SNS College of Technology

(An Autonomous Institutions)

Department of Computer Science and Engineering

23CSB201-Object Oriented Programming

Topic: Method Overloading & Overriding

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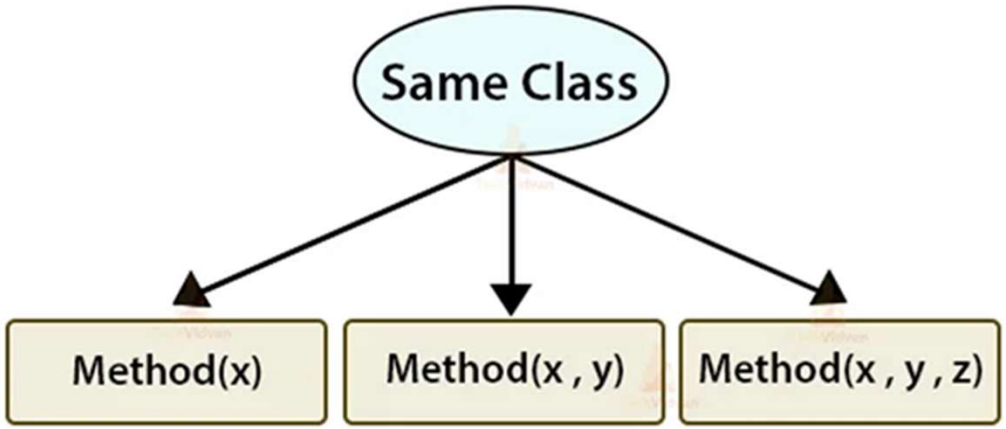
Method overloading

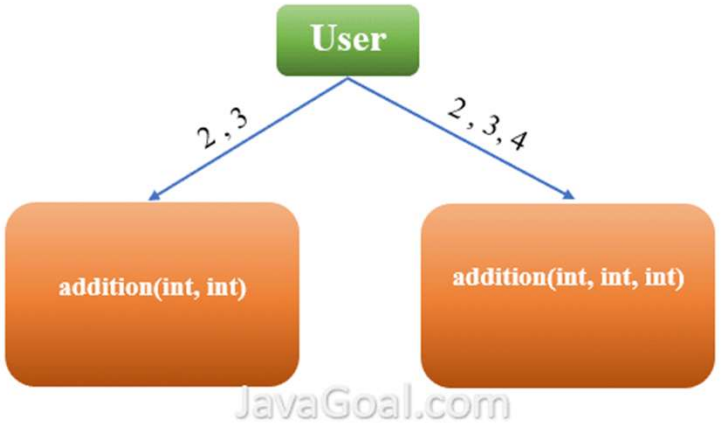
- **Method overloading** is a concept where **multiple methods have the same name but different parameter lists** (number, type, or order of parameters) within the **same class**.

Characteristic

- Occurs in the same class
- Method name is the same
- Parameters must be different
- Return type alone cannot differentiate methods
- Also called Compile-time polymorphism

Method Overloading





Overloading Sample Program

```
class Calculator {

    int add(int a, int b) {
        return a + b;
    }

    double add(double a, double b) {
        return a + b;
    }

    int add(int a, int b, int c) {
        return a + b + c;
    }
}
```

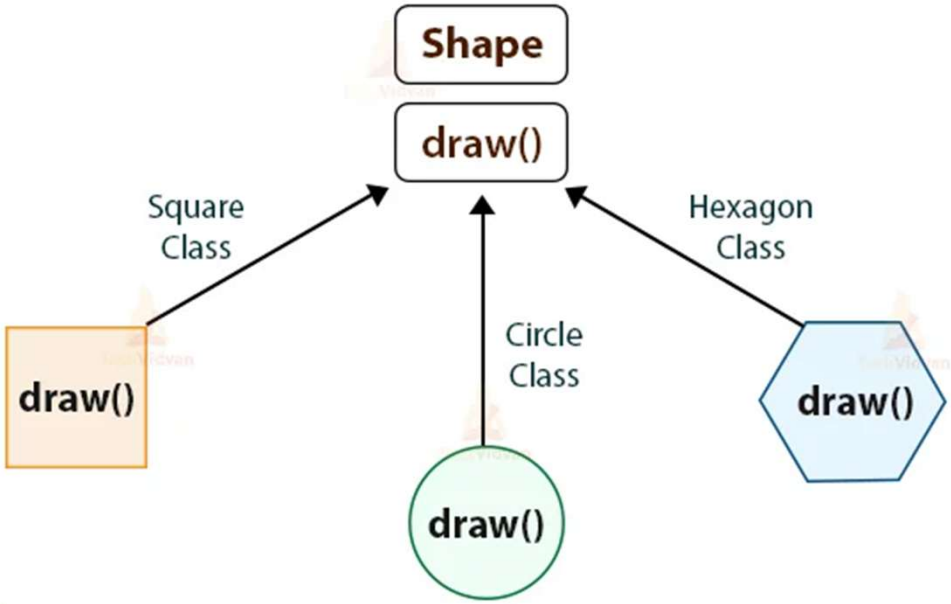
Method Overriding

- Method overriding occurs when a sub class provides a specific implementation of a method that is already defined in its super class.

