

Database-Backed Websites

No screens

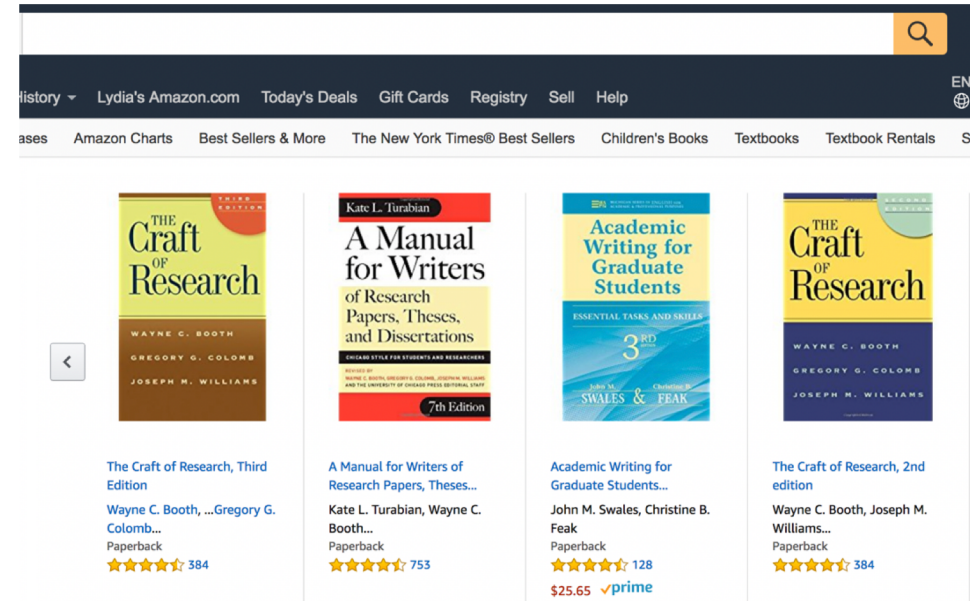
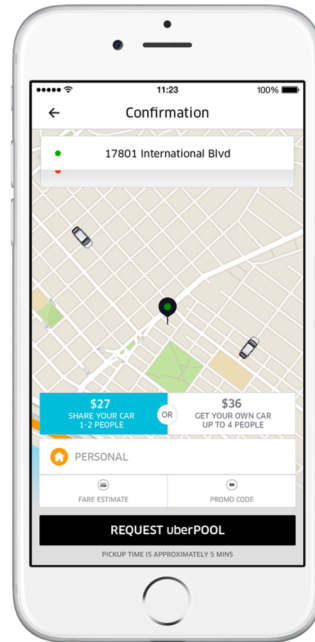
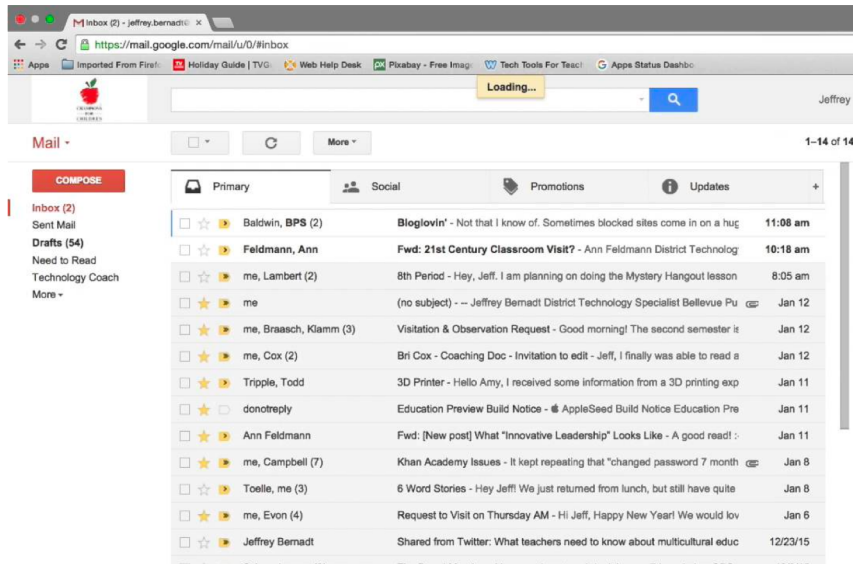


Prof. Lydia Chilton
COMS 4170
26 February 2020

Say your name



The main goal of many websites is to interact with data.

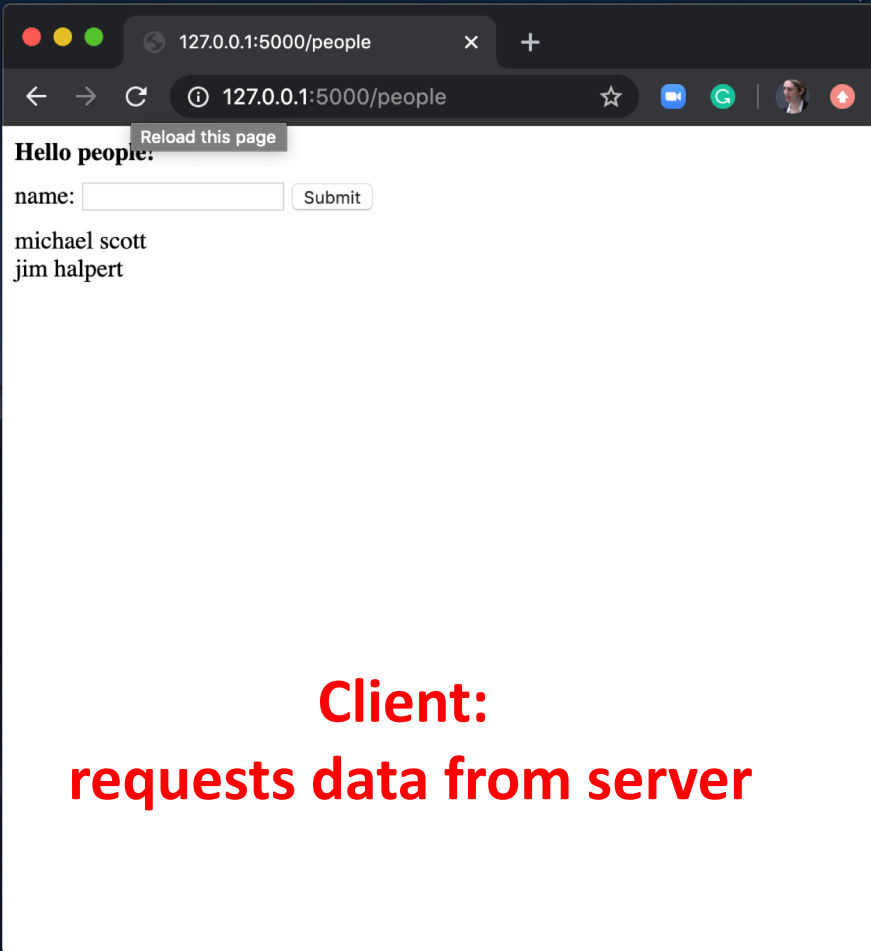


We need servers to store the data.
Clients request data from servers (and display it)

```
people — Python · Python server.py — 80x24
Last login: Sun Feb 16 09:18:51 on ttys001
Lydias-MacBook-Pro:people lydiachilton$ python server.py
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
* Restarting with stat
* Debugger is active!
* Debugger PIN: 723-907-492
127.0.0.1 - - [19/Feb/2020 07:07:16] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2020 07:07:17] "GET /favicon.ico HTTP/1.1" 404 -
127.0.0.1 - - [19/Feb/2020 07:07:46] "GET /people HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2020 07:07:46] "GET /static/people.js HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2020 07:07:56] "POST /add_name HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2020 07:08:01] "GET /people HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2020 07:09:25] "POST /add_name HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2020 07:09:28] "GET /people HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2020 07:26:36] "GET /people HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2020 07:26:38] "GET /people HTTP/1.1" 200 -
^CLydias-MacBook-Pro:people lydiachilton$ python server.py
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
* Restarting with stat
* Debugger is active!
* Debugger PIN: 723-907-492
127.0.0.1 - - [19/Feb/2020 07:26:46] "GET /people HTTP/1.1" 200 -
█
```

```
server.py
1 from flask
2 from flask
3 from flask
4 app = Flask
5
6
7 current_id
8 data = [
9     {
10      "id": 1,
11      "name": "michael scott"
12     },
13     {
14      "id": 2,
15      "name": "jim halpert"
16     },
17 ]
```

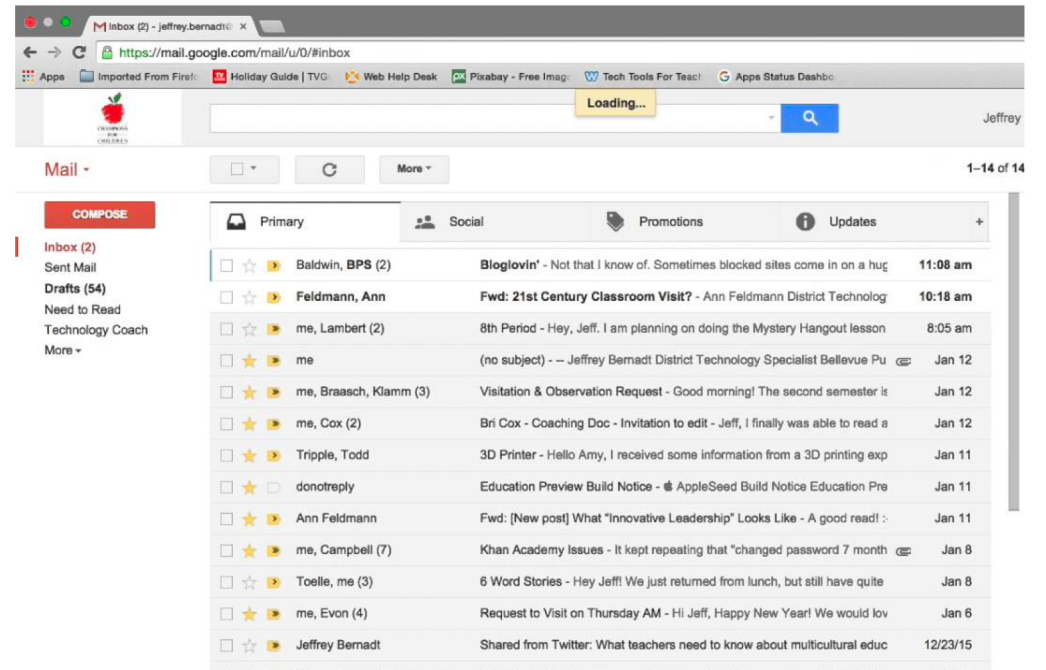
**Server:
store the data**



**Client:
requests data from server**

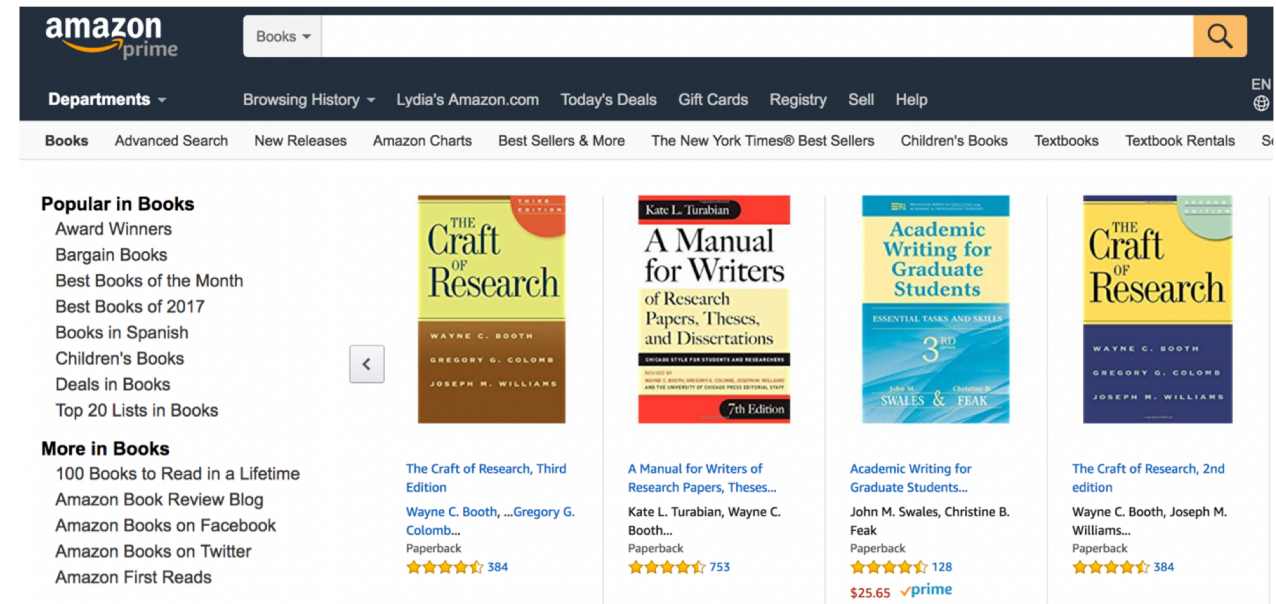
Gmail is a database of emails

```
emails = [  
  {  
    "from": "bollinger",  
    "to": "chilton",  
    "subject": "4170 is awesome!"  
  },  
  {  
    "from": "obama",  
    "to": "chilton",  
    "subject": "belated medal of freedom"  
  }  
]
```



Amazon is a database of books

```
products = [  
  {  
    "title": "Ivy League Web Design",  
    "author": "chilton",  
    "stars": "5"  
  },  
  {  
    "title": "JavaScript and You",  
    "author": "chilton",  
    "stars": "6"  
  },  
]
```



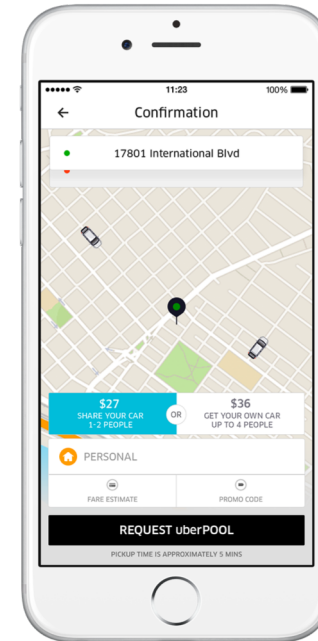
The screenshot shows the Amazon Books homepage. At the top, there is a search bar with "Books" selected and a magnifying glass icon. Below the search bar, there are navigation links for "Departments", "Browsing History", "Lydia's Amazon.com", "Today's Deals", "Gift Cards", "Registry", "Sell", and "Help". A secondary navigation bar includes "Books", "Advanced Search", "New Releases", "Amazon Charts", "Best Sellers & More", "The New York Times® Best Sellers", "Children's Books", "Textbooks", and "Textbook Rentals".

The main content area features several book recommendations:

- Popular in Books:** Award Winners, Bargain Books, Best Books of the Month, Best Books of 2017, Books in Spanish, Children's Books, Deals in Books, Top 20 Lists in Books.
- More in Books:** 100 Books to Read in a Lifetime, Amazon Book Review Blog, Amazon Books on Facebook, Amazon Books on Twitter, Amazon First Reads.
- Book 1:** "The Craft of Research, Third Edition" by Wayne C. Booth, Gregory G. Colomb, and Joseph M. Williams. 5 stars, 384 reviews.
- Book 2:** "A Manual for Writers of Research Papers, Theses, and Dissertations, 7th Edition" by Kate L. Turabian and Wayne C. Booth. 5 stars, 753 reviews.
- Book 3:** "Academic Writing for Graduate Students, 3rd Edition" by John M. Swales and Christine B. Feak. 5 stars, 128 reviews. Price: \$25.65. Prime eligible.
- Book 4:** "The Craft of Research, 2nd edition" by Wayne C. Booth and Joseph M. Williams. 5 stars, 384 reviews.

Uber is a database of drivers.

```
cars = [  
  {  
    "location": "116 and broadway",  
    "driver": "kenny",  
    "car type": "uber XL"  
  },  
  {  
    "location": "times square",  
    "driver": "jen",  
    "car type": "normal"  
  },  
]
```



Tinder is a database of profiles

```
profiles = [  
  {  
    "name": "maddy",  
    "image": "./maddy.png",  
    "likes": "1000",  
    "dislikes": 0,  
  },  
  {  
    "name": "julia",  
    "image": "./julia.png",  
    "likes": "1000",  
    "dislikes": 0,  
  },  
]
```



YouTube: Database of videos



windows 95 jennifer aniston matthew perry



Windows 95 Video Guide with Matthew Perry & Jennifer Aniston

216,782 views



2K



48



SHARE



Favorite Videos

Published on Dec 12, 2016

Watch all about the show Friends in a single playlist - <https://www.youtube.com/playlist?list...>

Subscribe and watch scenes from all seasons of Friends on my channel -

<https://www.youtube.com/channel/UCA8V...>

SHOW MORE

SUBSCRIBE 201K

Up next

AUTOPLAY



Friends - The One that Goes Behind the Scenes

Favorite Videos

1.8M views



Would I Lie to You? - S11 E08 (NEW WILTY 19th January)

David Mitchell

Recommended for you

New



Actor Replacements That Totally Ruined The Show

Looper

3M views



Inside Matthew Perry's Tragic Real Life Story

Nicki Swift

952K views



Friends - ET On VH1: Behind The Friends Finale

Favorite Videos

1M views



REACT S7 - E19

TEENS REACT TO WINDOWS 95

FBE

12M views



Friends - Ross and Monica's Cousin

Favorite Videos

3.6M views

Facebook: Database of posts

facebook



PictureCorrect Photography Tips

What is your Photography-Related New Year's Resolution??

15 minutes ago · Like · Comment

 Adel Gomaa and Richard Schneider like this.



Sadi Molloy get my business looking more professional: car signed: tick, making up portrait folders: tick, stickers & cd covers: still to do... its getting there though.

11 minutes ago · Flag



PictureCorrect Photography Tips My resolution for 2011 is to capture more landscape photos outside the U.S. and add more countries to my portfolio! What is yours?

