WebKit
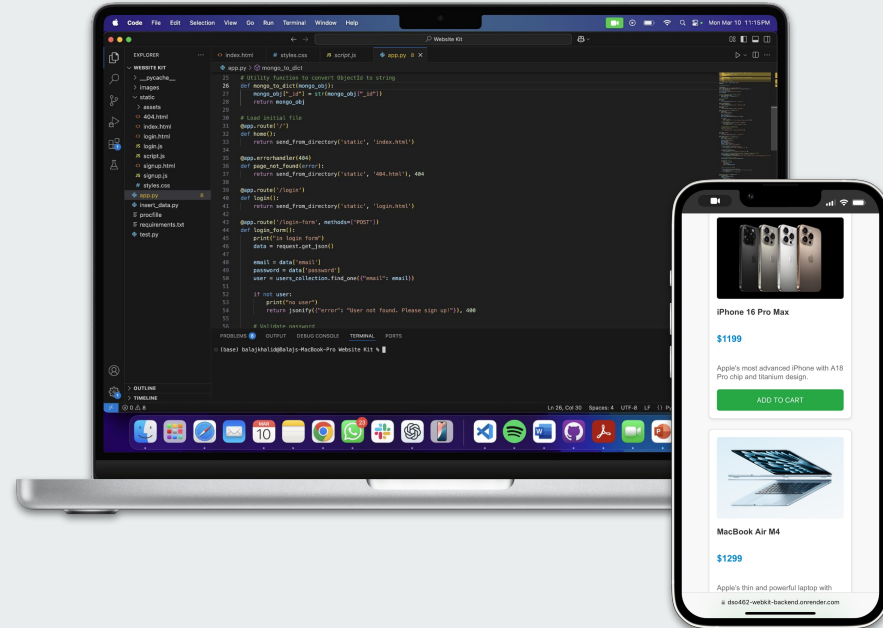
DSO 462 - Managing Small Business on Internet

By Balaj Khalid & Muhammad Atif
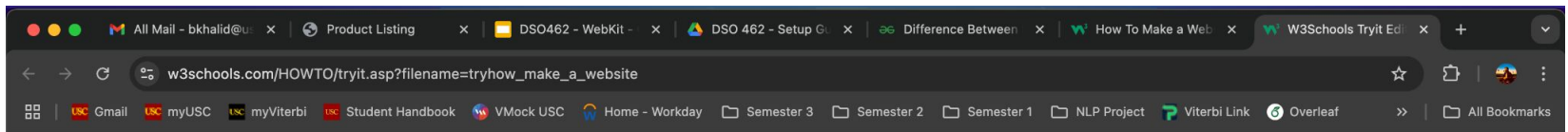
Outline

Front-End Technologies - A Brief Overview

- HTML: The backbone of any web page, used to structure content.
- CSS: Used to style web pages, improving their appearance.
- Javascript: Document Object Model (DOM) can be used to manipulate web content dynamically.
- Frameworks: Simplify development by providing pre-built components, improved security, and optimized performance
  - ReactJS (by Meta): A JavaScript library, to build fast, scalable, interactive, user interfaces.
  - Angular (by Google): A front-end framework, great for large-scale enterprise applications.

More about React vs Angular here.