Characteristic

- Occurs in **different classes** (inheritance required)
- Method name and parameters must be **same**
- Return type should be **same or covariant**
- Achieved at **runtime**
- Also called **Runtime polymorphism**

Method Overriding



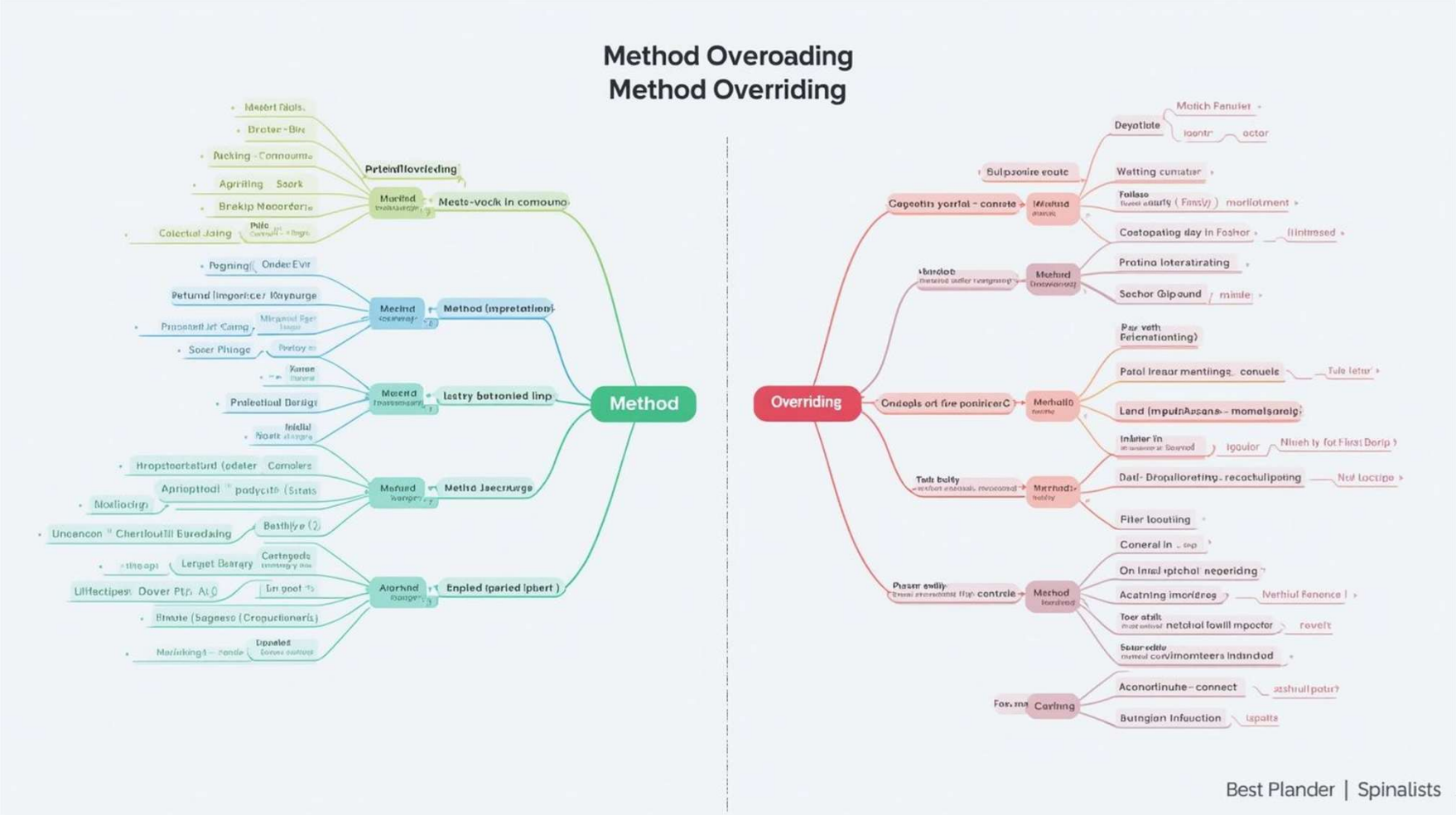
Example Diagram

```
class Animal {
    void sound() {
        System.out.println("Animal makes a sound");
    }
}

class Dog extends Animal {
    @Override
    void sound() {
        System.out.println("Dog barks");
    }
}

public class Main {
    public static void main(String[] args) {
        Animal a = new Dog();
        a.sound();   // Dog barks
    }
}
```

Mind Map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