

C-D 001

Introduction to Human-Computer Interaction

Class 4

IRB rules

IRBs also apply to CS-related work (involving network monitoring, personal/sensitive data, etc.)

IRB not needed or expedited for straightforward projects (surveys, interviews, public observation generally exempt)

Ask if in doubt!

Be careful about collecting identifiable information

Legal Requirements - GDPR/CCPA

Develop a protocol

Always obtain informed consent

Be consistent - follow a script

Always make clear that you're testing the interface, not the person

Always allow people to back out at any time if they feel uncomfortable

Be careful about deception, vulnerable populations, etc.

Human-centered design

Human needs, capabilities and behaviors are put first, and then a product is designed to support them

1. Understand user
2. Build prototypes
3. Test

Avoid specifying the exact problem too early to avoid narrow framing

Heuristic evaluation

Heuristic evaluation

A “discount” usability engineering method

A small set of (expert) evaluators are independently asked to find “bugs” in interfaces, usually w.r.t recognized usability principles

Evaluators are often domain experts (or are given specific tasks)

Can be done even at wireframe stage

Different evaluators tend to find different problems

Best practices

Typically 1-2 hour sessions

Evaluator goes through the interface several times and compares them with a list of heuristics (usability principles)

Evaluator can communicate with the designer

Heuristics based on general + domain-specific guidelines (e.g. derived from competitive analysis)

Can be done in 2 passes: overview and detail

Prioritize the issues, provide recommendations if possible

Sets of usability guidelines

Xerox Star

Macintosh

Sunsoft usability guidelines

iOS, Android, etc.

Nielsen-Norman group

Jakob Nielsen + Don Norman and associates

Perform some original research on usability

Keep an eye on their publications

(Sign up for their mailing list)

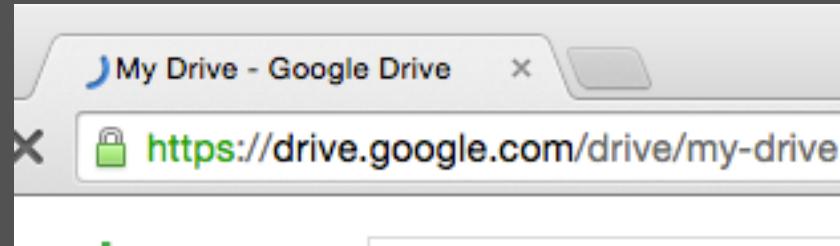
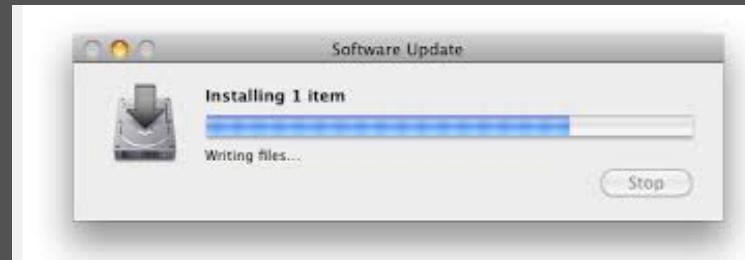
Nielsen's 10 heuristics

Nielsen's 10 Heuristics

1. Visibility of system status
2. Match between system and real world
3. User control and freedom
4. Consistency and standards
5. Preventing errors
6. Recognition over recall
7. Flexibility and efficiency
8. Aesthetic and minimalist design
9. Recover from errors
10. Help and documentation

Heuristic #1

Visibility of system status



Heuristic #1

Visibility of system status

The screenshot shows a website navigation bar with links for Preboarding, Pre-arrival, On arrival, Living in Denmark, Leaving Denmark, Ukraine, ISO Welcome Guide, Search, Login, Dansk, and Menu. Below the navigation is a breadcrumb trail: SDU > About SDU > International Staff > Living in Denmark > Insurance > Health Insurance. The main content area has a large title "Health Insurance". A text block explains the Danish public health service's comprehensive nature and free access. Another text block describes the municipalities' responsibilities for preventative health care. To the right, a red box contains a "Need help?" section with contact information for the International Staff Office and a "CONTACT" button.

