Types of APIs

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1. REST API (Representational State Transfer)

A widely used web API architecture that operates over **HTTP** and uses URLs for resource identification.
It primarily relies on standard HTTP methods like **GET, POST, PUT, and DELETE**.

Example : Fetching data from a REST API

```javascript
fetch('https://jsonplaceholder.typicode.com/posts')
    .then(response => response.json())
    .then(data => console.log(data))
    .catch(error => console.error('Error:', error));
```

2. SOAP API (Simple Object Access Protocol)

SOAP is a protocol for exchanging structured information, often used in enterprise applications.
It uses **XML** for messages, and each message has strict structure requirements.

Example : using a SOAP client library, as SOAP requires specific XML format

```javascript
const soap = require('soap');
const url = 'https://example.com/service?wsdl';
soap.createClient(url, (err, client) => {
  client.MyFunction(args, (err, result) => {
    console.log(result);
  });
});
```

3. GraphQL API

A query language for APIs that allows clients to request specific data, avoiding over-fetching or under-fetching.
Clients specify the structure of the response, making it flexible and efficient.

Example :

```javascript
const query = `
  query {
    posts {
      id
      title
      author {
        name
      }
    }
  }
`;

fetch('https://example.com/graphql', {
  method: 'POST',
  headers: { 'Content-Type': 'application/json' },
  body: JSON.stringify({ query })
})
  .then(response => response.json())
  .then(data => console.log(data));
```

4. WebSocket API

Enables real-time, two-way communication between the client and server over a persistent connection.
Commonly used in chat applications, gaming, and live notifications.

Example :

```javascript
const socket = new WebSocket('wss://example.com/socket');

socket.onopen = () => socket.send('Hello Server');
socket.onmessage = (event) => console.log('Message from server:',
event.data);
```