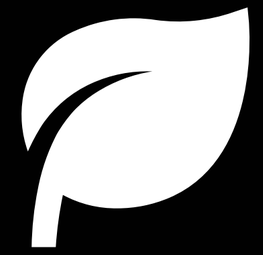
Say Hello to APIs



Presented by Vansh Sood

SHIFTKEY LABS

SHIFTKEY LABS

From hackathons to the Startup Residency program, ShiftKey Labs makes sure students have the skills & support they need to pursue their most innovative ideas!

HIGHLIGHTS

NASA Space Apps Challenge

Global Game Jam

Generative AI Hackathon

Workshops & Talks

- REACT
- Blockchain
- Prototyping
- Startups
- Freelancing
- Cybersecurity

shiftkeylabs.ca

@ShiftKeyLabs

info@shiftkeylabs.ca

About Me

- Third-year BCS, Software Dev, TA at Dalhousie University
- Tech coordinator for Shiftkey Labs and Faculty of Health
- Linkedin Top Web Applications Voice
- Freelancing for over 6 years
- Worked with 25+ startups and small businesses
- Helped startups raise over $100,000 in funding
- Founder of a web and mobile development agency
- Empowering students to leverage freelancing with GigEmpower
- AWS Certified Cloud Practitioner
- Google Code-In Grand Prize Winner (Global Top 50)

Software Development

Frontend

The way users interact with your application, encompassing the layout, design, and behavior seen and experienced.

Backend

Acts as the server-side, managing authentications, database calls, and logic of the business.

Database

Tables, Schemas, Documents, depending on your choice between SQL or NoSQL.

Deployment

The boisterous party, finally opening its gate to the beats of the market.

Frontend

Backend

Database

Client

Server

literally

Storage

Can I get a pumpkin spiced latte and an iced chai latte?

Client

Server

Storage

I need 1 order of pumpkin spiced latte and 1 order of iced chai latte

Client

Server

Storage

Your pumpkin spiced latte
and an iced chai latte. Enjoy!

Client

Server

Storage

["pumpkin spiced latte", "iced chai latte"]

Client

Server

Storage

SELECT item FROM Drinks
WHERE name = 'pumpkin spiced
latte' OR name = 'iced chai latte';

Client

Server

Storage

```
{
data: [
  {
     name: “pumpkin spiced latte”
  },
  {
     name: “iced chai latte”
   }
]
}
```

Client

Server

Storage

I don’t like pumpkin in it

Client

Server

Storage

Application Processing Interface

Types of API Architecture

APIs allow different software applications to communicate with each other.

RESTful

Leverage HTTP protocols for web services, focusing on stateless communication.

GraphQL

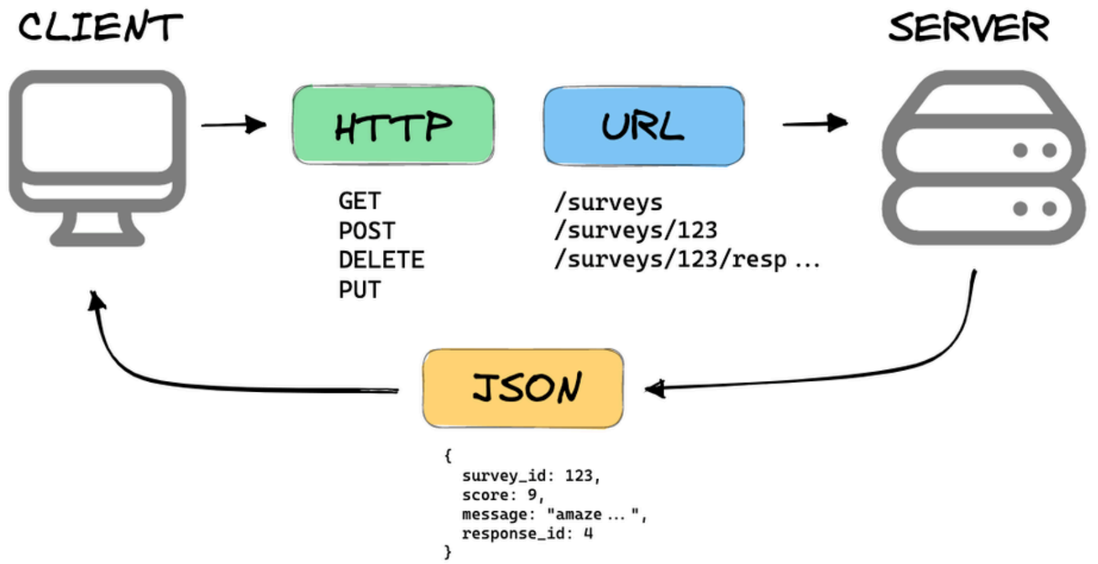
A query language for APIs that allows clients to request exactly the data they need, making it efficient and flexible.

SOAP

A protocol for exchanging structured information in web services, emphasizing extensibility and neutrality.

REST a bit

- REST (Representational State Transfer) is an architectural style.
- Uses HTTP requests to access and use data.
- Operations: GET, POST, PUT, DELETE.



