1. Explain spread operator and rest parameters with examples?

Answer:

- **Spread Operator:**
  The spread operator is used to expand elements of an array or object. It allows you to copy the contents of one array into another or include the properties of one object into another.

Example:

```
// Example 1: Copying Arrays
const arr1 = [1, 2, 3];
const arr2 = [...arr1]; // Copies elements of arr1 into a new array arr2

console.log(arr2); // Output: [1, 2, 3]

// Example 2: Concatenating Arrays
const arr3 = [4, 5, 6];
const combinedArray = [...arr1, ...arr3]; // Concatenates arr1 and arr3

console.log(combinedArray); // Output: [1, 2, 3, 4, 5, 6]

// Example 3: Copying Object Properties
const obj1 = { a: 1, b: 2 };
const obj2 = { ...obj1 }; // Copies properties of obj1 into a new object obj2

console.log(obj2); // Output: { a: 1, b: 2 }
```

```
C:\Users\auul\OneDrive\Desktop\hola 9\Javascript>node assigment8
[ 1, 2, 3 ]
[ 1, 2, 3, 4, 5, 6 ]
{ a: 1, b: 2 }
```

- **Function Argument Spreading:**
  The spread operator can be used to spread the elements of an array as individual arguments to a function.

Example:

```
// Example: Math.max with spread operator
const numbers = [1, 2, 3, 4, 5];
const maxNumber = Math.max(...numbers);

console.log(maxNumber); // Output: 5
```

```
C:\Users\auul\OneDrive\Desktop\hola 9\Javascript>node assigment8
5
```

- **Rest Parameters:**
  Rest parameters allow a function to accept an indefinite number of arguments as an array. It uses the ... syntax followed by the parameter name.

Example:

```
// Example: Sum of numbers using rest parameter
function sum(...numbers) {
  return numbers.reduce((total, num) => total + num, 0);
}

console.log(sum(1, 2, 3, 4, 5)); // Output: 15
```

```
C:\Users\auul\OneDrive\Desktop\hola 9\Javascript>node
15
```

In the **sum** function, the **...numbers** syntax collects all the arguments passed to the function into an array named **numbers**. This makes it easy to work with a variable number of arguments

- **Combining Spread and Rest:**
  You can also combine the spread and rest syntax.

Example:

```
// Example: Combining spread and rest
function example(arg1, arg2, ...restArgs) {
   console.log(arg1); // Output: 1
   console.log(arg2); // Output: 2
   console.log(restArgs); // Output: [3, 4, 5]
 }

 const arrayToSpread = [3, 4, 5];
 example(1, 2, ...arrayToSpread);
```

```
C:\Users\auul\OneDrive\Desktop\hola 9\Javascript>node assigment8
1
2
[ 3, 4, 5 ]
```

In this example, **arg1** and **arg2** are regular parameters, and **restArgs** collects the remaining arguments using the rest parameter syntax.These features make JavaScript more flexible and expressive when working with arrays and function parameters.

2.Explain rest operator using object and array destructuring with example.

Answer:

- **Rest Operator in Array Destructuring:**
  - **Definition:**
    The rest operator in array destructuring allows you to collect the remaining elements of an array into a new array. It is denoted by the ... syntax and is useful when you want to capture multiple elements without explicitly specifying each one.

Example:

```
// Definition
const numbers = [1, 2, 3, 4, 5];
const [first, second, ...rest] = numbers;

// Examples
console.log(first);  // Output: 1
console.log(second); // Output: 2
console.log(rest);   // Output: [3, 4, 5]
```

```
C:\Users\auul\OneDrive\Desktop\hola 9\Javascript>node assigment8
1
2
[ 3, 4, 5 ]
```

In this example, the **first** and **second** variables capture the first two elements of the **numbers** array, and the **...rest** collects the remaining elements into a new array called **rest**.

➢ Rest Operator in Object Destructuring:

- Definition:
  The rest operator in object destructuring allows you to collect the remaining properties of an object into a new object. It is also denoted by the ... syntax and is useful when you want to extract specific properties and handle the rest separately.

Example:

```
// Definition
const person = {
  firstName: "Virat",
  lastName: "Kholi",
  age: 35,
  Country: "India",
};
const { firstName, lastName, ...otherInfo } = person;

// Examples
console.log(firstName); // Output: Virat
console.log(lastName); // Output: Kholi
console.log(otherInfo); // Output: { age: 35, Country: 'India' }
```

```
C:\Users\auul\OneDrive\Desktop\hola 9\Javascript>node assigment8
Virat
Kholi
{ age: 35, Country: 'India' }
```

In this example, **firstName** and **lastName** capture specific properties of the **person** object, while the **...otherInfo** collects the remaining properties into a new object called **otherInfo**.

