Chapter 3: Operators & Conditions

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Q. What is operator precedence?

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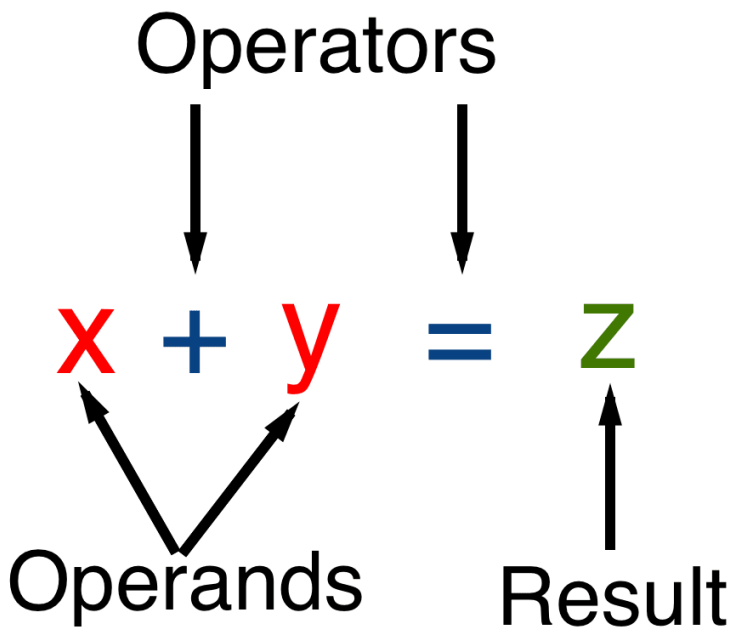
Q. What are operators? What are the types of operators in JS? V. IMP.

- Operators are **symbols or keywords** used to perform operations on operands.



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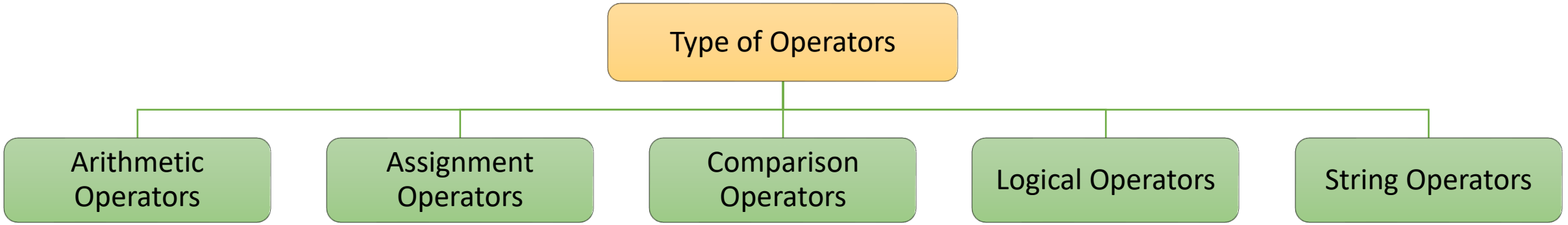
Q. What are operators? What are the types of operators in JS? V. IMP.




```
let x = 5;
let y = 2;

console.log(x + y);
console.log(x - y);
console.log(x * y);
console.log(x / y);
console.log(x % y);
//Remainder: 1
console.log(x ** y);
//Exponentiation: 25
```

```
let x = 10;

x += 5;
//x = x + 5
console.log(x);
// Output: 15

x *= 2;
//x = x * 2
console.log(x);
// Output: 30
```

```
let x = 5;
let y = 3;

console.log(x > y);
console.log(x < y);
console.log(x >= y);
console.log(x <= y);
console.log(x === y);
// Equality: false
console.log(x !== y);
// Inequality: true
```

```
let x = true;
let y = false;

console.log(x && y);
//Logical AND: false

console.log(x || y);
//Logical OR: true

console.log(!x);
//Logical NOT: false
```

```
let a = 'Hello ';
let b = 'World';

var c =(a + b);
// Concatenation
// "Hello World"
```

