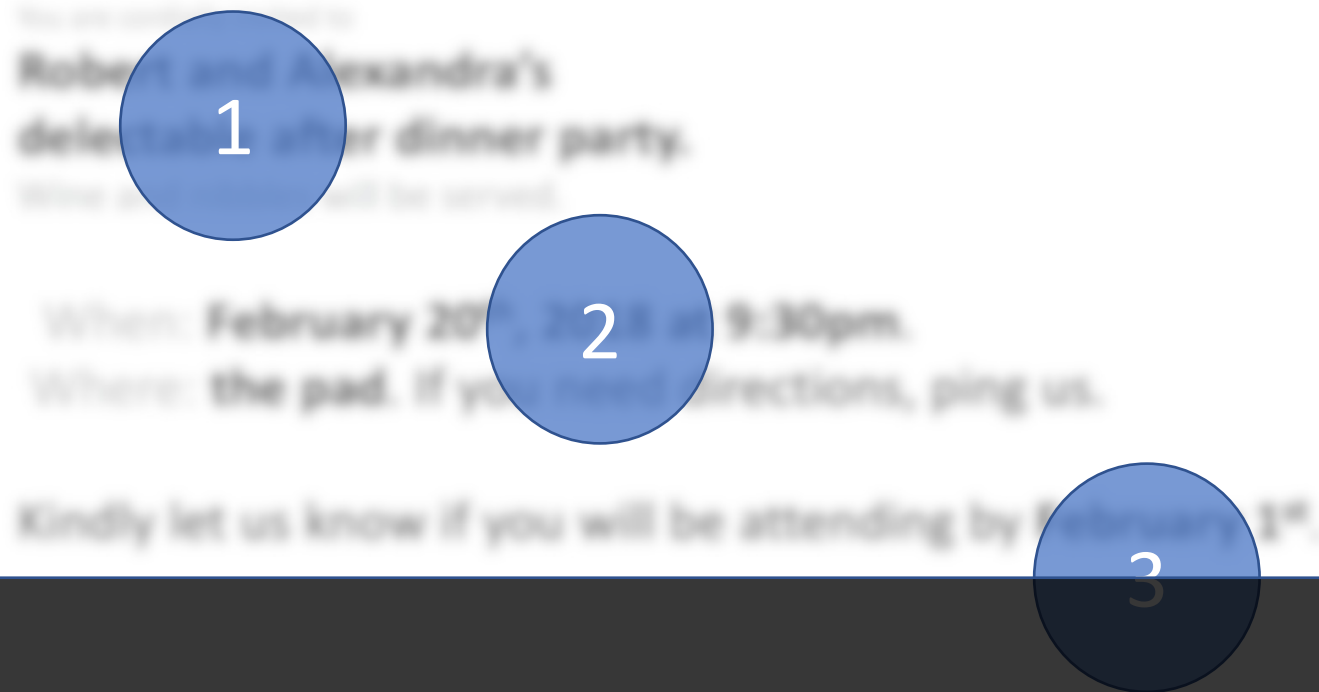


Menus and Navigation

Prof. Lydia Chilton
COMS 4170
12 February 2022

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

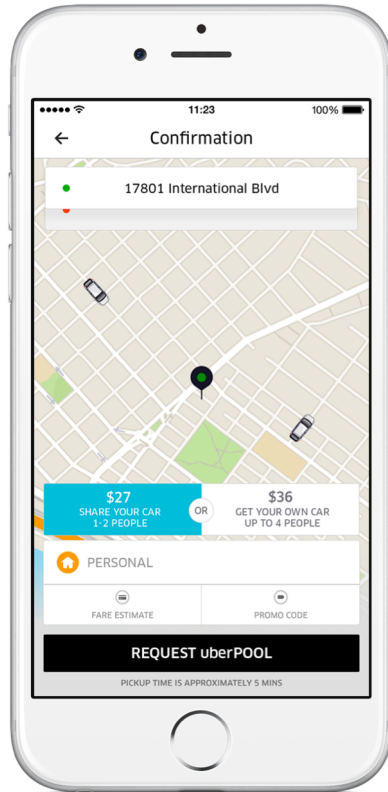
Mouseup

COMPOSE

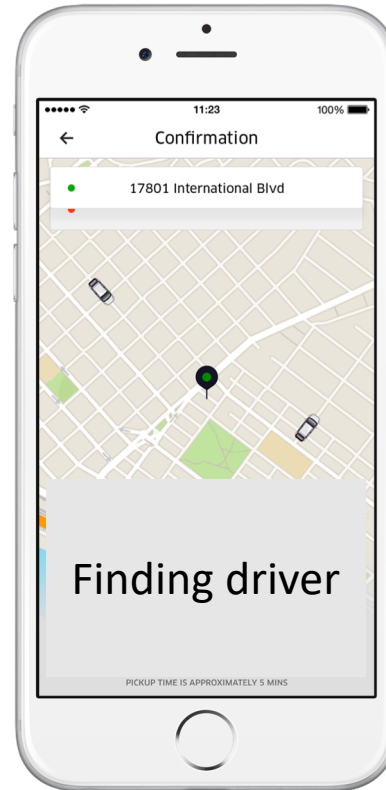
Normal state

COMPOSE

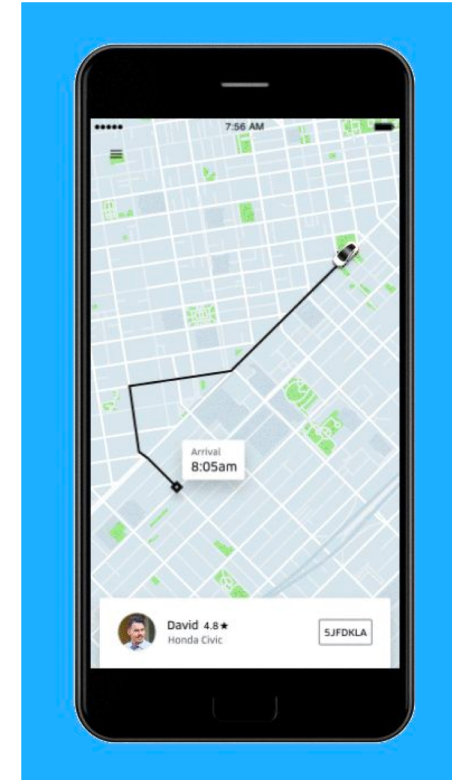
As do high-level states



Request ride
state



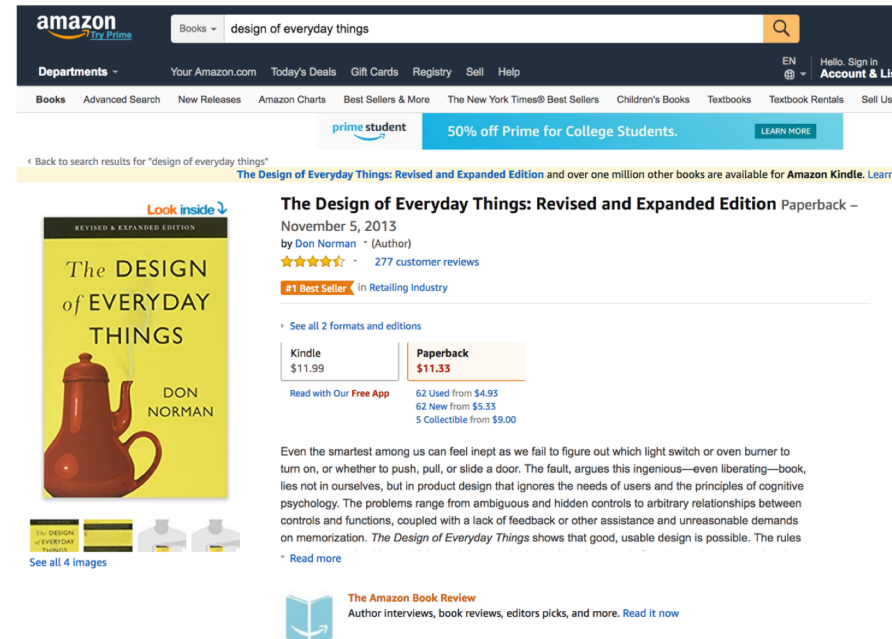
Finding driver
state



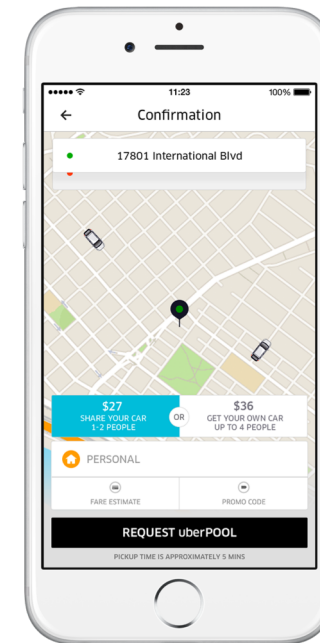
Driver en route
state

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.

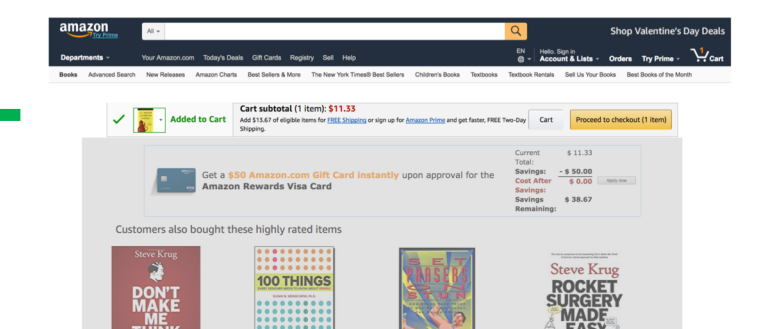
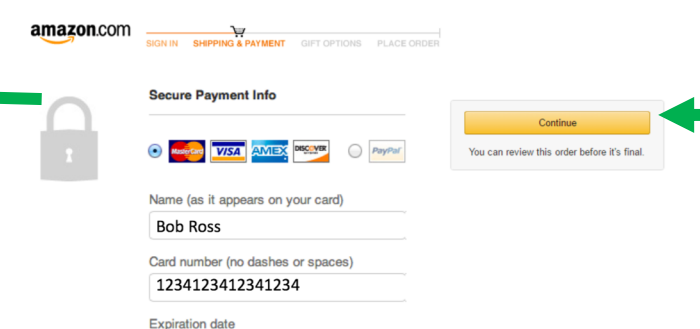
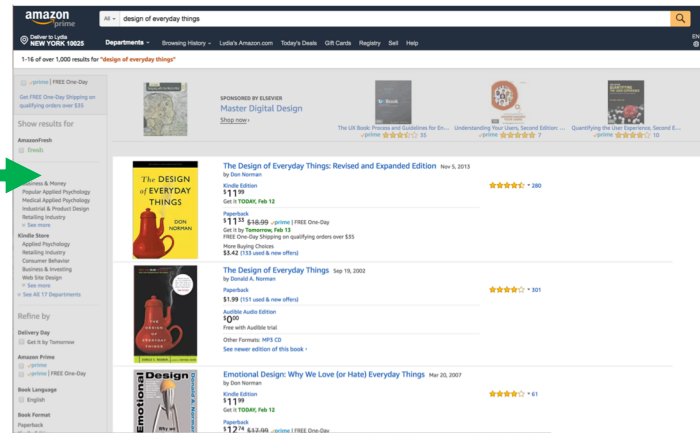
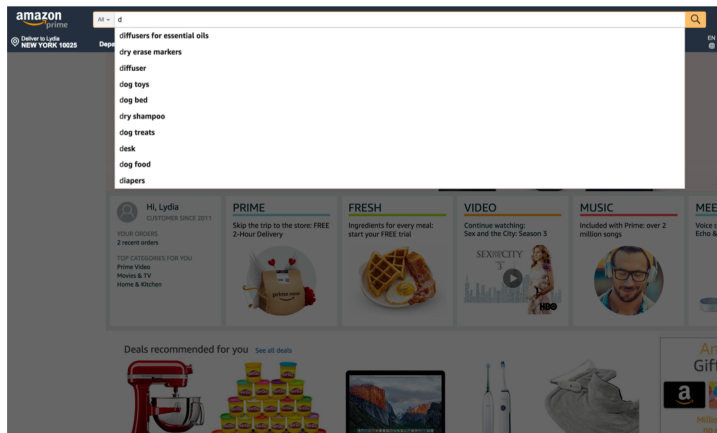
Buying a book on Amazon:

- 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

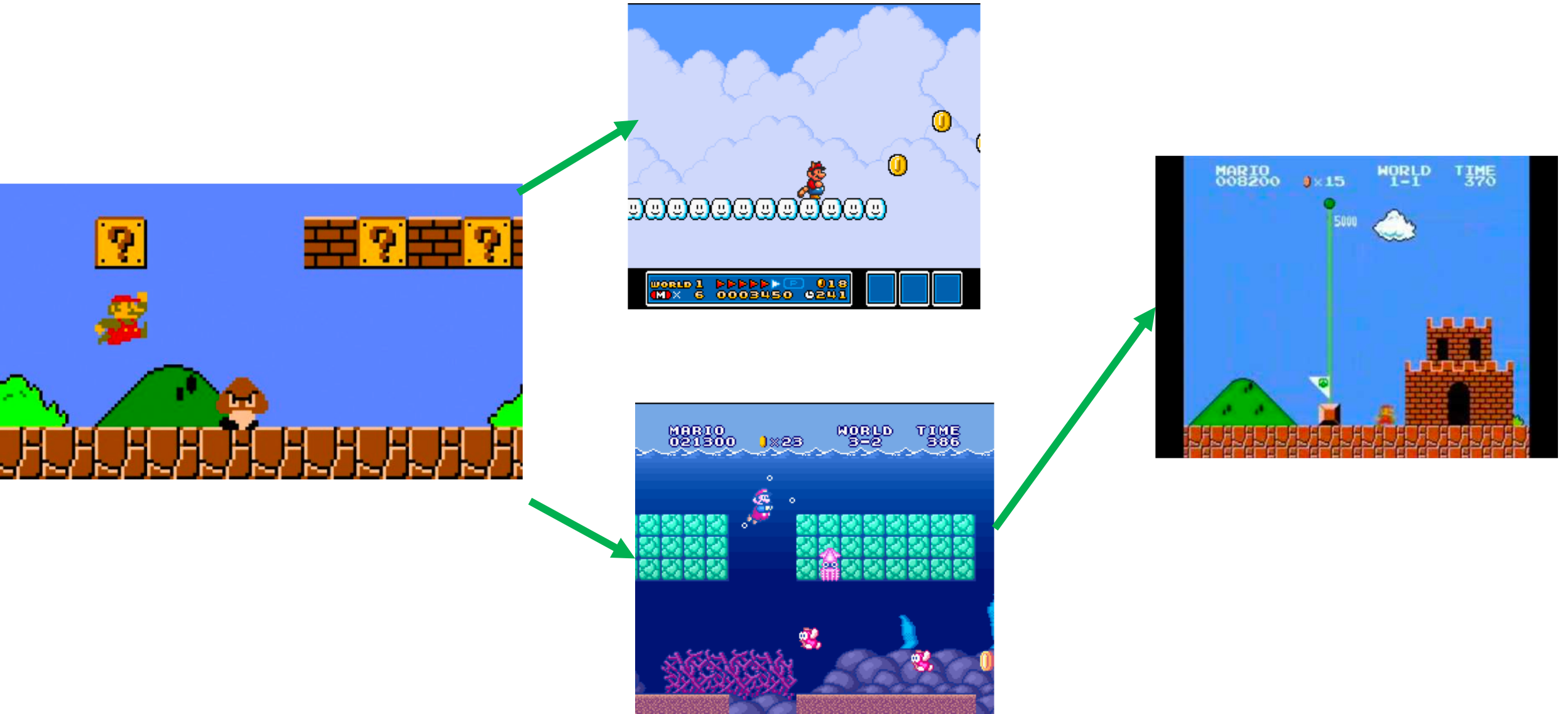
How should we break it up?

- 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



Examples of

States, Options and Transitions

Goal: Find “The Design of Everyday Things”

What **state** am I in?

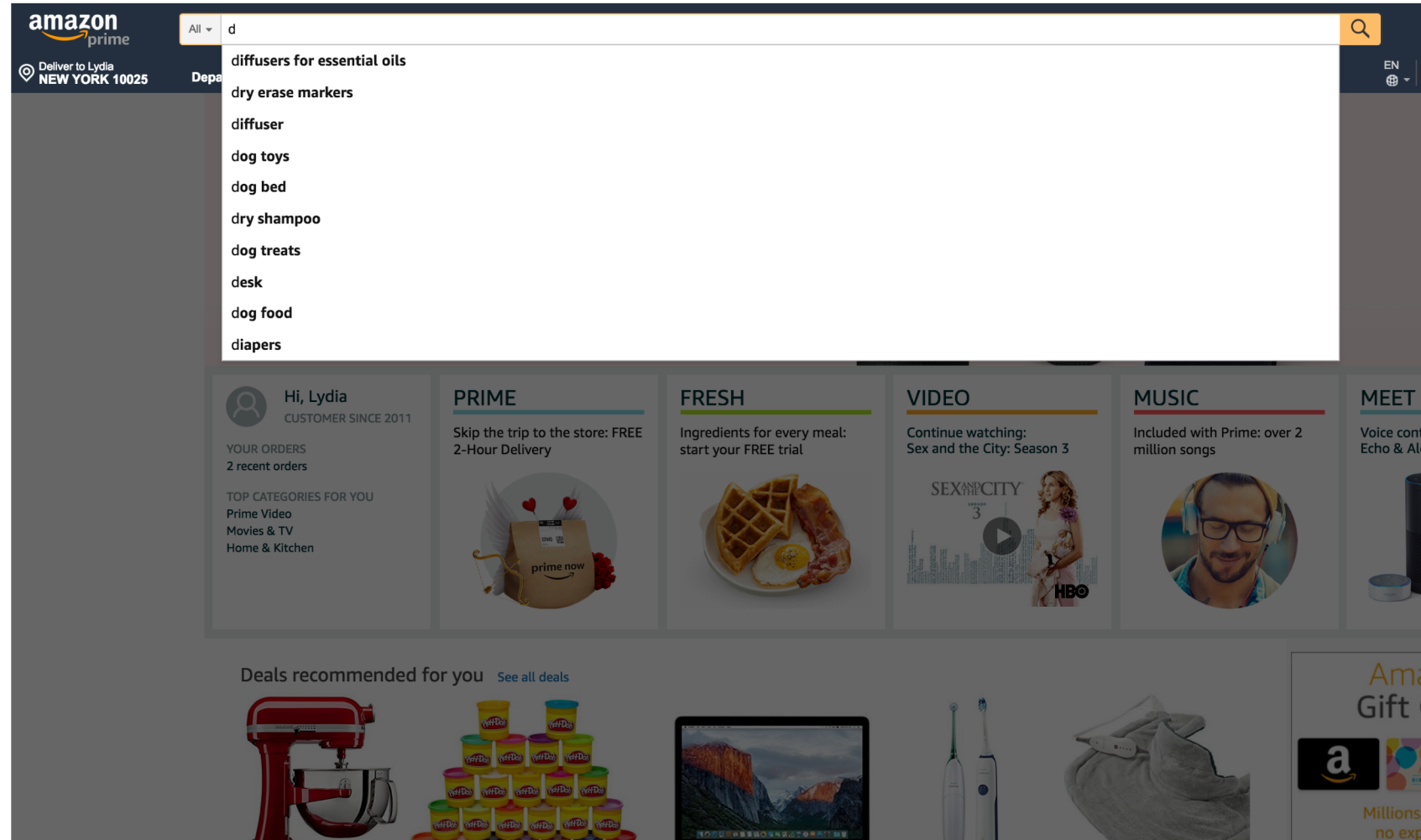
Product Search

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 search results for "design of everyday things". The search bar at the top contains the text "design of everyday things". The page displays several search results, including sponsored items and books. The first result is "The Design of Everyday Things: Revised and Expanded Edition" by Don Norman, published on Nov 5, 2013. It is available in Kindle Edition for \$11.99 and Paperback for \$11.33 (originally \$19.99). The second result is "The Design of Everyday Things" by Donald A. Norman, published on Sep 19, 2002. It is available in Paperback for \$1.99 (151 used & new offers) and Audible Audio Edition for \$0.00. The third result is "Emotional Design: Why We Love (or Hate) Everyday Things" by Don Norman, published on Mar 20, 2007. It is available in Kindle Edition for \$11.99 and Paperback for \$12.74 (originally \$17.99). The left sidebar contains filters for Amazon Fresh, Books, Kindle Store, and Refine by options like Delivery Day and Amazon Prime.

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 Design of Everyday Things: Revised and Expanded Edition" by Don Norman. The page includes the Amazon logo, search bar, navigation menu, and product details. The product is a paperback book priced at \$11.33, with a list price of \$18.99. It is a #1 Best Seller in the Retailing Industry. The page also features a "Look inside" button, a "Read with Our Free App" button, and a "Share" button. The product description and a review section are also visible.

amazon Try Prime Books design of everyday things

Departments Your Amazon.com Today's Deals Gift Cards Registry Sell Help EN Hello, Sign in Account & Lists Orders Try Prime Cart

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	Paperback \$11.33
----------------	-------------------

Read with Our Free App 62 Used from \$4.93 62 New from \$5.33 5 Collectible from \$9.00

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

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 for the Amazon Rewards Visa Card offers a \$50 gift 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 Total:	\$ 11.33
Savings:	- \$ 50.00
Cost After Savings:	\$ 0.00
Savings:	\$ 38.67
Remaining:	

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. WEINSCHENK, 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. The main heading is 'Review Your Order', with a note that placing an order agrees to the privacy notice and conditions of use.

