JavaScript: HTTP, JSON, AJAX, Promises

1. HTTP Methods

HTTP (HyperText Transfer Protocol) is the foundation of data communication for the web.

It allows browsers and servers to communicate. Common HTTP methods:

- GET: Request data

- POST: Send data

- PUT: Update data

- DELETE: Remove data

2. JSON: Parse and Stringify

JSON (JavaScript Object Notation) is a lightweight data-interchange format.

It is easy to read and write for humans and easy to parse and generate for machines.

JSON Example

```
const jsonString = '{"name":"Shekhar","age":45}';
const obj = JSON.parse(jsonString);
console.log(obj.name); // Shekhar
const json = JSON.stringify(obj);
console.log(json); // {"name":"Shekhar","age":45}
```

3. AJAX: Using XMLHttpRequest

AJAX (Asynchronous JavaScript and XML) allows web pages to update asynchronously by exchanging data with a web server in the background.

AJAX Example

```
const xhr = new XMLHttpRequest();
xhr.open("GET", "https://jsonplaceholder.typicode.com/posts/1");
xhr.onload = function() {
  if (xhr.status === 200) {
    const data = JSON.parse(xhr.responseText);
    console.log(data);
  }
};
xhr.send();
```

4. Promises in JavaScript

Promises represent the eventual completion (or failure) of an asynchronous operation and its resulting value.

States: Pending -> Fulfilled or Rejected.

Promise Example

```
const fetchData = () => {
  return new Promise((resolve, reject) => {
    setTimeout(() => {
      resolve("Data received!");
    }, 1000);
  });
};
fetchData()
  .then(data => console.log(data))
  .catch(error => console.error(error));
```