Intro To Human-Computer Interaction

Why Study HCI?

- Software Engineering is about meeting user needs

- If you build the wrong software…oops.

- Q: How do you build software that people can actually use effectively?

- A: Apply principles of HCI; iterate; hire a designer.

Design

- Design is not "graphic design"

- Design is not primarily about aesthetics (beauty)

- Design is about leveraging principles about humans (psychology) to build interactions people can use
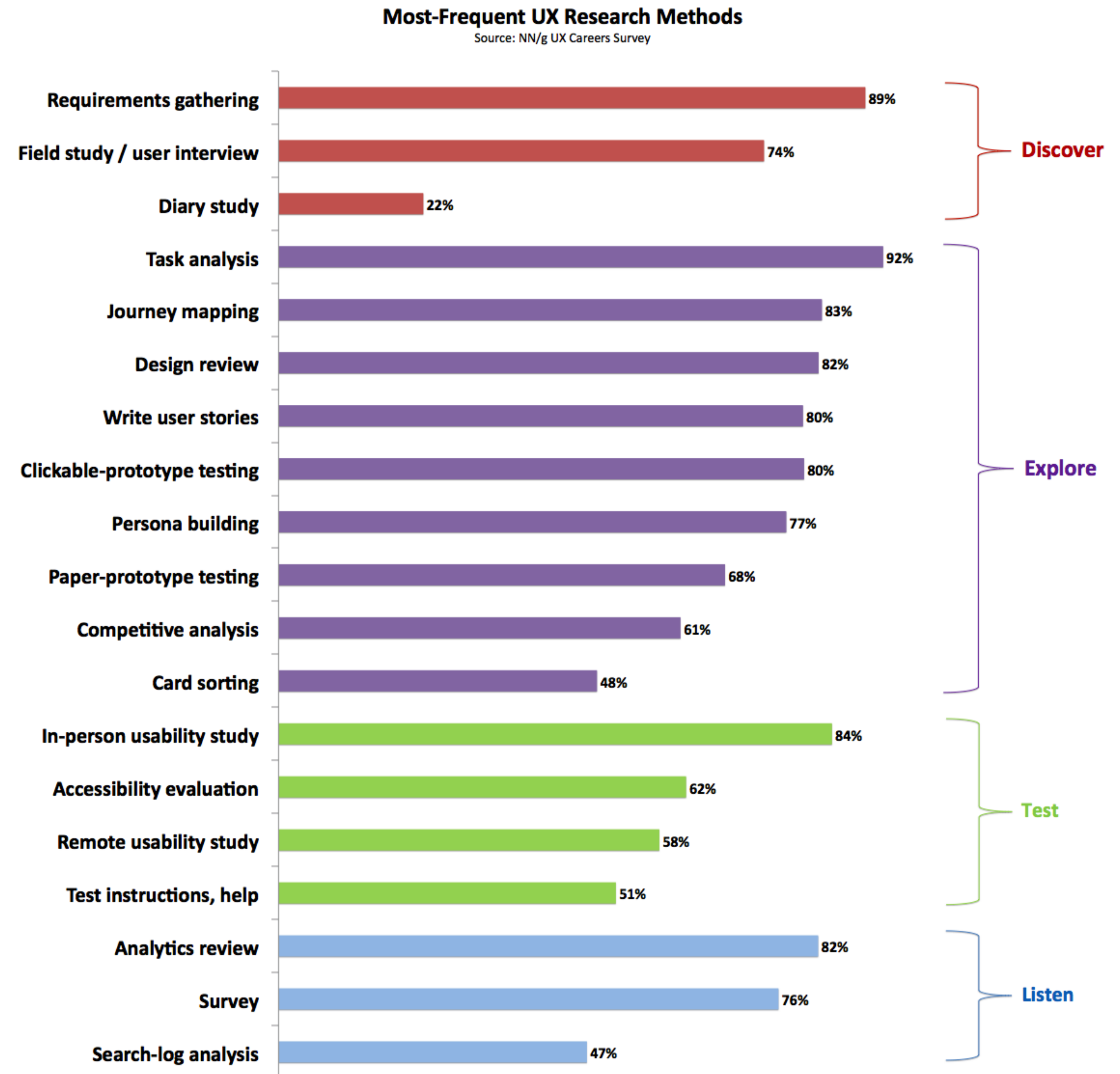
Your Examples: Bad Design

- Think of something that you used that was designed badly

- What about it was designed badly?