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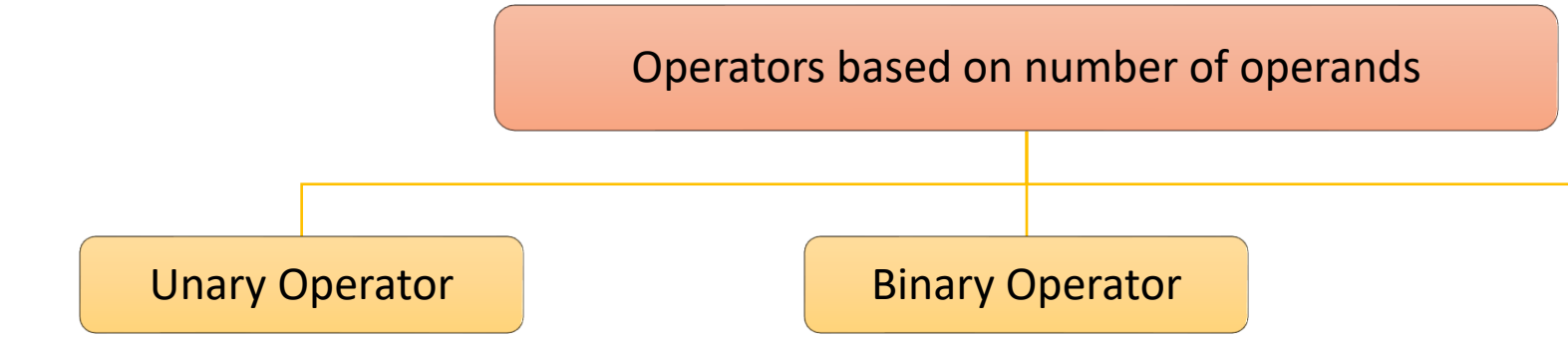
Q. What is the difference between unary, binary, and ternary operators?




```
let a = 5;

// Unary operator
// Single operand
let b = -a;
console.log(b);
// Output: -5
console.log(++a);
// Output: 6
```

```
let x = 10;
let y = 3;

// Binary operator
// Two operands
let z = x + y;
console.log(z);
// Output: 13
```

```
// Ternary operator
// Threee operands
let result = condition ? 'Yes' : 'No';

console.log(result);
// Output: 'Yes'
```

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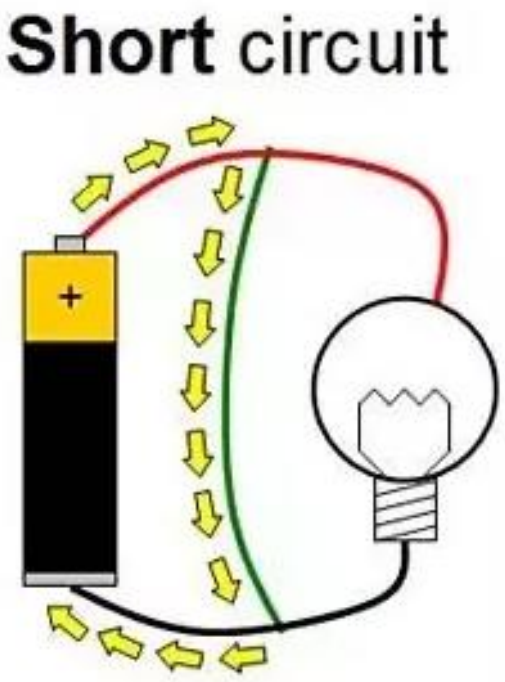
Q. What is short-circuit evaluation in JS?