The page 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:** Choose your Prime shipping speed:
 - FREE Standard Shipping (3-5 business days)
 - FREE Two-Day Shipping –get it Monday, September 26
 - \$3.99/item One-Day Shipping –get it Saturday, September 24
- Order Summary:**

Items:	\$29.95
Shipping & Handling:	\$0.00
Total Before Tax:	\$29.95
Estimated Tax To Be Collected:	\$0.00
Rewards Points:	-\$4.58
Order Total:	\$25.37
- Shipping Costs:** A note explaining that Amazon Prime Shipping has been applied to eligible items.

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



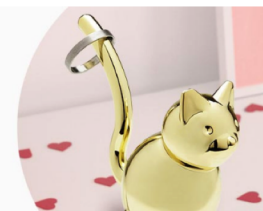
New for you [See more](#)



Budget women's apparel

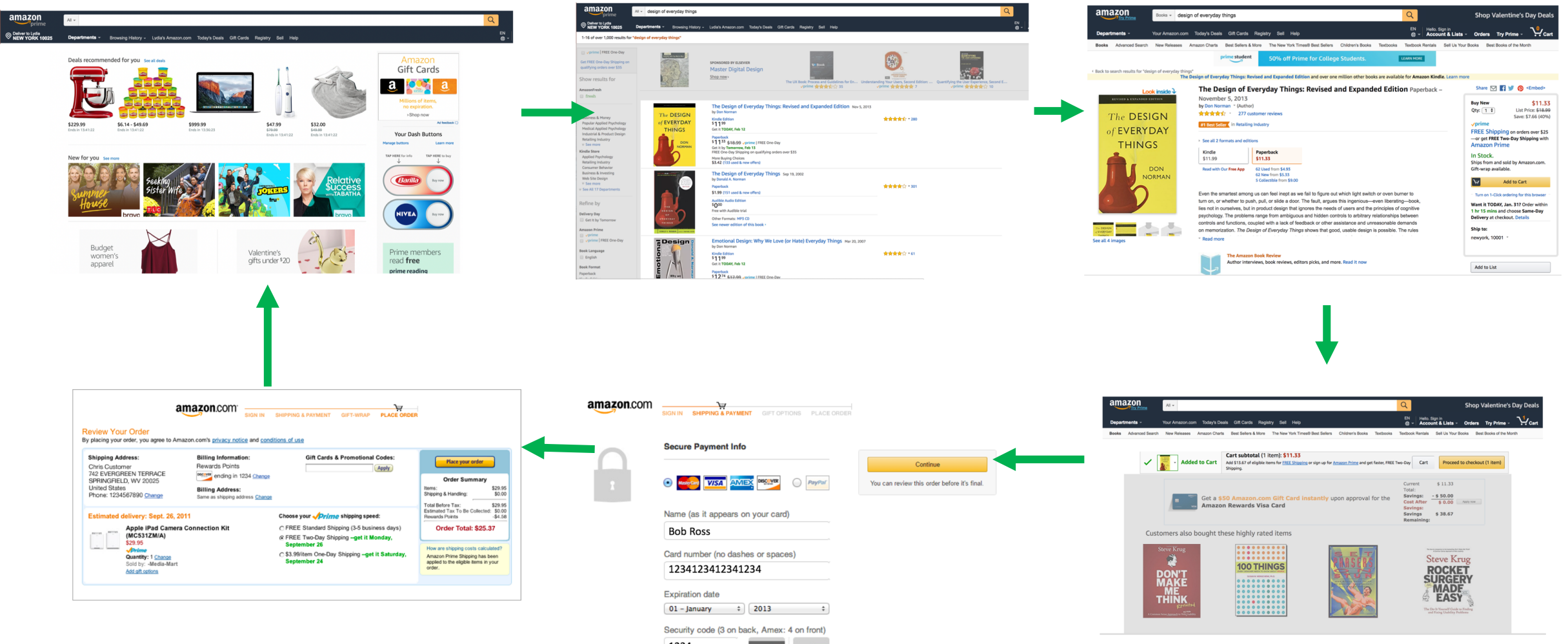


Valentine's gifts under \$20



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

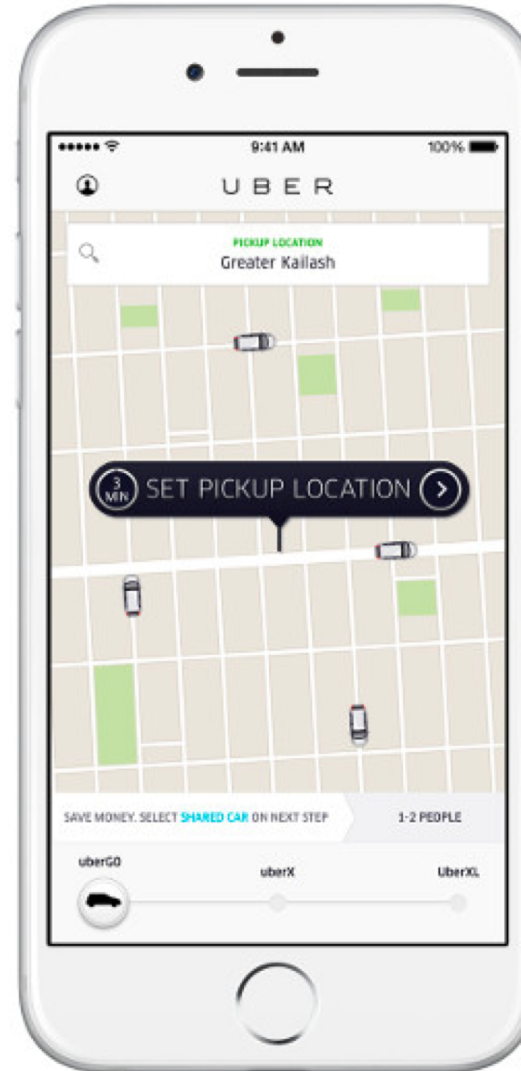
What **options** do I have?

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

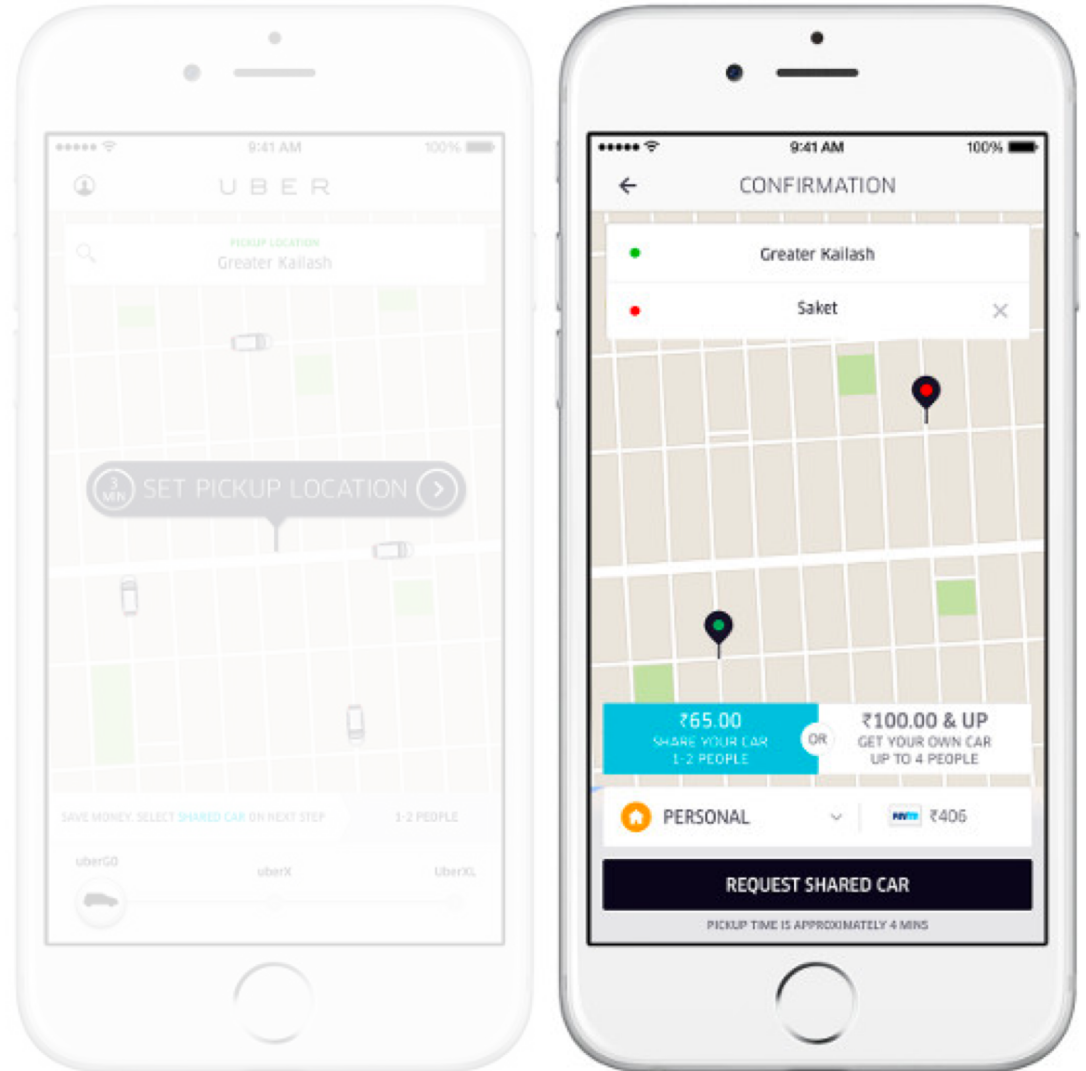
What **options** do I have?

Switch credit cards

Upgrade to your

How do I **transition**?

Press “Request shared car”



Goal: Find car

What **state** am I in?

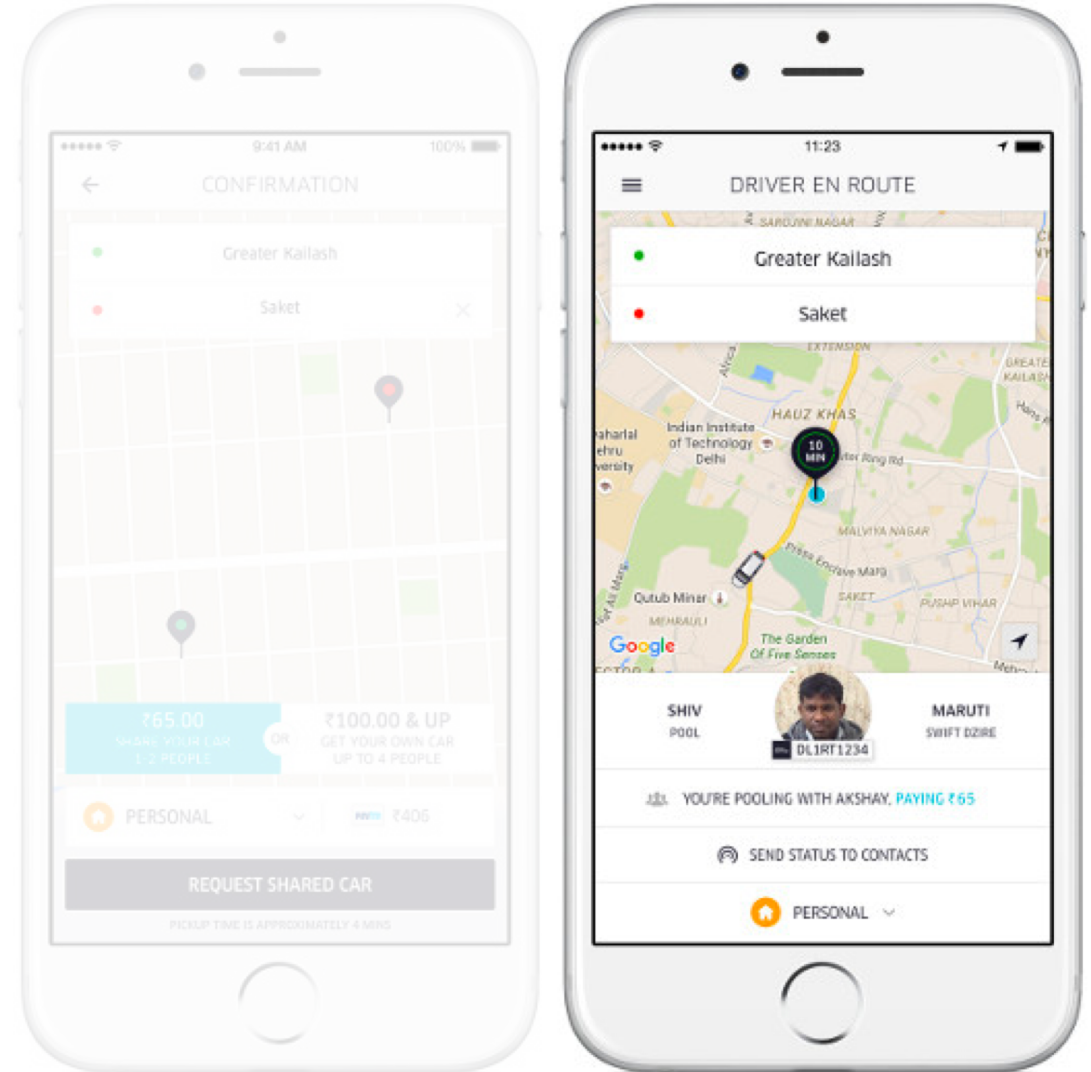
Waiting/"Driver en route"

What **options** do I have?

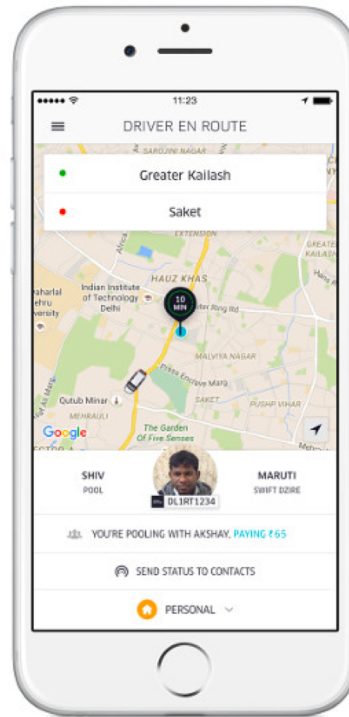
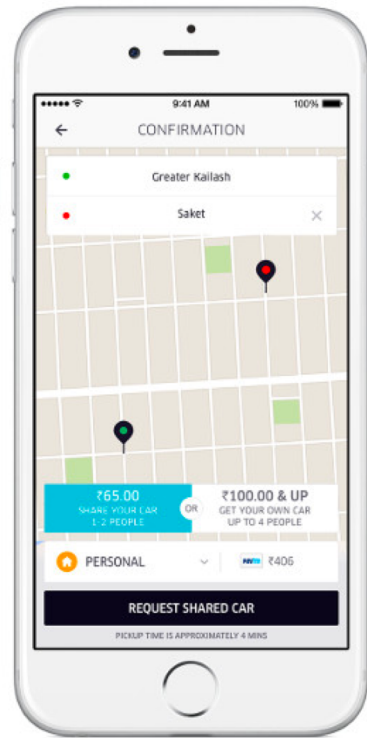
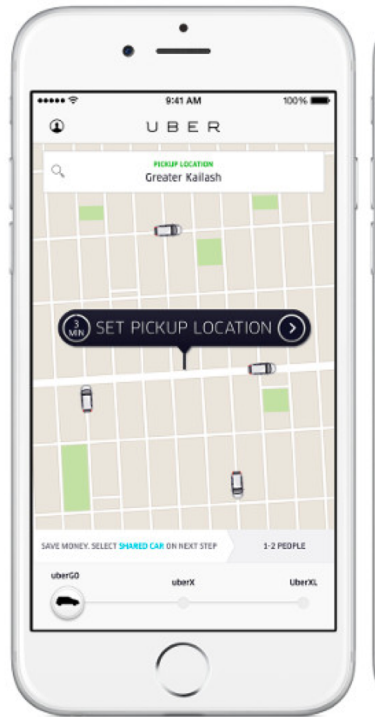
Contact driver

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?

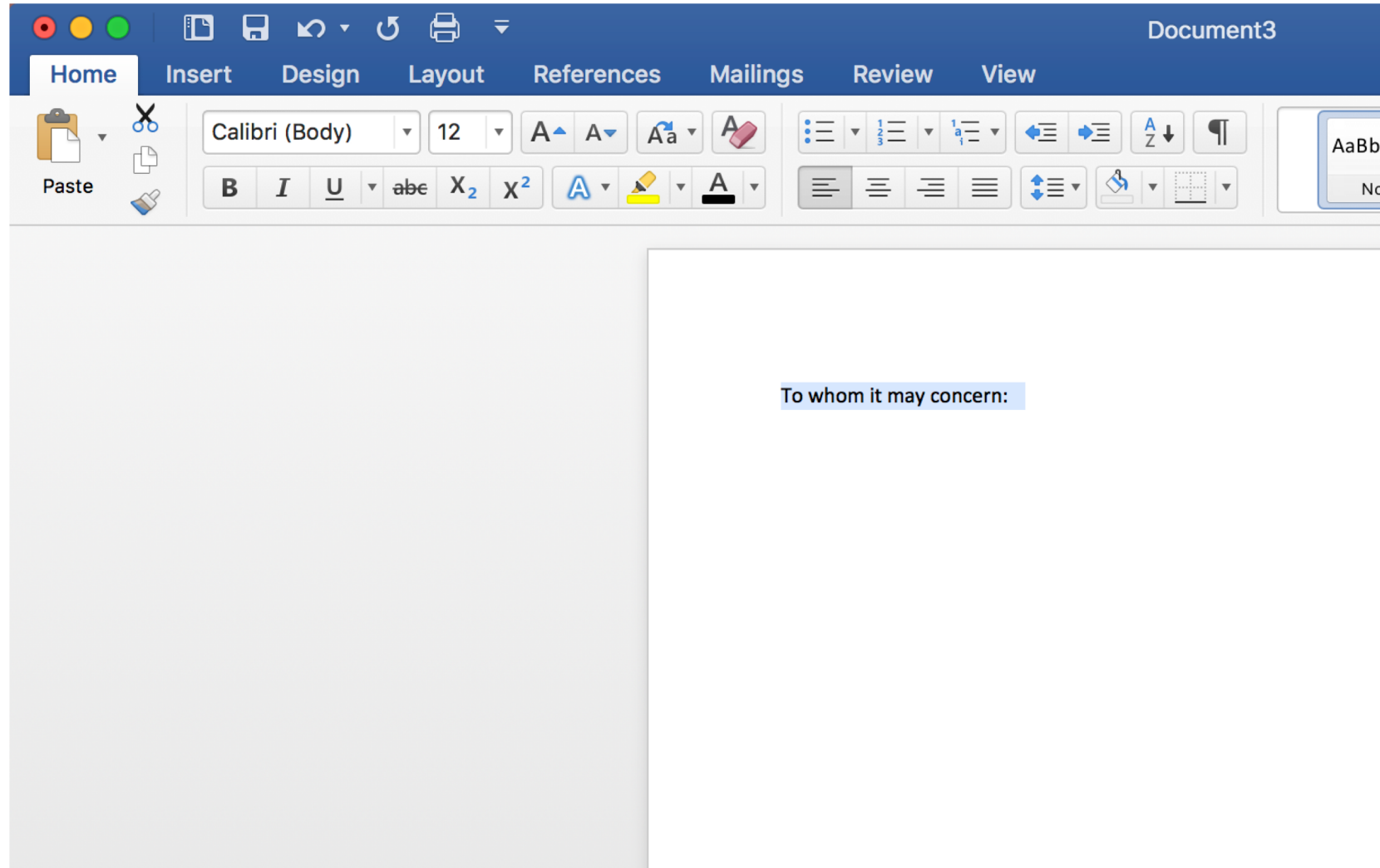
Selected Text

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

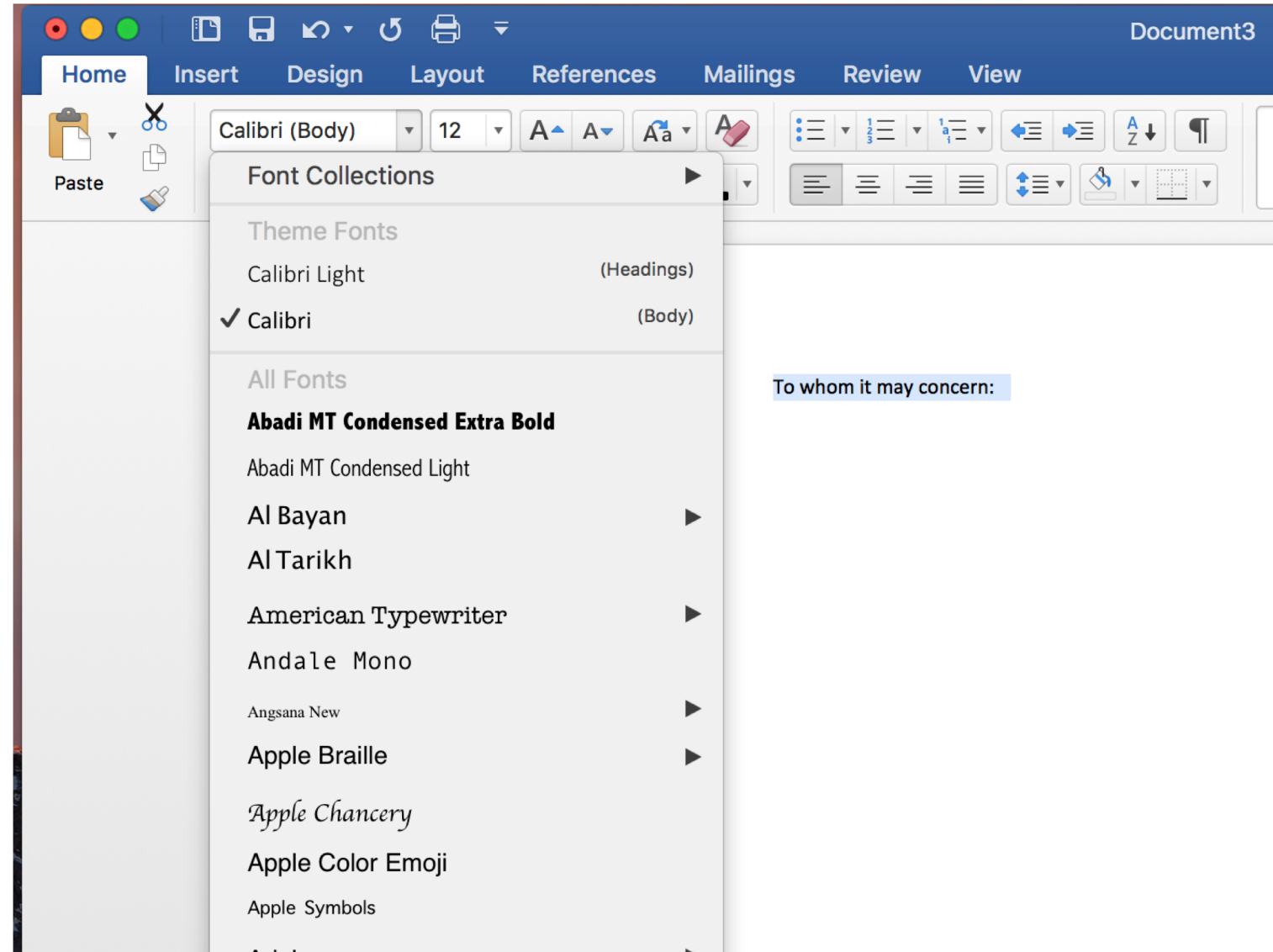
What **options** do I have?

