

Welcome to CS571!

Building User Interfaces

Cole Nelson

What is this course about?

UX Development

...but what is UX Development?

The realm of the UX developer exists **somewhere between that of the traditional developer and the designer**. We're not really designers, yet to be a good UX developer you certainly need to have an eye for design. In the same vein, we're not traditional developers but we certainly need to have development experience and expertise. Often this experience spans multiple technologies, languages, and platforms.

— Tim R. Todish

It falls on **the UX developer to bridge the gap between design and technology**. We need to be able to think and speak the language of designers. It's our job to help translate their vision to the development team in a way that they can understand and accept. This can be a critical piece of the puzzle in a project, especially if the design and the interactions behind it are complex.

— Tim R. Todish

Similarly, we need to speak on behalf **the developers to help reign in the designers**, at times. If they are coming up with concepts that will be extremely difficult or time consuming to implement, we can explain the limitations of the technology and the complexity involved in implementing their designs, and try to come up with an acceptable alternative.

— Tim R. Todish

UX Development

= **Software Engineering +**

UX Design

What does a Software Engineer do?



This species only
drinks warm liquids

Kantega | The Mysterious Life of Developers

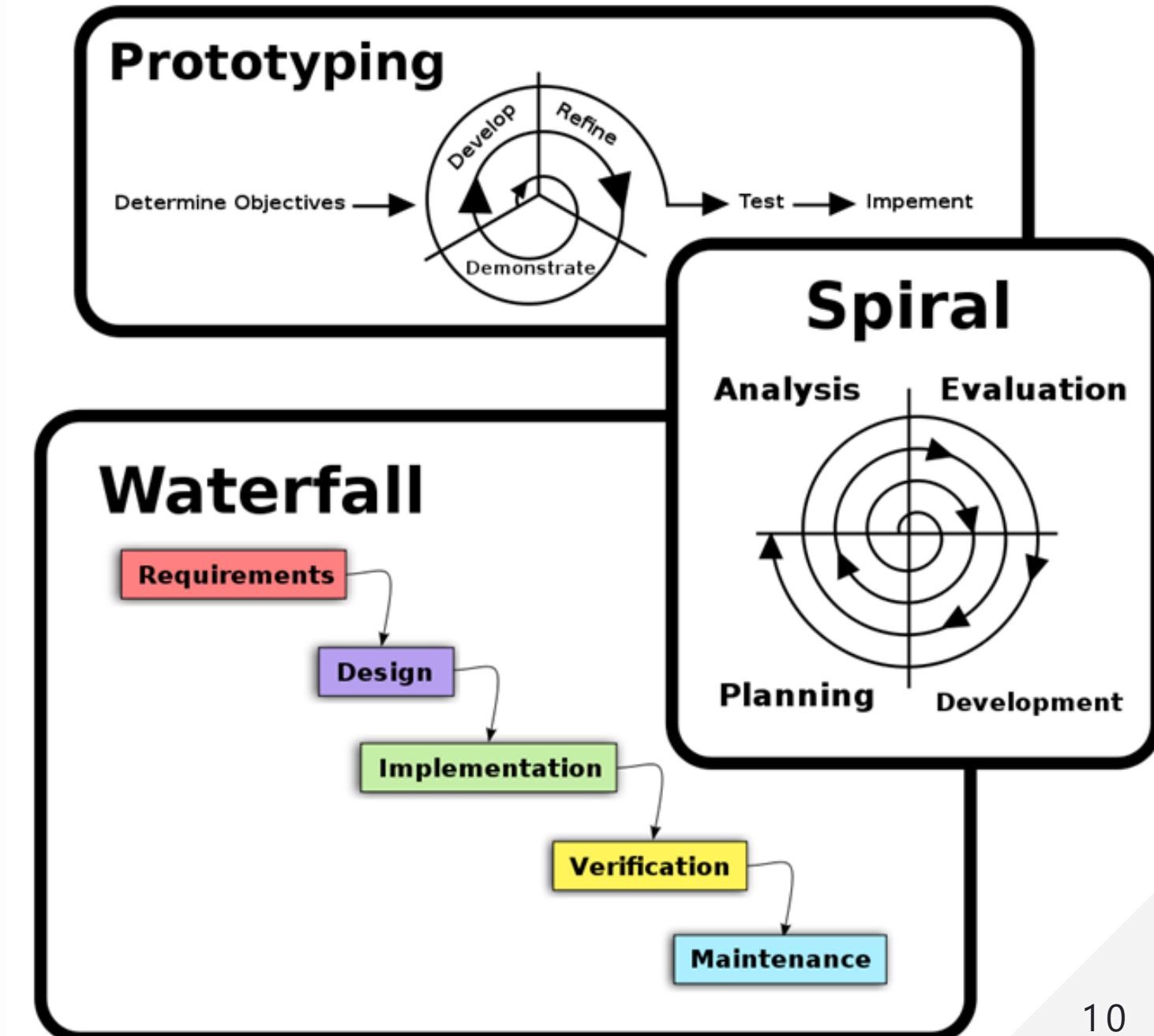
Definition: A software engineer is a person who applies the principles of software engineering to the design, development, maintenance, testing, and evaluation of computer software.

