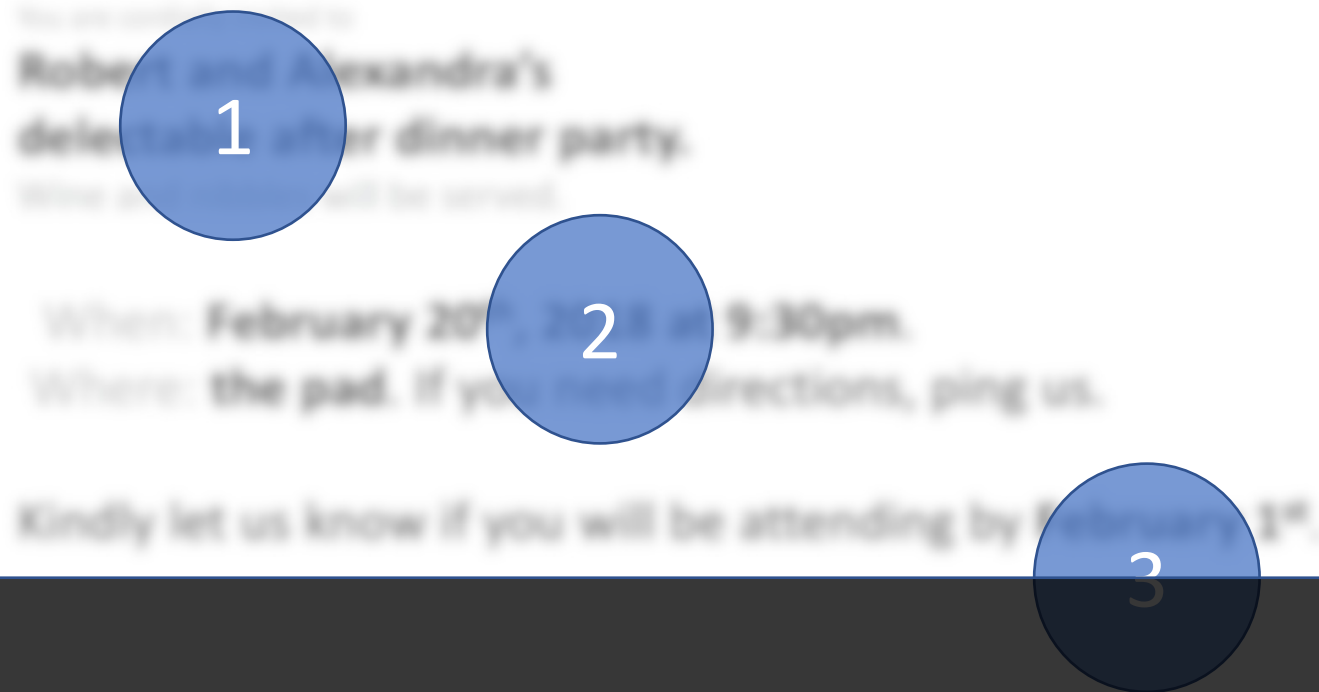


# Menus and Navigation

Prof. Lydia Chilton  
COMS 4170  
17 February 2025

Users can't focus on everything at once.  
They have a spotlight of attention.



The design must **guide users' attention.**

Feedback:

Communicate

full and continuous information about  
the results of an action and  
the **current state of the system**

to help people achieve their goal

# Low-level events have full and continuous feedback about actions and states



*Click!*  
*Depress!*

Normal state

COMPOSE

Mouseover

COMPOSE

Mousedown

COMPOSE

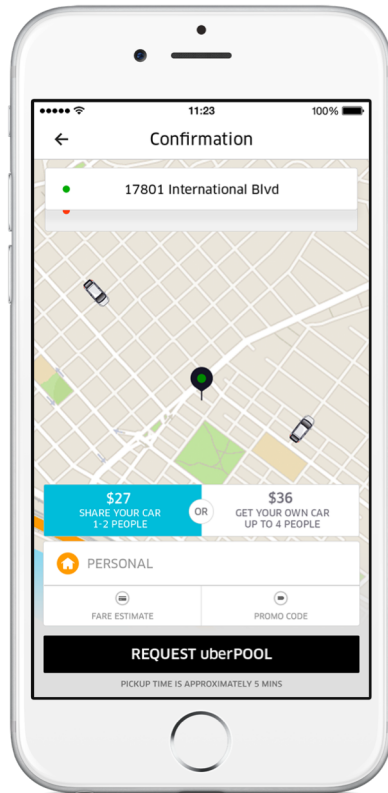
Mouseup

COMPOSE

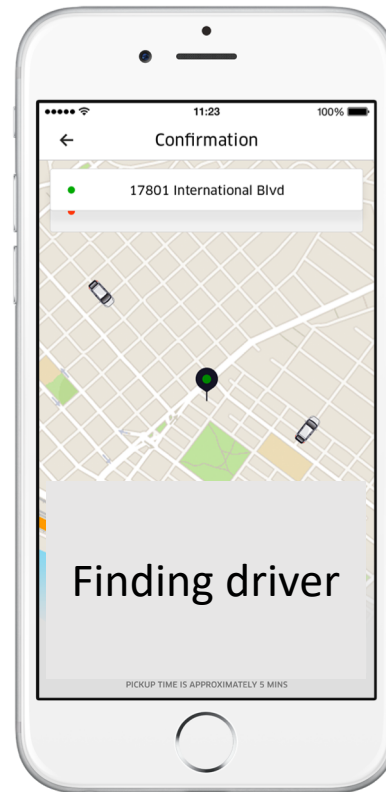
Normal state

COMPOSE

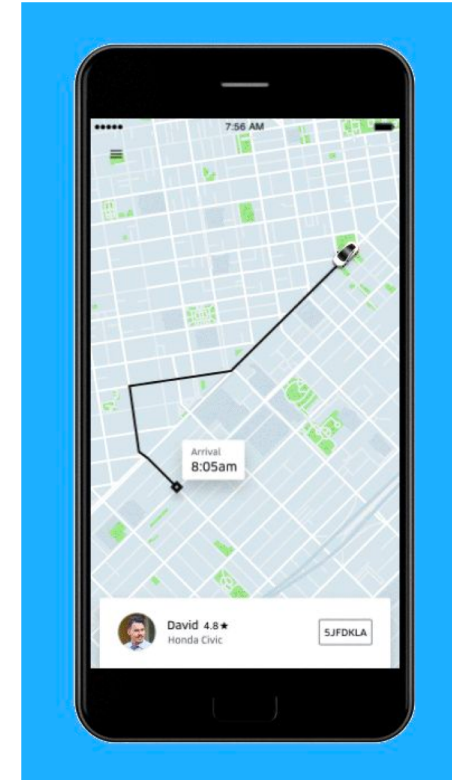
# As do high-level states



Request ride  
state



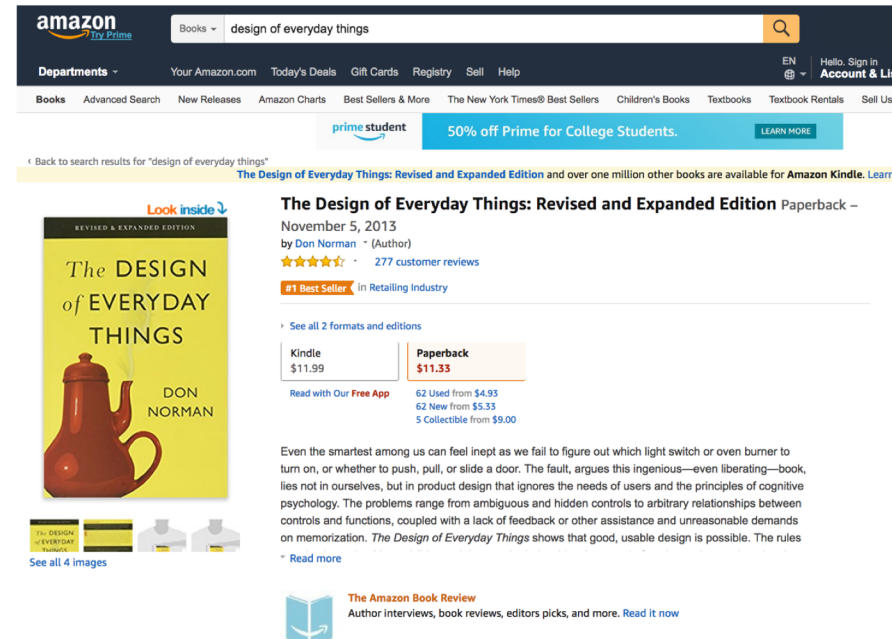
Finding driver  
state



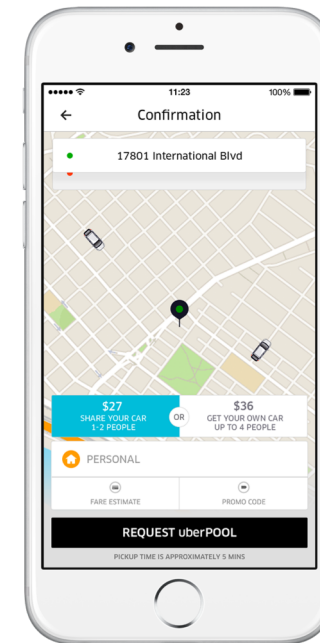
Driver en route  
state

# We are designing applications that help people achieve fairly complex goals.

Buy a book



Hail a cab to JFK



Can we put it all the information on one big page?

But for complex tasks, there is too much information to fit in one screen.

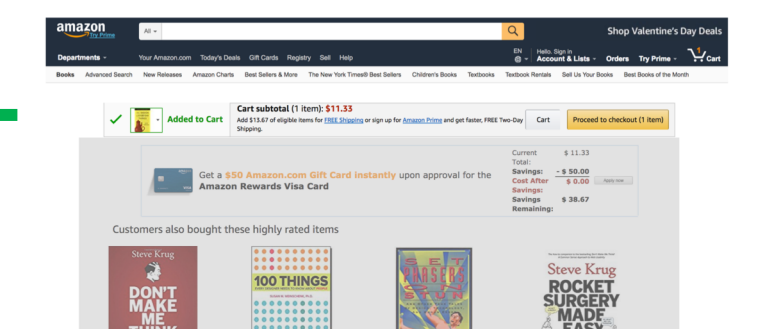
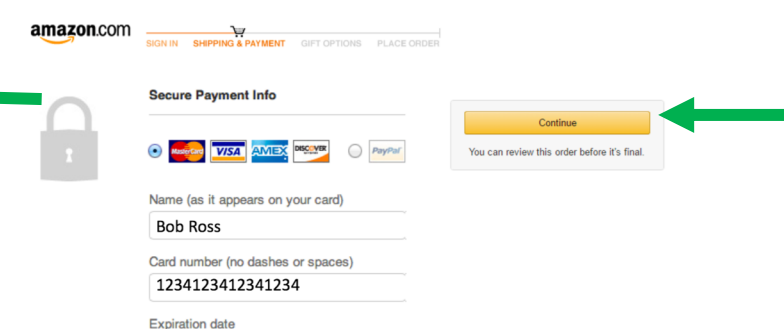
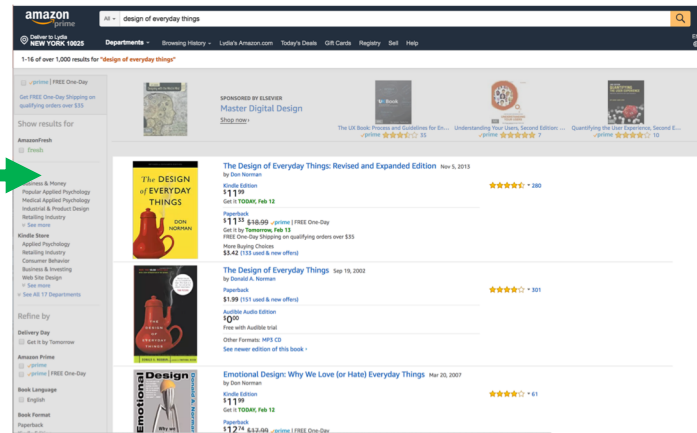
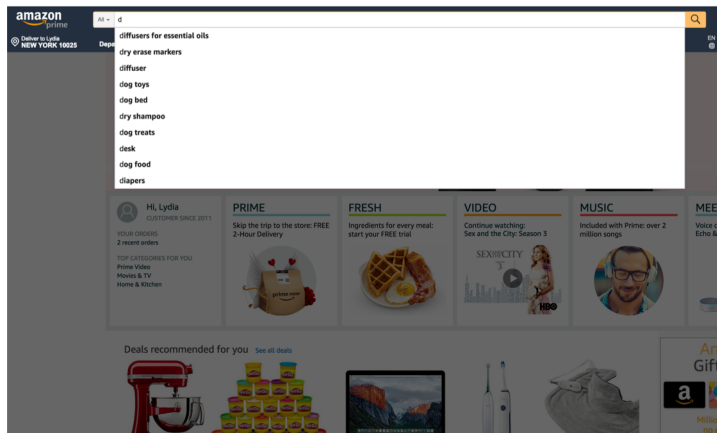
**Buying a book on Amazon:**

- Search for the book
- Select the edition
- See the reviews
- Look at the index
- How many pages does it have?
- Put it in your cart
- Shop around for other things
- Select a payment method

How should we break it up?

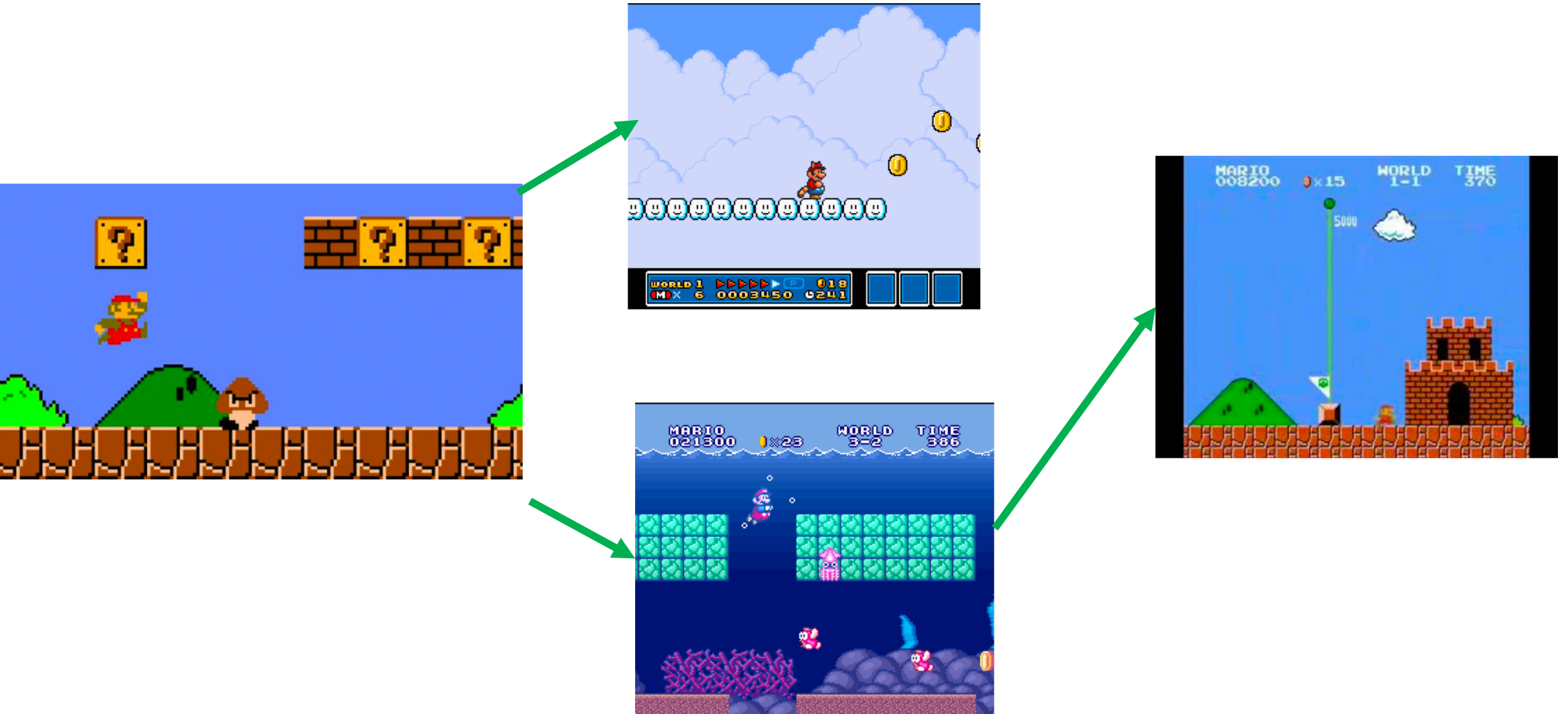
- Enter payment method information
- Enter shipping information
- Go back and put something else in the cart
- Change to rush delivery
- Remove something from the cart

# For complex goals, break the task into states, options, and transitions to new states.

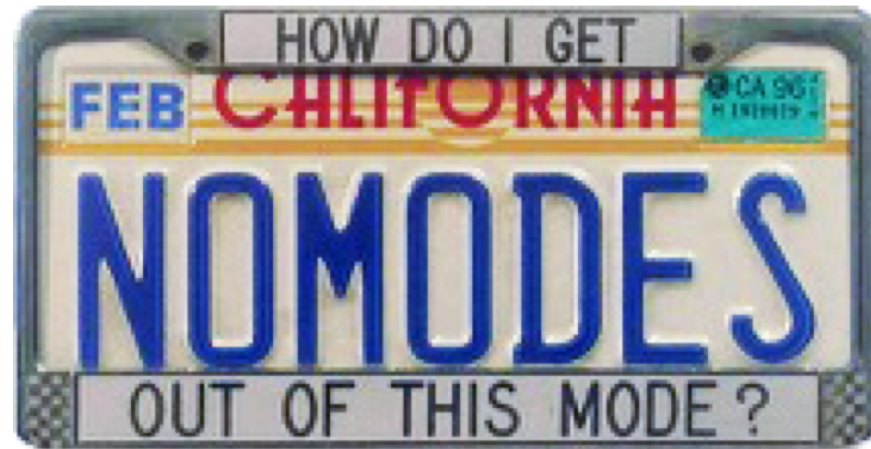




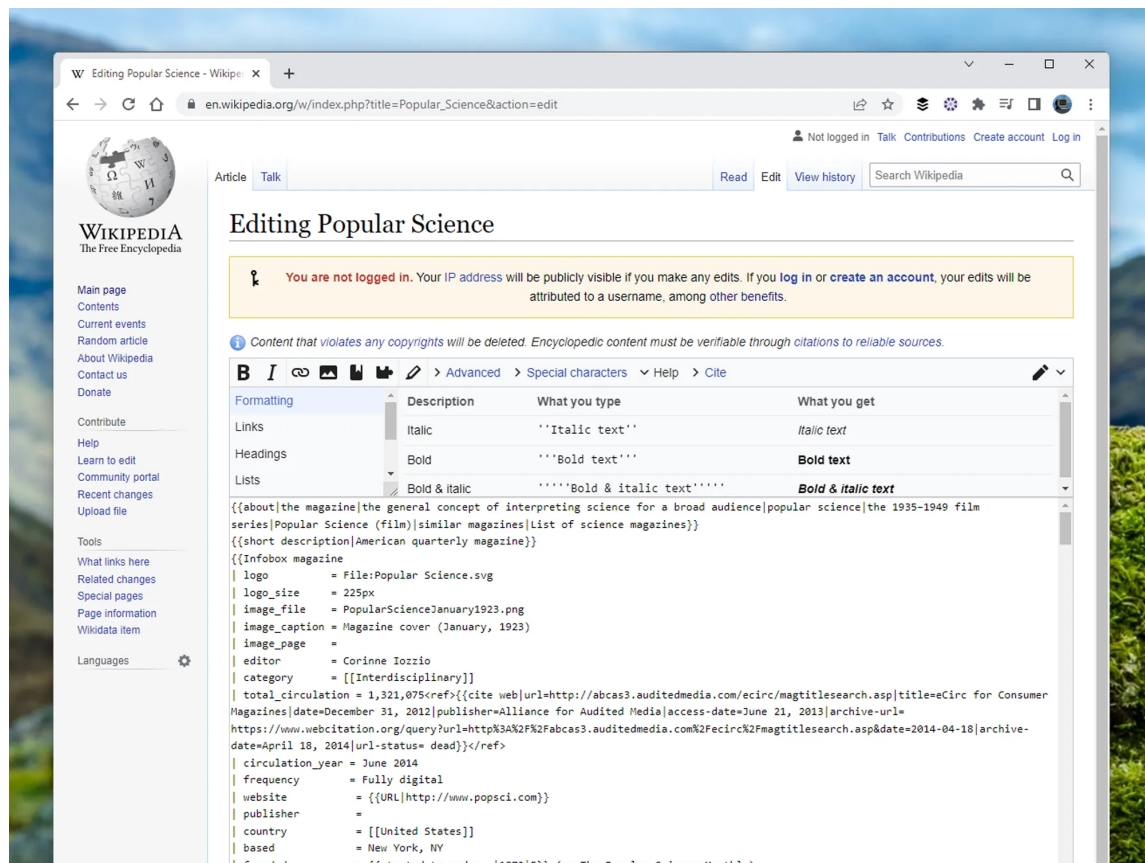
Think of it like a video game and  
You are designing the experience of your user