-Richard

11 minutes ago · Flag



James Donnelly Larger concerts to cover and improve my portrait editing style/skill

10 minutes ago · Flag



Jose Antonio Rubido To push my photpography foward full throttle

9 minutes ago · Flag



Deacon Jonathan Jerome Johnson To learn more and enhance the quality of my shots!

5 minutes ago · Flag



Latu Peti Vimahi Manulua-hafoka learn learn learn!!!

4 minutes ago · Flag



Tina Taylor Hammer Get my new business moving and have it pay for that lens and other equipment that I want (and a little for me too).

2 minutes ago · Flag



Stefanie Bakewell get a website up so that i can get clients full steam ahead

about a minute ago · Flag

GCalendar: Database of events

The screenshot displays the Google Calendar web interface for May 11-17, 2009. The interface includes a navigation bar with links for Gmail, Calendar, Documents, Photos, Reader, Web, and more. The main content area shows a weekly view with events listed in a grid format. The events are color-coded and include details such as time, title, and location. The interface also features a search bar, a calendar navigation panel on the left, and a sidebar with various calendar settings and options.

Navigation and Search:

- Search My Calendars:
- Show Search Options

Calendar Navigation:

- « May 2009 »
- Calendar grid showing days from Mon 5/11 to Sun 5/17.

Event Data (Sample from Grid):

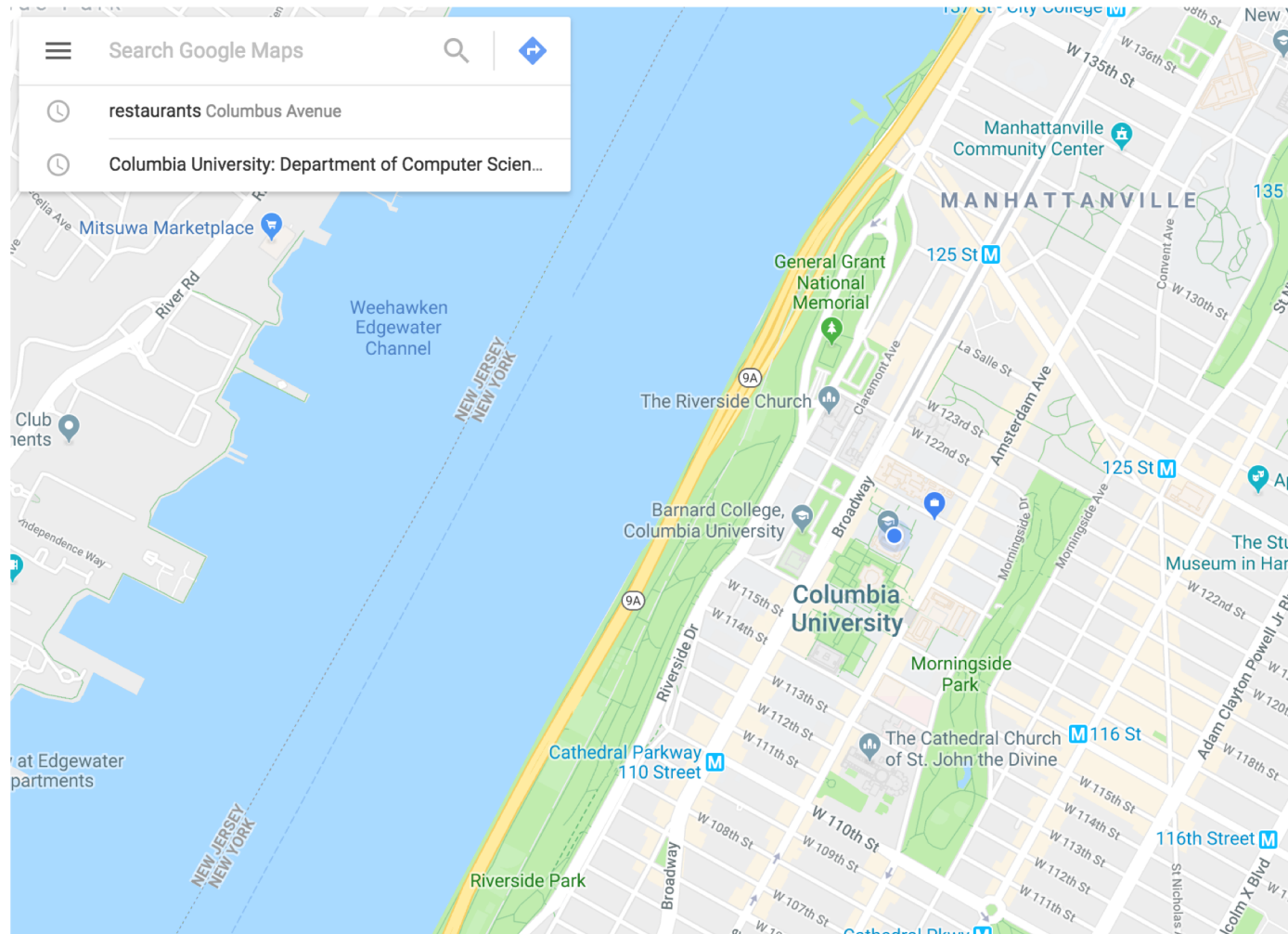
Time	Mon 5/11	Tue 5/12	Wed 5/13	Thu 5/14	Fri 5/15	Sat 5/16	Sun 5/17
06:00	Workout	Workout	Workout	Travel	Workout	Workout	Workout
07:00	Workout	Shower	Shower	Workout	Shower	Shower	Shower
08:00	Workout	Shopping	Shower	Misc	Newspaper	Workout	Workout
09:00	Shower	Reading	Travel	Misc	Lunch	Shower	Shower
10:00	Administrative	Misc	Travel	Stats, Mail	Misc	Workout	Workout
11:00	Blog	Writing	Travel	Play	Misc	Shower	Shower
12:00	Brainstorm	Misc	Lunch	Play	Misc	Breakfast	Breakfast
13:00	Reading	Blog	Misc	Misc	Misc	Blog	Brainstorm
14:00	Reading	Lunch	Misc	Soccer	Misc	Misc, mail	Misc, mail
15:00	Blog	Tip	Misc	Meditation	Play	Meditation	Meditation
16:00	Nonsense	Nap	Socializing	Tip	Phone	Misc	Misc
17:00	Misc	Play	Brainstorming	Tip	Phone	Blog	Blog
18:00	Misc	Tip	Play	Reading	Phone	Review	Review
19:00	Meditation	Brainstorming	Play	Socializing	Phone	Misc	Misc

Left Sidebar:

- My calendars: Personal, Guilt-Free Play, Misc Work, Quality Work
- Other calendars: Austrian Holidays, Phases of the Moon, US Holidays

Bottom: Customize your default calendar view. [Learn more](#)

Google Maps: A database of locations



New York Times: Database of news articles

SECTIONS SEARCH

hmslydia

ENGLISH 中文 (CHINESE) ESPAÑOL

The New York Times

Friday, January 19, 2018 Today's Paper Video 34°F S. & P. 500 +0.19%

World U.S. Politics N.Y. Business Opinion Tech Science Health Sports Arts Style Food Travel Magazine T Magazine Real Estate ALL

Trump in Shutdown Talks With Schumer

White House Invites Democratic Leader to Negotiate a Deal

By THE NEW YORK TIMES
49 minutes ago

- The government will shut down at 12:01 a.m. Saturday if lawmakers fail to get an agreement on some kind of spending bill.
- With Democrats balking, President Trump canceled plans to travel to his Florida resort and contacted Senator Chuck Schumer, the Democratic leader.
- **Timeline: How Congress Got to the Brink of a Shutdown**
- **Right and Left React to Prospect of Shutdown**



“We are not going to desert these young people,” he said, referring to DACA beneficiaries.

Senator Bernie Sanders of Vt.

How the Debate in Congress Breaks Down

By ALICIA PARLAPIANO and WILSON ANDREWS
Lawmakers have until Friday at midnight to pass a short-term spending bill to avoid a government shutdown.

Senate to Vote With Shutdown at Stake

By THOMAS KAPLAN and SHERYL GAY STOLBERG 44 minutes ago
Senate Democrats appear ready to block legislation to keep the government funded past midnight, gambling that Mr. Trump will offer concessions on immigration and other issues.

574 Comments

The Chaos President vs. His Iron-Fisted Chief of Staff

By MAGGIE HABERMAN and JULIE

VIDEO INTERVIEW

Opinion

EDITORIAL

Here's Another Fine Mess They've Gotten Us Into

Once again, Trump and Congress cannot perform a basic task, preventing a government shutdown.



- **Krugman: Doomsday Politics**
- **The Breakdown in Trust That Could Lead to a Shutdown**
- **Brooks: It's Time to Talk About the Power of Touch**
- **Goldberg: Is This the Collusion We Were Waiting For?**
- **Kristof: Swallowed by the Sea**
- **Leonhardt: A Warning for Democrats**
- **Egan: The Mad King**
- **The Shadow Safety Net**

FRANK BRUNI

Donald Trump's Radical Honesty

In his own wild way, this president is as truthful and transparent as they come.



Clubbable, but in the Worst Way

By MICHAEL GOLDFARB

Donald Trump is a man of his class — the nouveau-riche, country-club class.



- **How the Pro-Life Movement Has Promoted Liberal Values**
- **ICE Detained My Husband for Being an Activist**
- **Follow us on Twitter »**

TIMES INSIDER »

‘I, Figure Skating Reporter’: Full Circle With Tonya Harding

THE CROSSWORD »

Play Today's Puzzle



33m The Justice Department wants to ask if you are a U.S. citizen in the 2020 census. But public distrust of the government could lead Hispanic people to avoid being counted.



5h Can software predict crime? A study suggests that human amateurs are about as accurate as a popular software that many judges use to



Craigslist: Database of sales posts

CL new york > brooklyn > for sale > furniture - by owner

[◀ prev](#) ▲ [next ▶](#)

reply ☰ 📧

prohibited 📧

Posted 12 days ago

☆ **Gorgeous new 6ft. tall throne chair - \$1199 (Brooklyn)** 📧



condition: new

Gorgeous new 6ft. tall throne chair for \$1199obo. I will deliver it to you!

- do NOT contact me with unsolicited services or offers

post id: 6490476659

posted: 12 days ago

updated: 34 minutes ago

[email to friend](#)

♥ [best of](#) 📧

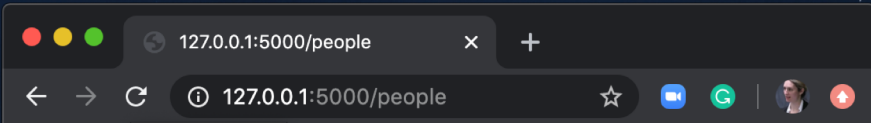
- [safety tips](#)
- [prohibited items](#)
- [product recalls](#)
- [avoiding scams](#)

We need to have another computer store and serve the data.
That server is running a Python application called Flask.

```
people — Python · Python server.py — 80x24
Last login: Sun Feb 16 09:18:51 on ttys001
Lydias-MacBook-Pro:people lydiachilton$ python server.py
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
* Restarting with stat
* Debugger is active!
* Debugger PIN: 723-907-492
127.0.0.1 - - [19/Feb/2020 07:07:16] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2020 07:07:17] "GET /favicon.ico HTTP/1.1" 404 -
127.0.0.1 - - [19/Feb/2020 07:07:46] "GET /people HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2020 07:07:46] "GET /static/people.js HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2020 07:07:56] "POST /add_name HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2020 07:08:01] "GET /people HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2020 07:09:25] "POST /add_name HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2020 07:09:28] "GET /people HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2020 07:26:36] "GET /people HTTP/1.1" 200 -
127.0.0.1 - - [19/Feb/2020 07:26:38] "GET /people HTTP/1.1" 200 -
^CLydias-MacBook-Pro:people lydiachilton$ python server.py
* Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
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* Debugger PIN: 723-907-492
127.0.0.1 - - [19/Feb/2020 07:26:46] "GET /people HTTP/1.1" 200 -
```

```
server.py
1 from flask
2 from flask
3 from flask
4 app = Flas
5
6
7 current_id
8 data = [
9
10     {
11         "id": 1,
12         "name": "michael scott"
13     },
14     {
15         "id": 2,
16         "name": "jim halpert"
17     },
18 ]
```

**Server:
keeps the data**



127.0.0.1:5000/people

Reload this page

Hello people:

name:

michael scott
jim halpert

**Client:
gets data from server
(and displays it to all users)**

This website has no database. Why not?

 Columbia University

User Interface Design

COMS 4170 · Spring 2018

[Home](#) [Syllabus](#) [Assignments](#) ▾

[Piazza](#)

Part 1 Build websites that suit the needs and abilities of users.

Part 2 When the needs and abilities of users are uncertain, design systems by learning from iteration and experimentation.

INSTRUCTOR

[Prof. Lydia Chilton](#)

OH: Tuesday 3-4 pm, CEPSR 612

Please contact staff through Piazza only

TAS

Tessa Hurr

Eleanor Murguia

Lucille Sui

WEEKLY SCHEDULE

Lecture

Mon, Wed 4:10–5:25pm, 413 Kent Hall

But most websites do have databases. They allow you to both see and interact with data.

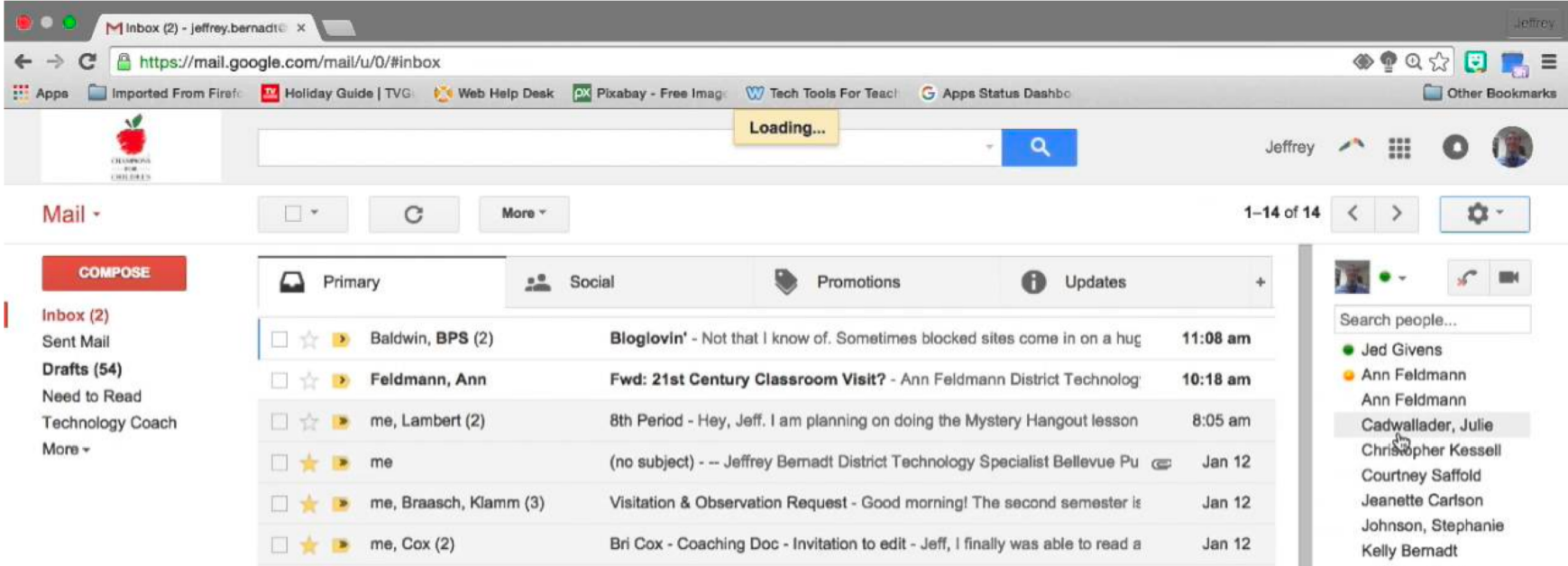
The image is a collage of three web browser screenshots, illustrating how various websites utilize databases to store and present information.

- Amazon.com:** The top screenshot shows the Amazon website with a search bar, navigation menu, and product listings. A blue 'facebook' watermark is overlaid on the page.
- Facebook:** The middle screenshot shows a Facebook post from 'PictureCorrect Photography Tips' with a 'facebook' watermark. The post includes text, a profile picture, and a timestamp.
- Gmail:** The bottom screenshot shows a Gmail inbox with a list of emails, including one from 'Baldwin, BPS' and another from 'Feldmann, Ann'. A 'craigslist' watermark is overlaid on the right side of the screenshot.

