Java

Method Overriding

Method Overriding

- If subclass (child class) has the same method as declared in the parent class, it is known as method overriding in java.

Usage of Java Method Overriding

- Method overriding is used to provide specific implementation of a method that is already provided by its super class.

- Method overriding is used for runtime polymorphism.

Rules for Java Method Overriding

- Method must have same name as in the parent class.

- Method must have same parameter as in the parent class.

- Must be in a relationship (inheritance).

- Static Method can't be Overriding.

Example:

```java
package try5;

class Test {
    public void show() {
        System.out.println("Some text here");
    }
}
class Test2 extends Test {
    public void show() {
        System.out.println("More Content Here");
    }
}

class Hornet {
    public static void main(String[] args) {
        Test t = new Test();
        Test t2 = new Test2();
        t.show();
        t2.show();

    }
}
```

Method Overloading

Method Overloading

- If a class has multiple methods having same name but different in parameters, it is known as Method Overloading

Advantage of method overloading

- Method overloading increases the readability of the program.

Different ways to overload the method

- There are two ways to overload the method in java
  - By changing number of arguments
  - By changing the data type

Example:

```java
package try5;

class Test {
    public int add(int a, int b) {
        return a+b;
    }
    public int add(int a, int b, int c) {
        return a+b+c;
    }
}

class Hornet {
    public static void main(String[] args) {
        Test t = new Test();
        int sum1 = t.add(9, 2);
        int sum2 = t.add(9, 2, 1);
        System.out.println(sum1);
        System.out.println(sum2);
    }
}
```

Method Overloading vs. Method Overriding

Method Overloading	Method Overriding
Method overloading is used to increase the readability of the program.	Method overriding is used to provide the specific implementation of the method that is already provided by its super class.
Method overloading is performed within class.	Method overriding occurs in two classes that have in a (inheritance) relationship.
In case of method overloading, parameter must be different.	In case of method overriding, parameter must be same.
Method overloading is the example of compile time polymorphism.	Method overriding is the example of run time polymorphism.
In java, method overloading can't be performed by changing return type of the method only. Return type can be same or different in method overloading. But you must have to change the parameter.	Return type must be same or covariant in method overriding.

Constructor vs. Method

Constructor	Method
Constructor is used to initialize the state of an object.	Method is used to expose behavior of an object.
Constructor must not have return type.	Method must have return type.
Constructor is invoked implicitly.	Method is invoked explicitly.
The java compiler provides a default constructor if you don't have any constructor.	Method is not provided by compiler in any case.
Constructor name must be same as the class name.	Method name may or may not be same as class name.