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?

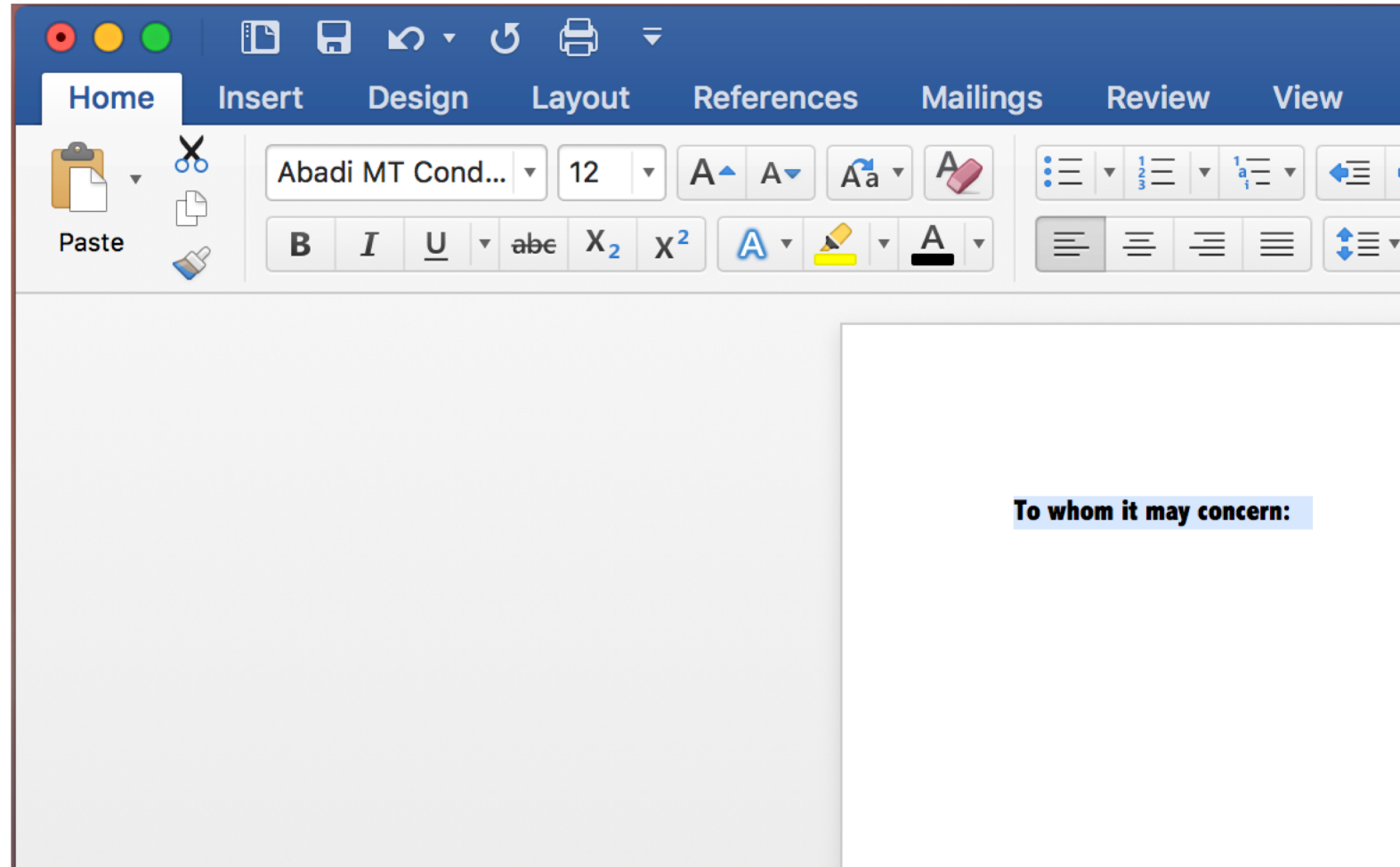
Selected Text

What **options** do I have?

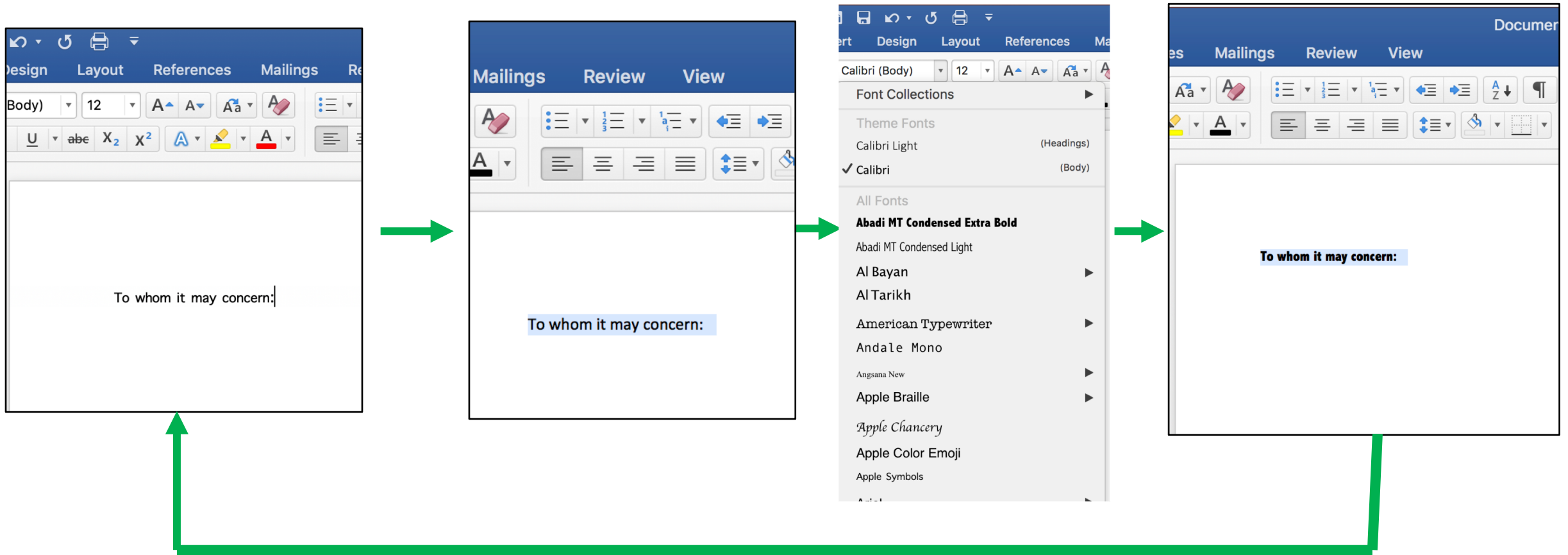
All the menu options

How do I **transition**?

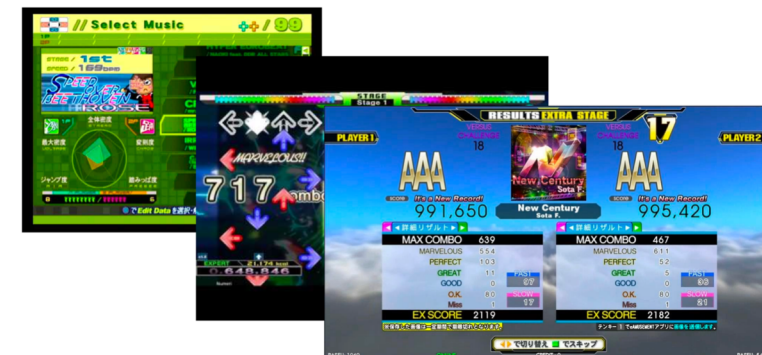
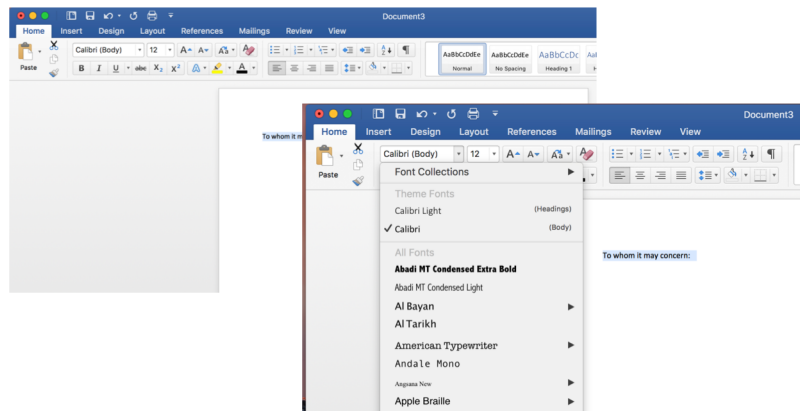
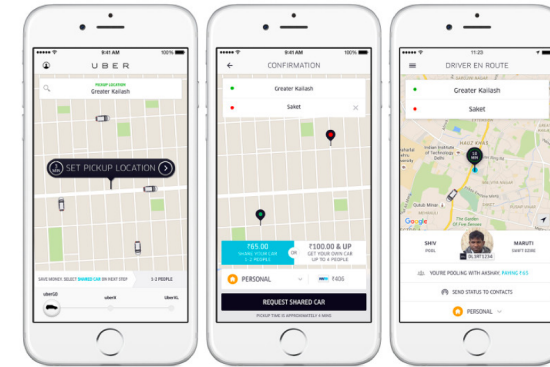
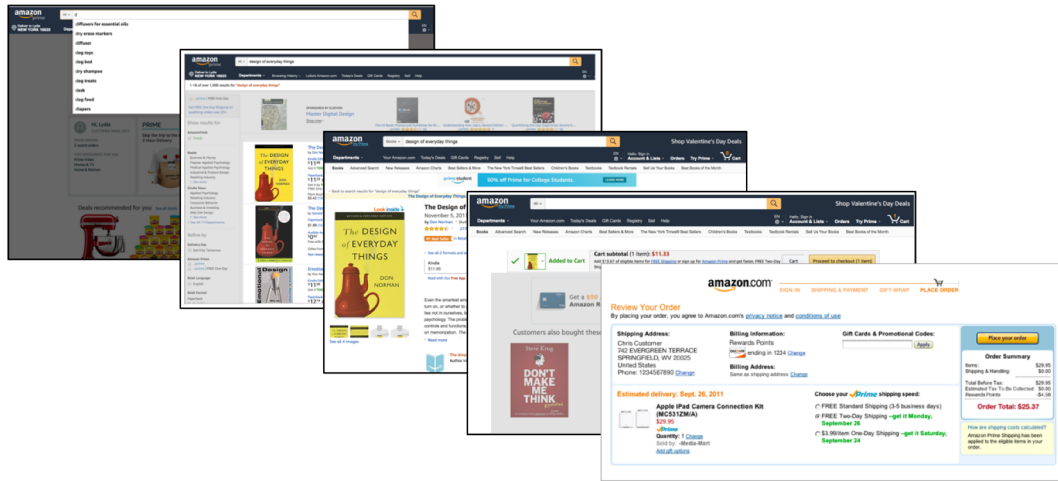
Select a new menu option OR
Click outside the selection



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

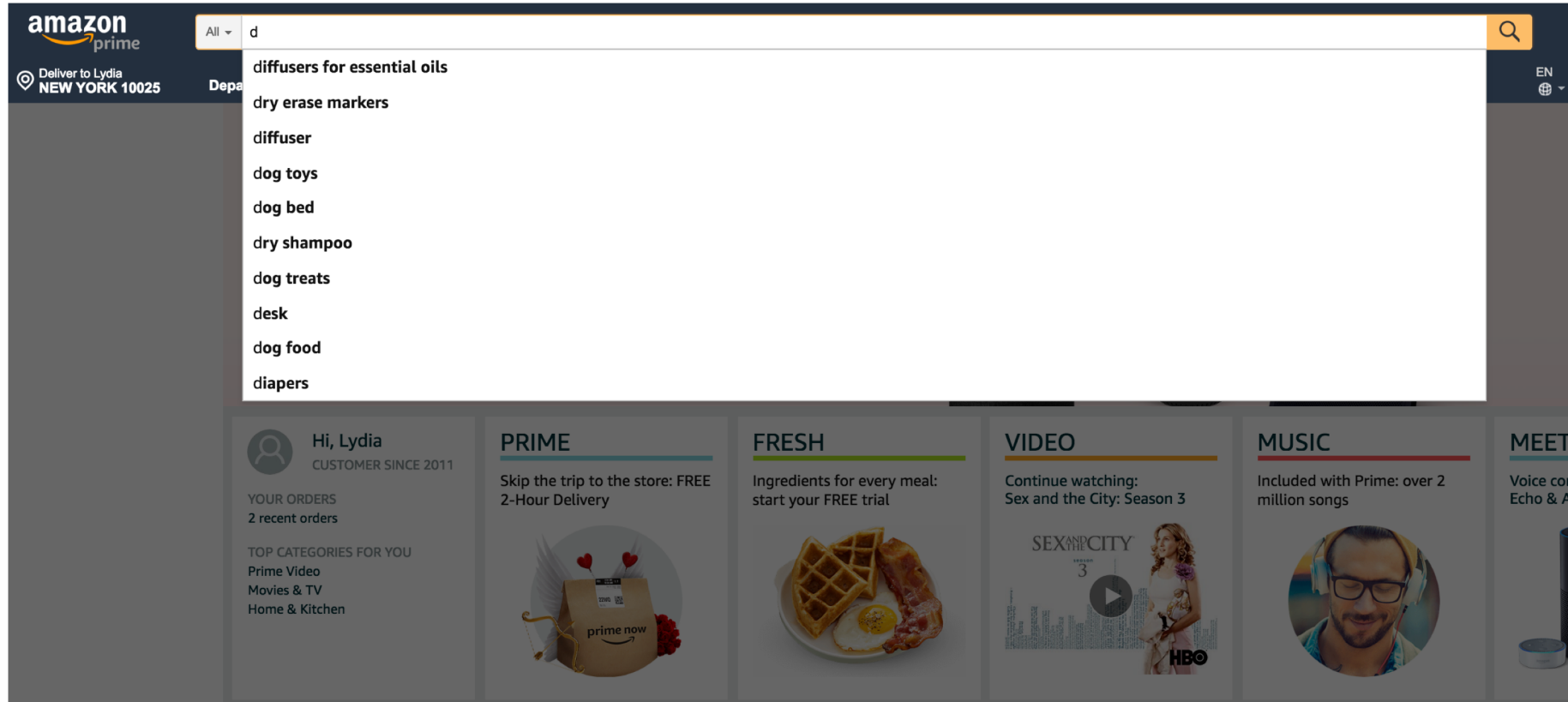


When you have too much information for one screen, **design states, options and transitions** for the user to navigate through to complete their goal.



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 for "design of everyday things". The search bar at the top contains the text "design of everyday things" and a magnifying glass icon. Below the search bar, the Amazon logo and "prime" are visible. The delivery location is "Deliver to Lydia NEW YORK 10025". The search results are displayed in a grid format, showing six product listings. Each listing includes a book cover, the title, author, publication date, and various pricing options (Kindle Edition, Paperback, Hardcover, Audible Audio Edition). The results are sorted by relevance, and the first result is "The Design of Everyday Things: Revised and Expanded Edition" by Don Norman, published in 2013. The second result is "The Design of Everyday Things" by Donald A. Norman, published in 2002. The third result is "Emotional Design: Why We Love (or Hate) Everyday Things" by Don Norman, published in 2007. The fourth result is "100 Things Every Designer Needs to Know About People (Voices That Matter)" by Susan Weinschenk, published in 2011. The fifth result is "The Psychology Of Everyday Things" by Don Norman, published in 1988. The sixth result is "Hooked: How to Build Habit-Forming Products" by Nir Eyal and Ryan Hoover, published in 2014. The text "About 10" is overlaid on the bottom right of the screenshot.

amazon prime

All design of everyday things

Deliver to Lydia NEW YORK 10025

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

EN

1-16 of over 1,000 results for "design of everyday things"

The Design of Everyday Things: Revised and Expanded Edition Nov 5, 2013
by Don Norman
Kindle Edition **\$11.99** ★★★★★ • 280
Get it TODAY, Feb 12
Paperback **\$11.99** ~~\$18.00~~ -prime | FREE One-Day
Get it by Tomorrow, Feb 13
FREE One-Day Shipping on qualifying orders over \$35
More Buying Choices **\$3.42** (134 used & new offers)

The Design of Everyday Things Sep 19, 2002
by Donald A. Norman
Paperback **\$1.99** (151 used & new offers) ★★★★★ • 301
Audible Audio Edition **\$0.00**
Free with Audible trial
Other Formats: MP3 CD
See newer edition of this book •

Emotional Design: Why We Love (or Hate) Everyday Things Mar 20, 2007
by Don Norman
Kindle Edition **\$11.99** ★★★★★ • 61
Get it TODAY, Feb 12
Paperback **\$12.74** ~~\$12.99~~ -prime | FREE One-Day
Get it by Tomorrow, Feb 13
FREE One-Day Shipping on qualifying orders over \$35
More Buying Choices **\$4.01** (130 used & new offers)
Other Formats: Hardcover

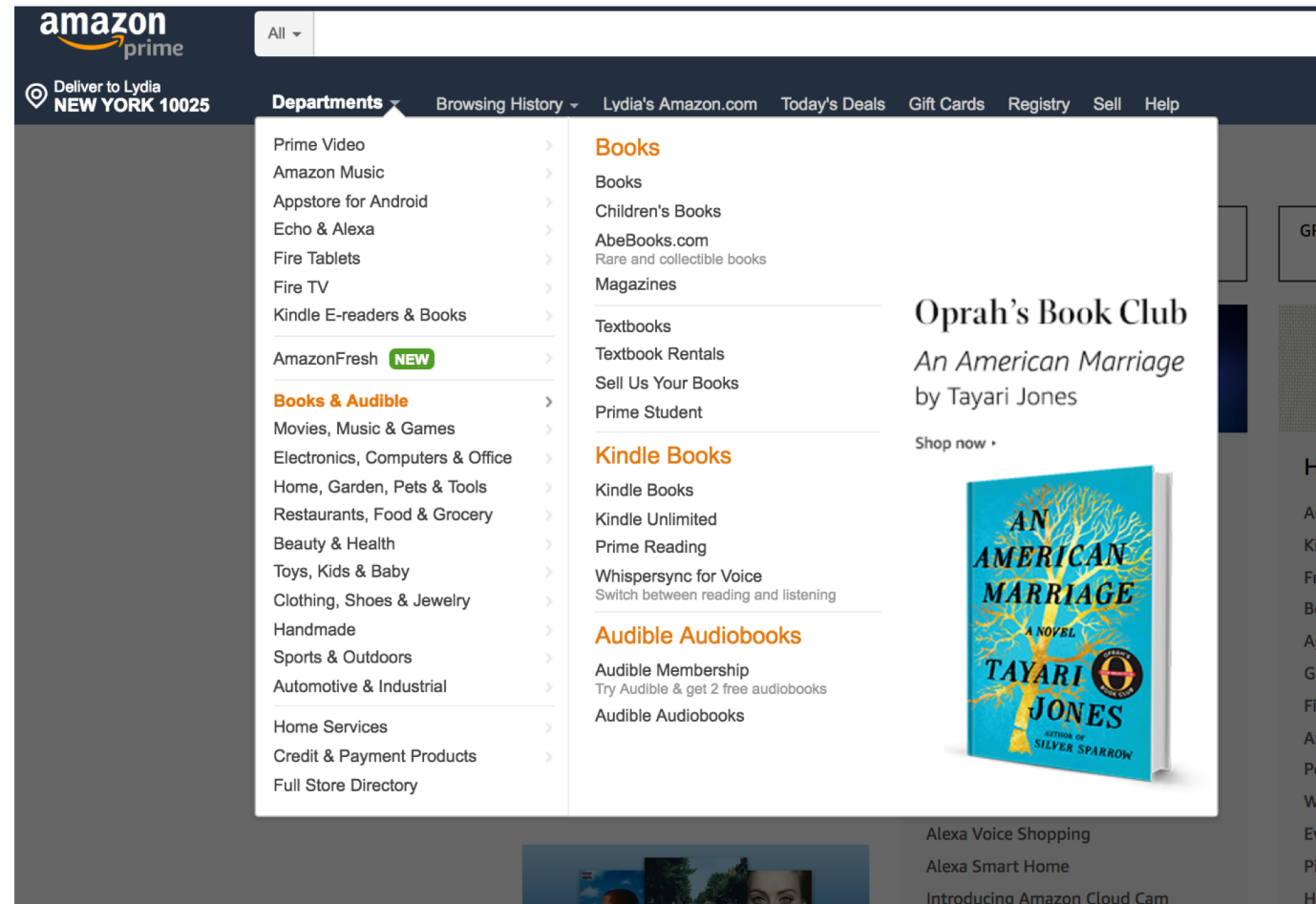
100 Things Every Designer Needs to Know About People (Voices That Matter) Apr 14, 2011
by Susan Weinschenk
Kindle Edition **\$9.60** ★★★★★ • 168
Get it TODAY, Feb 12
Paperback **\$25.24** ~~\$24.99~~ -prime
More Buying Choices **\$15.90** (98 used & new offers)

The Psychology Of Everyday Things Jun 15, 1988
by Don Norman
Hardcover **\$30.00** -prime | FREE One-Day
FREE One-Day Shipping on qualifying orders over \$35
Only 20 left in stock - order soon.
More Buying Choices **\$2.49** (98 used & new offers) ★★★★★ • 301

Hooked: How to Build Habit-Forming Products Nov 4, 2014
by Nir Eyal and Ryan Hoover
Kindle Edition **\$11.99** ★★★★★ • 10
Get it TODAY, Feb 12
Hardcover **\$17.12** ~~\$25.95~~ -prime
Get it by Tomorrow, Feb 13
More Buying Choices **\$10.23** (118 used & new offers)
Audible Audio Edition **\$0.00**
Free with Audible trial
Other Formats: Paperback, Audio CD

About 10

Amazon Departments: How many options are there?