Interacting with Data

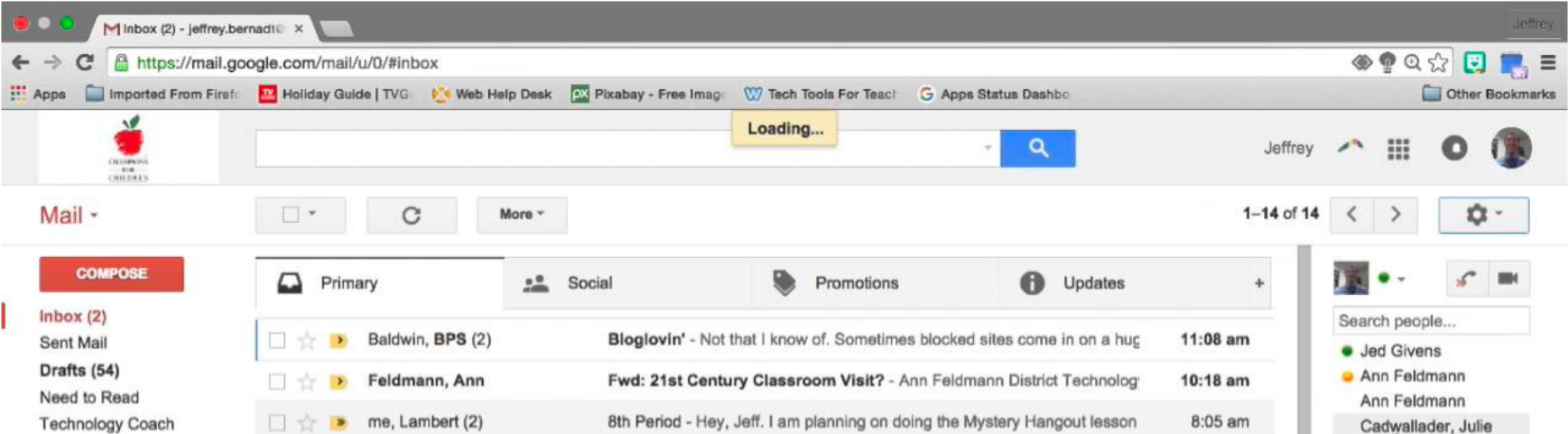
CRUD: Create, Read, Update, and Delete data

Gmail is a database of emails



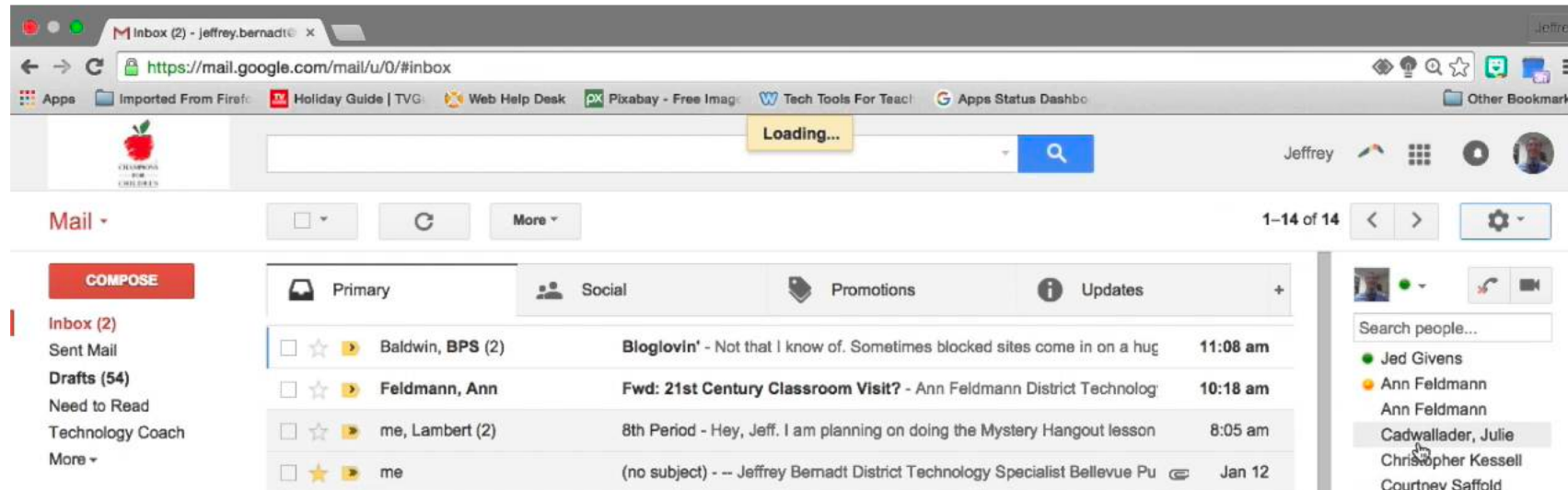
ID	From	To	Subject	Body	Time
1	Baldwin	Jeffrey	Bloglovin'	Not that I know of...	158904993585835
2	Ann Feldman	Jeffrey	Fwd: Classroom visit?	Ann Feldman District Technology	158904993585923
...					

How do we store multiple users' data?



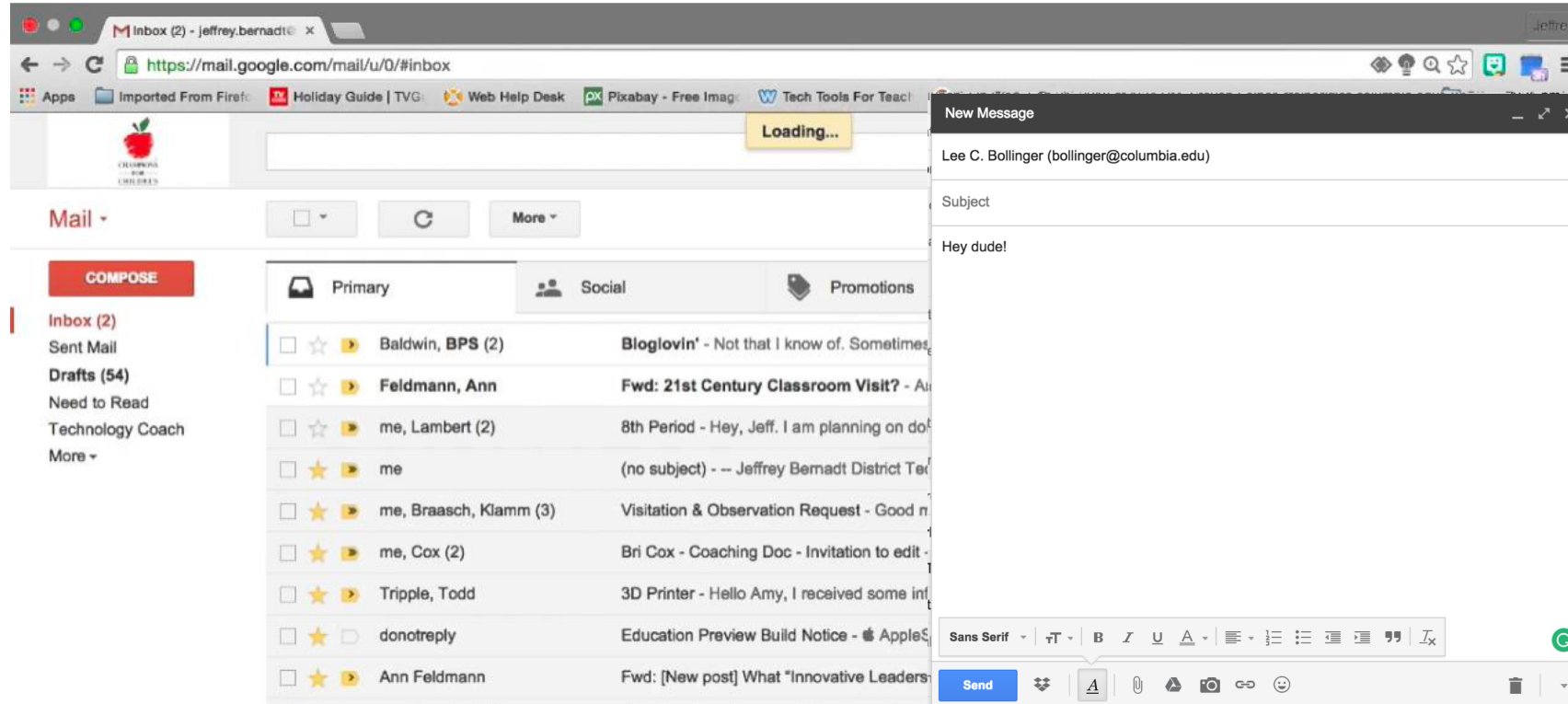
ID	From	To	Subject	Body	Time
1	Baldwin	Jeffrey	Blogloving'	Not that I know of...	158904993585835
2	Ann Feldman	Jeffrey	Fwd: Classroom visit?	Ann Feldman District Technology	158904993585923
3	Lydia Chilton	Lee Bollinger	Bowling tuesday	Hey dude! Donnie and I were thinking of going bowling...	158904993443772
...					

CRUD operations on data: Create, Read, Update, and Delete Data



ID	From	To	Subject	Body	Time
1	Baldwin	Jeffrey	Blogloving'	Not that I know of...	158904993585835
2	Ann Feldman	Jeffrey	Fwd: Classroom visit?	Ann Feldman District Technology	158904993585923
3	Lydia Chilton	Lee Bollinger	Bowling tuesday	Hey dude! Donnie and I were thinking of going bowling...	158904993443772

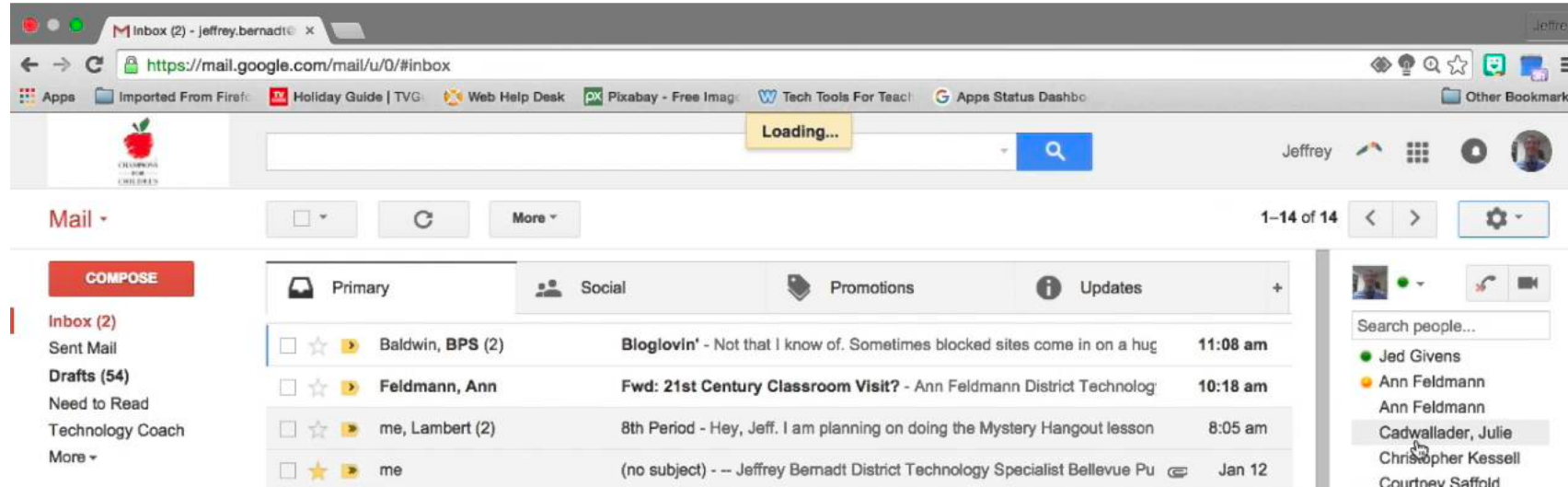
CREATE: How do users create data in GMail?



1. Compose a new email and send it
2. Reply to an email

READ: How do users read data in GMail?

How do they see different portions of the database?

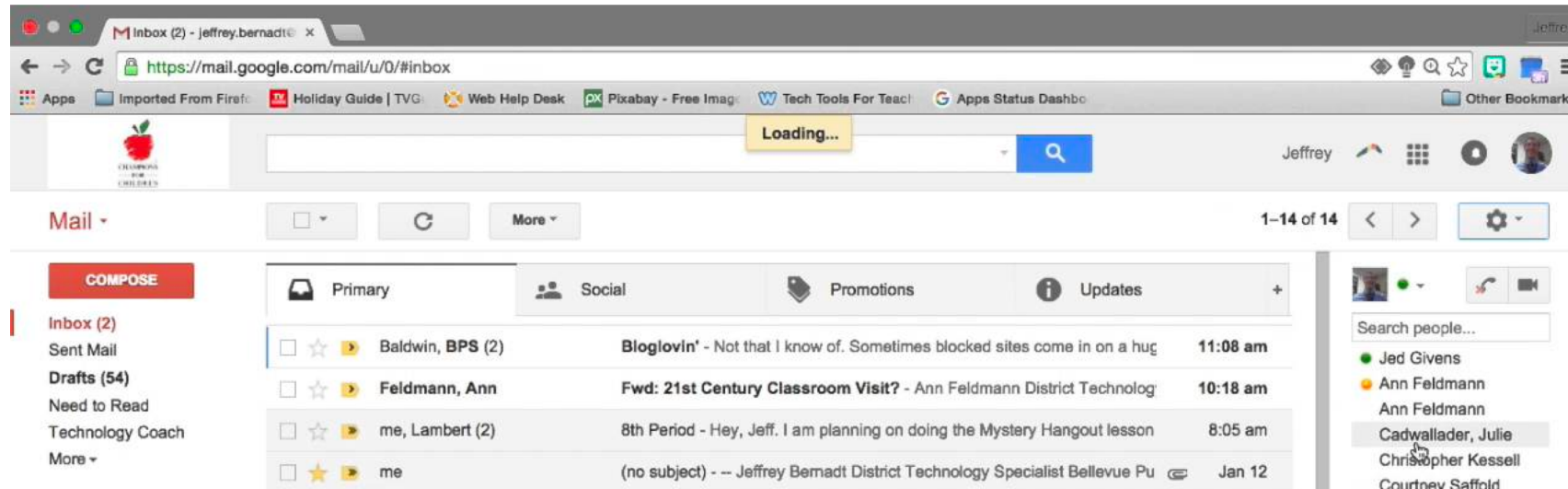


1. Load the page

2. Search inbox

UPDATE: How do users update data in GMail?

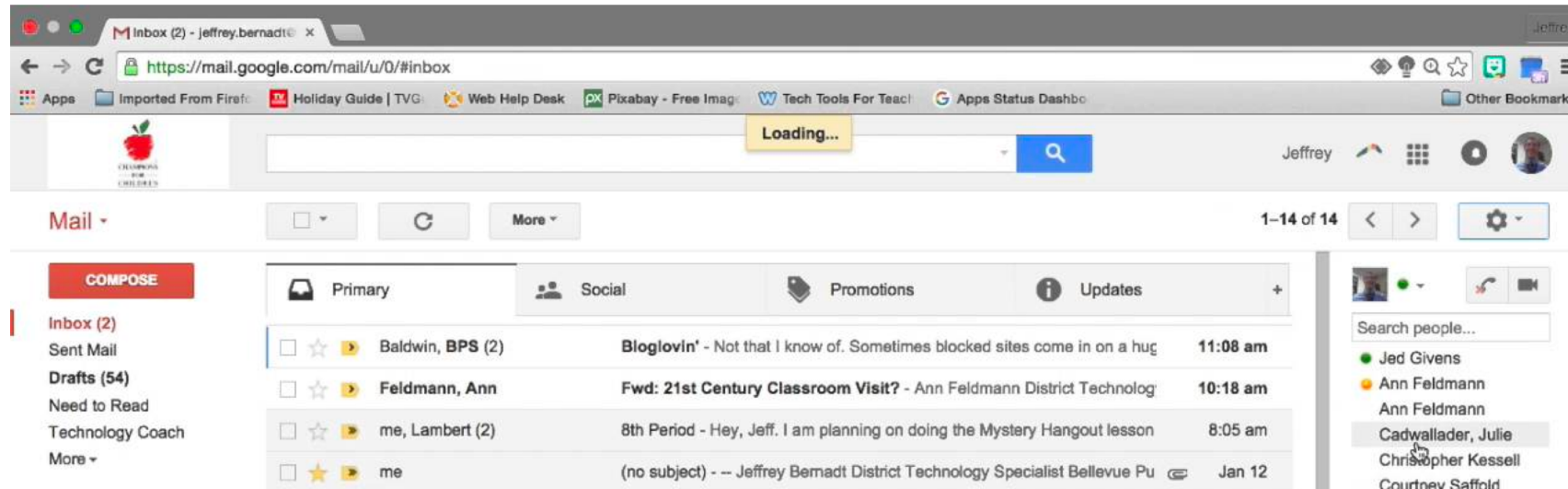
What do they update? And how do they do it in the interface?



1. Read an email (it gets marked as “read”)
2. Star and email
3. Add/remove a label
4. Reply to an email (the original email gets update to point to the reply)

DELETE: How do users delete data in GMail?

First, what objects can be deleted in GMail?