These rest operator examples illustrate how they provide a concise and flexible way to handle remaining elements or properties during array and object destructuring in JavaScript.

3.Explain localStorage methods like setItem(), getItem(), remove(), clear() with example?

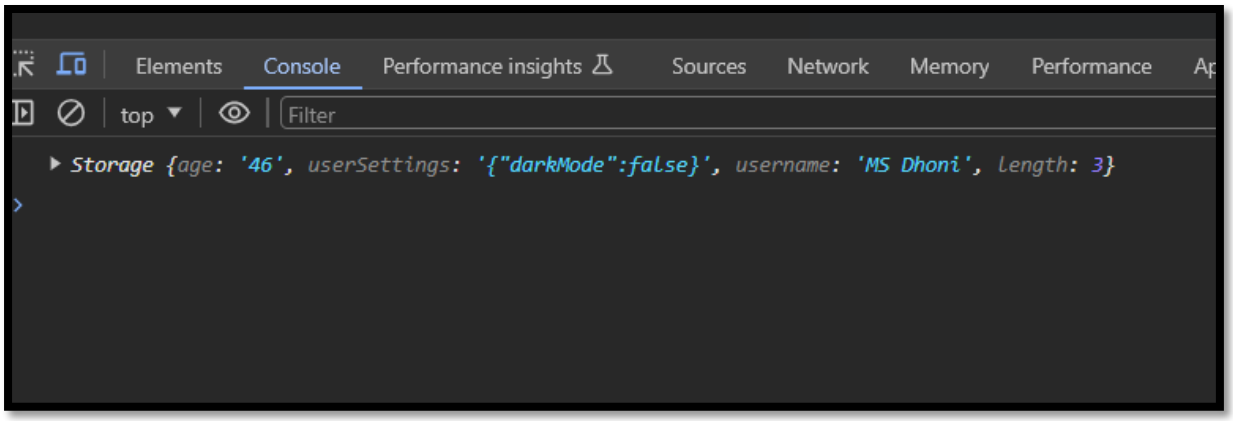
Answer:

- **setItem(key, value):**

- **Definition:**
  The setItem method is used to store a key-value pair in the local storage. The key is a string that acts as an identifier, and the value can be any valid JavaScript data type (string, number, boolean, object, etc.).

Example:

```
// Storing data in localStorage
localStorage.setItem('username', 'MS Dhoni');
localStorage.setItem('age', 46);
console.log(localStorage);
```

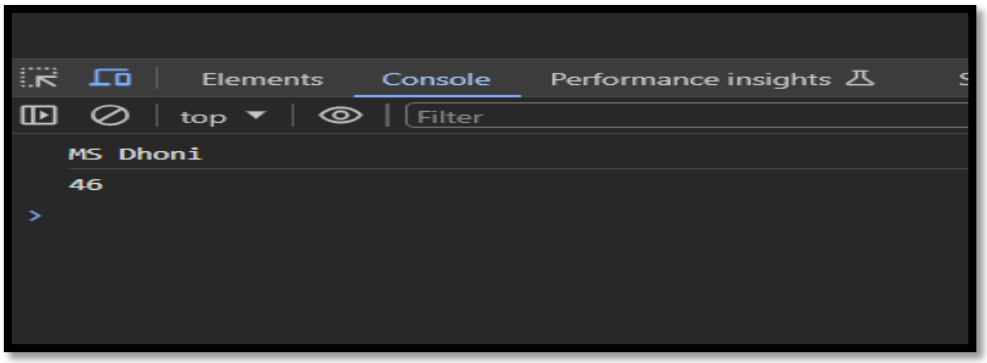


- **getItem(key):**
  - **Definition:**
    The getItem method retrieves the value associated with a specified key from the local storage.

Example:

```
// Retrieving data from localStorage
const username = localStorage.getItem("username");
const age = localStorage.getItem("age");
```

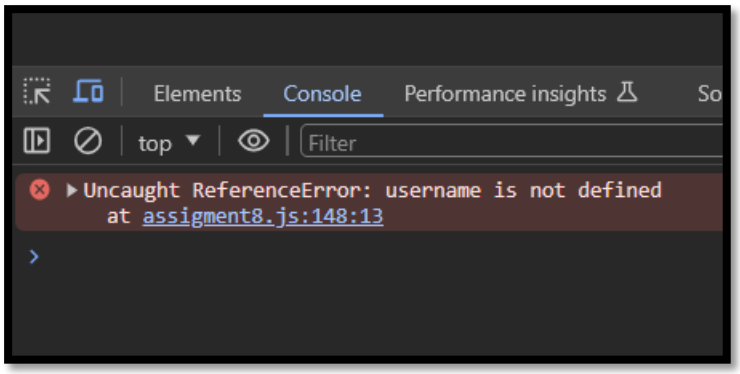
```
console.log(username); // Output: MS Dhoni
console.log(age); // Output: 46
```



- **removeItem(key):**
  - **Definition:**
    The removeItem method removes the key-value pair associated with the specified key from the local storage.

