



香港中文大學
The Chinese University of Hong Kong

CSCI2720/ESTR2106 BUILDING WEB APPLICATIONS

What you have learnt, and what you have not

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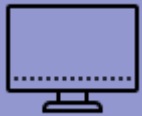
YOU HAVE GONE REALLY FAR!

Nothing is easy
if you want to do it well...



“Full-stack Development”

WEB TECHNOLOGIES



Web clients

Browser Engines

WebKit
Blink
Gecko
EdgeHTML

Client-side Rendering

HTML
CSS
JavaScript
Ajax
Frameworksss...



Internet

World Wide Web

HTTP
URL
Security layers



Web server



Files



Database

Server-side Programs

Perl
PHP
ASP
JSP
Node.js

Server Data

Plain files
JSON/XML
DBMS

WHAT YOU HAVE LEARNT...

- HTML
- CSS
- Web Forms
- Bootstrap for CSS
- JavaScript Basics
- JS DOM, Events, and Objects
- JS Functions and Arrays
- Asynchronous JS and Fetch API
- An Introduction to ReactJS
- Package Managers
- SPA and Routing
- Cookies, Session, and Storage
- Web Security
- Server, Client, and HTTP
- Node.js with Express
- MongoDB Basics
- More on Web App Architecture
- Rendering and UI/UX

AND EXTRA TOPICS AT ESTR2106

- CSS and Sass
- Customizing Bootstrap
- From JavaScript to TypeScript
- async/await
- React functional components
- Lazy loading
- More on Web Security
- Express middlewares and Node OS access
- GraphQL

WHAT YOU HAVE LEARNT...

 **JavaScript**

 **CSS+Bootstrap**

 **HTML**

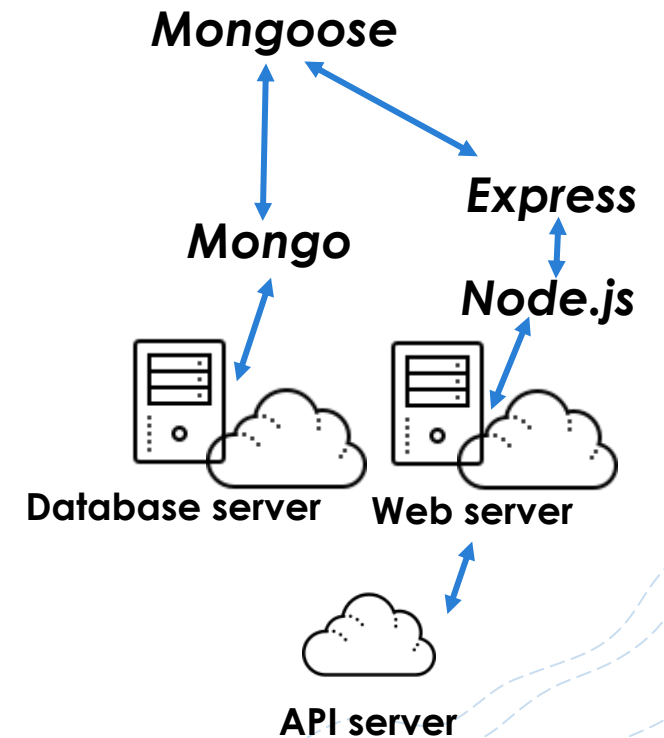


Web clients

At least, you should be able to...

- Layout a *simple* web page
- Create a *basic* React app
- Play with JS programming
- Set up a no-frill web server