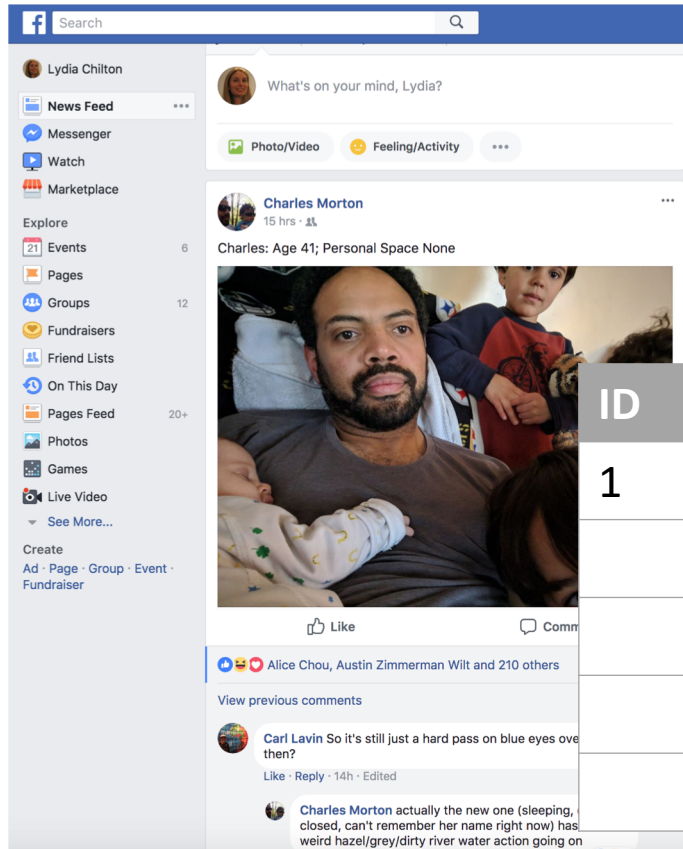


1. Discard a draft

2. Leave spam untouched for 30 days.

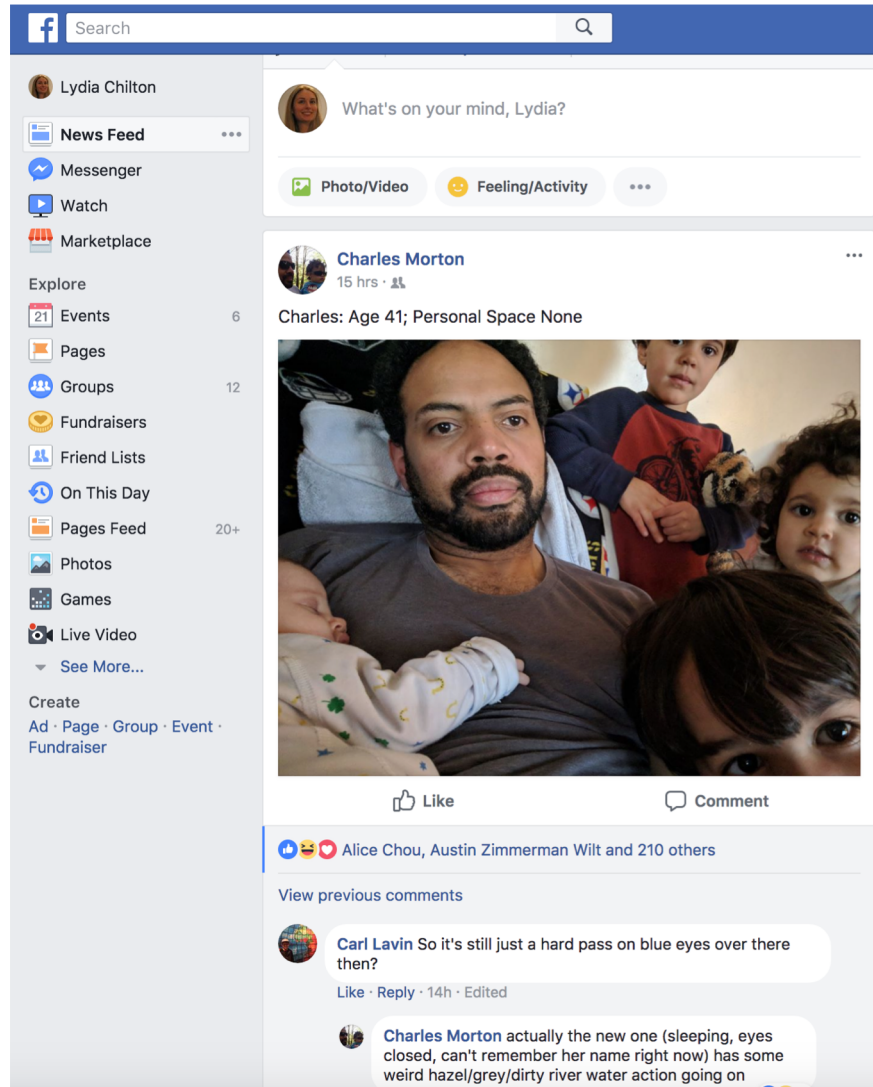
Deleting an email doesn't actually delete it – other users may still have it.
But it does UPDATE the email and mark it as deleted, so it doesn't show up for you.

Facebook is a database of posts.



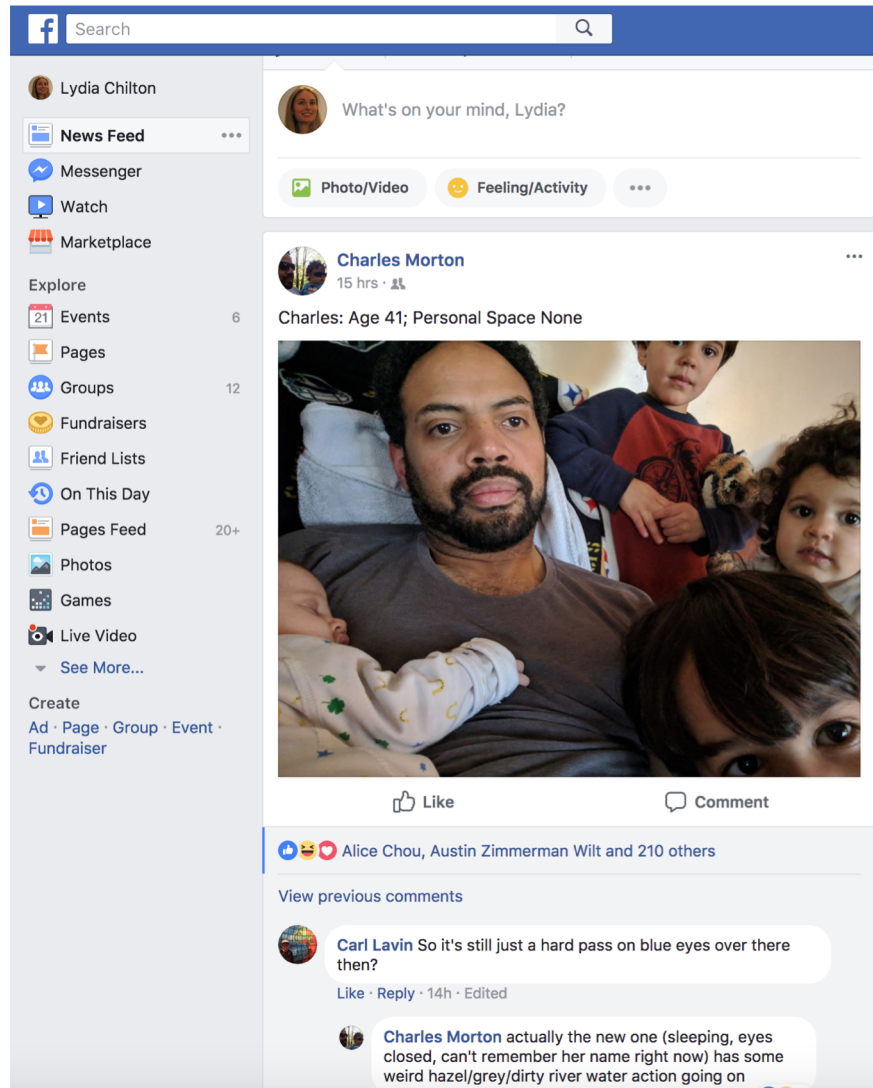
ID	creator	text	Likes	Time
1	Charles Morton	Charles Age 41: Personal..	210	15890499

CREATE: How do users create data in Facebook?




1. Create Post
2. Create Reply

READ: How do users read data in Facebook?



1. Load the page
2. Search for posts
3. Scroll –and it will autoloading posts

UPDATE: How do users update data in Facebook?



The screenshot shows a Facebook news feed interface. At the top, there is a search bar and a navigation menu on the left with options like News Feed, Messenger, Watch, and Marketplace. The main content is a post by Charles Morton, 15 hours old, with a privacy setting of 'Personal Space None'. The post features a photo of a man with a beard and children. Below the photo are 'Like' and 'Comment' buttons. A notification indicates that Alice Chou, Austin Zimmerman Wilt, and 210 others have reacted. Below this, there are two comments: one from Carl Lavin asking about blue eyes, and one from Charles Morton himself mentioning a child's eye condition.

1. Like

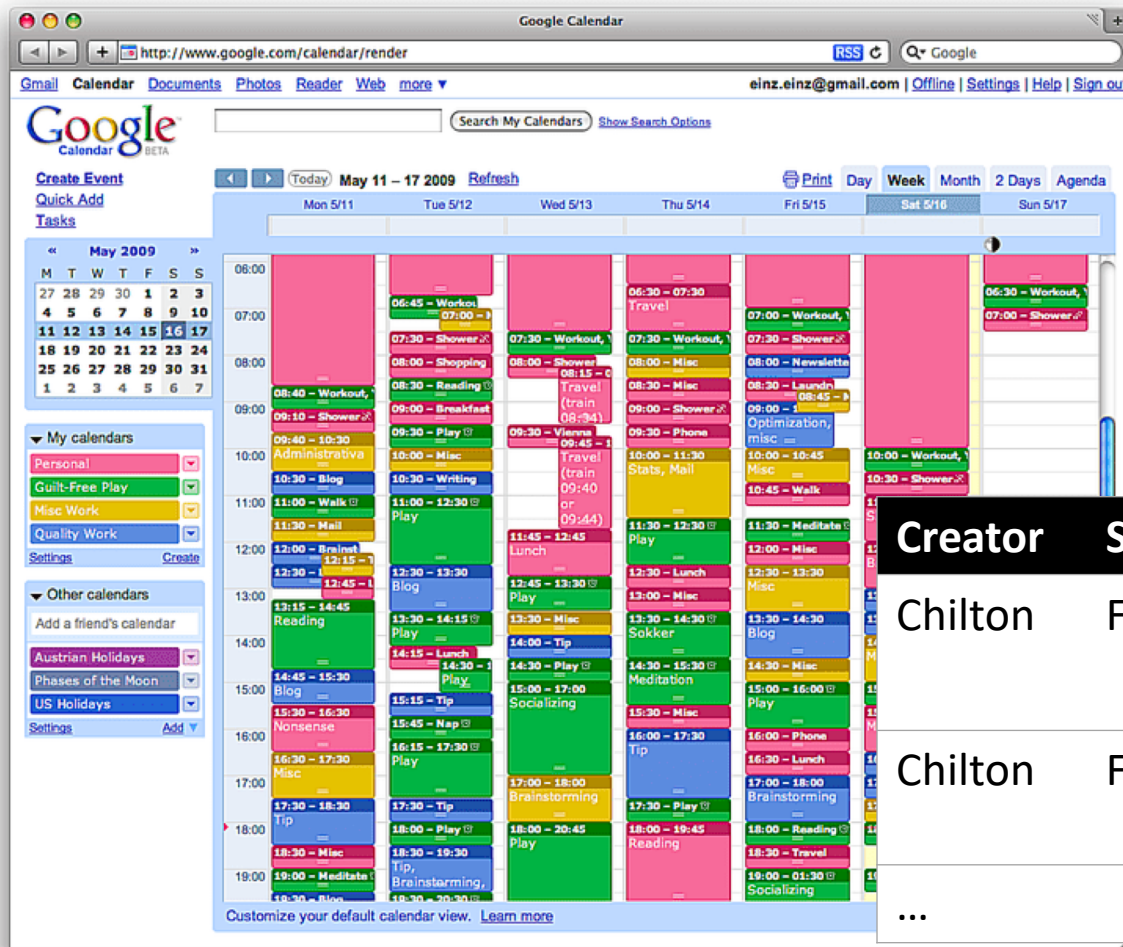


DELETE: How do users delete data in Facebook?



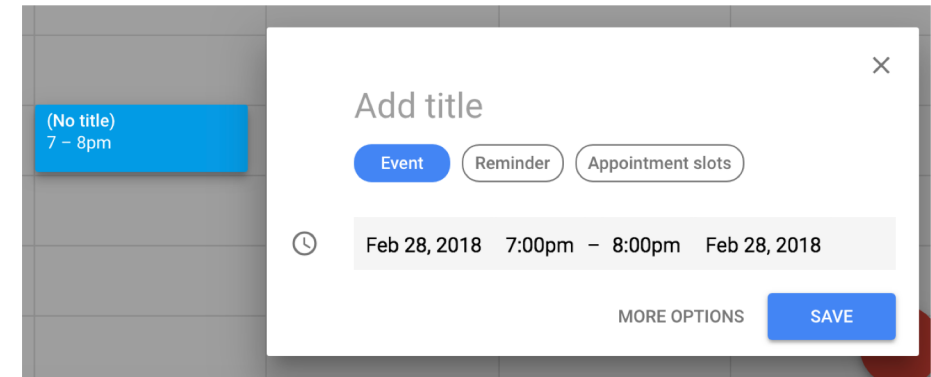
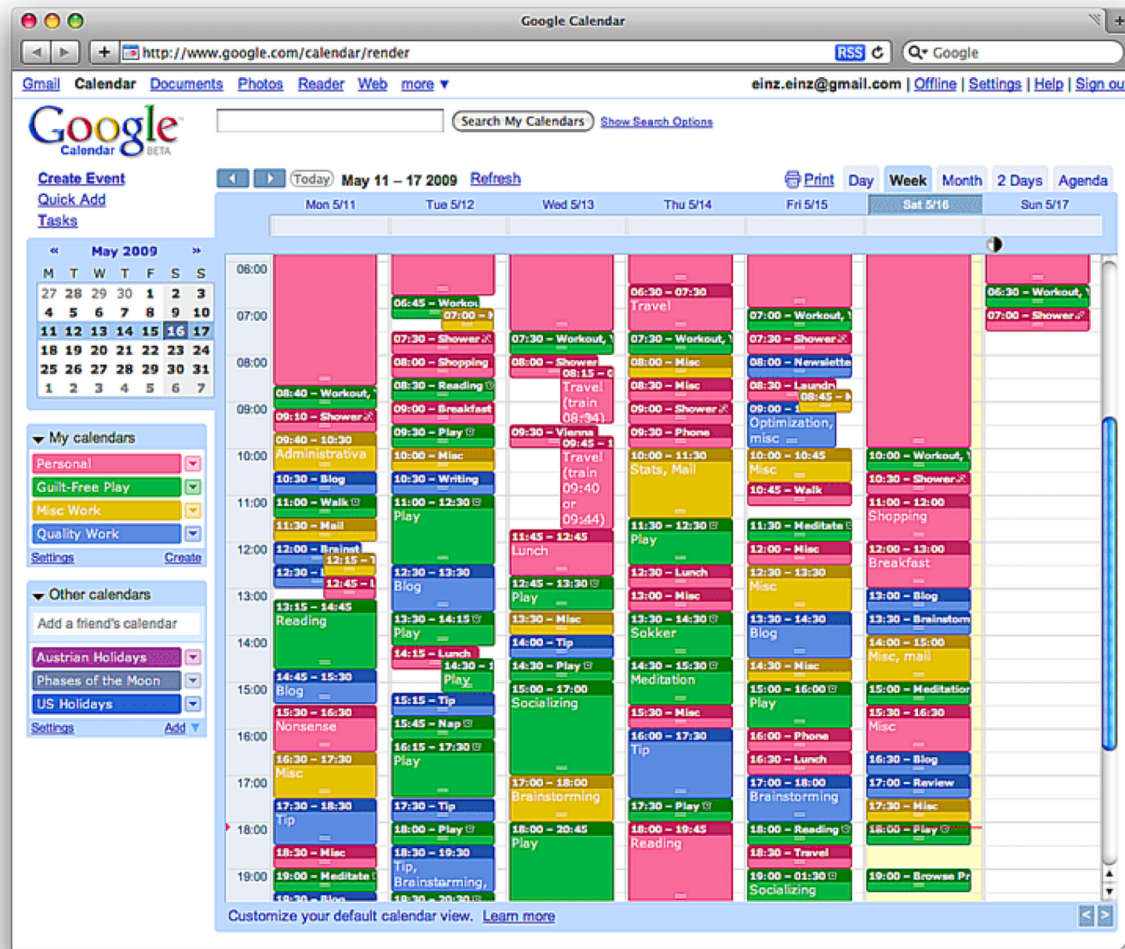
1. Delete the post?

Google Calendar is a database of events



Creator	Start date	End Date	Title
Chilton	Feb 28, 7pm	Feb 28, 8pm	Dinner with Lee
Chilton	Feb 14, 4pm	Feb 17, 12pm	National Academy of Sciences event
...			

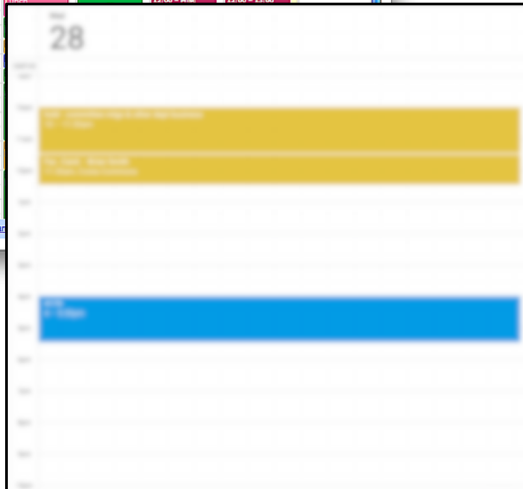
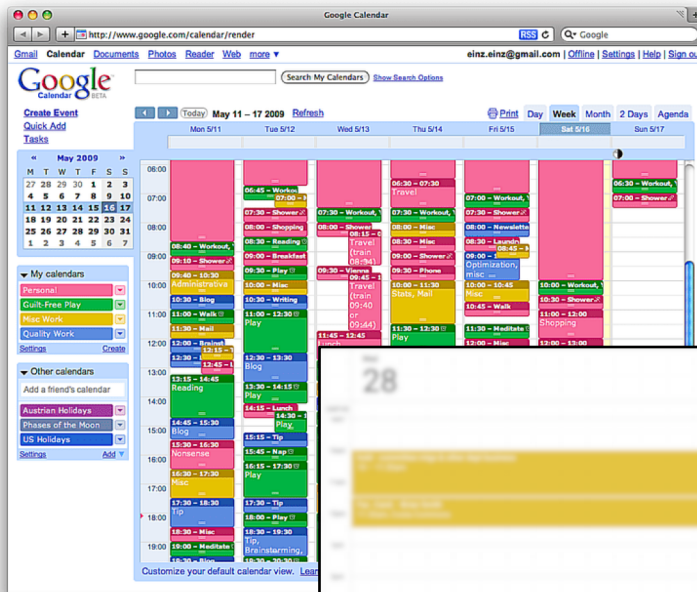
CREATE: How do users create data in Calendar?



READ: How do users read data in Calendar?

How do they see different portions of the database?