SDU | Preboarding Pre-arrival On arrival Living in Denmark Leaving Denmark Ukraine ISO Welcome Guide

SDU > About SDU > International Staff > Living in Denmark > Insurance > **Health Insurance**

Health Insurance

Denmark has a comprehensive public health service, including doctors, medical specialists, hospitals, health service, home care, health visitor services and pediatric dental care, and more. Most of the health services are free of charge. The Danish health service is based on the principle of equal access to the health services for all citizens.

The municipalities are responsible for: Preventative health careprogrammes for children, home nursing, health visitor services, paediatric dental care and in-school health services. The municipalities issue health cards and administer citizens' choice of doctor and health insurance scheme group. The five regions are responsible for operating the hospitals and psychiatric treatment in the regions.

Need help?
Contact International Staff Office

CONTACT

Heuristic #1

General guideline:

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

Heuristic #2

Match between system and the real world

Use concepts and terminology that users are already familiar with

Avoid technical jargon (e.g. "PNR number")

Use an outsider from the domain to evaluate

Consider cultural aspects

Heuristic #2



Skeuomorphism

Interface object mimics real world counterpart in how they appear or how the user interacts with them

Skeuomorph is a derivative object that retains *non-functional* ornamental design cues from the original

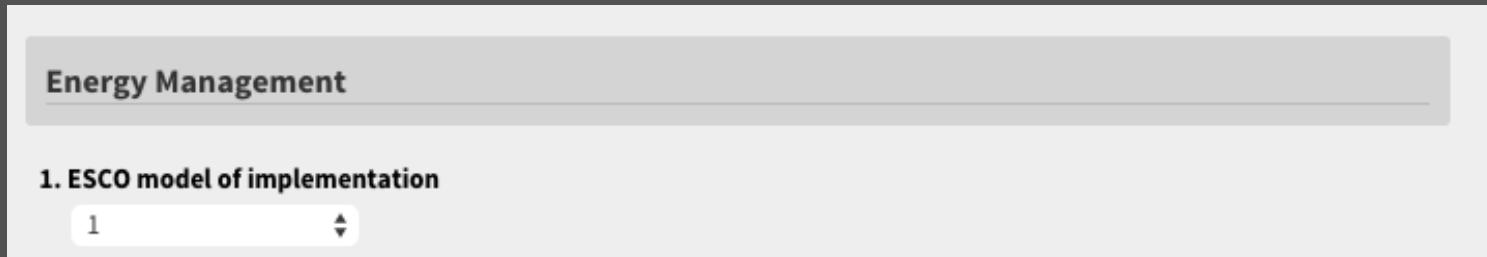
e.g. Trash can, desktop, email envelope, rotary dial,...

Contrasted with "flat" design

Heuristic #2

Frequent problem on Government websites, e.g. from the citizen's survey:

How important is:



Heuristic #3

User control and freedom

Fewer constraints the better. Don't say:

"Please don't close the browser window until the bank transaction is complete"

"Sorry, the service is not available right now. Try after some time."

"You aren't allowed to do that..."

Heuristic #3

Interface language: Remember the user is in control

“This application allows you to scan files.”

vs.

“This application enables you to scan files.”

Heuristic #4

Consistency and standards

Use same L&F e.g., navbar, footer, logo, etc.

