



What are my programmers talking about? A cheat sheet for confused managers.

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THE #1 BESTSELLER WITH
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THE MEMORY BOOK

**THE CLASSIC GUIDE
TO IMPROVING
YOUR MEMORY
AT WORK,
AT SCHOOL,
AND AT PLAY**

"A never-fail system!" —*Time*

Harry Lorayne & Jerry Lucas

"Since all matter in space vibrates in a 21 centimeter band, we could try and alter the power frequency so that it's completely foreign to the baby's natural vibrations."



"Since all matter in space vibrates in a 21 centimeter band, we could try and alter the power frequency so that it's completely foreign to the baby's natural vibrations."

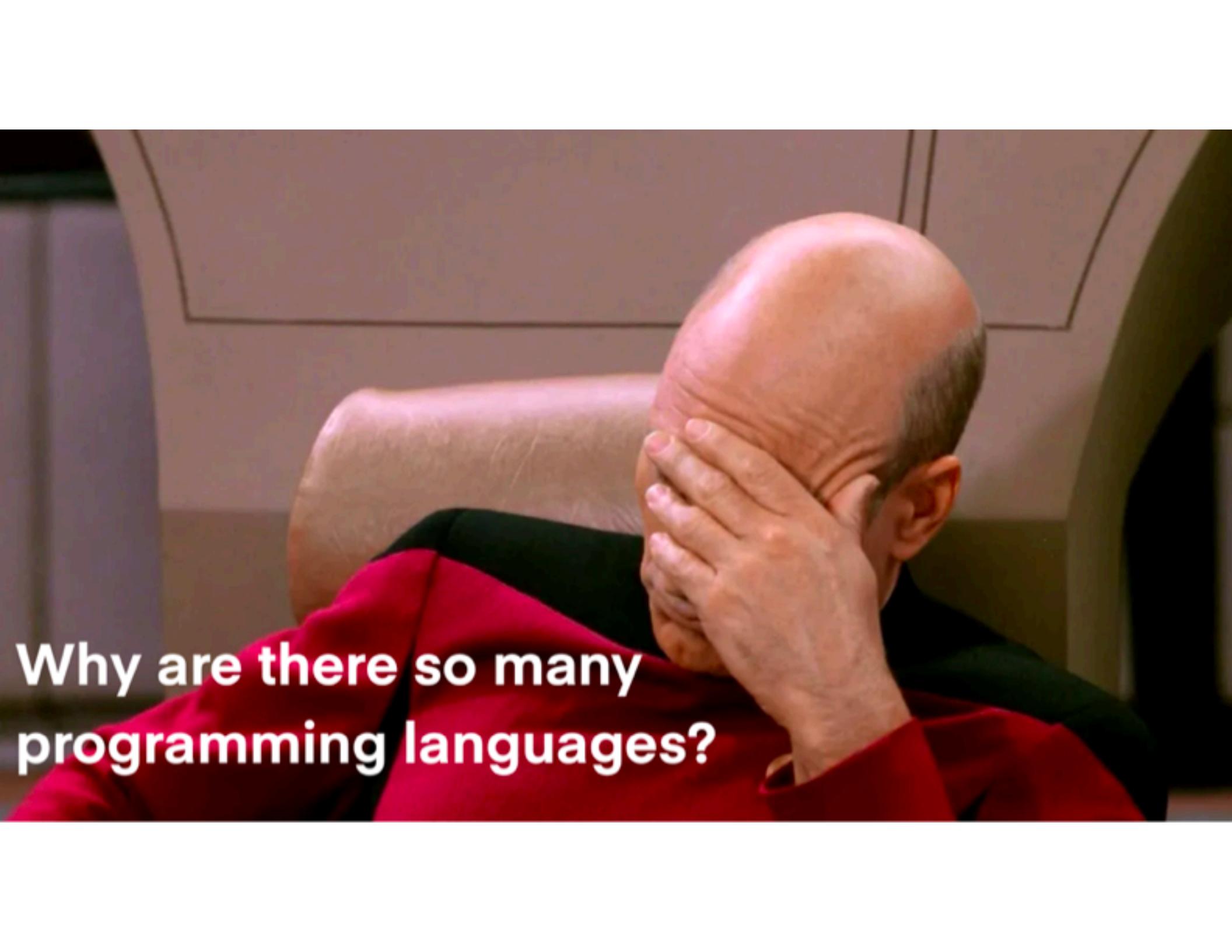
"It's like adding vinegar to the baby's milk."



My approach.

**"It's like adding vinegar to
the baby's milk."**



A close-up shot of Captain Jean-Luc Picard from Star Trek: The Next Generation. He is wearing his signature red and black Starfleet uniform. His right hand is raised to his forehead, with his fingers resting against his temple, a gesture often used to indicate stress or despair. The background shows the interior of a starship's bridge.

**Why are there so many
programming languages?**

There are two main types.

Interpreted

Compiled

Interpreted

The computer “interprets” a line at a time when you run it.

You can deploy and run it even if parts of it are horribly broken, as long as you don’t reach those parts.

Examples: Python, JavaScript, TypeScript

JavaScript (1995)

Built into most browsers. 99% of websites use it.

Despite the name, JavaScript has nothing to do with Java.

**Microsoft made their own version called JScript.
Eventually, the companies agreed on a common
standard called ECMAScript.**

**You can also run JavaScript outside of a browser.
Node.js**



TypeScript (2012)

A stricter form of JavaScript that adds types to the language.