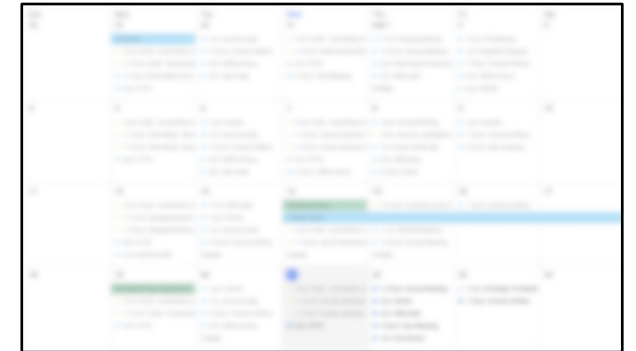
1. Load the page
2. Choose different views



“Day” view

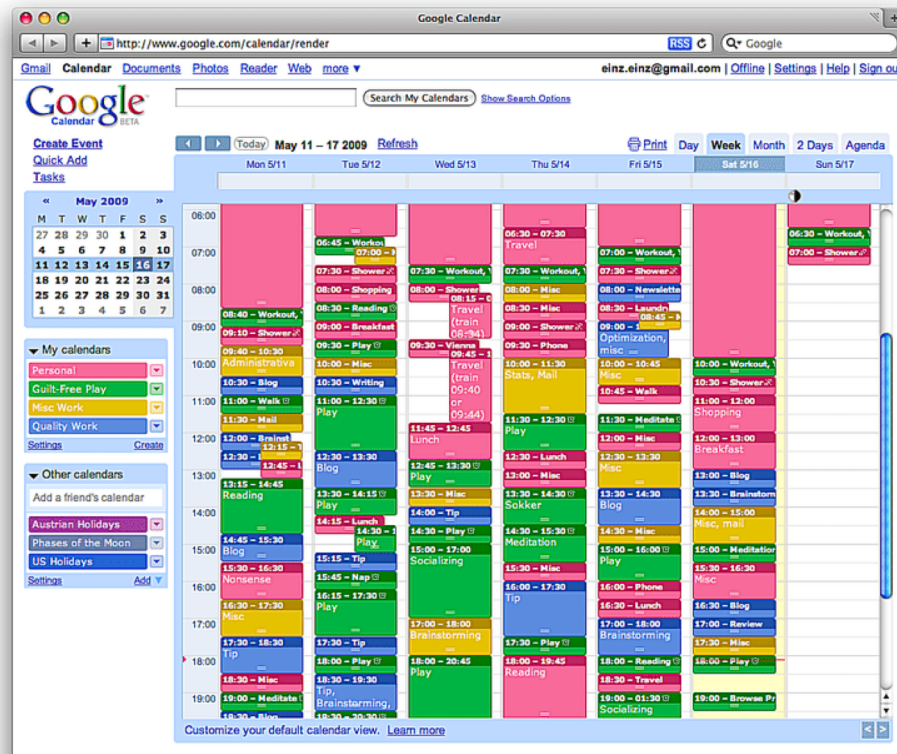


“Week” view

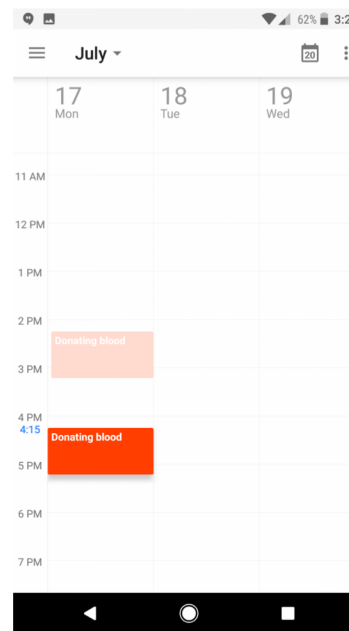


“Month” view

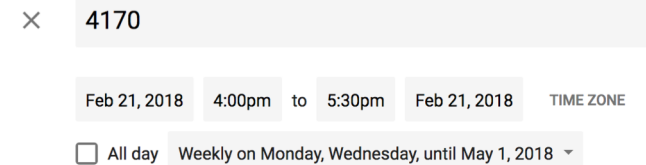
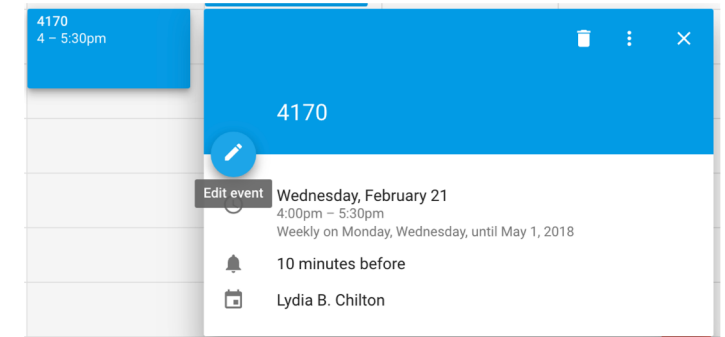
UPDATE: How do users update data in Calendar?



Drag and drop



Select an event and edit a form



DELETE: How do users delete data in Calendar?



Selecting an event and clicking delete



CRUD: Operations for interacting with a database

Create


New Message

To

From Lydia Chilton <chilton@cs.columbia.edu> ▾

Subject

Hey dude!

 What's on your mind, Lydia?

Add title

(No title)
7 - 8pm

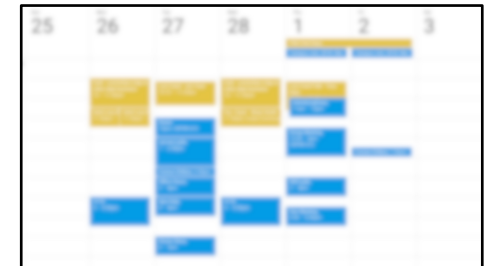
Event Reminder Appointment slots

Feb 28, 2018 7:00pm - 8:00pm Feb 28, 2018

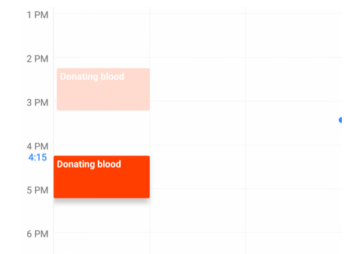
MORE OPTIONS

Read

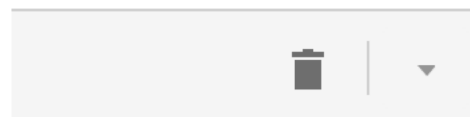
Baldwin, BPS (2)	Bioglovin' - Not that I know of. Sometimes bi
Feldmann, Ann	Fwd: 21st Century Classroom Visit? - Ann
me, Lambert (2)	8th Period - Hey, Jeff. I am planning on doing
me	(no subject) - -- Jeffrey Bernadt District Techn



Update



Delete

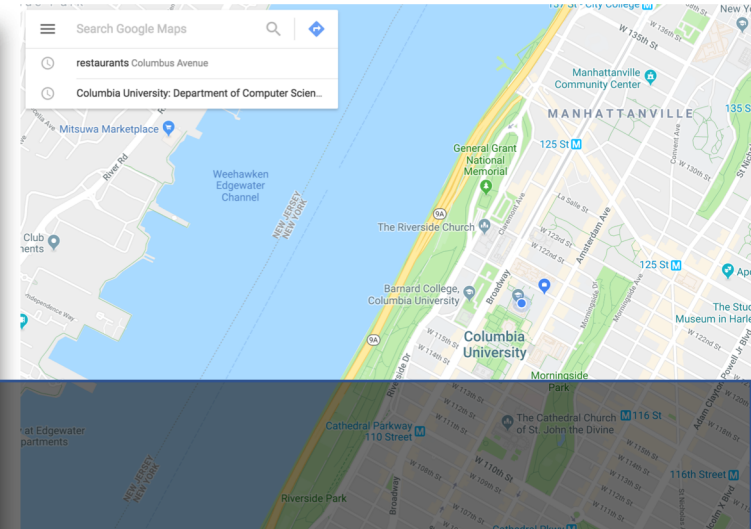
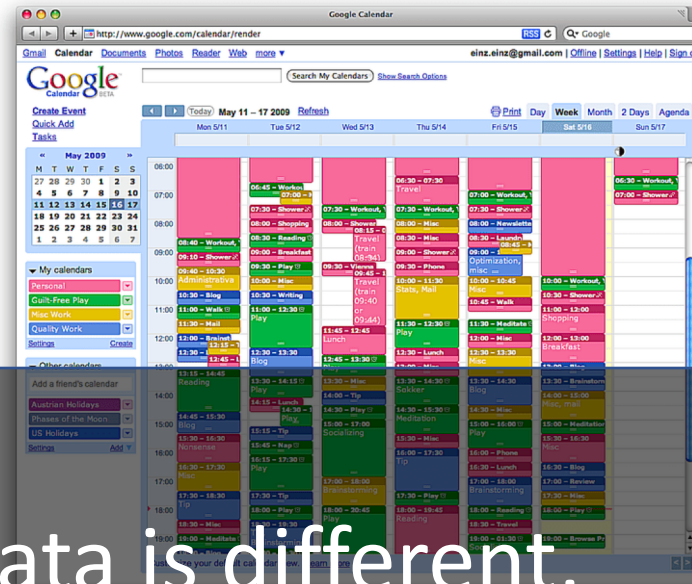
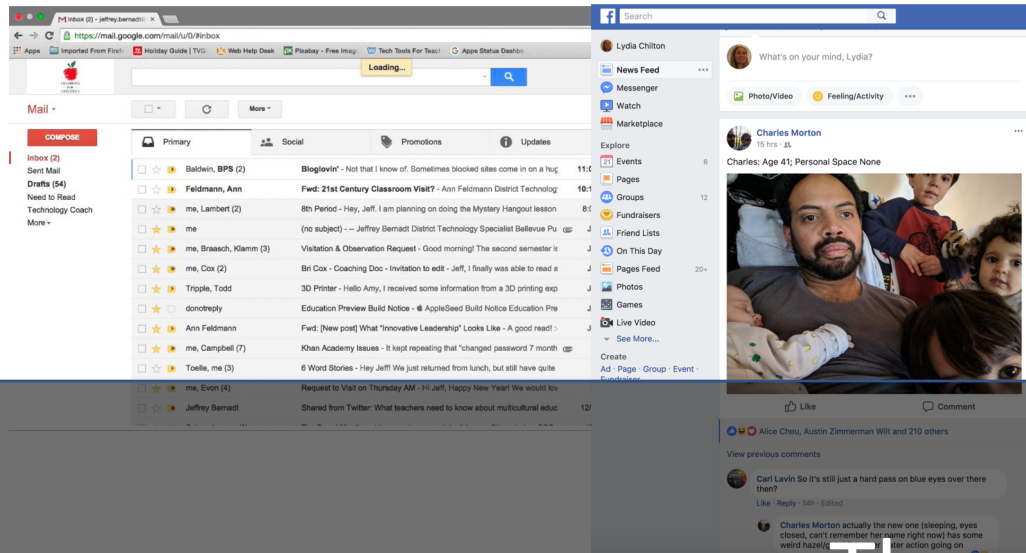


Delete Post?

Are you sure you want to delete it?



From a back-end perspective Facebook, Gmail are very similar. What's different?



The data is different,
And the information needs they serve are different.

You can drive a lot of human behavior
with one database update.



Rendering Templates

Dynamically Generating Webpages from Database Content

On IMDB, are there 100,000 static HTML pages sitting around?

IMDb Find Movies, TV shows, Celebrities and more... All

Movies, TV & Showtimes | Celebs, Events & Photos | News & Community | Watchlist

FULL CAST AND CREW | TRIVIA | USER REVIEWS | IMDbPro | MORE | SHARE

The Big Chill (1983) ★ 7.2 /10 28,073 Rate This

R | 1h 45min | Comedy, Drama | 30 September 1983 (USA)



2:02 | Trailer | 1 VIDEO | 76 IMAGES

Watch Now With Prime Video

WATCH NOW ON DISC

A group of seven former college friends gather for a weekend reunion at a South Carolina winter house after the funeral of one of their friends.

Director: Lawrence Kasdan
Writers: Lawrence Kasdan, Barbara Benedek
Stars: Tom Berenger, Glenn Close, Jeff Goldblum | See full cast & crew »

62 Metascore From metacritic.com | 186 user | 61 critic | Popularity 4,222 (▲ 509)

Nominated for 3 Oscars. Another 3 wins & 5 nominations. See more awards »



IMDb Find Movies, TV shows, Celebrities and more... All

Movies, TV & Showtimes | Celebs, Events & Photos | News & Community | Watchlist

FULL CAST AND CREW | TRIVIA | USER REVIEWS | IMDbPro | MORE | SHARE

The Big Lebowski (1998) ★ 8.2 /10 609,031 Rate This

R | 1h 57min | Comedy, Crime | 6 March 1998 (USA)



0:31 | Trailer | 9 VIDEOS | 141 IMAGES

Watch Now From \$2.99 (SD) on Prime Video

ON DISC

"The Dude" Lebowski, mistaken for a millionaire Lebowski, seeks restitution for his ruined rug and enlists his bowling buddies to help get it.

Directors: Joel Coen, Ethan Coen (uncredited)
Writers: Ethan Coen, Joel Coen
Stars: Jeff Bridges, John Goodman, Julianne Moore | See full cast & crew »

69 Metascore From metacritic.com | 1,075 user | 257 critic | Popularity 515 (▲ 32)

Top Rated Movies #167 | 4 wins & 17 nominations. See more awards »

IMDb Find Movies, TV shows, Celebrities and more... All

Movies, TV & Showtimes | Celebs, Events & Photos | News & Community | Watchlist

FULL CAST AND CREW | TRIVIA | USER REVIEWS | IMDbPro | MORE | SHARE

The Big Short (2015) ★ 7.8 /10 274,582 Rate This

R | 2h 10min | Biography, Comedy, Drama | 23 December 2015 (USA)



2:05 | Trailer | 39 VIDEOS | 128 IMAGES

Watch Now From \$2.99 (SD) on Prime Video

ON DISC

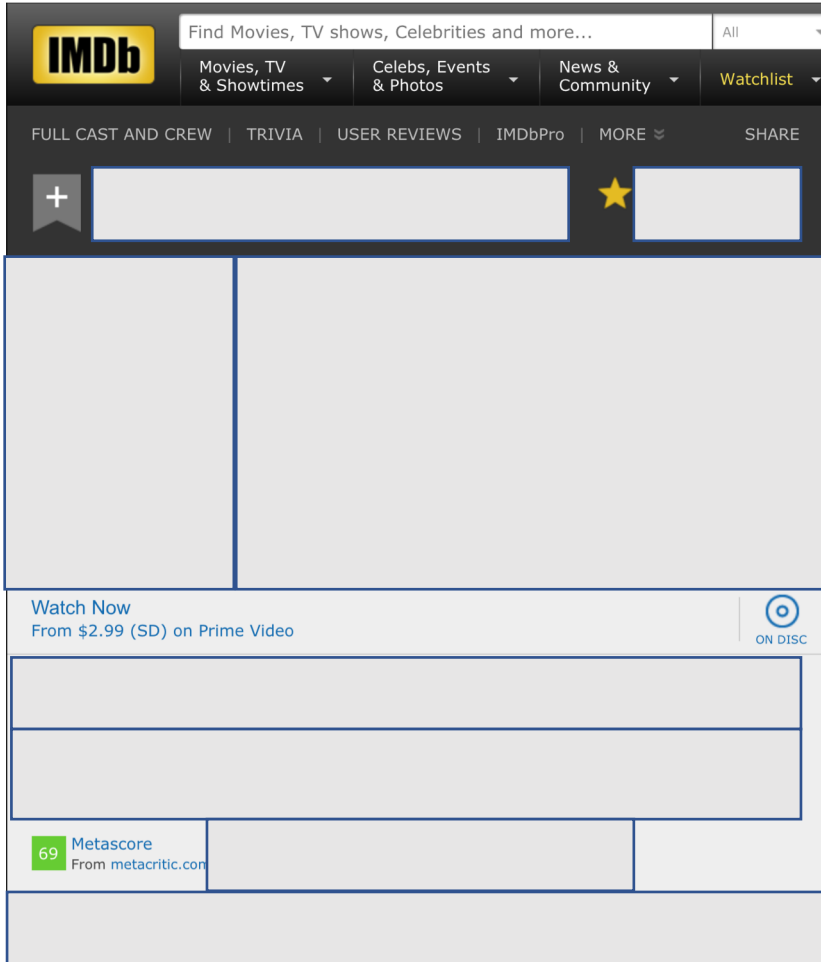
In 2006-7 a group of investors bet against the US mortgage market. In their research they discover how flawed and corrupt the market is.

Director: Adam McKay
Writers: Charles Randolph (screenplay), Adam McKay (screenplay) | 1 more credit »
Stars: Christian Bale, Steve Carell, Ryan Gosling | See full cast & crew »

81 Metascore From metacritic.com | 428 user | 454 critic | Popularity 434 (▲ 47)

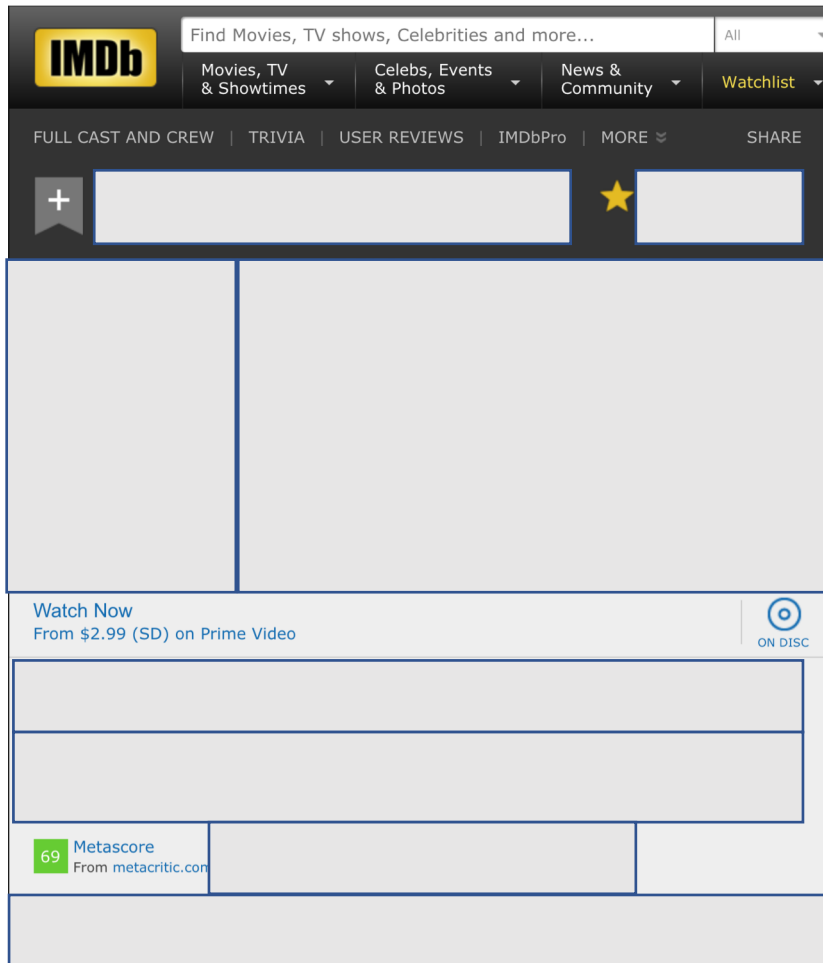
Won 1 Oscar. Another 37 wins & 79 nominations. See more awards »

IMDB uses a template and a database...