*Nevertheless, know how to read
online tutorials!*



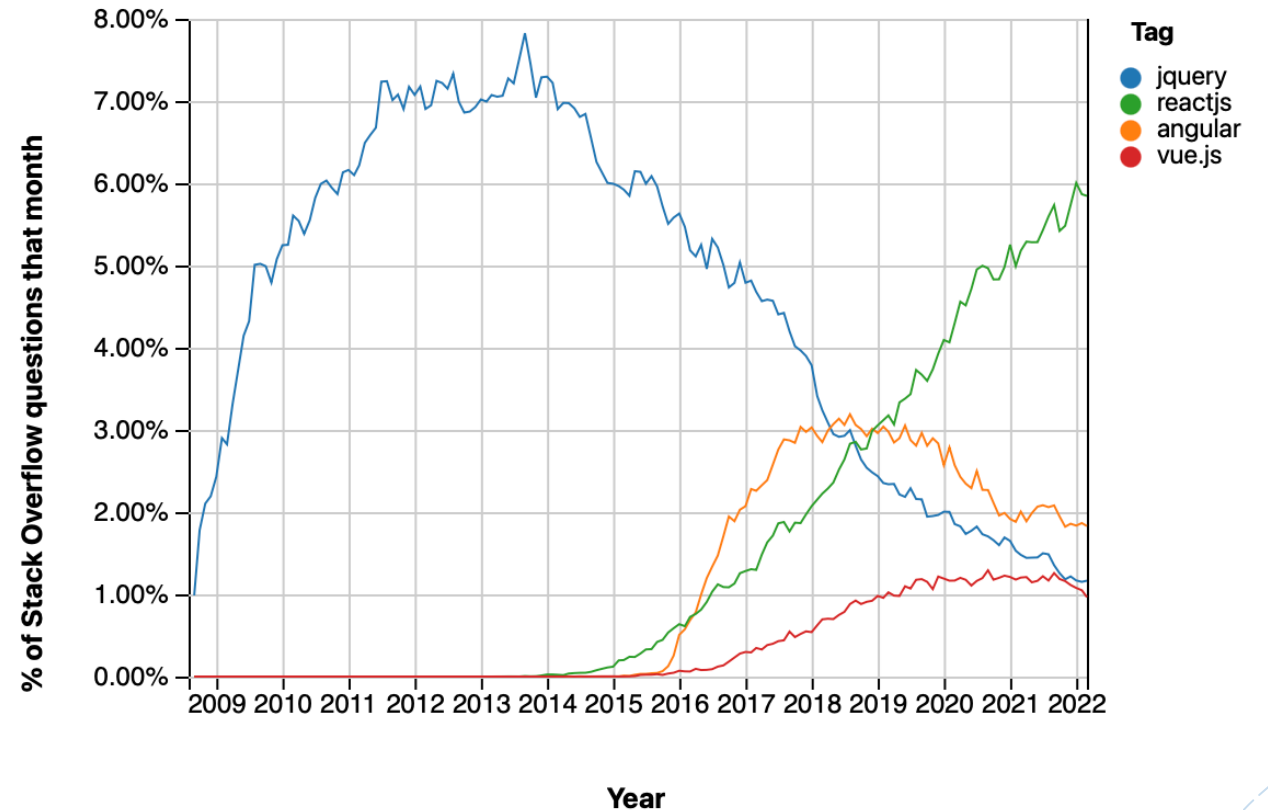
WHAT HAVE YOU NOT LEARNT (YET)?

- Server-side scripting languages
 - Python? PHP? Perl? ASP? JSP? ...
- SQL DataBase
 - MySQL? PostgreSQL? Oracle?
- Version control
 - Git?
- Frontend frameworks?
 - Angular? React? Vue.js?
- Tools for *tools for tools for tools...* for Javascript
 - More package managers and module bundlers
 - Yarn? Webpack? Grunt?
- Web technologies
 - Caching web contents
 - i18n localization
 - HTML canvas, SVG, ...
 - *And a lot more*

TRENDS

- WebDev follows trends
 - Browsers
 - Dev communities
 - Your *boss* ⇔ *your clients*
- Be prepared!