Created by Microsoft and is free and open source.

TypeScript is usually translated (transpiled) to JavaScript.



Python (1991)

**Very popular, especially for AI.
Designed to be easy to read.**

**Also used for web sites, data analysis,
task automation.**

**Named after "Monty Python", not the
snake.**



Compiled

The computer translates every line ahead of time.

Every line must be right. Got 100K lines of code and one line has a mistake, like a missing semicolon? You have to fix it before deploying and running it.

Examples: C, C++, C#, Java, Go, Rust, Scala

C (1972)

Fairly primitive, low level.

**Good for working directly
with hardware, or for
writing very high
performance code.**



C++ (1985)

**C with new features to
make it more high level and modern.**

**For systems programming,
embedded systems, and high
performance work.**



Java (1995)

Meant to “write once, run everywhere.”

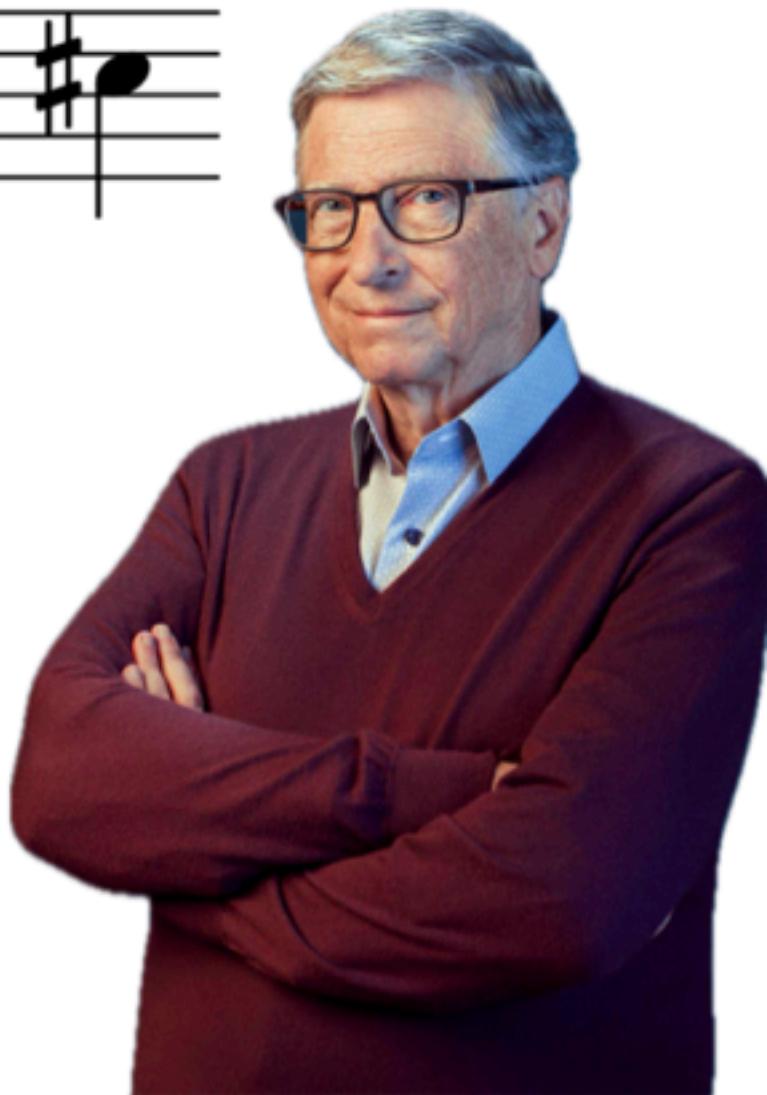
Still one of the most popular languages.



C# (2000)

**Some called it Microsoft's
“imitation” of Java.**

**Despite the name, it was much
more like Java than C or C++,
but the languages have greatly
diverged over the years.**



Rust (2015)

Designed to be safer than C and C++. Popular in systems programming.

One of the fastest growing languages.

Programmers call themselves "Rustaceans."



Go (2009)

**Developed by Google to be a safe,
simple, easy to learn language.**

**A lot of features common to modern
programming languages were left out
in favor of simplicity.**

Google never intends on a 2.0 version.



