1. **Definition of Method Overloading**

Method Overloading refers to defining multiple methods in the same class with the same name but different parameter lists. It allows a method to perform different tasks based on the input arguments.

1. **Definition of Method Overriding**

Method Overriding occurs when a subclass provides a specific implementation of a method that is already defined in its superclass. The overridden method must have the same name, return type, and parameters.

|  |  |  |
| --- | --- | --- |
| Feature | Method Overloading | Method Overriding |
| Definition | Defining multiple methods in the same class with the same name but different parameters. | Redefining a method in the child class that already exists in the parent class. |
| Class Scope | Occurs within the same class. | Occurs between a parent class and a child class. |
| Number of Methods | Multiple methods with the same name but different signatures. | A single method is redefined in the child class. |
| Parameters | Different number or type of parameters. | Same method signature (name and parameters). |
| Return Type | Can have different return types. | Must have the same return type or covariant return type. |
| Inheritance Requirement | Not required; methods exist in the same class. | Requires inheritance; child class must extend parent class. |
| Method Resolution | Resolved at compile-time (static binding). | Resolved at runtime (dynamic binding). |
| Use Case | Improves code readability by allowing multiple ways to call a method. | Allows a child class to provide a specific implementation for a parent method. |