Result Size: 790 x 579

Run ❯

Get your own website

```
<!DOCTYPE html>
<html lang="en">
<head>
<title>Page Title</title>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1">
</head>
<body>

<div class="header">
  <h1>My Website</h1>
  <p>A website created by me.</p>
</div>

<div class="navbar">
  <a href="#">Link</a>
  <a href="#">Link</a>
  <a href="#">Link</a>
  <a href="#" class="right">Link</a>
</div>

<div class="row">
  <div class="side">
    <h2>About Me</h2>
    <h5>Photo of me:</h5>
    <div class="fakeimg" style="height:200px;">Image</div>
    <p>Some text about me in culpa qui officia deserunt mollit anim..</p>
    <h3>More Text</h3>
    <p>Lorem ipsum dolor sit ame.</p>
    <div class="fakeimg" style="height:60px;">Image</div><br>
    <div class="fakeimg" style="height:60px;">Image</div><br>
    ...style="height:60px;">Image</div>
```
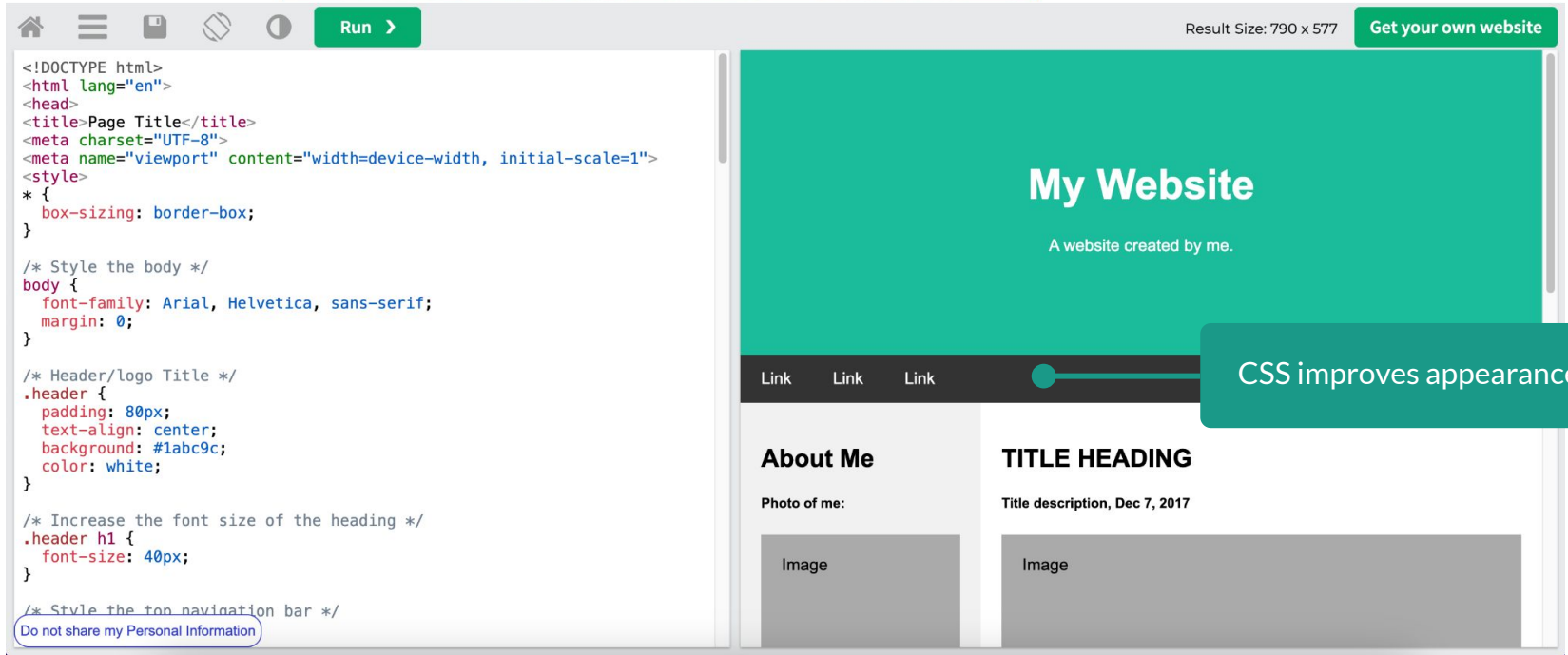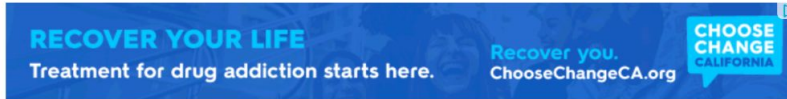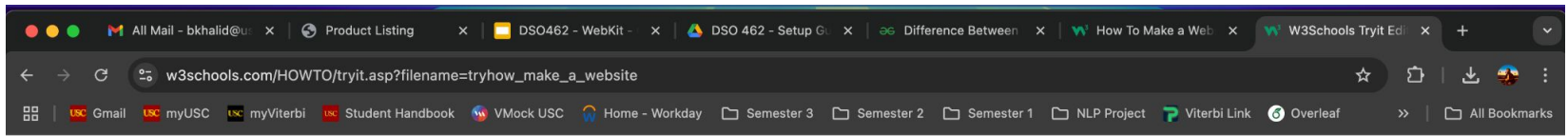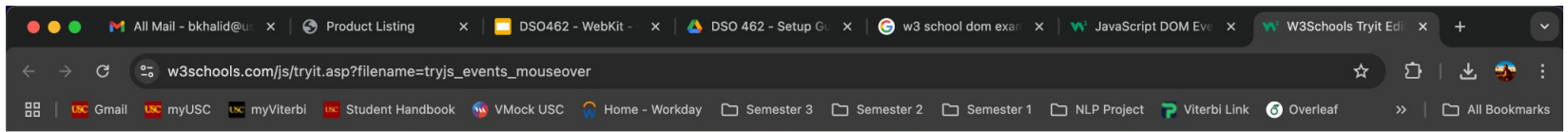
Do not share my Personal Information

My Website

A website created by me.