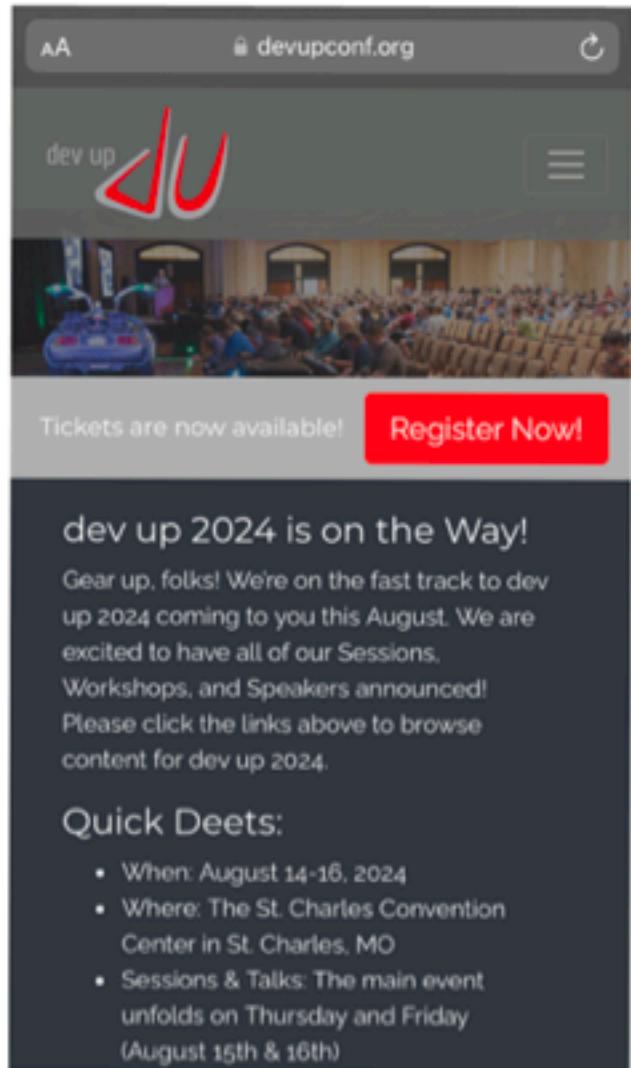
Scala (2004)

"Scalable language."

**Addresses a lot of perceived problems
with Java.**

Very elegant language.





Let's talk about web pages!

HTML



HTML (1993)

HyperText Markup Language

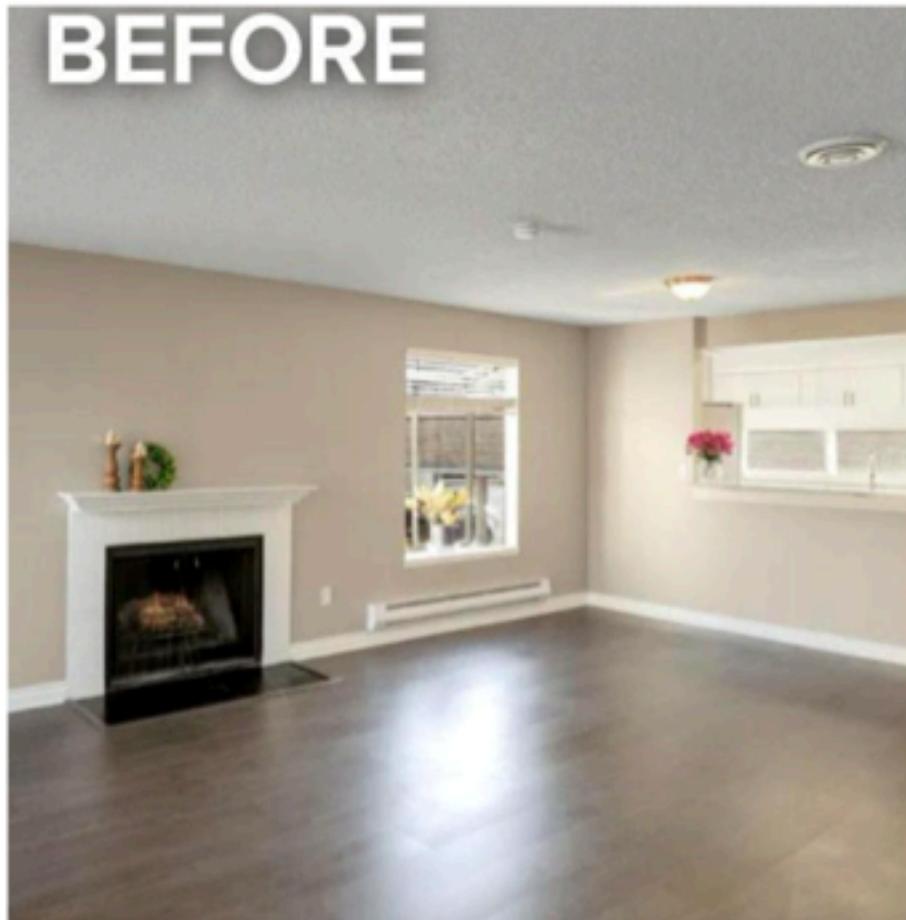


Describes the CONTENT of a web page, NOT the look.