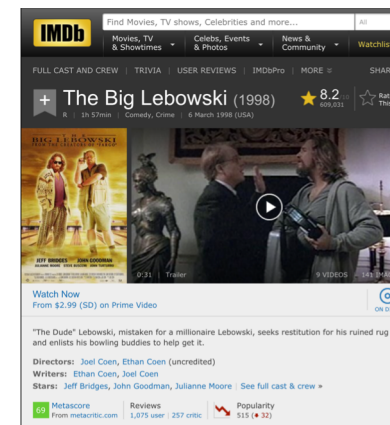


Title	Plot summary	poster	year
The Big Lebowski	"The dude" Lebowski, mistaken...	Lebowski.jpg	1998
The Big Short	In 2006-7 a group of investors...	Big_short.jpg	2015
The Big Chill	A group of 7 former roommates	Big_chill.jpg	1983

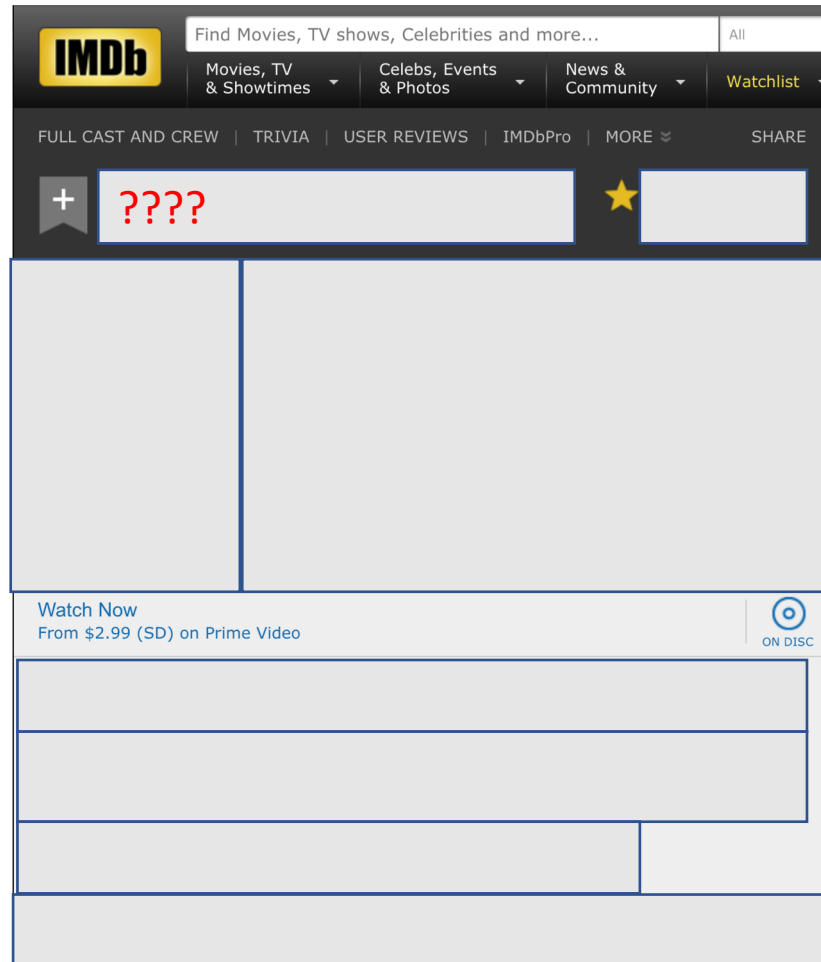
IMDb uses a template and a database... And fills in the data dynamically on pageload



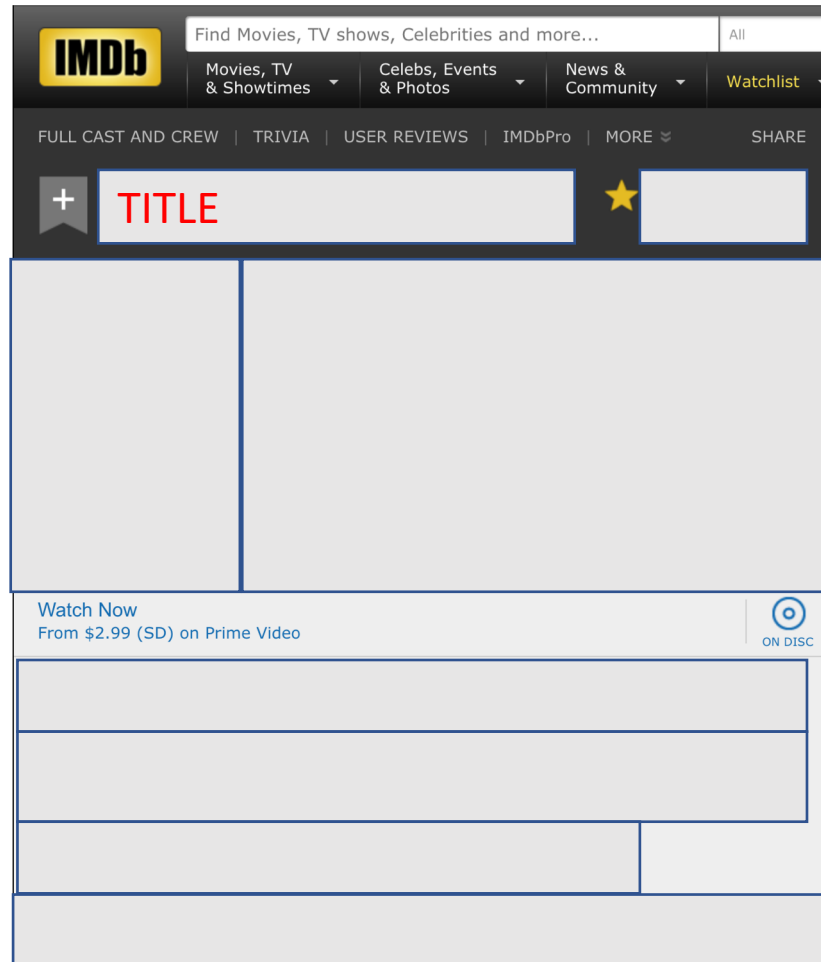
Title	Plot summary	poster	year
The Big Lebowski	"The dude" Lebowski, mistaken...	Lebowski.jpg	1998
The Big Short	In 2006-7 a group of investors...	Big_short.jpg	2015
The Big Chill	A group of 7 former roommates	Big_chill.jpg	1983



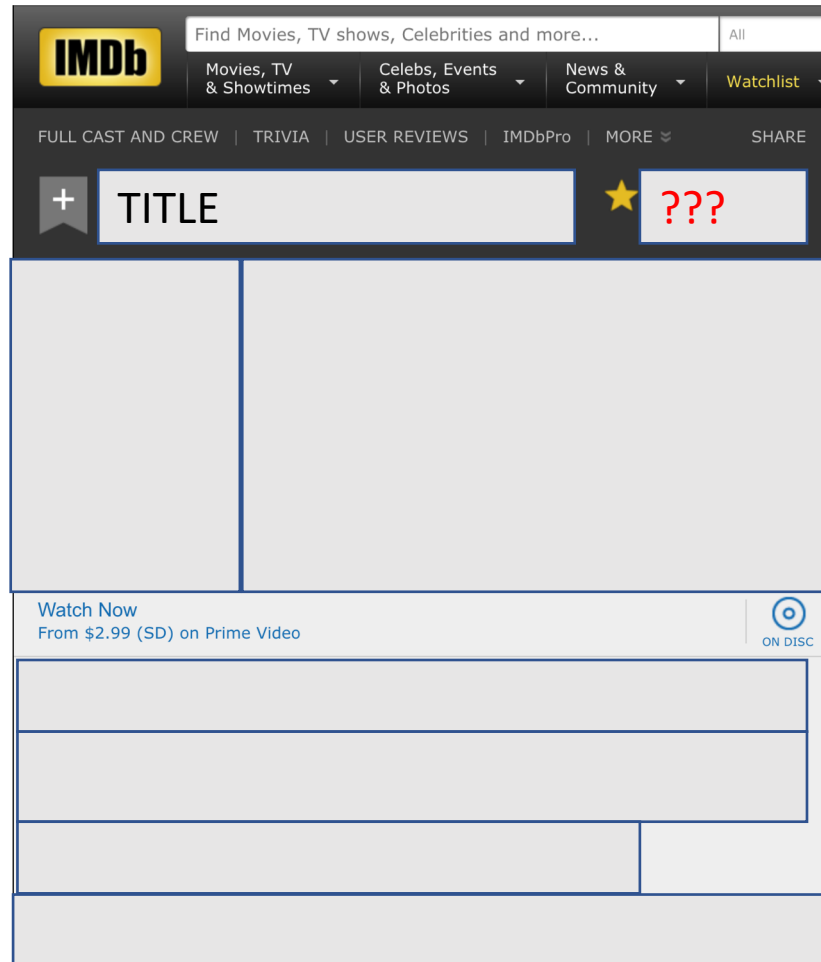
What goes in the template?



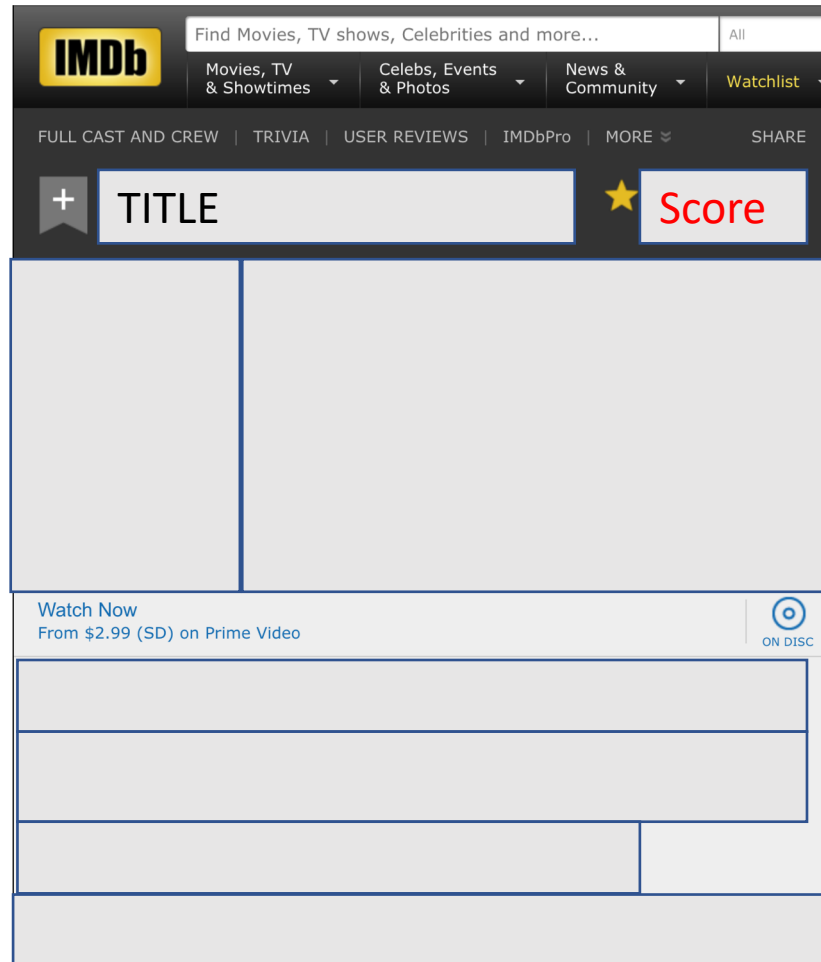
What goes in the template?



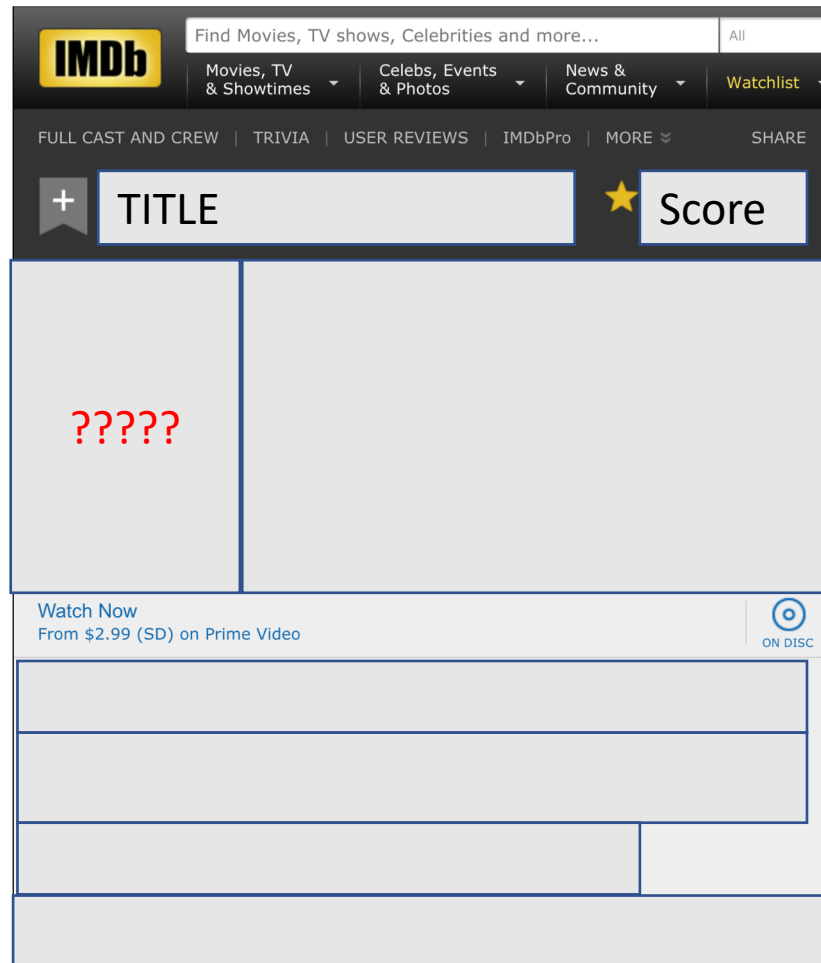
What goes in the template?



What goes in the template?



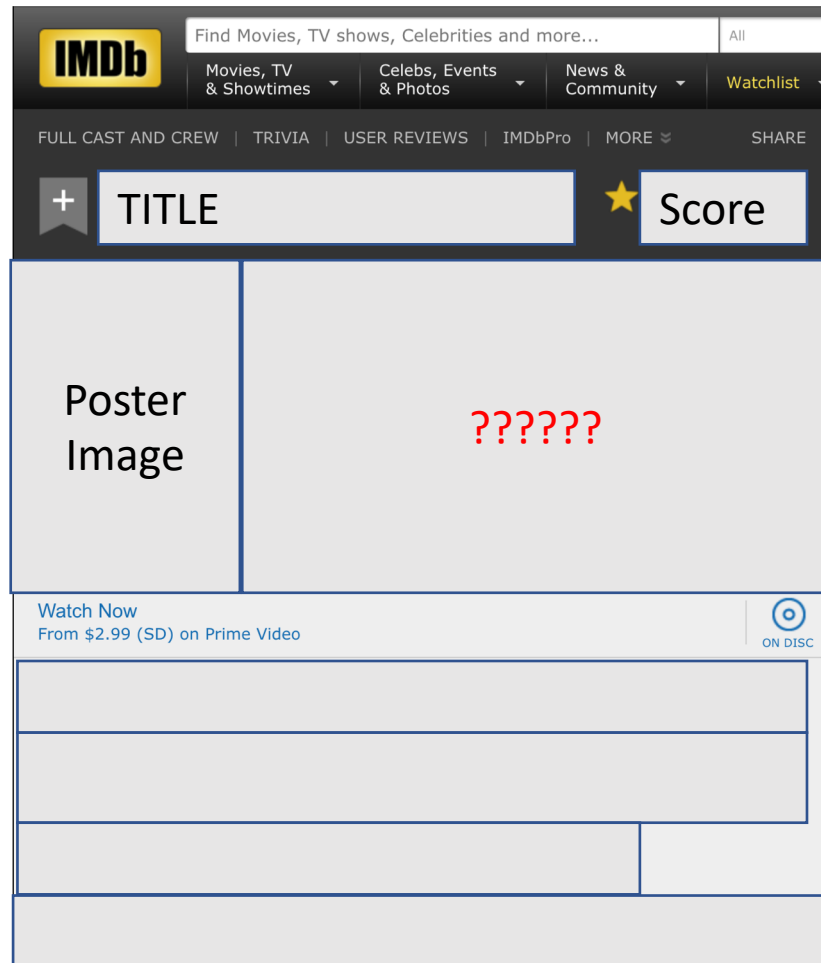
What goes in the template?



What goes in the template?



What goes in the template?



What goes in the template?



IMDB uses a template and dynamically fills the template from a database query

The screenshot displays the IMDb page for the movie "The Big Lebowski" (1998). The page features a search bar at the top, navigation tabs for "Movies, TV & Showtimes", "Celebs, Events & Photos", "News & Community", and "Watchlist". Below the navigation, there are links for "FULL CAST AND CREW", "TRIVIA", "USER REVIEWS", "IMDbPro", and "MORE". The movie title "The Big Lebowski (1998)" is prominently displayed, along with its rating of 8.2/10 and a "Rate This" button. A trailer player is shown with a play button and a "0:31 Trailer" label. Below the trailer, there are several empty rectangular boxes, likely representing a template structure for content.