# What NOT to do: Modes

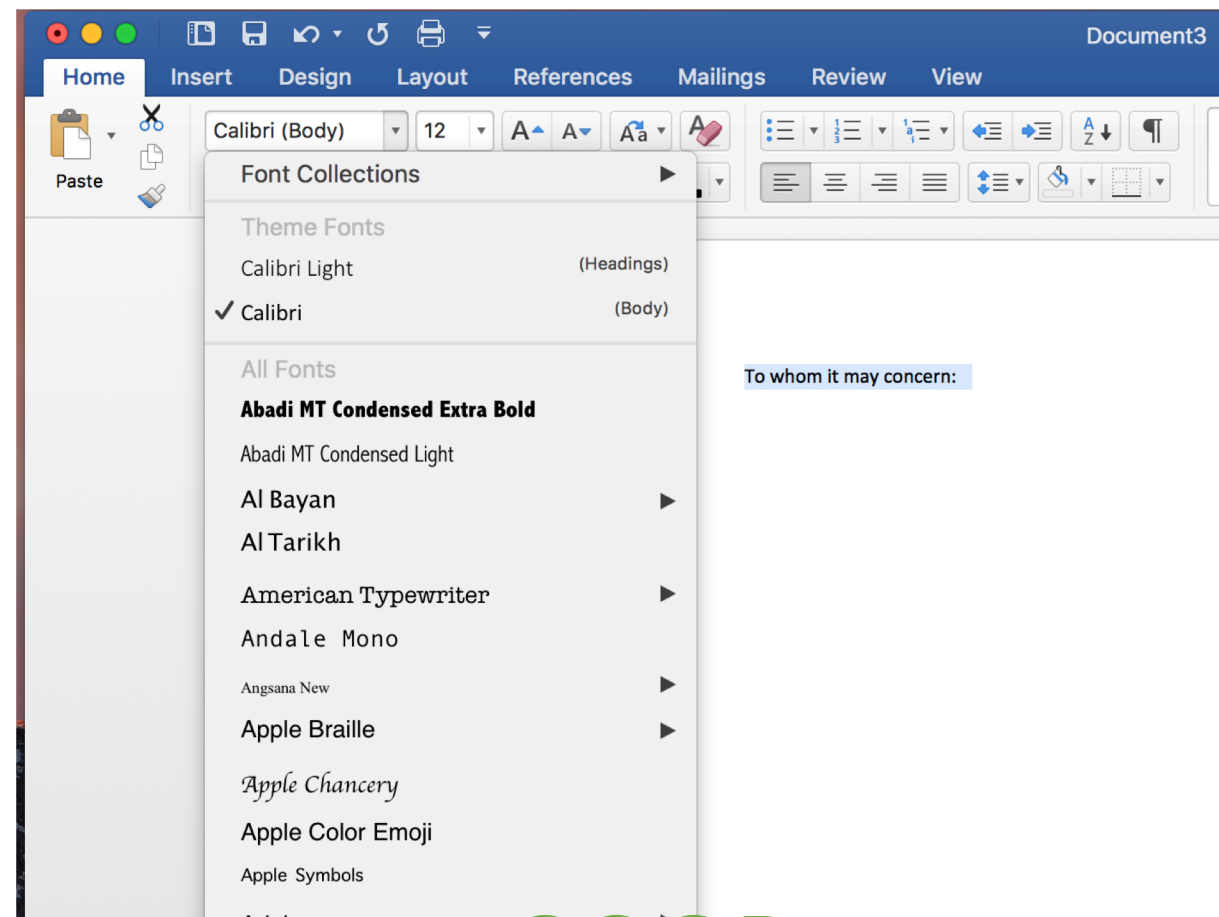


# “Editing mode”



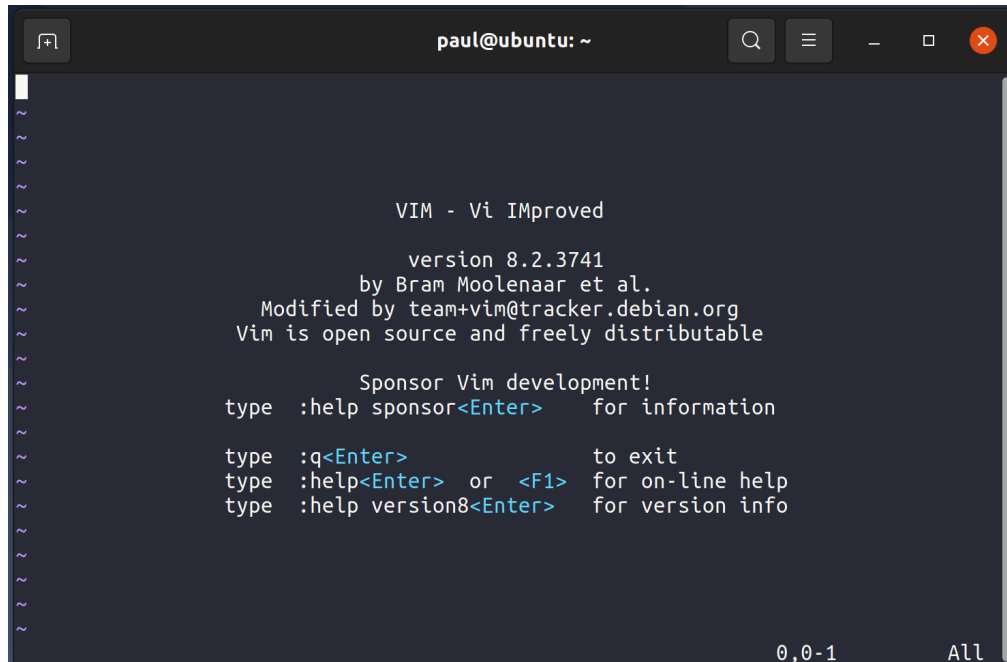
# BAD

# WYSIWYG Editing (whizzy-wig)



# GOOD

# Bad Modes



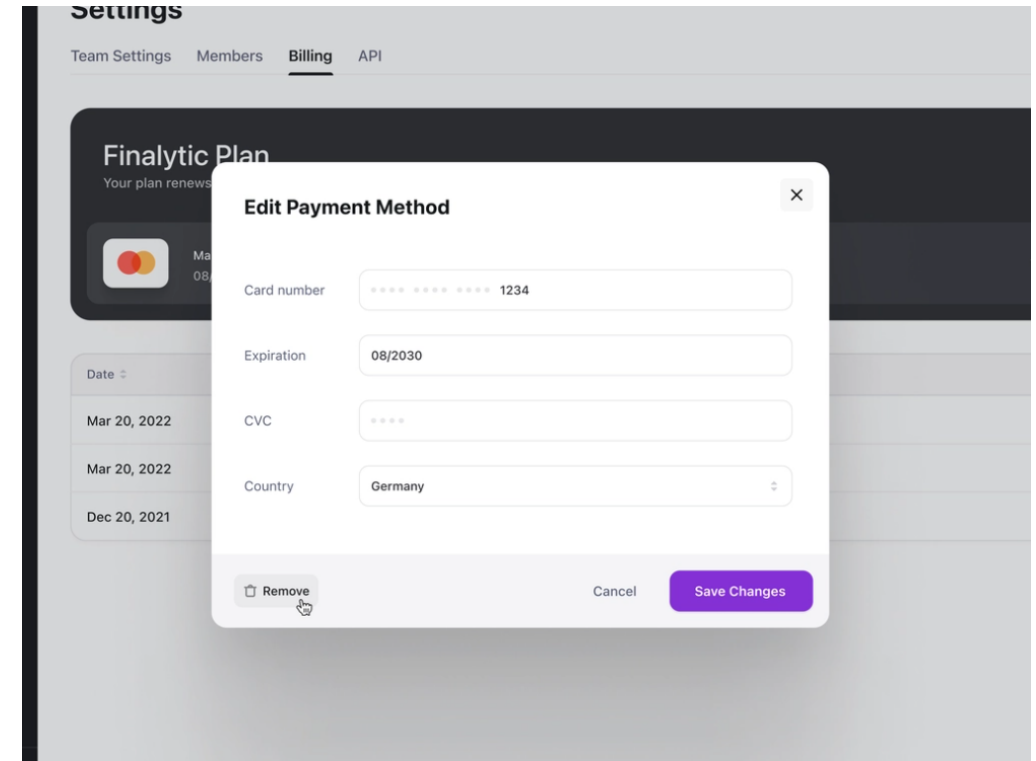
A terminal window titled "paul@ubuntu: ~" showing the Vim help screen. The text includes: "VIM - Vi IMproved", "version 8.2.3741", "by Bram Moolenaar et al.", "Modified by team+vim@tracker.debian.org", "Vim is open source and freely distributable", "Sponsor Vim development!", and instructions for using help, exiting, and getting version info. The bottom right corner shows "0,0-1" and "All".

```
VIM - Vi IMproved
      version 8.2.3741
      by Bram Moolenaar et al.
      Modified by team+vim@tracker.debian.org
      Vim is open source and freely distributable

      Sponsor Vim development!
      type :help sponsor<Enter> for information

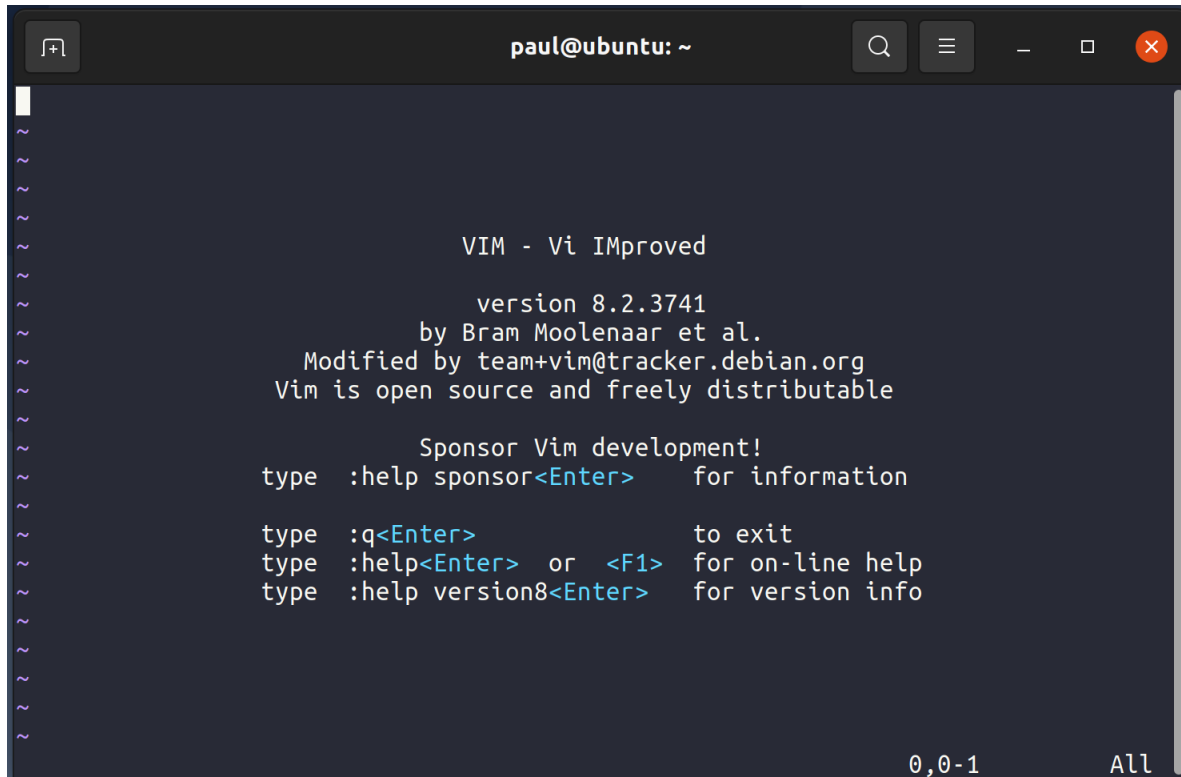
      type :q<Enter> to exit
      type :help<Enter> or <F1> for on-line help
      type :help version8<Enter> for version info

0,0-1 All
```

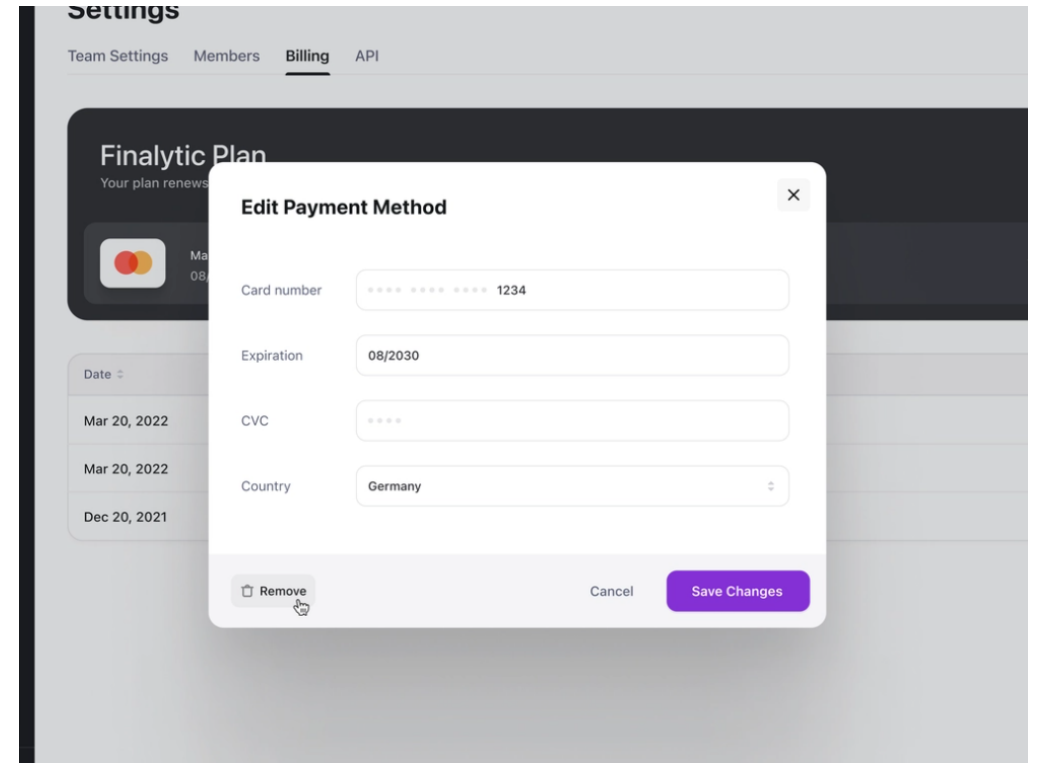


“HOW DO I GET OUT OF THIS \*\*\*\*ing MODE?????”

# Modes are a temporary state where commands have new meanings or are limited.

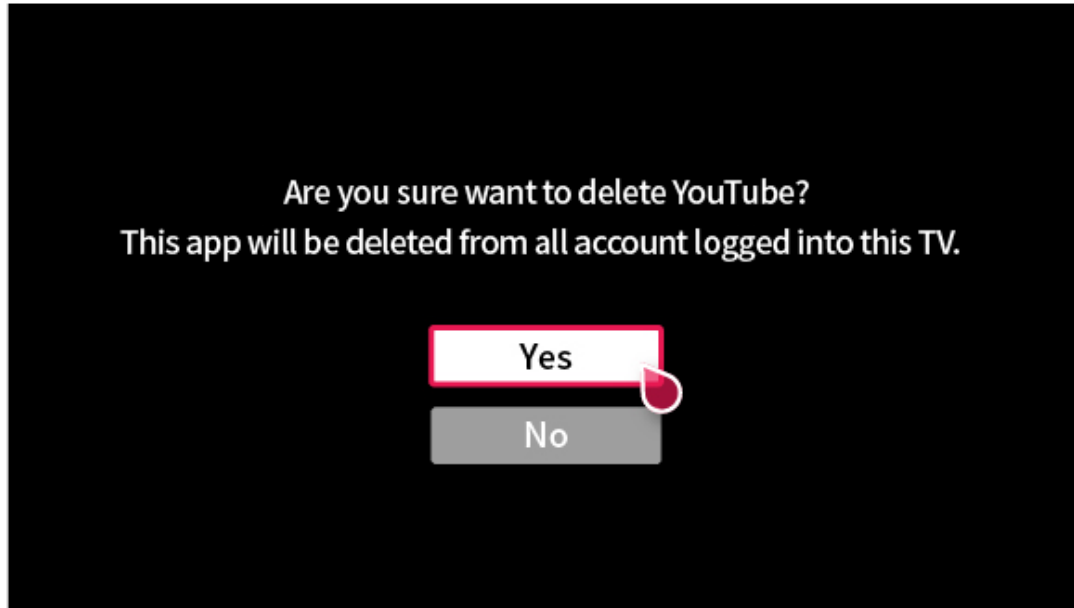


Commands have new meanings

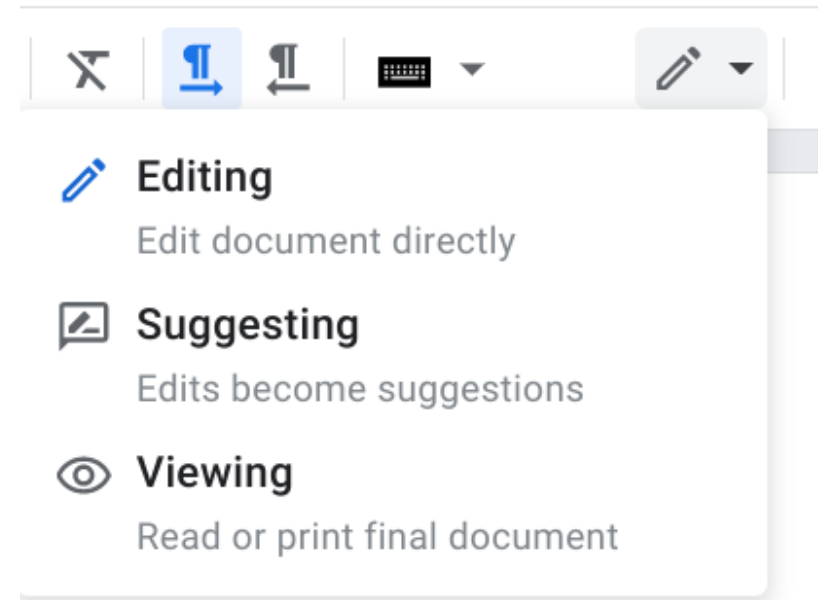


Limited options

A mode is only ok when you need to focus all the users attention, and prevent other actions.



Focus all attention,  
prevent other options

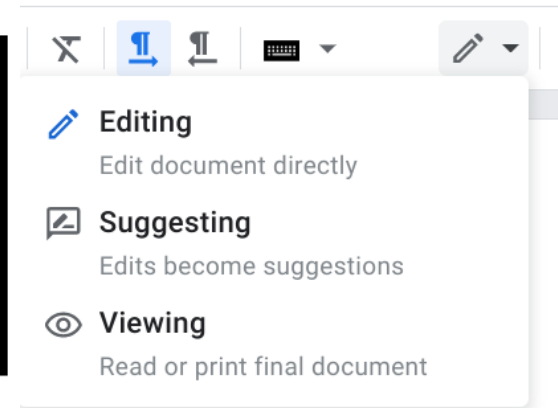
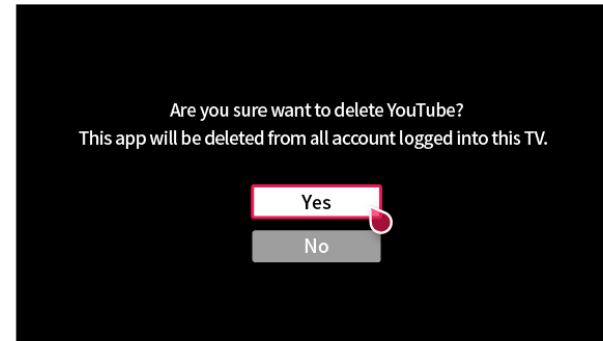
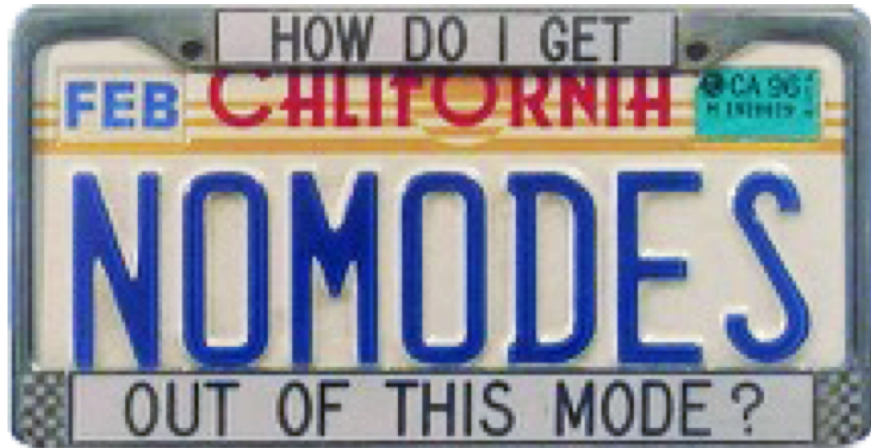


Prevent other options

# Why modes are bad:

- **Mode escapes are inconsistent.**
  - Users often get “stuck” in a mode.
  - “How do I get out of this mode?”
  - This violates “user control and freedom”
- **Key meanings are mode-dependent.**
  - Double click means “paint” in paint mode, but “select” in regular mode
  - This violates the “consistency and standards” Heuristic.
- **Verbs precede their objects.**
  - What I do (“save”) has to be specified before the object (“this document”)
  - People find it easier to specify the object (“this document”), then decide which action to take (“save”, “edit”, “undo”, “delete”, etc.)
  - This violates “system matching the real world”

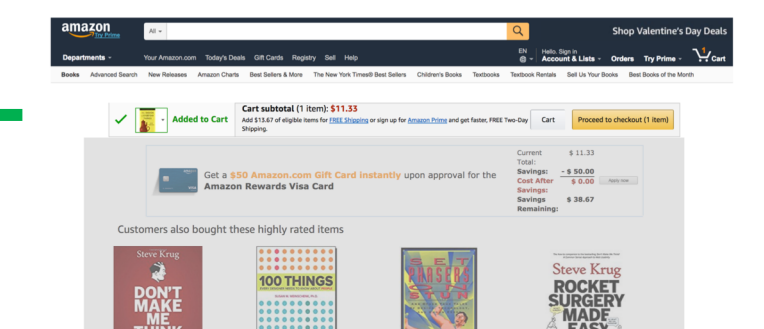
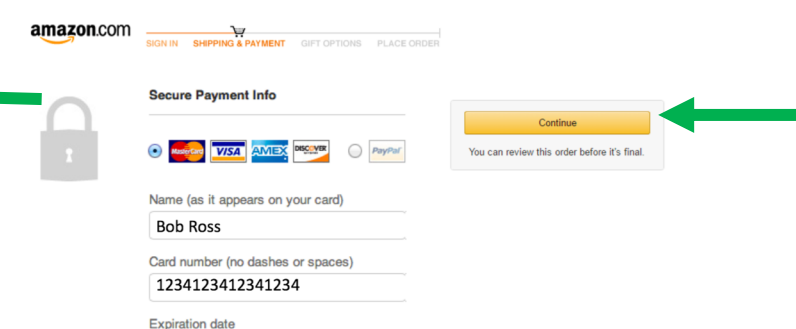
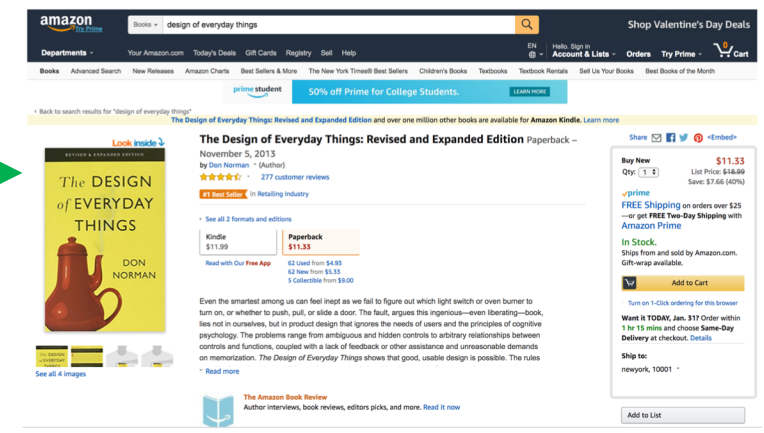
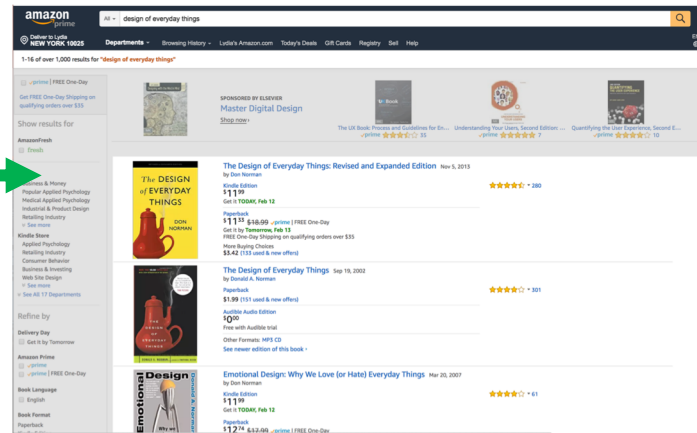
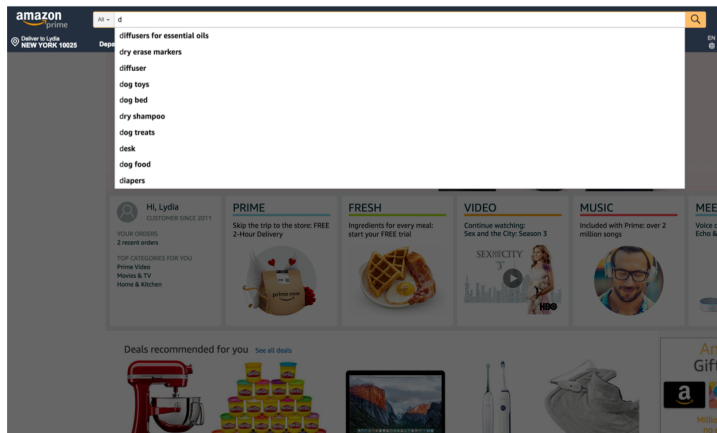
# Generally, NO MODES



A mode is only ok when you need to focus all the users attention, and prevent other actions.



# For complex goals, break the task into states, options, and transitions to new states.



Examples of

States, Options and Transitions

# Goal: Find “The Design of Everyday Things”

What **state** am I in?

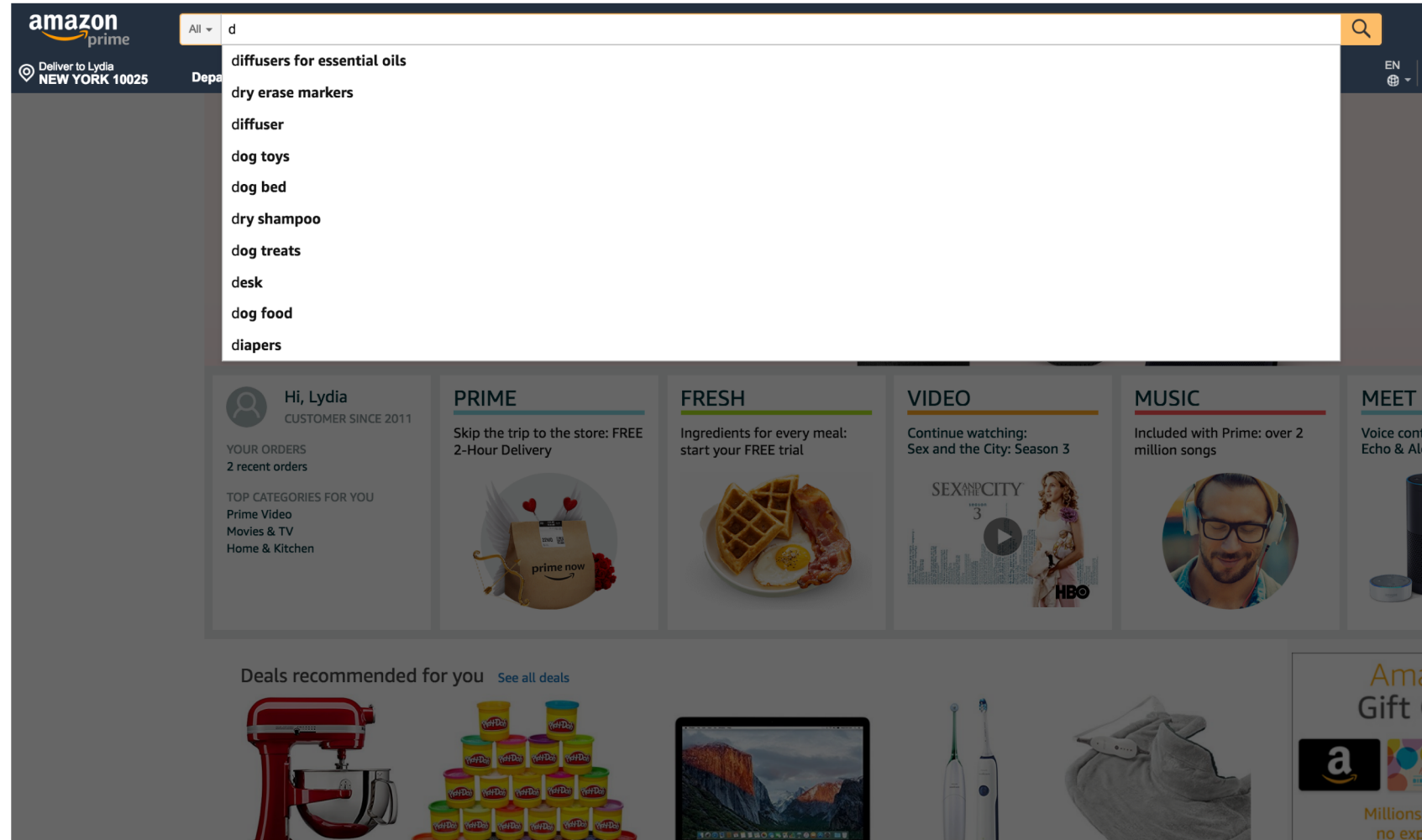
Product Search

What **options** do I have?

All the products

How do I **transition**?

Select an product name



# Goal: find “The Design of Everyday Things”

What **state** am I in?

Product search results

What **options** do I have?

All the products –  
different editions

How do I **transition**?

Select an product name

The screenshot shows the Amazon website interface for a search query "design of everyday things". The top navigation bar includes the Amazon Prime logo, a search bar with the query, and various utility links like "Deliver to Lydia NEW YORK 10025", "Departments", "Browsing History", "Lydia's Amazon.com", "Today's Deals", "Gift Cards", "Registry", "Sell", and "Help". Below the search bar, it indicates "1-16 of over 1,000 results for 'design of everyday things'".

On the left side, there are filters for "prime | FREE One-Day" shipping, "AmazonFresh", and "Books" categories. The "Books" filter is expanded, showing sub-categories like "Business & Money", "Popular Applied Psychology", "Medical Applied Psychology", "Industrial & Product Design", "Retailing Industry", and "Kindle Store".

The main content area displays three search results:

- Top result:** "The Design of Everyday Things: Revised and Expanded Edition" by Don Norman, published Nov 5, 2013. It is available in Kindle Edition (\$11.99) and Paperback (\$11.33, down from \$19.99). It has a 5-star rating with 280 reviews. The paperback is available for delivery starting Feb 12.
- Second result:** "The Design of Everyday Things" by Donald A. Norman, published Sep 19, 2002. It is available in Paperback (\$1.99) and Audible Audio Edition (\$0.00). It has a 5-star rating with 301 reviews.
- Third result:** "Emotional Design: Why We Love (or Hate) Everyday Things" by Don Norman, published Mar 20, 2007. It is available in Kindle Edition (\$11.99) and Paperback (\$12.74, down from \$17.99). It has a 5-star rating with 61 reviews.

# Goal: Decide if I'll buy "The Design of Everyday Things"

What **state** am I in?