Example:

```
// Removing data from localStorage
localStorage.removeItem("username");
console.log(username);
```



- **clear():**
  - **Definition:**
    The clear method is used to remove all key-value pairs from the local storage, effectively clearing the entire storage.

Example:

```
// Clearing all data from localStorage
localStorage.clear();
console.log(username);
```

4. Explain setTimeout() and setInerval() with examples

Answer:

- **setTimeout():**
  - **Definition:**

The setTimeout() function is used to execute a function or code snippet after a specified delay, measured in milliseconds.

Syntax:

setTimeout(function, delay, param1, param2, ...);

- ✓ **function:** The function to be executed.
- ✓ **delay:** The time (in milliseconds) to wait before executing the function.
- ✓ **param1, param2, ...:** Optional parameters to be passed to the function when it is executed.

Example:

```
// Display a message after 2 seconds
setTimeout(function () {
  console.log("This message is displayed after 5 seconds.");
}, 5000);
```

- ➢ **setInterval():**
  - **Definition:**

  The setInterval() function is used to repeatedly execute a function or code snippet at a specified interval.

Syntax:

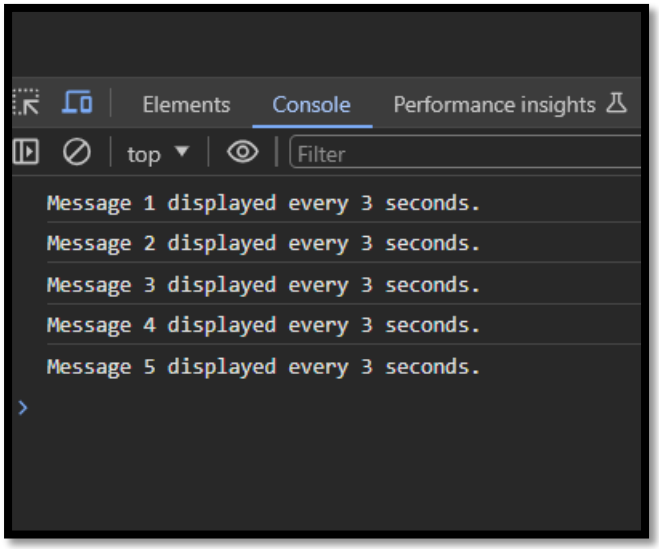
setInterval(function, interval, param1, param2, ...);

- ✓ **function:** The function to be executed.
- ✓ **interval:** The time (in milliseconds) between each execution of the function.
- ✓ **param1, param2, ...:** Optional parameters to be passed to the function each time it is executed.

Example:

```
// Display a message every 3 seconds
let count = 0;
const intervalId = setInterval(function() {
  count++;
  console.log(`Message ${count} displayed every 3 seconds.`);
```

```
  // Stop after displaying 5 messages
  if (count === 5) {
    clearInterval(intervalId); // Clears the interval
  }
}, 3000);
```



5. W.A.P of Promise() using .then() and .catch() with the condition (n>3)?

Answer:

```
// Function that returns a promise
function checkNumber(n) {
  return new Promise((resolve, reject) => {
    if (n > 3) {
      resolve(`Number ${n} is greater than 3.`);
    } else {
      reject(`Number ${n} is not greater than 3.`);
    }
  });
}

// Example usage
const inputNumber = 4;

checkNumber(inputNumber)
  .then((message) => {
    console.log("Success:", message);
  })
  .catch((message) => {
    console.error("Error:", message);
  });
```

```
C:\Users\auul\OneDrive\Desktop\hola 9\Javascript>node assigment8
Error: Number 1 is not greater than 3.

C:\Users\auul\OneDrive\Desktop\hola 9\Javascript>node assigment8
Error: Number 2 is not greater than 3.

C:\Users\auul\OneDrive\Desktop\hola 9\Javascript>node assigment8
Error: Number 3 is not greater than 3.

C:\Users\auul\OneDrive\Desktop\hola 9\Javascript>node assigment8
Success: Number 4 is greater than 3.

C:\Users\auul\OneDrive\Desktop\hola 9\Javascript>node assigment8
Success: Number 5 is greater than 3.

C:\Users\auul\OneDrive\Desktop\hola 9\Javascript>node assigment8
Success: Number 6 is greater than 3.
```

6.Explain async and await with using fetch(‘https://dummyjson.com/users/’)

Answer:

- ❖ async and await are features in JavaScript that simplify asynchronous code, making it look and behave more like synchronous code. They are often used in conjunction with promises, and one common use case is with the fetch API for making asynchronous HTTP requests.

