JavaScript Student Notes with Interview-Focused Questions

Conditions for This Content

- Language must stay **easy and clear** for students.
- Every topic should have explanation + small interview focus.
- Must include **if, else if, else** conditions clearly.
- Include **topic-level interview questions** and **coding practice questions**.

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1) Variables

- **Declaration** → `let a;` (only name created).
  👉Interview: Default value is `undefined`.

- **Initialization** → `a = 10;` (value assigned).
  👉Interview: Without initialization, variable is undefined.

- **var** → old, function scope, hoisted.
  👉Interview: Avoid var because of hoisting bugs.

- **let** → block scope, used when value can change.
  👉Interview: Good for counters and reassigning values.

- **const** → block scope, fixed binding.
  👉Interview: Object properties can change, but reference cannot.

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2) Operators

- **Arithmetic** (+ - * / % ++ --)
  👉Interview: Common in loops and counters.

- **Comparison** (==, ===, !=, !==, >, <, >=, <=)
  👉Interview: Always prefer `===` for strict comparison.

- **Logical** (&&, ||, !)
  👉Interview: Used for multiple condition checks.

• **Assignment** (=, +=, -=, *=, /=)
👉Interview: Used to update values quickly.

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3) Conditions (if / else if / else)

• **if** → Runs only if condition true.

```
if (marks >= 35) {
  console.log("Pass");
}
```

👉Interview: Basic control structure; checks one condition.

• **else** → Runs when if condition is false.

```
if (marks >= 35) {
  console.log("Pass");
} else {
  console.log("Fail");
}
```

👉Interview: Gives alternative path.

• **else if** → Multiple conditions check.

```
if (marks >= 90) {
  console.log("Grade A");
} else if (marks >= 75) {
  console.log("Grade B");
} else if (marks >= 35) {
  console.log("Pass");
} else {
  console.log("Fail");
}
```

👉Interview: Shows ability to chain conditions for ranges.

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4) Data Types

- **Primitive** → string, number, boolean, null, undefined.
  👉Interview: Stored directly in memory.

- **Non-Primitive** → array, object, function.
  👉Interview: Stored as references.

Examples: - String → "Hello" - Number → 10 - Boolean → true/false - Array → [1,2,3] - Object → {name:"ReRe"} - Array of Objects → [{id:1},{id:2}]

👉Interview: `typeof null` is object (JavaScript bug).

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5) Functions

- **Function Declaration** → `function greet(){}`
  👉Interview: Hoisted.

- **Function Expression** → `const greet = function(){}`
  👉Interview: Not hoisted.

- **Arrow Function** → `const greet = () => {}`
  👉Interview: Does not have its own `this`.

- **Parameters vs Arguments**
  👉Parameters = placeholders, Arguments = real values.

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6) Loops

- **for** → known count.
- **while** → unknown count.
- **do...while** → at least once.
- **nested loop** → loop inside loop.

👉Interview: Loops test logical flow and array handling.

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7) Patterns (Nested Loops)

- Right Triangle →

```
*
**
***
```

• Inverted Triangle →

```
***
**
*
```

• Numbers Triangle →

```
1
12
123
```

👉Interview: Classic loop logic test.

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8) Arrays + Loops

- **Print all values** → with for loop.
- **Find even numbers** → check `% 2 == 0`.
- **Add all numbers** → `sum = sum + arr[i]`.

👉Interview: Arrays + loops are core for coding tests.

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9) Array Methods (Basic Only)

- push → add last.
- pop → remove last.
- shift → remove first.
- unshift → add first.

👉Interview: These 4 are must-know basics.

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10) Prototype

- Every array/object has prototype.
  👉Interview: Built-in methods exist because of prototype.

• Prototype = blueprint for inheritance.
👉Interview: JS inheritance works with prototype chain.

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11) Interview Questions (Topic-Wise)

Variables 1. Difference between var, let, const? 2. Can const objects be changed? 3. What happens if variable used before declaration?

Operators 4. Difference between == and ===? 5. Where do we use logical operators?

Conditions 6. Write if/else program for pass/fail. 7. Write else if ladder for grading system.

Data Types 8. Primitive vs Non-Primitive? 9. Why is typeof null = object?

Functions 10. 3 types of functions? 11. Difference between arrow and normal function?

Loops 12. Where to use while loop in real life? 13. What is nested loop and example?

Arrays 14. How to print even numbers from array? 15. Difference between push and unshift?

Prototype 16. What is prototype? 17. How are array methods available by default?

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12) Coding Questions (Interview Style)

1. Print numbers 1 to 10.
2. Print even numbers from 2 to 20.
3. Print multiplication table of 5.
4. Reverse an array manually.
5. Count vowels in string.
6. Find maximum in array.
7. Check palindrome string.
8. Print square pattern of *.
9. Print right triangle of *.
10. Print inverted triangle of *.
11. Print number triangle.
12. Print numbers 10 to 1.
13. Find sum of first N numbers.
14. Swap two numbers without temp variable.
15. Print factorial using loop.
16. Write if/else if program for marks grading.
17. Write program using while loop to print numbers until 100.
18. Write nested loop to print multiplication tables 1–10.

👉Now content includes **if, else if, else conditions** with explanation + examples at the right place, plus strong coding and interview questions.