Product info page

What **options** do I have?

Kindle/paper back,

Look in book, reviews

Add to cart

How do I **transition**?

Add to cart OR

Go back

The screenshot shows the Amazon product page for the book "The Design of Everyday Things: Revised and Expanded Edition" by Don Norman. The page includes the Amazon logo, a search bar with the query "design of everyday things", and navigation links. The product title is "The Design of Everyday Things: Revised and Expanded Edition Paperback". The author is Don Norman, and the publication date is November 5, 2013. The book has a 4.5-star rating from 277 customer reviews and is a "#1 Best Seller" in the Retailing Industry. The price for the paperback is \$11.33, with a list price of \$18.99. The page also features a "Look inside" button, a "Read with Our Free App" button, and a "See all 2 formats and editions" link. The product description discusses the challenges of product design and the importance of usability. The page also includes a "Share" button, a "Buy New" button with a quantity selector, and a "Add to Cart" button. The shipping information indicates that the book is in stock and will be shipped from and sold by Amazon.com.

amazon  
Books design of everyday things

Departments Your Amazon.com Today's Deals Gift Cards Registry Sell Help

Books Advanced Search New Releases Amazon Charts Best Sellers & More The New York Times® Best Sellers Children's Books Textbooks Textbook Rentals Sell Us Your Books Best Books of the Month

prime student 50% off Prime for College Students. LEARN MORE

Back to search results for "design of everyday things"

The Design of Everyday Things: Revised and Expanded Edition and over one million other books are available for Amazon Kindle. Learn more

Look inside

REVISED & EXPANDED EDITION

The DESIGN of EVERYDAY THINGS

DON NORMAN

The Design of Everyday Things: Revised and Expanded Edition Paperback – November 5, 2013  
by Don Norman (Author)  
★★★★☆ 277 customer reviews  
#1 Best Seller in Retailing Industry

See all 2 formats and editions

Kindle \$11.99 Read with Our Free App	Paperback \$11.33 62 Used from \$4.93 62 New from \$5.33 5 Collectible from \$9.00
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Even the smartest among us can feel inept as we fail to figure out which light switch or oven burner to turn on, or whether to push, pull, or slide a door. The fault, argues this ingenious—even liberating—book, lies not in ourselves, but in product design that ignores the needs of users and the principles of cognitive psychology. The problems range from ambiguous and hidden controls to arbitrary relationships between controls and functions, coupled with a lack of feedback or other assistance and unreasonable demands on memorization. *The Design of Everyday Things* shows that good, usable design is possible. The rules

Read more

The Amazon Book Review  
Author interviews, book reviews, editors picks, and more. Read it now

Share

Buy New \$11.33  
Qty: 1 List Price: \$18.99  
Save: \$7.66 (40%)

prime  
FREE Shipping on orders over \$25  
—or get FREE Two-Day Shipping with Amazon Prime

In Stock.  
Ships from and sold by Amazon.com.  
Gift-wrap available.

Add to Cart

Turn on 1-Click ordering for this browser

Want it TODAY, Jan. 31? Order within 1 hr 15 mins and choose Same-Day Delivery at checkout. Details

Ship to:  
newyork, 10001

Add to List

# Goal: Decide if I'm done.

What **state** am I in?

“Add to cart” feedback

What **options** do I have?

Check out

See cart

Keep shopping

How do I **transition**?

Click one of the options.

The screenshot shows the Amazon.com checkout page. At the top, the Amazon logo and navigation links are visible. The cart subtotal is \$11.33. A promotional banner offers a \$50 Amazon Rewards Visa Card. Below this, a table shows the current total of \$11.33, a savings of \$50.00, and a cost after savings of \$0.00. A remaining savings of \$38.67 is also shown. The page recommends several books, including 'Don't Make Me Think' by Steve Krug, '100 Things Every Designer Needs to Know About People' by Susan M. Weinschenk, 'Set Phasers to Work' by Steve Krug, and 'Rocket Surgery Made Easy' by Steve Krug.

amazon Try Prime


All

Shop Vale

Departments ▼ Your Amazon.com Today's Deals Gift Cards Registry Sell Help


EN ▼ Hello. Sign in **Account & Lists** ▼ **Orders** ▼ **Try**

Books Advanced Search New Releases Amazon Charts Best Sellers & More The New York Times® Best Sellers Children's Books Textbooks Textbook Rentals Sell Us Your Books Best Book

✓  **Added to Cart**

**Cart subtotal (1 item): \$11.33**  
Add \$13.67 of eligible items for [FREE Shipping](#) or sign up for [Amazon Prime](#) and get faster, FREE Two-Day Shipping.

**Cart** **Proceed to checkout (1 item)**

 Get a **\$50 Amazon.com Gift Card instantly** upon approval for the **Amazon Rewards Visa Card**

Current	\$ 11.33
Total:	
<b>Savings:</b>	<b>- \$ 50.00</b>
<b>Cost After</b>	<b>\$ 0.00</b> <a href="#">Apply now</a>
<b>Savings:</b>	
<b>Savings</b>	<b>\$ 38.67</b>
<b>Remaining:</b>	

Customers also bought these highly rated items

Steve Krug  
**DON'T MAKE ME THINK**  
*perisited*  
A Common Sense Approach to Web Usability

**100 THINGS**  
EVERY DESIGNER NEEDS TO KNOW ABOUT PEOPLE  
SUSAN M. WEINSCHEK, Ph.D.

**SET PHASERS TO WORK**  
AND OTHER TALK TALES OF DESIGN TECHNOLOGY AND USER RESEARCH

Steve Krug  
**ROCKET SURGERY MADE EASY**  
The Do-It-Yourself Guide to Finding and Fixing Usability Problems

# Goal: Pay for it.

What **state** am I in?

Enter payment

What **options** do I have?

Which payment methods

How do I **transition**?

Press Continue

amazon.com

SIGN IN SHIPPING & PAYMENT GIFT OPTIONS PLACE ORDER



## Secure Payment Info



Name (as it appears on your card)

Bob Ross

Card number (no dashes or spaces)

1234123412341234

Expiration date

01 - January

2013

Security code (3 on back, Amex: 4 on front)

1234

123

1234

Continue

You can review this order before it's final.

# Goal: Buy it.

What **state** am I in?

Review and place order

What **options** do I have?

Shipping options,

Change payment options

How do I **transition**?

Press “Place your order”

The screenshot displays the Amazon.com checkout process. At the top, the Amazon logo is followed by navigation links: SIGN IN, SHIPPING & PAYMENT, GIFT-WRAP, and PLACE ORDER. Below this is the 'Review Your Order' section, which includes a disclaimer about Amazon's privacy policy and terms of use.

The main content area is divided into several sections:

- Shipping Address:** Chris Customer, 742 EVERGREEN TERRACE, SPRINGFIELD, WV 20025, United States, Phone: 1234567890. A 'Change' link is provided.
- Billing Information:** Rewards Points ending in 1234. A 'Change' link is provided.
- Billing Address:** Same as shipping address. A 'Change' link is provided.
- Gift Cards & Promotional Codes:** A text input field and an 'Apply' button.
- Estimated delivery:** Sept. 26, 2011.
- Item:** Apple iPad Camera Connection Kit (MC531ZM/A) for \$29.95. It is marked as Prime. Quantity: 1. Sold by: -Media-Mart. Links for 'Change' and 'Add gift options' are present.
- Shipping Options:** Three options are listed: FREE Standard Shipping (3-5 business days), FREE Two-Day Shipping (selected, 'get it Monday, September 26'), and \$3.99/item One-Day Shipping ('get it Saturday, September 24').
- Order Summary:** A table showing: Items: \$29.95, Shipping & Handling: \$0.00, Total Before Tax: \$29.95, Estimated Tax To Be Collected: \$0.00, Rewards Points: -\$4.58. The final **Order Total: \$25.37** is displayed in red.
- Shipping Information:** A note explaining that Amazon Prime Shipping has been applied to eligible items.

A prominent 'Place your order' button is located at the top right of the main content area.



# After I buy, what state do I transition to?

amazon prime

Deliver to Lydia  
NEW YORK 10025

All ▾

Departments ▾ Browsing History ▾ Lydia's Amazon.com Today's Deals Gift Cards Registry Sell Help

EN

## Deals recommended for you [See all deals](#)



\$229.99  
Ends in 13:41:22



\$6.14 - \$49.69  
Ends in 13:41:22



\$999.99  
Ends in 13:36:23



\$47.99  
\$79.99  
Ends in 13:41:22



\$32.00  
\$49.99  
Ends in 13:41:22

## Amazon Gift Cards



Millions of items,  
no expiration.

[>Shop now](#)

[Ad feedback](#)

## Your Dash Buttons

[Manage buttons](#)

[Learn more](#)

TAP HERE for info

TAP HERE to buy



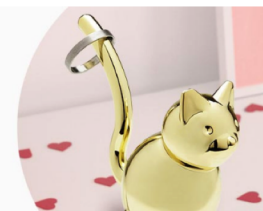
## New for you [See more](#)



Budget  
women's  
apparel

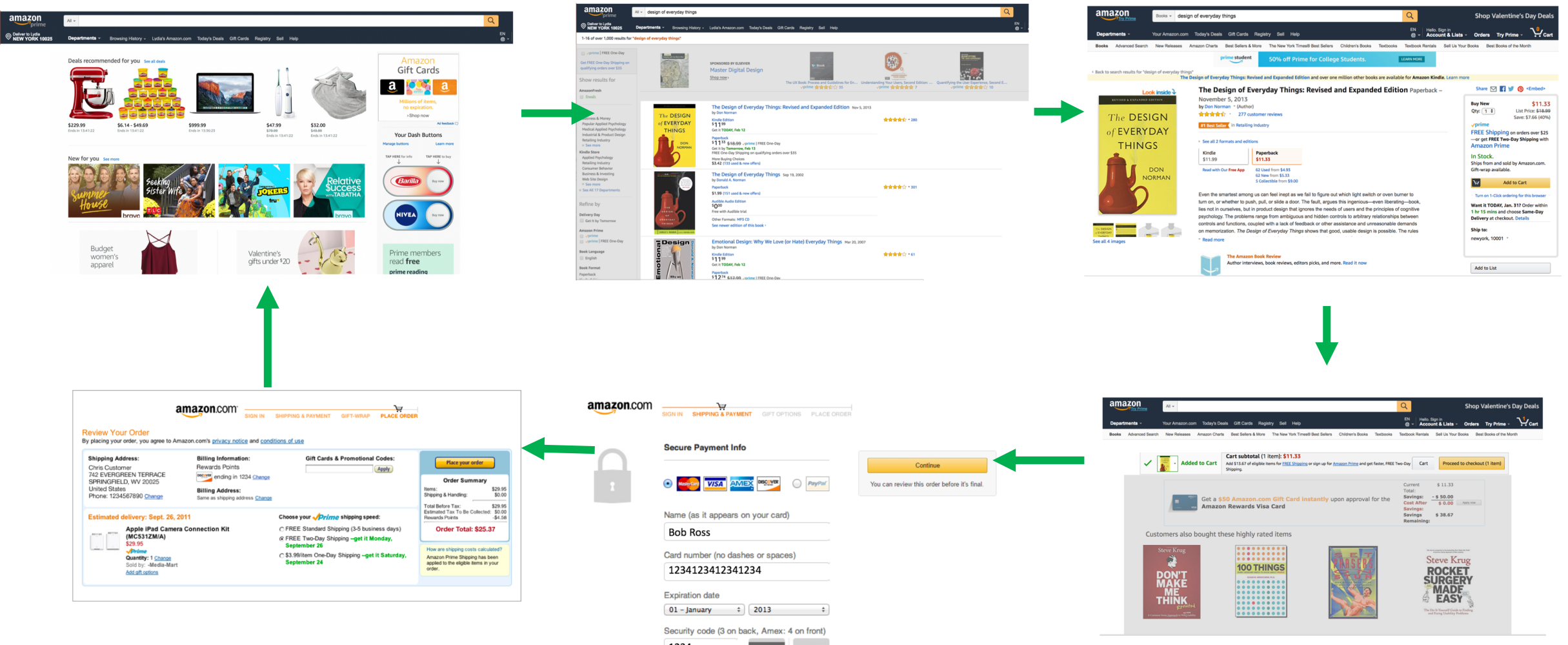


Valentine's  
gifts under \$20



Prime members  
read **free**  
prime reading

# For complex goals, break the task into states, options, and transitions to new states.



# Goal: Tell Uber where to find me.

What **state** am I in?

Set pickup location

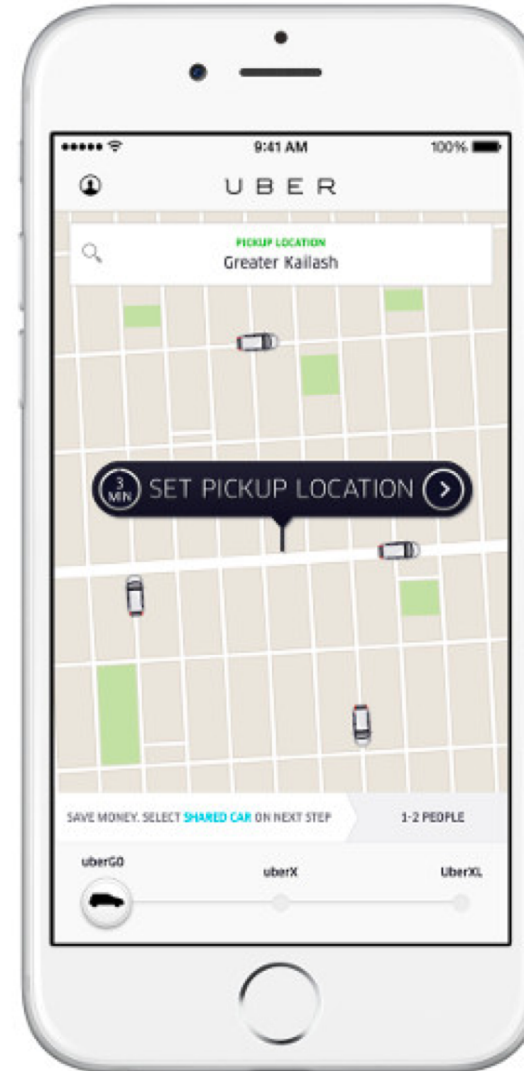
What **options** do I have?

Move pin to different location

What size car: pool/X/XL

How do I **transition**?

Press “Set Pickup location”



# Goal: Pay for it.

What **state** am I in?

Payment/Confirmation

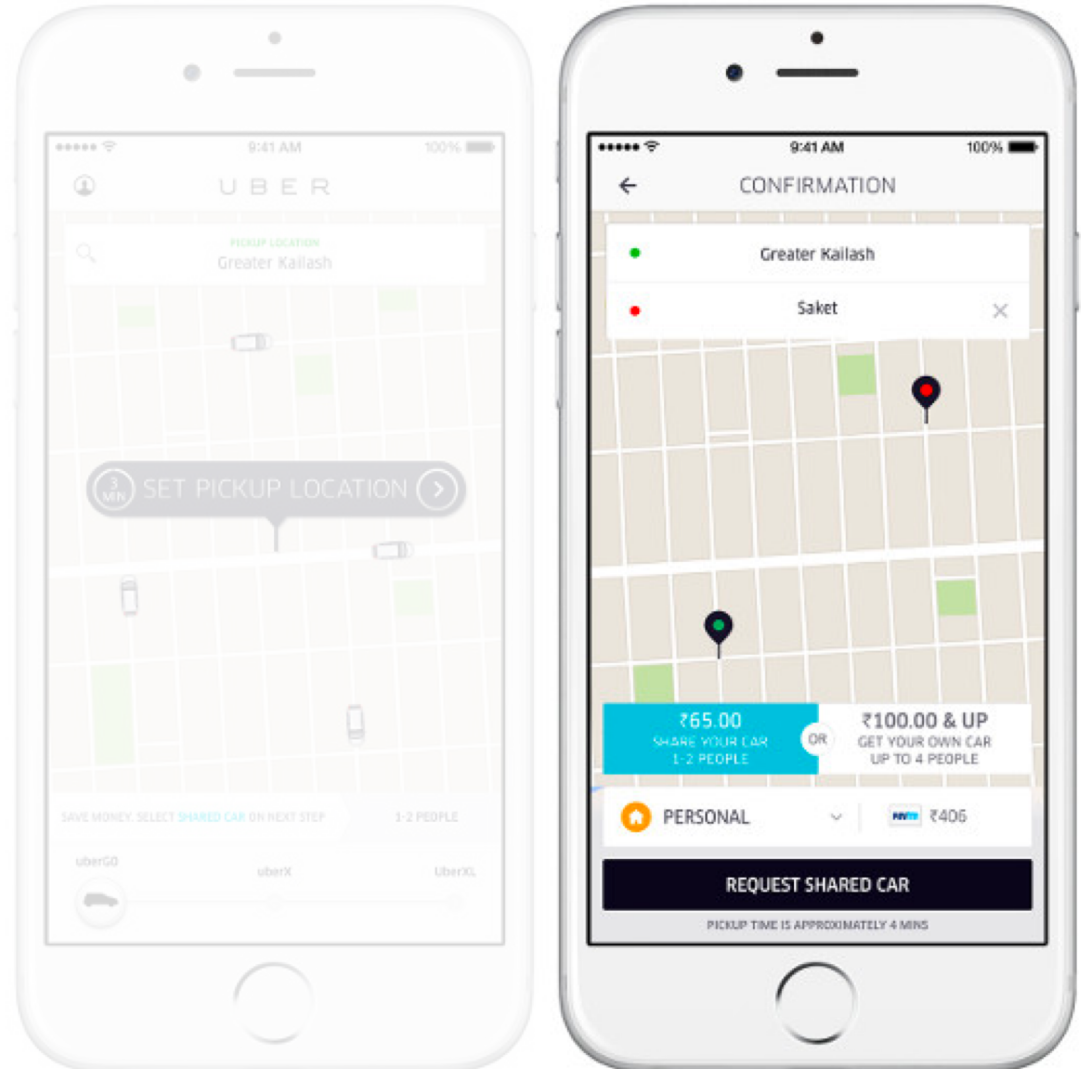
What **options** do I have?

Switch credit cards

Upgrade to your ride

How do I **transition**?

Press “Request shared car”



# Goal: Find car

What **state** am I in?

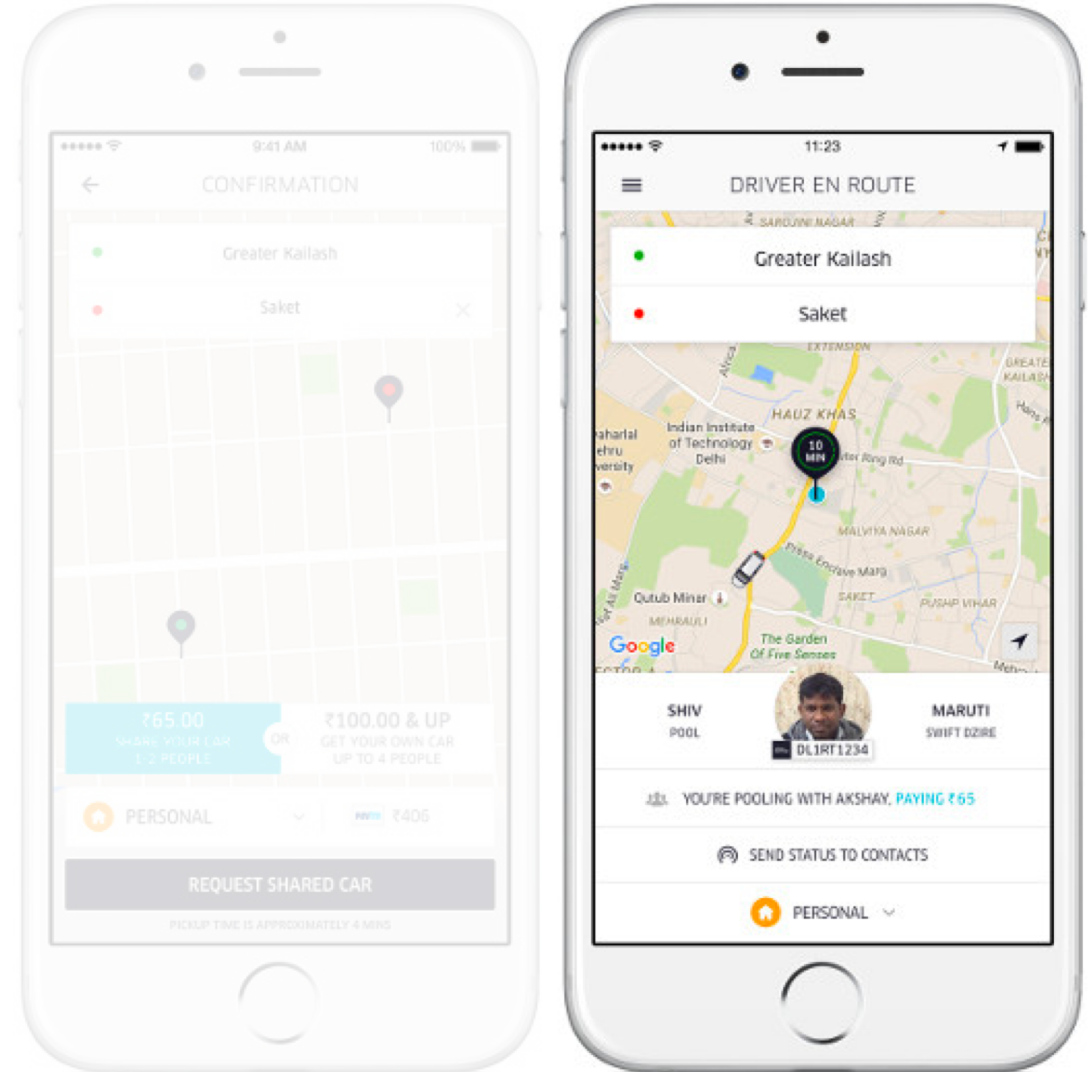
Waiting/"Driver en route"

What **options** do I have?

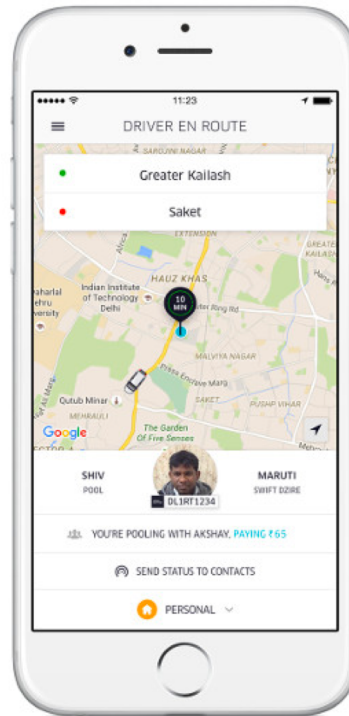
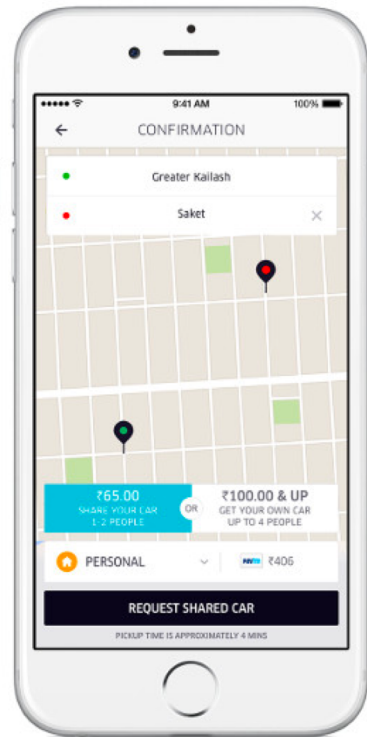
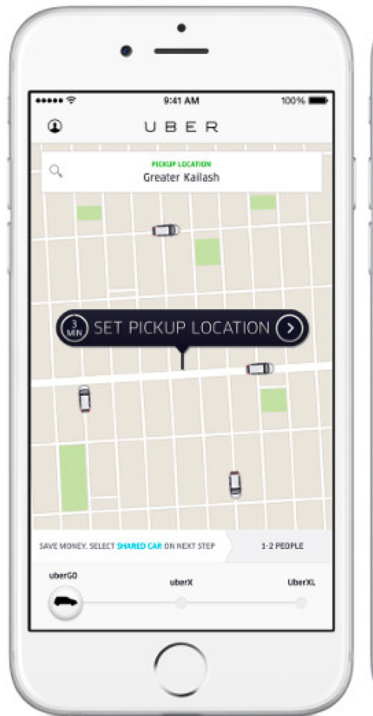
Contact driver

How do I **transition**?

Just wait



For complex goals, break the task into states, options, and transitions to new states.



# Goal: Change the font

What **state** am I in?

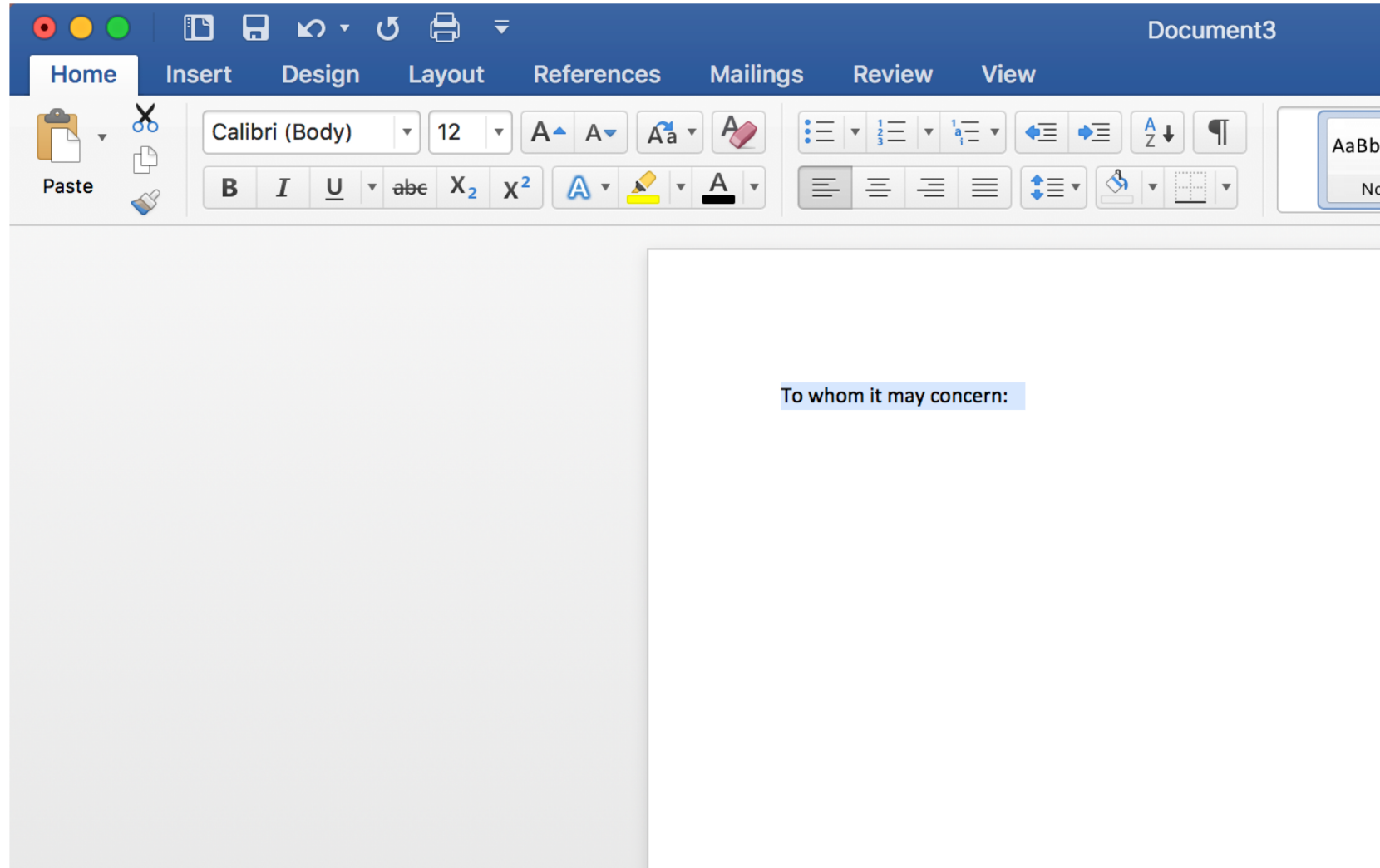
Selected Text

What **options** do I have?

