Talking to Interfaces

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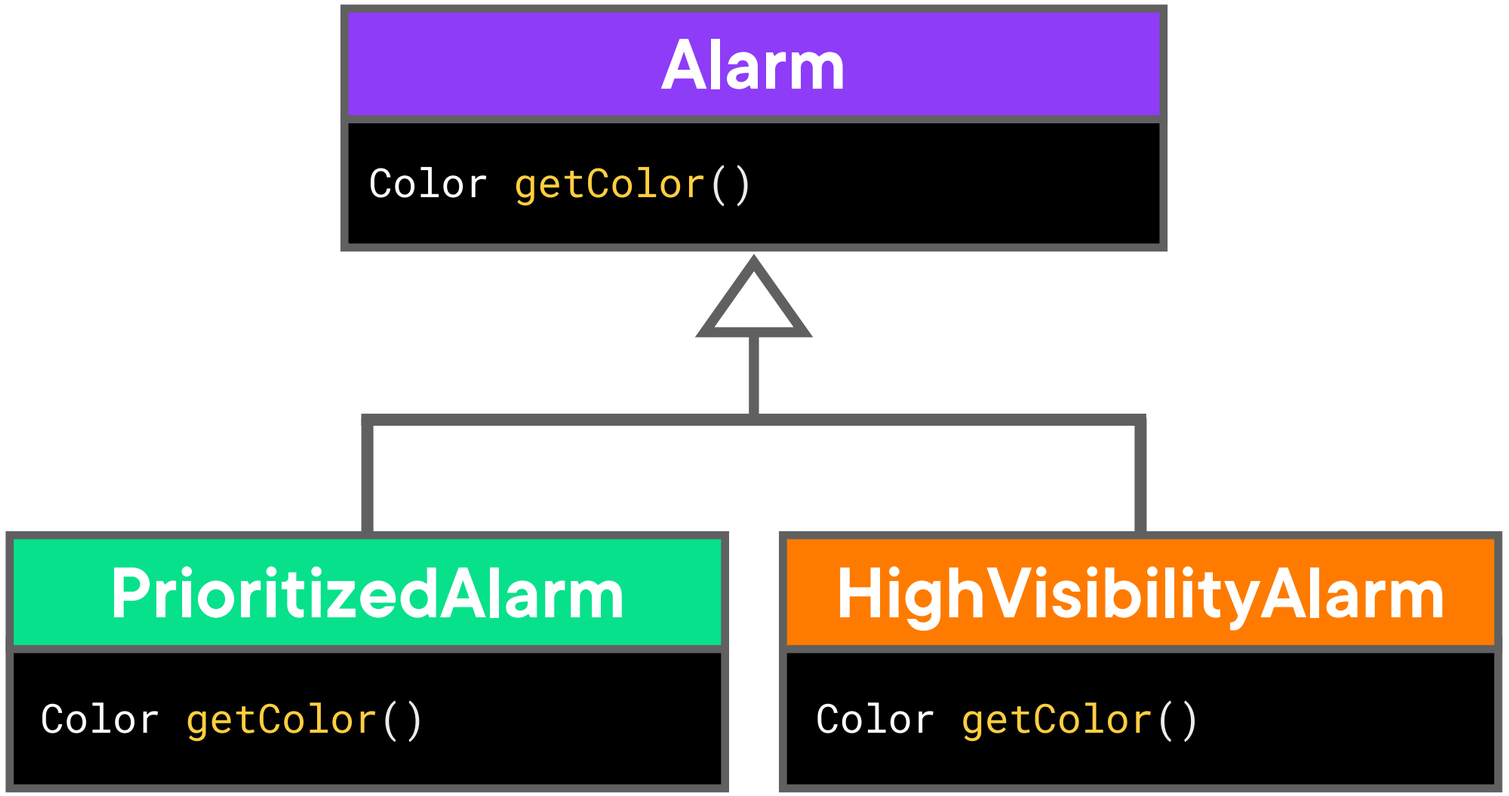
Another Request from the Customer