See: <https://insights.stackoverflow.com/trends?tags=jquery%2Cangular%2Creactjs%2Cvue.js>



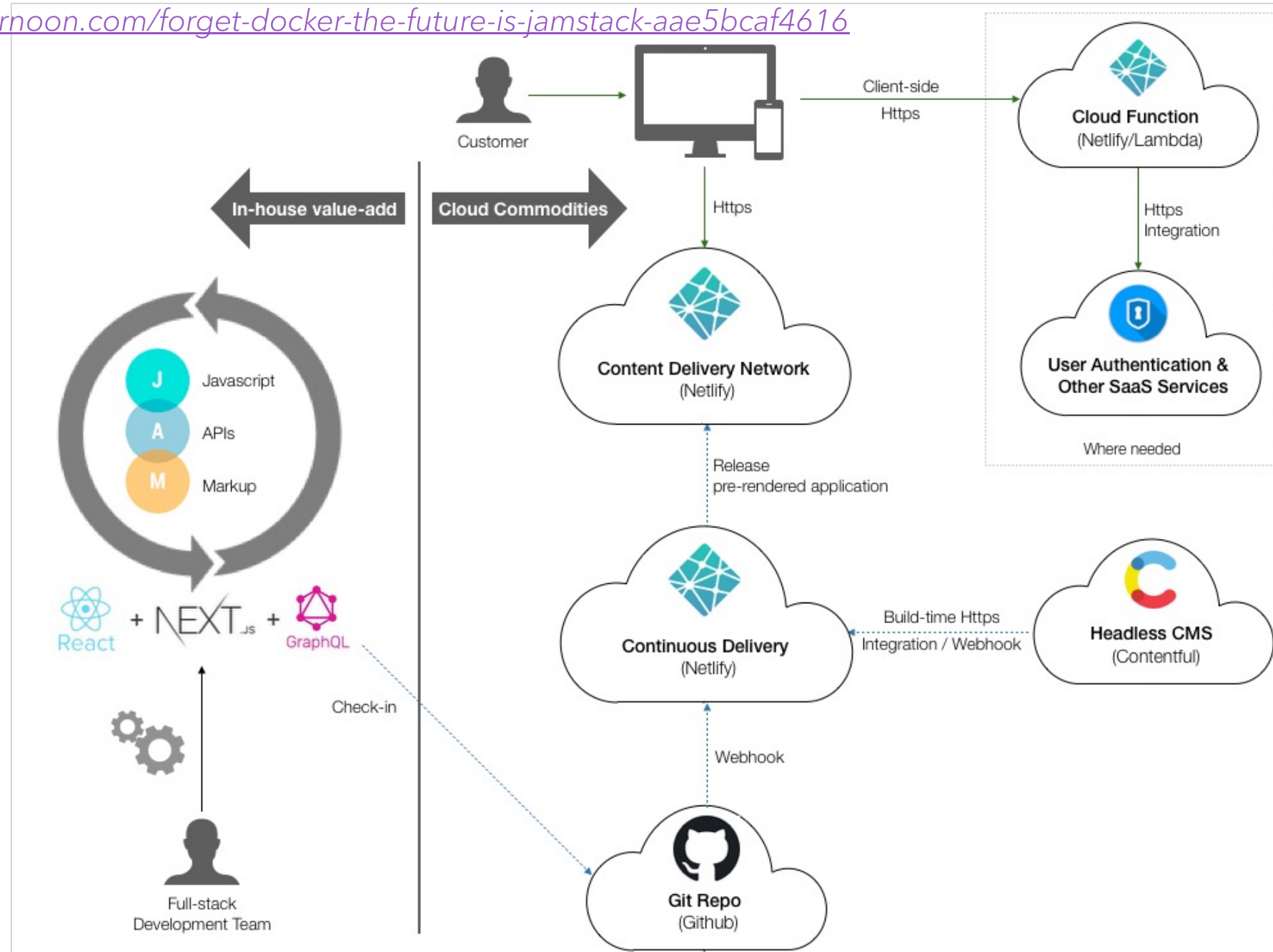
- Search Engine Optimization (SEO)
 - Prepare well for your customers
 - Appropriate keywords, title, URL
 - “Crawl accessibility”
- Know your customers well
 - Who are they?
 - Audience
 - Where do they come from?
 - Demographics
 - Referrer
 - What device do they use?
 - How long do they stay?