How does a Software Engineer go about this?

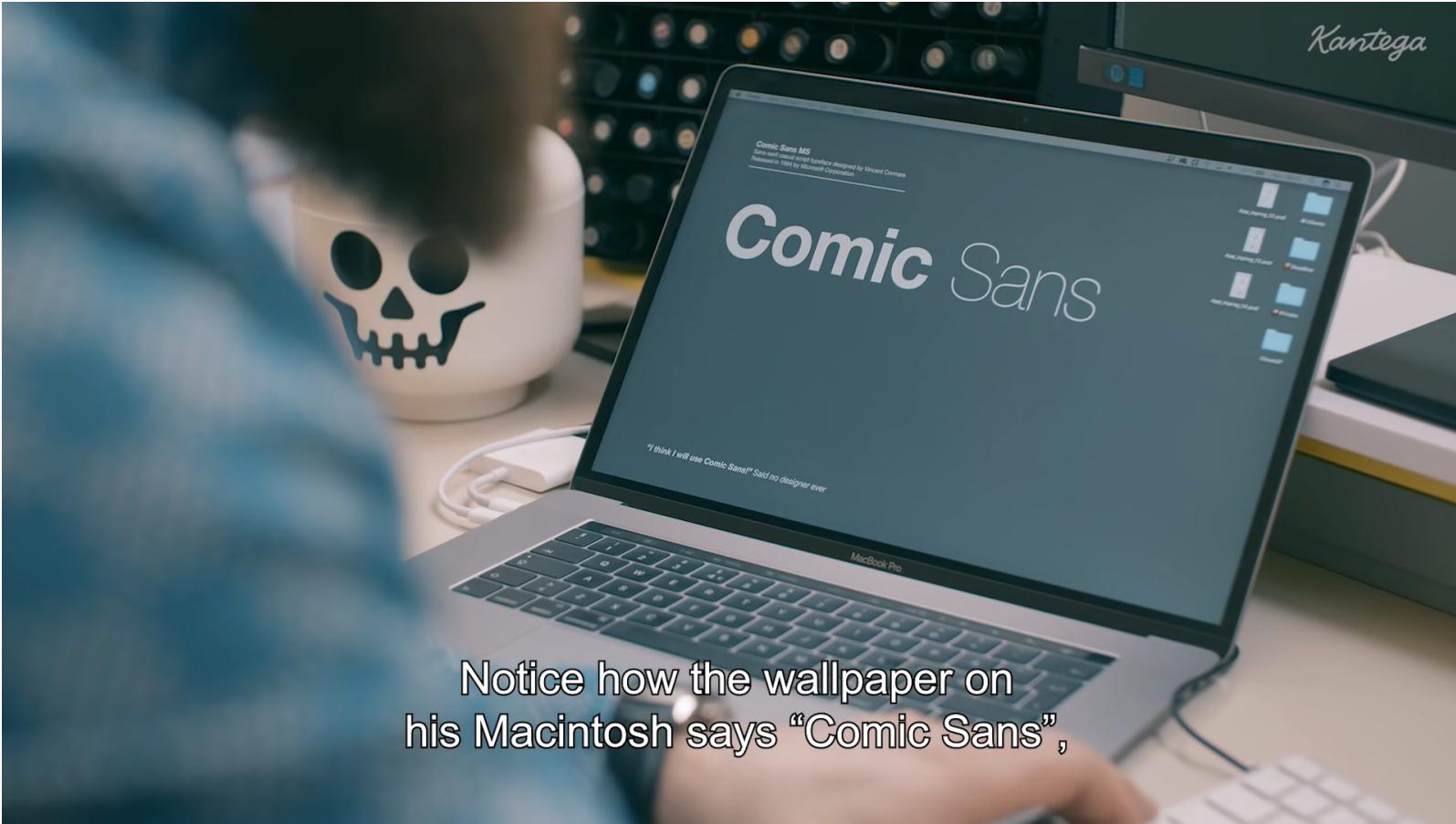
What is a Software Engineer?

Software Development Lifecycle

SDL Process



What does a UX Designer do?



Notice how the wallpaper on
his Macintosh says “Comic Sans”,

Kantega | The Mysterious Life Of UX Designers

Definition: User experience (UX) design is the process that design teams use to create products that provide meaningful and relevant experiences to users. A UX designer is concerned with the entire *process* of acquiring and integrating a product, including aspects of branding, design, usability, and function.