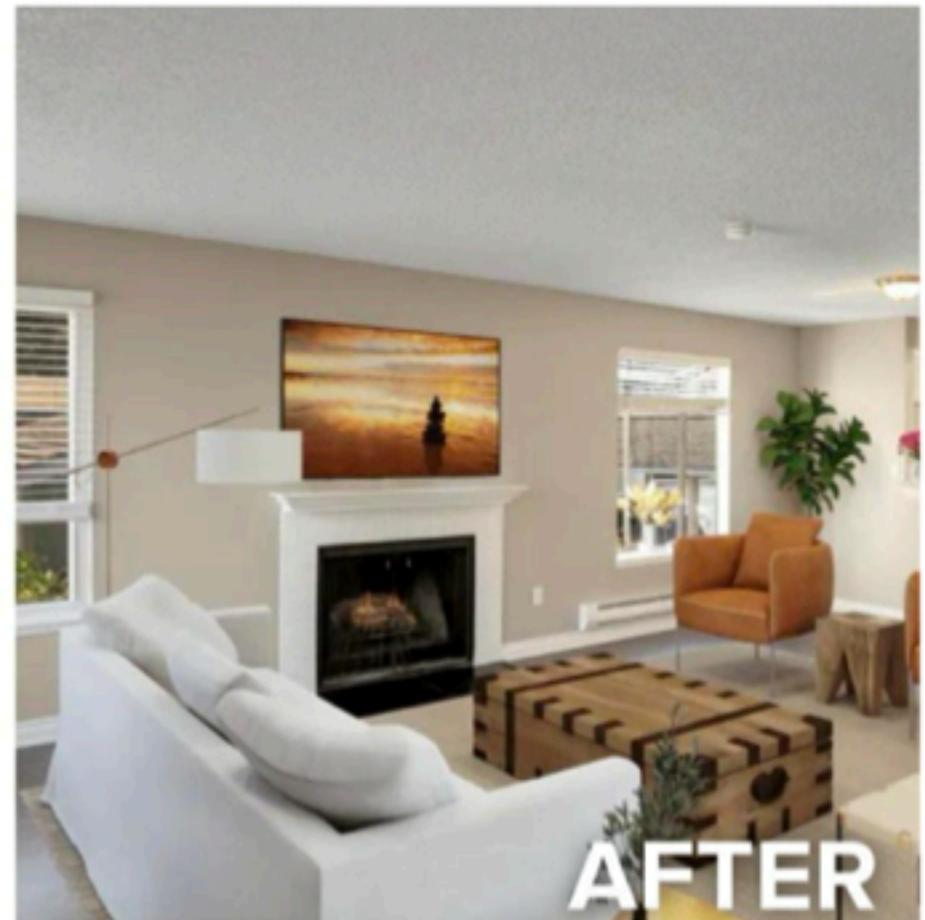
Like a house under construction - it has the content (kitchen, bathroom, bedroom, etc.) but they don't look good.

CSS

BEFORE



AFTER



CSS (1996)



“Cascading Style Sheets”

Describes how to “style” (decorate) the content in the HTML.

It's like an interior decorator for web pages.

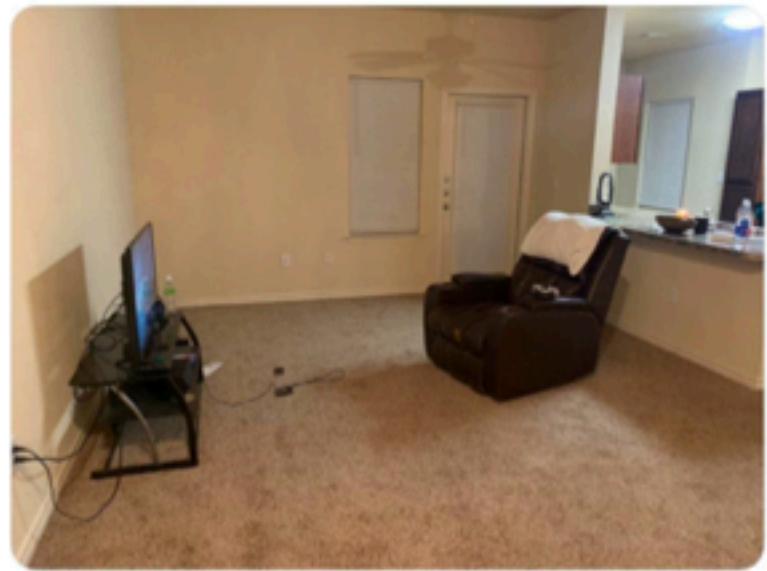
Not everyone is a great designer.

Luckily, there are CSS frameworks that we can use.



kat hasty
@kathasty

guys really live in apartments like this and don't see any issue



12/12/18, 7:15 PM

Let's look at some of these "interior decorators."

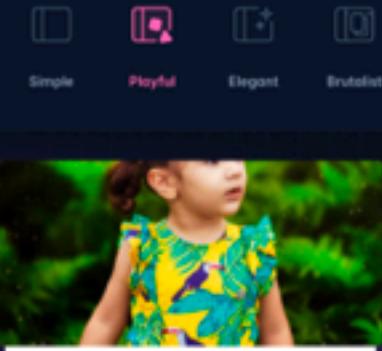




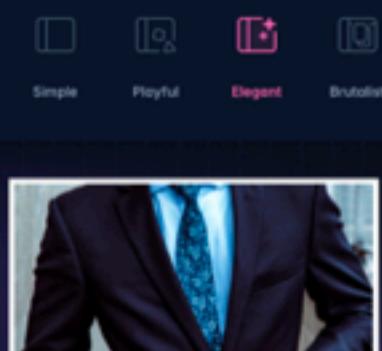
Tailwind CSS



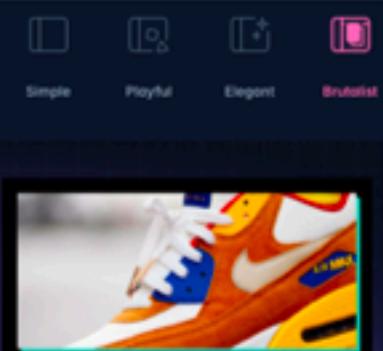
A product card for a Utility Jacket. At the top, there are four style icons: Simple (white), Playful (blue), Elegant (green), and Brutalist (orange). Below the icons is a large image of a brown utility jacket. The product name "Utility Jacket" is displayed in bold black text, followed by the price "\$110.00". A "Buy now" button is in a dark blue box at the bottom. To the right of the jacket image, it says "In stock". Below the jacket image, size options XS, S, M, L, XL are listed. At the very bottom, it says "Free shipping on all orders.".



