Here's a **detailed explanation** of

the different types of

`if`,

`if...else` ,

and `else if`

statements in JavaScript with **syntax, examples**, and **outputs**.

□ 1. `if` Statement

□ Syntax:

```
if (condition) {
  // Code to run if condition is true
}
```

□ Explanation:

- The code inside the `if` block runs **only if** the condition is `true`.

□ Example:

```
<script>
let age = 20;

if (age >= 18) {
  console.log("You are an adult.");
}
<script>
```

□ Output:

```
You are an adult.
```

□ 2. `if...else` Statement

□ Syntax:

```
if (condition) {
  // Runs if condition is true
} else {
  // Runs if condition is false
}
```

□ Explanation:

- If the `if` condition is `true`, the first block runs.
- Otherwise, the `else` block runs.

□ Example:

```
<script>



let isRaining = false;

if (isRaining) {
  console.log("Take an umbrella.");
} else {
  console.log("No need for an umbrella.");
}
<script>
```

□ Output:

```
No need for an umbrella.
```

□ 3. `if...else if...else` Statement

□ Syntax:

```
if (condition1) {
  // Runs if condition1 is true
} else if (condition2) {
  // Runs if condition2 is true
} else {
  // Runs if none of the above conditions are true
}
```

□ Explanation:

- Checks multiple conditions **in order**.
- Runs the block of the **first true** condition.
- If **none** are true, runs the `else` block.

□ Example:

```
<script>
let score = 75;

if (score >= 90) {
  console.log("Grade: A");
} else if (score >= 80) {
  console.log("Grade: B");
} else if (score >= 70) {
  console.log("Grade: C");
} else {
  console.log("Grade: F");
}
</script>
```

□ Output:

```
Grade: C
```

□ Summary Table:-

Type	Used For	Else Required?	Checks Multiple Conditions?
`if`	When you need to run code if true	□ No	□ No
`if...else`	Run one block if true, another if not	□ Yes	□ No
`if...else if...else`	Multiple checks	□ Yes (optional)	□ Yes

Let’s dive into more `if...else` statement examples in JavaScript — these are great for simple **binary decisions** (true/false, yes/no, pass/fail, etc.).

Each example includes:

- □ Code
- □ Explanation
- □ Output

□ Example 1: Voting Eligibility

```
<script>

let age = 16;

if (age >= 18) {
  console.log("You are eligible to vote.");
} else {
  console.log("You are not eligible to vote.");
}
</script>
```

□ Output:

```
You are not eligible to vote.
```

□ Example 2: Even or Odd Number

```
<script>
let number = 9;

if (number % 2 === 0) {
  console.log("Even number");
} else {
  console.log("Odd number");
}
</script>
```

□ Output:

```
Odd number
```

□ Example 3: Check Password Match

```
<script>

let enteredPassword = "hello123";
let correctPassword = "hello123";

if (enteredPassword === correctPassword) {
  console.log("Login successful");
} else {
  console.log("Incorrect password");
}
</script>
```

□ Output:

```
Login successful
```

□ Example 4: Temperature Check

```
<script>

let temperature = 35;

if (temperature > 30) {
  console.log("It's hot outside.");
} else {
  console.log("The weather is fine.");
}
</script>
```

□ Output:

```
It's hot outside.
```

□ Example 5: Check if Number is Positive

```
<script>

let num = 0;
```

```
if (num > 0) {
  console.log("Positive number");
} else {
  console.log("Zero or negative number");
}
</script>
```

□ Output:

```
Zero or negative number
```

□ Example 6: Light Switch

```
<script>

let isLightOn = false;

if (isLightOn) {
  console.log("Turn the light off");
} else {
  console.log("Turn the light on");
}
</script>
```

□ Output:

```
Turn the light on
```

□ Example 7: User is Logged In or Not

```
<script>

let isLoggedIn = true;

if (isLoggedIn) {
  console.log("Welcome back!");
} else {
  console.log("Please log in.");
}
</script>
```

□ Output:

```
Welcome back!
```

□ Example 8: Check if a Character is a Vowel

```
<script>

let char = 'e';

if (char === 'a' || char === 'e' || char === 'i' || char === 'o' || char
=== 'u') {
  console.log("Vowel");
} else {
  console.log("Consonant");
}
</script>
```

□ Output:

```
Vowel
```

□ Summary: When to Use `if...else`

Situation	Use `if...else`
Two possible outcomes	□ Yes
Binary conditions (true/false)	□ Yes
Simplest decision-making logic	□ Yes

Let's go deeper into the `else if` statement with more **realistic and diverse examples**. Each example includes:

- □ Explanation
- □ Output

□ Example 1: Weather Condition Checker

```
<script>



let weather = "cloudy";

if (weather === "sunny") {
  console.log("Wear sunglasses.");
} else if (weather === "rainy") {
  console.log("Take an umbrella.");
} else if (weather === "cloudy") {
  console.log("It might rain, stay prepared.");
} else {
  console.log("Weather condition unknown.");
}
</script>
```

□ Output:

```
It might rain, stay prepared.
```

□ Example 2: Time of Day Greeting

```
<script>



let hour = 15;

if (hour < 12) {
  console.log("Good morning!");
} else if (hour < 18) {
  console.log("Good afternoon!");
} else if (hour <= 23) {
  console.log("Good evening!");
} else {
  console.log("Invalid hour.");
}
</script>
```

□ Output:

```
Good afternoon!
```

□ Example 3: Number Classification

```
<script>



let number = -7;

if (number > 0) {
  console.log("Positive number");
} else if (number < 0) {
  console.log("Negative number");
} else {
  console.log("Number is zero");
}
</script>
```

□ Output:

```
Negative number
```

□ Example 4: User Role Access Control

```
<script>



let role = "admin";

if (role === "user") {
  console.log("You can view content.");
} else if (role === "editor") {
  console.log("You can edit content.");
} else if (role === "admin") {
  console.log("You have full access.");
} else {
  console.log("Invalid role.");
}
</script>
```

□ Output:

```
You have full access.
```

□ Example 5: Grading System (with more levels)

```
<script>

let marks = 88;

if (marks >= 90) {
  console.log("Grade: A");
} else if (marks >= 80) {
  console.log("Grade: B");
} else if (marks >= 70) {
  console.log("Grade: C");
} else if (marks >= 60) {
  console.log("Grade: D");
} else {
  console.log("Grade: F");
}
</script>
```

□ Output:

```
Grade: B
```

□ Example 6: Traffic Light Simulation

```
<script>
let trafficLight = "yellow";

if (trafficLight === "red") {
  console.log("Stop");
} else if (trafficLight === "yellow") {
  console.log("Get ready");
} else if (trafficLight === "green") {
  console.log("Go");
} else {
  console.log("Invalid traffic light color");
}
</script>
```

□ Output:

```
Get ready
```

□ Key Notes:

- JavaScript evaluates conditions **top to bottom**.
- As soon as it finds a `true` condition, it **executes that block and skips the rest**.
- `else if` helps make the code more **readable** than multiple nested `if` statements.