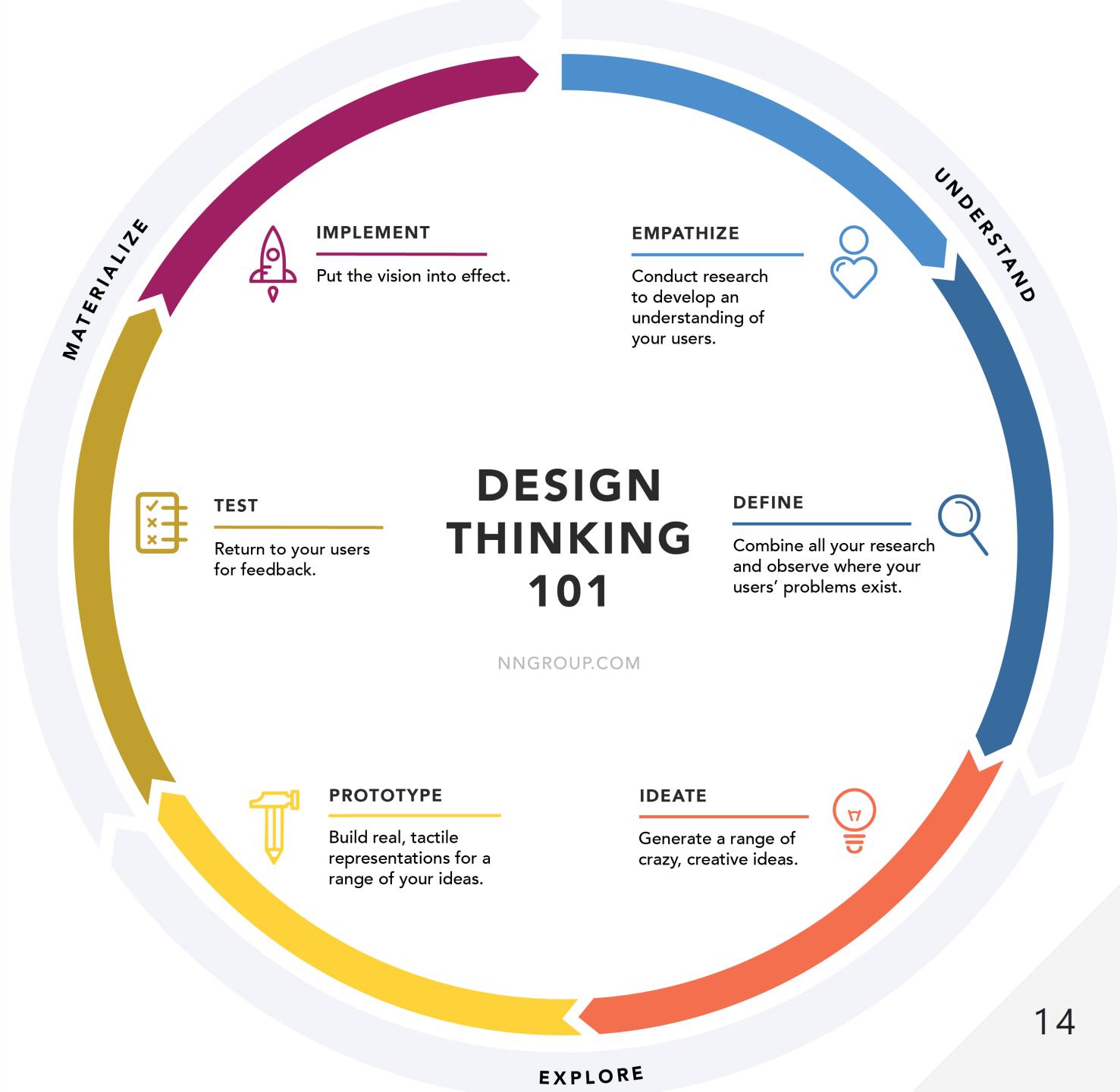
How does a UX designer go about this?