Link Link Link Link

About Me

Photo of me:

Image

Some text about me in culpa qui officia deserunt mollit anim..

More Text

Lorem ipsum dolor sit ame.

Image

HTML in web

HTML

🔗 **W3 School - HTML**

ReactJS vs Angular

Interest over time

Mar 9 – 15, 2025

| React | 75 |
| Angular | 22 |

Values for this point have partial (incomplete) data available

Average

Mar 8, 2020   Dec 5, 2021   Sep 3, 2025

100
75
50
25
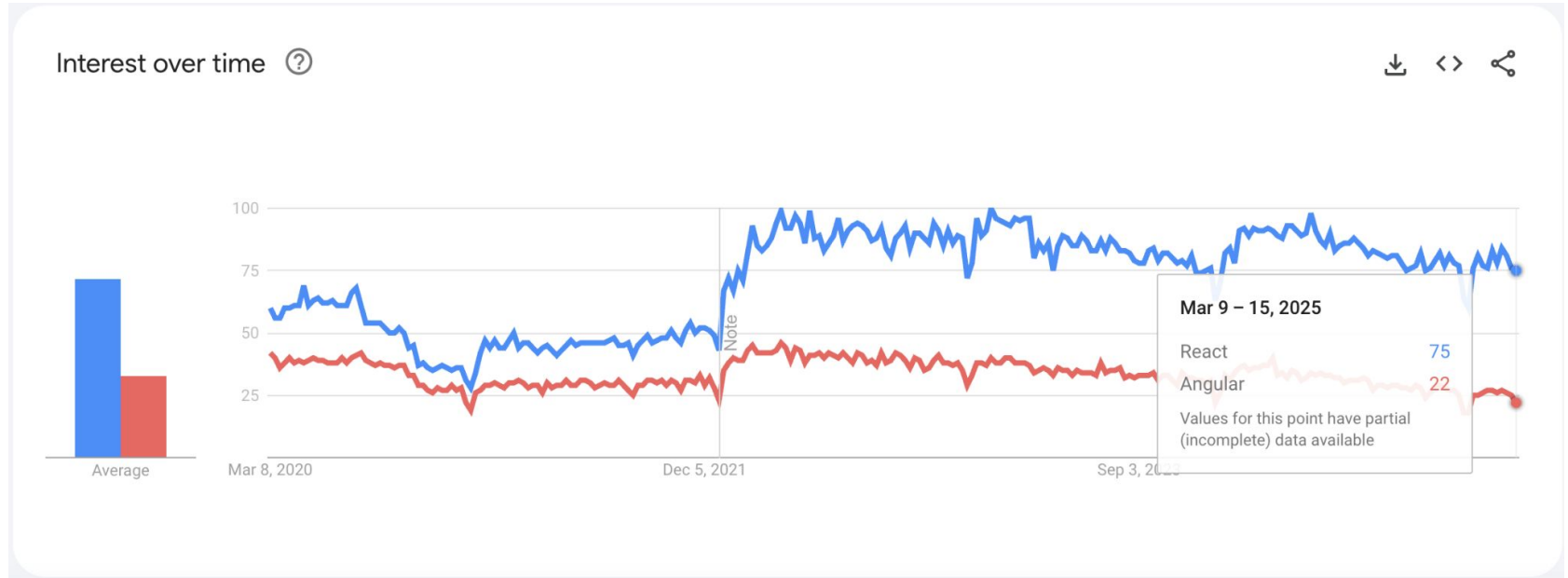
Back-End Technologies - A Brief Overview

- **Programming Languages (Server-Side Scripting)**
    - **Python** – Easy to learn, widely used in web development (Flask, FAST), AI, and data science.
    - **JavaScript (Node.js)** – Allows JavaScript to run on the server, making it possible to use a single language for both front-end and back-end.
- **Frameworks**
    - **FastAPI (Python)** – A high-performance, modern framework for building APIs, known for speed and easy integration with machine learning models.
    - **Flask (Python)** – Lightweight and flexible, ideal for small-scale applications.
    - **Express.js (Node.js)** – Minimalist and efficient, commonly used with MongoDB in full-stack applications.