Agenda

- We don't have enough time to teach you interaction design

- But we can give you a taste

- HCI has a whole collection of methods…

Process

1. Understand your users

2. Create a prototype

3. Evaluate/get feedback

4. Go to step 1

https://www.nngroup.com/articles/ux-research-cheat-sheet/

Most-Frequent UX Research Methods
Source: NN/g UX Careers Survey

Method		
Requirements gathering	89%	Discover
Field study / user interview	74%	
Diary study	22%	
Task analysis	92%	Explore
Journey mapping	83%	
Design review	82%	
Write user stories	80%	
Clickable-prototype testing	80%	
Persona building	77%	
Paper-prototype testing	68%	
Competitive analysis	61%	
Card sorting	48%	
In-person usability study	84%	Test
Accessibility evaluation	62%	
Remote usability study	58%	
Test instructions, help	51%	
Analytics review	82%	Listen
Survey	76%	
Search-log analysis	47%	

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Contextual Design

- People are experts at their own work

    - But cannot articulate their work practice

- Solution: observe people doing their work

- Build personas to bring users alive

Personas

- Build empathy

- Help you think like the user

- Not necessarily specific, real people

  - But have enough detail that you can believe…

Persona 5: Jason, a Regional Director

• Name: Jason Carter

• Occupation: Regional Director

• Demographic: 34 years old, single, lives in San Francisco but travels a lot, has a high-income level.

Jason's story:

Jason is a regional director who needs to catch flights a lot. He sometimes has to 7-8 times a month for work purposes. His company has assigned Jason to a specific region so that he travels to the same cities and stays at the same hotels for convenience.

What challenges Jason:

However, Jason finds this situation rather inconvenient if anything. He thinks he wastes the time he doesn't even have, trying to book flights or hotels out of many options. Also, being an introvert, he finds it frustrating that he needs to make phone calls, speak to tons of people or go through numerous websites and waste time.

What Jason needs:

Jason needs a quick and easy process regarding his travel appointments. A site or a mobile app that would simplify the planning process of his travels would be excellent for him. That way, he would narrow down his options in just a few seconds and clicks and not have to carry his laptop everywhere with him since all he wants is comfort, convenience, and speed.

Designing a Prototype

- This is a whole course!

- Short version: create storyboards

- Try Figma (www.figma.com)

  - Free for education (https://www.figma.com/education/)

Layers Assets   Page 1

Intermediate Frame

Starting Frame

End Frame

Starting Frame

API Implementation Environment

import requests
response = requests.get("https://rest-api-design-research.herokuapp.com/")
print(response)

Response
Try submitting your code to get you first response...

Run   Submit

1160 × 636

End Frame

API Implementation Environment

import requests
response = requests.get("https://rest-api-design-research.herokuapp.com/")
print(response)

Response
HTTP Error Code : 404
{
message: "requested url not found"
}

Submit

Intermediate Frame

API Implementation Environment

import requests
response = requests.get("https://rest-api-design-research.herokuapp.com/")
print(response)

Response

Submit

Design   Prototype   Inspect

Frame

X -1562   Y -438

W 1160   H 636

0°   0

☐ Clip content

Auto layout   +

Layout grid   +

Layer

Pass through   100%

Fill   +

Stroke   +

Selection colors

000000   100%

859CEF   100%

B6C1E8   100%

See all 6 colors

Share   33%

Principles

- Lots of visual design principles

- Ways of assessing designs

  - Usability studies

  - "Discount methods": don't need users (users are expensive)

Usability Studies

- Pro: get real data from real people

  - Good practice: "eat your own dog food"

    - "In 2006, Warren Harrison, the Editor-in-Chief of *IEEE Software* recounted that in the 1970s television advertisements for Alpo dog food, Lorne Greene pointed out that he fed Alpo to his own dogs." (Wikipedia)

- Cons:

  - Expensive (design tasks, recruit people, sit with them) — inhibits iteration

  - Might not get the right people

  - Can only study part of the system

Rest of Today: Nielsen's 10 Usability Heuristics

- Date from 1994, but still very useful today

  - Timeless? I'm teaching a well-tested approach, anyway

- No need for user tests

- Instead, need an expert evaluator (you?)

- Goal: identify usability problems

Priorities

- Can't fix every problem

- Instead, consider:

  - *Frequency* with which problem occurs

  - *Impact*: easy or difficult for user to overcome?

  - *Persistence*: one-time, or will users be bothered repeatedly?

#1: Visibility of System Status

- Examples:

  - *you are here* on mall maps

  - Progress indicators (is the system processing?)