- Short-circuit evaluation stops the execution as soon as the **result can be determined without evaluating** the remaining sub-expressions.




```
// Short-circuit evaluation with logical AND
let result1 = false && someFunction();
console.log(result1);
// Output: false
```

```
// Short-circuit evaluation with logical OR
let result2 = true || someFunction();
console.log(result2);
// Output: true
```

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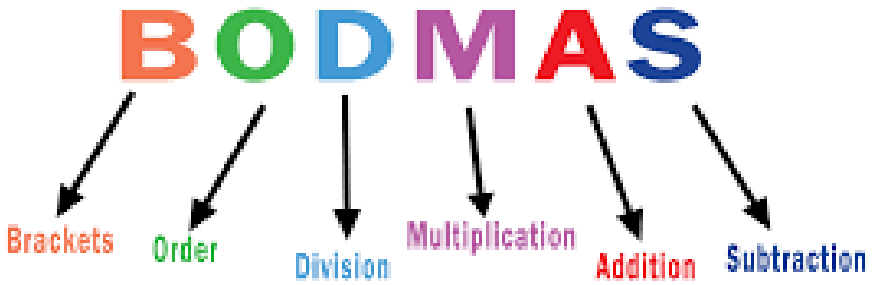
Q. What is operator precedence?

- As per operator precedence, operators with higher precedence are **evaluated first.**




```
let a = 6;
let b = 3;
let c = 2;

//BracketOf-Division-Multiplication-Add-Sub
let result = a + b * c + (a - b);

console.log(result);
// Output: 15
```

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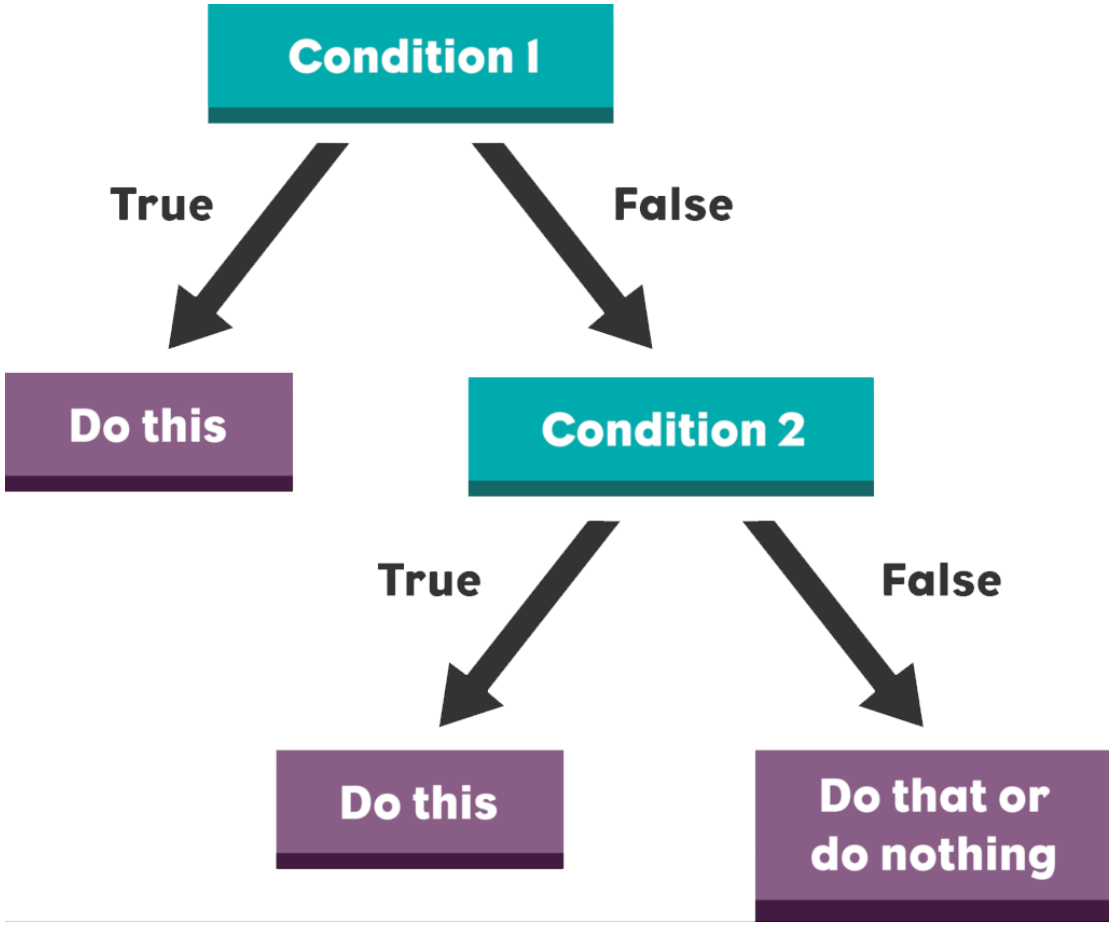
Q. What are the types of conditions statements in JS? V. IMP.