Back-End Technologies - (continued)

- **Databases**
  - **SQL Databases (Structured Data):** MySQL, PostgreSQL, Microsoft SQL Server
  - **NoSQL Databases (Unstructured & Scalable Data):** MongoDB, Firebase.
- **APIs (Application Programming Interfaces)**
  - **RESTful APIs –** Standardized communication using HTTP methods (GET, POST, PUT, DELETE).
  - **GraphQL –** Allows flexible data retrieval with precise queries, reducing unnecessary data transfer.

Python vs JavaScript
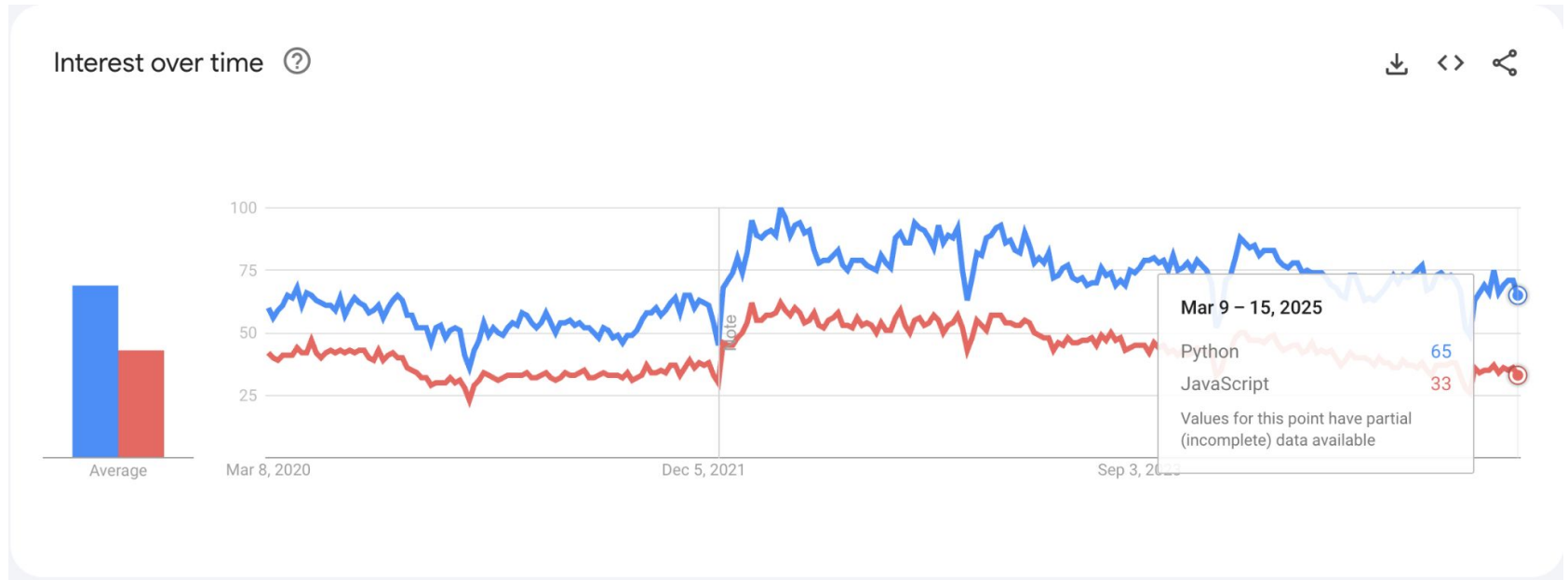
FastAPI vs Flask vs Express.js