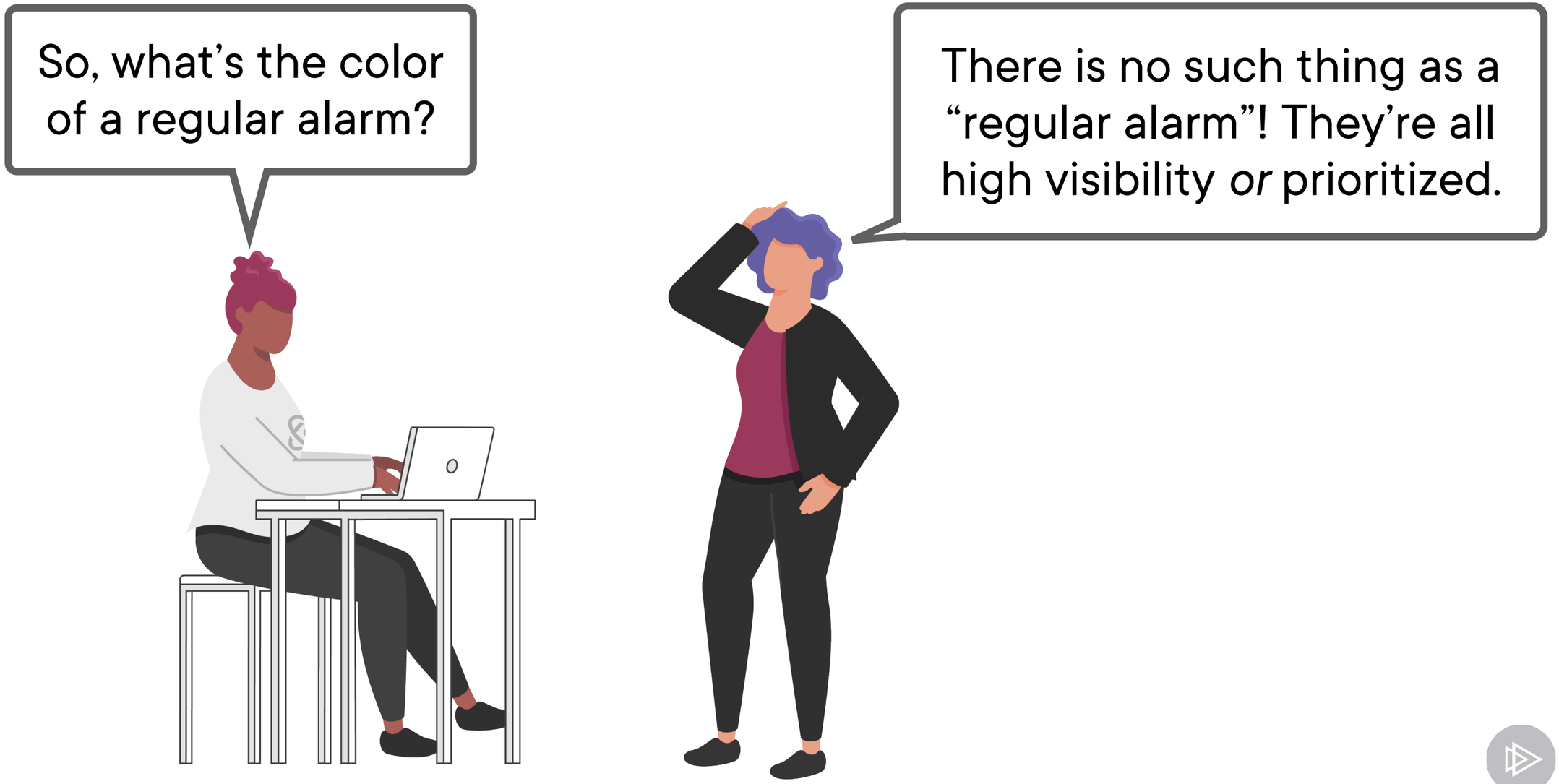
Alarms have an associated color

- High visibility alarms are **orange**
- Prioritized alarms are **green**