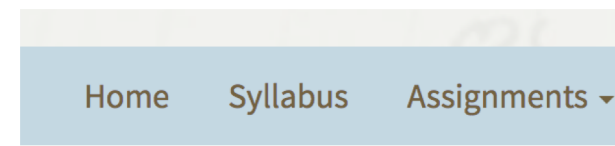
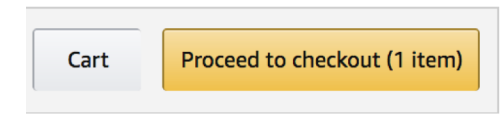
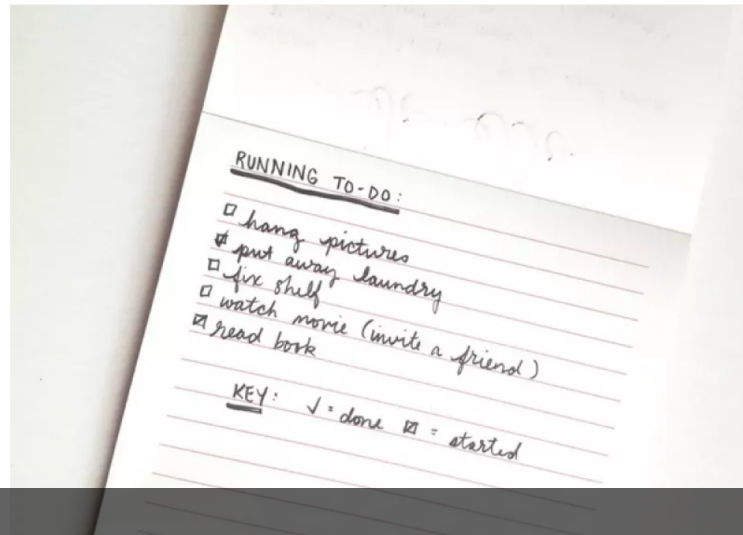
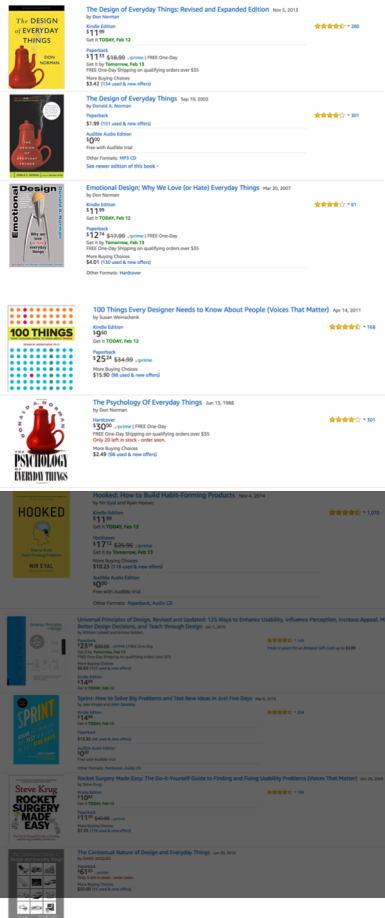


About 100

We display options different depending on how many options there are

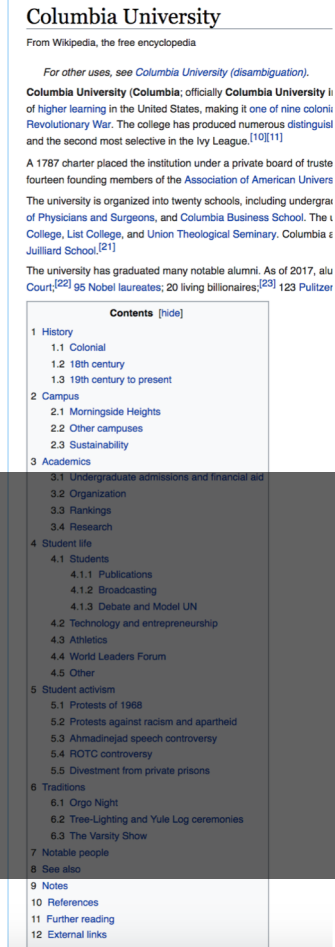
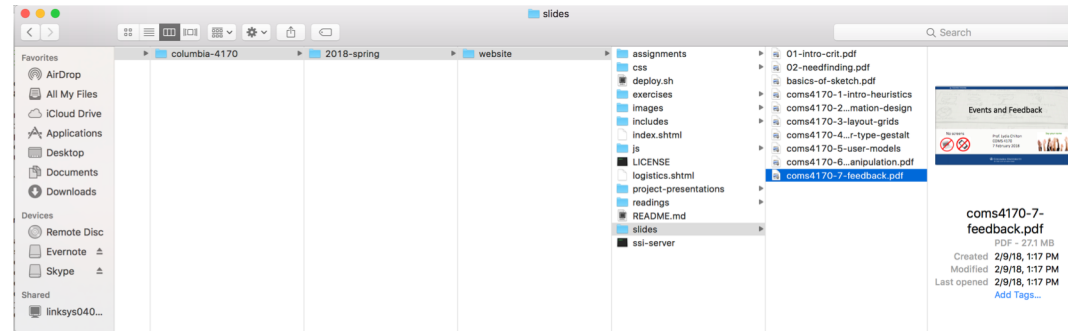
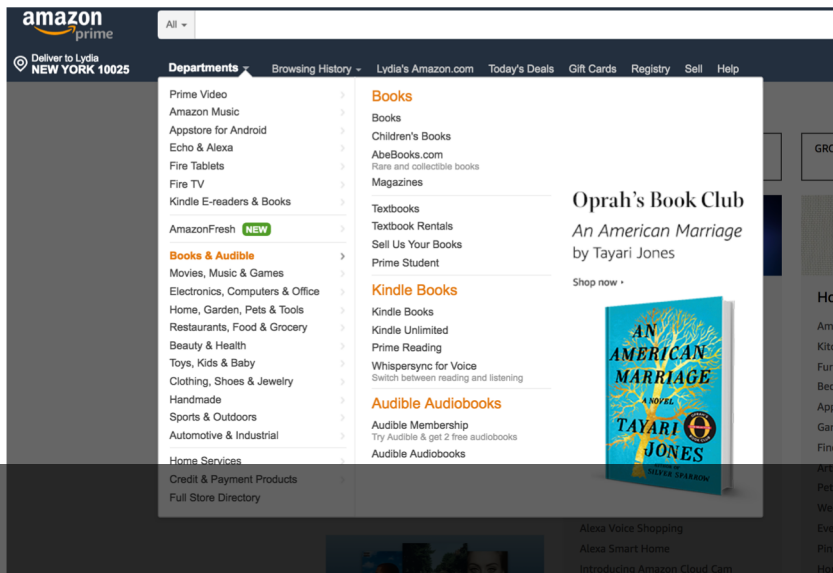
- Orders of magnitude
 - 1 (no options, just a single choice)
 - 10
 - 100
 - 1000+

For ~10 options, how do you display them?



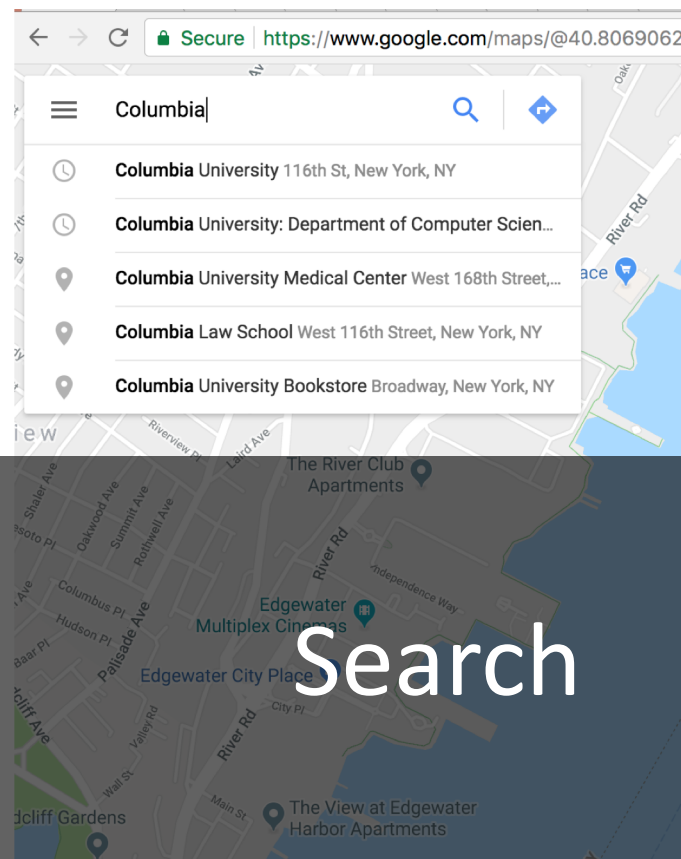
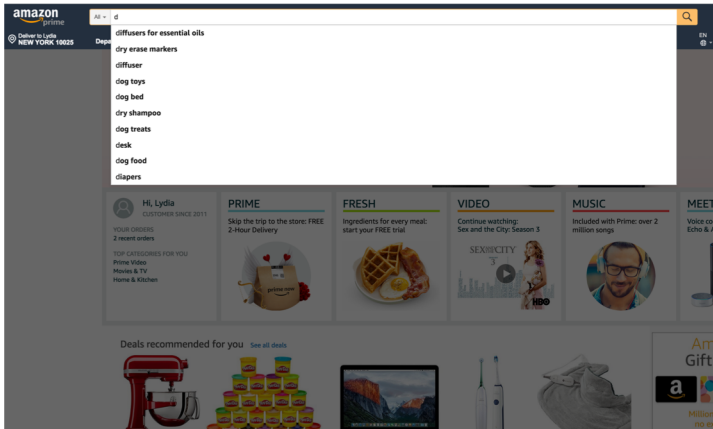
List

For ~100 options, how do you display them?



