Phase 8: Static Keyword in Java

Topics Covered

1. Static variables
2. Static methods
3. Static blocks
4. Static vs instance context
5. When and why to use static

Concept Breakdown

- static variable: Shared among all instances of a class
- static method: Can be called without creating object
- static block: Runs once when class is loaded
- static class: Can only be a nested class inside another class

Code Example

```
package StaticDemo;

class Counter {
    static int count = 0; // shared variable

    Counter() {
        count++;
        System.out.println("Object created. Total count: " + count);
    }
```

```
    static void displayCount() {
        System.out.println("Static Method -> Total Count: " + count);
    }

    static {
        System.out.println("Static Block -> Counter class loaded");
    }
}

public class Task {
    public static void main(String[] args) {
        Counter.displayCount(); // static method without object

        Counter c1 = new Counter();
        Counter c2 = new Counter();
        Counter c3 = new Counter();

        Counter.displayCount(); // check shared count
    }
}
```

Notes:

- Static block runs only once when class is loaded.
- Static variable 'count' is shared among all instances.
- Static method can be accessed without an object.