All the menu options –  
Font, size, color, bullet pts

How do I **transition**?

Select a menu option OR  
Click outside the selection



# Goal: Find a font I like

What **state** am I in?

Font selection

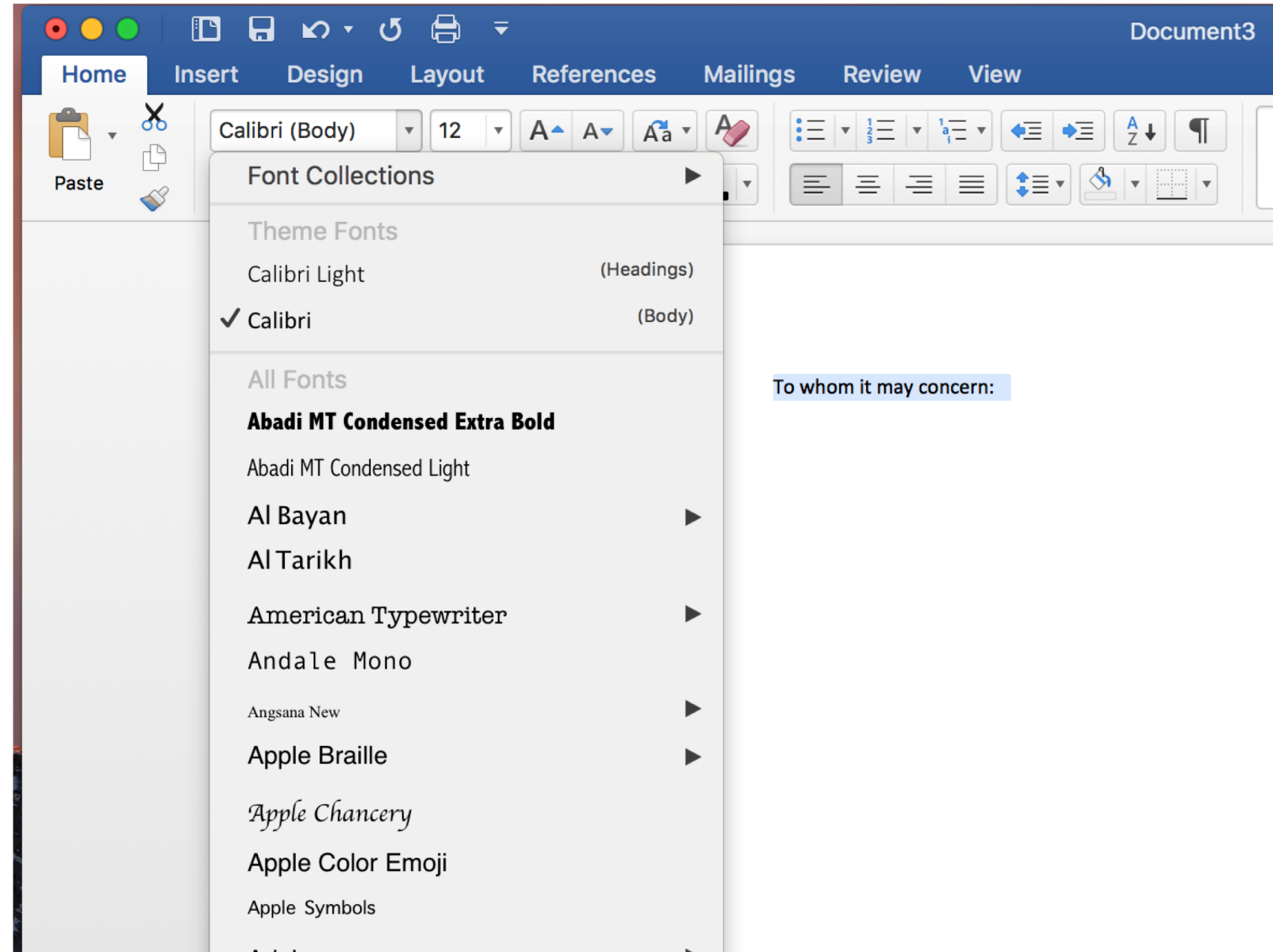
What **options** do I have?

Hundreds of fonts

How do I **transition**?

Select a font OR

Click outside the font menu.





# Goal: Evaluate the font

What **state** am I in?

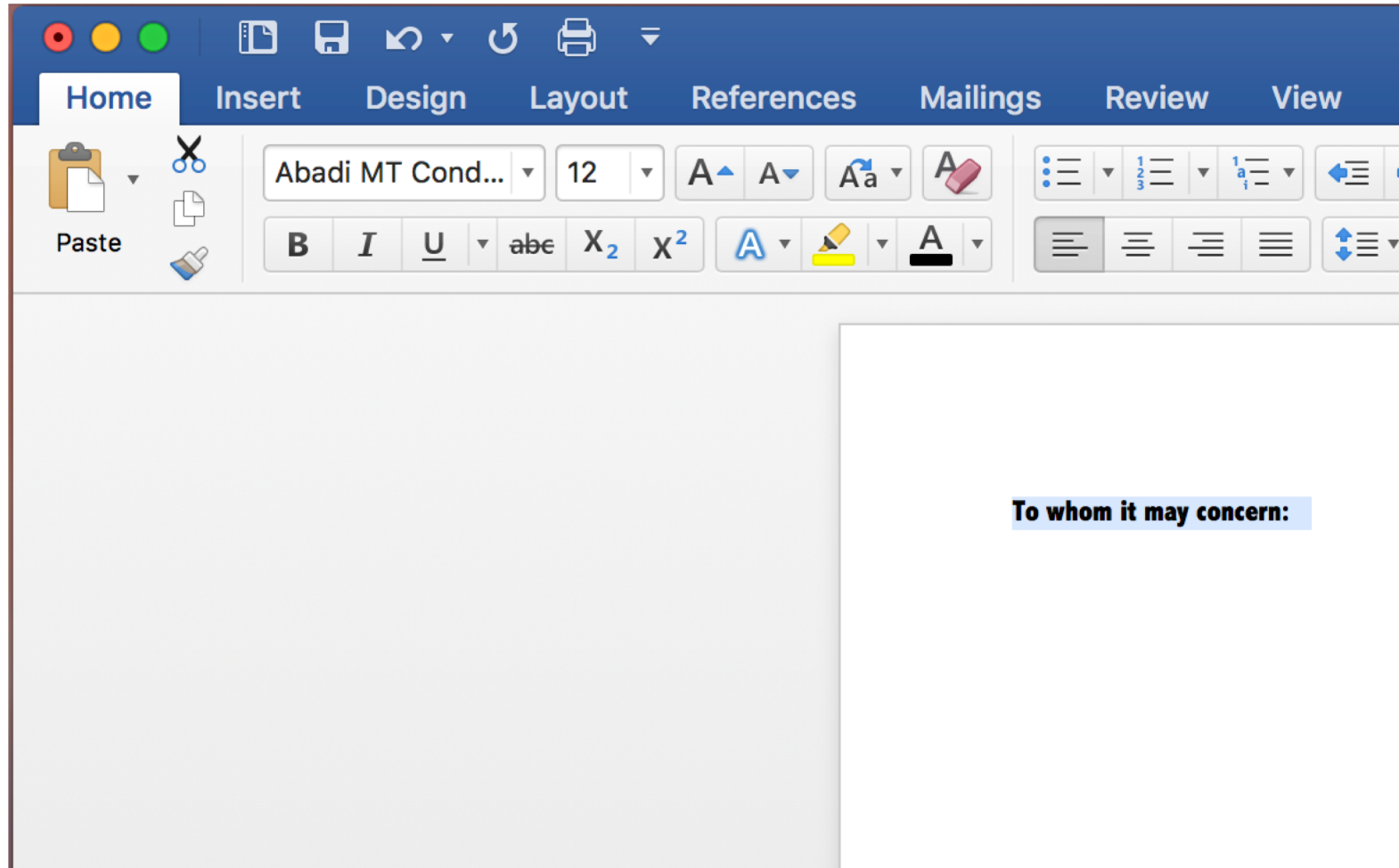
Selected Text

What **options** do I have?

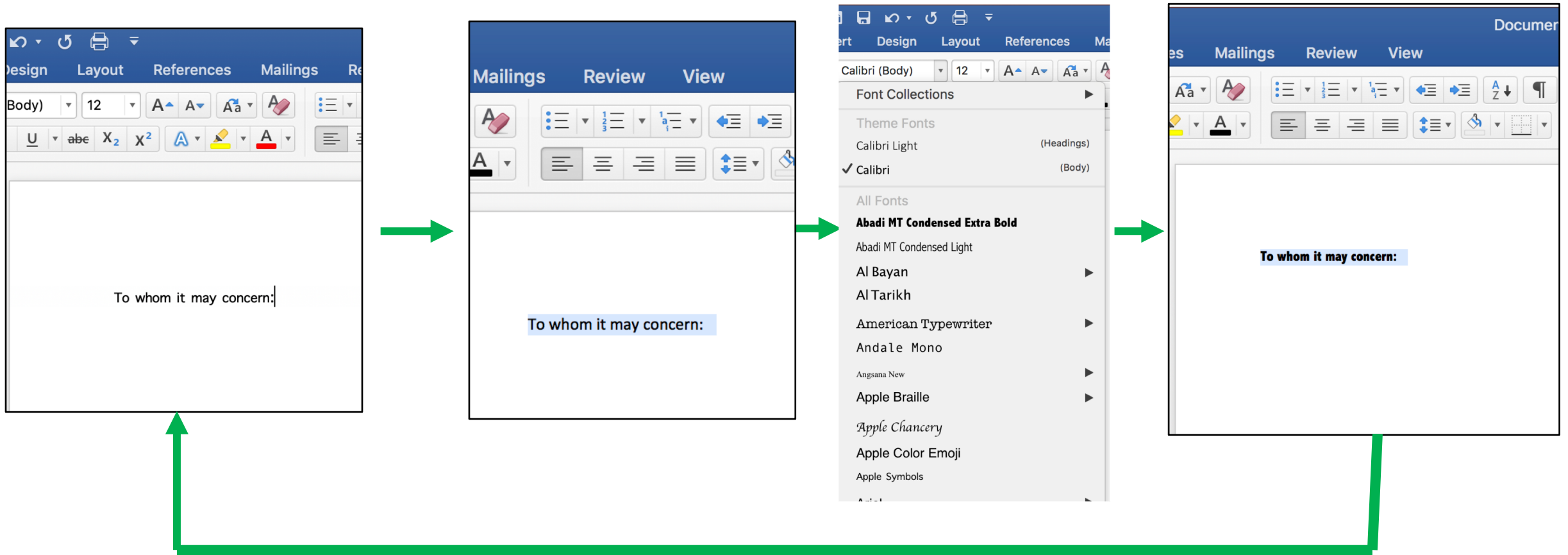
All the menu options

How do I **transition**?

Select a new menu option OR  
Click outside the selection



For complex goals, break the task into states, options, and transitions to new states.

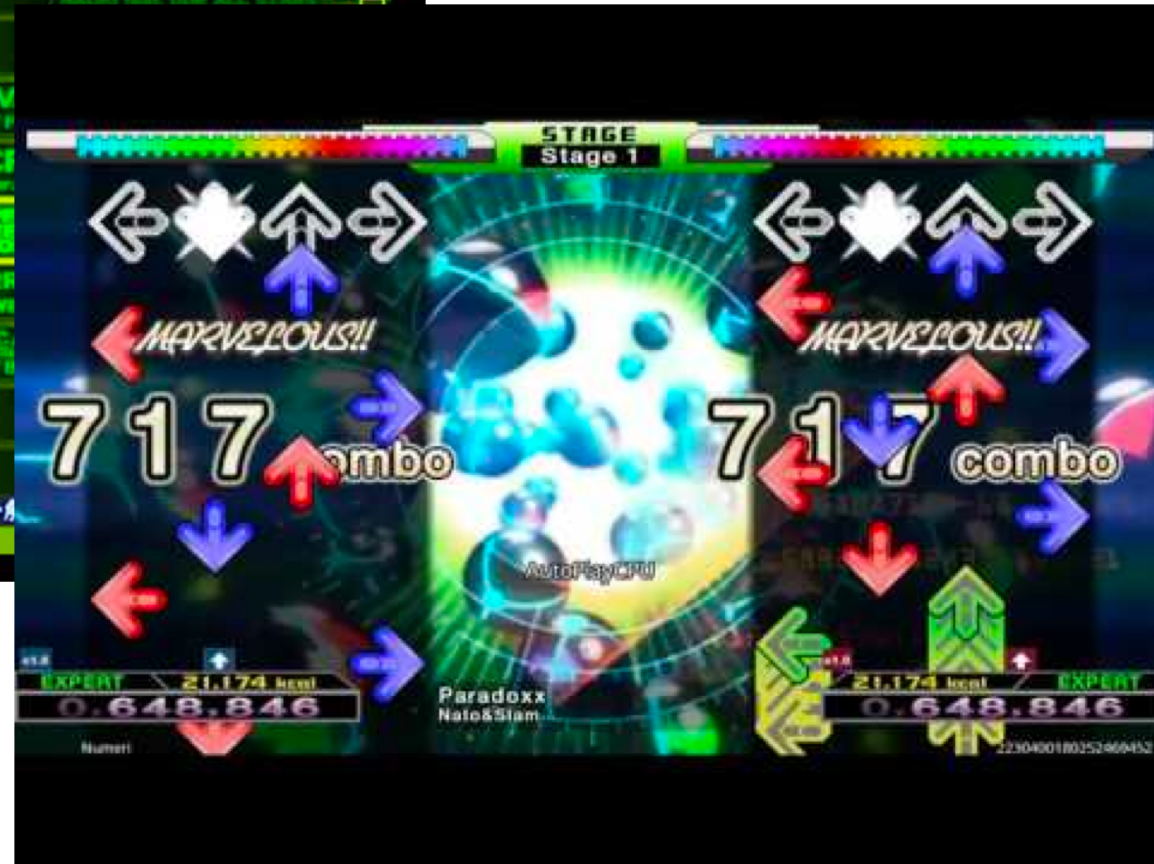


DDR: What state are we in?

What are the options in this state?



# DDR: What state are we in?



# DDR: What state are we in? What state will we transition to?

The image displays three overlapping screenshots from the DDR game. The top-left screenshot shows the 'Select Music' screen for 'SPEED OVER BEETHOVEN' by FROSE, with a stage speed of 169bpm. The middle screenshot shows a performance sequence with a 'MARVELOUS!!' hit and a '717' combo. The bottom-right screenshot shows the 'RESULTS EXTRA STAGE' screen for 'New Century' by Sota F., featuring a 'VERSUS CHALLENGE' mode with a score of 995,420 for Player 2 and 991,650 for Player 1, both achieving an 'AAA' grade.

**RESULTS EXTRA STAGE**

**PLAYER 1**      **VERSUS CHALLENGE** 18      **PLAYER 2**

**AAA**      **AAA**

score *It's a New Record!*      score *It's a New Record!*

991,650      **New Century**      995,420  
Sota F.

MAX COMBO 639      MAX COMBO 467

MARVELOUS	554	FAST	
PERFECT	103	GOOD	97
GREAT	11	SLOW	17
GOOD	0		
O.K.	80		
Miss	1		

**EX SCORE** 2119      **EX SCORE** 2182

※保存した画像は一定期間で期限切れとなります。      テンキー 1 でeAMUSEMENTアプリに画像を送信します。

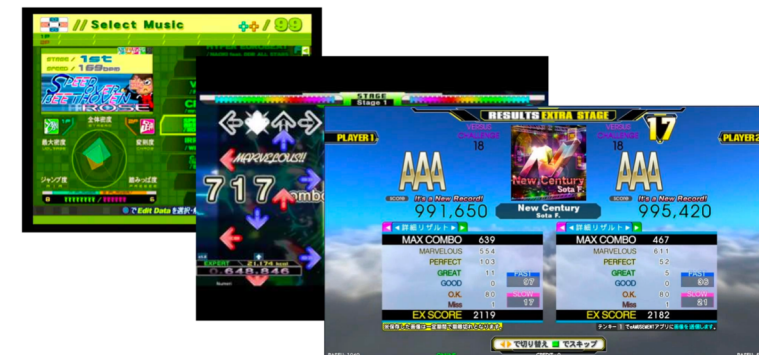
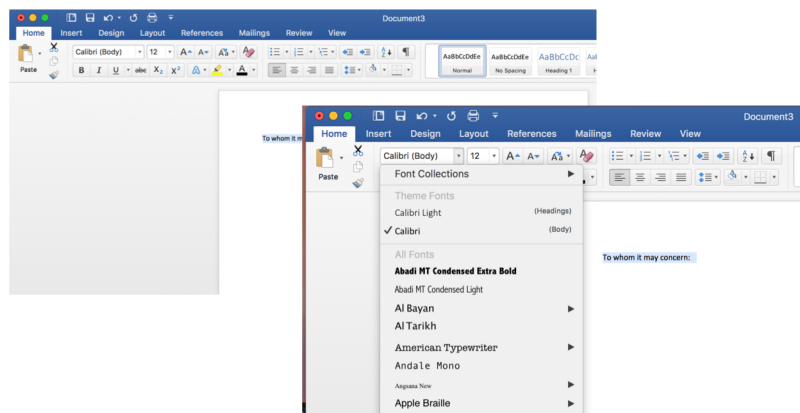
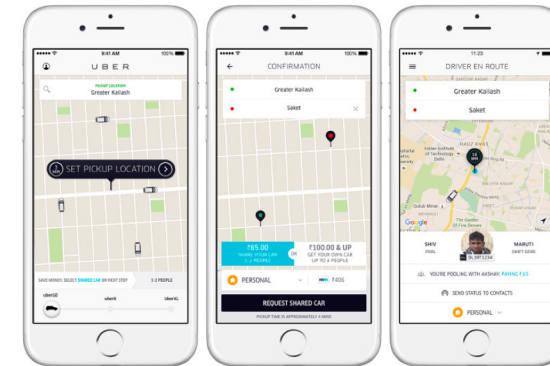
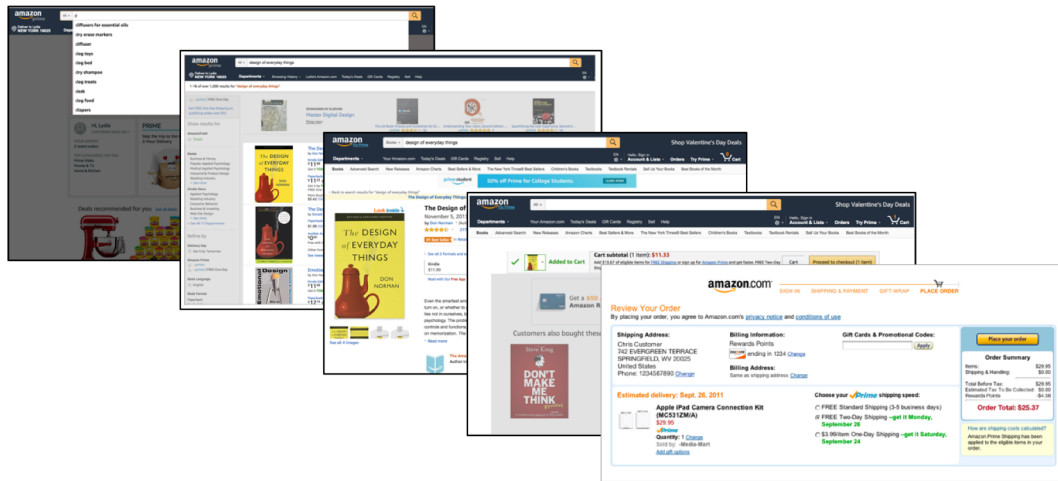
で切り替え      でスキップ

PASEL: 1060      ONLINE      CREDIT: 0      PASEL: 5469

DDR: Returns users to the song selection state.



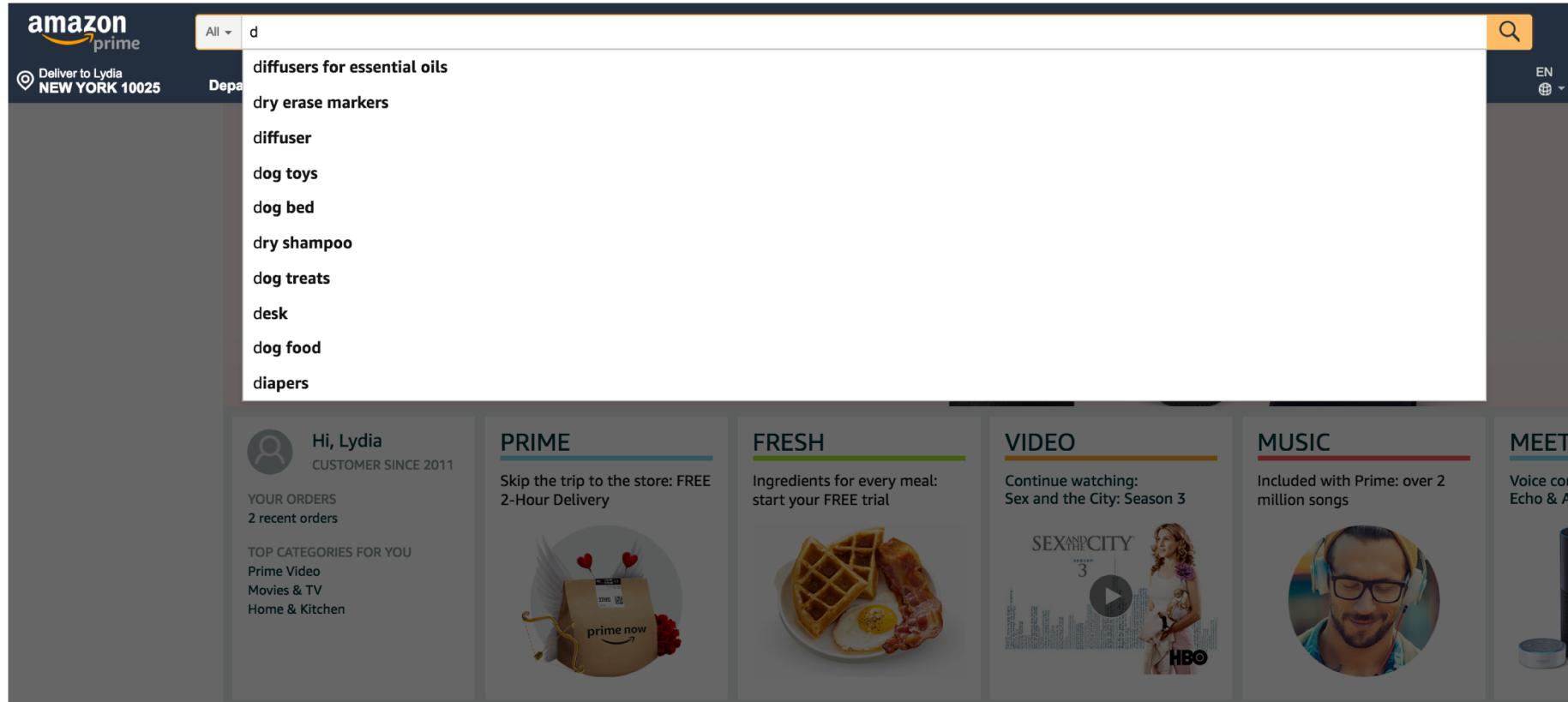
When you have too much information for one screen, **design states, options and transitions** for the user to navigate through to complete their goal.