Interest over time

	Mar 9 – 15, 2025
FastAPI	71
FLASK API	5
Express.js	53

Values for this point have partial (incomplete) data available

100
75
50
25

Mar 8, 2020   Dec 5, 2021   Sep 3, 2025

Note

Average
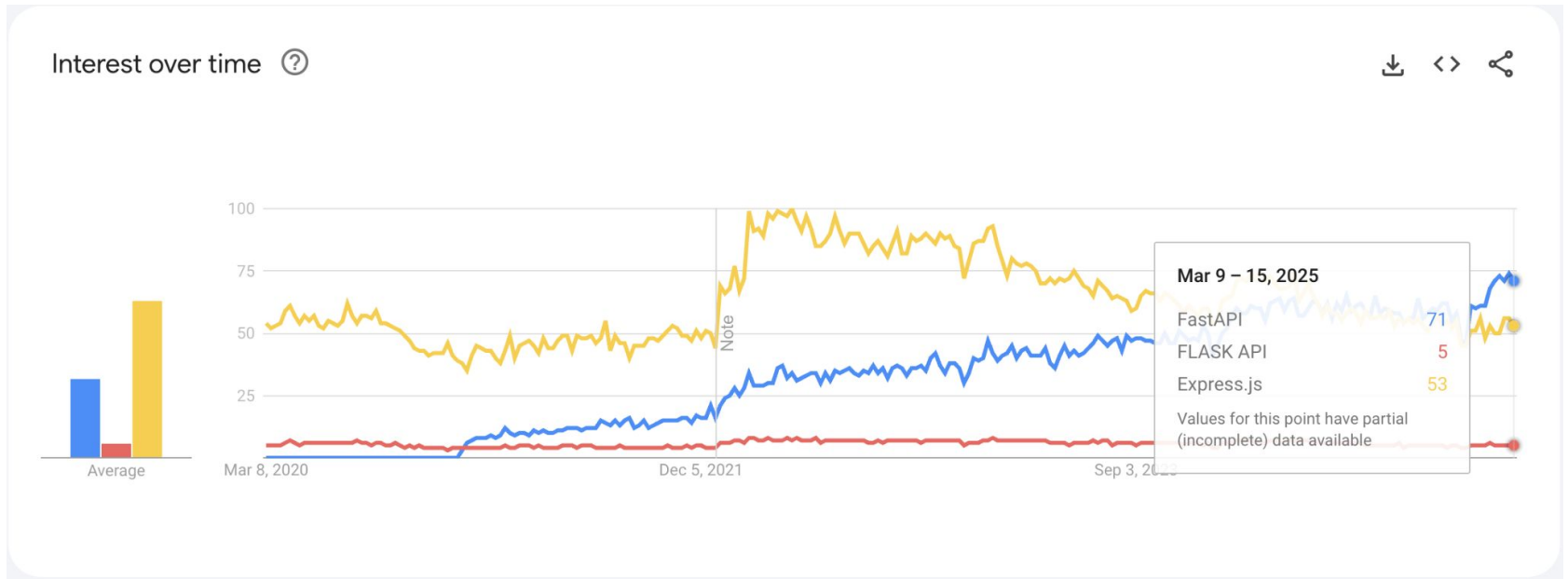
MySQL vs MongoDB vs Firebase

Interest over time

Mar 9 – 15, 2025
Mysql 56
MongoDB 22
Firebase 21
Values for this point have partial (incomplete) data available