Banner at top shows how much more to spend for free delivery
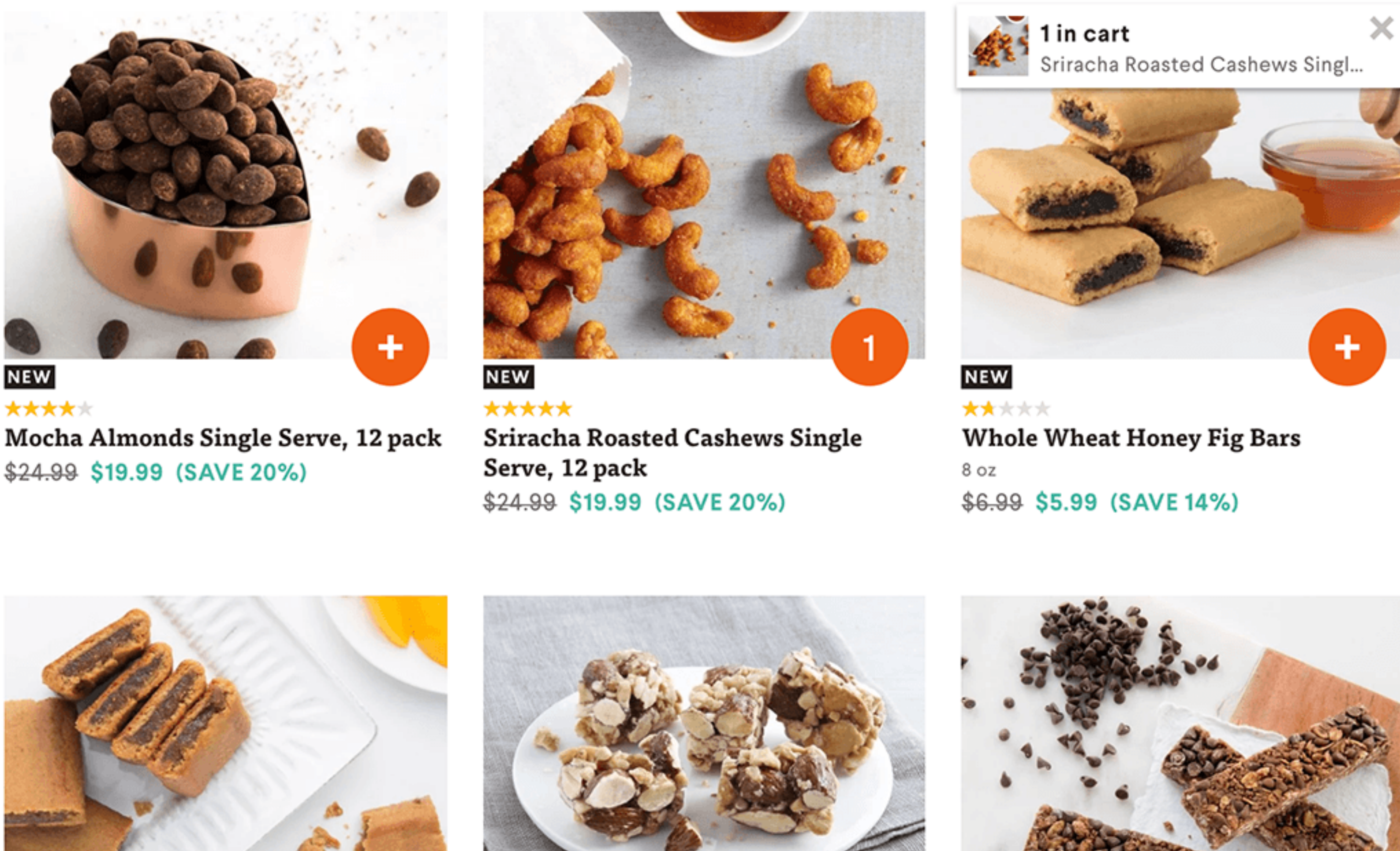
#2: Match Between System and the Real World

- The design should speak the users' language. Use words, phrases, and concepts familiar to the user, rather than internal jargon. Follow real-world conventions, making information appear in a natural and logical order.

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The Compass Looks Like a Compass

How is the user supposed to know this means "back"?
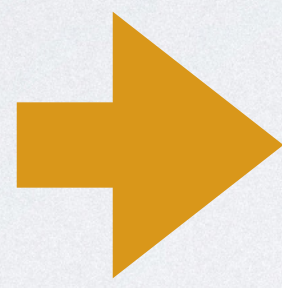
What Does This Button Do in Word?