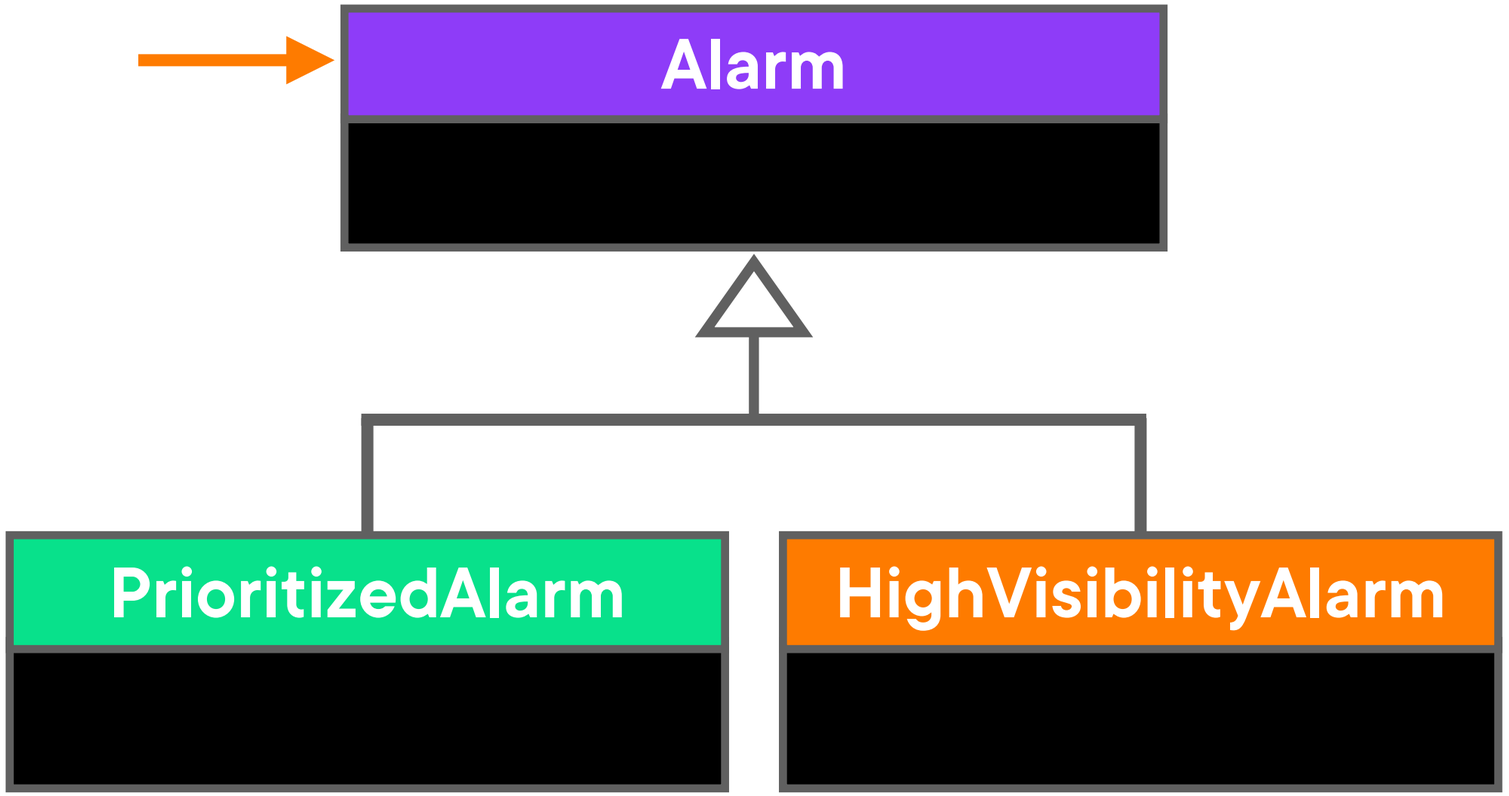
A Plan of Action



Talking to the Customer



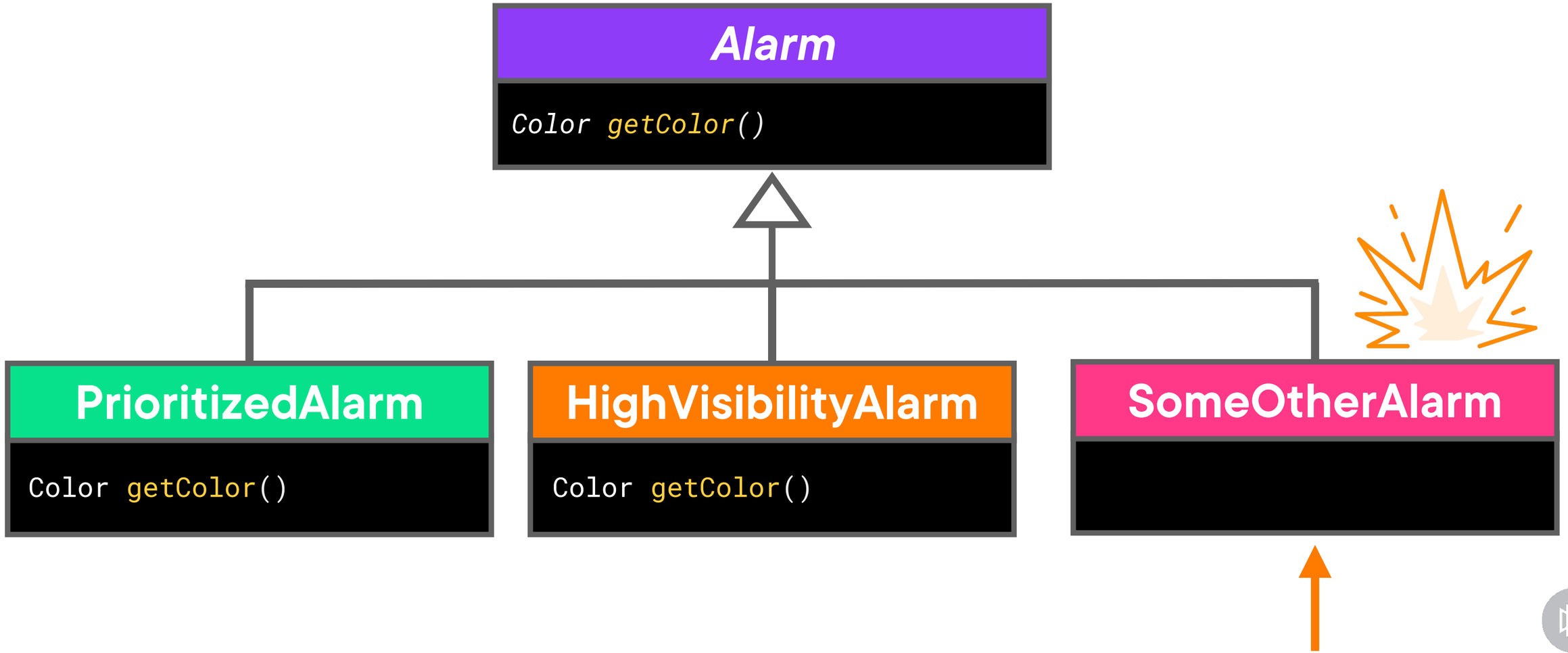
We Never Create an Alarm Directly



Upcasting to the Alarm Class

```
Alarm alarm = new HighVisibilityAlarm("We're almost out of donuts");
Color color = alarm.getColor();
```

Abstract Methods



“We Have New Ideas!”