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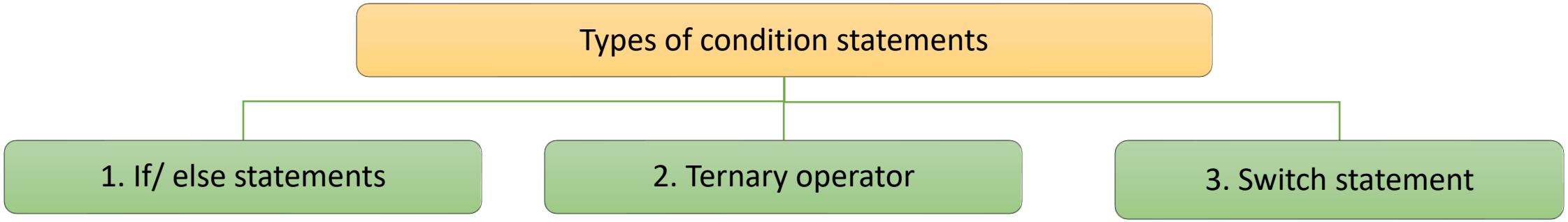
Q. What are the types of conditions statements in JS? V. IMP.




```
let x = 5;

if (x > 10) {
  console.log("1");
} else if (x < 5) {
  console.log("2");
} else {
  console.log("3");
}
// Output: '3'
```

```
let y = 20;
let z = y > 10 ? "1" : "0"
console.log(z);
// Output: '1'
```

```
let a = 5;
switch (a) {
  case 1:
    console.log("1");
    break;
  case 5:
    console.log("2");
    break;
  default:
    console.log("3");
}
// Output: '2'
```

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Q. When to use which type of conditions statements in real applications? V. IMP.

- If…else : for complex, different & multiline execution.
- Benefit: Cover all scenarios.

```
const age = 25;
const height = 6

if (age < 25 && height < 5) {
  console.log("You are a minor.");
  console.log("You are a short.");
} else if (age >= 18 && height > 6) {
  console.log("You are an adult.");
  console.log("You are an tall.");
} else {
  console.log("You are average");
}
// Output: "You are average"
```

- Ternary operators : for simple conditions & single value evaluations.
- Benefit: Short one line syntax.

```
const isUser = true;

const user = isUser ? 10 : 20;

console.log(user);
// Output: "10"
```

- Switch case: For same left side values.
- Benefit: More structured code.

```
const dayOfWeek = "Tuesday";

switch (dayOfWeek) {
  case "Monday":
    console.log("Start ");
    break;
  case "Tuesday":
  case "Sunday":
    console.log("Weekend!");
    break;
  default:
    console.log("Invalid");
}
// Output: "Weekend!"
```

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Q. What is the difference between == and ===? V. IMP.

```
//Loose Equality
console.log(1 == '1');
console.log(true == 1);
// Output: true
```

- Loose Equality (==) operator compares two values for equality after performing **type coercion**

```
//Strict Equality
console.log(1 === '1');
console.log(true === 1);
// Output: false
```

- Strict Equality (===) operator compares two values for equality **without** performing type coercion.

