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polymorphism

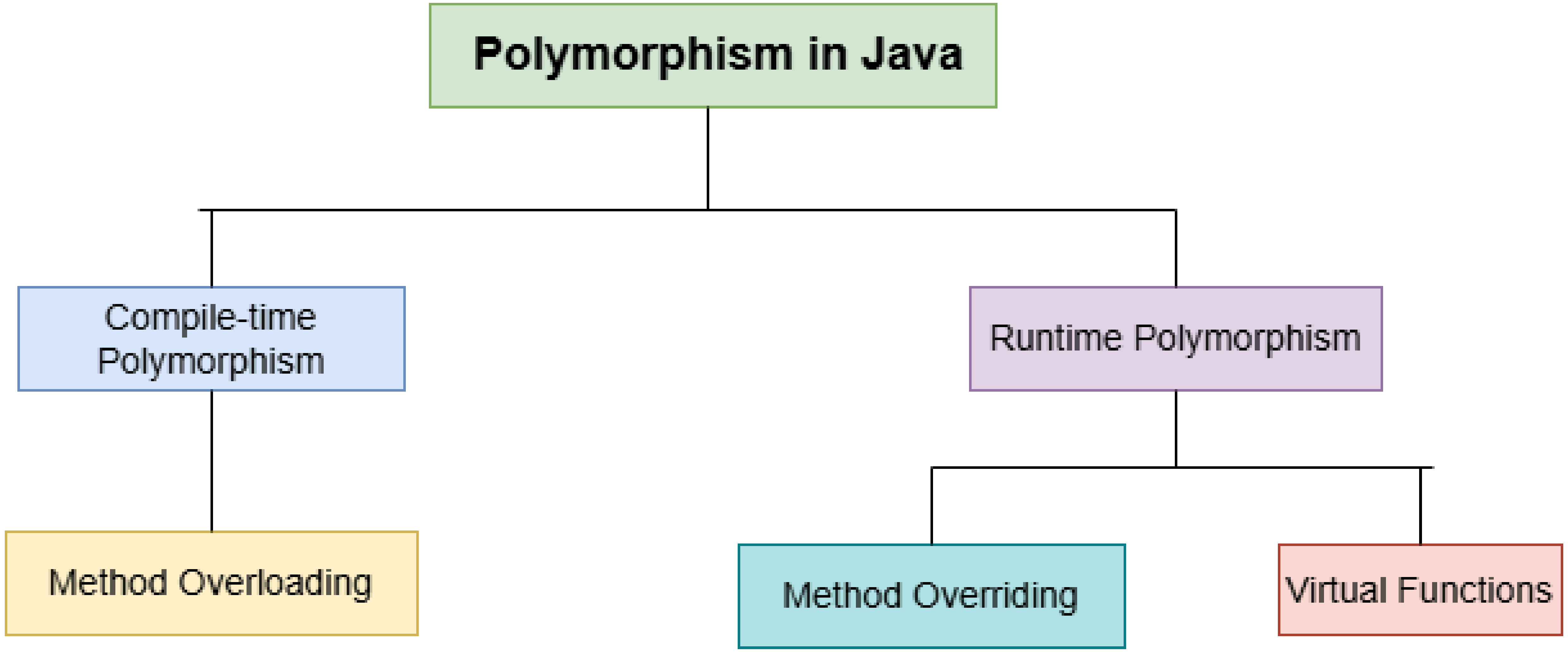
polymorphism

- What does it mean?? Poly means many, and morphism means forms. So basically it’s one entity behaving in multiple ways.

- What does it mean in OOP?? An object can take multiple forms. The same method/operator can show multiple behaviors, and is decided at the compile time/run time.

- Why does it matter?? It improves code reusability, makes programs more flexible, and maintainable, while also promoting clean code in OOP.

types



Polymorphism in Java

Compile-time Polymorphism

Runtime Polymorphism

Method Overloading

Method Overriding

Virtual Functions

types

- Compile Time Polymorphism : This is also called static binding, and is achieved via method overloading. It’s resolved by the compiler as the name suggests.

- Run Time Polymorphism : This is also called dynamic binding, and is achieved via method overriding. It’s resolved by the JVM during runtime.

method overloading

- Having multiple methods with the same name, but different input parameters.
- Occurs within the same class, is decided at compile time.
- The return type can also differ.
- Example

  add(int, int)

  add(double, double)

  add(int, int, int)

method overriding

- Having a method in a subclass with the same name, return type, and parameters as in its superclass. (uses @Override)

- Used to provide a specific implementation in the child class.

- Occurs in different classes (inheritance), and at runtime.

- Return type must be same, only non-final and non-static funcs can be overriden, and the access modifiers can’t be more restrictive

- Example

```
class Animal { void sound() { … } }

class Dog extends Animal { void sound() { … } }
```

thank you