SEO AND ANALYTICS



- JAM
→ *J*avaScript, *A*PIs, *M*arkup
- Static file hosting in cloud
- Cloud-based deployment and continuous integration
- Software-as-a-service partners
- On-demand serverless Cloud functions

SERVERLESS JAMSTACK



- Human's ***desire to talk and interact*** but not to operate a device or navigate through a complex website
 - Interaction with computer enhanced by AI
 - 24/7 customer support (intelligently)
- Conversational interfaces via natural language processing

CHATBOTS AND VOICE SEARCH

Predicted Use Cases for Chatbots

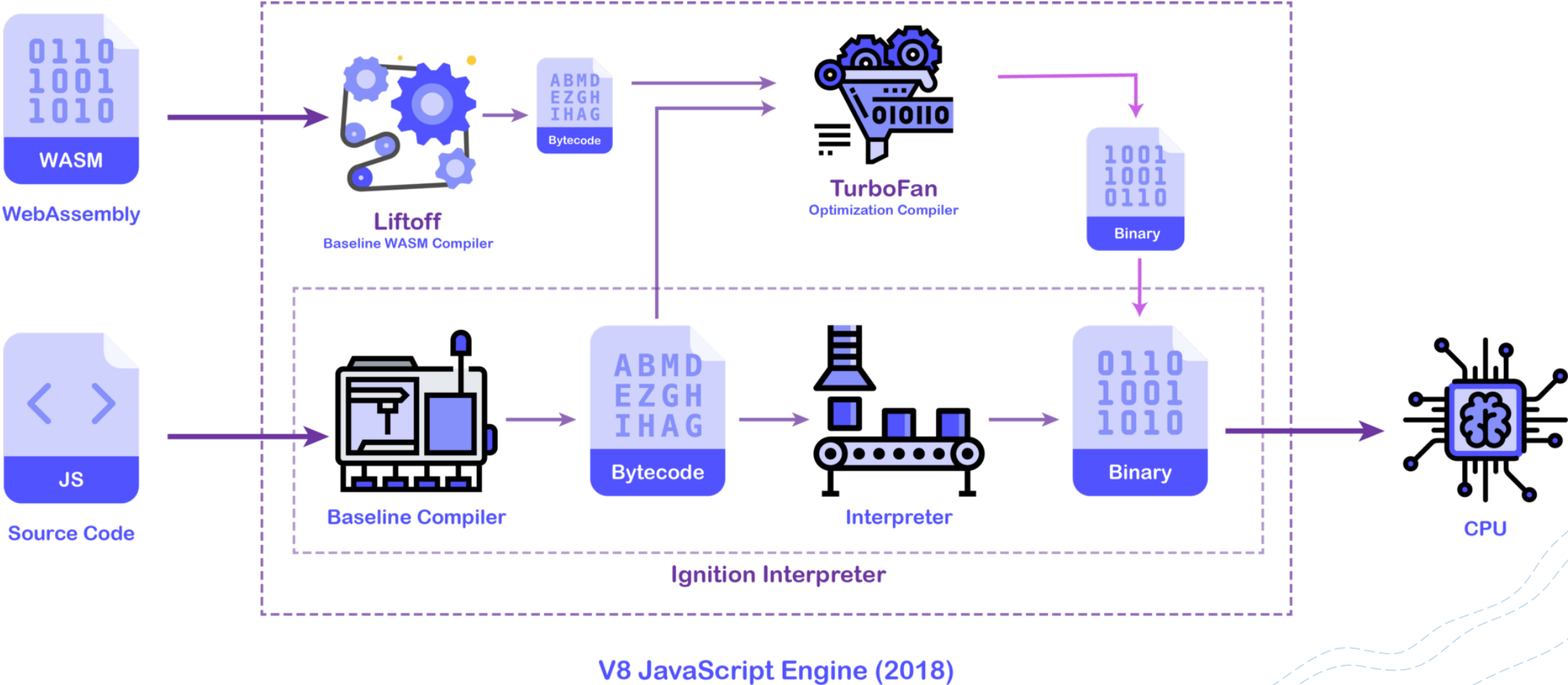
What do you predict you would use a chatbot for?