IMDb Find Movies, TV shows, Celebrities and more... All

Movies, TV & Showtimes Celebs, Events & Photos News & Community Watchlist

FULL CAST AND CREW TRIVIA USER REVIEWS IMDbPro MORE SHARE

+ The Big Lebowski (1998) ★ 8.2 / 10 609,031 ☆ Rate This

R | 1h 57min | Comedy, Crime | 6 March 1998 (USA)

0:31 Trailer 9 VIDEOS 141 IMAGES

Watch Now From \$2.99 (SD) on Prime Video ON DISC

Anyone remember the other categories?

IMDb Find Movies, TV shows, Celebrities and more... All

Movies, TV & Showtimes | Celebs, Events & Photos | News & Community | Watchlist

FULL CAST AND CREW | TRIVIA | USER REVIEWS | IMDbPro | MORE | SHARE

The Big Lebowski (1998) ★ 8.2¹⁰
609,031 Rate This

R | 1h 57min | Comedy, Crime | 6 March 1998 (USA)

BIG LEBOWSKI
FROM THE CREATORS OF "FARGO"

JEFF BRIDGES JOHN GOODMAN
JULIANNE MOORE STEVE BUSCEMI JOHN TURTURRO

0:31 Trailer 9 VIDEOS 141 IMAGES

Watch Now
From \$2.99 (SD) on Prime Video

ON DISC

[Empty rectangular boxes representing missing content]

Anyone remember the other categories?

IMDb Find Movies, TV shows, Celebrities and more... All

Movies, TV & Showtimes | Celebs, Events & Photos | News & Community | Watchlist

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609,031 Rate This

R | 1h 57min | Comedy, Crime | 6 March 1998 (USA)

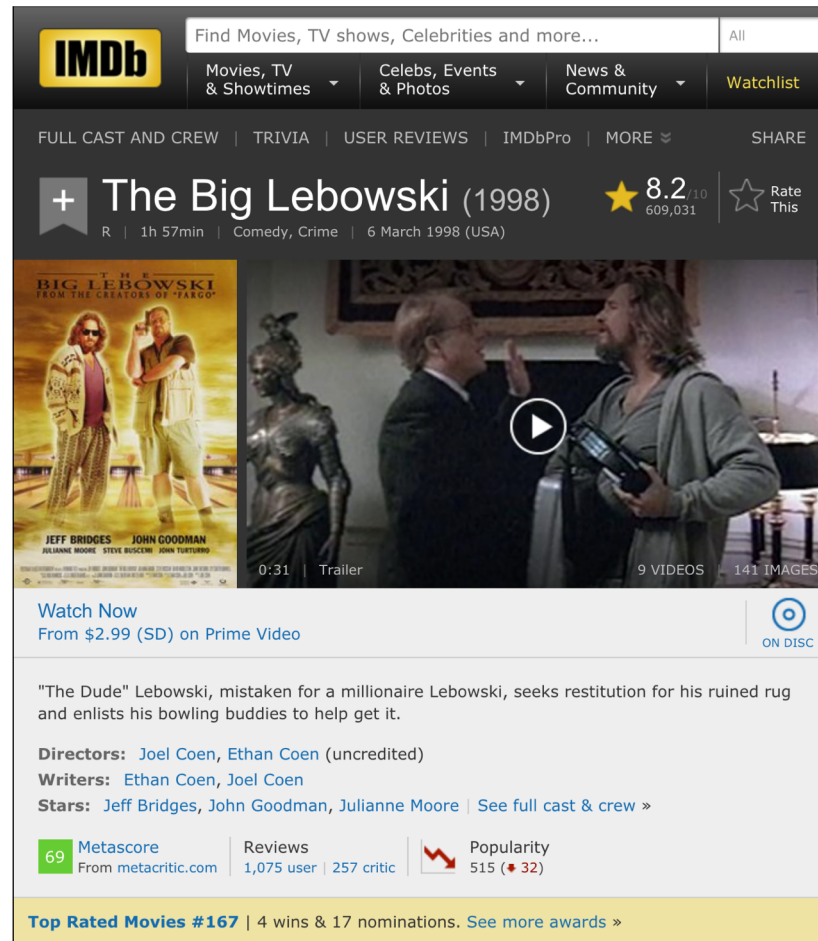
Plot summary

Main creatives

Reviews

Awards

Anyone remember the other categories?



IMDb Find Movies, TV shows, Celebrities and more... All

Movies, TV & Showtimes | Celebs, Events & Photos | News & Community | Watchlist

FULL CAST AND CREW | TRIVIA | USER REVIEWS | IMDbPro | MORE | SHARE

The Big Lebowski (1998) ★ 8.2₁₀ ☆ Rate This
R | 1h 57min | Comedy, Crime | 6 March 1998 (USA)

Watch Now
From \$2.99 (SD) on Prime Video ON DISC

"The Dude" Lebowski, mistaken for a millionaire Lebowski, seeks restitution for his ruined rug and enlists his bowling buddies to help get it.

Directors: [Joel Coen](#), [Ethan Coen](#) (uncredited)
Writers: [Ethan Coen](#), [Joel Coen](#)
Stars: [Jeff Bridges](#), [John Goodman](#), [Julianne Moore](#) | [See full cast & crew »](#)

69 Metascore From metacritic.com | **Reviews** 1,075 user | 257 critic | **Popularity** 515 (▲ 32)

Top Rated Movies #167 | 4 wins & 17 nominations. [See more awards »](#)

IMDB Template

The image shows a screenshot of the IMDb website interface with various HTML placeholders for content. The top navigation bar includes the IMDb logo, a search bar, and menu items like 'Movies, TV & Showtimes', 'Celebs, Events & Photos', 'News & Community', and 'Watchlist'. Below the navigation bar, there are links for 'FULL CAST AND CREW', 'TRIVIA', 'USER REVIEWS', 'IMDbPro', 'MORE', and 'SHARE'. The main content area features a title placeholder `{{TITLE}}` with a plus sign icon and a score placeholder `{{Score}}` with a star icon. Below this, there are two large placeholder boxes: one for a poster image with the code `` and one for a trailer video with the code `<video src=“{{Trailer Video}}”>`. A 'Watch Now' section is visible, indicating availability on Prime Video from \$2.99 (SD). Below this, there are several more placeholder boxes for 'Plot summary', 'Main creatives', 'Reviews', and 'Awards'.

IMDb

Find Movies, TV shows, Celebrities and more... All

Movies, TV & Showtimes Celebs, Events & Photos News & Community Watchlist

FULL CAST AND CREW TRIVIA USER REVIEWS IMDbPro MORE SHARE

+ `{{TITLE}}` ★ `{{Score}}`

``

`<video src=“{{Trailer Video}}”>`

Watch Now
From \$2.99 (SD) on Prime Video

ON DISC

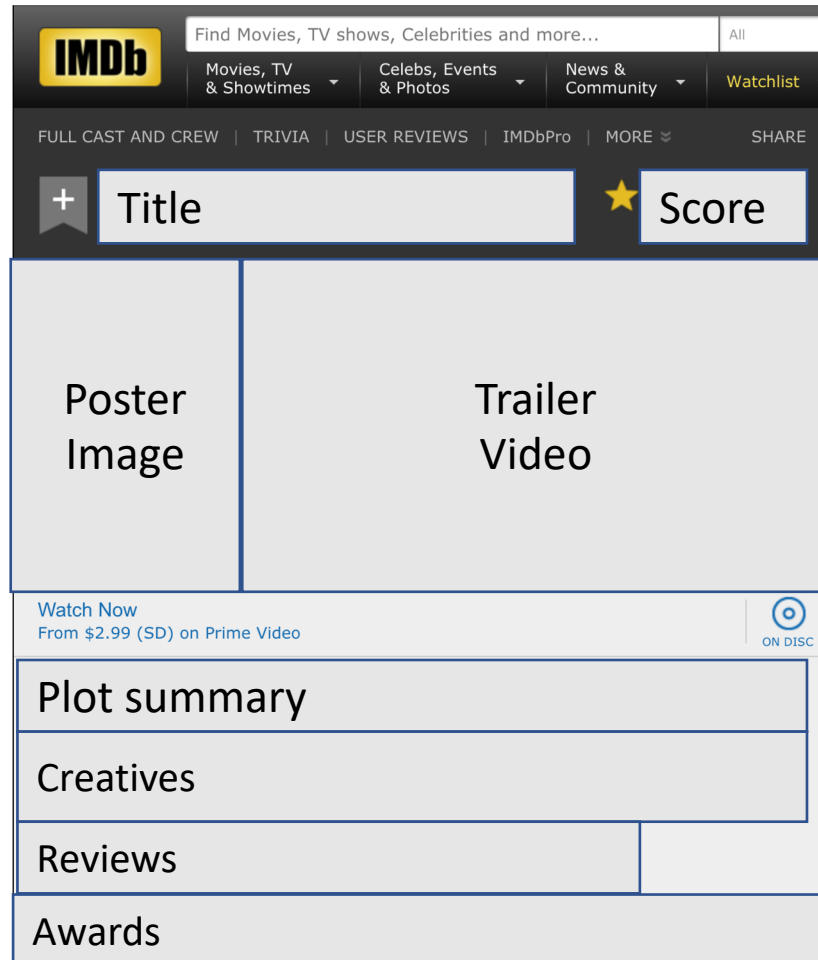
`{{Plot summary}}`

`{{Main creatives}}`

`{{Reviews}}`

`{{Awards}}`

Templates are standardizations. What can go wrong?



Templates are standardizations. What can go wrong?

The screenshot shows the IMDb page for the movie "The Big Short" (2015). The page layout is as follows:

- Header: IMDb logo, search bar "Find Movies, TV shows, Celebrities and more...", and navigation tabs: "Movies, TV & Showtimes", "Celebs, Events & Photos", "News & Community", "Watchlist".
- Sub-header: "FULL CAST AND CREW | TRIVIA | USER REVIEWS | IMDbPro | MORE | SHARE".
- Movie Title: "+ The Big Short (2015)" with a star rating placeholder.
- Metadata: "R | 2h 10min | Biography, Comedy, Drama | 23 December 2015 (USA)".
- Image Placeholder: A large rectangular area where the movie poster should be, currently blank.
- Text Placeholder: A large rectangular area below the image placeholder, currently blank.
- Director: "Director: Adam McKay".
- Writers: "Writers: Charles Randolph (screenplay), Adam McKay (screenplay) | 1 more credit »".
- Stars: "Stars: Christian Bale, Steve Carell, Ryan Gosling | See full cast & crew »".
- Bottom Section: Two more rectangular areas, the top one is blank and the bottom one is partially filled with text.

The screenshot shows the IMDb page for the movie "The Big Lebowski" (1998). The page layout is as follows:

- Header: IMDb logo, search bar "Find Movies, TV shows, Celebrities and more...", and navigation tabs: "Movies, TV & Showtimes", "Celebs, Events & Photos", "News & Community", "Watchlist".
- Sub-header: "FULL CAST AND CREW | TRIVIA | USER REVIEWS | IMDbPro | MORE | SHARE".
- Movie Title: "+ The Big Lebowski (1998)" with a star rating placeholder.
- Metadata: "R | 1h 57min | Comedy, Crime | 6 March 1998 (USA)".
- Image Placeholder: A large rectangular area where the movie poster should be, currently blank.
- Text Placeholder: A large rectangular area below the image placeholder, currently blank.
- Text Placeholder: A smaller rectangular area containing the red text "????????".
- Stars: "Stars: Jeff Bridges, John Goodman, Julianne Moore | See full cast & crew »".
- Bottom Section: Two more rectangular areas, the top one is blank and the bottom one is partially filled with text.

Templates are standardizations. What can go wrong?

The screenshot shows the IMDb page for the movie 'The Big Short' (2015). The page layout is partially obscured by a grey template overlay with blue borders. The visible text includes the IMDb logo, a search bar, navigation tabs (Movies, TV & Showtimes, Celebs, Events & Photos, News & Community, Watchlist), and a header for the movie: '+ The Big Short (2015) ★ [rating box]'. Below the header, there are two columns of placeholder boxes. At the bottom, the following text is visible: 'Director: Adam McKay', 'Writers: Charles Randolph (screenplay), Adam McKay (screenplay) | 1 more credit >', and 'Stars: Christian Bale, Steve Carell, Ryan Gosling | See full cast & crew >'.

The screenshot shows the IMDb page for the movie 'The Big Lebowski' (1998). The page layout is partially obscured by a grey template overlay with blue borders. The visible text includes the IMDb logo, a search bar, navigation tabs (Movies, TV & Showtimes, Celebs, Events & Photos, News & Community, Watchlist), and a header for the movie: '+ The Big Lebowski (1998) ★ [rating box]'. Below the header, there are two columns of placeholder boxes. At the bottom, the following text is visible: 'Directors: Joel Coen, Ethan Coen (uncredited)', 'Writers: Ethan Coen, Joel Coen', and 'Stars: Jeff Bridges, John Goodman, Julianne Moore | See full cast & crew >'.

Standardization is hard. Expect to **iterate** on your templates

IMDb Find Movies, TV shows, Celebrities and more... All

Movies, TV & Showtimes | Celebs, Events & Photos | News & Community | Watchlist

FULL CAST AND CREW | TRIVIA | USER REVIEWS | IMDbPro | MORE | SHARE

The Big Chill (1983) ★ 7.2_{28,073} ☆ Rate This

R | 1h 45min | Comedy, Drama | 30 September 1983 (USA)



2:02 | Trailer | 1 VIDEO | 76 IMAGES

Watch Now With Prime Video

WATCH NOW ON DISC

A group of seven former college friends gather for a weekend reunion at a South Carolina winter house after the funeral of one of their friends.

Director: [Lawrence Kasdan](#)
Writers: [Lawrence Kasdan](#), [Barbara Benedek](#)
Stars: [Tom Berenger](#), [Glenn Close](#), [Jeff Goldblum](#) | [See full cast & crew](#) »

62 Metascore From [metacritic.com](#) | **Reviews** 186 user | 61 critic | **Popularity** 4,222 (▲ 509)

Nominated for 3 Oscars. Another 3 wins & 5 nominations. [See more awards](#) »



IMDb Find Movies, TV shows, Celebrities and more... All

Movies, TV & Showtimes | Celebs, Events & Photos | News & Community | Watchlist

FULL CAST AND CREW | TRIVIA | USER REVIEWS | IMDbPro | MORE | SHARE

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0:31 | Trailer | 9 VIDEOS | 141 IMAGES

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Writers: [Ethan Coen](#), [Joel Coen](#)
Stars: [Jeff Bridges](#), [John Goodman](#), [Julianne Moore](#) | [See full cast & crew](#) »

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The Big Short (2015) ★ 7.8_{274,582} ☆ Rate This

R | 2h 10min | Biography, Comedy, Drama | 23 December 2015 (USA)



2:05 | Trailer | 39 VIDEOS | 128 IMAGES

Watch Now From \$2.99 (SD) on Prime Video

ON DISC

In 2006-7 a group of investors bet against the US mortgage market. In their research they discover how flawed and corrupt the market is.

Director: [Adam McKay](#)
Writers: [Charles Randolph](#) (screenplay), [Adam McKay](#) (screenplay) | [1 more credit](#) »
Stars: [Christian Bale](#), [Steve Carell](#), [Ryan Gosling](#) | [See full cast & crew](#) »

81 Metascore From [metacritic.com](#) | **Reviews** 428 user | 454 critic | **Popularity** 434 (▲ 47)

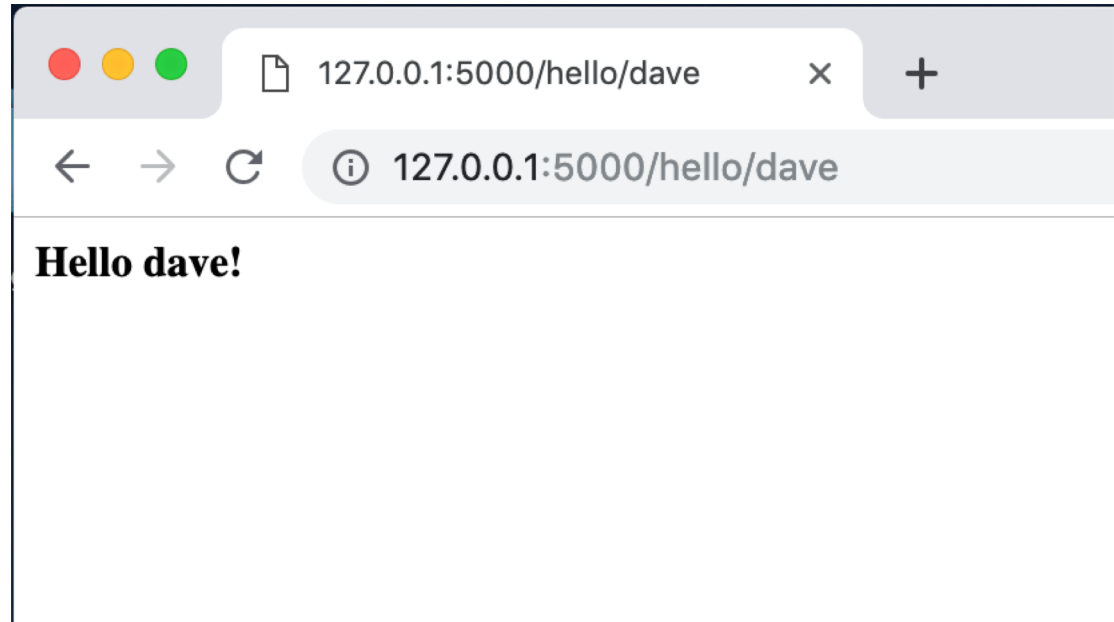
Won 1 Oscar. Another 37 wins & 79 nominations. [See more awards](#) »

Implementing Templates in Flask

How to render a template with data

```
server.py x hello.html x
1 from flask import Flask
2 from flask import render_template
3 app = Flask(__name__)
4
5 @app.route('/')
6 def hello_world():
7     return 'Hello World'
8
9 @app.route('/hello/<name>')
10 def hello(name=None):
11     return render_template('hello.html', name=name)
12
13 if __name__ == '__main__':
14     app.run()
15
16
```

```
server.py x hello.html x
1 <html>
2 <head></head>
3 <body>
4
5 <b>Hello {{name}}!</b>
6 </body>
7 </html>
8
9
```



Homework 6 & 7: Building a Search Application

HW6:

Search Application Part 1: **Functionality**

(due Wed. 3/4)

- **Search** Data
 - **Create** Data
 - **View** Data
 - **Update** Data
 - **Delete** Data
-
- Submit:
 - code
 - short write up

HW7:

Search Application Part 2: Usability (due Wed. 3/11)

- Information hierarchy
- Font, color, gestalt
- Feedback
- Accessibility
- Widgets
- More Ajax

- Submit:
 - code
 - short write up
 - **video**

Pick a dataset and put 30 items in it by hand.