A product card for a Kids Jumpsuit. At the top, there are four style icons: Simple (white), Playful (blue), Elegant (green), and Brutalist (orange). Below the icons is a large image of a child wearing a yellow and green tropical print jumpsuit. The product name "Kids Jumpsuit" is displayed in bold black text, followed by the price "\$39.00". A "Buy now" button is in a purple box at the bottom. To the right of the jumpsuit image, it says "In stock". Below the jumpsuit image, size options XS, S, M, L, XL are listed. At the very bottom, it says "Free shipping on all orders.".



A product card for a Dogtooth Style Jacket. At the top, there are four style icons: Simple (white), Playful (blue), Elegant (green), and Brutalist (orange). Below the icons is a large image of a dark blue dogtooth style jacket with a blue patterned tie. The product name "Dogtooth Style Jacket" is displayed in bold black text, followed by the price "\$350.00". A "Buy now" button is in a dark blue box at the bottom. To the right of the jacket image, it says "IN STOCK". Below the jacket image, size options XS, S, M, L, XL are listed. At the very bottom, it says "Free shipping on all orders.".



A product card for a Retro Shoe. At the top, there are four style icons: Simple (white), Playful (blue), Elegant (green), and Brutalist (orange). Below the icons is a large image of a colorful retro-style sneaker. The product name "Retro Shoe" is displayed in bold black text, followed by the price "\$89.00" and the status "IN STOCK". A "Buy now" button is in a teal box at the bottom. To the right of the shoe image, it says "IN STOCK". Below the shoe image, size options XS, S, M, L, XL are listed. At the very bottom, it says "Free shipping on all orders.".



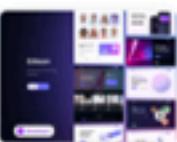
Bootstrap

Popular

Top-sellers in the past week!



Phoenix - Admin Dashbo...
Admin & Dashboard
\$39.00



Silicon - Business & Tech...
Landing & Corporate
\$49.00



Vendor - E-Commerce B...
E-Commerce & Retail
\$49.00



Varkala - E-commerce L...
E-Commerce & Retail
\$39.00



Incline - Landing Page S...
Landing & Corporate
\$49.00



New UI Kit PRO - Premium...
Portfolio & Blog
\$69.00



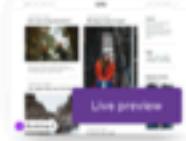
Hyper - Admin & Dashbo...
Admin & Dashboard
\$49.00



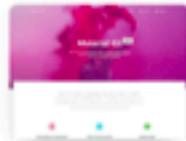
Cartzills - Multipurpose ...
E-Commerce & Retail
\$49.00



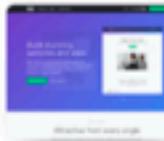
Quick - Website UI Kit (L...
Landing & Corporate
\$49.00



Milo - Magazine/Blog Th...
Portfolio & Blog
\$49.00



Material Kit PRO - Boots...
Landing & Corporate
\$79.00



Wingman Landing Page ...
Landing & Corporate
\$39.00



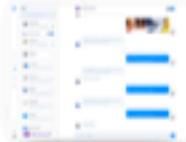
Falcon - Admin Dashbo...
Admin & Dashboard
\$49.00



Phoenix - Admin Dashbo...
Admin & Dashboard
\$49.00



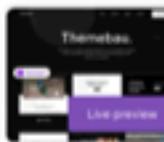
Spaces - Listings Map B...
E-Commerce & Retail
\$79.00



Messenger - Bootstrap ...
Application
\$49.00



Beagle - Responsive Ad...
Admin & Dashboard
\$49.00



Themebus - Minimal Por...
Portfolio & Blog
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HTML describes WHAT is on a web page: buttons, titles, text, etc.

CSS styles (decorates) the HTML so it looks pretty.

JavaScript can manipulate the web page.

But how do the HTML, CSS, and JavaScript get to the browser? Where do they come from?

There are web frameworks that run on a server that push the HTML, CSS, and JavaScript to the browser.

Three common ones are Angular, React, and Vue.js.

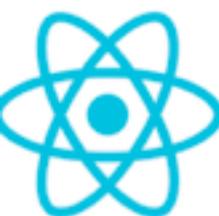


Developed by Google and uses TypeScript.

Pretty much everything you need for developing a web app.

Fairly steep learning curve.

Generates large bundles - take care for low bandwidth situations.



React JS

Developed by Facebook.

Only creates user interfaces - you need to add third party libraries to it.
Uses JavaScript.

Renders quickly in the browser.

Combines the HTML, CSS, and JavaScript for a component in a single file, so easy to manage.



Written by Evan You after working with Angular at Google - he wanted to write a lightweight framework that contained his favorite parts of Angular.

Like React, it only renders views - you have to add in other libraries to make a complete app.

Easy to learn, but doesn't have the support that Angular and React have.

Let's talk about containers!



Computers can be finicky. Updating one piece of software can break another app. Or sometimes you want to test a new version of software that needs other items upgraded.

Wouldn't it be nice to always have a system set up EXACTLY the way you want it?

