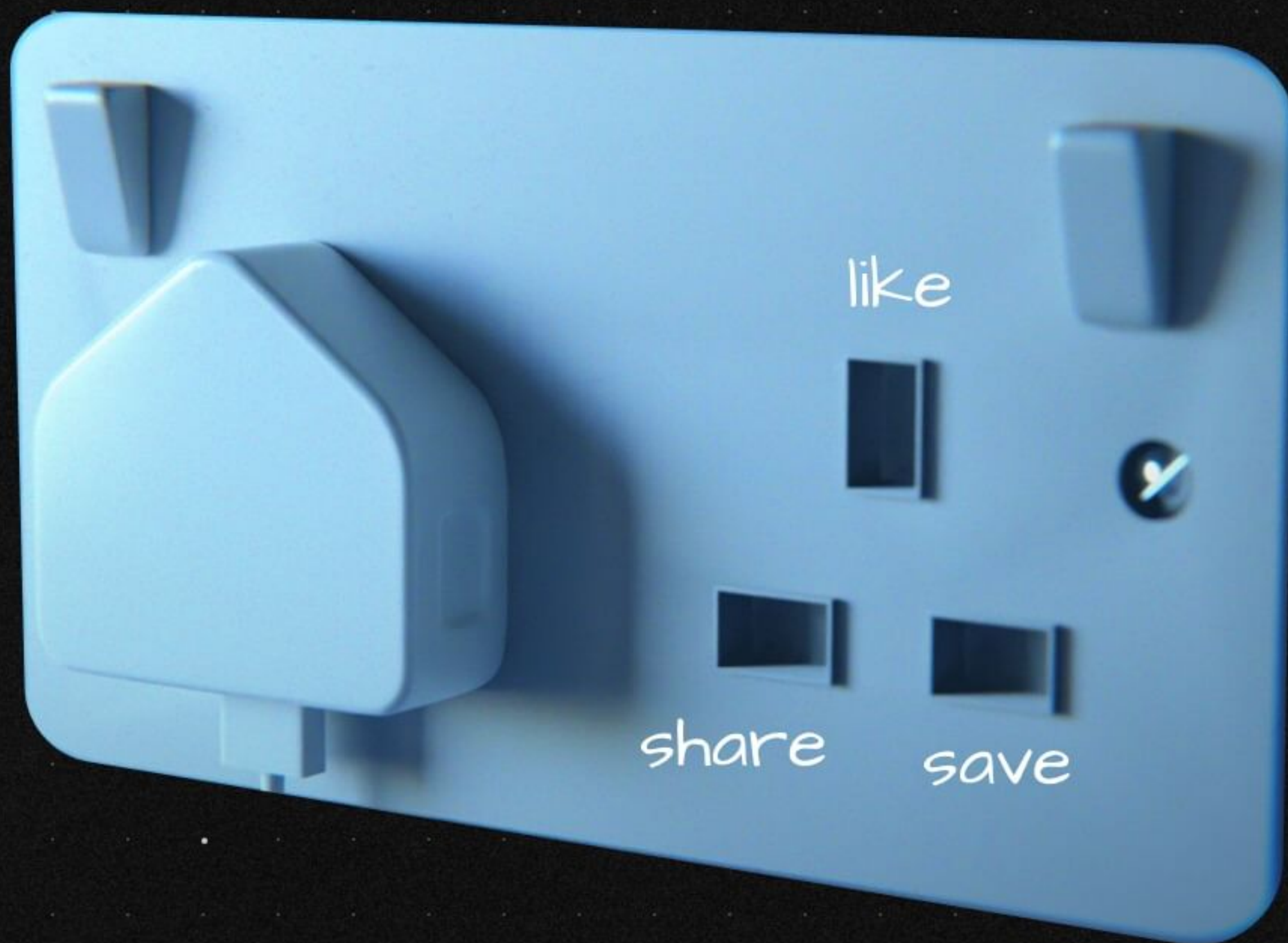




Most common **JavaScript**
Interview Questions

WebSockets

in **JavaScript**



WebSockets in JavaScript allow for real-time, bidirectional communication between a client (usually a web browser) and a server.

They are particularly useful for **building interactive web applications** that require instant data updates.



Understanding WebSockets

WebSockets provide a full-duplex communication channel over a **single TCP connection**.

Unlike HTTP, WebSockets enable **both the client and server to send messages** to each other at any time **without waiting** for a request from the client.

WebSockets use a **protocol** that starts with **ws:// (unencrypted)** or **wss:// (encrypted)** instead of **http://** or **https://**



Creating a WebSocket Connection

To establish a WebSocket connection in JavaScript, create a new WebSocket object, passing the WebSocket server **URL as a parameter**.



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



WebSocket Events

WebSocket objects emit **various events** to **handle different stages** of the connection.

open: Triggered when the connection is successfully established



```
socket.addEventListener('open', (event) => {  
  // Connection is open.  
});  
  
socket.addEventListener('message', (event) => {  
  const message = event.data;  
  // Handle incoming message.  
});
```

message: Fired when the server sends a message



error: Triggered when an error occurs



```
socket.addEventListener('error', (event) => {  
  console.error('WebSocket error:', event);  
});  
  
socket.addEventListener('close', (event) => {  
  if (event.wasClean) {  
    console.log(`Connection closed cleanly,  
code=${event.code}, reason=${event.reason}`);  
  } else {  
    console.error('Connection abruptly closed');  
  }  
});
```

close: Fired when the connection is closed



Sending Data



To send data to the server, use the **send** method of the WebSocket object. Data can be a **string**, **ArrayBuffer**, or **Blob**.



```
socket.send('Hello, server!');
```

Closing the Connection

To close the WebSocket connection, call the **close** method on the WebSocket object.



```
socket.close();
```



Server-Side WebSocket Implementation



On the server side, you need to implement a WebSocket server that **listens** for WebSocket connections and **handles** messages from clients. **Popular libraries** for this purpose include **ws for Node.js** and libraries for various languages like Python, Ruby, and Java.

Error Handling

Be sure to handle errors gracefully by listening for the error event and **providing appropriate feedback** to the user.



Security Considerations

When using WebSockets, consider security measures like **encrypting** the connection using **wss://**, implementing authentication, and **validating** incoming messages to prevent **vulnerabilities** like **WebSocket-based attacks**.



Use Cases

WebSockets are suitable for real-time chat applications, online gaming, live notifications, collaborative tools, and any **scenario where immediate data updates are required**.