2018 State of Chatbots Report




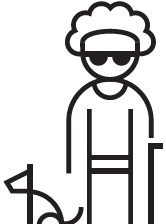








- Direct manipulation of device API
 - Push notifications
 - Device sensors, e.g., geolocation
- WebAssembly (Wasm)
 - Natively running ***low-level executable code*** in the browser
 - C/C++ could be much faster than JavaScript
 - W3C recommendation since 2019

PWA AND WEBASSEMBLY



- Increased mobility of technology
→ Increased moments of disability
- “***Mismatched*** interactions”
- Designing mobile-first websites, or ***human-first***?

INCLUSIVE DESIGN AND ACCESSIBILITY

	Permanent	Temporary	Situational
Touch	 One arm	 Arm injury	 New parent
See	 Blind	 Cataract	 Distracted driver
Hear	 Deaf	 Ear infection	 Bartender
Speak	 Non-verbal	 Laryngitis	 Heavy accent

See: <https://www.microsoft.com/design/inclusive/>

- Who wants to code?
 - Go ahead and enjoy coding
 - yet...
- Content management systems (CMS)
 - e.g., *WordPress* (powering 43% of Internet sites)
 - See: <https://kinsta.com/wordpress-market-share>
- Visual editors
 - e.g., *Webflow*
 - See: <https://blog.prototypr.io/why-webflow-is-the-best-web-design-program-right-now-f128aef8b45>
- Everyone can be a...
 - Designer → Developer