HTTP Request and Response

A request is what happens when your web browser or app needs to communicate with a web server to ask for information or resources.

```
{
method: 'GET',
headers: {
  'Content-Type': 'application/json',
  ‘Authorization': '834u948320340ri'
},
params: ‘dirty-martini’
}
```

A response is what the server sends back after receiving and processing a request. It's like the answer to your question.

```
{
statusCode: 200,
headers: {
  "Content-Type": "application/json"
},
"body": {
  "drinkName": "Dirty Martini",
  "ingredients": ["2 oz gin", "1/2 oz dry vermouth", "1/2 oz olive brine", "1 olive"],
 }
}
```

Request Methods

GET

Retrieves data from a specified resource.

POST

Submits data to a specified resource to process.

PUT

Updates a specified resource with provided data.

DELETE

Removes a specified resource.

Response Status Codes

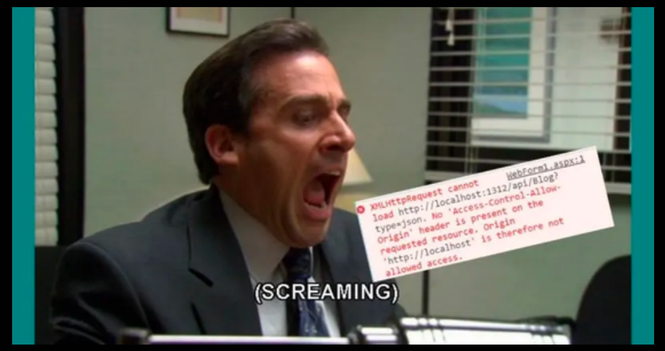
2xx Success	Signifies that the client's request was successfully received, understood, and accepted.
3xx Redirect	Indicates that further action needs to be taken by the client in order to complete the request.
4xx Client err	The request contains bad syntax or some error due to an error on the client's side.
5xx Server err	Indicates that the server failed to fulfill an apparently valid request.

A developer’s worst nightmare: CORS

Cross-Origin Resource Sharing (CORS)

An HTTP-header based mechanism that allows a server to indicate any other origins (domain, scheme, or port) than its own from which a browser should permit loading of resources.

Why is CORS important? It's a security feature that restricts how resources on a web page can be requested from another domain outside the domain from which the first resource was served. This helps prevent malicious sites from reading sensitive data from another site.



Headers

HTTP headers let the client and the server pass additional information with an HTTP request or response.

Headers are key-value pairs sent before the message body of an HTTP request or response.

Break down into categories such as Request Headers, Response Headers, and General Headers. Crucial for content negotiation, authentication, caching, and managing cross-origin requests.

["jameson on rocks", "dirty martini"]

Client Server Storage

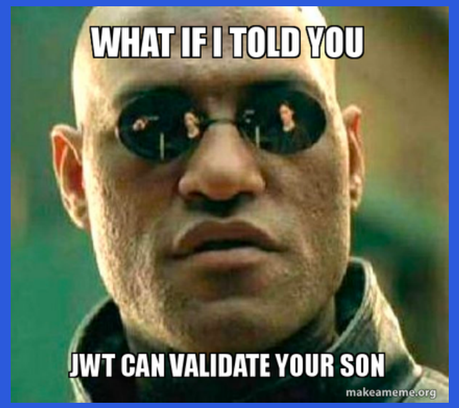
403. Underage drinking is prohibited.

Client Server Storage

How do I make it secure? JWT

- Authentication vs. Authorization: Clarify the difference between authentication (verifying the identity of a user or client) and authorization (determining if a user or client has permission to perform an action or access a resource).

- Implementing JWT (JSON Web Tokens): Introduce JWT as a compact, URL-safe means of representing claims to be transferred between two parties. Discuss how JWTs can be used in Node.js and Express for securing APIs by ensuring that only authenticated users can access certain routes.



```
{
method: 'GET',
headers: {
  'Content-Type': 'application/json',
  ‘Authorization': '834u948320340ri'
},
body: ‘dirty martini’
}
```

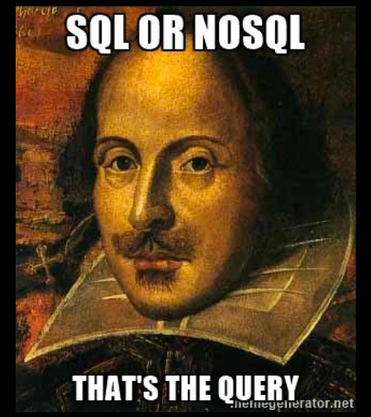
Client Server Storage

Middleware and Routing

Middleware are functions that execute during the lifecycle of a request to the Express server. Application-level middleware, Router-level middleware, Error-handling middleware, Built-in middleware, and Third-party middleware.

Routing is the determination of how an application responds to a client request to a particular endpoint. Route Methods such as app.get, app.post, and more, corresponding to HTTP request methods.

Questions?



Lets test it out

Thank you

Reach out to me:
https://www.linkedin.com/in/vanshsood/