Interaction Design Foundation

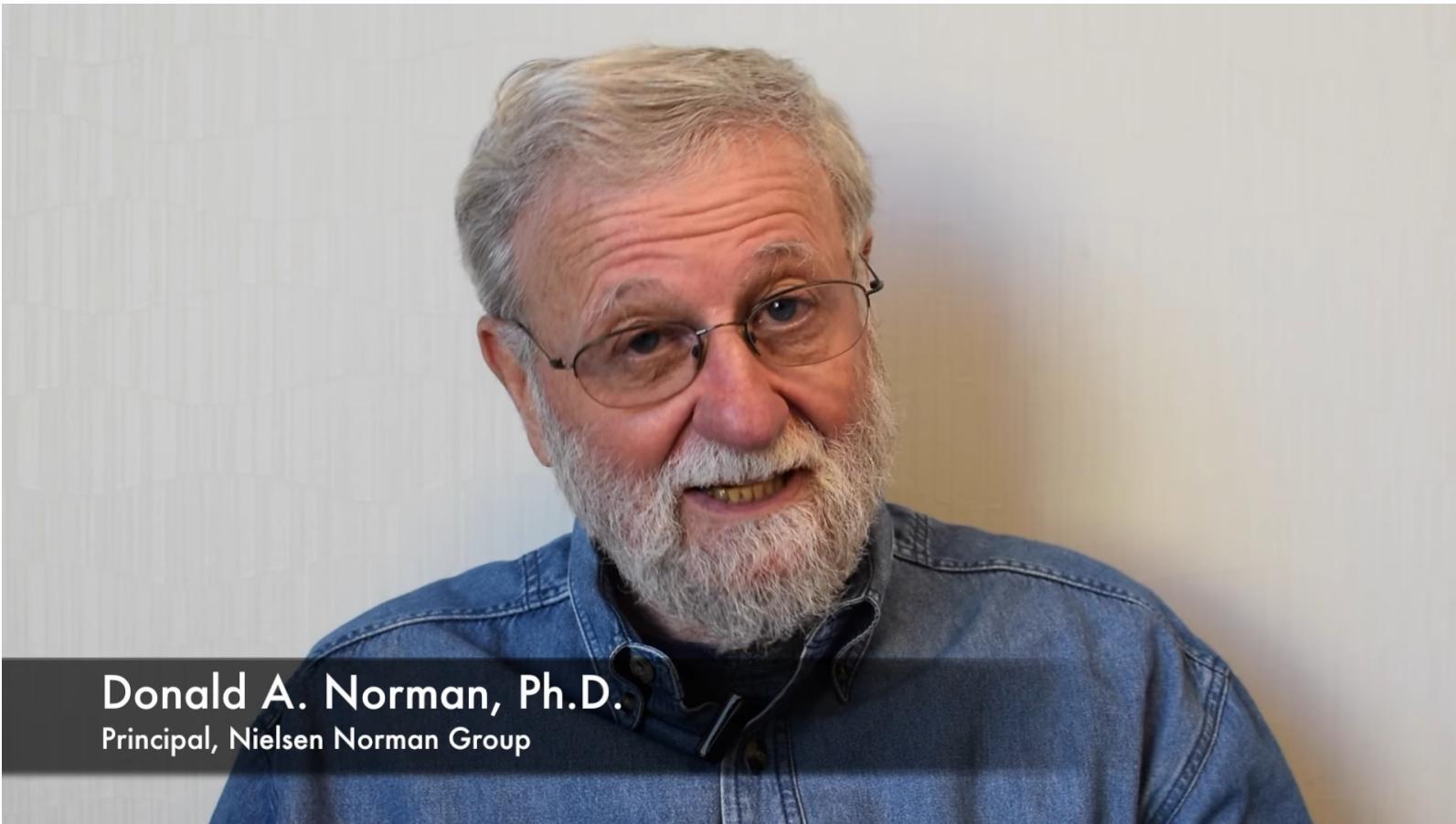
UX Design Process

Look familiar?

NN/g Design Thinking



**So then, what is UX
Development?**



Donald A. Norman, Ph.D.
Principal, Nielsen Norman Group

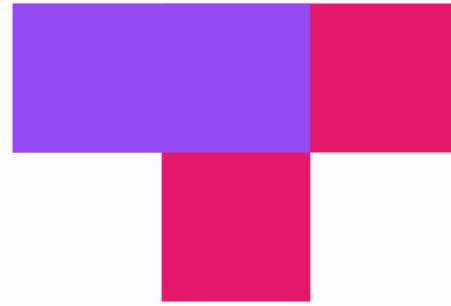
Don Norman: The term "UX"

UX Development Trajectories

- One-person development team to build full-stack applications
- A developer who speaks the language of the designers
- A designer who can also build native prototypes
- A bridge/translator between designers and developers in large/complex organizations

TopHat Trial

What is your favorite
programming language?