VISUAL DEVELOPMENT

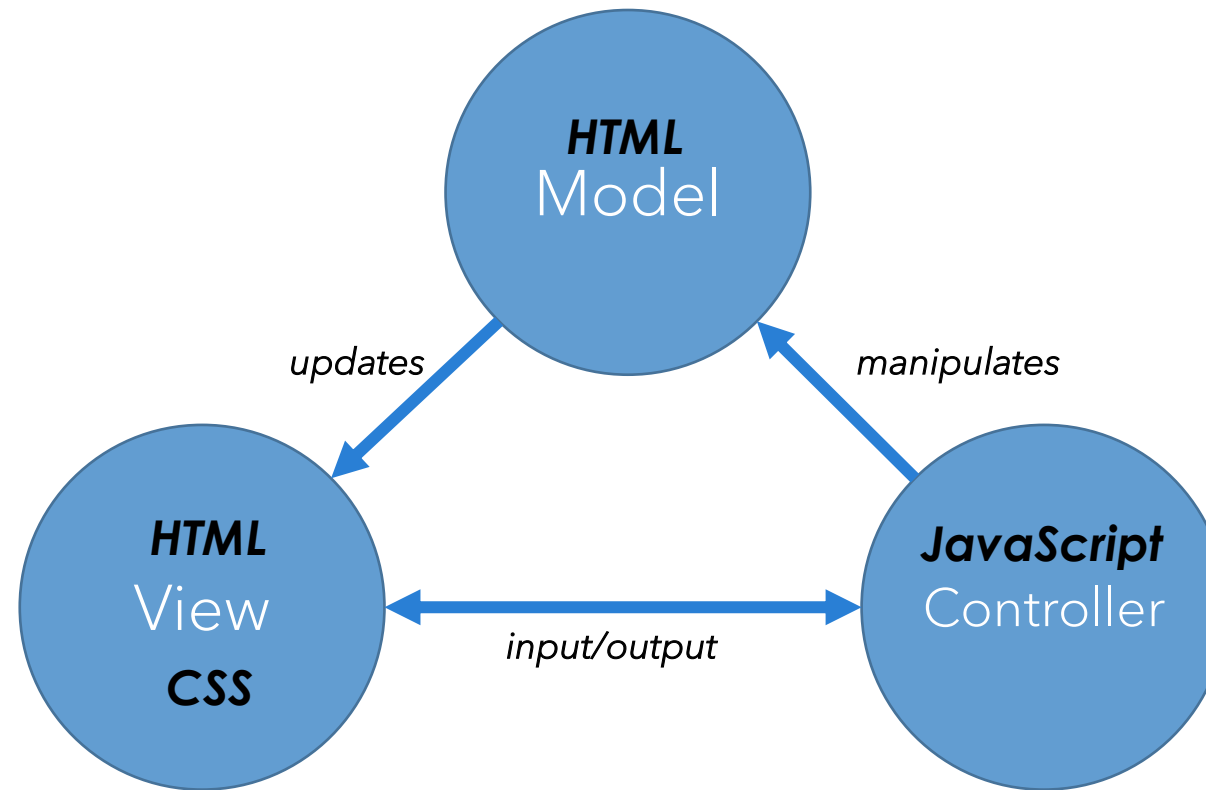
JUST KEEP CALM AND READ ON

- Predicting the Future of the Web Development (2020 and 2025)
 - https://www.youtube.com/watch?v=24tQRwIRP_w
- Web Development in 2022 – A Practical Guide
 - <https://www.youtube.com/watch?v=EqzUcMzfV1w>
 - <https://github.com/andrews1022/web-development-course-list>

MORE TO EXPLORE AND LEARN

- What you have learnt today is outdated tomorrow
 - Read this: <https://hackernoon.com/how-it-feels-to-learn-javascript-in-2016-d3a717dd577f>
- Explore frameworks on TodoMVC
 - <http://todomvc.com>
- The webdev community is ALWAYS vibrant!

KNOW THE FUNDAMENTALS



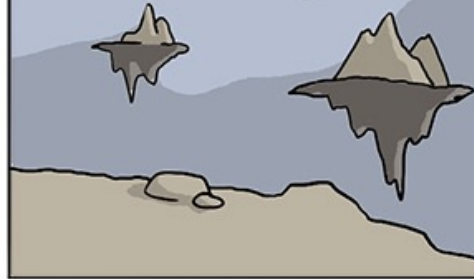
IF THE WORLD WAS CREATED BY A PROGRAMMER

BY  toggl

IN THE BEGINNING,
THERE WAS THE HEAVEN
AND THE EARTH



BUT THE EARTH WAS
FORMLESS AND BUGGY,
& WITHOUT DOCUMENTATION



AND THE PROGRAMMER
SAW THAT IT WAS
NOT GOOD.



THEN YOU SAID
"LET THERE BE LIGHT!"

BUT THE LIGHT
DID NOT
COMPILE.