The application should become a general control panel

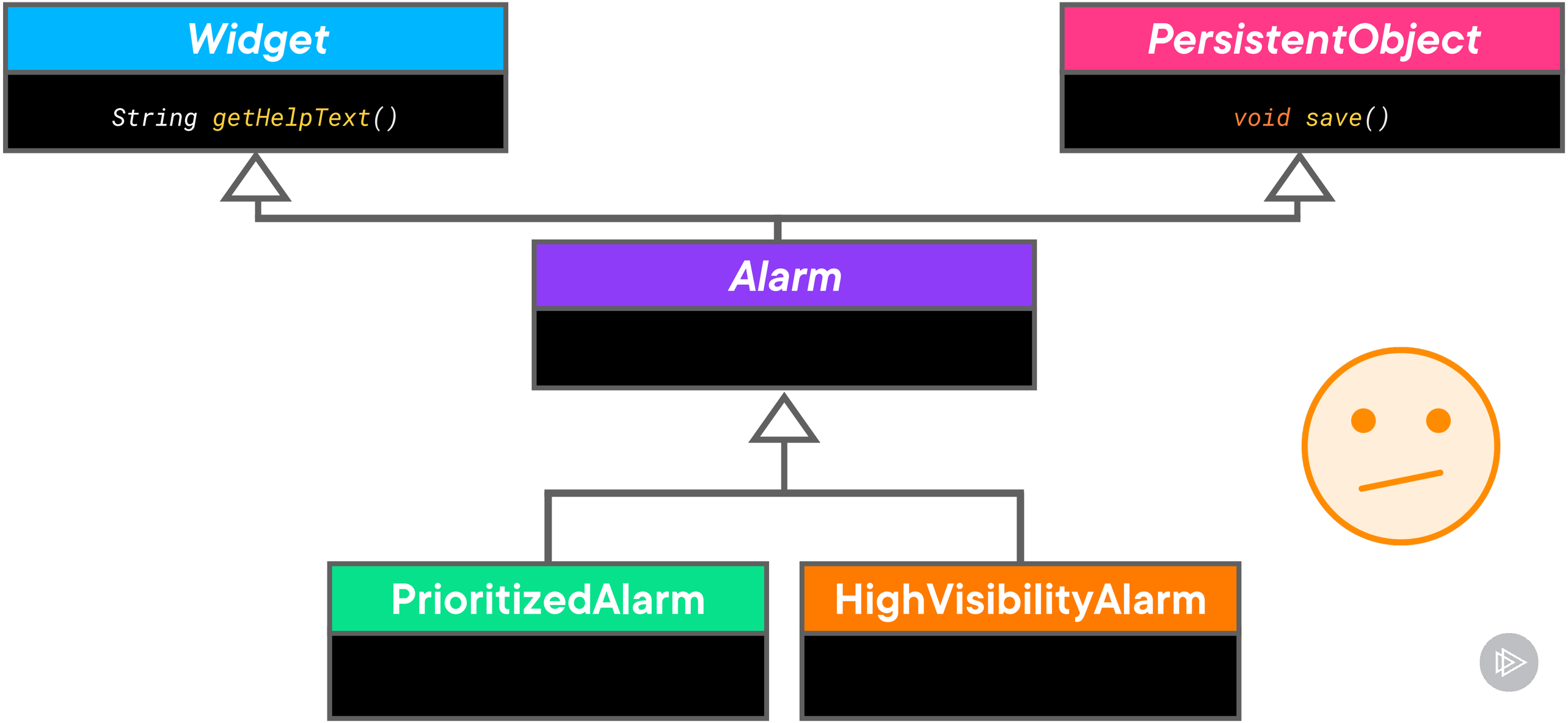
- It provides many kinds of widgets.
- Alarms are one kind of widget.
- Then there are gauges, on/off switches... Lots of stuff.

Some widgets are persistent

- They can be saved to the cloud.

“And plenty more ideas where those came from!”

Updating the Hierarchy



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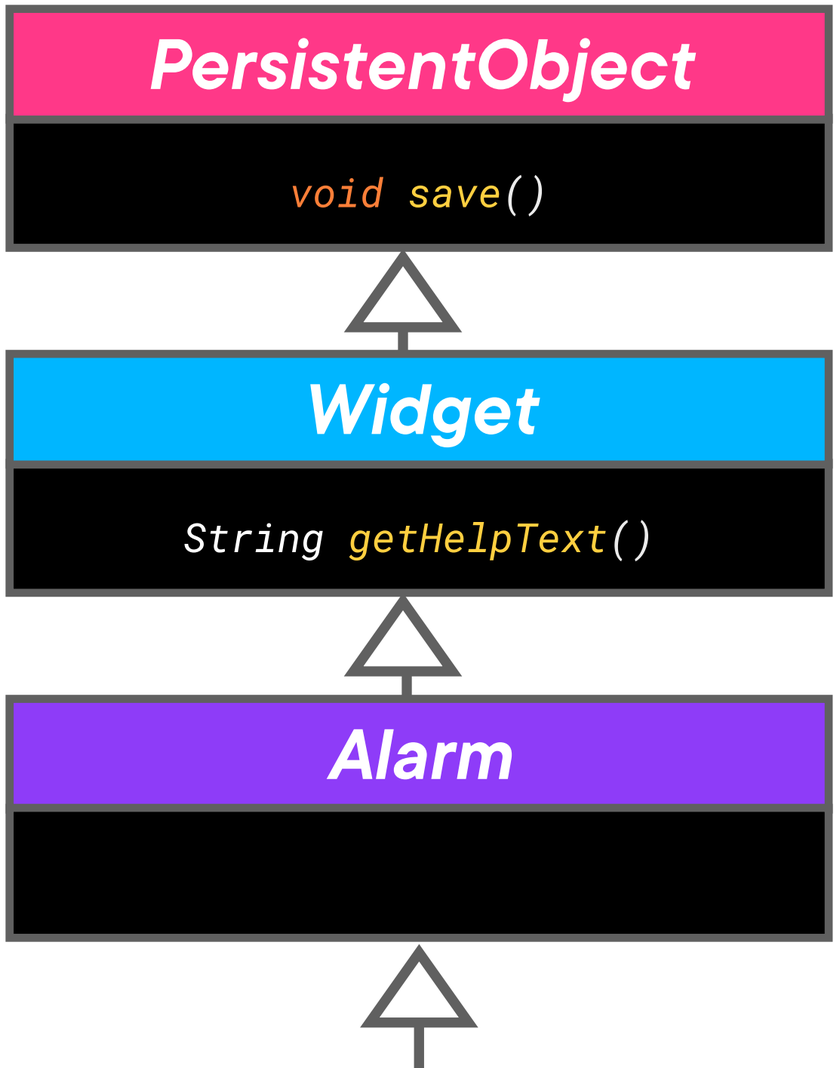