Use consistent terminology (even small things: "OK" vs. "confirm", "folder" vs. "directory")

Predictability of actions, locations of widgets, etc. (e.g. OK vs. cancel action)

Remember there can be multiple L&Fs

Heuristic #4

Yes

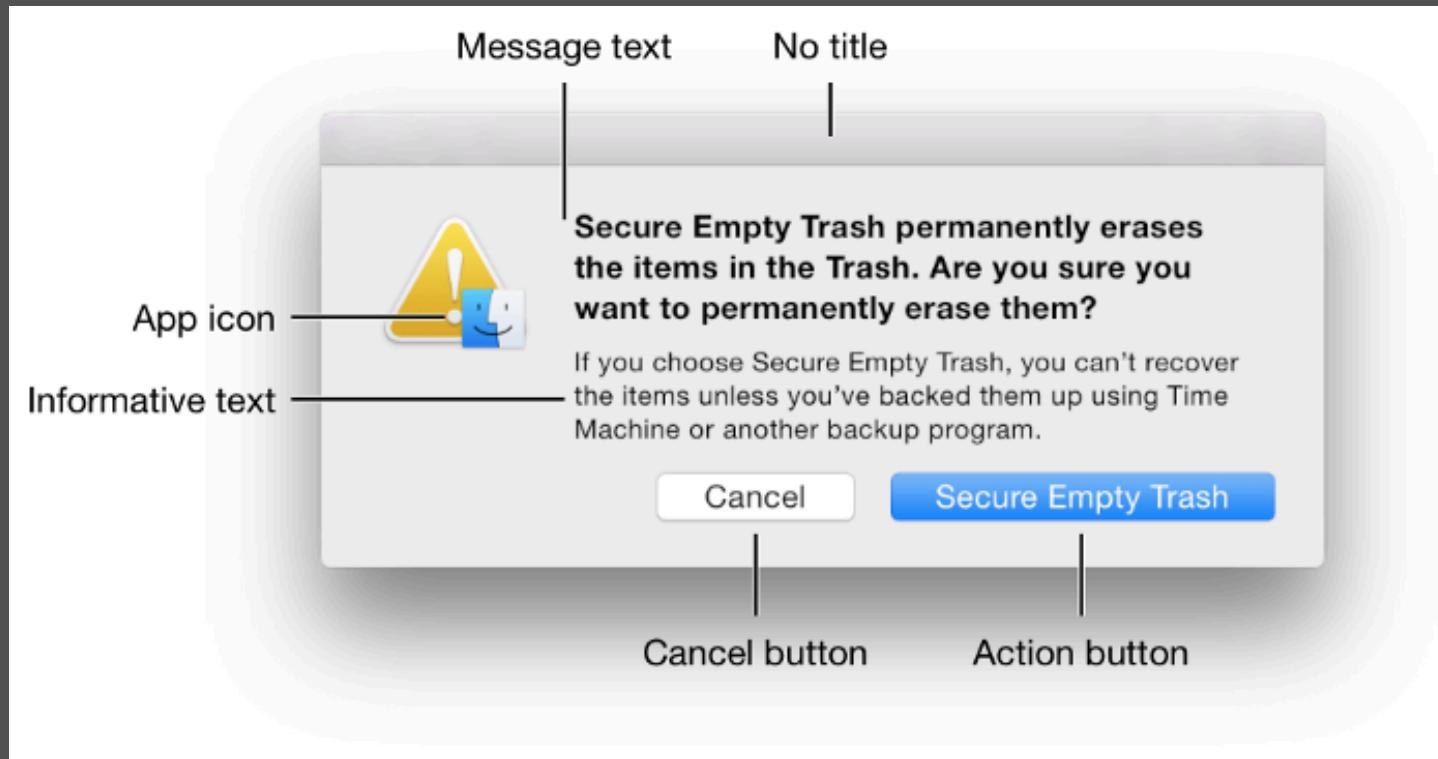
Your date of birth (dd/mm/yyyy)