Presenting users with options



# Product search: How many options are there?



Billions

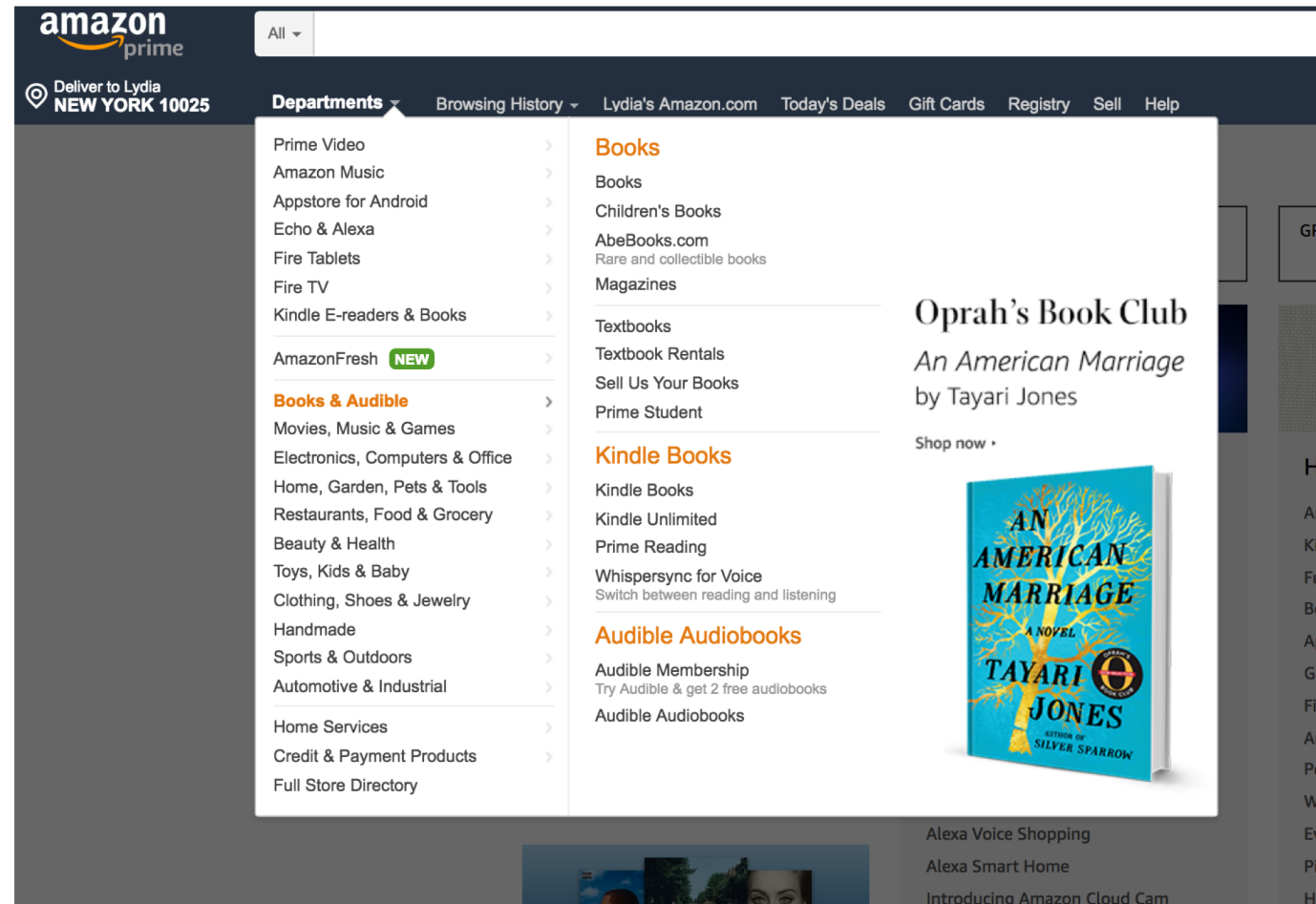
# Search Results: How many options are presented?

The screenshot shows the Amazon search results page for the query "design of everyday things". The page displays a list of 16 results, with the first six visible. Each result includes a book cover, title, author, publication date, and pricing information for various formats (Kindle, Paperback, Hardcover, Audible). The results are:

- The Design of Everyday Things: Revised and Expanded Edition** by Don Norman (Nov 5, 2013). Kindle Edition: \$11.99. Paperback: \$11.35 (was \$18.00). Hardcover: \$34.42 (was \$42.00).
- The Design of Everyday Things** by Donald A. Norman (Sep 19, 2002). Paperback: \$1.99 (was \$5.99). Audible Audio Edition: \$0.00.
- Emotional Design: Why We Love (or Hate) Everyday Things** by Don Norman (Mar 20, 2007). Kindle Edition: \$11.99. Paperback: \$12.24 (was \$12.99). Hardcover: \$40.00.
- 100 Things Every Designer Needs to Know About People (Voices That Matter)** by Susan Weinschenk (Apr 14, 2011). Kindle Edition: \$9.60. Paperback: \$25.24 (was \$24.99). Hardcover: \$15.90 (was \$19.95).
- The Psychology Of Everyday Things** by Don Norman (Jun 15, 1988). Hardcover: \$30.00 (was \$34.95). Paperback: \$2.49 (was \$2.95).
- Hooked: How to Build Habit-Forming Products** by Nir Eyal and Ryan Hoover (Nov 4, 2014). Kindle Edition: \$11.99. Hardcover: \$17.12 (was \$25.95). Paperback: \$10.23 (was \$12.95).

The text "About 10" is overlaid on the bottom right of the screenshot.

# Amazon Departments: How many options are there?

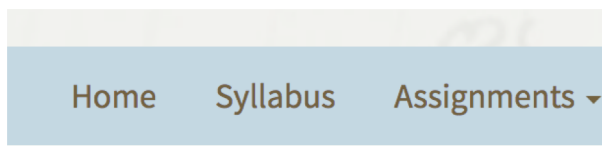
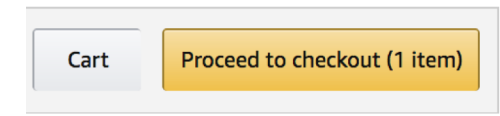
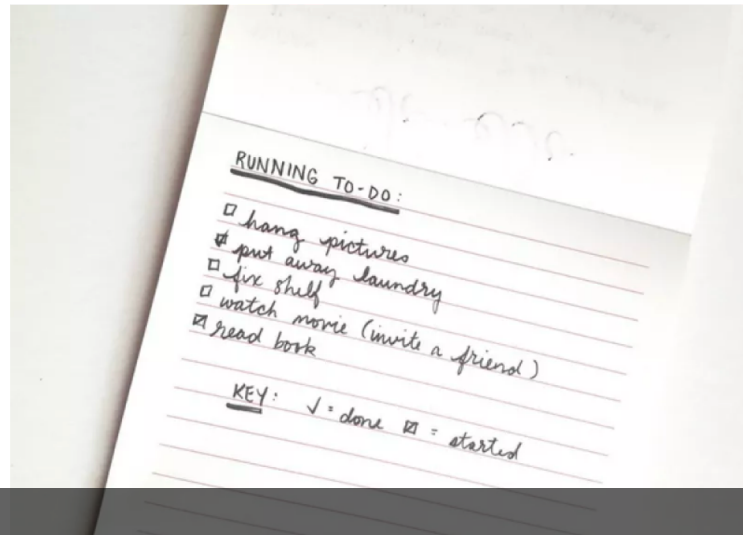
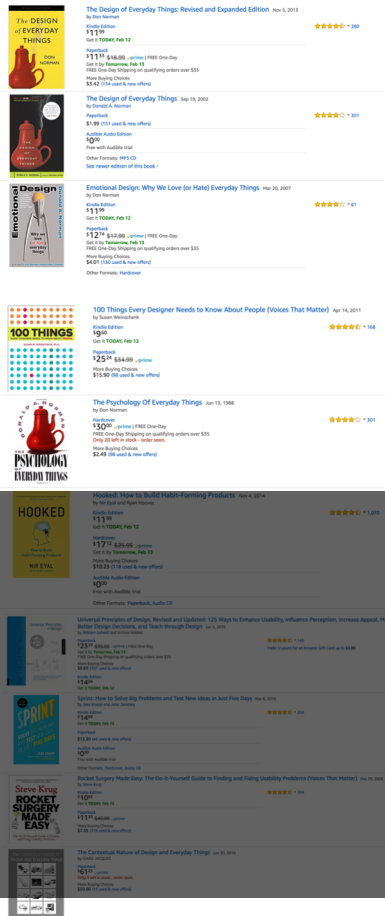


About 100

# We display options different depending on how many options there are

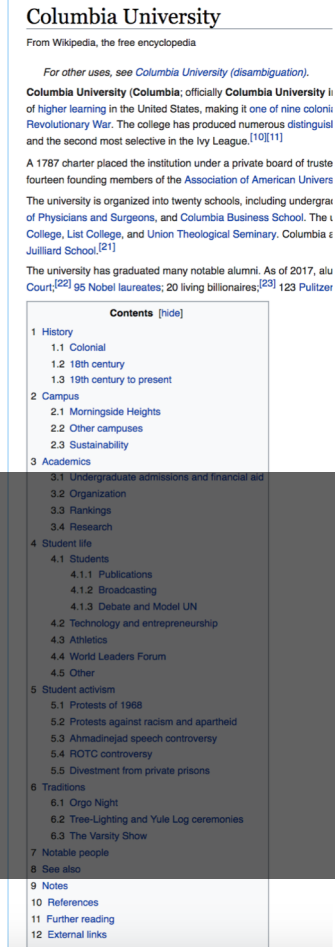
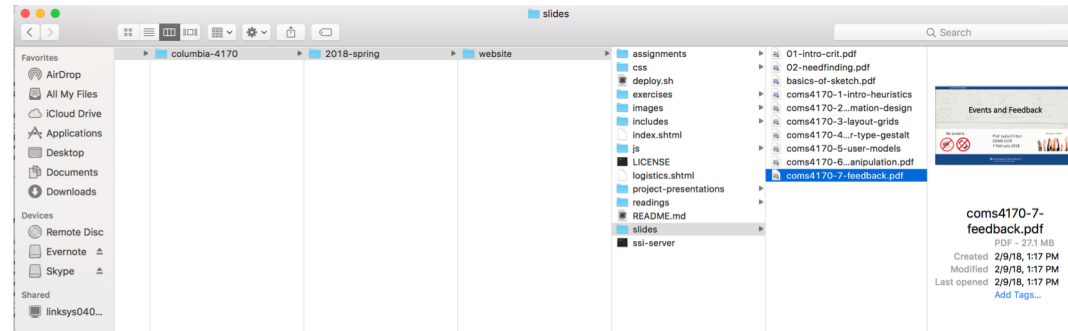
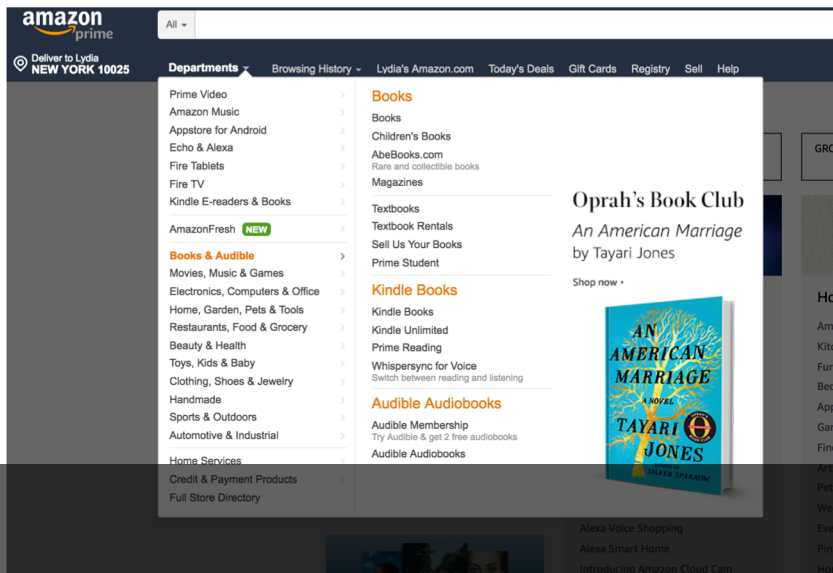
- Orders of magnitude
  - 1 (no options, just a single choice)
  - 10
  - 100
  - 1000+

# For ~10 options, how do you display them?



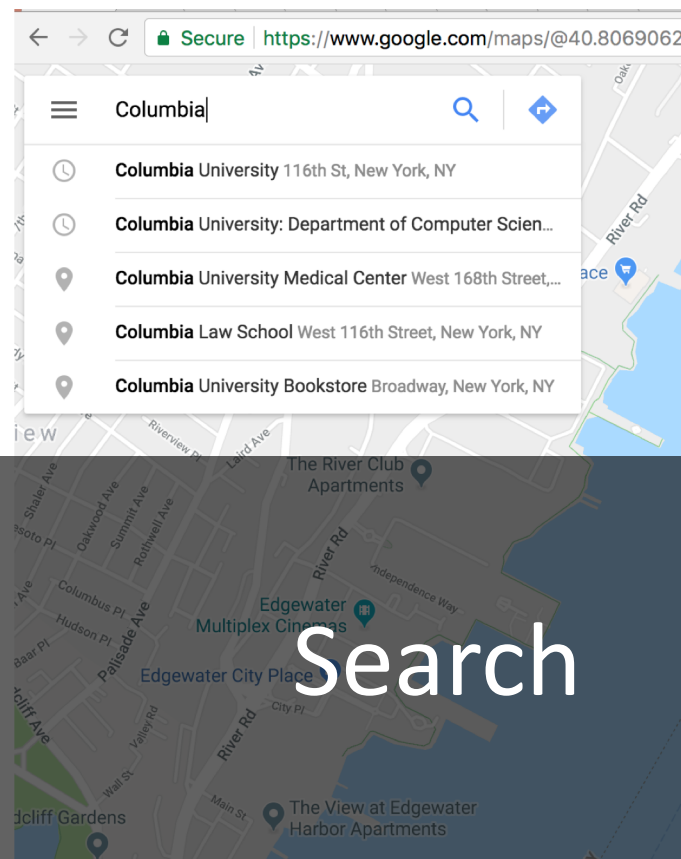
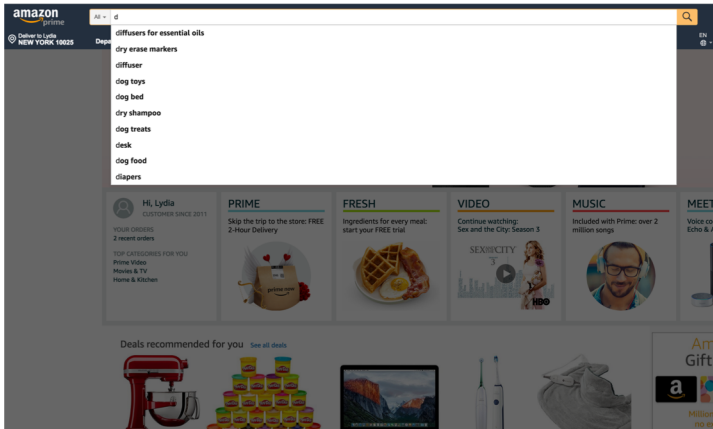
List