- Normally **=== is preferred** in use to get more accurate comparisons.

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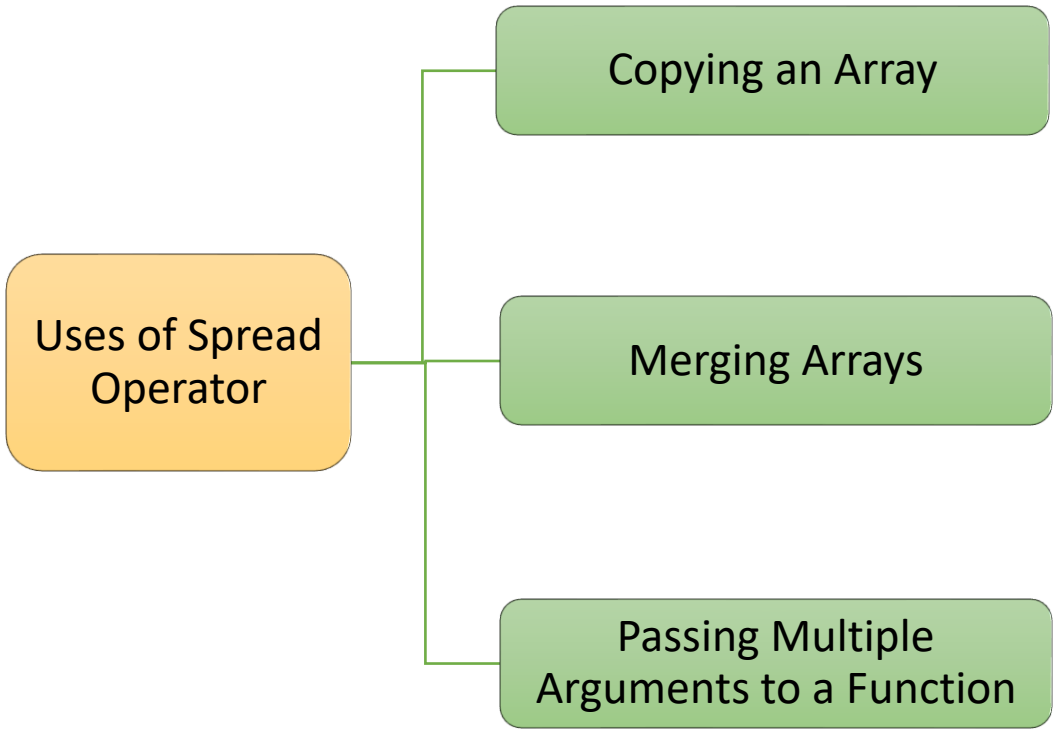
Q. What is the difference between Spread and Rest operator in JS?

- The spread operator(...) is used to **expand or spread elements** from an iterable (such as an array, string, or object) into individual elements.




```
// Spread Operator Examples
const array = [1, 2, 3];
console.log(...array); // Output: 1, 2, 3
```

```
// Copying an array
const originalArray = [1, 2, 3];
const copiedArray = [...originalArray];
console.log(copiedArray); // Output: [1, 2, 3]
```

```
// Merging arrays
const array1 = [1, 2, 3];
const array2 = [4, 5];
const mergedArray = [...array1, ...array2];
console.log(mergedArray); // Output: [1, 2, 3, 4, 5]
```

```
// Passing multiple arguments to a function
const numbers = [1, 2, 3, 4, 5];
sum(...numbers);
function sum(a, b, c, d, e) {
  console.log(a + b + c + d + e); //Output: 15
}
```

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Q. What is the difference between Spread and Rest operator in JS?

- The rest operator is used in function parameters to collect all **remaining arguments** into an array.

```
// Rest Operator Example
display(1, 2, 3, 4, 5);

function display(first, second, ...restArguments) {
  console.log(first); // Output: 1
  console.log(second); // Output: 2

  console.log(remaining); // Output: [3, 4, 5]
}
```

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