Objects

Question 1: What is an object in JavaScript? How are objects different from arrays?

Answer 1: An **object** in JavaScript is a data structure that stores data in the form of **key-value pairs**. Objects are used to represent real-world entities with properties and behaviors.

**Syntax:**

**let objectName = {**

**key1: value1,**

**key2: value2,**

**};**

**Example:**

let person = {

name: "Alice",

age: 25,

greet: function () {

console.log("Hello!");

},

};

console.log(person.name); // Output: Alice

person.greet(); // Output: Hello!

**Objects Are Different From Arrays:**

| **Aspect** | **Objects** | **Arrays** |
| --- | --- | --- |
| **Structure** | Stores data as **key-value**  **pairs**. | Stores data as an **ordered**  **list of items**. |
| **Access** | Access values using keys  (e.g., object.key). | Access values using indices (e.g., array[0]). |
| **Use Case** | Best for representing  **entities** with properties. | Best for storing **lists** or sequences of data. |
| **Example** | {name: "Alice", age: 25} | ["Apple", "Banana", "Cherry"] |

**Example Comparison:**

**Object:**

let car = {

brand: "Toyota",

model: "Corolla",

year: 2022,

};

console.log(car.brand); // Output: Toyota

**Array:**

let fruits = ["Apple", "Banana", "Cherry"];

console.log(fruits[0]); // Output: Apple

**Example:**

* **Objects**: Use when data is labeled (key-value pairs).
* **Arrays**: Use when data is in an ordered list or sequence.

Question 2: Explain how to access and update object properties using dot notation and bracket notation.

Answer 2:

**Accessing and Updating Object Properties in JavaScript:**

* You can access and update object properties using **dot notation** or **bracket notation**.

**1. Dot Notation**

* **How it works:** Use a period (.) followed by the property name.
* **Use case:** When the property name is a simple string (e.g., no spaces or special characters).

**Accessing:**

let person = { name: "Alice", age: 25 };

console.log(person.name); // Output: Alice

console.log(person.age); // Output: 25

**Updating:**

person.age = 26; // Update the 'age' property

console.log(person.age); // Output: 26

**2. Bracket Notation**

* **How it works:** Use square brackets ([]) and pass the property name as a string inside.
* **Use case:** When the property name has spaces, special characters, or is stored in a variable.

**Accessing:**

let person = { "first name": "Alice", age: 25 };

console.log(person["first name"]); // Output: Alice

console.log(person["age"]); // Output: 25

**Updating:**

person["first name"] = "Bob"; // Update the 'first name' property

console.log(person["first name"]); // Output: Bob

**Using Variables in Bracket Notation:**

let key = "age";

console.log(person[key]); // Output: 25

person[key] = 30; // Update 'age'

console.log(person.age); // Output: 30

**Sort Explanations:**

| **Aspect** | **Dot Notation** | **Bracket Notation** |
| --- | --- | --- |
| **Syntax** | object.property | object["property"] |
| **When to Use** | Simple property names. | Property names with spaces, special characters, or variables. |