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

**What is an Object?**

An object is a collection of key-value pairs (properties) that represent a real-world entity.

- **Keys** are strings (or Symbols).

- **Values** can be any data type (numbers, strings, functions, other objects).

**How Objects Differ from Arrays**

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| **Feature** | **Objects** | **Arrays** |
| Structure | `{ key: value }` (Unordered) | `[value1, value2]` (Ordered) |
| Access | By property name (key) | By index (0-based) |
| Use Case | Represent entities (e.g., `user`) | Store lists (e.g., `shoppingList`) |
| Methods | Custom properties/functions | Built-in methods (`push`, `map`) |

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

**1. Dot Notation (Static Access)**

- Syntax: `object.property`

- Use Case: When the property name is known and fixed.

Javascript:

const user = {

name: "John",

age: 30

};

// Access

console.log(user.name); // "John"

// Update

user.age = 31;

console.log(user.age); // 3

**2. Bracket Notation (Dynamic Access)**

- Syntax: `object["property"]`

- Use Case: When the property name is:

- Dynamic (stored in a variable).

- Contains special characters (e.g., `user["first-name"]`).

Javascript:

const key = "age";

console.log(user[key]); // 31 (same as user["age"])

// Update

user["name"] = "Jane";

console.log(user.name); // "Jane"