

Department: BCA
Faculty Name: Er. Ashish Kumar
Subject: JAVA (5th sem.)
Topic: final keyword in java

final keyword in java

The final keyword is used in different contexts. First of all, *final* is a non-access modifiers applicable **only to a variable, a method or a class**. Following are different contexts where final is used.

Final Variable	→	To create constant variables
Final Methods	→	Prevent Method Overriding
Final Classes	→	Prevent Inheritance

The **final keyword** in java is used to restrict the user. The java final keyword can be used in many contexts. Final can be:

1. **final variable**
2. **final method**
3. **final class**

1. **final variable:** The final keyword can be applied with the variables, a final variable that have no value it is called blank final variable or uninitialized final variable. It can be initialized in the constructor only. The blank final variable can be static also which will be initialized in the static block only.

Example:

The screenshot shows a Notepad++ window with the file `C:\Users\ashishjha\Desktop\java\TestBike.java` open. The code defines a `TestBike` class with a `final` variable `maxSpeedLimit` and a `show()` method. A `main` method is also present, which creates a `TestBike` object and calls `show()`. Below the code editor, a Command Prompt window shows the compilation and execution of the program.

```

1  class TestBike
2  {
3      final int maxSpeedLimit=140;//final value
4      /*TestBike()
5      {
6          maxSpeedLimit=200;
7      }*/
8      /* static final int speedlimit;//final variable
9      static
10     {
11         speedlimit=200;
12     } */
13     void show()
14     {
15         System.out.println(maxSpeedLimit);
16     }
17     public static void main(String args[])
18     {
19         TestBike obj=new TestBike();
20         obj.show();
21     }
22
23 }
```

Command Prompt output:

```

C:\Users\ashishjha\Desktop\java>javac TestBike.java

C:\Users\ashishjha\Desktop\java>java TestBike
140

C:\Users\ashishjha\Desktop\java>
```

2. **method:** When a method is declared with *final* keyword, it is called a final method. A final method cannot be overridden. The Object class does this a number of its methods are final. We must declare methods with final keyword for which we required to follow the same implementation throughout all the derived classes.

Example:

The screenshot shows a Notepad++ window with the file `C:\Users\ashishjha\Desktop\java\TestFinalMD.java`. The code defines two classes: `TestFinalM` and `TestFinalMD`. `TestFinalM` has a `final void m1()` method. `TestFinalMD` extends `TestFinalM` and attempts to override `m1()` with a non-final method, which causes a compilation error. The error message in the Command Prompt states: "TestFinalMD.java:11: error: m1() in TestFinalMD cannot override m1() in TestFinalM void m1() ^ overridden method is final 1 error".

```

1  class TestFinalM
2  {
3      final void m1 ()
4      {
5          System.out.println("This is a final method.");
6      }
7  }
8
9  class TestFinalMD extends TestFinalM
10 {
11     void m1 ()
12     {
13         // COMPILE-ERROR! Can't override.
14         System.out.println("Illegal!");
15     }
16     public static void main(String args[])
17     {
18         TestFinalMD obj=new TestFinalMD();
19         obj.m1();
20     }
21 }

```

Command Prompt Output:

```

C:\Users\ashishjha\Desktop\java>javac TestFinalMD.java
TestFinalMD.java:11: error: m1() in TestFinalMD cannot override
m1() in TestFinalM
    void m1()
        ^
    overridden method is final
1 error

C:\Users\ashishjha\Desktop\java>

```

3. **final class:** When a class is declared with *final* keyword, it is called a final class. A final class cannot be extended(inherited). There are two uses of a final class:

- One is definitely to prevent inheritance, as final classes cannot be extended. For example, all Wrapper Classes like Integer, Float etc. are final classes.
- The other use of final with classes is to create an immutable class like the predefined String class. We can't make a class immutable without making it final.