# For ~100 options, how do you display them?



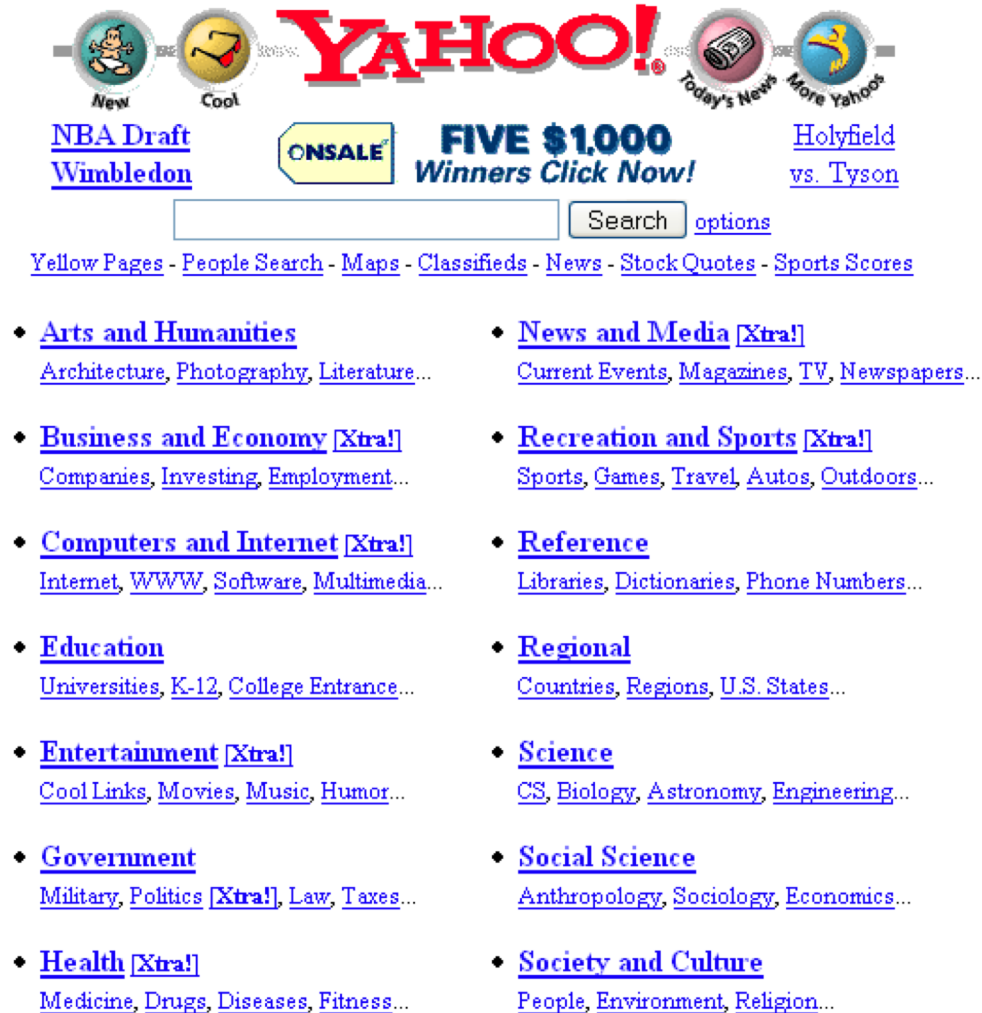
A tree

# For ~1000 options, how do you display them?



```
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137     $(document).ready(function(){
138         window.website = new Website();
139         window.website.loadCodeEditor();
140         website.setCurrentPageElement($("#home"));
141         add
142     });
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```

# Yahoo 1995: What interaction style is this?



The image shows a screenshot of the 1995 Yahoo! homepage. At the top, the word "YAHOO!" is written in large, red, bold letters. To the left of the logo are two circular icons: one with a baby and the word "New" below it, and another with a red ribbon and the word "Cool" below it. To the right of the logo are two more circular icons: one with a newspaper and the words "Today's News" below it, and another with a blue figure and the words "More Yahoos" below it. Below the logo, there are several links: "NBA Draft", "Wimbledon", "ONSALE" (in a yellow box), "FIVE \$1,000 Winners Click Now!", "Holyfield vs. Tyson", and a search bar with a "Search" button and a link to "options". Below the search bar, there is a horizontal line of links: "Yellow Pages - People Search - Maps - Classifieds - News - Stock Quotes - Sports Scores". The main content area is a grid of category links, each starting with a diamond symbol and followed by a category name and a list of sub-links.

[NBA Draft](#)  
[Wimbledon](#)

**ONSALE**

**FIVE \$1,000**  
*Winners Click Now!*

[Holyfield vs. Tyson](#)

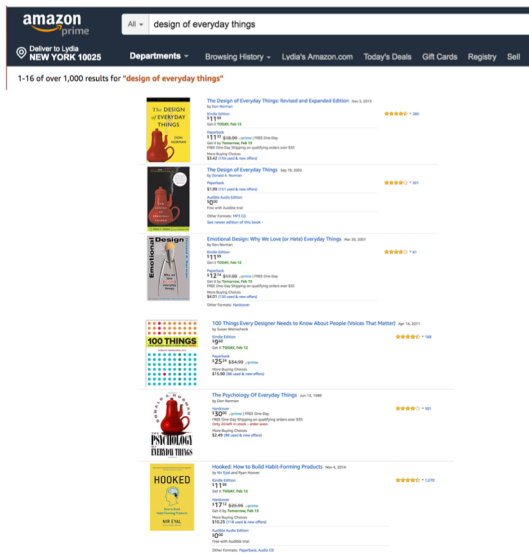
[options](#)

[Yellow Pages](#) - [People Search](#) - [Maps](#) - [Classifieds](#) - [News](#) - [Stock Quotes](#) - [Sports Scores](#)

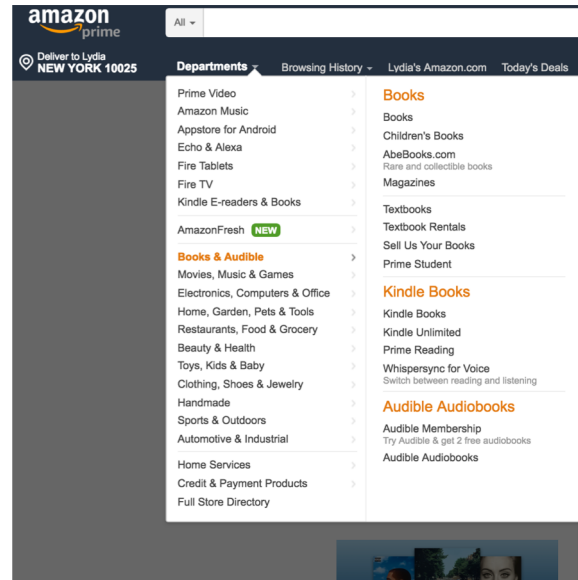
- ◆ [Arts and Humanities](#)  
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- ◆ [Business and Economy](#) [Xtra!]  
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- ◆ [Society and Culture](#)  
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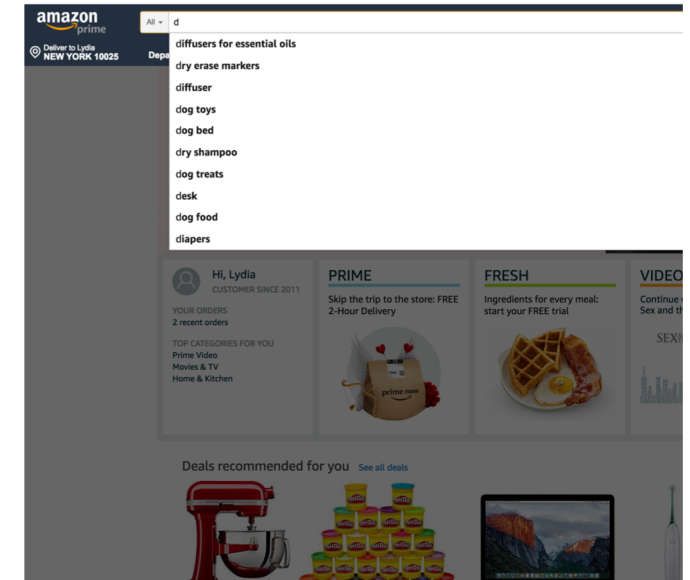
# When displaying options, the number of options determines the interaction style.



~10 items = list



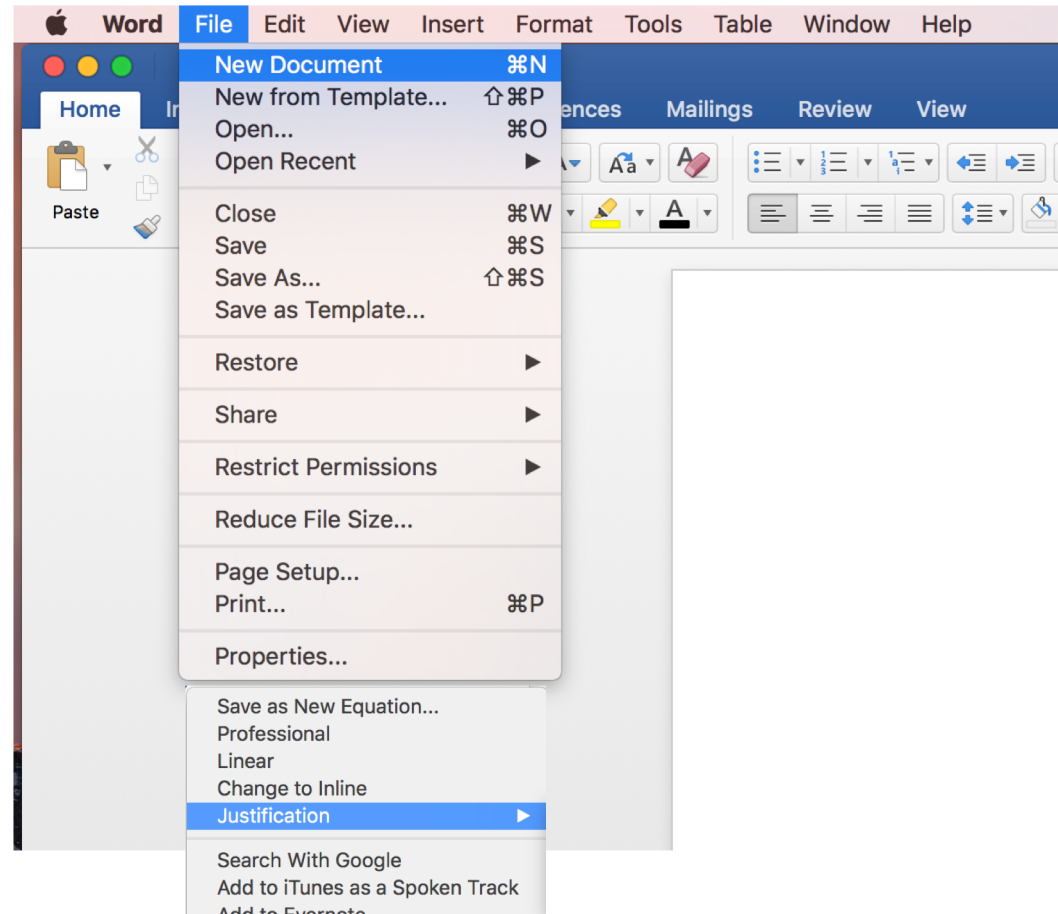
~100 items = tree



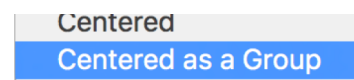
~1000 items = search

# Designing Menu Options

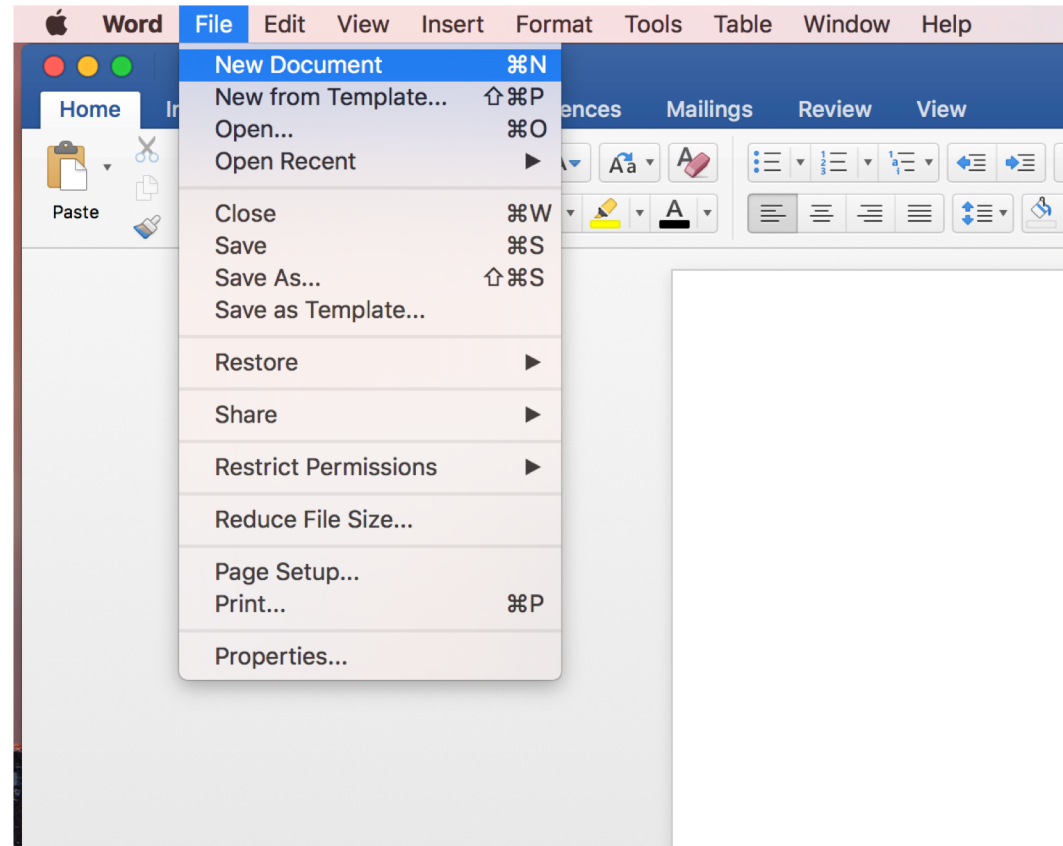
# What would happen if one menu listed all the commands?



Items that are **infrequently** used can be more **difficult** to access

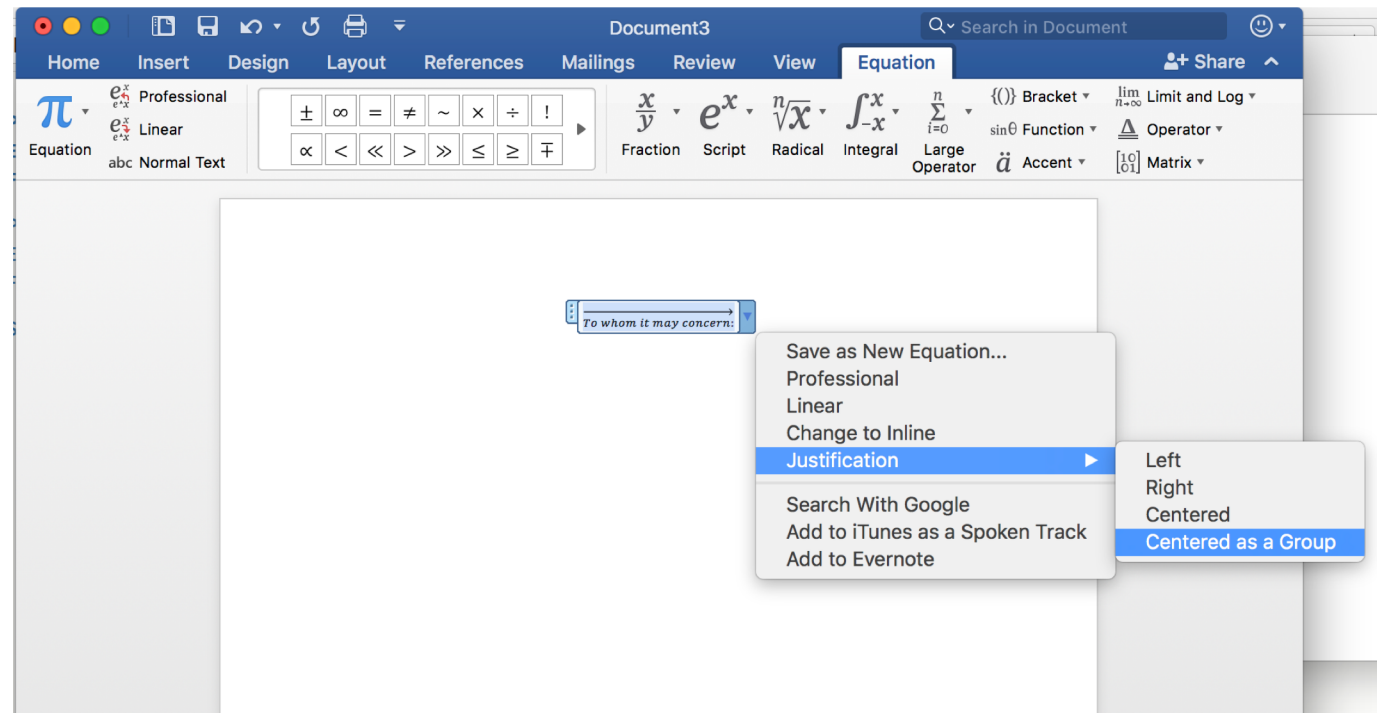


# Why is “New Document” the first menu item?



Items that are **frequently** used should be **easy** to access

Why is the function “*Word Equation -> Fraction -> Denominator -> Justification -> Centered as a Group*” buried 4 levels deep in the menu?

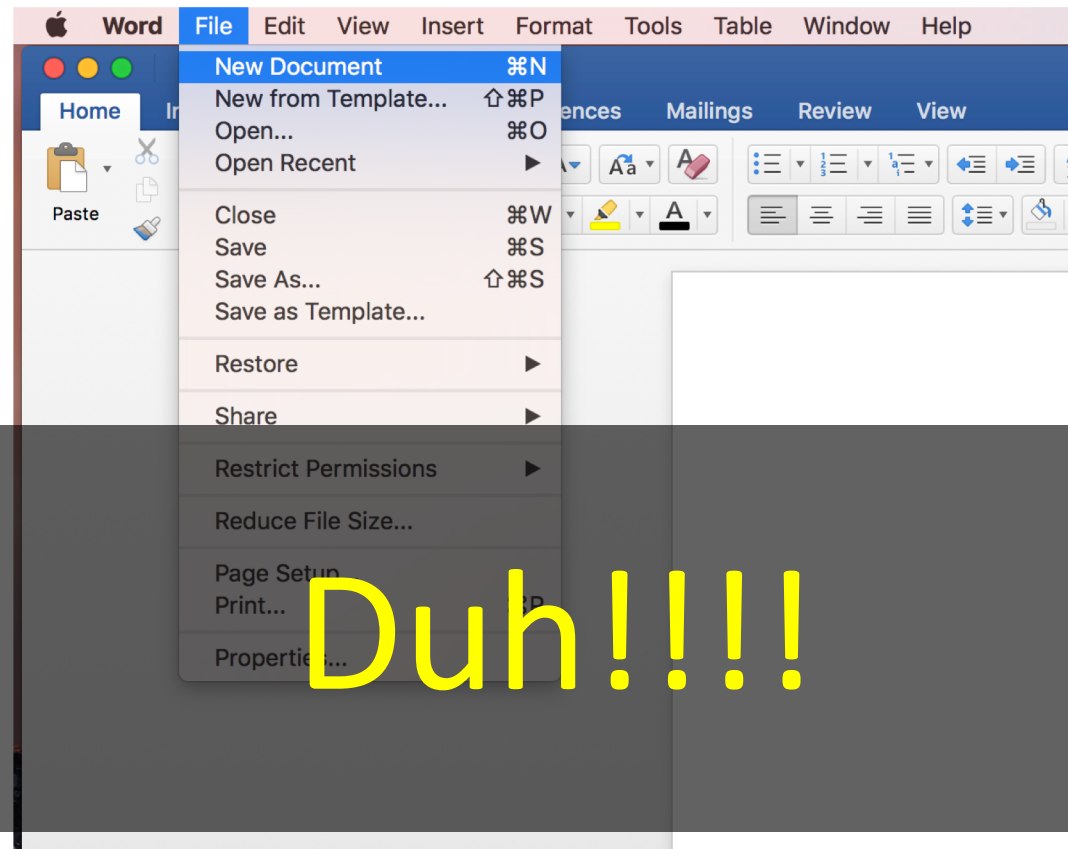


Items that are **infrequently** used can be more **difficult** to access

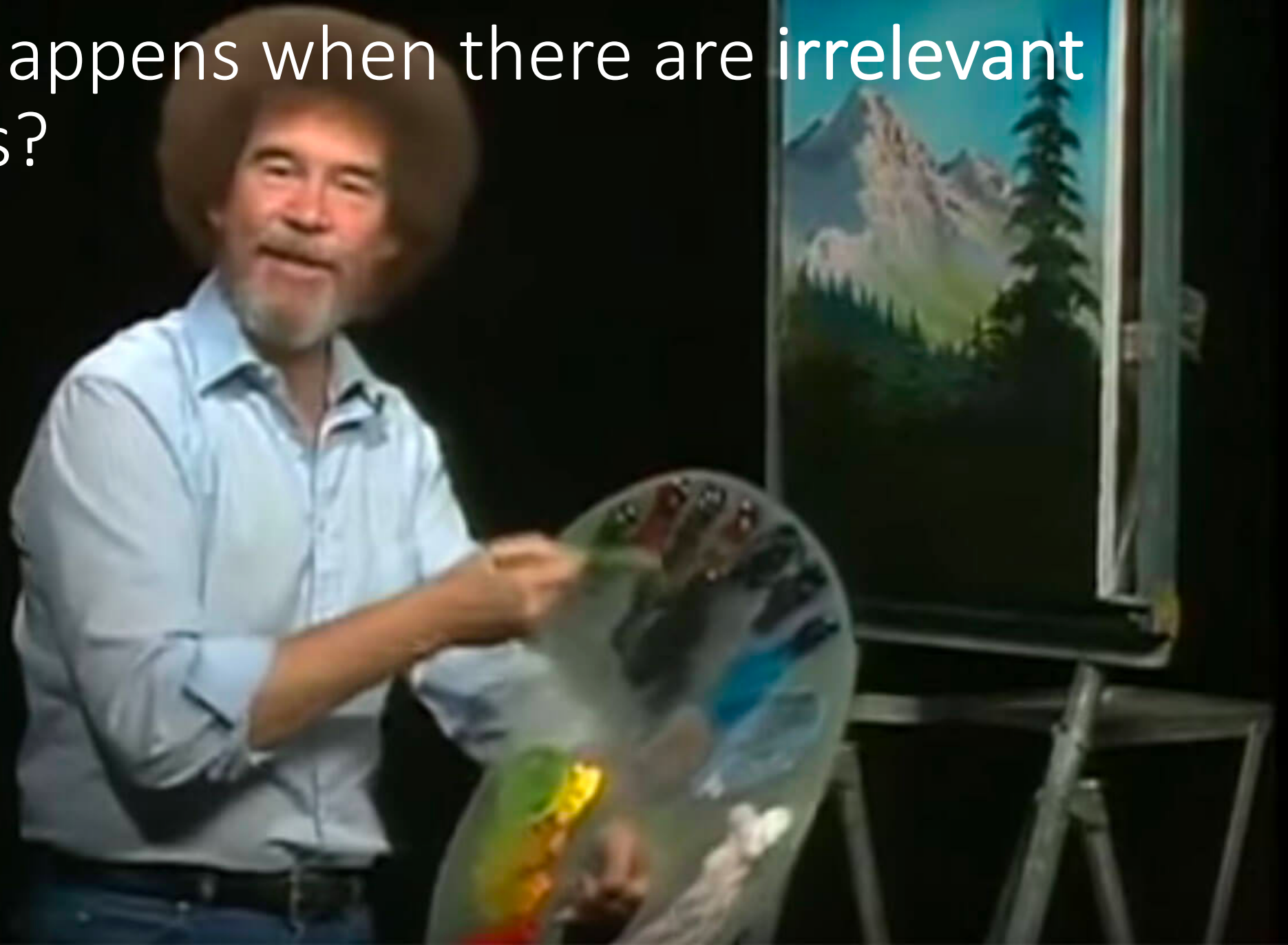
People have limited time.

Make frequently used options easier to access

Make rarely used options harder to access



What happens when there are irrelevant options?



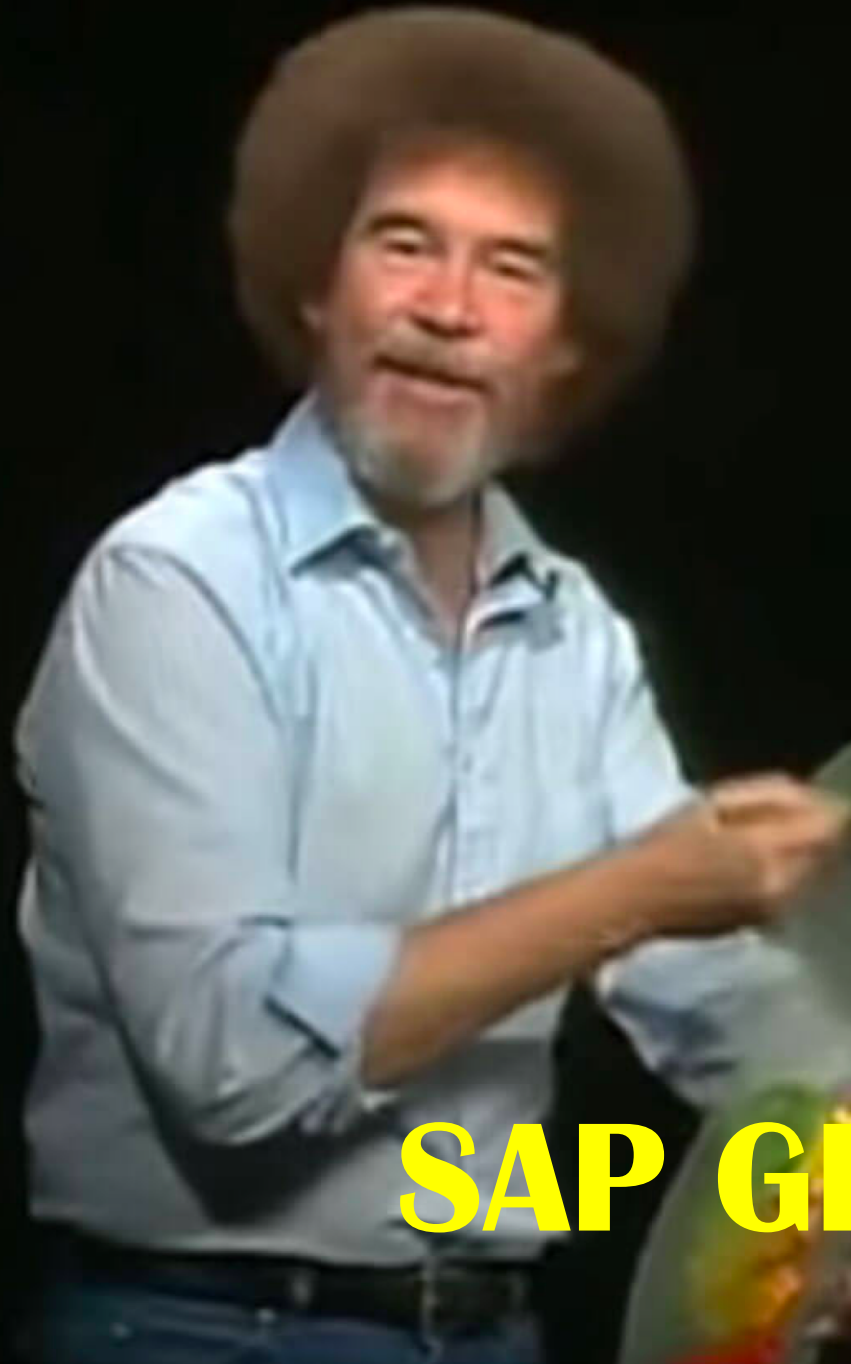
A man with a large afro hairstyle, wearing a light blue button-down shirt and jeans, is painting a landscape on a canvas. He is holding a palette with various colors of paint. The painting on the canvas depicts a mountain range with a large evergreen tree in the foreground. The text "TITANIUM WHITE" is overlaid in yellow at the bottom of the image.

**TITANIUM WHITE**

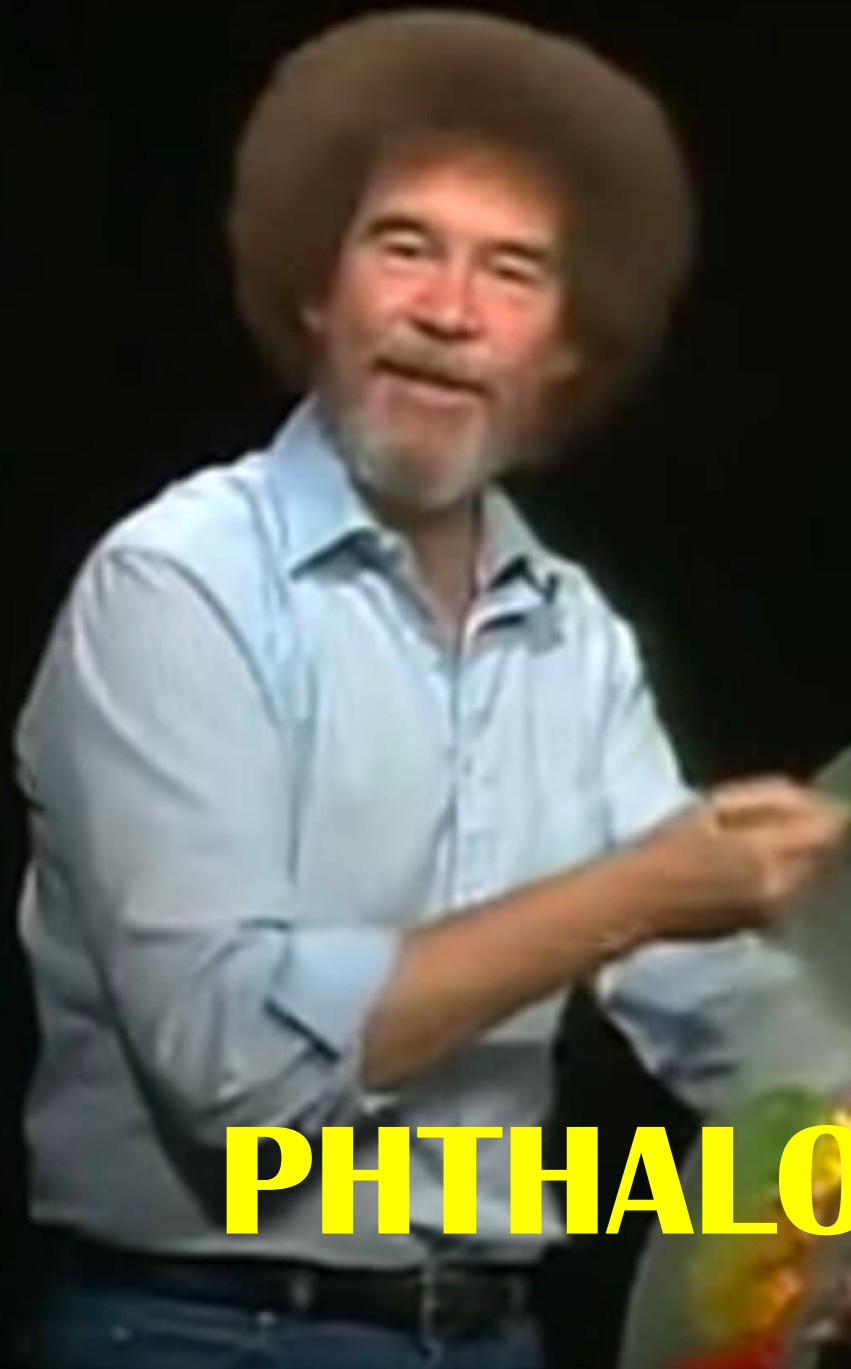


A man with a large afro hairstyle, wearing a light blue button-down shirt and jeans, is painting a landscape on a canvas. He is holding a palette with various colors of paint. The painting on the canvas shows a mountain range with a large evergreen tree in the foreground. The text "CADMIUM YELLOW" is overlaid in large, bold, yellow letters at the bottom of the image.

**CADMIUM YELLOW**



**SAP GREEN**



**PHTHALO BLUE**

Why not do this?



4

**ELECTRIC PINK**

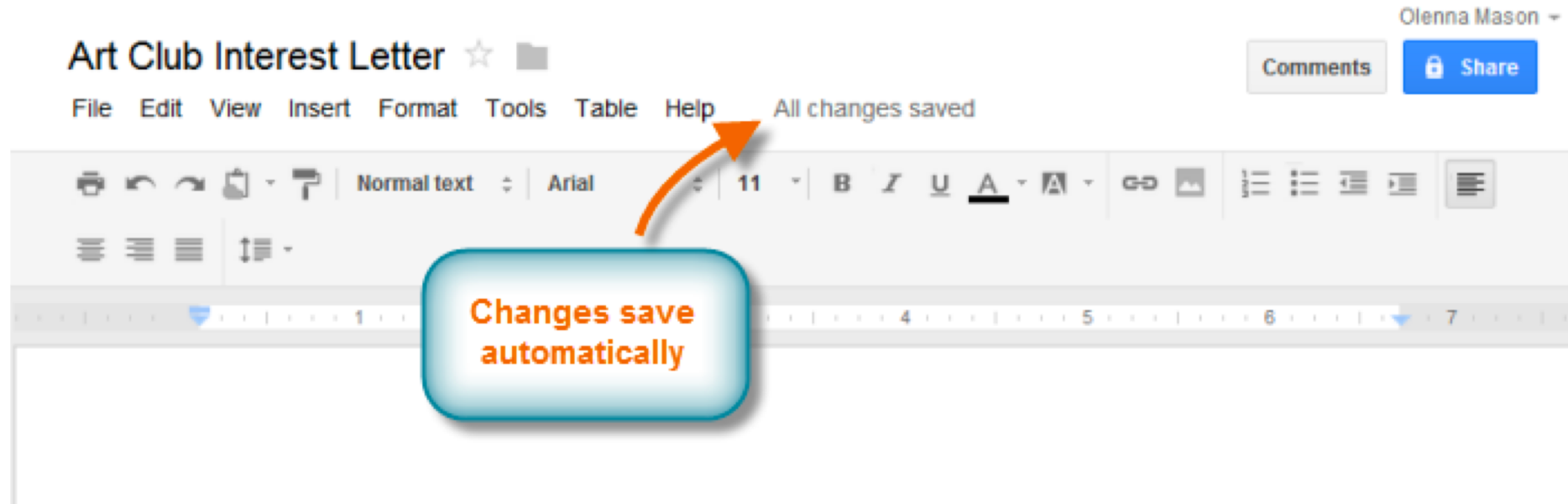
# Irrelevant options create distractions



Users will expend energy to focus.  
OR make mistakes

# 5. Error prevention

Even better than good error messages is a careful design which prevents a problem from occurring in the first place.



People have limited focus.

Within a state, provide options that are relevant to the user completing their goal.

**YES**



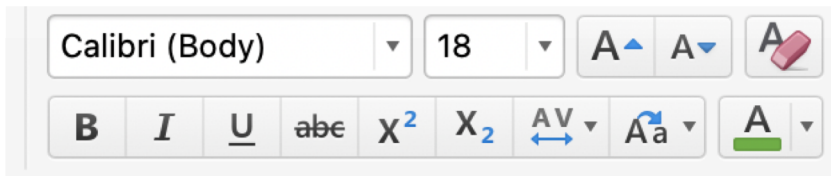
**NO**



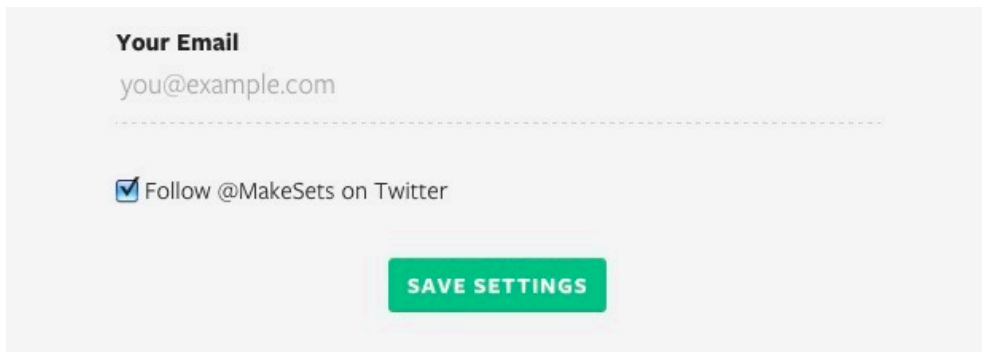
# Design good default options.

They save users time, and they often just accept them.

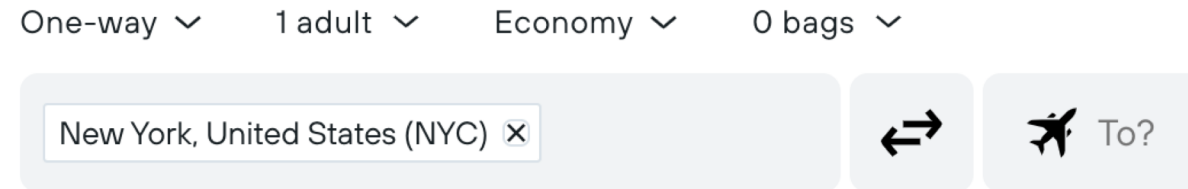
## People accept default fonts



## People accept default settings

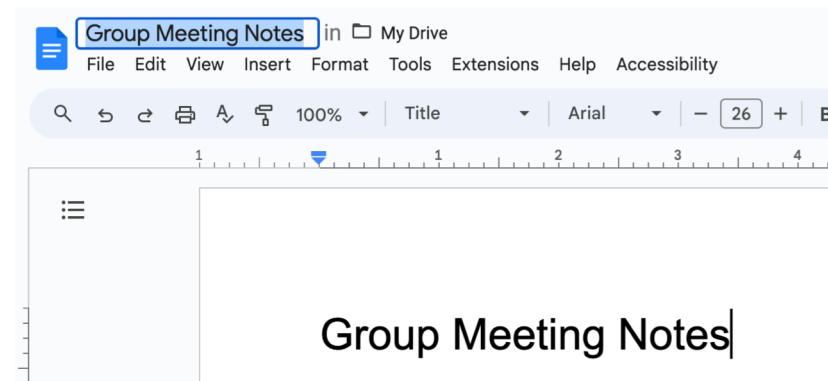


## Defaults save users time and energy



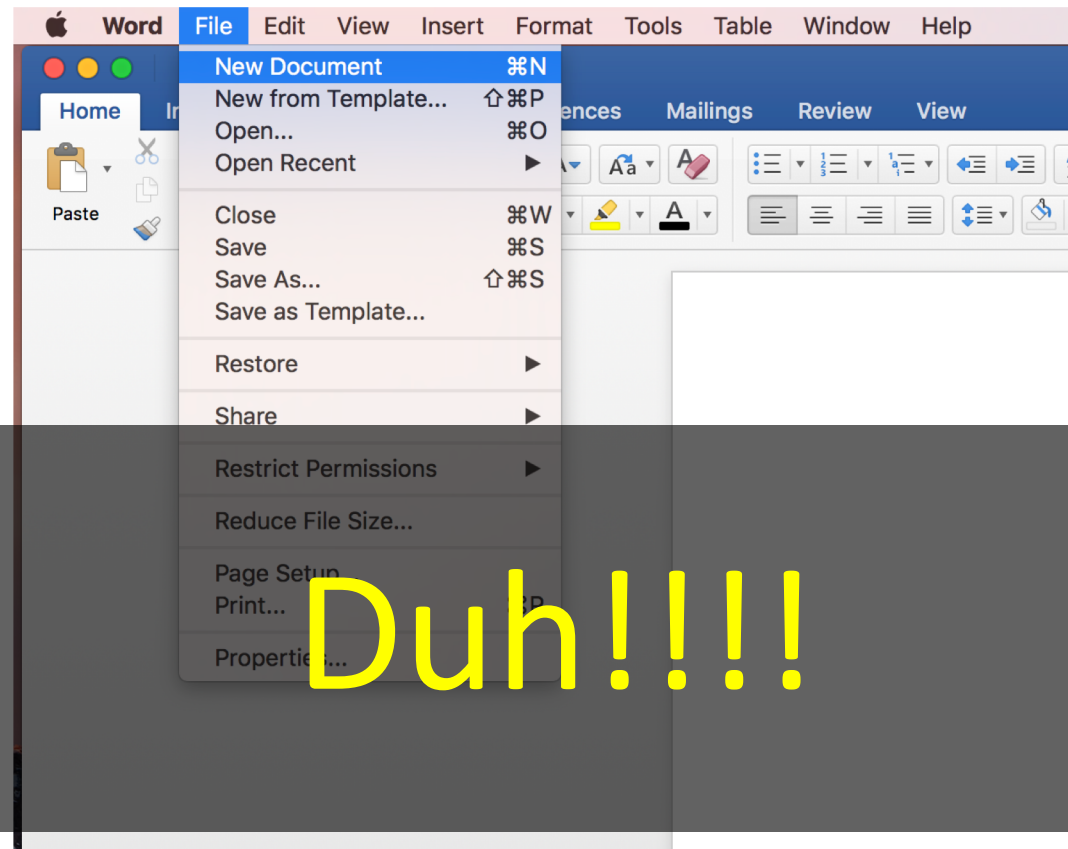
## UIs have millions of decisions

Good defaults reduce users' cognitive load.

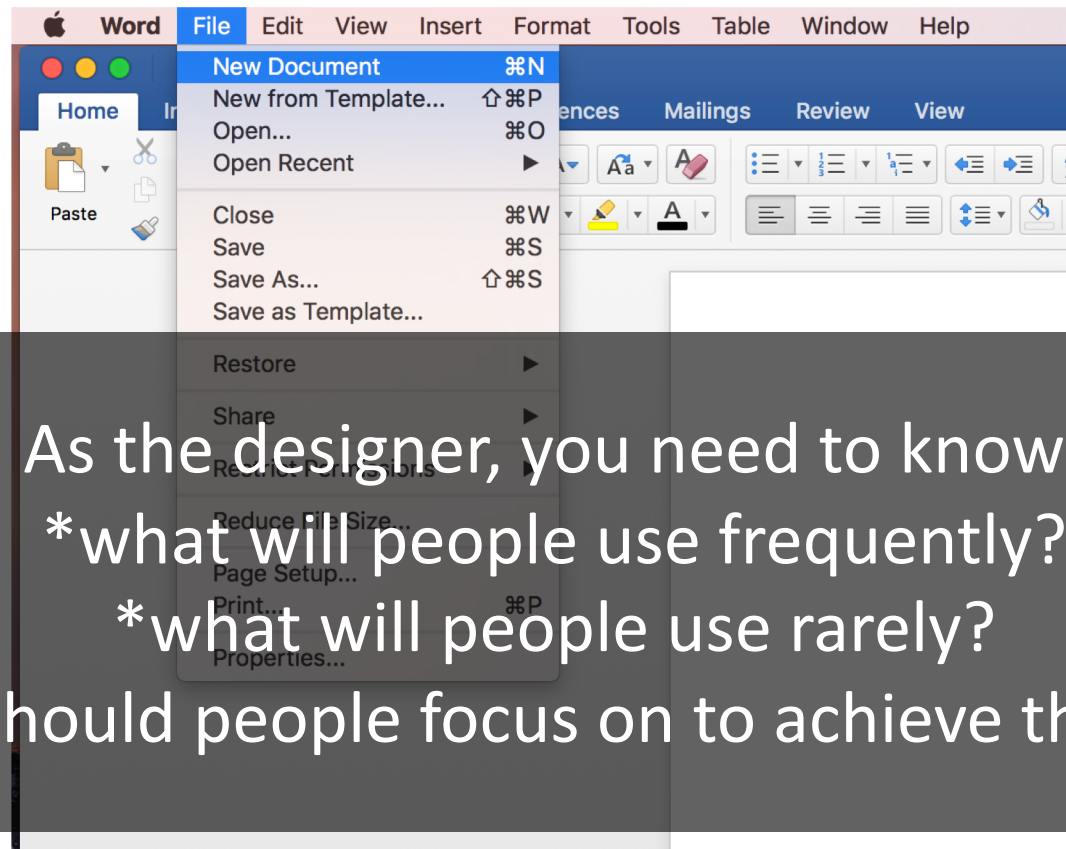




Make frequently used options easier to access  
Make rarely used options harder to access



# People have limited time and focus.



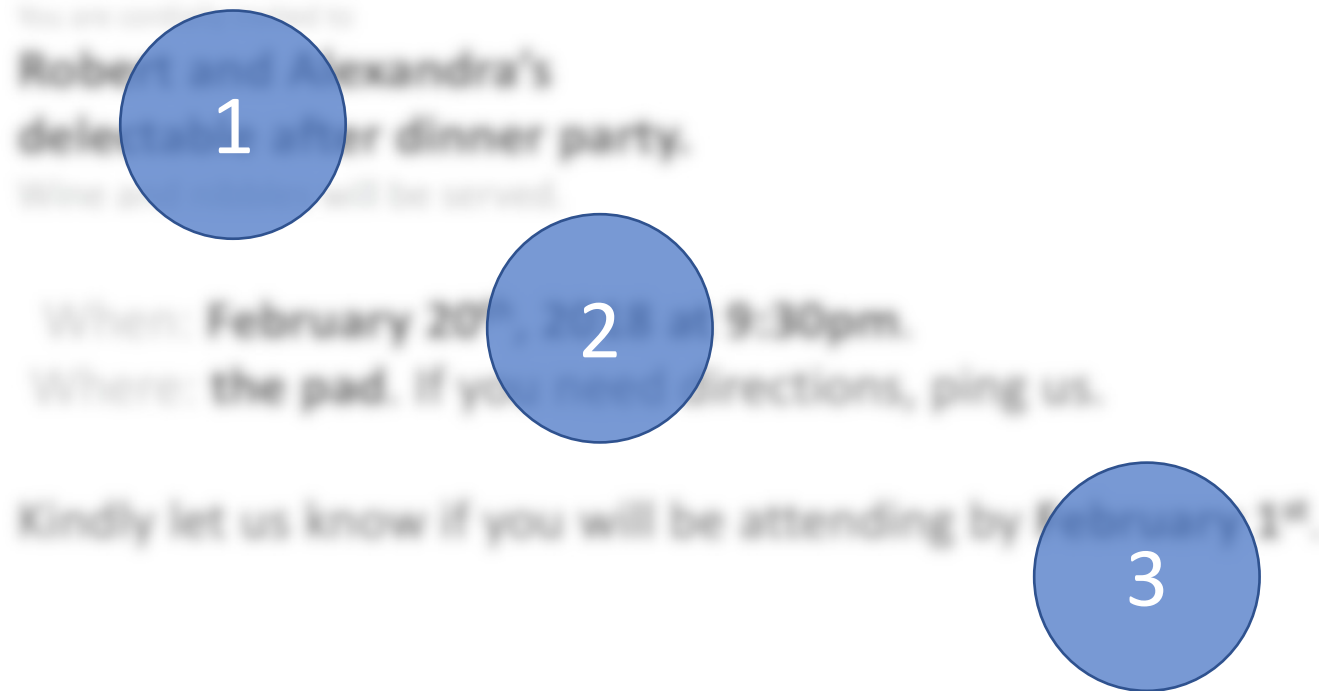
As the designer, you need to know:

- \*what will people use frequently?

- \*what will people use rarely?

- \*what should people focus on to achieve their goal?

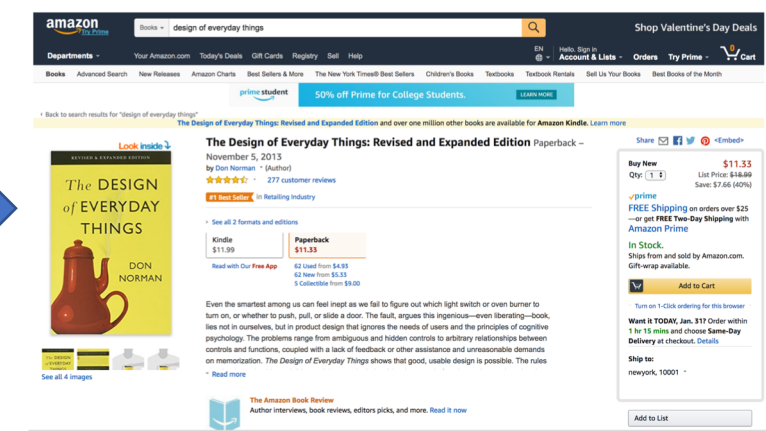
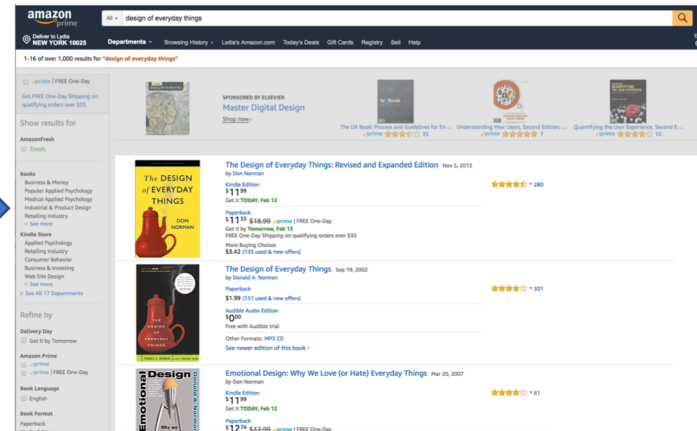
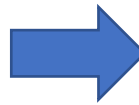
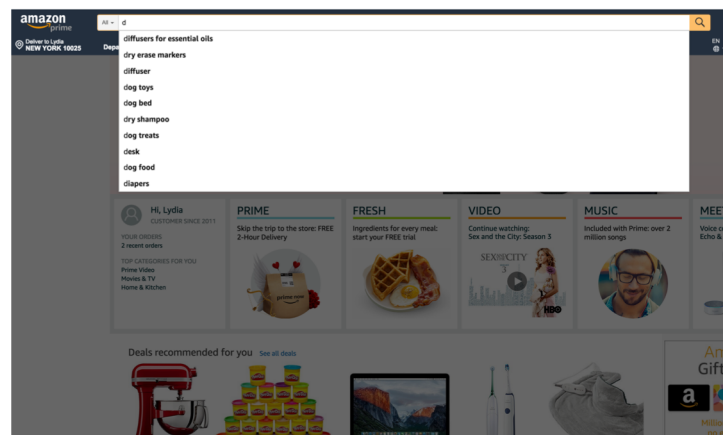
# Sound familiar?



The designer must **guide users' attention.**

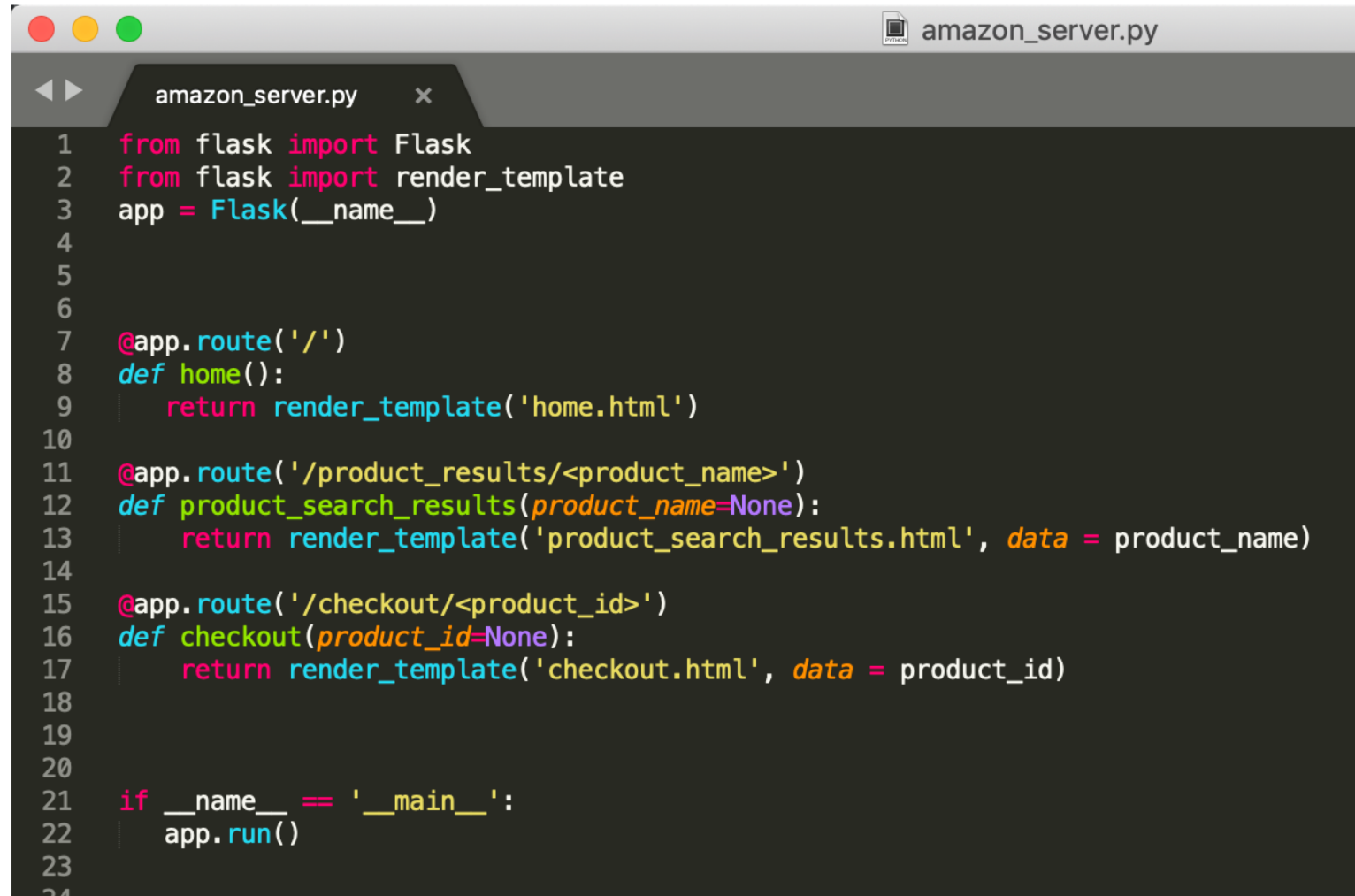
# Implementing navigation on the web

# How is each state instantiated?



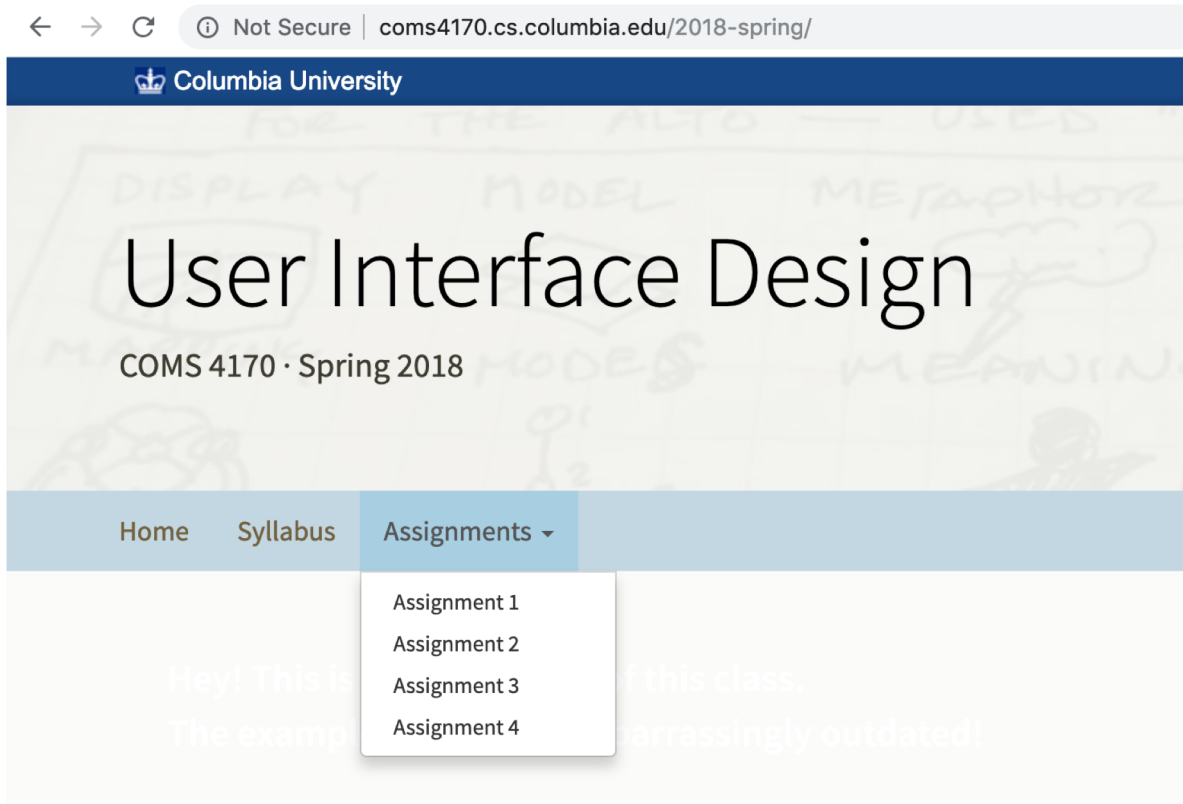
Typically, each page is a state

To create a website with multiple pages we need a **server** on the backend.