mm/dd/yyyy

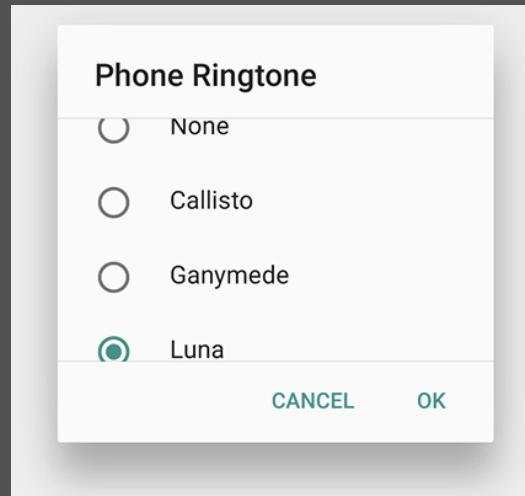
Please enter your date of birth

Your marital status

Mac OS dialog box



Android guidelines



The dismissive action of a dialog is always on the left. Dismissive actions return to the user to the previous state.

The affirmative actions are on the right. Affirmative actions continue progress toward the user goal that triggered the dialog.

Heuristic #5

Errors: wrong mental model vs. slips: errors in execution

Preventing slips:

Add constraints that make it difficult to commit them

Offer suggestions/auto-complete

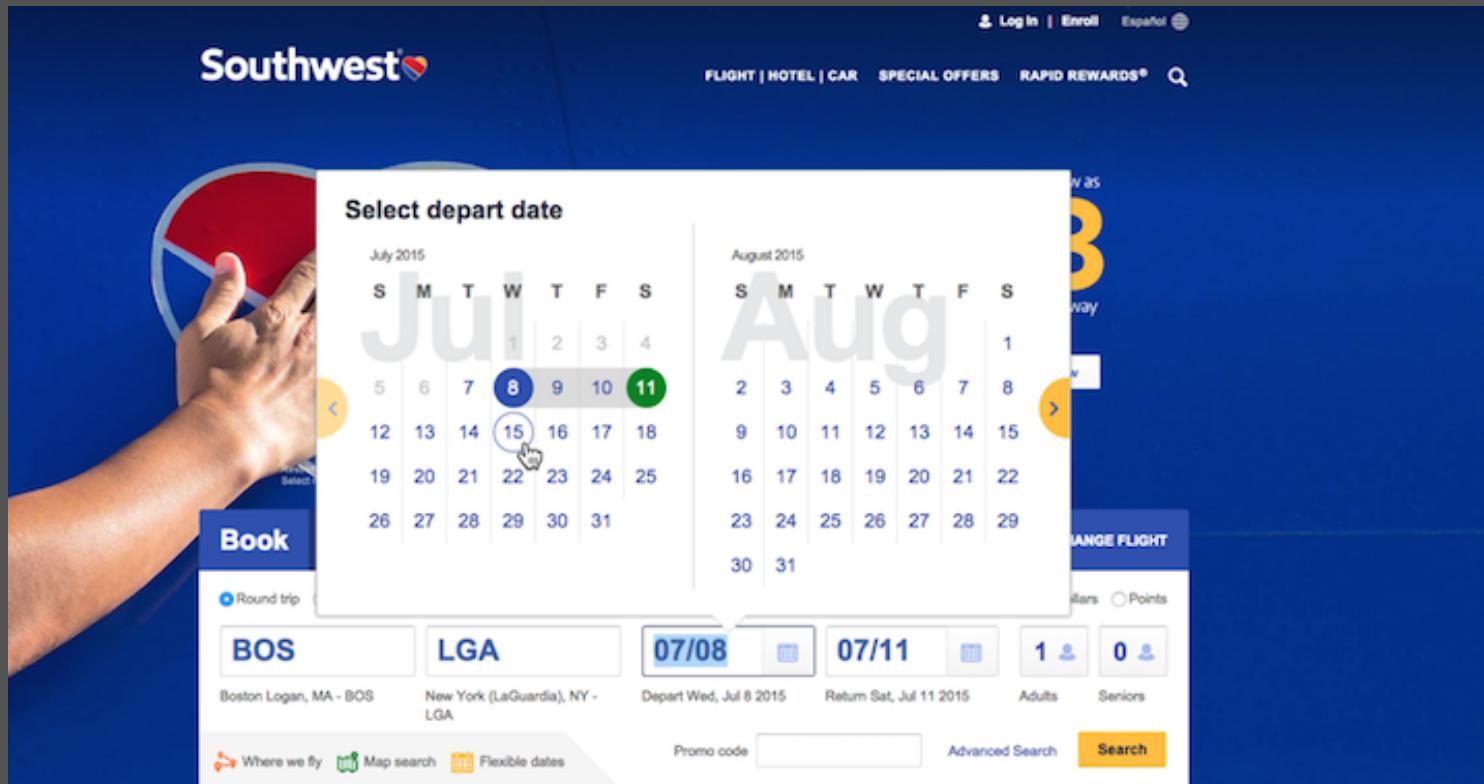
Use good defaults

Be forgiving in syntax (e.g., HTML)

Ok to be redundant: Bengaluru and Bangalore

Heuristic #5

Error prevention: Make it difficult to commit errors



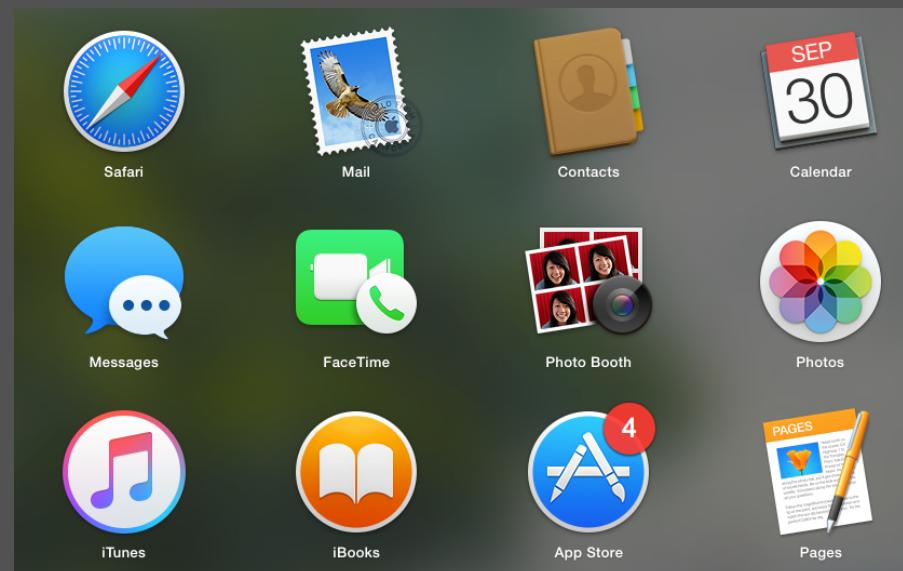
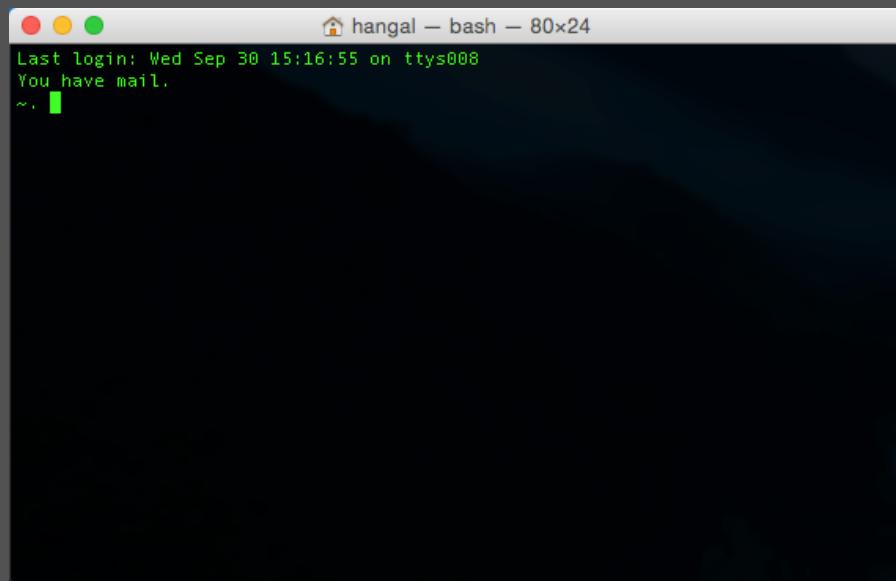
Aside: Security