NBA All-Stars



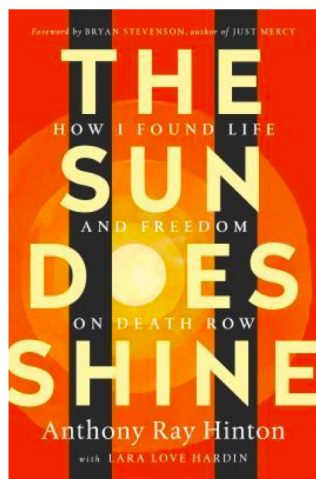
Affordable make-up



Academy Award Winning Films



Book I want to read



Independent Coffee Shops in NYC



Fauvist Paintings



Have a user need in mind. Who needs this data? Why?

Family-owned Ice cream parlors in the US



A college student is graduating and wants to road trip from NYC to Florida. Along the way, they want to find top-rated family-owned ice cream parlors so they can write about it for their travel blog.

More specific needs are easier to design for.

Yoga poses



A person who has exercised or is looking to make a part of their body more flexible.

Top players for the 2019 baseball season



Someone who wants to prepare for his or her fantasy baseball draft

US Elections in 2018



1. Any civically minded citizen or citizen who wants to be more well-read about our politics

2. A political candidate who wants to see how successful they are as incumbent in their district based on the results in the 2018 election.

It is easier to make design decisions when the goal is clear.

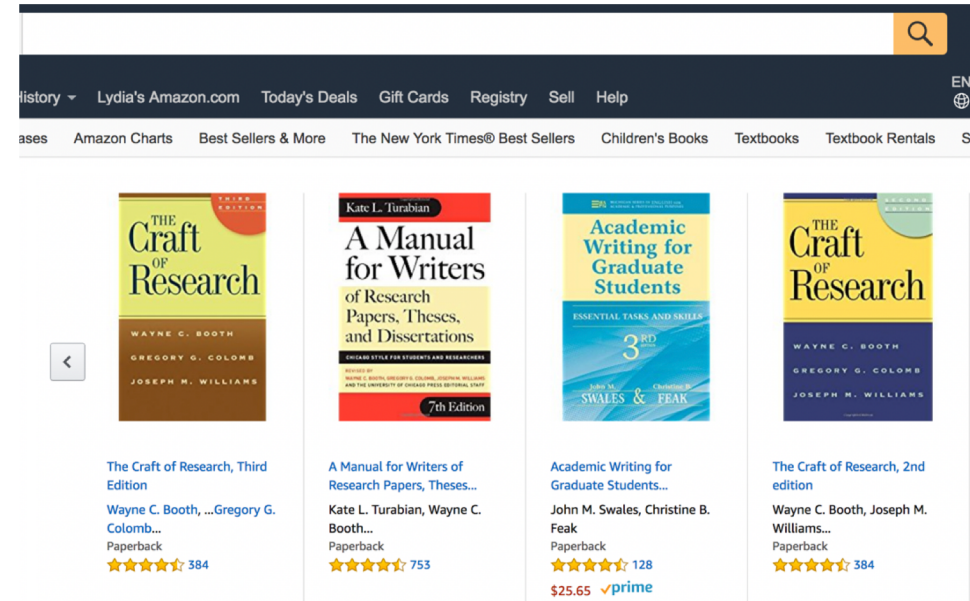
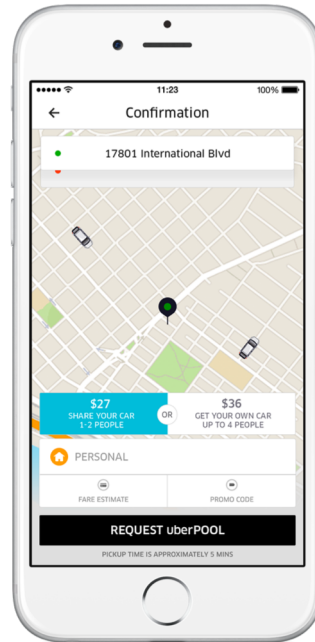
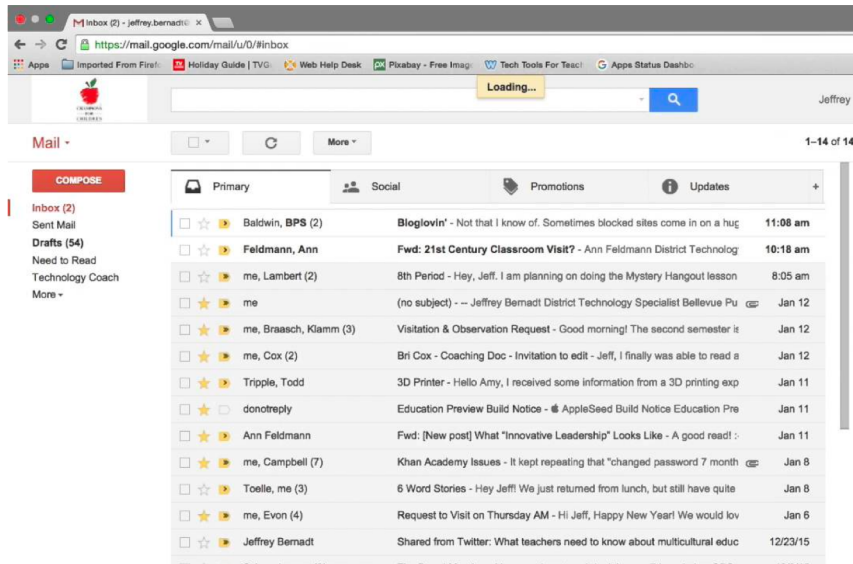
What data to store, what interactions to enable.

HW7 is the midterm in this class.

- We can't assess mastery of the material in a 2 hour written test, so we create an assignment that cover all the material in the first half
- You are still allowed to ask for help in the normal ways.
 - (Even masters of this material ask for help)
- The same late policies apply. No more than 5 days after the deadline, even with a note.
- No office hours or Piazza help after Friday 3/13 5pm.

Summary

The main goal of many websites is to interact with data.



CRUD: Operations for interacting with a database

Create


New Message

To

From Lydia Chilton <chilton@cs.columbia.edu> ▾

Subject

Hey dude!

 What's on your mind, Lydia?

Add title

(No title)
7 - 8pm

Event Reminder Appointment slots

Feb 28, 2018 7:00pm - 8:00pm Feb 28, 2018

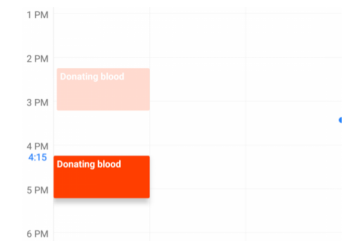
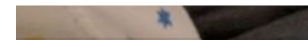
MORE OPTIONS

Read

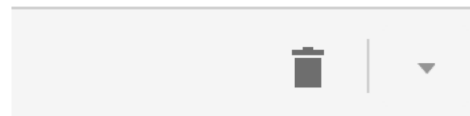
Baldwin, BPS (2)	Bioglovin' - Not that I know of. Sometimes bi
Feldmann, Ann	Fwd: 21st Century Classroom Visit? - Ann
me, Lambert (2)	8th Period - Hey, Jeff. I am planning on doing
me	(no subject) - -- Jeffrey Bernadt District Techn



Update



Delete

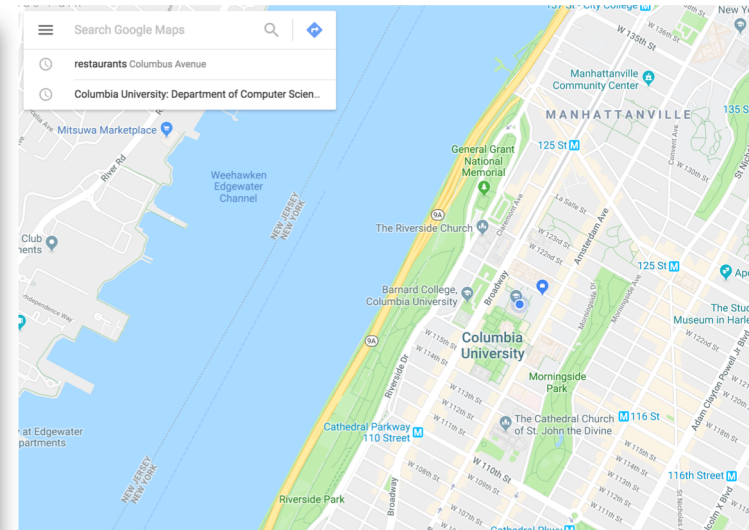
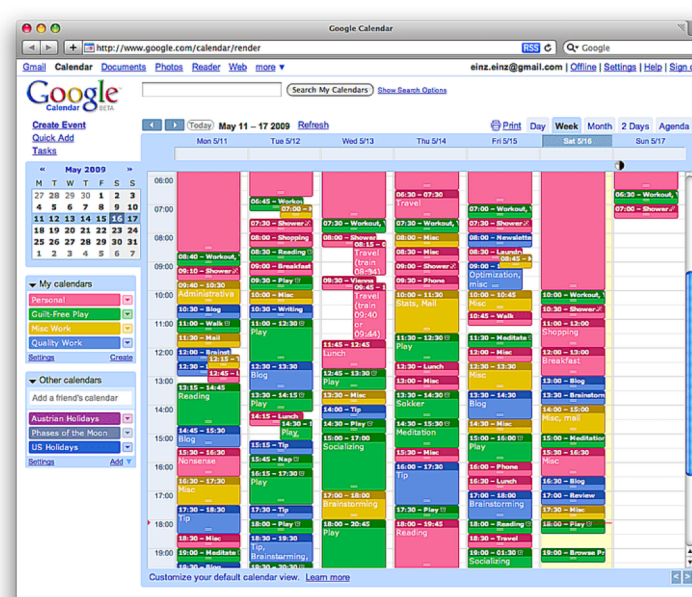
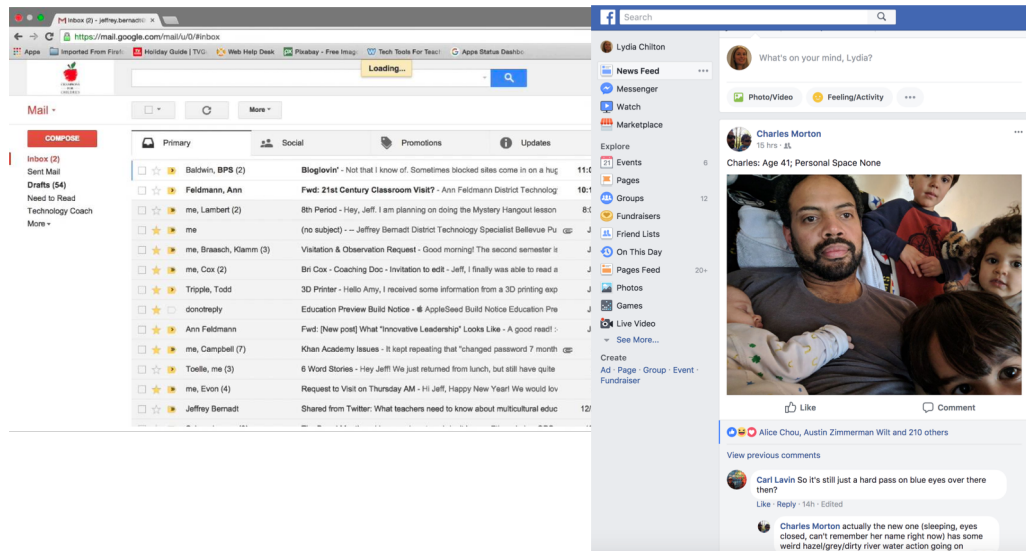


Delete Post?

Are you sure you want to delete it?

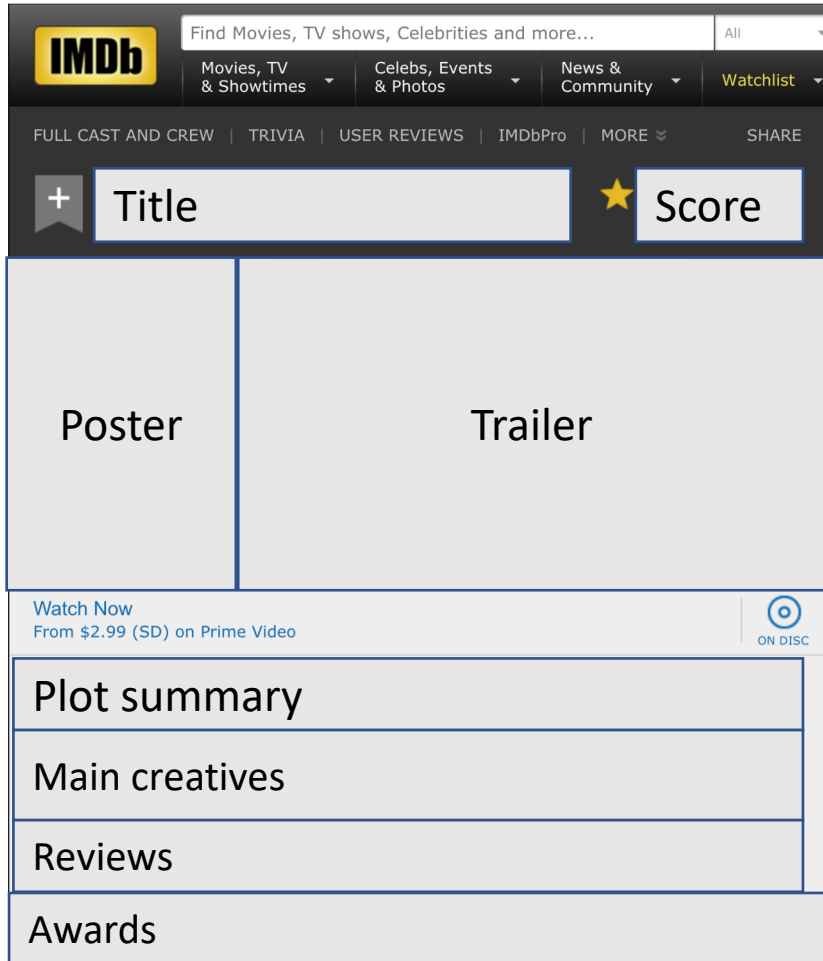


From a back-end perspective Database-backed websites are very similar.



But they serve different data and different information needs

Use templates to dynamically generate pages from data in the database



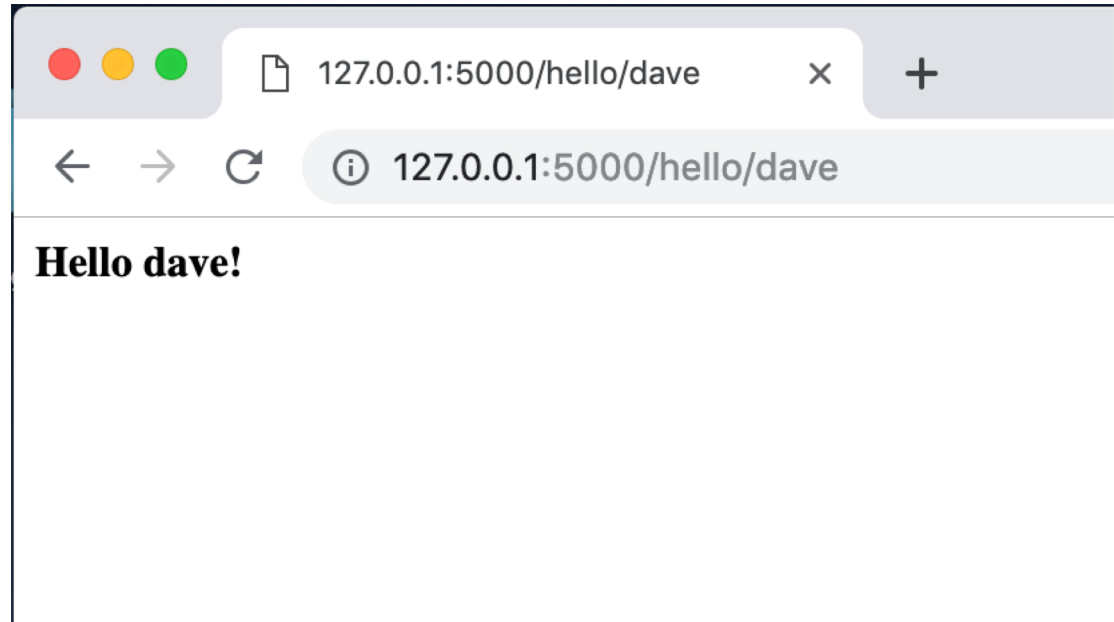
Title	Plot summary	poster	year
The Big Lebowski	"The dude" Lebowski, mistaken...	Lebowski.jpg	1998
The Big Short	In 2006-7 a group of investors...	Big_short.jpg	2015
The Big Chill	A group of 7 former roommates	Big_chill.jpg	1983



How to render a template with data

```
server.py x hello.html x
1 from flask import Flask
2 from flask import render_template
3 app = Flask(__name__)
4
5 @app.route('/')
6 def hello_world():
7     return 'Hello World'
8
9 @app.route('/hello/<name>')
10 def hello(name=None):
11     return render_template('hello.html', name=name)
12
13 if __name__ == '__main__':
14     app.run()
15
16
```

```
server.py x hello.html x
1 <html>
2 <head></head>
3 <body>
4
5 <b>Hello {{name}}!</b>
6 </body>
7 </html>
8
9
```



Fill out participation now!
HW 6 is out.

Columbia University

User Interface Design

COMS 4170 · Spring 2020

Home Grading Syllabus **Piazza**

6	FEBRUARY 24 Participation Form HW4 Review Color, Type, Gestalt	FEBRUARY 26 Homework 5 due @ 4pm Participation Form Homework 6 out
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