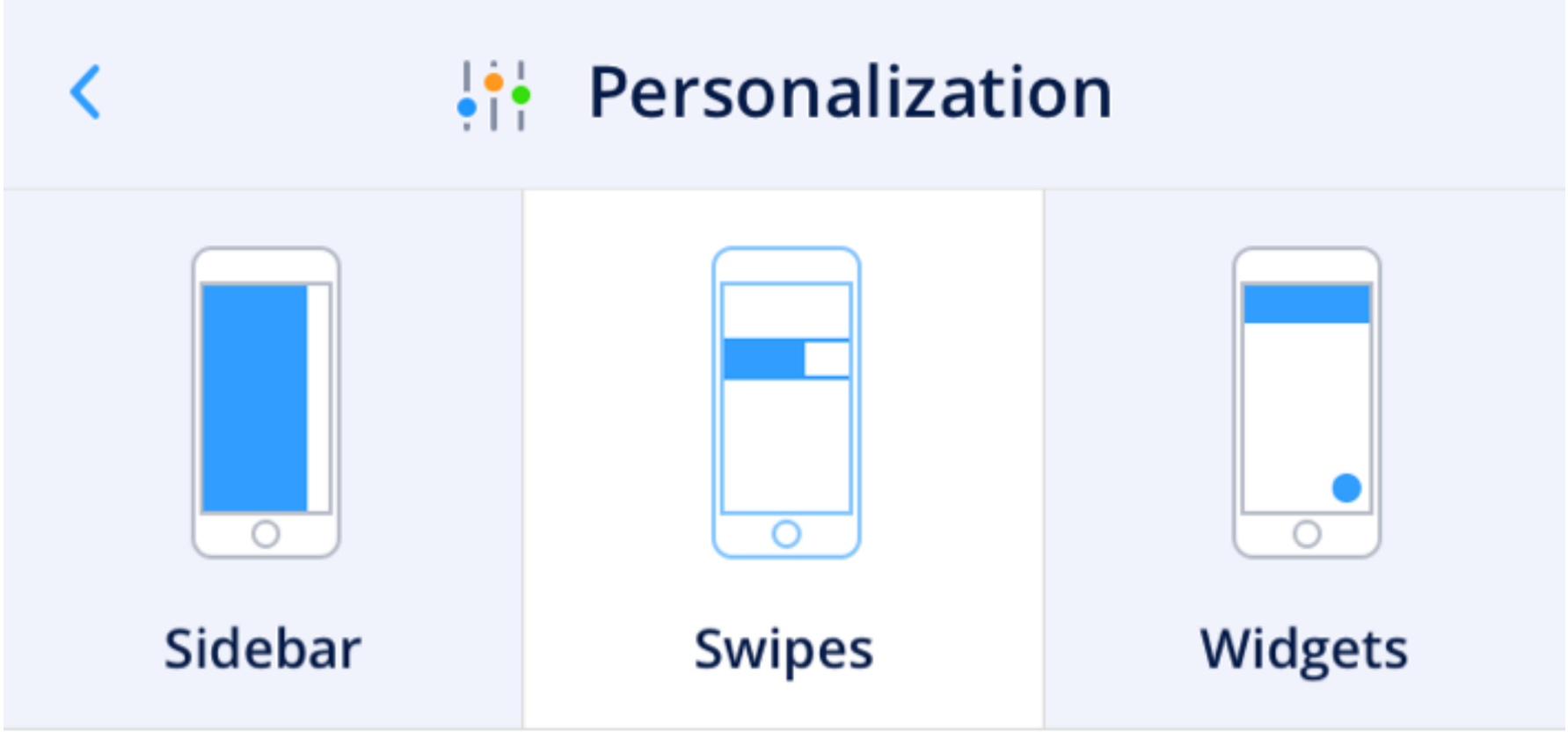
Time

Distance

Size

Don’t make me cry

- Keep dangerous actions away
- Protect users work, always
- Always provide a way out