100
75
50
25

Average

Mar 8, 2020   Dec 5, 2021   Sep 3, 2023

RESTful API vs GraphQL

Interest over time

	Mar 9 – 15, 2025
RESTful	16
GraphQL	39

Values for this point have partial (incomplete) data available

Average

Mar 8, 2020   Dec 5, 2021   Sep 3, 2023
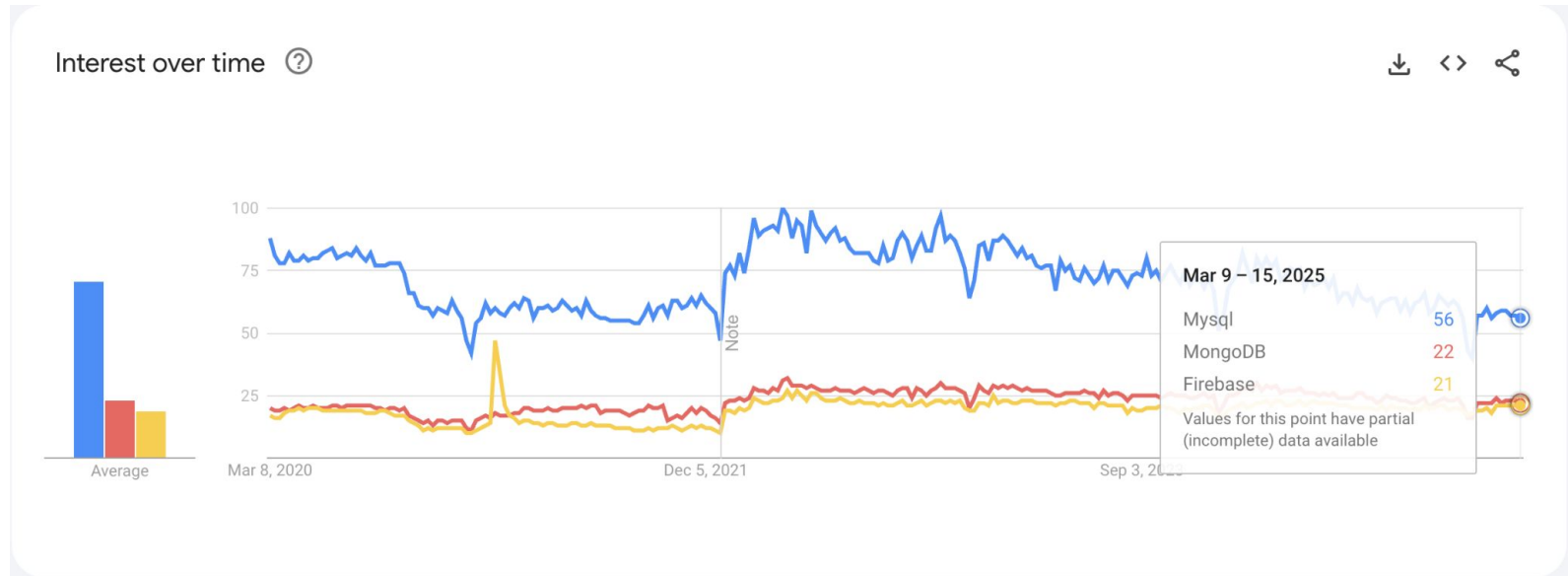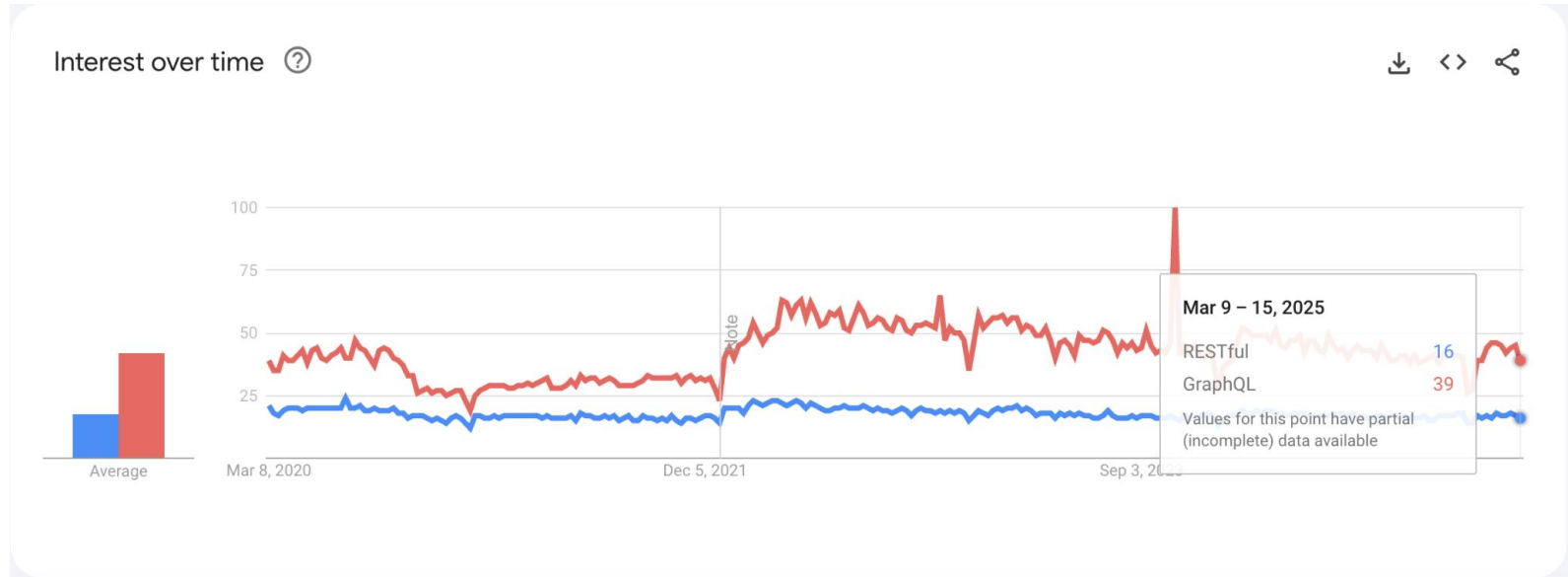
WebKit Demo

Technologies Used:

