

# Java Synchronization: Method, Block, and Static

## 1. synchronized Method (Instance-level Lock)

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- Syntax: public synchronized void methodName() {}
- Lock is on 'this' object (instance).
- If two threads access the method via two different objects, both will run simultaneously (no synchronization between them).

Example:

```
class Counter {  
    int count = 0;  
  
    public synchronized void increment() {  
        count++;  
    }  
}
```

## 2. synchronized Block

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- More flexible. You can synchronize only a specific block of code.
- Lock can be on any object.

Example:

```
class Counter {
```

```
int count = 0;

public void increment() {
    synchronized(this) {
        count++;
    }
}
```

### 3. static synchronized Method (Class-level Lock)

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- Lock is on the Class object (i.e., ClassName.class).
- Regardless of how many objects exist, only one thread can access the static synchronized method at a time.

Example:

```
class Counter {

    static int count = 0;

    public static synchronized void increment() {
        count++;
    }
}
```