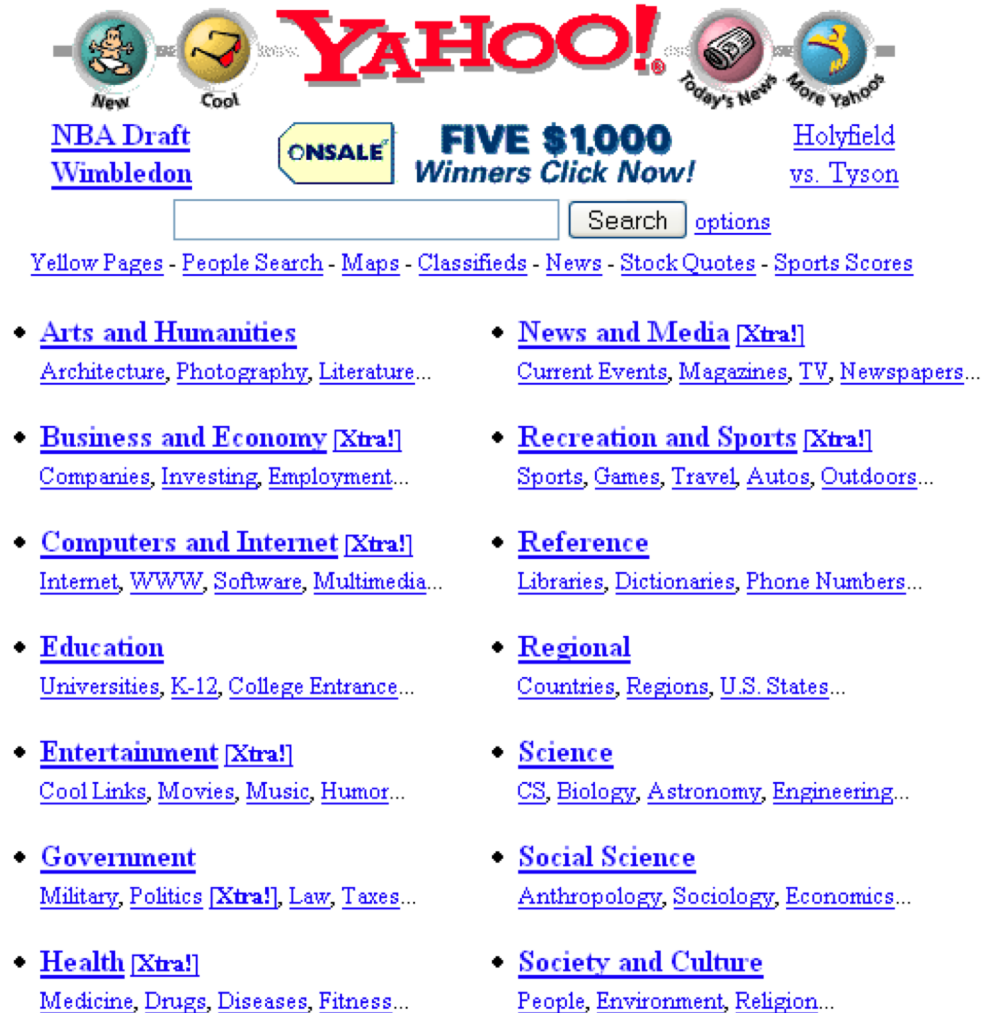
A tree

For ~1000 options, how do you display them?



```
135
136
137     $(document).ready(function(){
138         window.website = new Website();
139         window.website.loadCodeEditor();
140         website.setCurrentPageElement($("#home"));
141         add
142     });
143     });
144     });
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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", "FIVE \$1,000 Winners Click Now!", "Holyfield vs. Tyson". Below these links is a search bar with a "Search" button and a link to "options". Below the search bar is a horizontal line of links: "Yellow Pages - People Search - Maps - Classifieds - News - Stock Quotes - Sports Scores". Below this line 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!

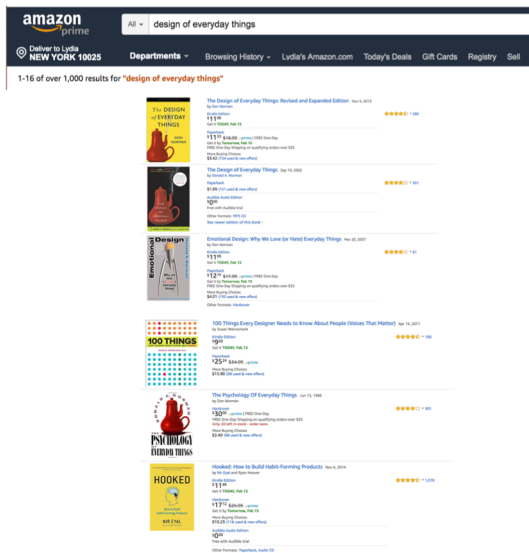
[Holyfield vs. Tyson](#)

[options](#)

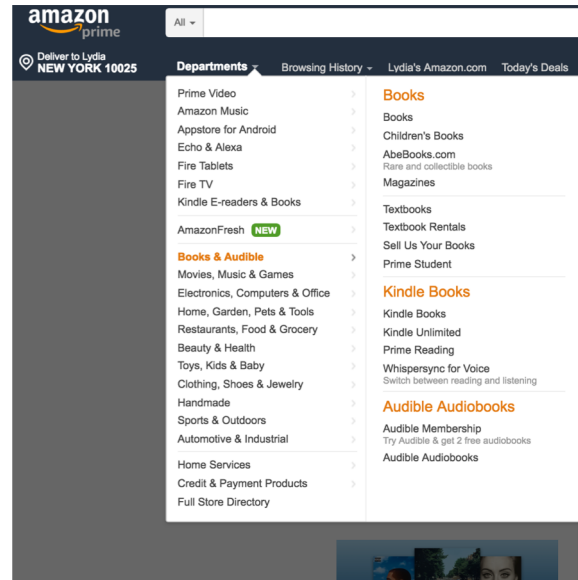
[Yellow Pages](#) - [People Search](#) - [Maps](#) - [Classifieds](#) - [News](#) - [Stock Quotes](#) - [Sports Scores](#)

- ◆ [Arts and Humanities](#)
[Architecture](#), [Photography](#), [Literature](#)...
- ◆ [Business and Economy](#) [Xtra!]
[Companies](#), [Investing](#), [Employment](#)...
- ◆ [Computers and Internet](#) [Xtra!]
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- ◆ [Education](#)
[Universities](#), [K-12](#), [College Entrance](#)...
- ◆ [Entertainment](#) [Xtra!]
[Cool Links](#), [Movies](#), [Music](#), [Humor](#)...
- ◆ [Government](#)
[Military](#), [Politics](#) [Xtra!], [Law](#), [Taxes](#)...
- ◆ [Health](#) [Xtra!]
[Medicine](#), [Drugs](#), [Diseases](#), [Fitness](#)...
- ◆ [News and Media](#) [Xtra!]
[Current Events](#), [Magazines](#), [TV](#), [Newspapers](#)...
- ◆ [Recreation and Sports](#) [Xtra!]
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[Anthropology](#), [Sociology](#), [Economics](#)...
- ◆ [Society and Culture](#)
[People](#), [Environment](#), [Religion](#)...

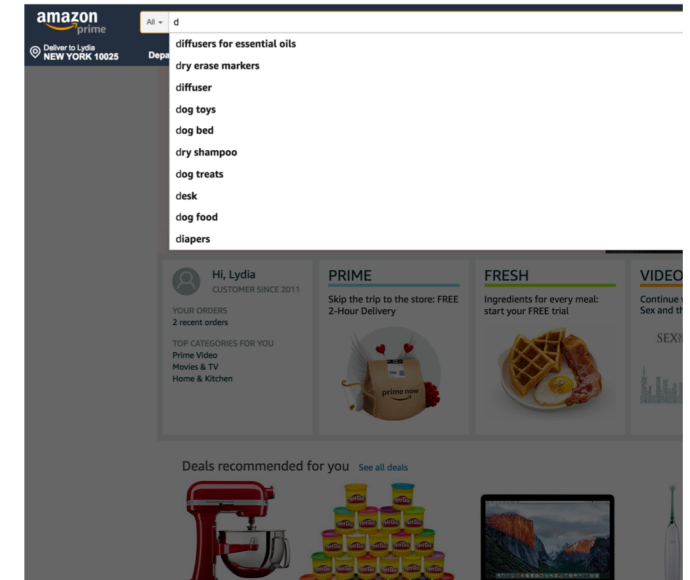
When displaying options, the number of options determines the interaction style.



~10 items = list



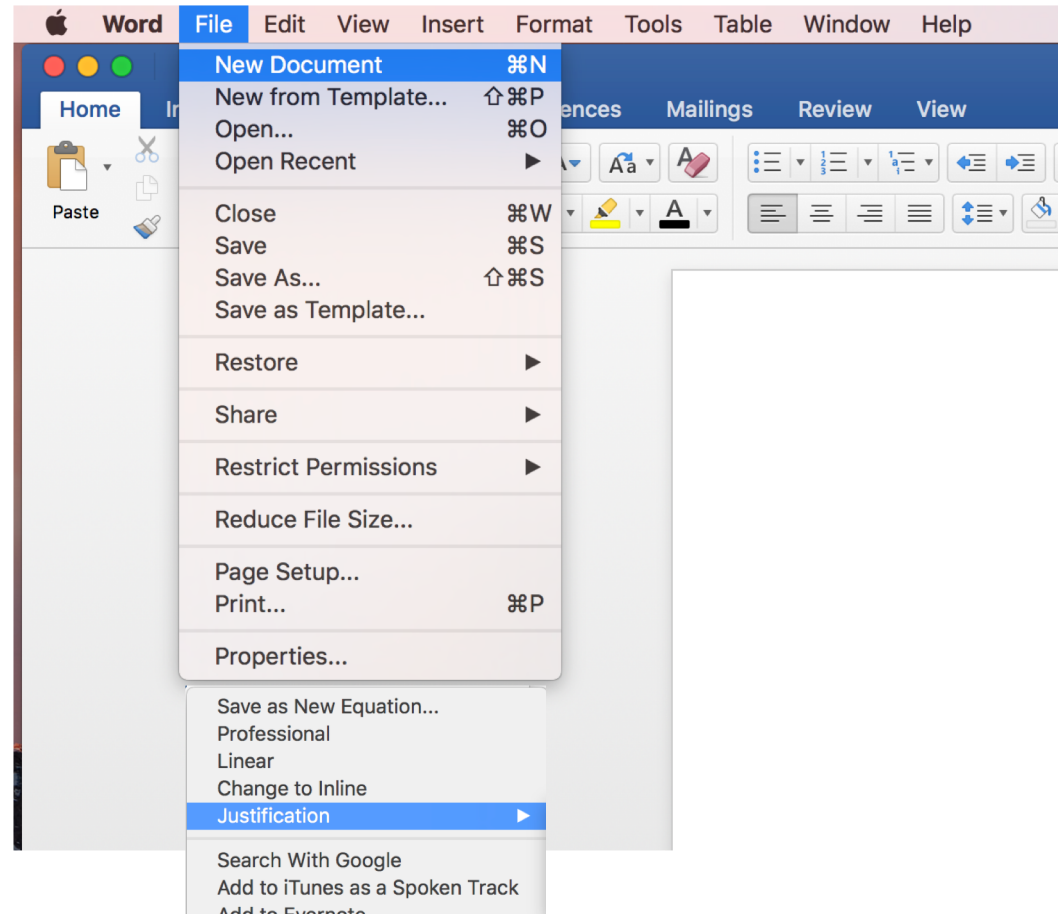
~100 items = tree



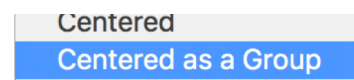
~1000 items = search

Designing Menu Options

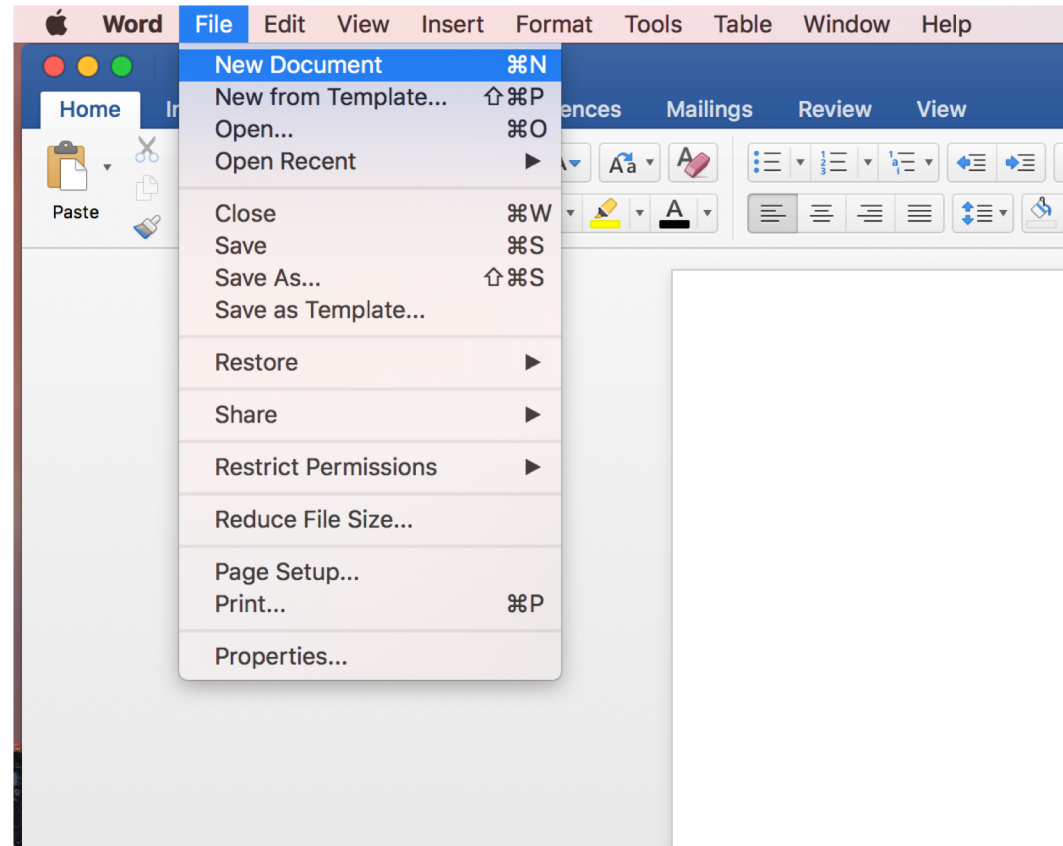
What would happen if one menu listed all the commands?



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

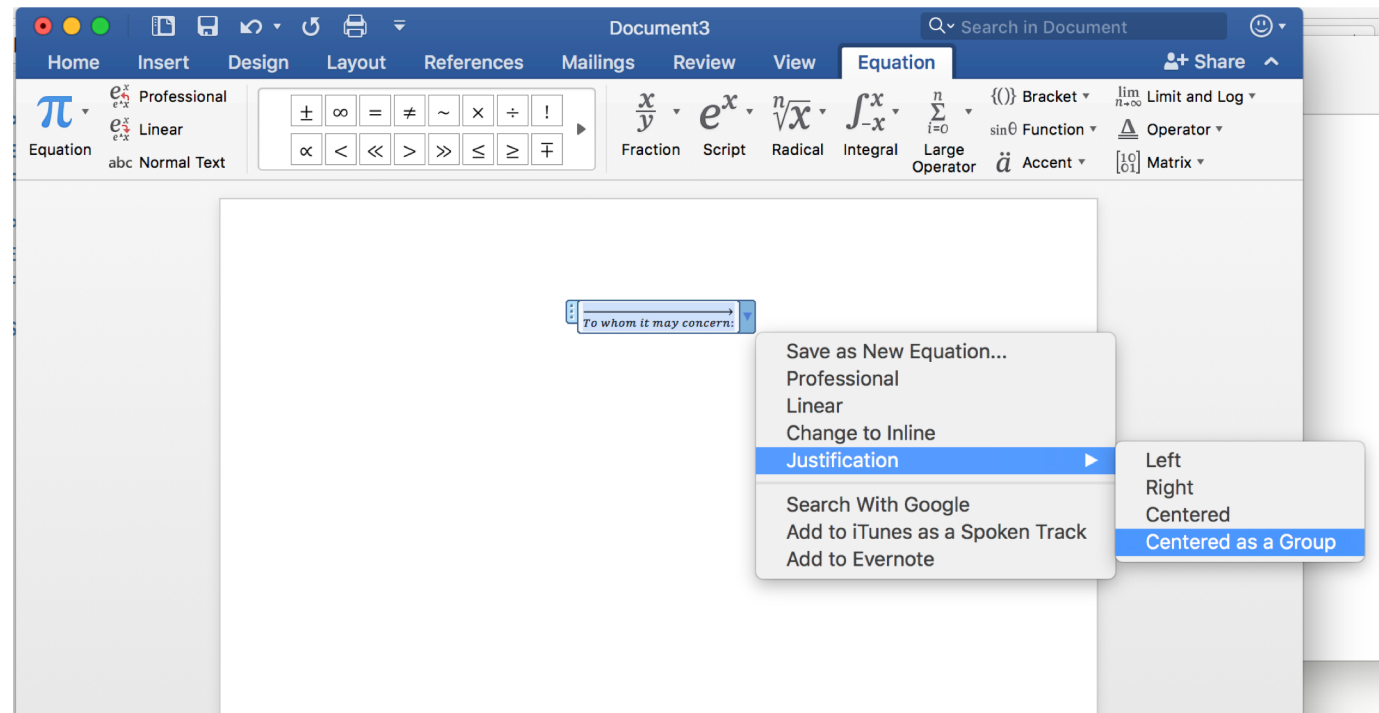


Why is “New Document” the first menu item?



