

# 04 Access Modifiers and ~~Object~~ Object Class

Date \_\_\_\_\_  
Page No. \_\_\_\_\_

## 1) Access Modifiers

→ Access Modifiers control the visibility or accessibility of classes, methods, and variables in Java. They help encapsulate data and restrict unauthorized access.

(a) ● There are 4 main access modifier in Java -

### (i) Private

- Private members are accessible only with the defining class.
- Used to hide internal state and implementation details from other classes.

Syntax:

```
private int count; // accessible only inside  
private void method() { } // the same class.
```

### (ii) public

- public members are accessible from any class, anywhere in the program.
- used to expose APIs and interfaces that should be widely accessible.

Syntax:

```
public int count; // accessible from any  
public void method() { } // other class.
```

### (iii) Protected

- protected members are accessible within the same package and also by subclasses (even in different packages).
- Allows controlled inheritance access while restricting general access.

Syntax:

```
protected int count; // accessible within package  
protected void method() { } // and subclasses
```



#### (iv) Default (package-private)

- If no modifier is specified, the member has package-private (default) access.
- Accessible only within classes of the same package, but not outside.

Syntax: `int count;` // accessible only within same package.  
`void method() {}`

#### (b) Rules for modifiers

- You cannot use private, protected, or public on local variables (inside methods).
- Classes can be either public or default. Top-level classes cannot be private or protected.
- Access levels in order from most restrictive to least.  
→ private < default (package-private) < protected < public
- Members marked private are NOT inherited by subclasses, but can still be accessed through public/protected methods.
- protected gives access to subclasses and classes in the same package.
- Interfaces and interface methods are implicitly public.

#### Access Levels

| Modifier  | class | package | subclasses | world |
|-----------|-------|---------|------------|-------|
| public    | Y     | Y       | Y          | Y     |
| protected | Y     | Y       | Y          | Y     |
| default   | Y     | N       | N          | N     |
| private   | Y     | N       | N          | N     |