TOP HAT

Course Details

Cole Nelson

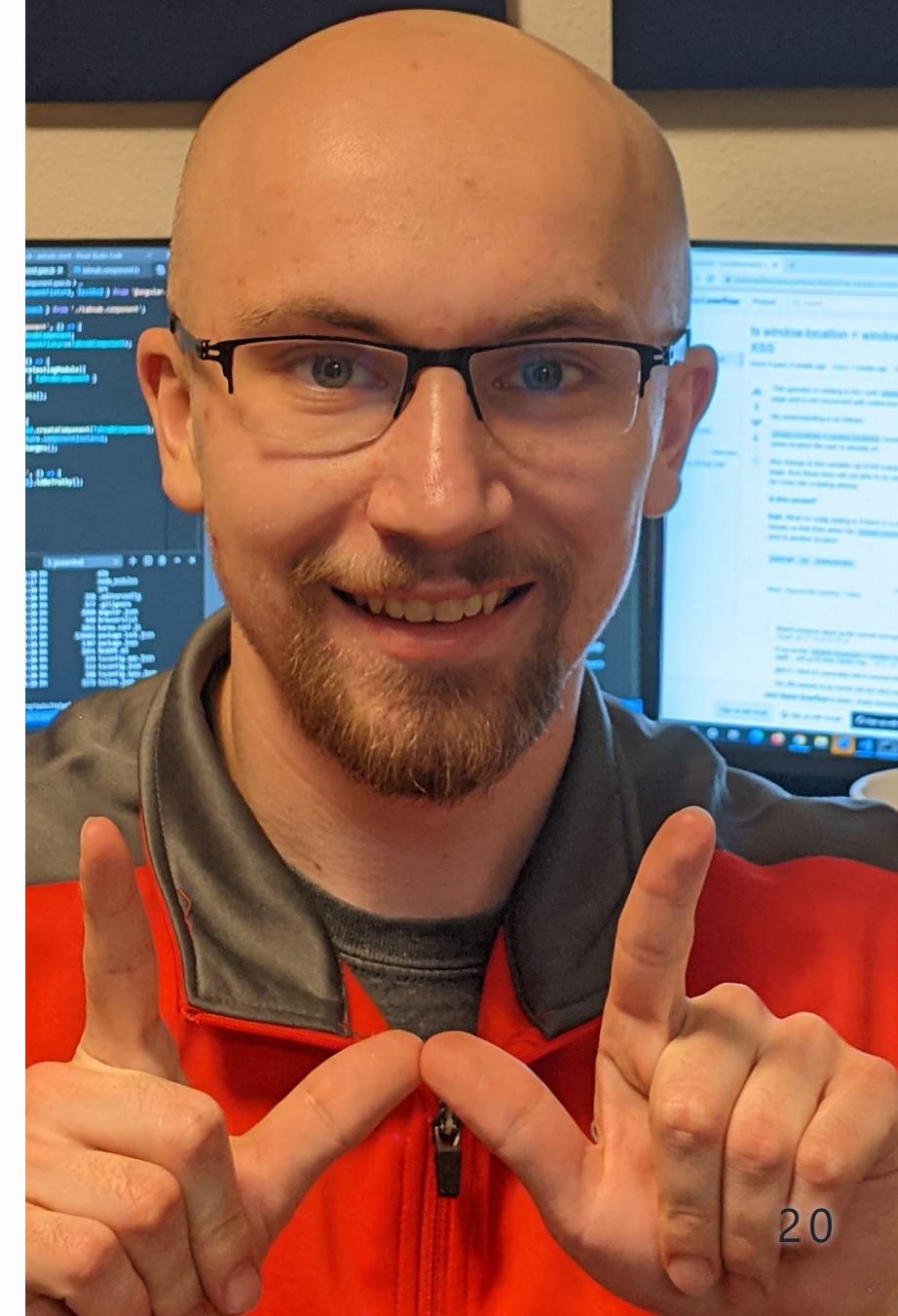
ctnelson2@wisc.edu

Professional Interests

- Computer Science Education
- Human-Computer Interaction
- Web Application Security

Personal Interests

- Coffee



Yishen Sun

yishen.sun@wisc.edu

Professional Interests:

- Distributed Systems
- Fullstack Development

Personal Interests:

- Photography
- Hiking



Amy Koike

ekoike@wisc.edu

Professional Interests:

- Human-Robot Interaction
- Mechanical Design
- Graphic Design

Personal Interests:

- Disney (theme parks, animation, music, everything!)
- 3D Printers



Hongtao Hao

hongtaoh@cs.wisc.edu

Professional Interests:

- Data Visualization

Personal Interests:

- Blogging
- Meditation
- Reading



Who are you?

See HW1.

Course Information

- Meet Tuesdays & Thursdays 4:00-5:15p; lectures will be recorded and posted to Kaltura.
- Tuesday's lecture will cover programming topics, Thursday's lecture will cover fundamental human-computer interaction topics...
 - ... except we will have week-long JavaScript and React "bootcamps" on Weeks 2 and 4.
- Bring a laptop!

Week	Topics	Homework	Quiz
Jan 23	Intro & Design Thinking	Assign HW1	Quiz A
Jan 30	JavaScript Bootcamp. JS1 & JS2	Assign HW2	Quiz B
Feb 6	JS3 & Web/Interaction Design	Assign HW3	Quiz C
Feb 13	React Bootcamp. React 1 & React 2	Assign HW4	Quiz D
Feb 20	React 3 & Visual Design	Assign HW5	Quiz E
Feb 27	React 4 & Expert Evaluation	Assign HW6	Quiz F
Mar 6	React 5 & Midterm	No HW	No Quiz
Mar 13	Spring Break!	No HW	No Quiz
Mar 20	React Native 1 & Mobile Design	Assign HW7	Quiz G
Mar 27	React Native 2 & Design Patterns	Assign HW8	Quiz H
Apr 3	React Native 3 & Prototyping	Assign HW9	Quiz I
Apr 10	React Native 4 & Accessibility	Assign HW10	Quiz J
Apr 17	DialogFlow 1 & VUI Design/Exp. Proto.	Assign HW11	Quiz K
Apr 24	DialogFlow 2 & Agent Design/Usab. Eval.	Assign HW12	Quiz L
May 1	Fullstack Development & Final Exam	No HW	No Quiz
May 8	Good luck on your other finals!	No HW	No Quiz