YOU CREATE A HACK
SO THAT LIGHT IS PART
OF THE LAND

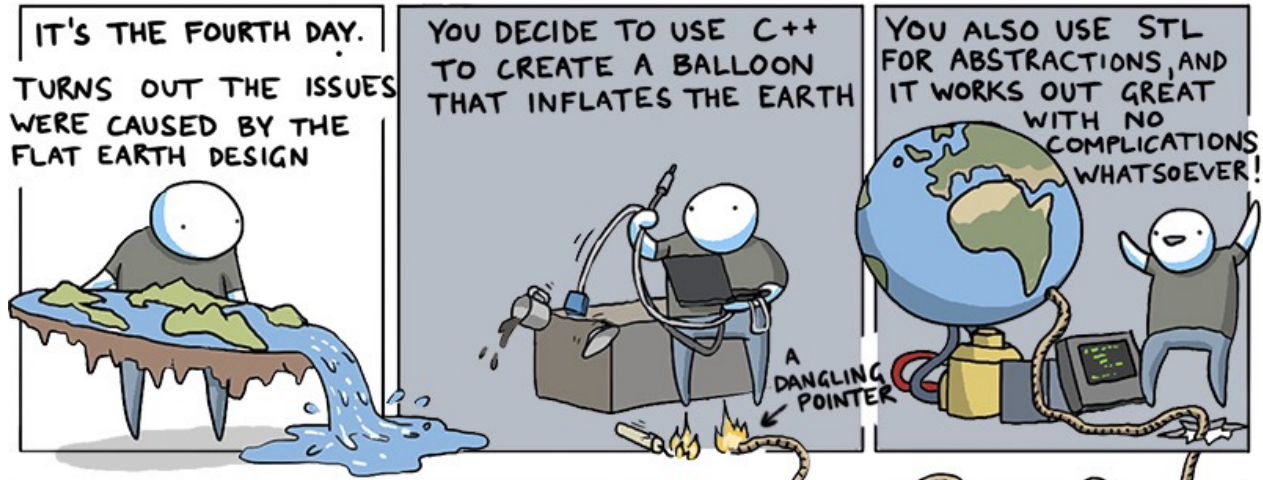
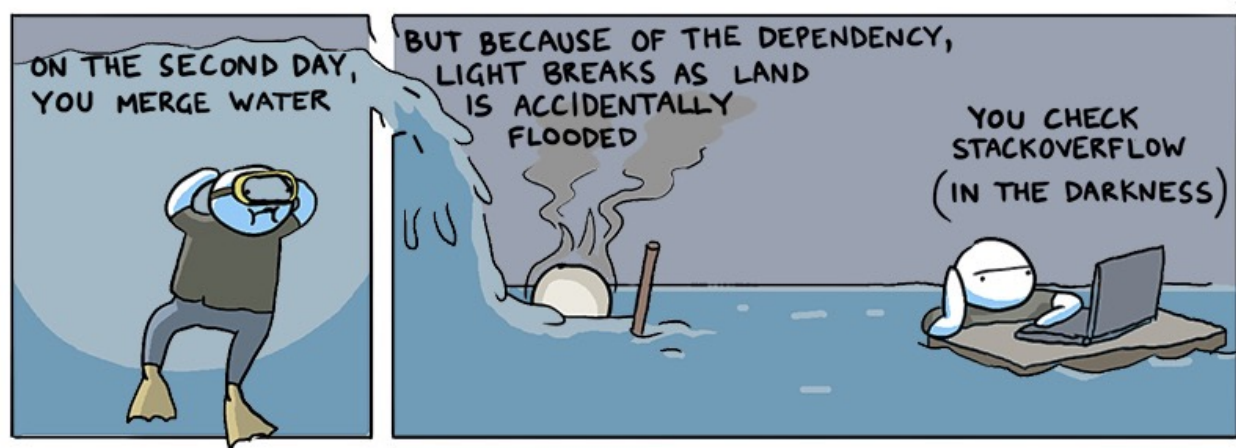


TO CREATE DARKNESS, YOU
NEED TO HIDE THE LAND,
BUT THAT'S OK CAUSE
CREATURES WON'T BE ADDED
UNTIL LATER.

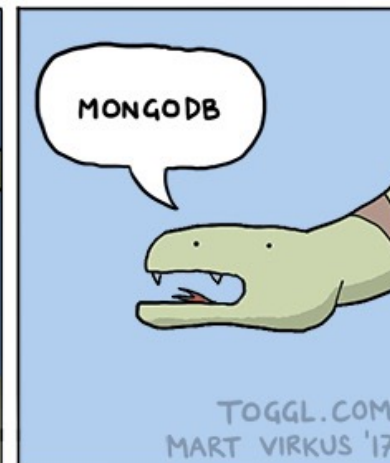
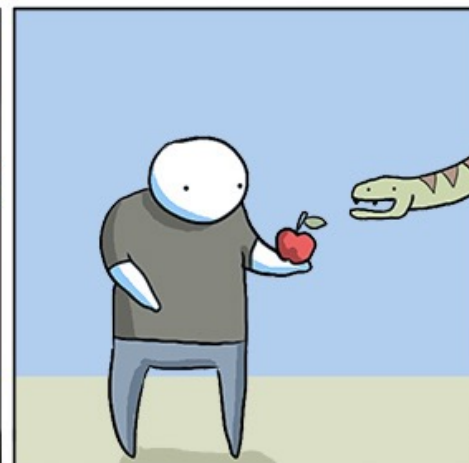
AND STACKOVERFLOW
SAID IT'S FINE



