

The `final` Keyword in Java

1. Introduction

`final` keyword Java te use hoy **variables, methods, and classes ke restrict** korte.
Eta **inheritance er context** e khub important, karon `final` **child class er modification** ke control korel

2. Uses of `final` Keyword

1. **Final Variable** – constant value declare korte
 2. **Final Method** – method override prevent korte
 3. **Final Class** – class ke extend prevent korte
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3. Final Variable

```
class TestFinalVariable {  
    final int MAX = 100;  
  
    void display() {  
        // MAX = 200; // Error: cannot assign a value to final variable  
        System.out.println("MAX = " + MAX);  
    }  
}  
  
public class DemoFinalVariable {  
    public static void main(String[] args) {  
        TestFinalVariable t = new TestFinalVariable();  
        t.display();  
    }  
}
```

Output:

```
MAX = 100
```

4. Final Method

```
class Parent {
    final void show() {
        System.out.println("This is a final method");
    }
}

class Child extends Parent {
    // void show() { // Error: cannot override final method
    //     System.out.println("Trying to override");
    // }
}

public class TestFinalMethod {
    public static void main(String[] args) {
        Child c = new Child();
        c.show();
    }
}
```

Output:

```
This is a final method
```

5. Final Class

```
final class Vehicle {
    void start() {
        System.out.println("Vehicle starts");
    }
}

// class Car extends Vehicle { // Error: cannot inherit from final Vehicle
// }

public class TestFinalClass {
    public static void main(String[] args) {
        Vehicle v = new Vehicle();
        v.start();
    }
}
```

```
}  
}
```

Output:

```
Vehicle starts
```

6. Summary Table

Feature	Description	Example
Final Variable	Value cannot change	<code>final int MAX = 100;</code>
Final Method	Cannot be overridden	<code>final void show()</code>
Final Class	Cannot be extended	<code>final class Vehicle</code>

7. Points to Remember

1. Final keyword **immutability and safety** ensure korel
2. Final variable must be **initialized during declaration or in constructor**
3. Final methods prevent **overriding**, final classes prevent **inheritance**
4. Final members are widely used in **constants, utility classes, and API design**