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?

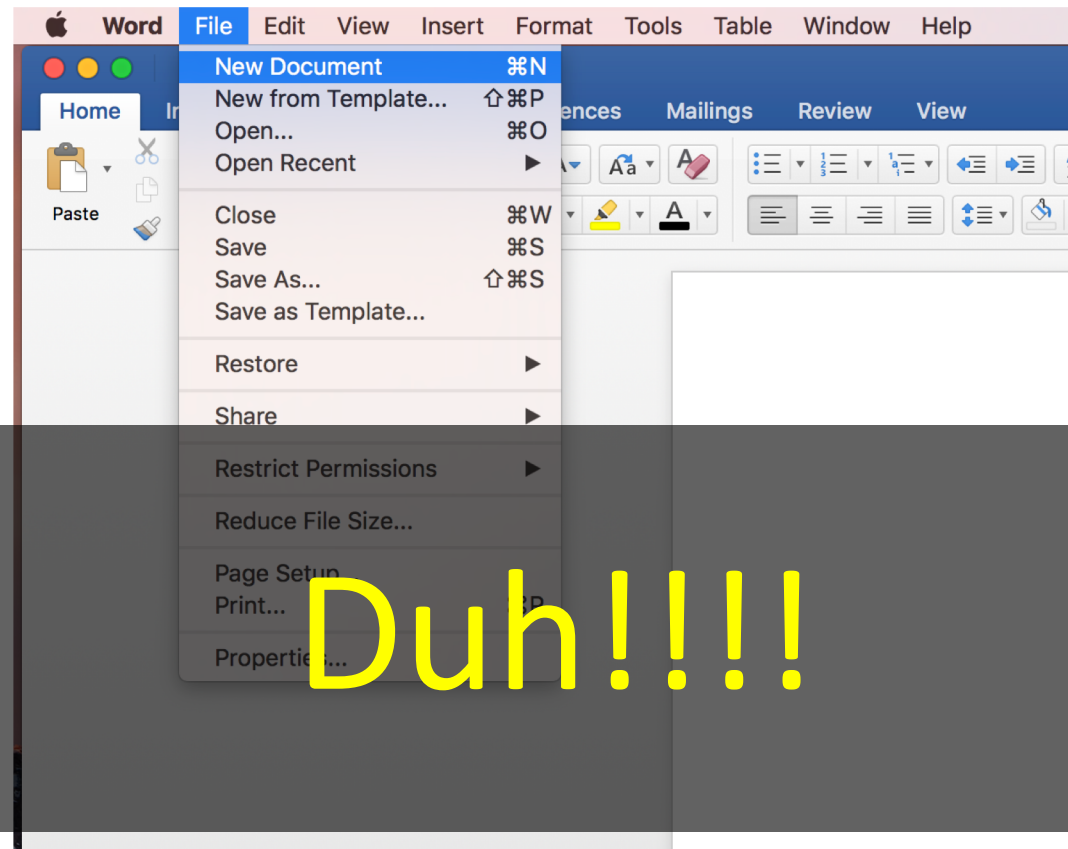


Items that are **infrequently** used can be more **difficult** to access

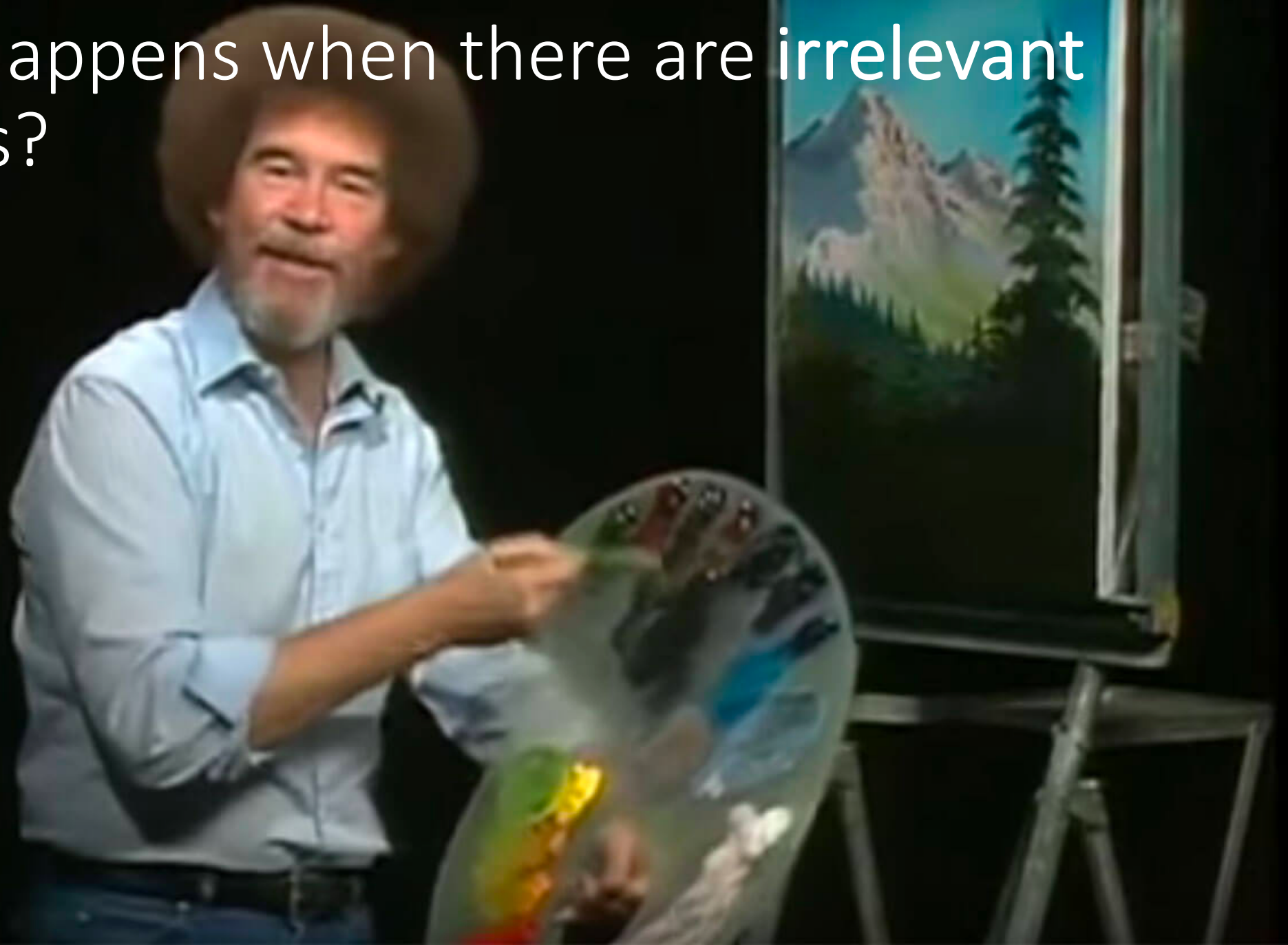
People have limited time.

Make frequently used options easier to access

Make rarely used options harder to access



What happens when there are irrelevant options?

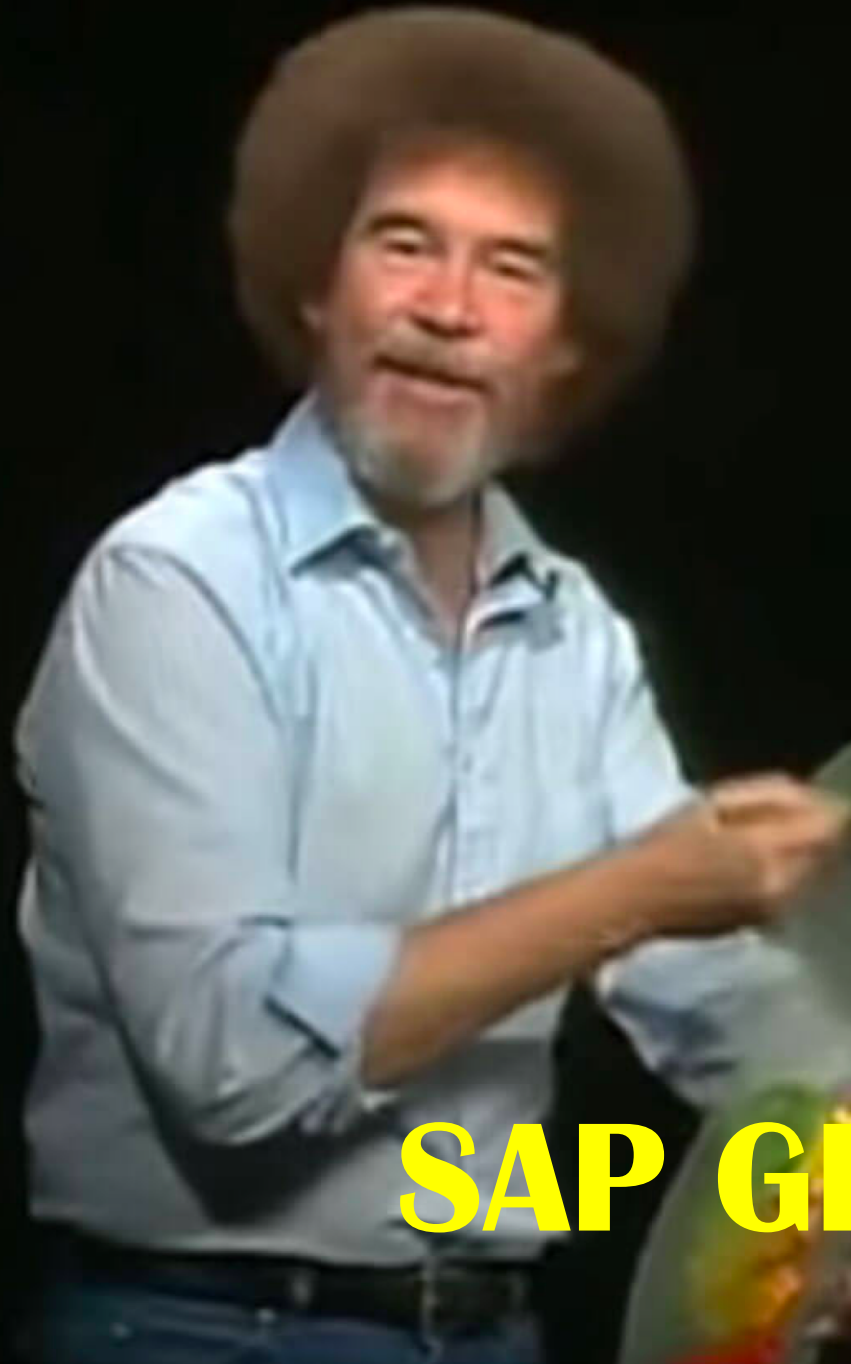


A man with a large afro hairstyle, wearing a light blue button-down shirt and jeans, is painting a landscape on a canvas. He is holding a palette with various colors of paint. The painting depicts a mountain range with a large evergreen tree in the foreground. The text "TITANIUM WHITE" is overlaid in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

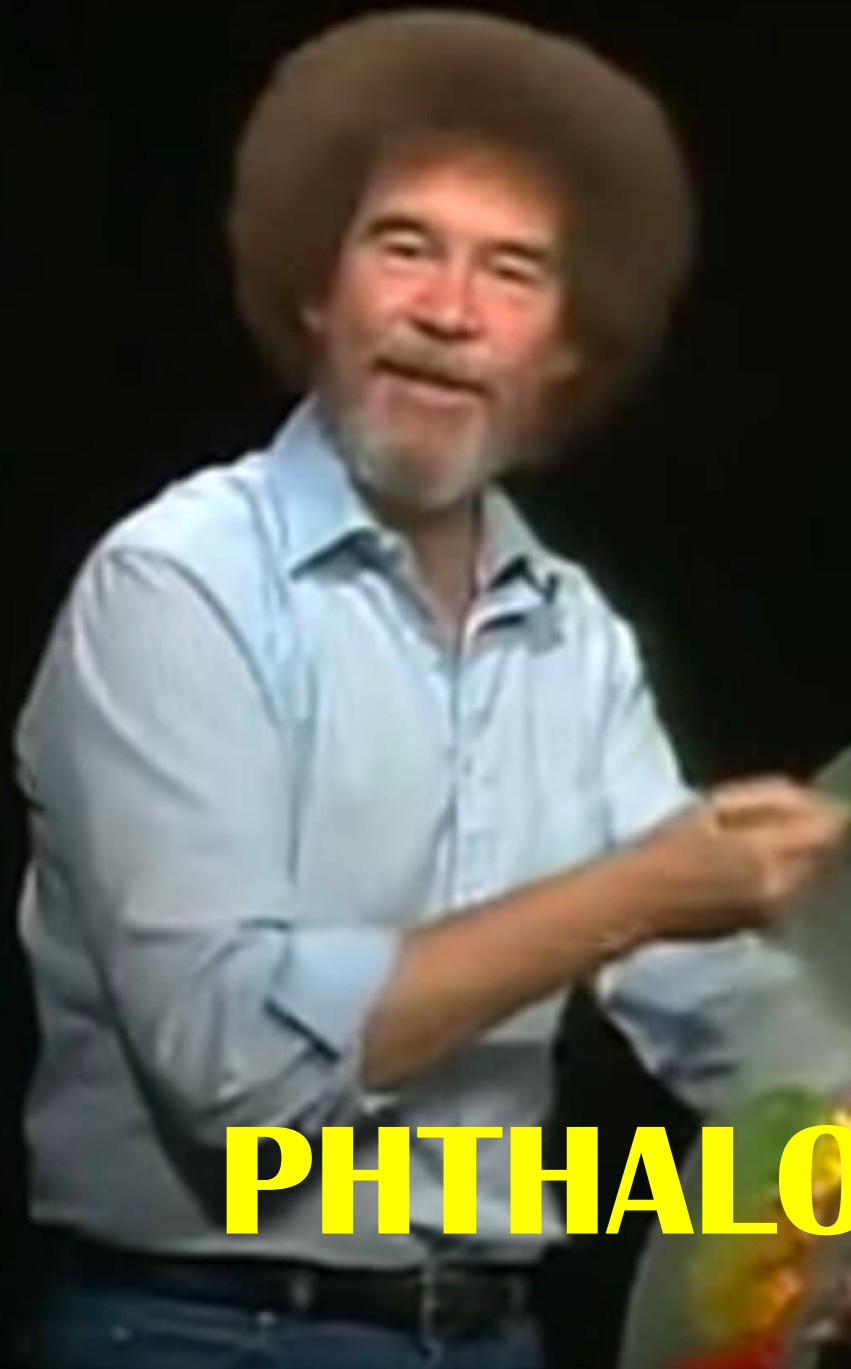
TITANIUM WHITE

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 depicts a mountain range with a large evergreen tree in the foreground. The background is dark, making the painting stand out.

CADMIUM YELLOW



SAP GREEN



PHTHALO BLUE

Why not do this?



4

ELECTRIC PINK

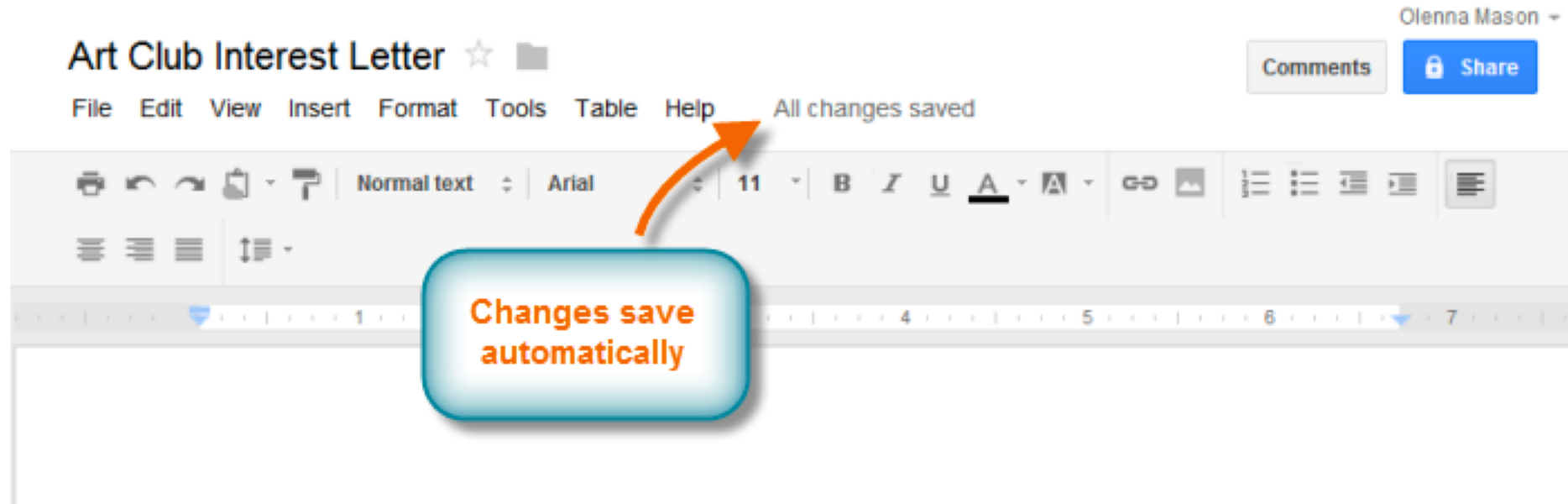
Irrelevant options create distractions



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



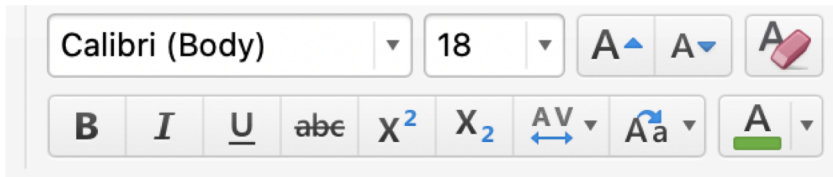
NO



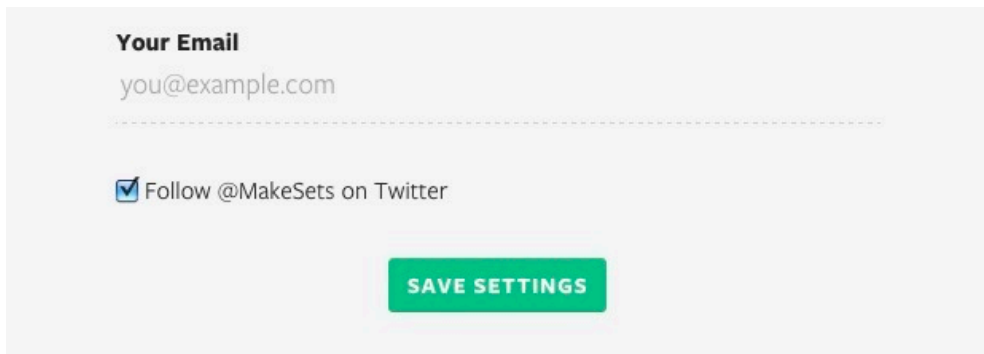
Design good default options.

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

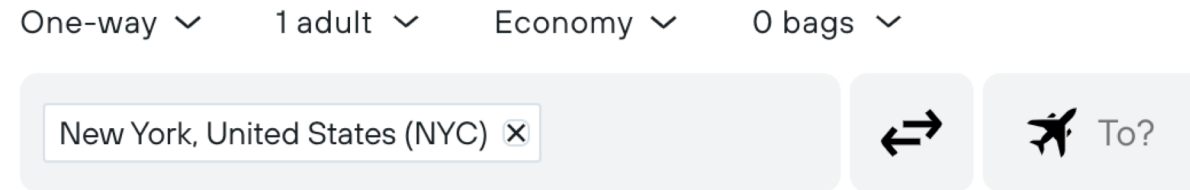
People accept default fonts



People accept default settings

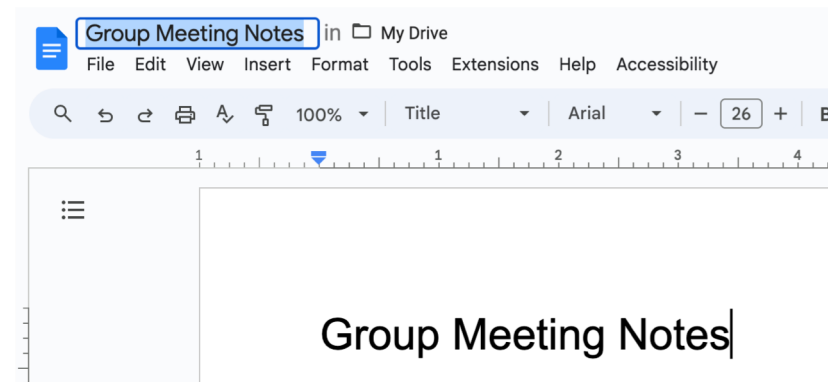


Defaults save users time and energy

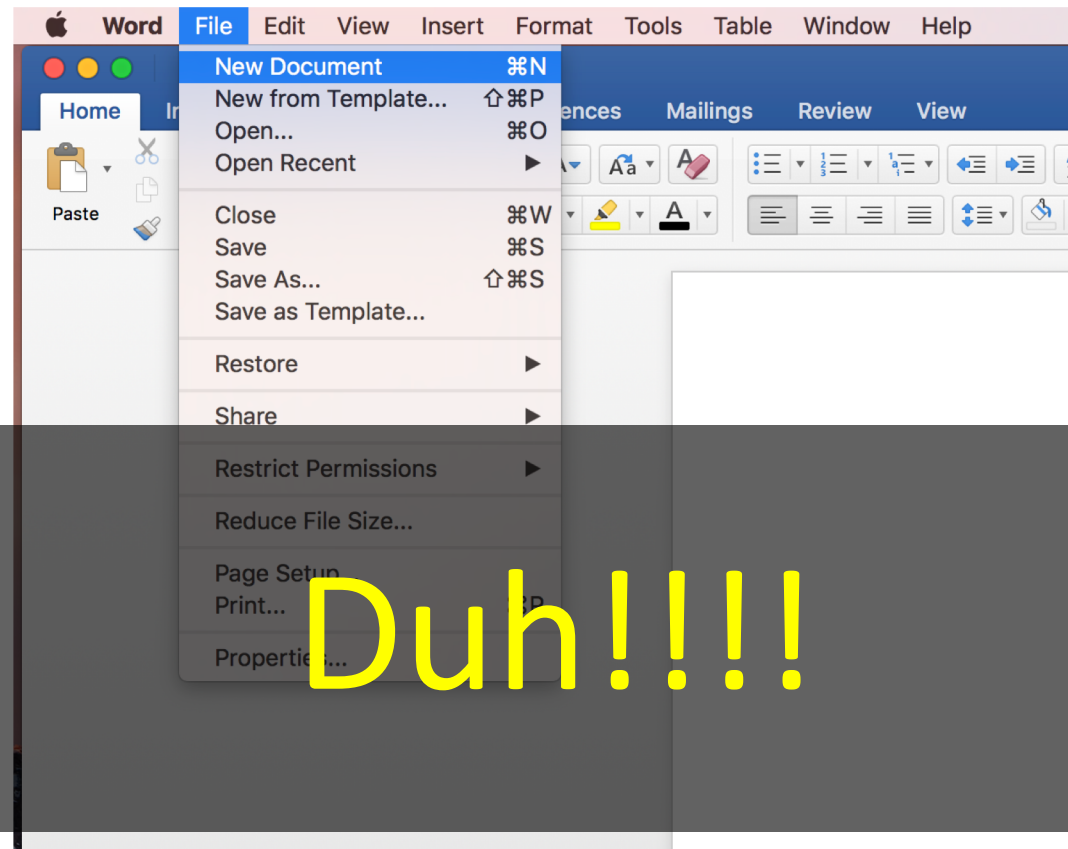


UIs have millions of decisions

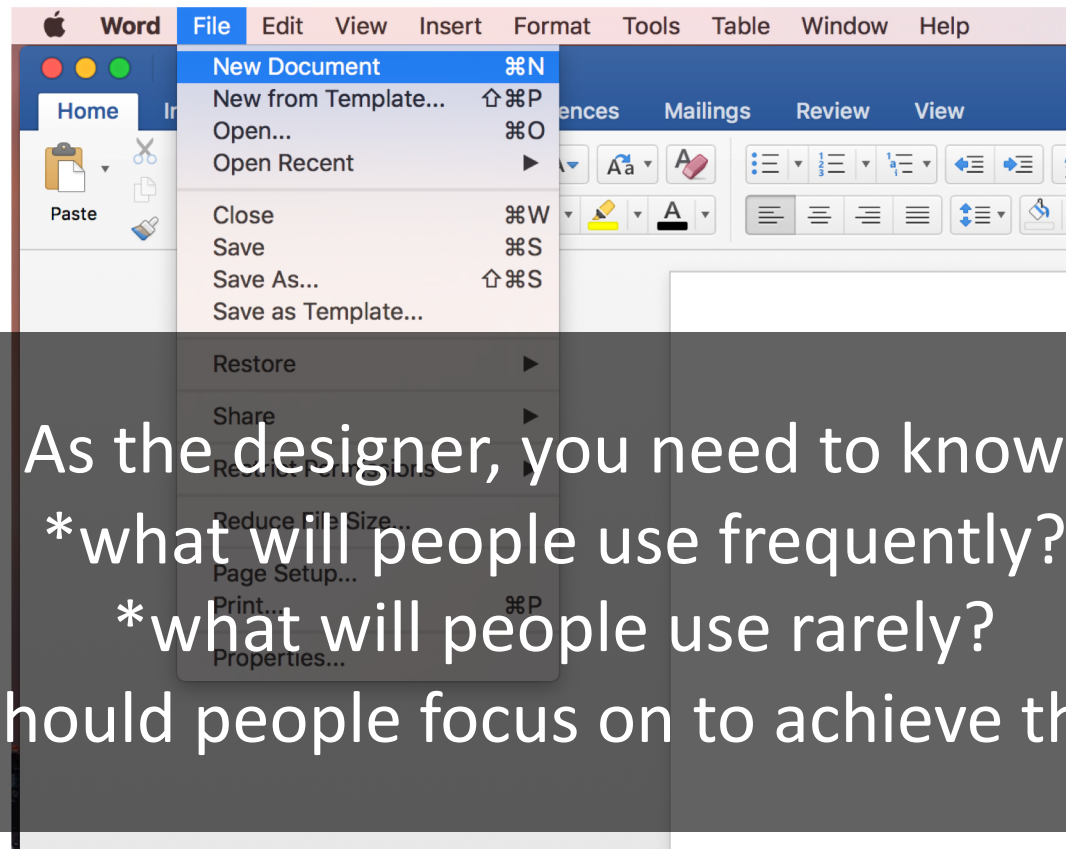
Good defaults reduce users' cognitive load.



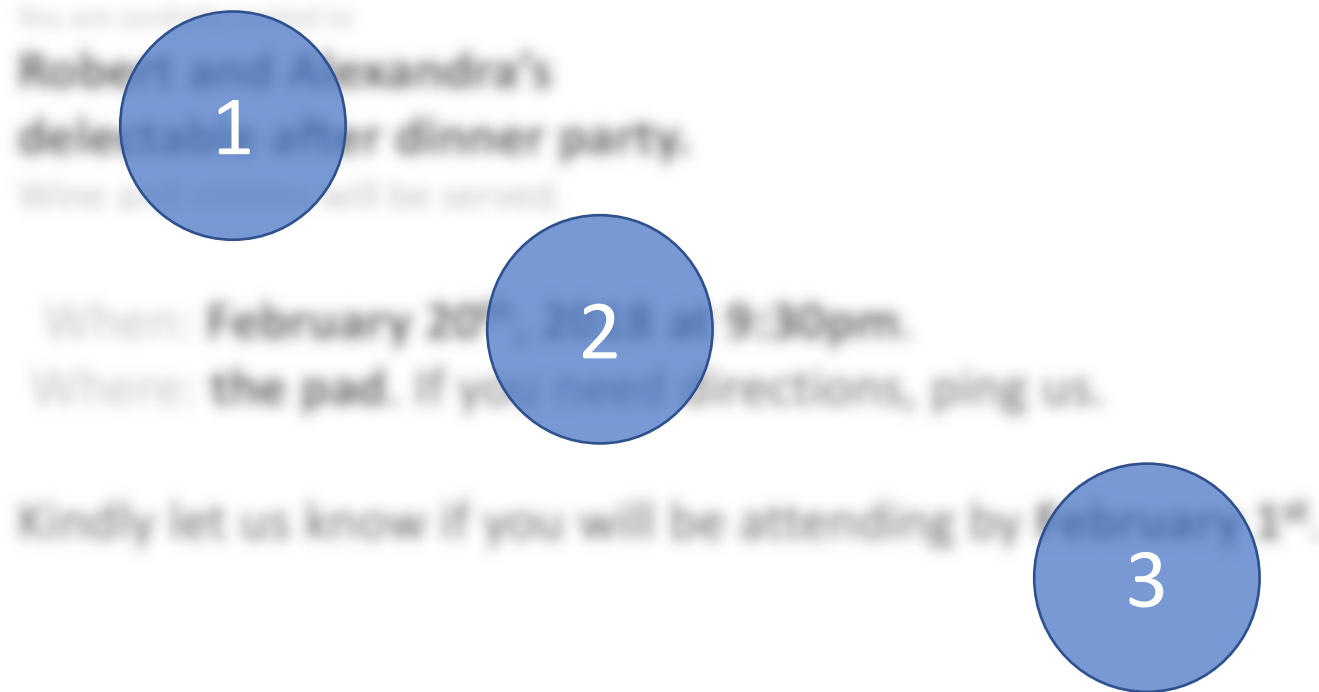
Make frequently used options easier to access
Make rarely used options harder to access



People have limited time and focus.



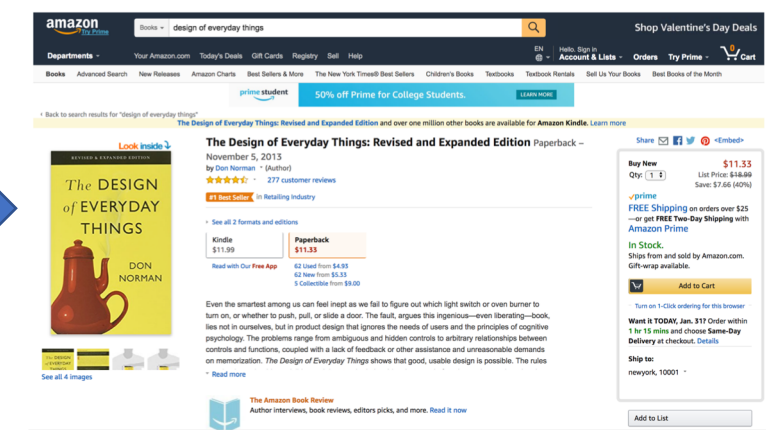
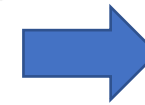
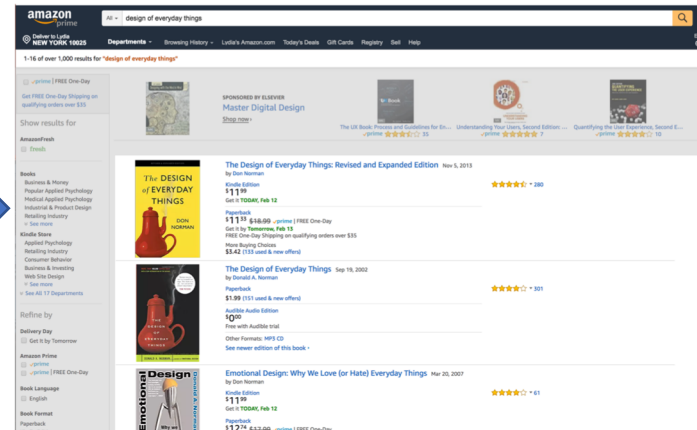
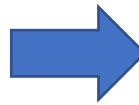
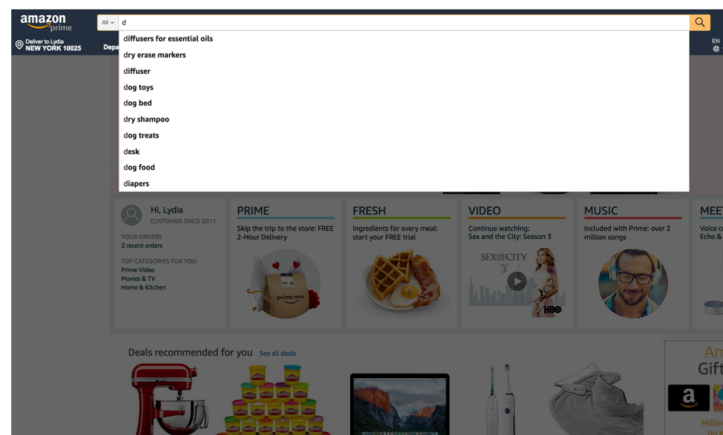
Sound familiar?



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

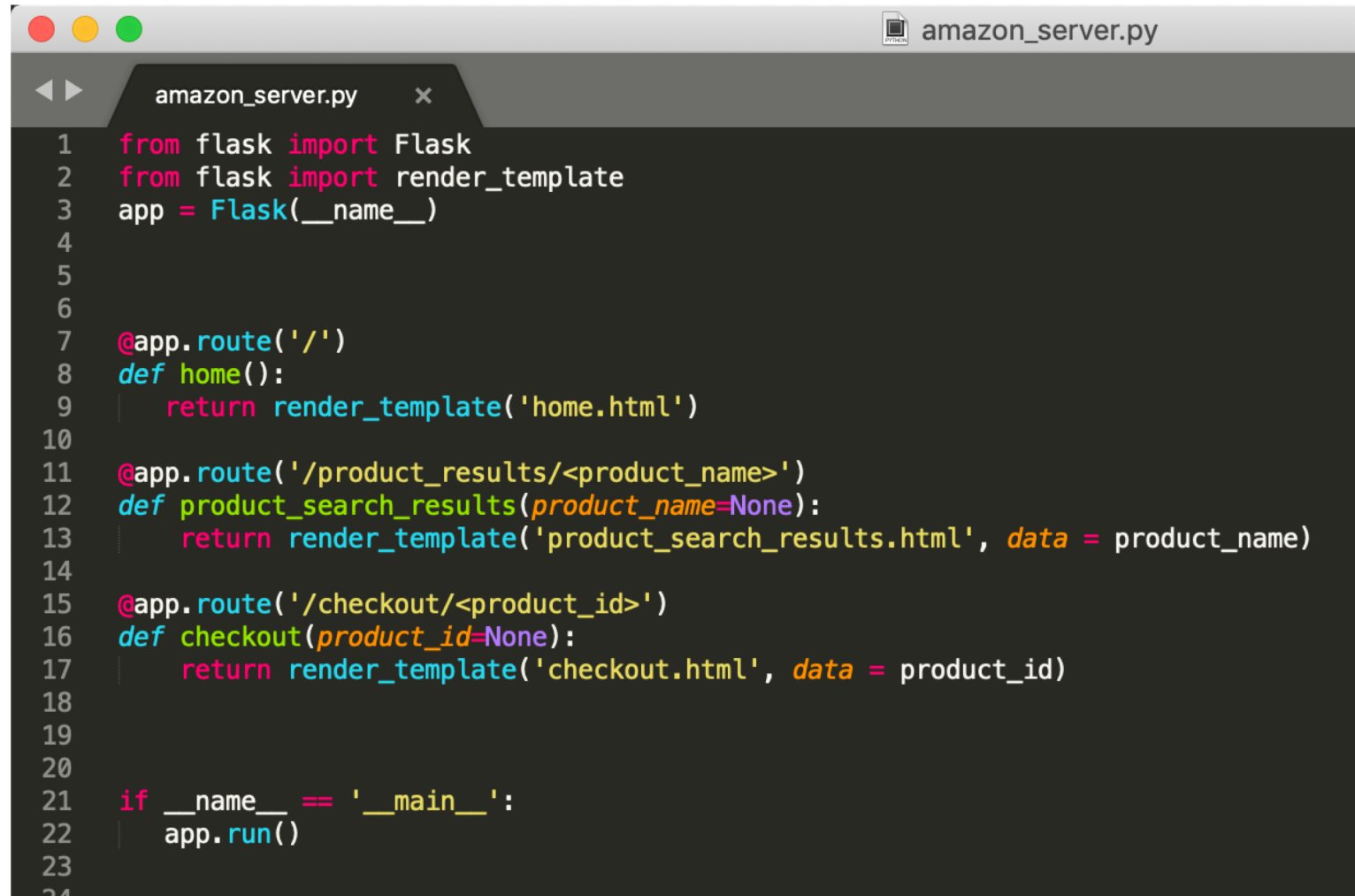
Implementing navigation on the web

How is each state instantiated?



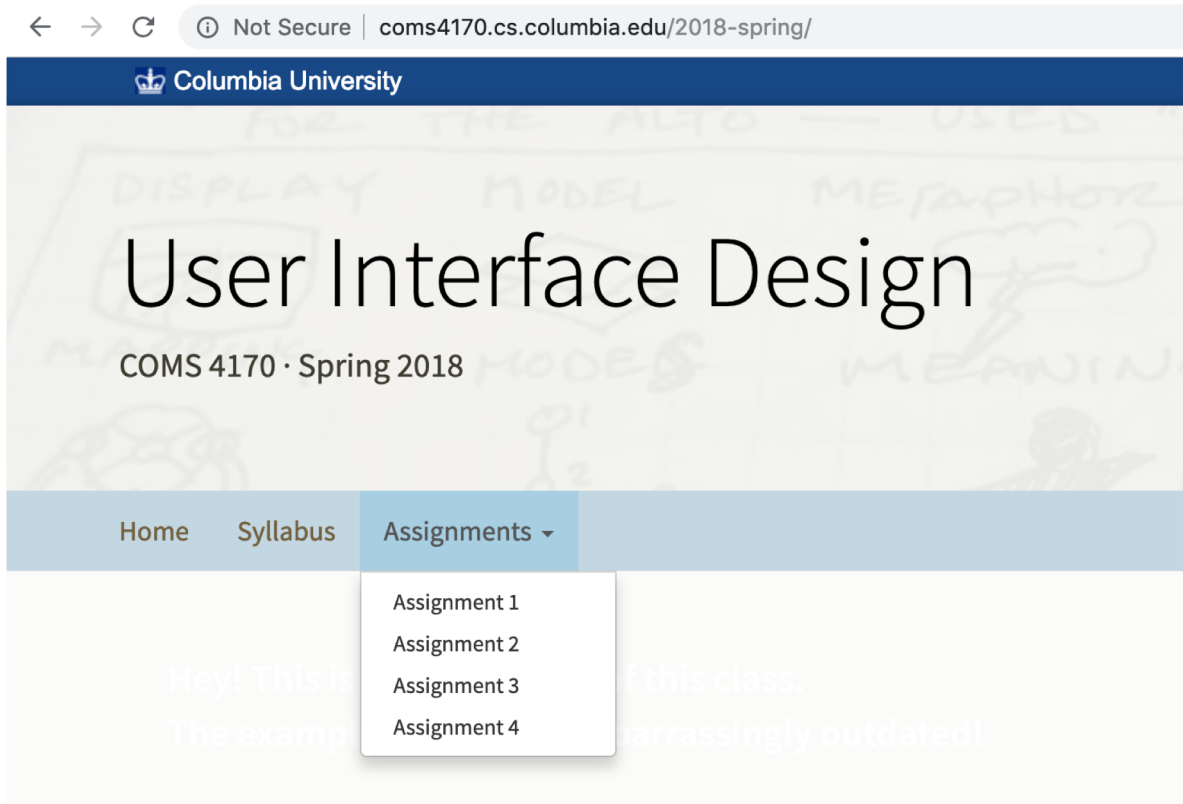
Typically, each page is a state

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
```