```
amazon_server.py
amazon_server.py x
1 from flask import Flask
2 from flask import render_template
3 app = Flask(__name__)
4
5
6
7 @app.route('/')
8 def home():
9     return render_template('home.html')
10
11 @app.route('/product_results/<product_name>')
12 def product_search_results(product_name=None):
13     return render_template('product_search_results.html', data = product_name)
14
15 @app.route('/checkout/<product_id>')
16 def checkout(product_id=None):
17     return render_template('checkout.html', data = product_id)
18
19
20
21 if __name__ == '__main__':
22     app.run()
23
24
```

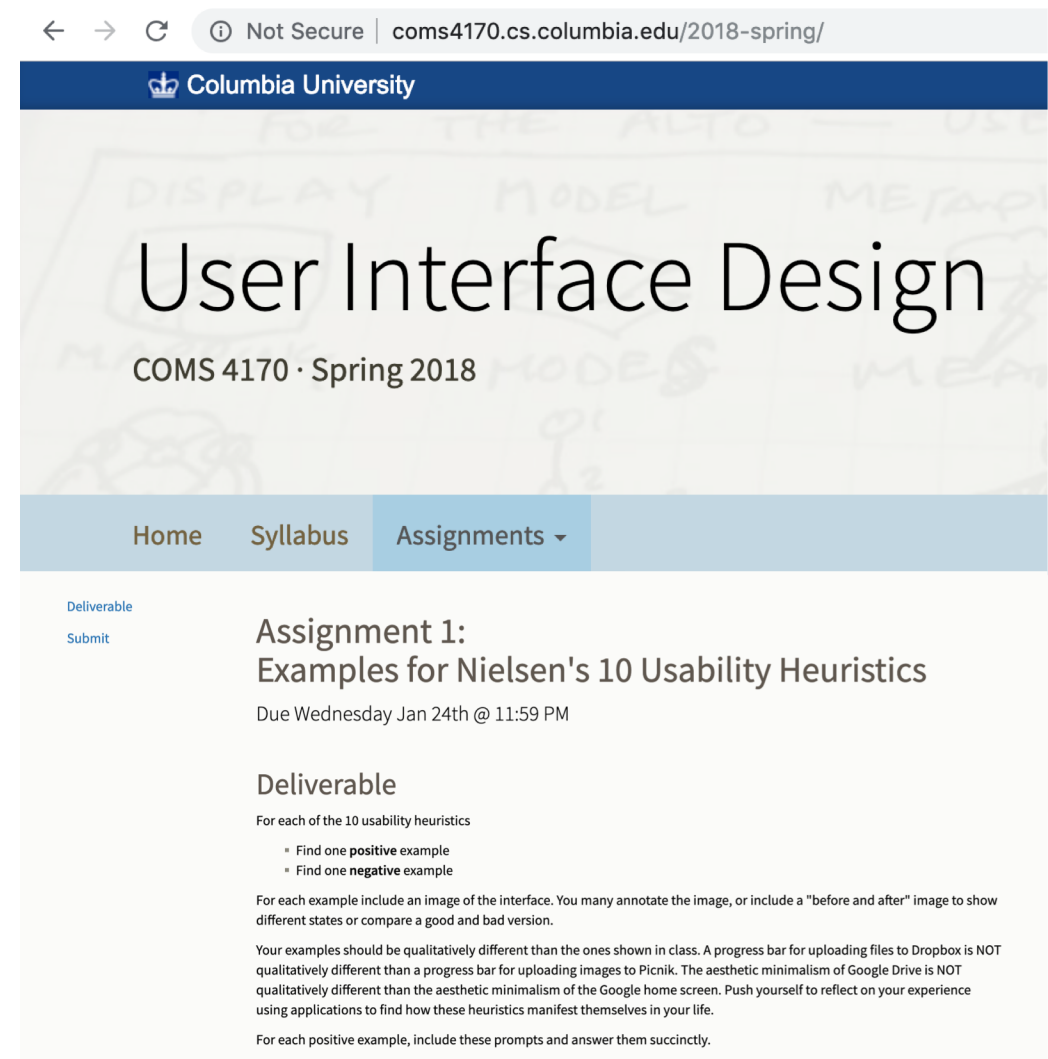
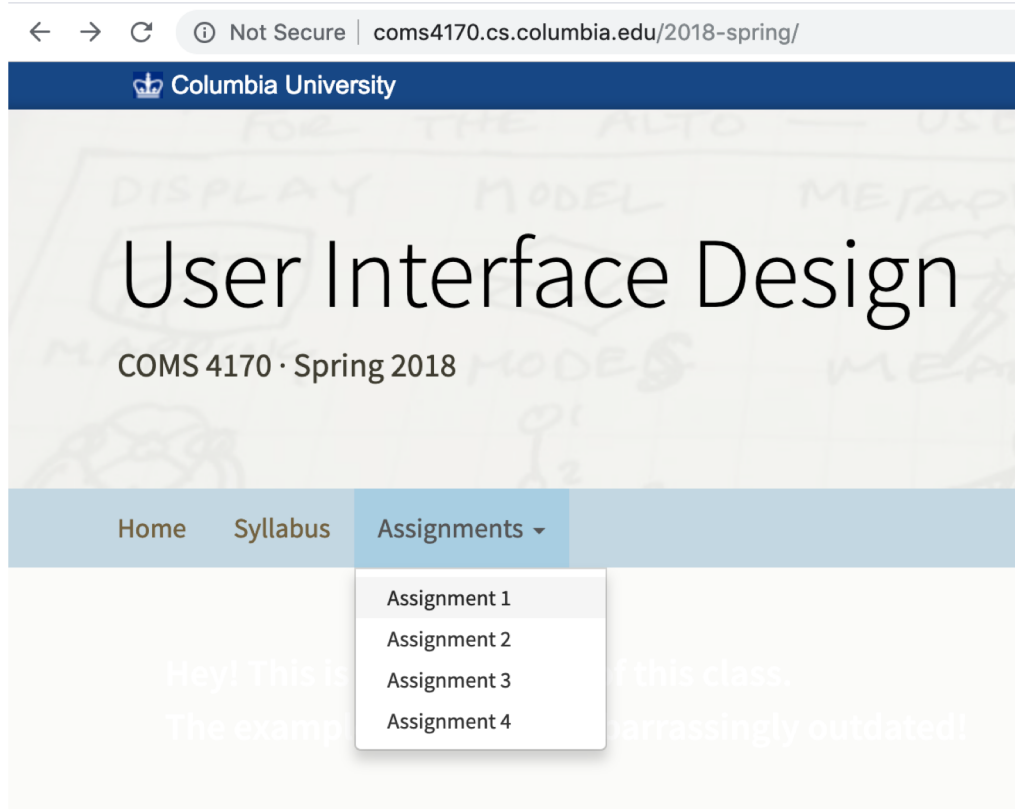
# Menus are implemented as Bootstrap NavBars



```
<nav class="navbar navbar-default navbar-static-top" role="navigation">
  <div class="container">
    <div class="navbar-header">
      <button type="button" class="navbar-toggle" data-toggle="collapse" data-target=".navbar-collapse">
        <span class="sr-only">Toggle navigation</span>
        <span class="icon-bar"></span>
        <span class="icon-bar"></span>
        <span class="icon-bar"></span>
      </button>
      <a class="navbar-brand" href="/2018-spring/index.shtml">Home</a>
    </div>
    <div class="navbar-collapse collapse">
      <ul class="nav navbar-nav">
        <li><a href="/2018-spring/index.shtml#calendar">Syllabus</a></li>

