Q1. What is an object in JavaScript? How are objects different from arrays?

Ans: An object in JavaScript is a data structure used to store related data and functions in the form of key–value pairs (also called properties). Objects help represent real-world entities such as a student, car, or user.

Example of an Object:

let student = {

  name: "Nagesh",

  age: 23,

  course: "Front-End"

};

Here, name, age, and course are keys, and their values store related information.

Difference Between Objects and Arrays

Although both objects and arrays can store multiple values, they are used for different purposes.

Feature	Object	Array
Data storage	Key–value pairs	Ordered list of values
Access method	Using keys	Using index numbers
Order	Not guaranteed	Ordered
Use case	Store related properties	Store list of items
Syntax	{}	[]

Example Comparison

Array Example:

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

console.log(fruits[1]); // Banana

Object Example:

let car = {

```
  brand: "Honda",

  model: "City"

};
```

console.log(car.brand); // Honda

Q2. Explain how to access and update object properties using dot notation and bracket notation.

Ans: In JavaScript, object properties can be accessed and updated using two methods: dot notation and bracket notation.

1. Dot Notation

Dot notation is the most common and readable way to access object properties.

Syntax:

objectName.propertyName

Example:

```
let student = {

  name: "Nagesh",

  age: 23,

  course: "Front-End"

};
// Access property

console.log(student.name); // Nagesh


// Update property

student.age = 23;

console.log(student.age); // 23
```

2. Bracket Notation

Bracket notation is useful when:

- Property names have spaces or special characters

- Property names are stored in variables

Syntax:

objectName["propertyName"]

Example:

```
let student = {

  "full name": "Nagesh Kumavat",

  age: 23

};
```

```
// Access property

console.log(student["full name"]); // Nagesh Kumavat
```

```
// Update property

student["age"] = 23;

console.log(student["age"]); // 23
```

Using Variable with Bracket Notation:

```
let key = "age";

console.log(student[key]); // 23
```