For client-server apps: client side checking is ok

But in no case should security/data integrity depend on client side checks!

Heuristic #6

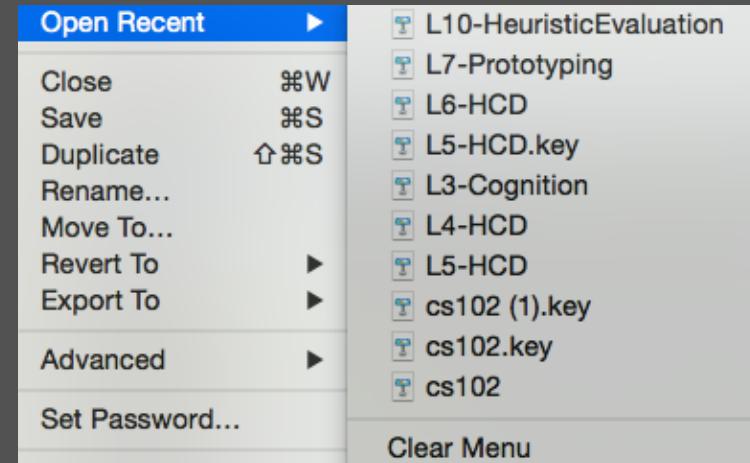
Prefer recognition to recall



Heuristic #6

Recognition rather than recall

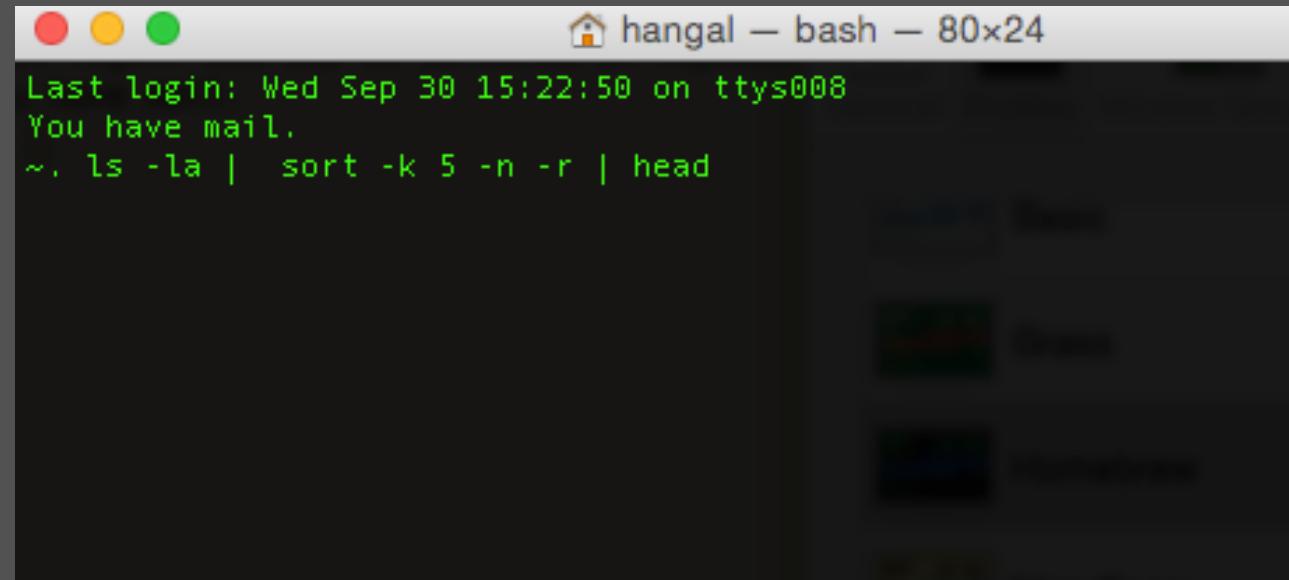
amazon.com



Heuristic #7

Flexibility and efficiency of use

Undo	⌘Z
Redo	⇧⌘Z
Cut	⌘X
Copy	⌘C
Paste	⌘V
Paste and Match Style	⇧⌘V
Delete	
Select All	⌘A
Find	▶
Spelling and Grammar	▶
Speech	▶
Start Dictation...	fn fn
Emoji & Symbols	^⌘Space



The screenshot shows a Mac OS X desktop environment. At the top, there is a menu bar with the following items:

- File (selected)
- Edit
- View
- TextEdit
- TextEdit Help

Below the menu bar, a terminal window titled "hangal – bash – 80x24" is open. The window contains the following text:

```
Last login: Wed Sep 30 15:22:50 on ttys008
You have mail.
~. ls -la | sort -k 5 -n -r | head
```

Heuristic #7

Examples:

Command-line interfaces

Keyboard shortcuts

Sticky settings so users don't have to set them each time

Spreadsheet Macros, Apps Script, etc.

Heuristic #8

Aesthetic and minimalist design

Good graphic design (catchall) - polish gives the impression that a lot of thought has gone into the system