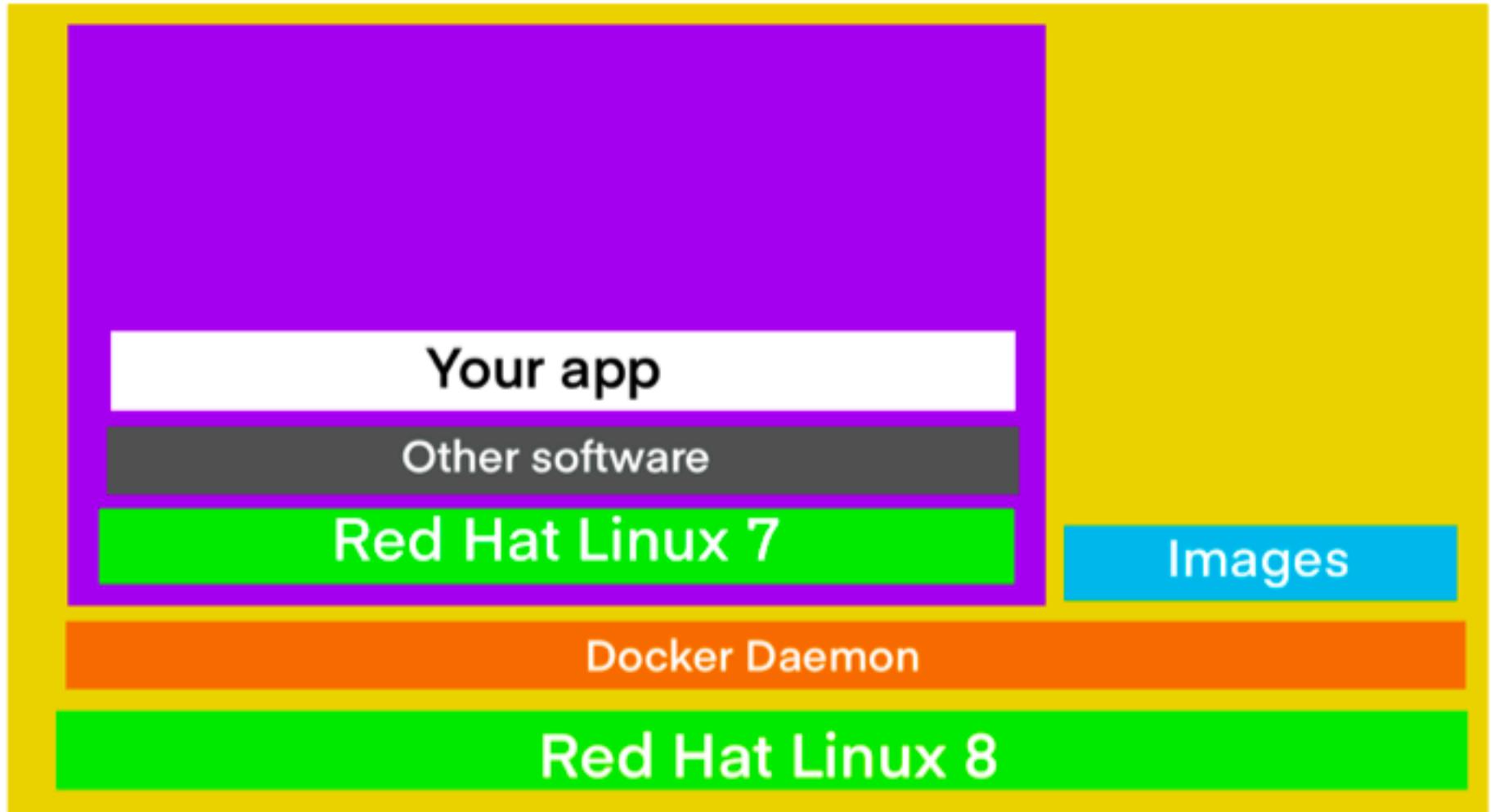
That's what Docker is for.

Docker is a program that pretends to be the computer.