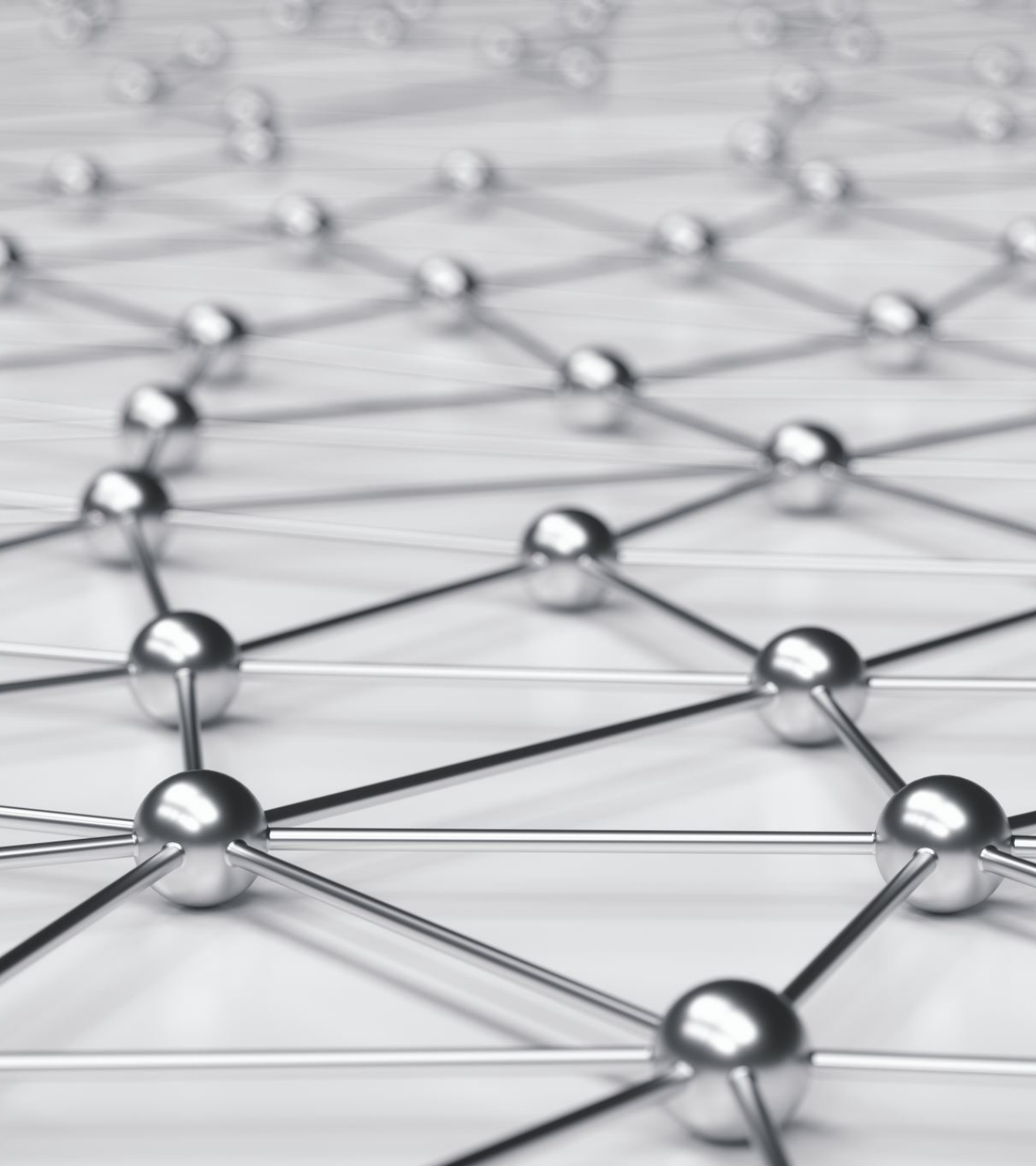
Ref: <https://blog.toggl.com/world-created-programmer/>



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“For the things we have to learn before we can do them, we learn by doing them.”

— Aristotle, *The Nicomachean Ethics*