Keep instructions short

Heuristic #9

Help users recognize, diagnose and recover from errors

Think from user's point of view: provide actionable advice

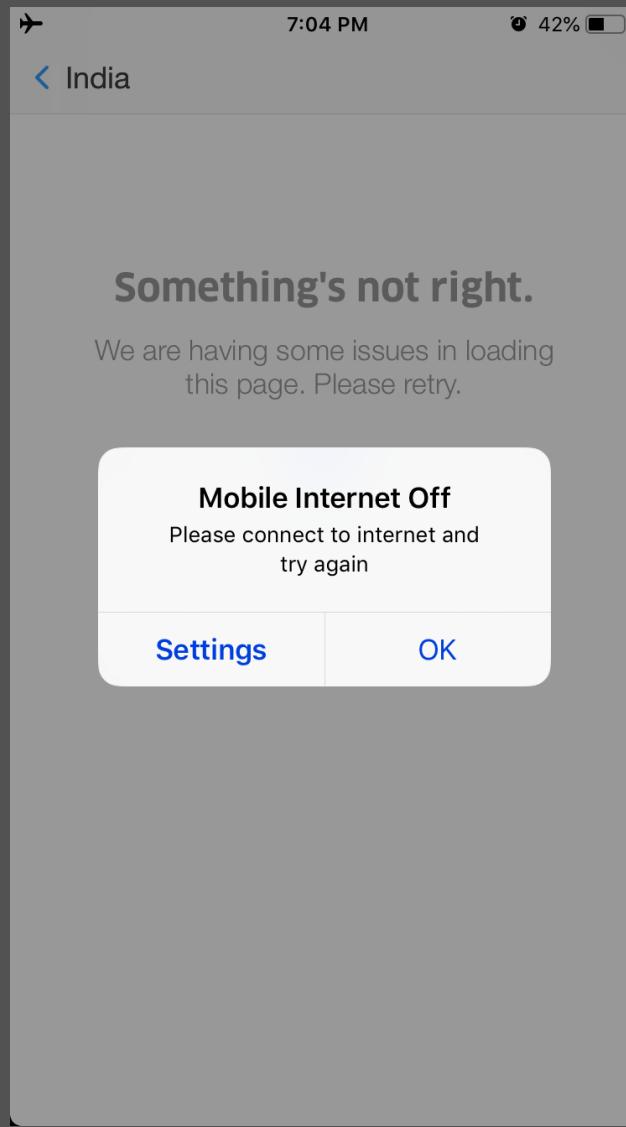
Restate exactly what happened

Shift blame to yourself

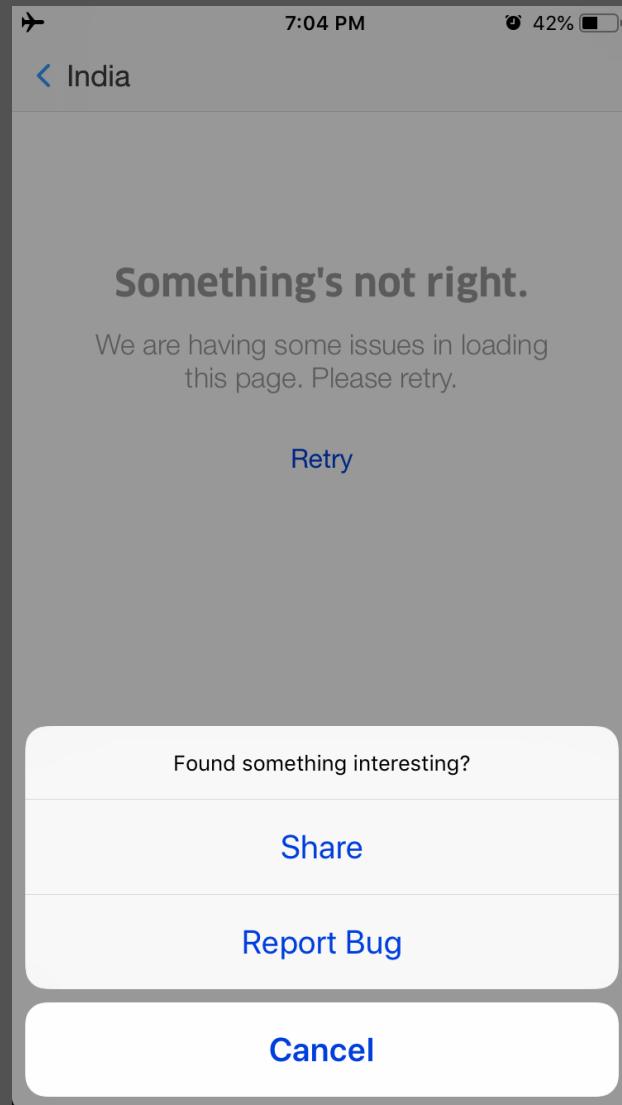
Error has to be understandable by user/and or operator

Hide technical details (e.g., stack trace) until requested

Inshorts



Inshorts



Heuristic #9

Understand the frustrated user (even a single user may be influential)

A user in trouble is very engaged

Use support tickets to relentlessly tune error handling and messaging

Small touches reveal a quality product

Much of great engineering is in robust error handling

Heuristic #10

Provision of help and documentation

Help should be:

Searchable (consistent terminology is important)

Context-sensitive

Task-oriented

Concrete

Short

Assignment

Choose an app or site with < 10M users and conduct a heuristic evaluation

Write up a report of your findings with respect to each criterion (8-20 pages).

Each team member should do heuristic evaluation independently. Then compile results together.

Assignment

Your report should cover each of the 10 heuristics (write NA if needed; don't shoehorn issues into each heuristic)

Rubric: 10% for professionally presented report, 40% for completeness (all heuristics), 50% for analysis and insight

Focus on interface choices (not functional bugs)

Writing a usability report

Exec. summary

Methodology (with references)

Findings

Screenshots

Prioritised recommendations (with references)