Course Schedule

Item	Points	Notes
Weekly Assignments	52	12 HWs, 5 pts each, HWs 1 & 7 only 1 pt.
Weekly Quizzes	11	12 quizzes, 1 pt each, lowest dropped
Library Usage	2	Use of an external dependency.
Midterm Exam	15	Single-sided notesheet
Final Exam	20	Double-sided notesheet

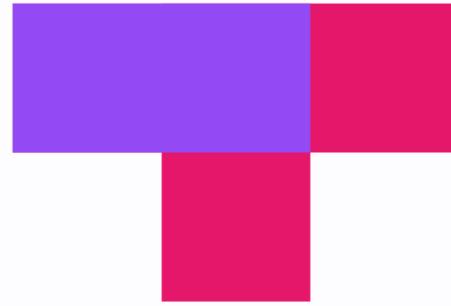
Point Distribution

A	AB	B	BC	C	D	F
[100, 93]	(93, 88]	(88, 80]	(80, 75]	(75, 70]	(70, 60]	(60, 0]

Grading Scale

TopHat Trial

When should the final
exam be held?



TOP HAT

Other Grading Things...

- Up to *two* homeworks can be submitted up to one week late without penalty. Homeworks may *not* be submitted more than one week late.
- Quizzes may *not* be submitted late.
- Exams will be held *in-person*.
 - Contact me >1 week in advance if you cannot make it - Canvas/HonorLock alternative.
- Your lowest quiz will be dropped.

Library Usage

Students must incorporate a meaningful third-party library not discussed in class and provide a short description about its use. Such third-party libraries could be jquery, typescript, axios, redux, mobx, lodash, or any other meaningful library.

The library can be added to enhance the project *after* the submission date, but it must be completed *before* the final exam.

Weekly Assignments

- Every weekly assignment and quiz is released on Tuesday and due on Monday at 11:59 pm.
- Submissions may be made up to 1 week late for 50% of the total points earned. Submissions are not accepted later than 1 week.
- Your first two late assignments will not have points deducted, but cannot be submitted more than 1 week late.

Academic Integrity

- **Do not share code with others!**
- **Do not use code from previous semesters!**
- You may *discuss* assignments with others, but all work must be done individually.
- Snippets taken from StackOverflow et. al. must be cited with a comment.
- We use tools like MOSS... Don't risk it!

Academic Integrity

First Offense

```
let currAssignment = 0;
const newCourseGrade = currCourseGrade * 0.9;
```

Second Offense

```
const newCourseGrade = 0;
fetch('https://conduct.students.wisc.edu/misconduct', {
  method: 'POST',
  body: JSON.stringify(currStudent)
});
```

Course Tools

- Quizzes will be completed via *Canvas*. They are open-book, but must be completed individually.
- Assignments will be submitted via *Github Classroom*.
- Questions will be asked via *Piazza*.
- Personal matters will be handled via *email*.

Tools & Downloads

- **Visual Studio Code** for JS Development
- **Node 18 and NPM 8** for React Development
- **Postman** for API Exploration
- **Git** for Version Control/Submission

McBurney & Accommodations

The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity.

Please inform me of your need for instructional accommodations during the beginning of the semester, or as soon as possible after being approved for accommodations.

Mental Health

UHS offers no-cost services in psychiatry, individual, couple, and group counseling, alcohol and drug abuse, and other mental health needs.