        <li class="dropdown">
          <a href="#" class="dropdown-toggle" data-toggle="dropdown" role="button" aria-haspopup="true"
            aria-expanded="false">Assignments <span class="caret"></span></a>
          <ul id="assignments" class="dropdown-menu">
            <!--<li class="disabled"><a href="">coming soon!</a></li-->
            <li><a href="/2018-spring/assignments/a1.shtml">Assignment 1</a></li>
            <li><a href="/2018-spring/assignments/a2.shtml">Assignment 2</a></li>
            <li><a href="/2018-spring/assignments/a3.shtml">Assignment 3</a></li>
            <li><a href="/2018-spring/assignments/a4.shtml">Assignment 4</a></li>
          </ul>
        </li>
        <!--
        <li><a href="/2018-spring/project-presentations/index.shtml">Project Presentations</a></li>
        -->
      </ul>
      <ul class="nav navbar-nav navbar-right">
        <a class="navbar-link" href="http://piazza.com/columbia/
          spring2018/comsw4170_001_2018_1userinterfacedesign/home"><button type="button" class="btn btn-default
            btn-su navbar-btn">Piazza</button></a>
      </ul>
    </div>
  </div>
</nav>
```

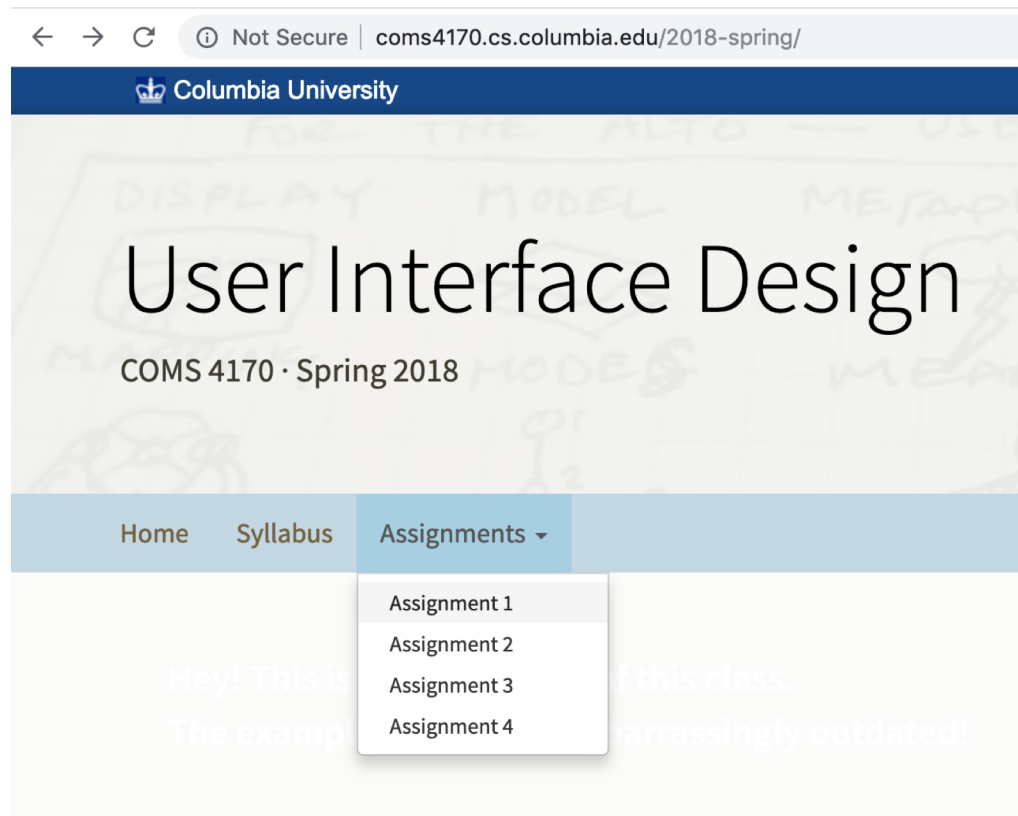
# NavBars are the same across all your pages.



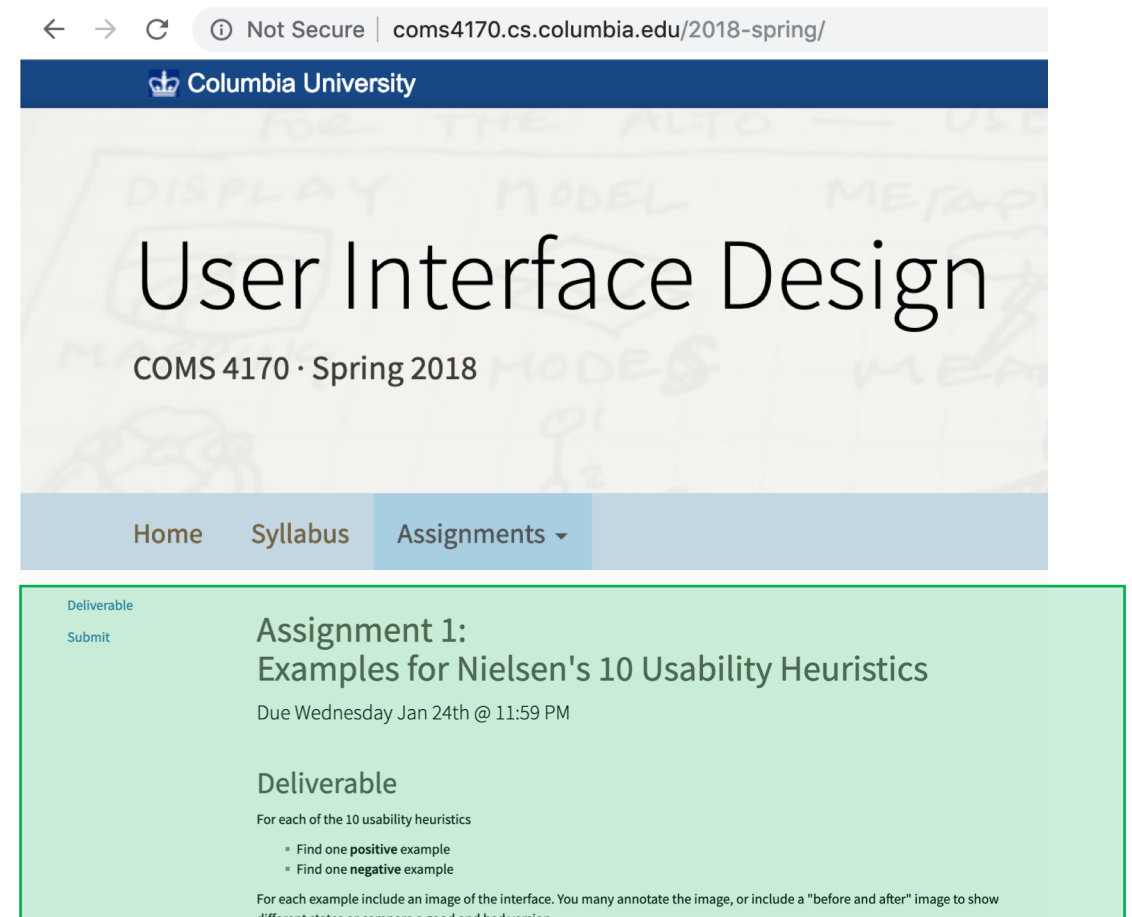


NavBars HTML is not copied across pages.  
NavBars is part of the *layout*.

## layout



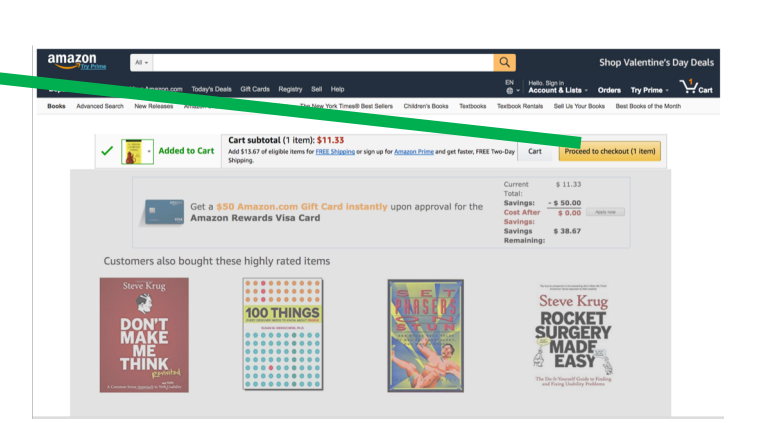
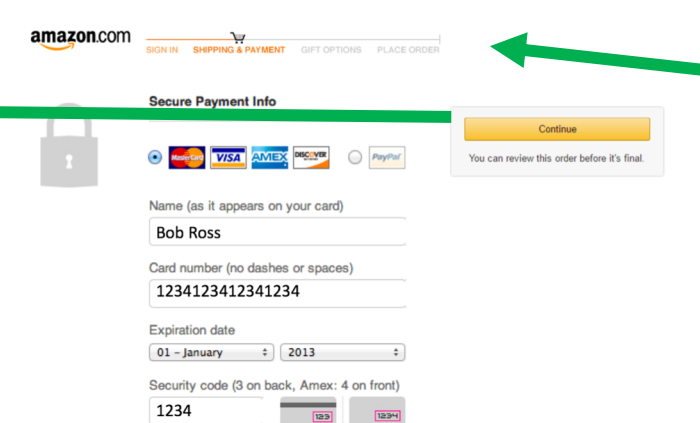
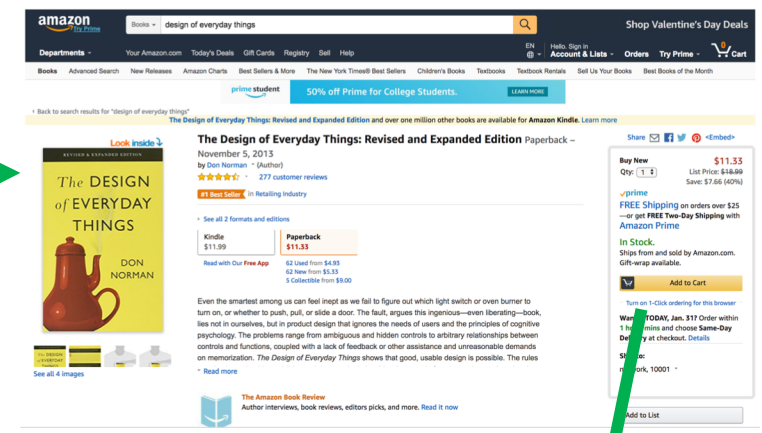
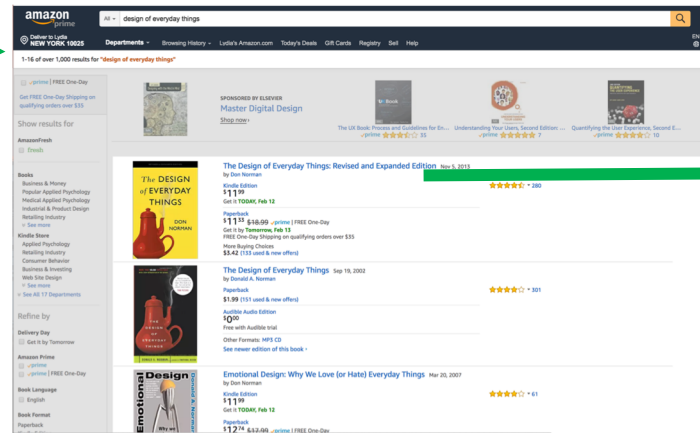
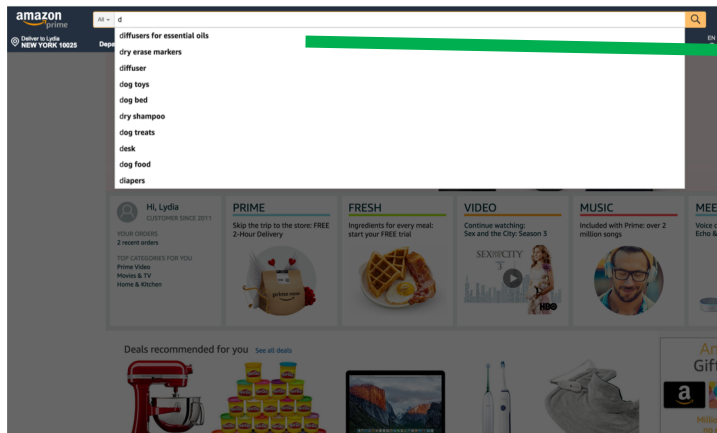
## Content block



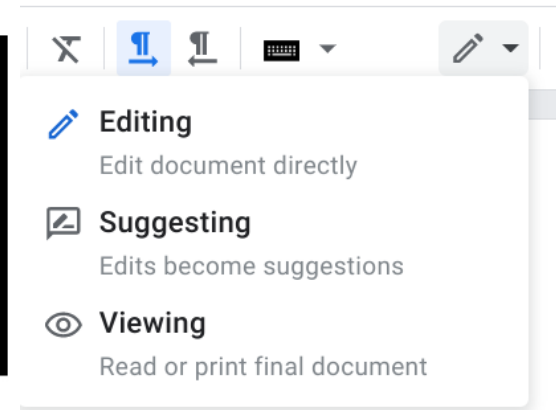
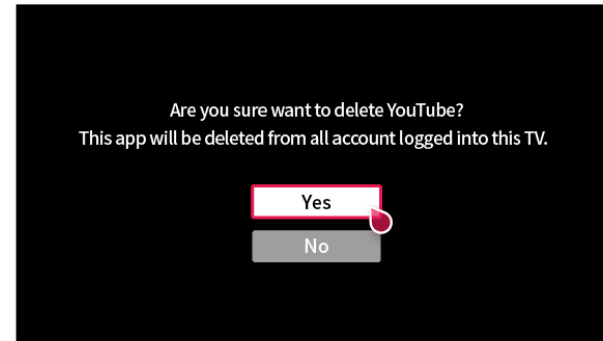
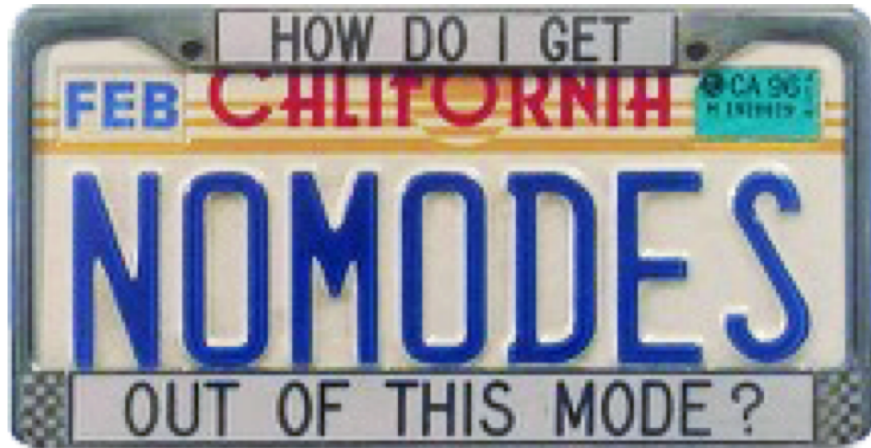


# Summary

# For complex tasks, guide users attention by breaking the task into: states, options, and transitions to new states.

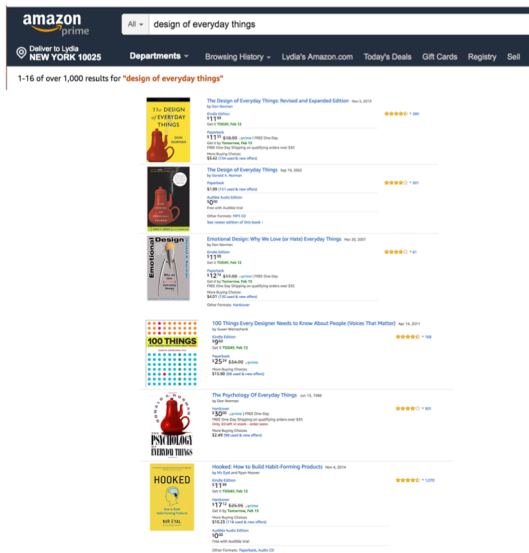


# Generally, NO MODES

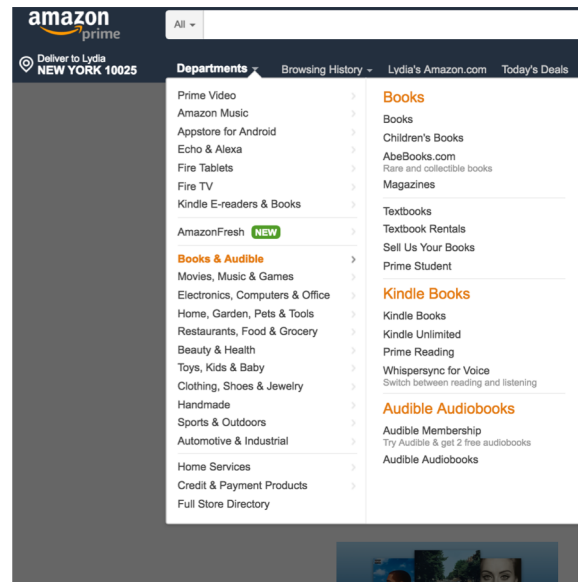


A mode is only ok when you need to focus all the users attention, and prevent other actions.

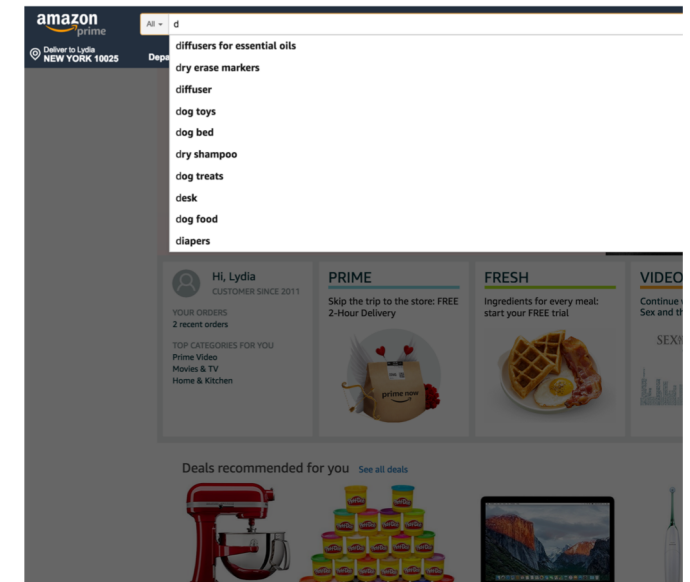
# When displaying options, the number of options determines the interaction style.



~10 items = **list**



~100 items = **tree**

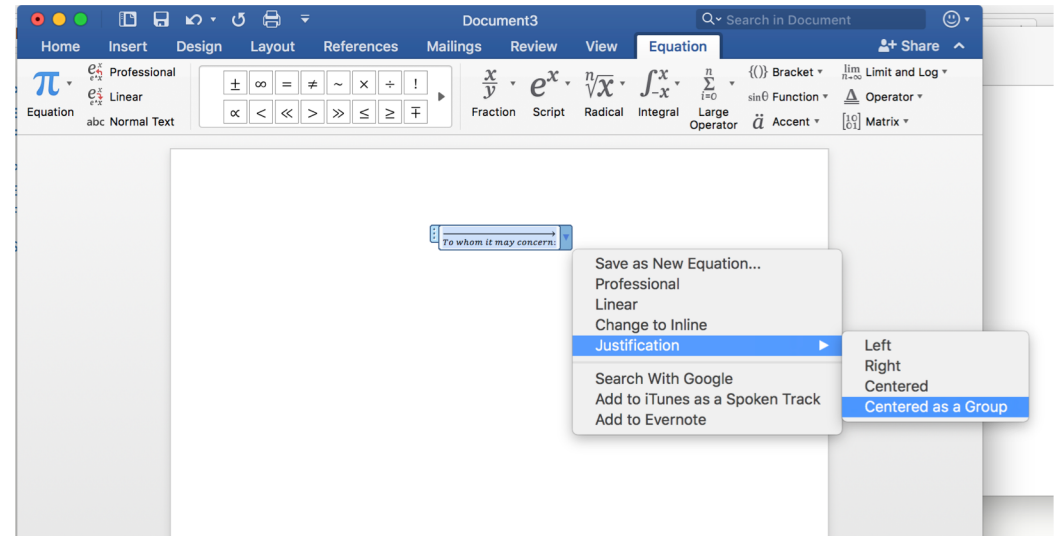
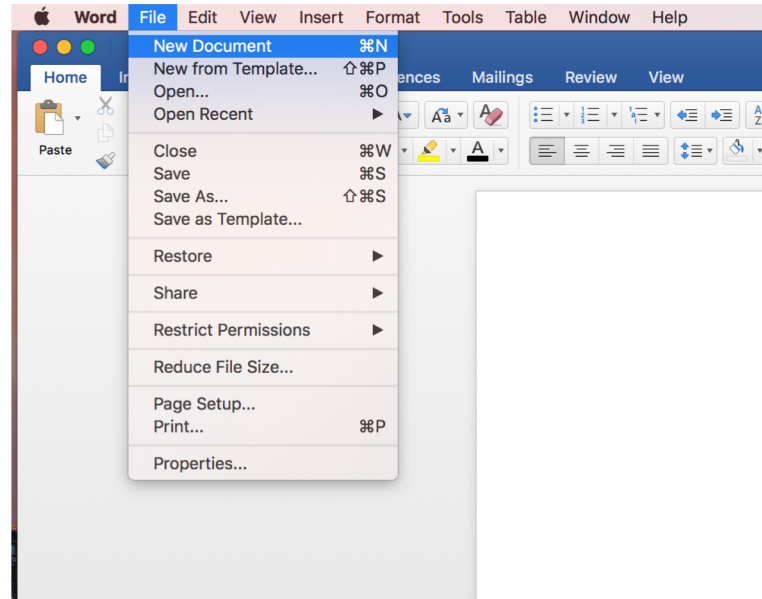


~1000 items = **search**

# People have limited time.

## Make frequently used options easier to access

## Make rarely used options harder to access



People have limited focus.

Within a state, provide options that are relevant to the user completing their goal.

**YES**



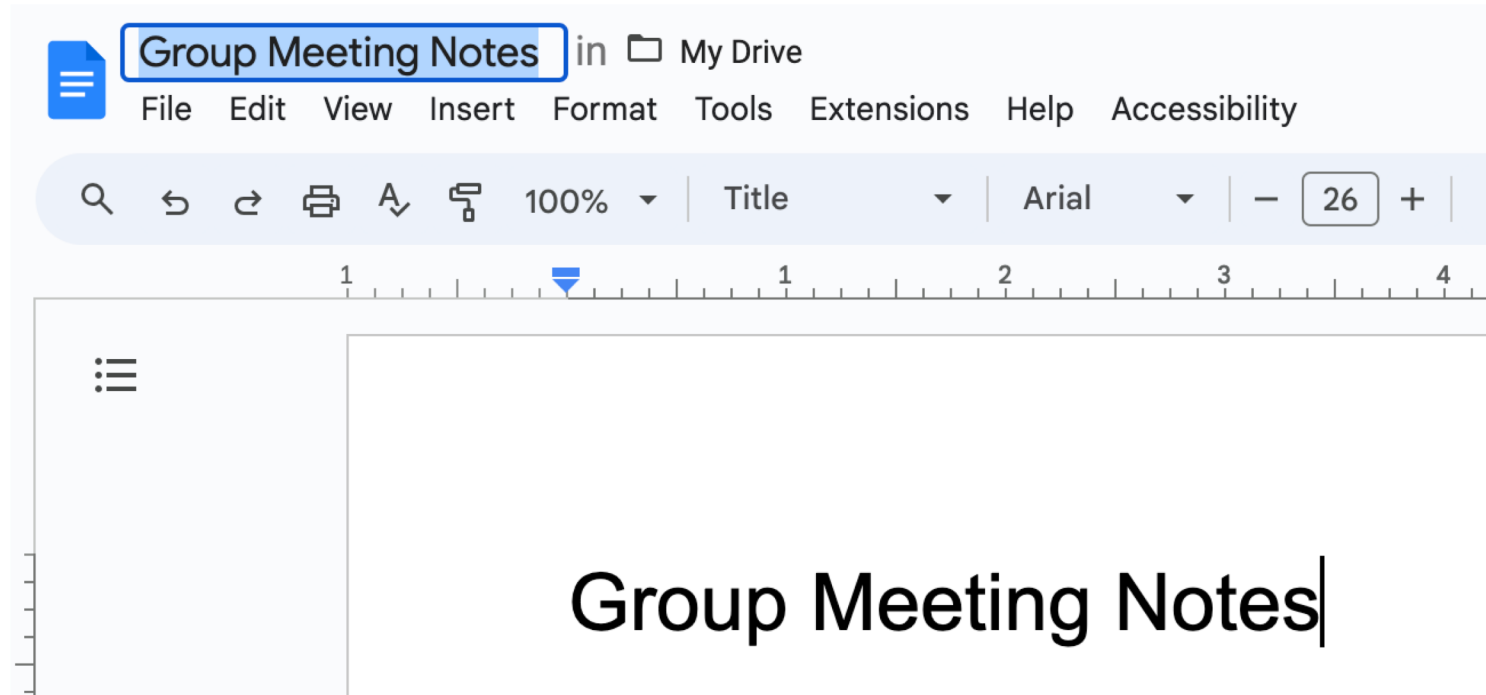
**NO**





# Design good default options.

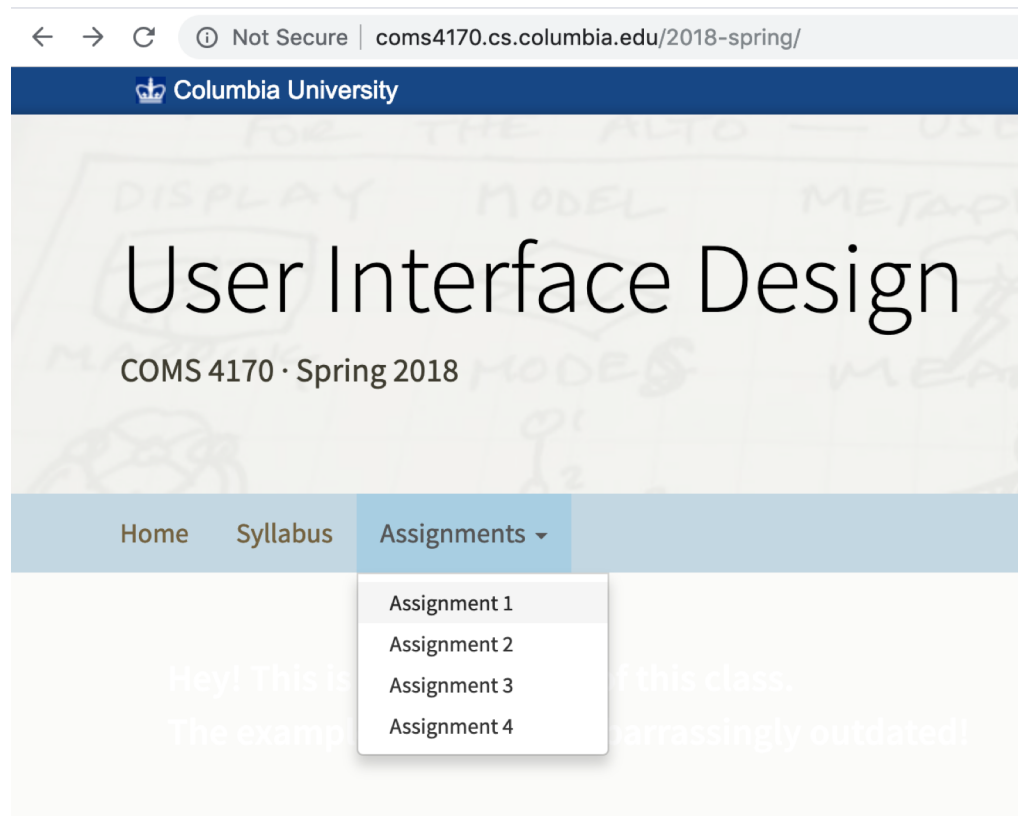
They save users time, and they often just accept them.



UIs have millions of decisions  
Good defaults reduce users' cognitive load.

Implement navigation as a shared layout page.  
Insert a content block for unique content

## Layout



## Content block