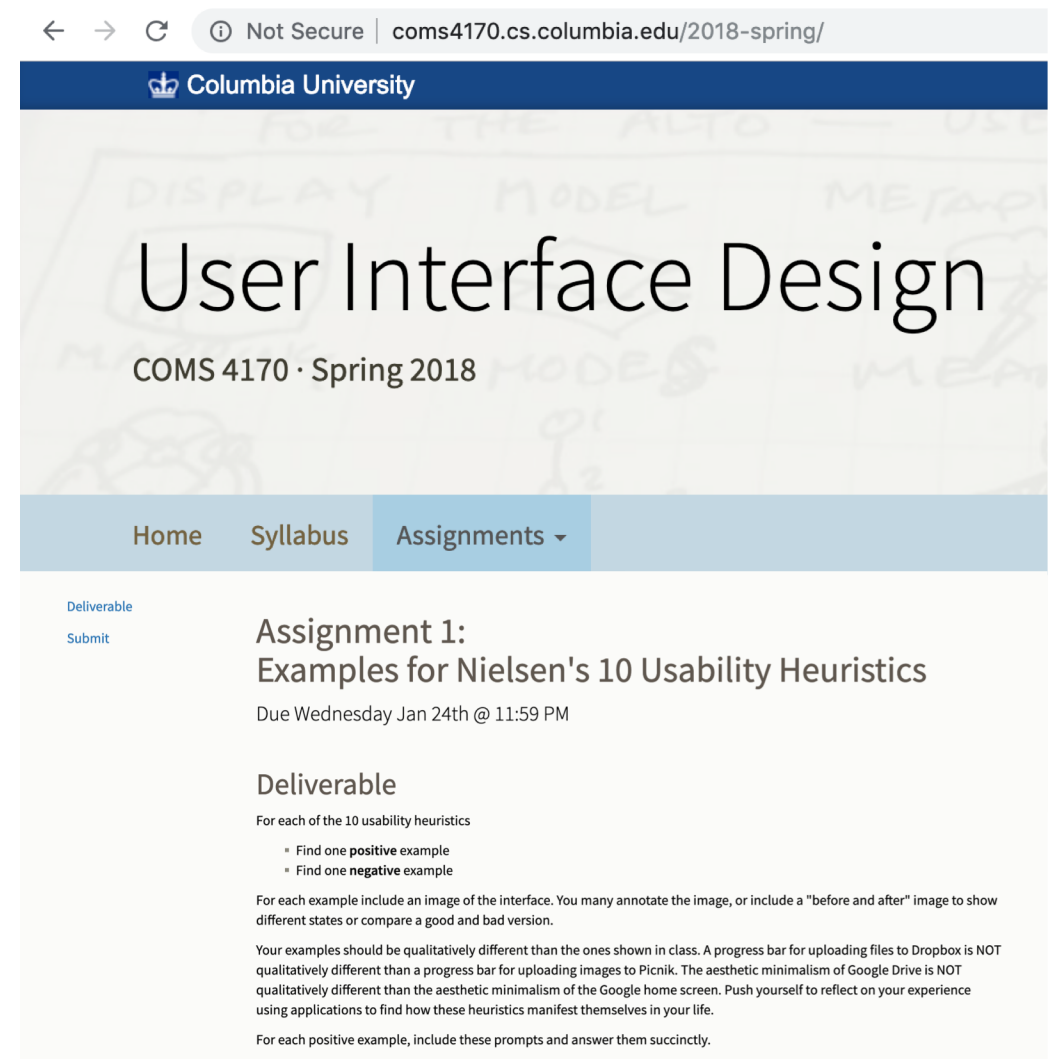
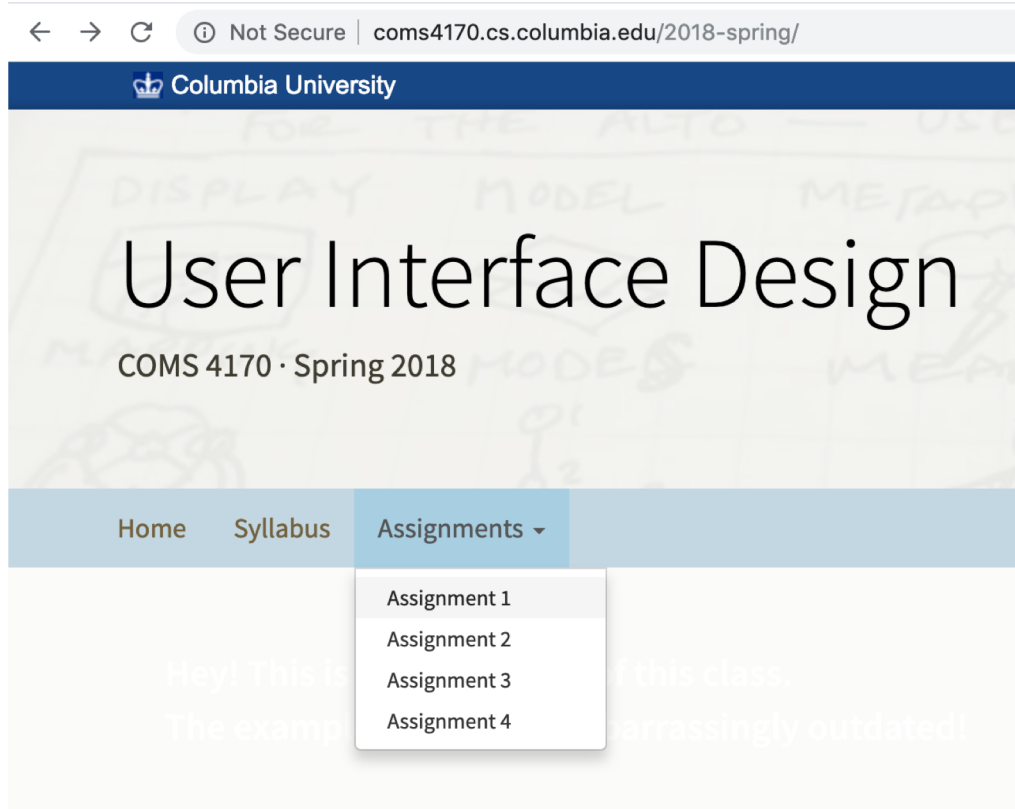
Menus are implemented as Bootstrap NavBars



```
<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>

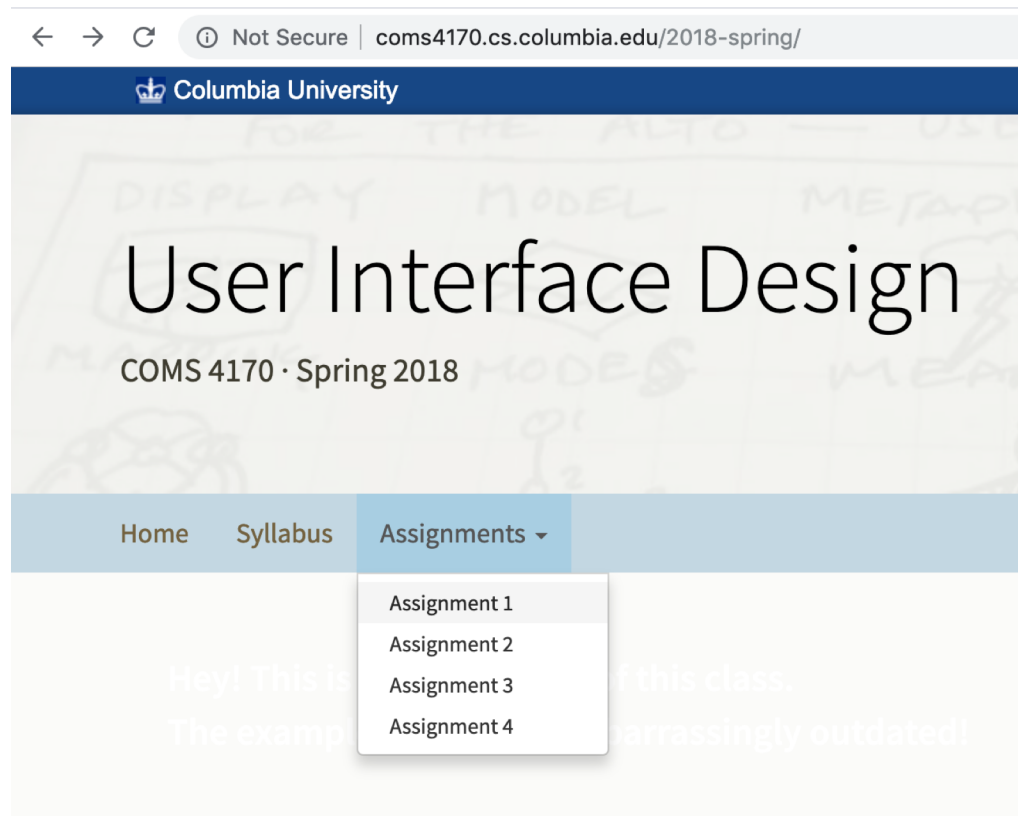
        <li class="dropdown">
          <a href="#" class="dropdown-toggle" data-toggle="dropdown" role="button" aria-haspopup="true"
            aria-expanded="false">Assignments <span class="caret"></span></a>
          <ul id="assignments" class="dropdown-menu">
            <!--<li class="disabled"><a href="">coming 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_userinterfacedesign/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.

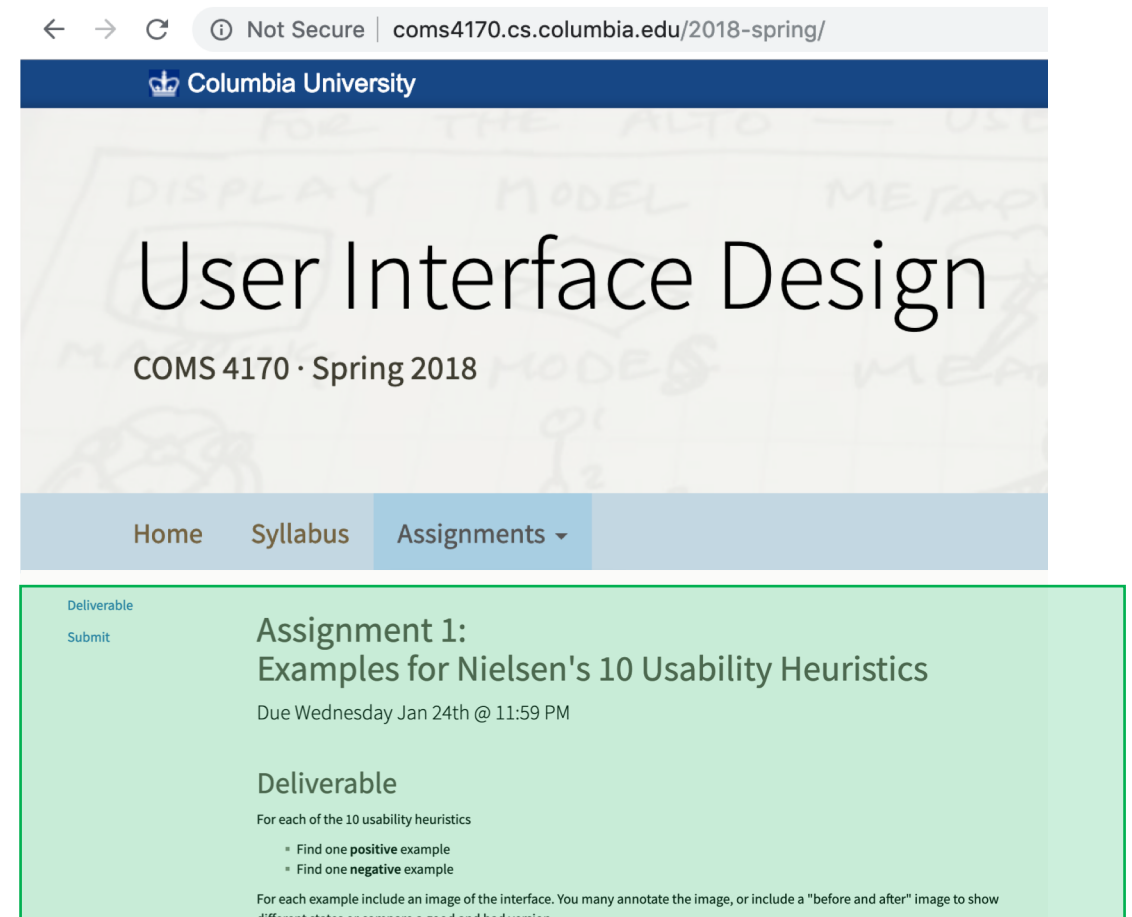


NavBars HTML is not copied across pages.
NavBars is part of the *layout*.

layout



Content block



Create "layout.html" that has the common HTML (headers, navs bars, etc)

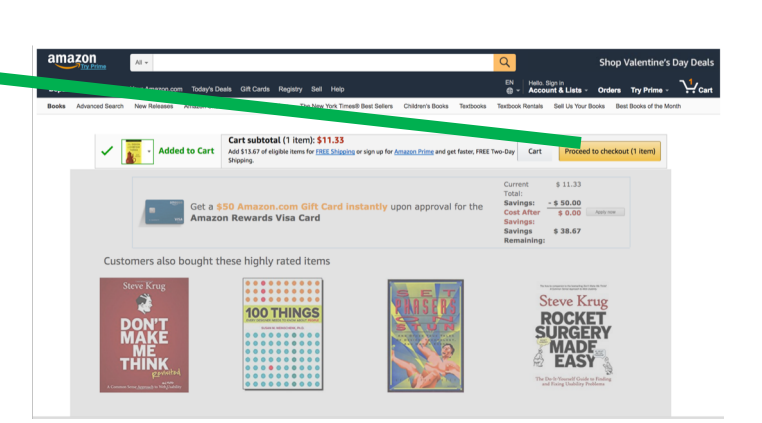
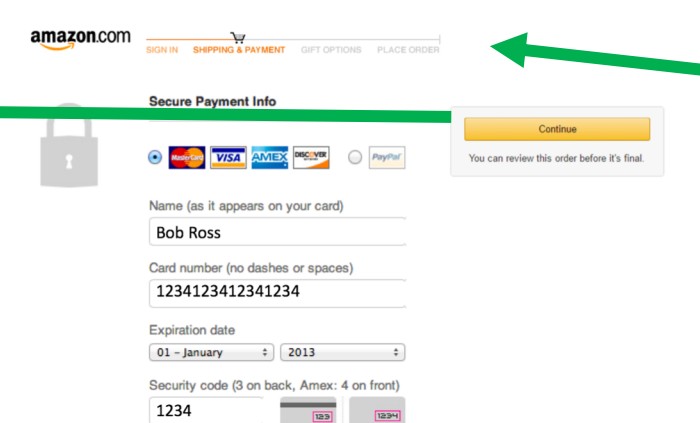
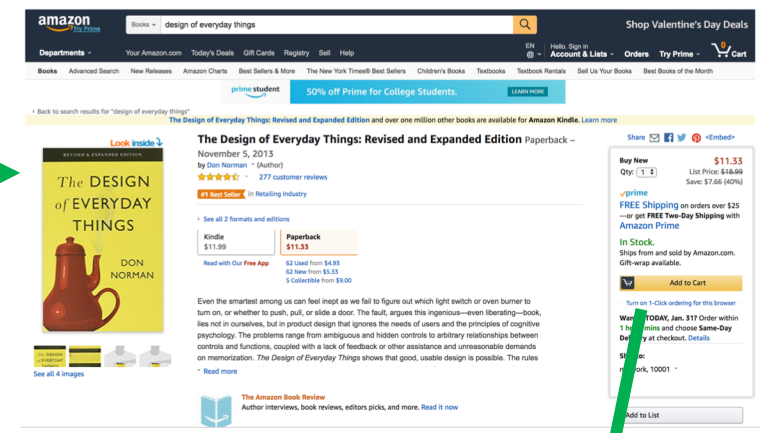
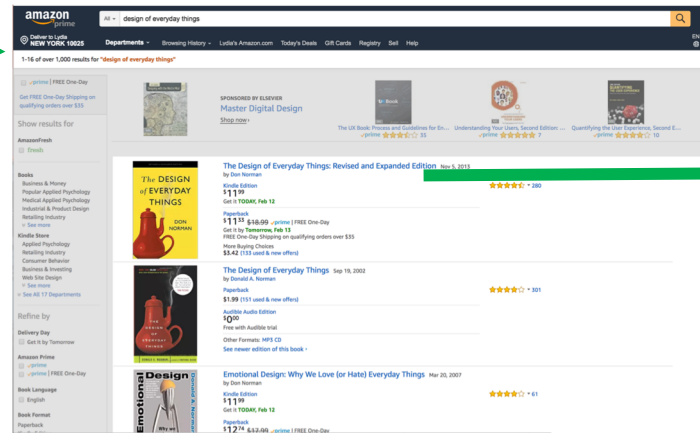
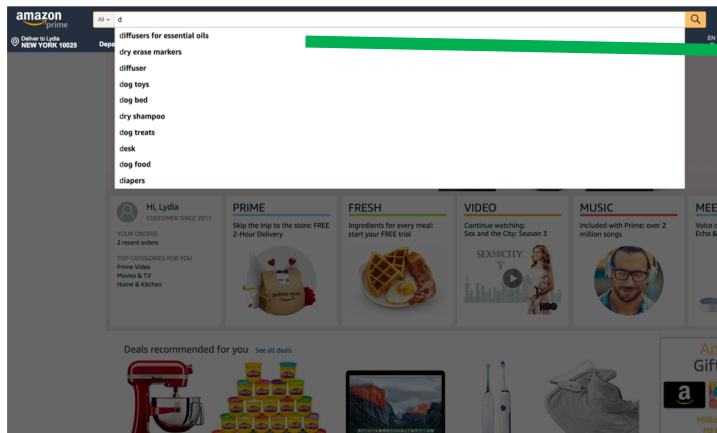
```
1 <html>
2 <head>
3 <link href="http://netdna.bootstrapcdn.com/bootstrap/3.0.0/css/bootstrap.min.css" >
4 </head>
5
6
7 <body>
8 <nav class="navbar navbar-inverse" role="navigation">
9 <div class="container-fluid">
10 <div class="navbar-header">
11 <button type="button" class="navbar-toggle" data-toggle="collapse" data-target="#bs-example-navbar-collapse-1">
12 <span class="sr-only">Toggle navigation</span>
13 <span class="icon-bar"></span>
14 <span class="icon-bar"></span>
15 <span class="icon-bar"></span>
16 </button>
17 <a class="navbar-brand" href="/">Home</a>
18 </div>
19
20 <div class="collapse navbar-collapse" id="bs-example-navbar-collapse-1">
21 <ul class="nav navbar-nav navbar-right">
22 <li><a href="#">Link</a></li>
23 <li class="dropdown">
24 <a href="#" class="dropdown-toggle" data-toggle="dropdown">Dropdown <b class="caret"></b></a>
25 <ul class="dropdown-menu">
26 <li><a href="#">Action</a></li>
27 <li><a href="#">Another action</a></li>
28 <li><a href="#">Something else here</a></li>
29 <li class="divider"></li>
30 <li><a href="#">Separated link</a></li>
31 </ul>
32 </li>
33 </ul>
34 </div><!-- /.navbar-collapse -->
35 </div><!-- /.container-fluid -->
36 </nav>
37 <div class="container">