- ❖ **Using fetch with async and await:** Let's see an example where we use fetch to make an HTTP request to 'https://dummyjson.com/users/' and then use async and await to handle the response.

```
// Function to fetch user data asynchronously
async function fetchUserData() {
  try {
    // Use the fetch function to make an HTTP GET request
    const response = await fetch("https://dummyjson.com/users/");

    // Check if the response status is okay (status code 200-299)
    if (!response.ok) {
      throw new Error(`HTTP error! Status: ${response.status}`);
    }

    // Parse the response JSON
    const data = await response.json();

    // Log the user data
    console.log("User Data:", data);

    return data; // You can return the data or perform additional operations
  } catch (error) {
```

```
    console.error("Error fetching user data:", error.message);
    throw error; // Rethrow the error or handle it as needed
  }
}

// Call the function and handle the result
fetchUserData()
  .then((userData) => {
    // Do something with the user data
    console.log("User data received:", userData);
  })
  .catch((error) => {
    // Handle errors
    console.error("Error in fetchUserData:", error);
  });

async function abcd() {
  //async return a promise
  let result = await fetch("https://dummyjson.com/products/"); //await waits for a
promise
  let data = await result.json();
  console.log(data);
}
abcd();
```

```
Elements  Console  Performance insights  Sources  Network  Memory  Performance  Application  Security  Lighthouse  Recorder
top ▾  Filter

User Data: ▸ {users: Array(30), total: 100, skip: 0, limit: 30}
User data received: ▸ {users: Array(30), total: 100, skip: 0, limit: 30}
▾ {products: Array(30), total: 100, skip: 0, limit: 30} i
  limit: 30
  ▾ products: Array(30)
    ▸ 0: {id: 1, title: 'iPhone 9', description: 'An apple mobile which is nothing like apple', price: 549, discountPercentage: 12.96, …}
    ▸ 1: {id: 2, title: 'iPhone X', description: 'SIM-Free, Model A19211 6.5-inch Super Retina HD di…lay with OLED technology A12 Bionic chip with ...', price: 899, discountPercentage: 17.94, …}
    ▸ 2: {id: 3, title: 'Samsung Universe 9', description: "Samsung's new variant which goes beyond Galaxy to the Universe", price: 1249, discountPercentage: 15.46, …}
    ▸ 3: {id: 4, title: 'OPPOF19', description: 'OPPO F19 is officially announced on April 2021.', price: 280, discountPercentage: 17.91, …}
    ▸ 4: {id: 5, title: 'Huawei P30', description: 'Huawei's re-badged P30 Pro New Edition was officia…ny and now the device has made its way to the UK.', price: 499, discountPercentage: 10.58, …}
    ▸ 5: {id: 6, title: 'MacBook Pro', description: 'MacBook Pro 2021 with mini-LED display may launch between September, November', price: 1749, discountPercentage: 11.02, …}
    ▸ 6: {id: 7, title: 'Samsung Galaxy Book', description: 'Samsung Galaxy Book S (2020) Laptop With Intel Lakefield Chip, 8GB of RAM Launched', price: 1499, discountPercentage: 4.15, …}
    ▸ 7: {id: 8, title: 'Microsoft Surface Laptop 4', description: 'Style and speed. Stand out on HD video calls backe…o Mics. Capture ideas on the vibrant touchscreen.', price: 1499, discountPercentage: 10.23, …}
    ▸ 8: {id: 9, title: 'Infinix INBOOK', description: 'Infinix Inbook X1 Ci3 10th 8GB 256GB 14 Win10 Grey - 1 Year Warranty', price: 1099, discountPercentage: 11.83, …}
    ▸ 9: {id: 10, title: 'HP Pavilion 15-DK1056WM', description: 'HP Pavilion 15-DK1056WM Gaming Laptop 10th Gen Core i5, 8GB, 256GB SSD, GTX 1650 4GB, Windows 10', price: 1099, discountPercentage: 6.18, …}
    ▸ 10: {id: 11, title: 'perfume Oil', description: 'Mega Discount, Impression of Acqua Di Gio by GiorgioArmani concentrated attar perfume Oil', price: 13, discountPercentage: 8.4, …}
```

In this example:

- The fetchUserData function is declared as an async function. This allows the use of the await keyword inside the function.
- Inside the function, await fetch('https://dummyjson.com/users/') is used to make an asynchronous HTTP GET request. The await keyword ensures that the code waits for the request to complete and returns the response.
- We check if the response status is okay (status code 200-299), and then use await response.json() to parse the response as JSON.
- The user data is logged to the console, and the data is returned.
- The function is called using fetchUserData().then() to handle the resolved promise or .catch() to handle any errors.

This example demonstrates how async and await make asynchronous code more readable and easier to reason about, especially when working with promises and asynchronous operations like fetching data from an API.