- Floppy drives were obsolete in 2001

- This is Word 365, ©2024

#3: User Control and Freedom

- Users often perform actions by mistake. They need a clearly marked "emergency exit" to leave the unwanted action without having to go through an extended process.

- Support Undo and Redo.

- Show a clear way to exit the current interaction, like a Cancel button.

- Make sure the exit is clearly labeled and discoverable.

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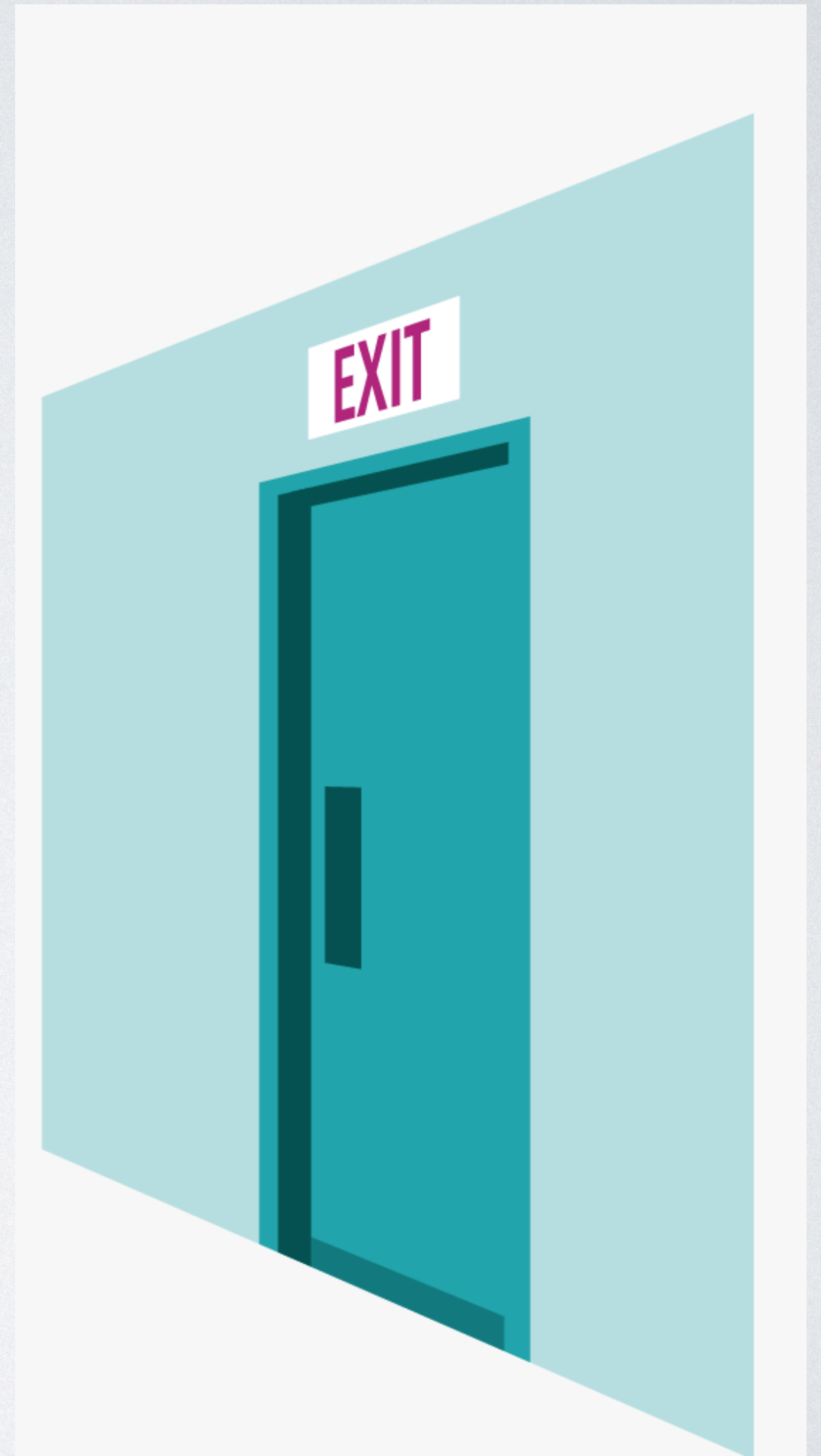
Let Users Pick the Order

- "Wizards" force users to make choices in an order the developer chose

- Inspectors let users choose in any order