38 <div class="container">
39 <div class="container">
40 <div class="container">
41 <div class="container">
42 <div class="container">
43 <div class="container">
44 <div class="container">
45 <div class="container">
46 <div class="container">
47 <div class="container">
```

Create each page (like "home.html") by extending "layout.html"

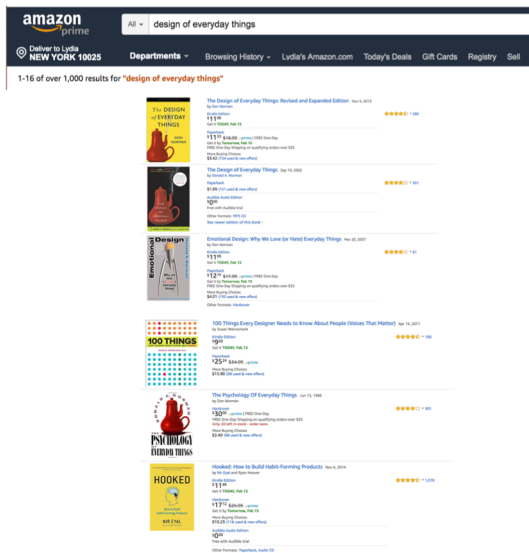
```
1 {% extends "layout.html" %}
2
3
4 {% block content %}
5 <div>
6 <h1> Assignment 1</h1>
7
8 <p>
9 Your assignment for this week is to ...
10 </p>
11 </div>
12 {% endblock %}
13
14
15
16
```


Summary

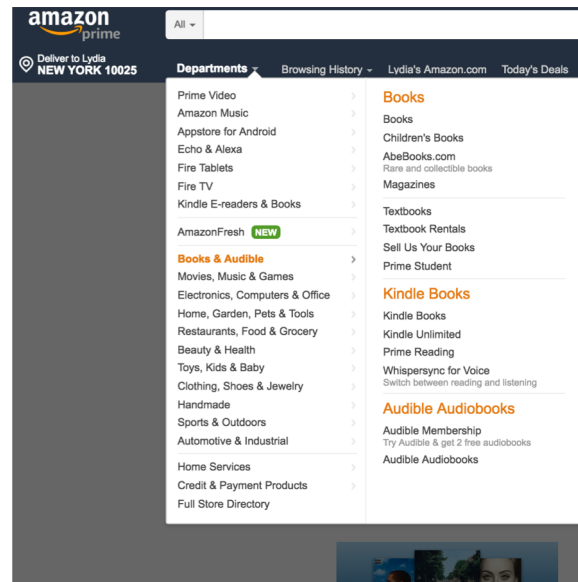
For complex tasks, guide users attention by breaking the task into: states, options, and transitions to new states.



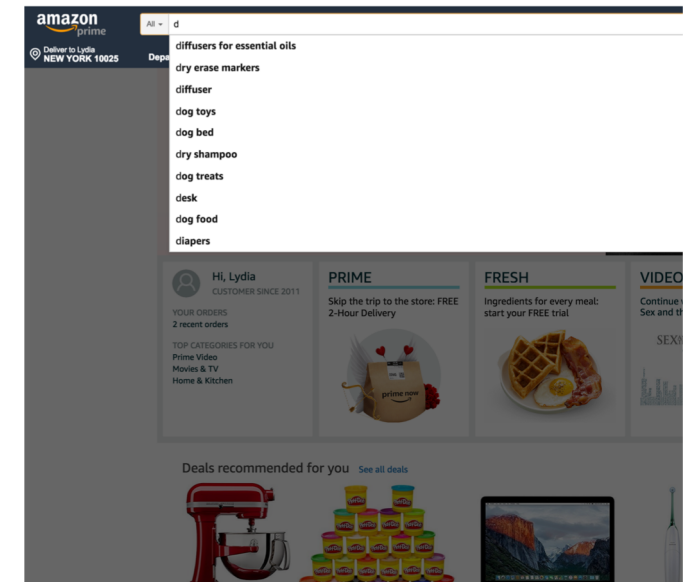
When displaying options, the number of options determines the interaction style.



~10 items = **list**



~100 items = **tree**

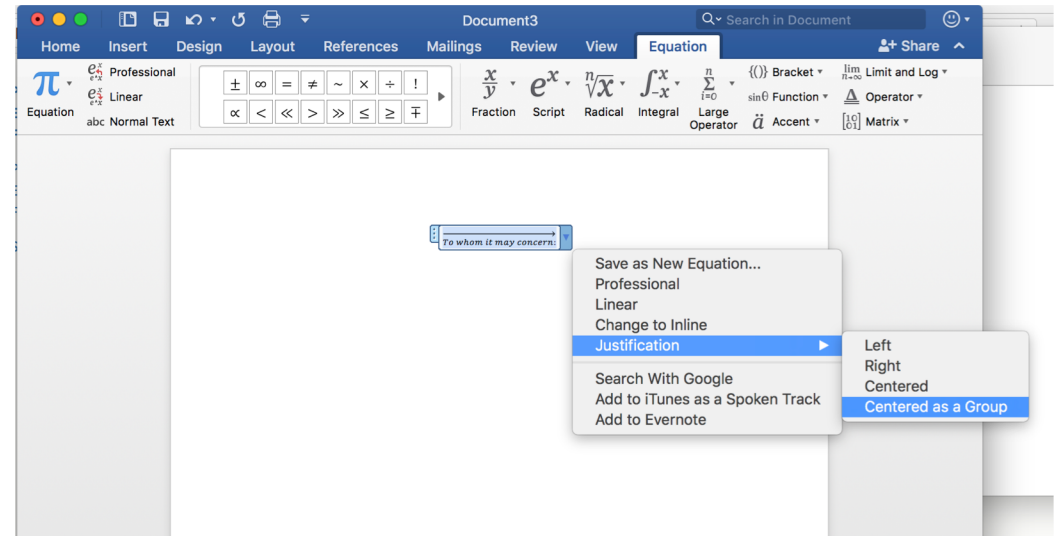
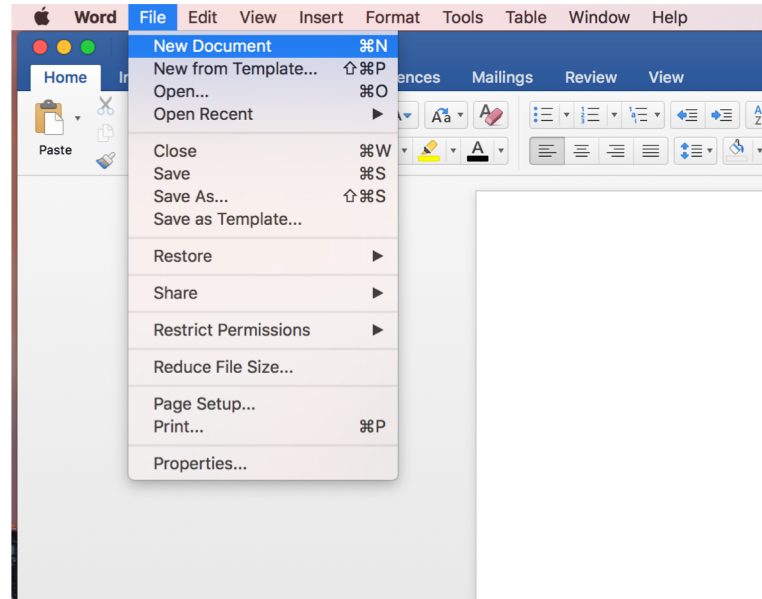


~1000 items = **search**

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

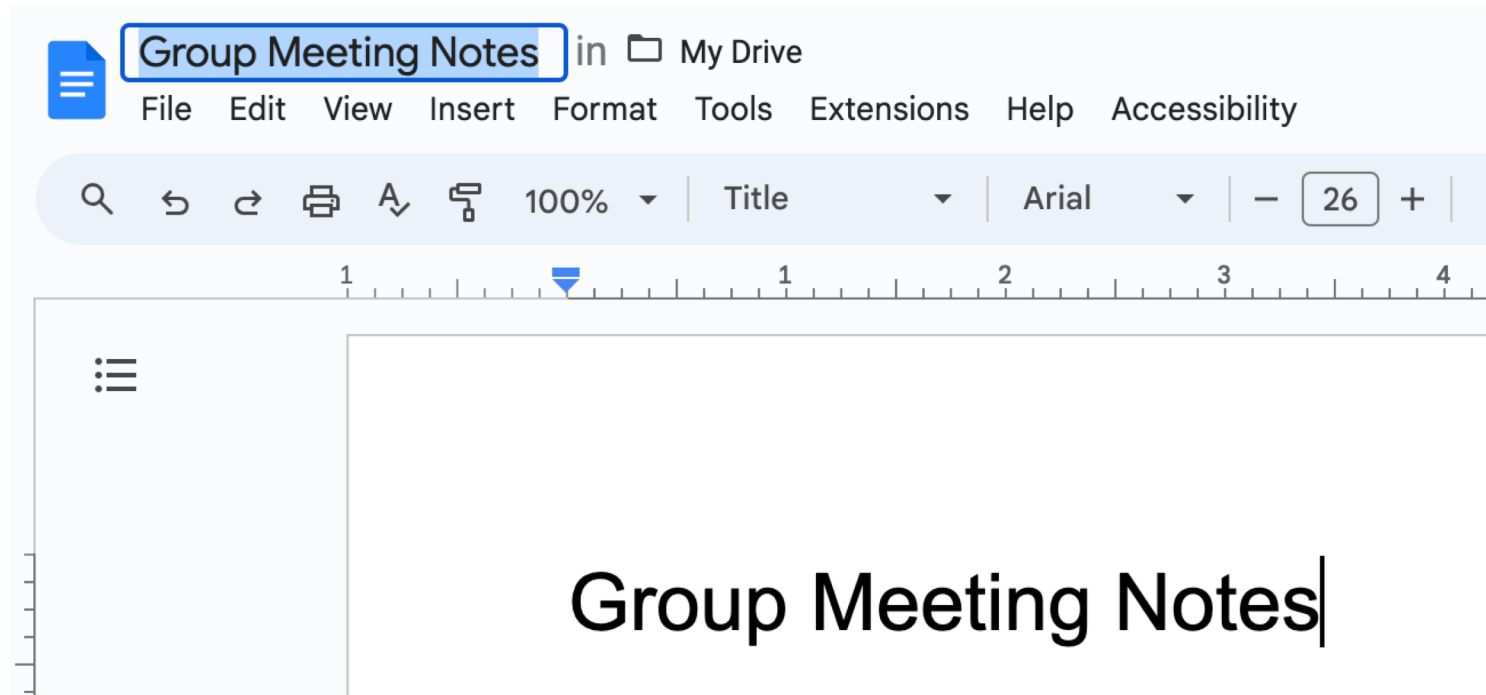


NO



Design good default options.

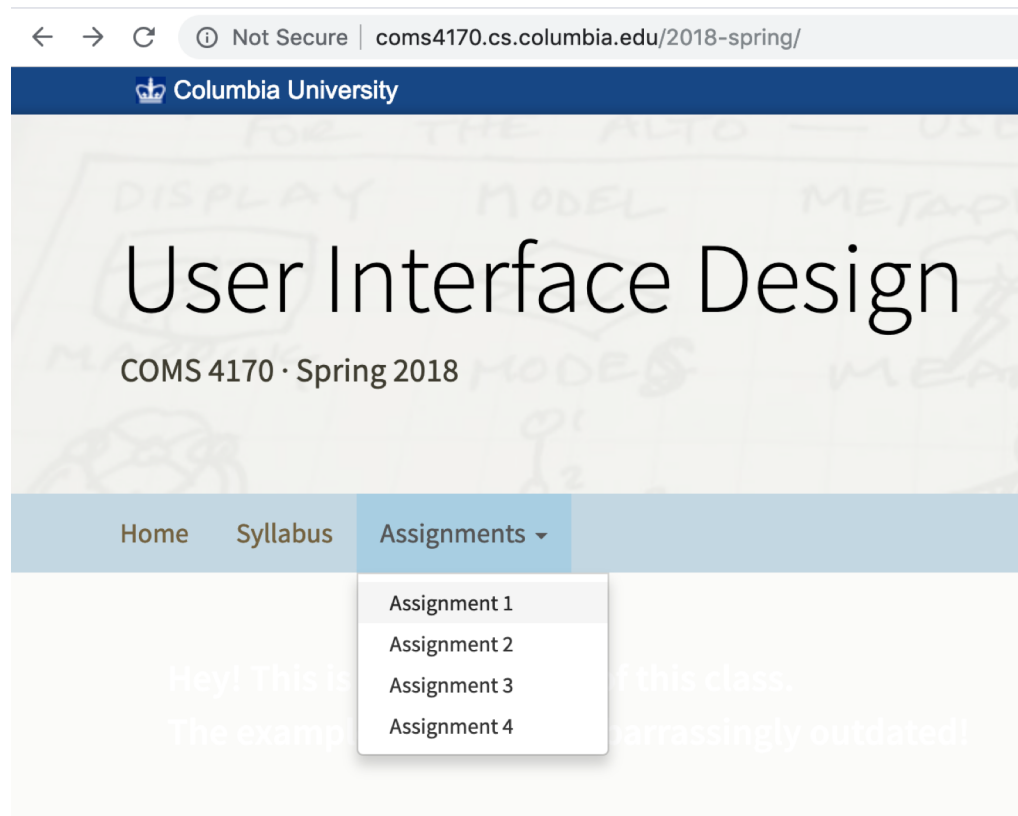
They save users time, and they often just accept them.



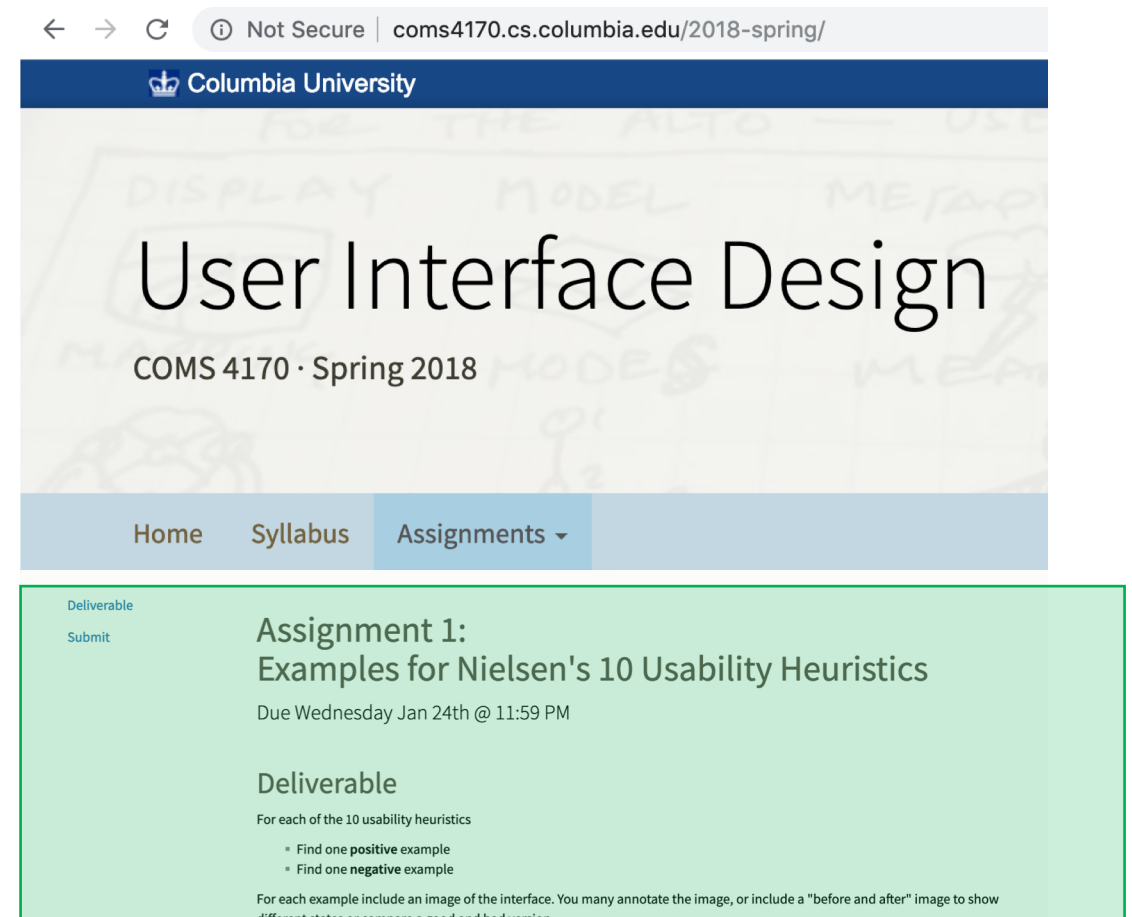
UIs have millions of decisions
Good defaults reduce users' cognitive load.

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

Layout



Content block



Homework 4 hint: How to delete item n?

Columbia Paper Infinity

Stanley Hudson	Toast	400	X
----------------	-------	-----	---

Log your paper sales:

James D. Halpert

Shake Shack

100

Michael G. Scott

Computer Science Department

1000

Each item is uniquely represented by its position in the list

0

```
let sales = [  
  {  
    "salesperson": "James D. Halpert",  
    "client": "Shake Shack",  
    "reams": 100  
  },
```

1

```
  {  
    "salesperson": "Stanley Hudson",  
    "client": "Toast",  
    "reams": 400  
  },
```

2

```
  {  
    "salesperson": "Michael G. Scott",  
    "client": "Computer Science Department",  
    "reams": 1000  
  },
```

```
]
```

How do I attach meta data (like an id) to an HTML element?

```
for (let i = 0; i < sales.length; i++) {  
  let sale = sales[i]  
  let row = $("

The HTML property:  
data-VARIABLENAME="VALUE"


```