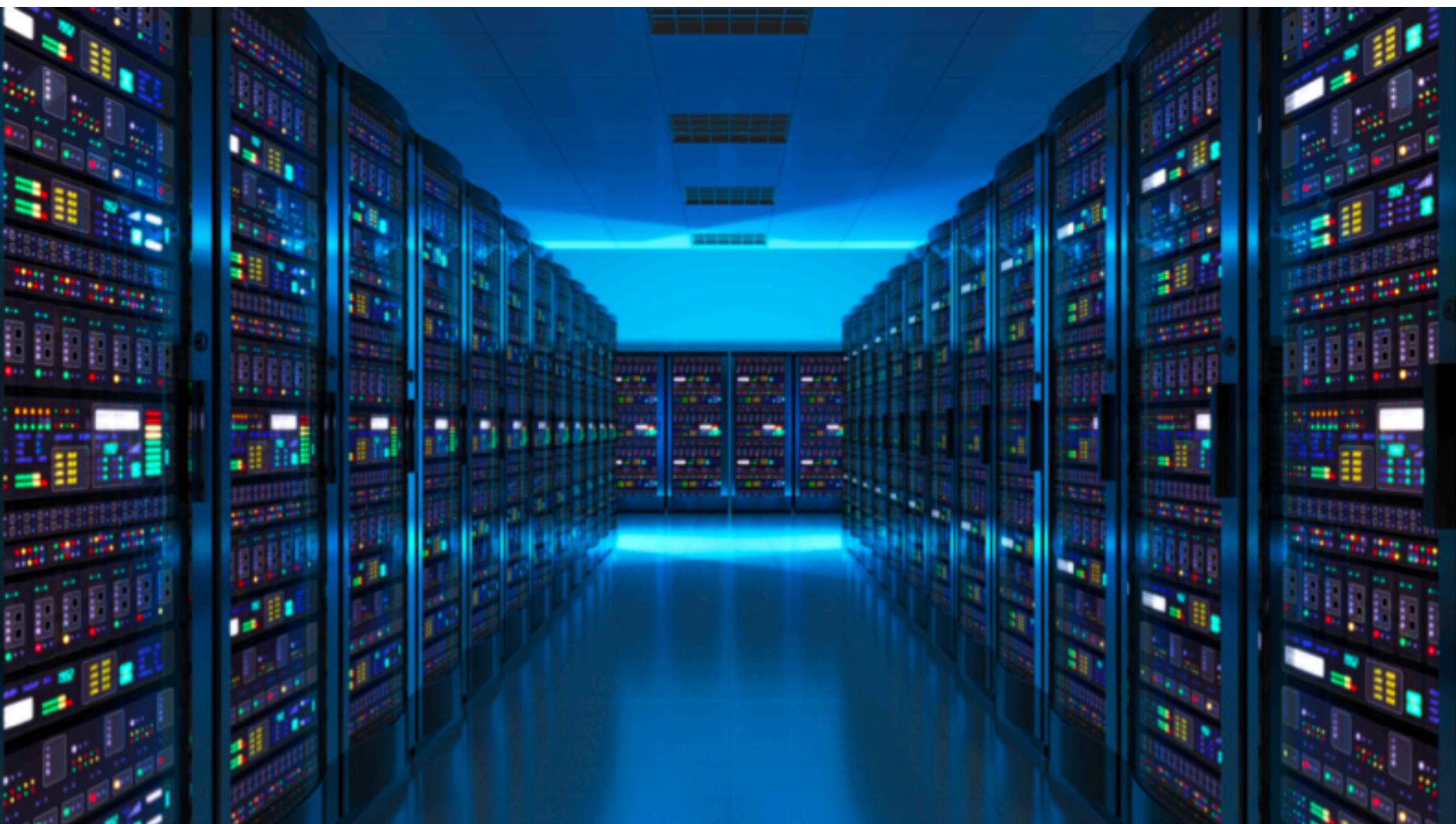
You can set up the program any way you'd like without affecting the real computer.

For example, you might have a server running Red Hat Linux 8.

If your app needs Red Hat Linux 7 instead, you can run Docker on the server and then tell Docker to pretend it's a server running Red Hat Linux 7.







Imagine you have a server room. Lots of computers, some older, some newer, some faster, some slower, with different amounts of memory and storage.

How do you manage running software on all of those machines?

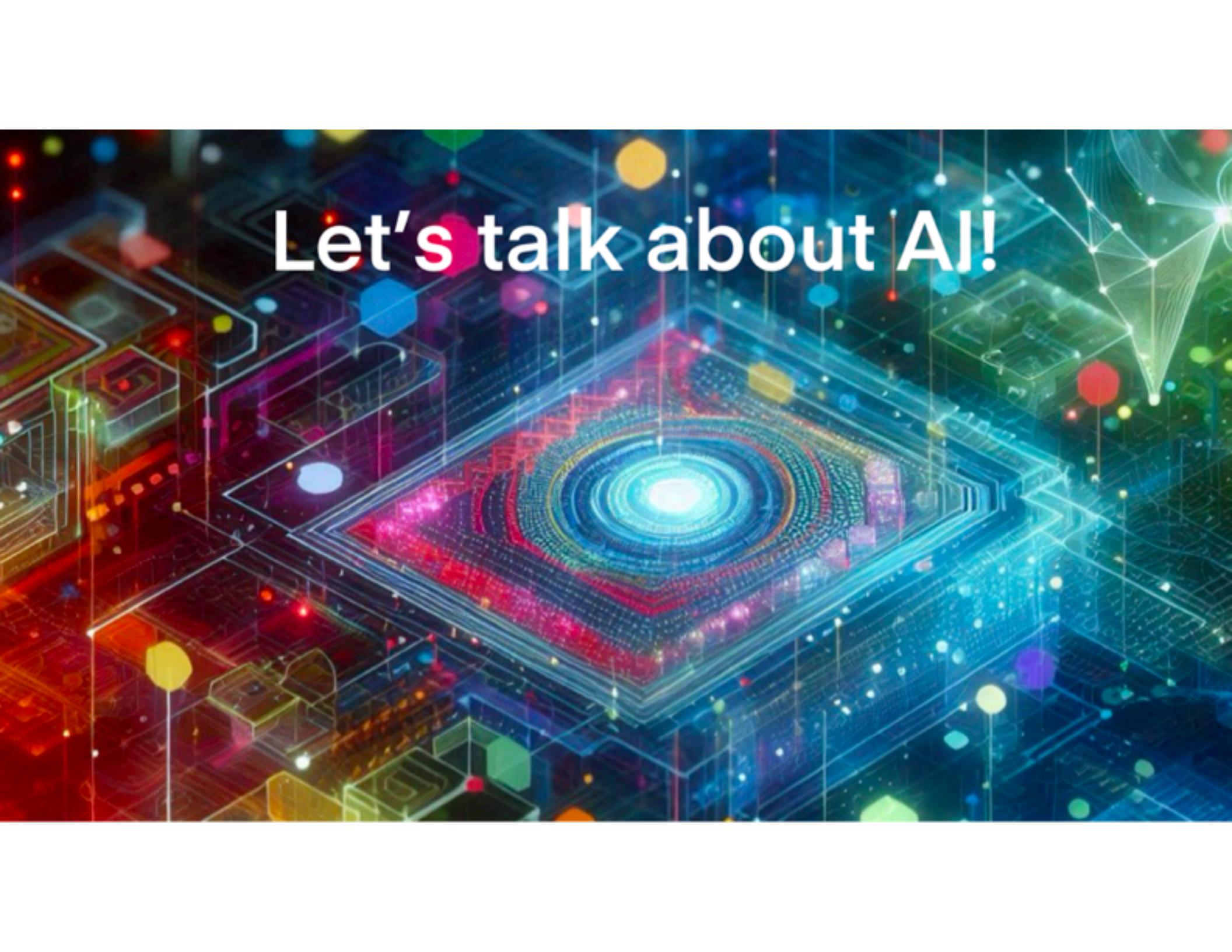
Kubernetes is the answer!