- **Front-End**:
  - HTML
  - CSS
  - DOM (JavaScript)
- **Back-End**:
  - Python
  - MongoDB
  - RESTful APIs
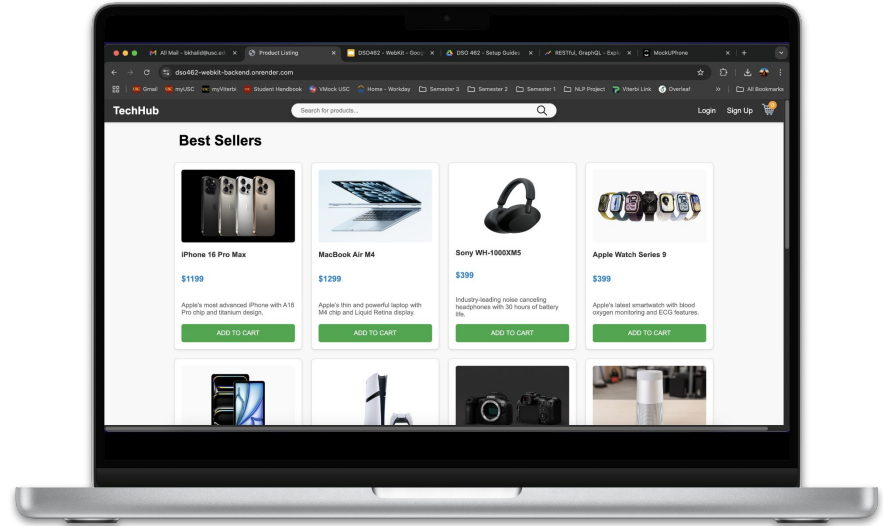
Link to full code.

MongoDB

- Fast & Performance-Oriented
- Highly Scalable
  - Designed to handle large amounts of data efficiently.
  - Supports horizontal scaling (sharding) to distribute data across multiple servers.
- Flexible & Schema-Free: No need to define a strict schema like SQL databases.
- Free & Student Friendly:
  - **$50 in credits** with the **GitHub Student Developer Pack**.
  - The free version (MongoDB Atlas) is powerful enough for small to medium projects.
- Link to [setup guide](#).

Version Control (Git/Github)

- Git
  - **Tracks code changes** – See who changed what and when.
  - **Allows collaboration** – Multiple developers can work on the same project without conflicts.
  - **Supports branching** – Work on new features without affecting the main project.
  - **Easy to revert changes** – Mistakes can be undone quickly.
- Github
  - A cloud-based platform for storing and managing Git repositories.
- Link to setup guide.

Hosting your app on Web

Cloud vs Traditional Hosting

Feature	Cloud Hosting	Traditional Hosting
Infrastructure	Uses a network of servers (distributed).	Hosted on a single physical server.
Scalability	Highly scalable – Auto-scales based on traffic.	Limited scalability, requires manual upgrades.
Performance	Faster and more reliable with load balancing.	Performance depends on server capacity.
Cost Model	Pay-as-you-go – Pay only for what you use.	Fixed pricing, often includes unused resources.
Reliability	High availability – Redundant servers prevent downtime.	Downtime possible if the server fails.
Security	Cloud providers offer built-in security, firewalls, and backups.	Security depends on the hosting provider and setup.

Cloud Hosting

- **Google Cloud**
  - $300 in free credits for 3 months (great for developers to test and deploy apps).
  - Supports auto-scaling, security, and global deployment.
  - Works well with AI, ML, and data-heavy applications.
- **Amazon Web Services**
  - $300 in free credits for 3 months.
  - Great choice for enterprise level applications (industry leader).
  - Highly customizable and flexible – AWS offers more options for developers to fine-tune their cloud setup.

Traditional Hosting

- **Digital Ocean**
  - **$200 in free credits** with the **GitHub Student Developer Pack**.
  - Developer-friendly, easy-to-set-up cloud servers.
  - Good for small to medium-scale applications.
- **Genez.io**
  - Free hosting with support for multiple frameworks.
  - Simple UI and one-click deployment for seamless setup.
  - Link to setup guide.
- **Render**
  - **Completely free hosting for web apps and APIs**.
  - **Downside**: Can be **slow to start** (cold start issues for backend services).
  - Best suited for small projects and prototypes.
  - Link to setup guide.

API Integration

- An API (Application Programming Interface) enables communication between your web application and external services, allowing them to interact seamlessly.
- **RESTful APIs:**
  - GET: Retrieves data from the database.
  - POST: Inserts new data into the database (e.g., adding new entries or records).
  - PUT: Updates existing data in the database (e.g., modifying a record or resource).
  - DELETE: Removes data from the database (e.g., deleting a record or resource).
- APIs are commonly used to connect your web application to databases, such as **MongoDB**, to manage and store data or other services such as **AI/machine learning models.**
- API endpoints typically require **API keys** for authentication, ensuring that only authorized users or applications can access the data or services.

Learn more about GET vs POST here.