Left Short

To Google Drive

Left Long

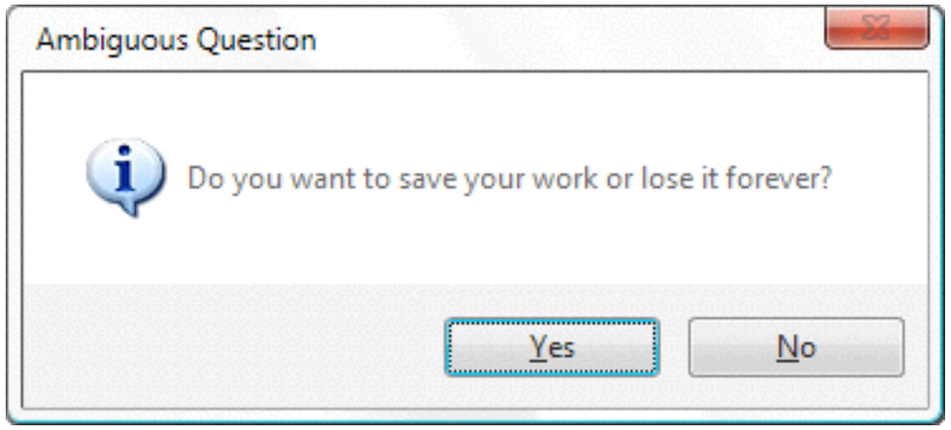
Delete

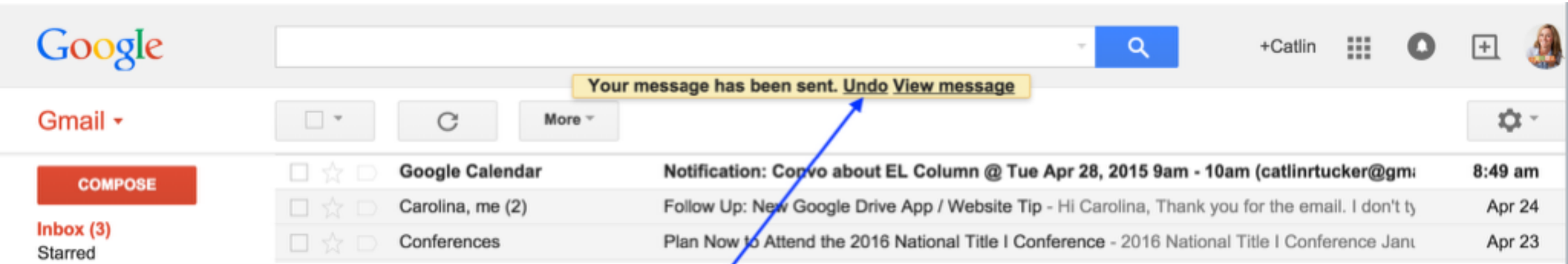
Right Short

Pin

Right Long

Snooze


Ambiguous Question
Do you want to save your work or lose it forever?
Yes
No



You have 10 seconds to click “Undo”

Usability Evaluation

1. Heuristic Evaluation
2. System Usability Scale
3. Think Aloud Protocol
4. Quantitative Analysis

Heuristic Evaluation

- Heuristics: rule of thumb for UI design
- 3-5 evaluators go through a UI *thoroughly* and *independently*, cross checked with the heuristics
- Combine results

Neilsen's Heuristics

Visibility of System Status

The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

Match between systems and the real world

The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

User Control and Freedom

Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.

Consistency and standards

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

Error prevention

Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.

Recognition rather than recall

Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

Flexibility and efficiency of use

Accelerators -- unseen by the novice user -- may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

Aesthetic and minimalist design

Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.

Help users recognize, diagnose, and recover from errors

Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.

Help and documentation

Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

Your Tasks

- Before end of semester, produce a heuristic evaluation report (see sample) with individual contributions tagged.
- Present how you improve your UI based on the evaluation

System Usability Score (SUS)

SUS

- Get at least 10 users to use your software
- Give them specific tasks
- After completion, fill in a survey with 10 questions

1. I think that I would like to use this system frequently.
2. I found the system unnecessarily complex.
3. I thought the system was easy to use.
4. I think that I would need the support of a technical person to be able to use this system.
5. I found the various functions in this system were well integrated.
6. I thought there was too much inconsistency in this system.
7. I would imagine that most people would learn to use this system very quickly.
8. I found the system very cumbersome to use.
9. I felt very confident using the system.
10. I needed to learn a lot of things before I could get going with this system.

Calculating the Score

- Each question is scored 1 to 5 (1 - strongly disagree; 5 - strongly agree)
- Map the score for a user to 0 (worst) to 100 (best)
- Average is **68**; Aim for **80** or above

Your Tasks

- Before end of semester, run SUS evaluation and submit your report and score.

Think Aloud Protocol

Think Aloud Protocol

- Give a user a specific task
- Ask the user to speak whatever is in his/her mind while completing the task
- What the user see, think, feel, etc.
- Observe and analyze

Sample Video

Your Task

- Try with 1-2 users
- Report on what you find and how you improve the UI based on your findings

Quantitative Analysis

Quantitative Analysis

- Insert measurement code
- Analyze logs
- Measure the number of clicks, time taken in each step, etc.
- Needs a lot more users for the results to be statistically meaningful

Pros and Cons

- **SUS**: simple and robust, but is not diagnostic in nature (so, do it last)
- **Think Aloud Protocol**: gets into users head, identify issues from users' perspective
- **Heuristics Evaluation**: do it internally within your team without real users