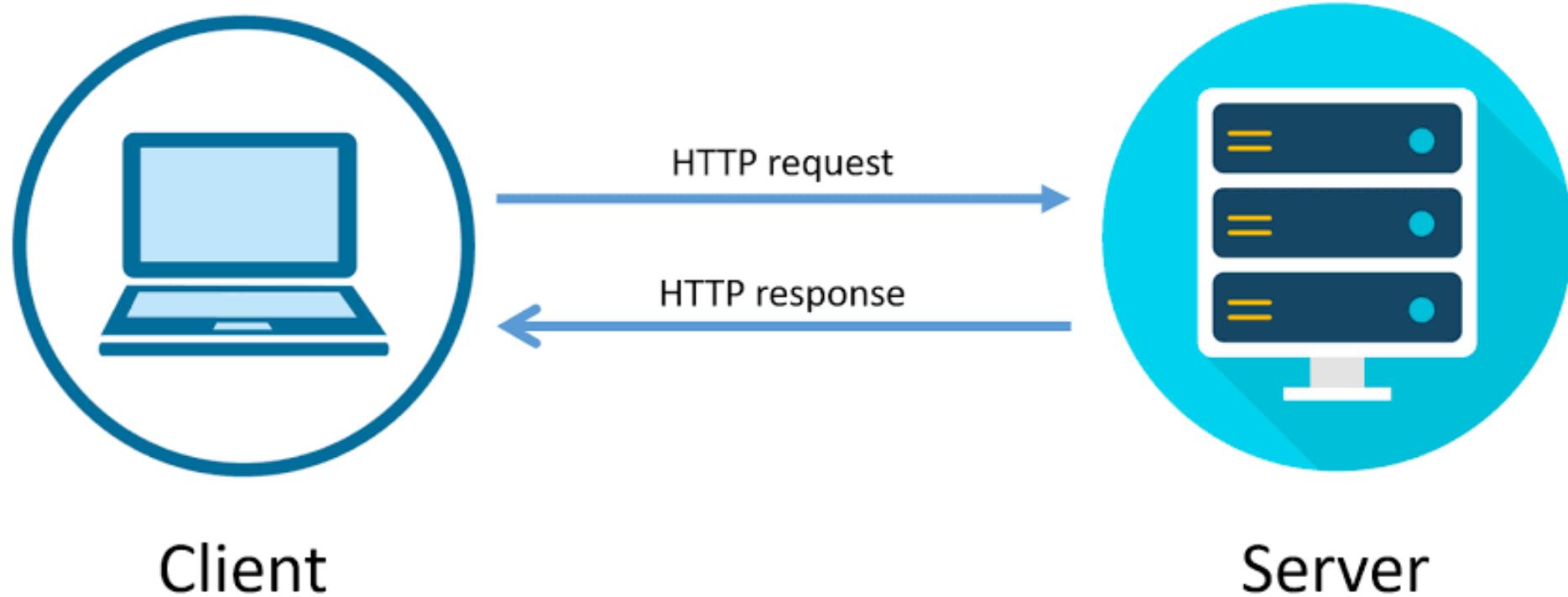
Schedule an access appointment at 608-265-5600 option 2 or contact 24/7 crisis support at option 9.

You matter!

Today's Topic

The Web.

Web Communication

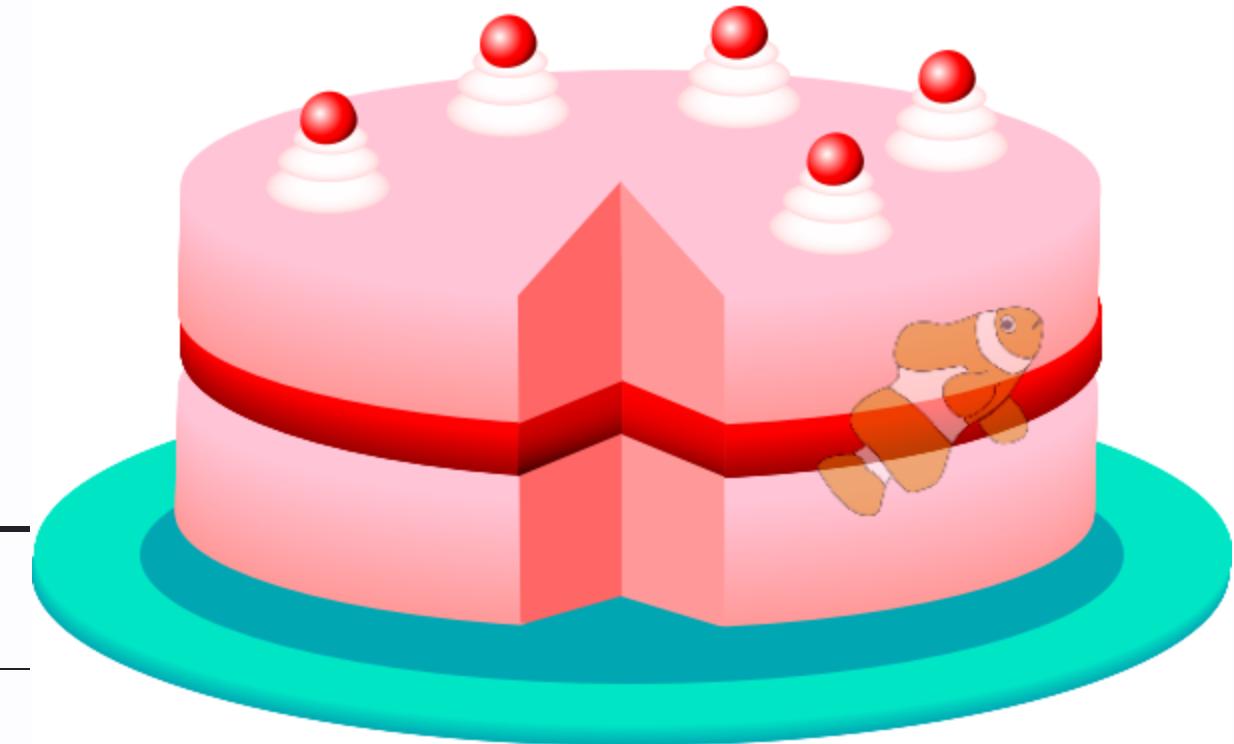


Medium

A Web Frontend

HTTP does delivery for a bakery that makes cake!