Tools

Google Analytics

- Offers detailed insights into how users interact with your website.
- Key metrics include,
  - **Users:** Tracks the number of unique visitors to your website. This is essential for monitoring your website's reach over time.
  - **Average session duration:** Measures the average time users spend on your website. This metric is useful for optimizing content and improving the overall user experience.
  - **Conversation rate:** The percentage of users who complete a desired action (e.g., making a purchase). This metric is crucial for evaluating the success of your marketing efforts.
- These metrics help assess the performance of your ads, marketing campaigns, and enable you to segment target demographics, analyze traffic sources, and visualize the user journey through your conversion funnel.
- Link to [setup guide](#).

Google AdSense

- Allows you to earn revenue by displaying targeted ads on your website
- **Key Metrics for Success:**
  - **Impressions**: The number of times an ad is shown on your website. Essential for tracking visibility and reach of your ads.
  - **Clicks**: The number of times users click on an ad. Measures user engagement with the ads.
  - **CTR (Click-Through Rate)**: The ratio of clicks to impressions, showing how effective your ads are at encouraging user interaction. Optimizes ad placement and formats for higher engagement.
  - **CPC (Cost Per Click)**: The amount earned each time a user clicks on an ad. Indicates the revenue generated from user engagement with ads.
- Link to setup guide.

Suggestions

UI/UX

- **Use Exciting Colors**
  - **Vibrant Colors**: Choose bold and vibrant colors that catch users' attention but avoid overwhelming them.
  - **Brand Consistency**: Maintain color consistency with your brand to create a recognizable and cohesive design.
  - **Contrast**: Ensure there is enough contrast between text and background for readability, especially for users with visual impairments.
- **Accessibility Options**
  - **Font Size Adjustment**: Provide options for users to increase or decrease the font size to improve readability for those with visual impairments.
  - **Color Blind Support**: Implement features like color contrast adjustment or use of patterns alongside colors to assist users with color blindness.

UI/UX (continued)

- **Clean and Simple UI**
  - **Minimalistic Design**: Avoid clutter by focusing on essential elements. A clean UI improves usability and helps users focus on key content.
  - **Intuitive Navigation**: Structure menus and content in a way that is easy for users to navigate. Ensure key actions are easily accessible.
  - **Whitespace**: Use whitespace effectively to separate different sections, making the UI feel less crowded and more organized.
- **Mobile Responsiveness**
  - **Responsive Design**: Ensure the UI/UX adapts to different screen sizes (desktops, tablets, mobile devices) for an optimal experience on all devices.

Feature Comparison

Free	Standard	Premium	Enterprise
Free	**Standard**	**RECOMMENDED** **Premium**	**Enterprise**
Free forever for 10 users	Everything you need to get started	Align multiple teams	Advanced analytics, scale and security for enterprises
$0	**$7.53** per user / month	**$13.53** per user / month	Billed annually. Switch to Annual billing above to view Enterprise pricing.
Get it now	Start free trial	Start free trial	Contact sales

Includes:	**Everything from Free plus:**	**Everything from Standard plus:**	**Everything from Premium plus:**
> Unlimited goals, projects, tasks, and forms	> User roles and permissions	> Generate, summarize, and search content with Atlassian Intelligence (AI) NEW	> Cross-product insights with Atlassian Analytics and Data Lake
> Backlog, list, board, timeline, calendar, and summary views	> External collaboration	> Cross-team planning and dependency management	> Advanced admin controls and security
> Reports and dashboards	> Multi-region data residency	> Customizable approval processes	> Enterprise-grade identity and access management
> 100 automation rule runs per month	> 1,700 automation rule runs per month	> Per user automation limits (1,000 rule runs per month)	> Unlimited automation rule runs
2 GB of storage	250 GB of storage	Unlimited storage	> Multiple sites (up to 150)
> Support from Atlassian Community	> 9/5 regional support	> 24/7 support for critical issues	> 24/7 support for all issues
Up to 10 users	Up to 50,000 users on a single site	99.9% uptime SLA	99.95% uptime SLA

Image Source: **Jira Pricing**

Work Organization

- Divide your project into distinct **features** (e.g., **Login**, **Sign Up**) for better clarity and organization.
- Leverage tools like **Jira** or **Kanban** to efficiently track and manage tasks.
- **Benefits**
  - **Improved Organization**: Helps break large projects into manageable tasks.
  - **Clear Accountability**: Everyone knows their responsibilities.
  - **Better Collaboration**: Teams can track each other's progress and offer support.
  - **Faster Development**: Allows for focused work on specific tasks, speeding up development.

Work Organization (continued)

Image Source: Jira

Questions?