Types of Inheritance

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◇ Types of Inheritance in Java

1. **Single Inheritance**
   - One class inherits from another.
   - Example: Father extends Grandfather.

```
class Father extends GrandFather {  2 usages  2 inheritors  new *

    // initializer
    {
        hairColor = "blond" ;
    }

    // constructors
    public Father(){  2 usages  new *
        System.out.println("Father constructor.. called !");
    }

    public Father(String name){  2 usages  new *
        super(name);
    }

}
```

2. **Multilevel Inheritance**
   - A class is derived from another class, which is also derived from another class.
   - Example: Son extends Father extends Grandfather.

```
class Son extends Father {  2 usages  new *

    // initializer
    {
        eyeColor = "black" ;
    }

    // constructors
    public Son(){  no usages  new *
        System.out.println("Son constructor.. called !");
    }

    public Son(String name){  1 usage  new *
        super(name);
    }
}
```

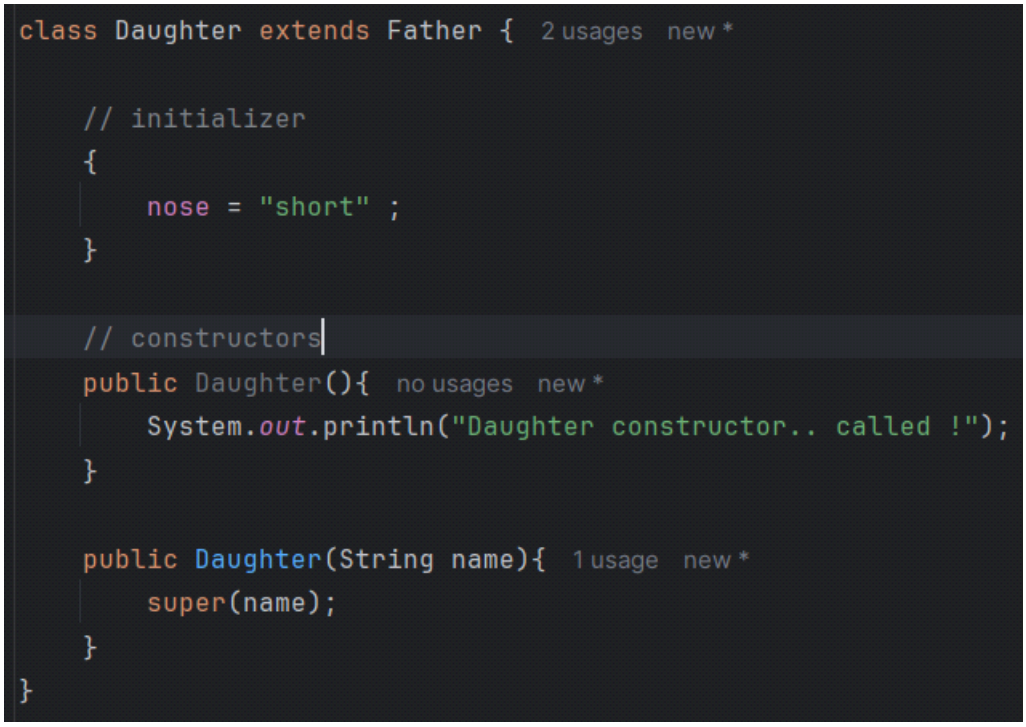
3. **Hierarchical Inheritance**
   - Multiple classes inherit from the same parent class.
   - Example: Daughter extends Father, Son extends Father.

```
class Son extends Father {  2 usages  new *

    // initializer
    {
        eyeColor = "black" ;
    }

    // constructors
    public Son(){  no usages  new *
        System.out.println("Son constructor.. called !");
    }

    public Son(String name){  1 usage  new *
        super(name);
    }
}
```

- 

```
class Daughter extends Father {  2 usages  new *

    // initializer
    {
        nose = "short" ;
    }

    // constructors
    public Daughter(){  no usages  new *
        System.out.println("Daughter constructor.. called !");
    }

    public Daughter(String name){  1 usage  new *
        super(name);
    }
}
```

4. **Multiple Inheritance (through Interfaces only)**
   - A class can implement multiple interfaces.
   - Java does **not support multiple inheritance with classes** (to avoid ambiguity), but supports it using **interfaces**.
   - // will be done later
5. **Hybrid Inheritance (via Interfaces)**
   - A mix of two or more types of inheritance.
   - Example: combination of multiple + multilevel using interfaces.
   - // will be done later