Kubernetes (k8s) lets you deploy and manage software across a cluster.

It checks app health, starts new instances when needed, etc.

It can work with Docker.

There is a program named Helm that lets you package software for deployment.

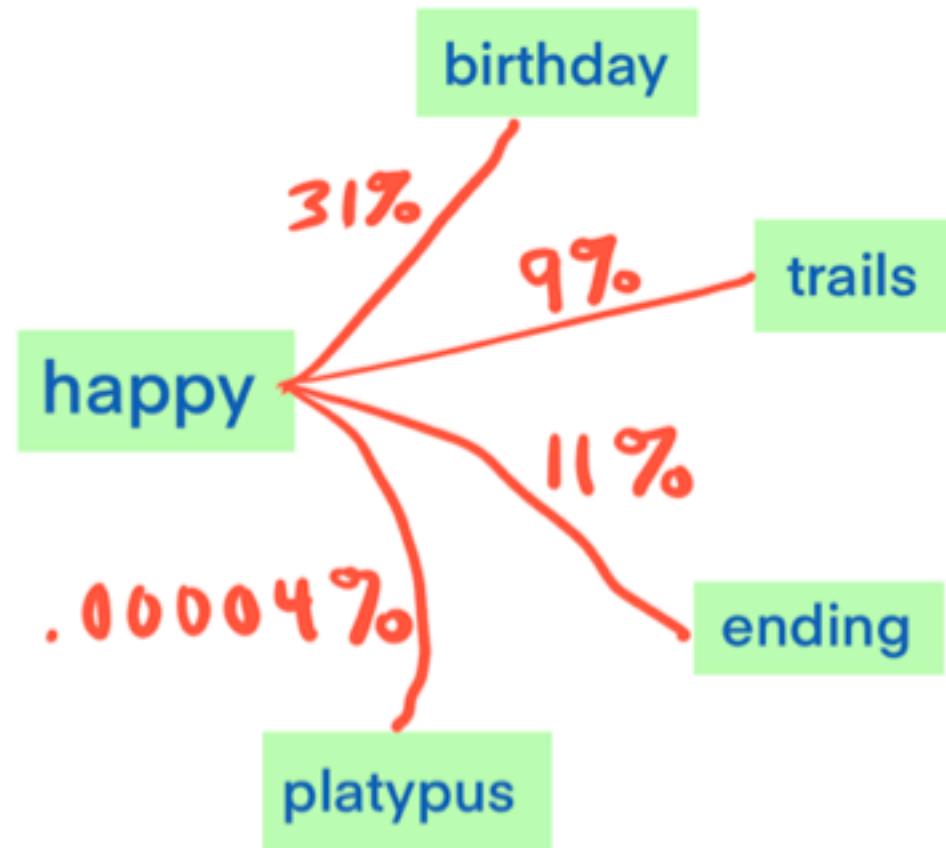


Let's talk about AI!

What is an LLM?

Basically, an LLM (large language model) is what you get when you take an enormous amount of data, break it into small pieces called tokens, and then record their context (how they are related).

You can then use this to generate new content.



Imagine doing that for a big chunk of the Internet!

Commonly related words will be tightly correlated.

Rare ones (happy platypus) will not. If you query something with lots of low correlations, you can get hallucinations.

GPT - Generative Pre-Trained Transformer

Generative - “I can create text”

Pre-Trained - “using data I already analyzed”

Transformer - “with this nifty tool that
understands context and relationships ”

RAG - Retrieval Augmented Generation

Retrieval - “using small amounts of data from my machine”

Augmented - “combine it with your massive amounts of data”

Generation - “to generate an answer to my question”

Let's talk about databases!

Relational databases

Think of these like spreadsheets - rows and columns of data that can be related to each other.

Examples: MySQL, PostgreSQL

SQL - Structured Query Language

Basically, a language for working with a database

NoSQL - databases that store data other than tables, such as documents, graphs, key/value pairs, etc.

Scalable, high performance.

MongoDB - stores documents

Redis - stores key/value pairs

Cassandra - stores large amounts of data on different servers

Neo4j - stores graphs

Elasticsearch - stores documents, optimized for full text search

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of presentations.

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