Aspect	Behavior	Cake
HTML	Structure	Sponge
CSS	Design	Icing
JS	Behavior	Clown



How does my browser get information?

Via APIs! e.g. we can imagine that

<https://github.com/ctnelson1997> gets information from
<https://api.github.com/users/ctnelson1997>

```
GET /users/ctnelson1997 HTTP/1.1  
Host: api.github.com  
User-Agent: curl/7.83.1  
Accept: */*
```



Request Line

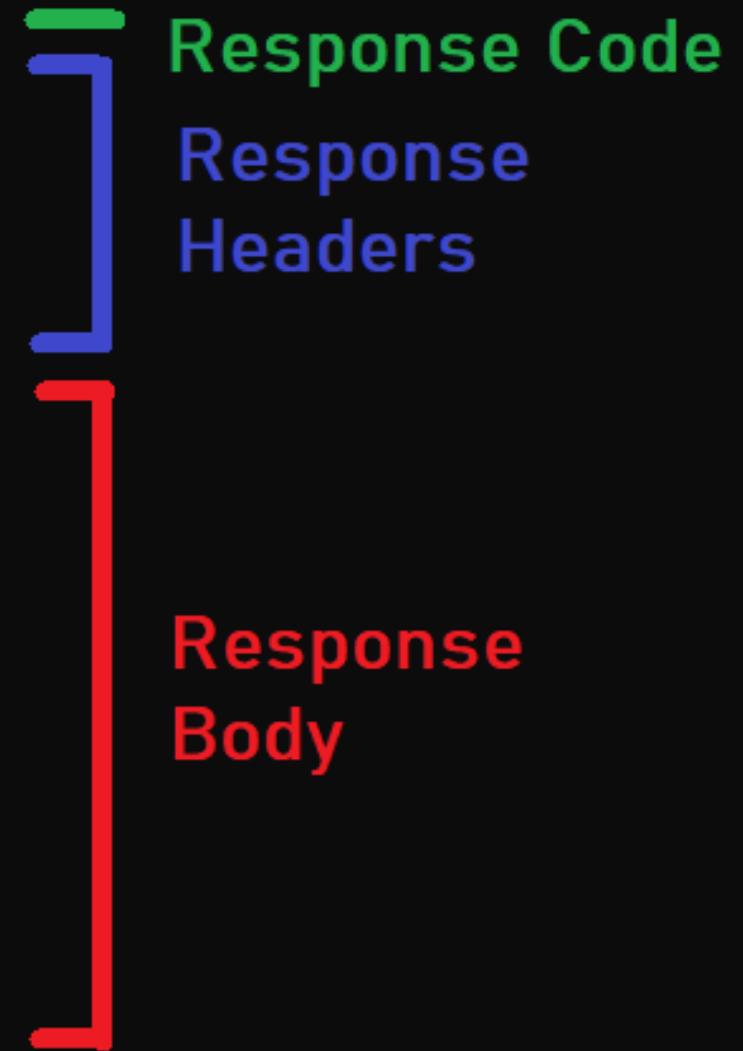


Request Headers



Request Body

```
HTTP/1.1 200 OK
Server: GitHub.com
Date: Fri, 20 Jan 2023 21:36:04 GMT
Content-Type: application/json; charset=utf-8
Cache-Control: public, max-age=60, s-maxage=60
Vary: Accept, Accept-Encoding, Accept, X-Requested-With
Last-Modified: Fri, 20 Jan 2023 12:09:09 GMT
{
  "login": "ctnelson1997",
  "id": 37457808,
  "node_id": "MDQ6VXNlcjM3NDU3ODA4",
  "avatar_url": "https://avatars.githubusercontent.com/u/37457808?v=4",
  "gravatar_id": "",
  "url": "https://api.github.com/users/ctnelson1997",
  "public_repos": 6,
  "public_gists": 1,
  "followers": 3,
  "following": 3,
  "created_at": "2018-03-16T20:56:14Z",
  "updated_at": "2023-01-20T12:09:09Z"
}
```



Why JSON?

- easy to understand
- human-readable
- language agnostic
- easily convertible to JS objects

```
[  
 {  
   "id": 1,  
   "title": "New interactive mural invites  
             exploration and engagement with  
             science",  
   "img": "https://www.coletnelson.us  
          /cs571/f22/hw7/api/news/images  
          /exhibit",  
   "tags": [  
     "science",  
     "entertainment"  
   ]  
 },  
 {  
   "id": 2,  
   "title": "Sewer sleuthing, air
```

JSON to JS Object

```
{  
  "firstName": "Cole",  
  "lastName": "Nelson",  
  "roles": ["student", "faculty"]  
}
```

JSON



```
const instructor = {  
  firstName: "Cole",  
  lastName: "Nelson",  
  roles: ["student", "faculty"]  
}
```

JS Object

HW1 & GitHub Classroom

Expressing yourself in JSON.

Questions?