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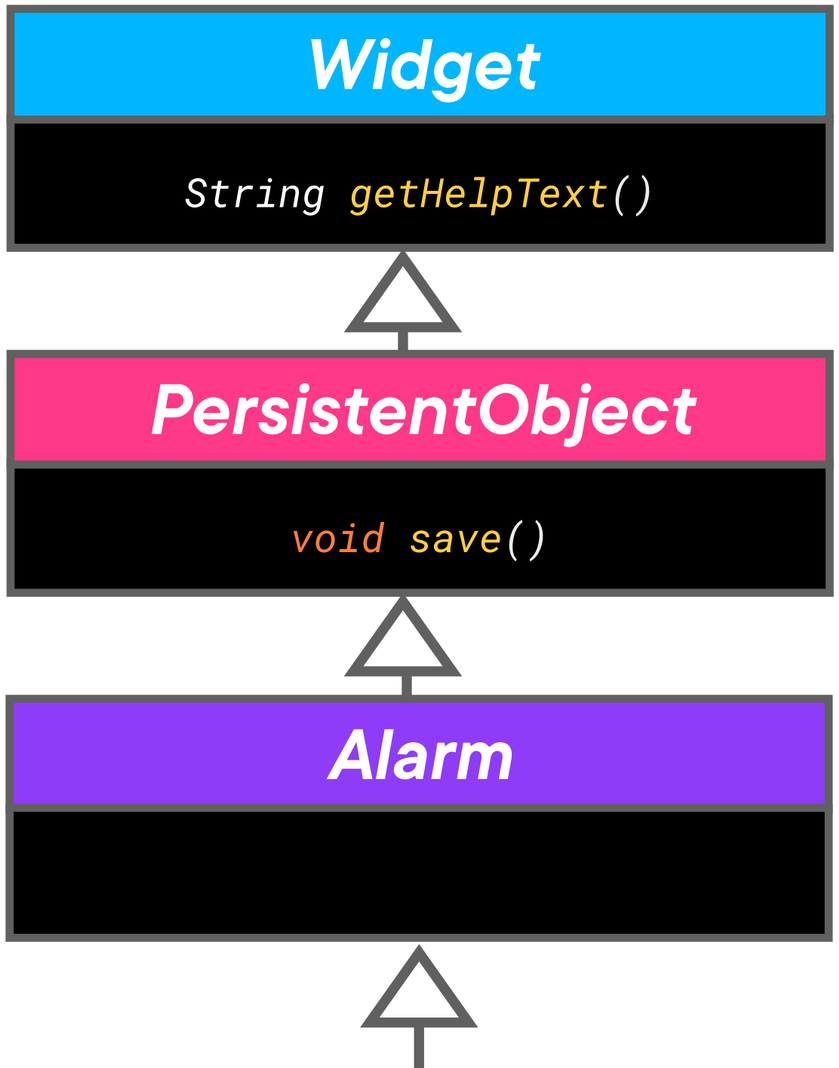
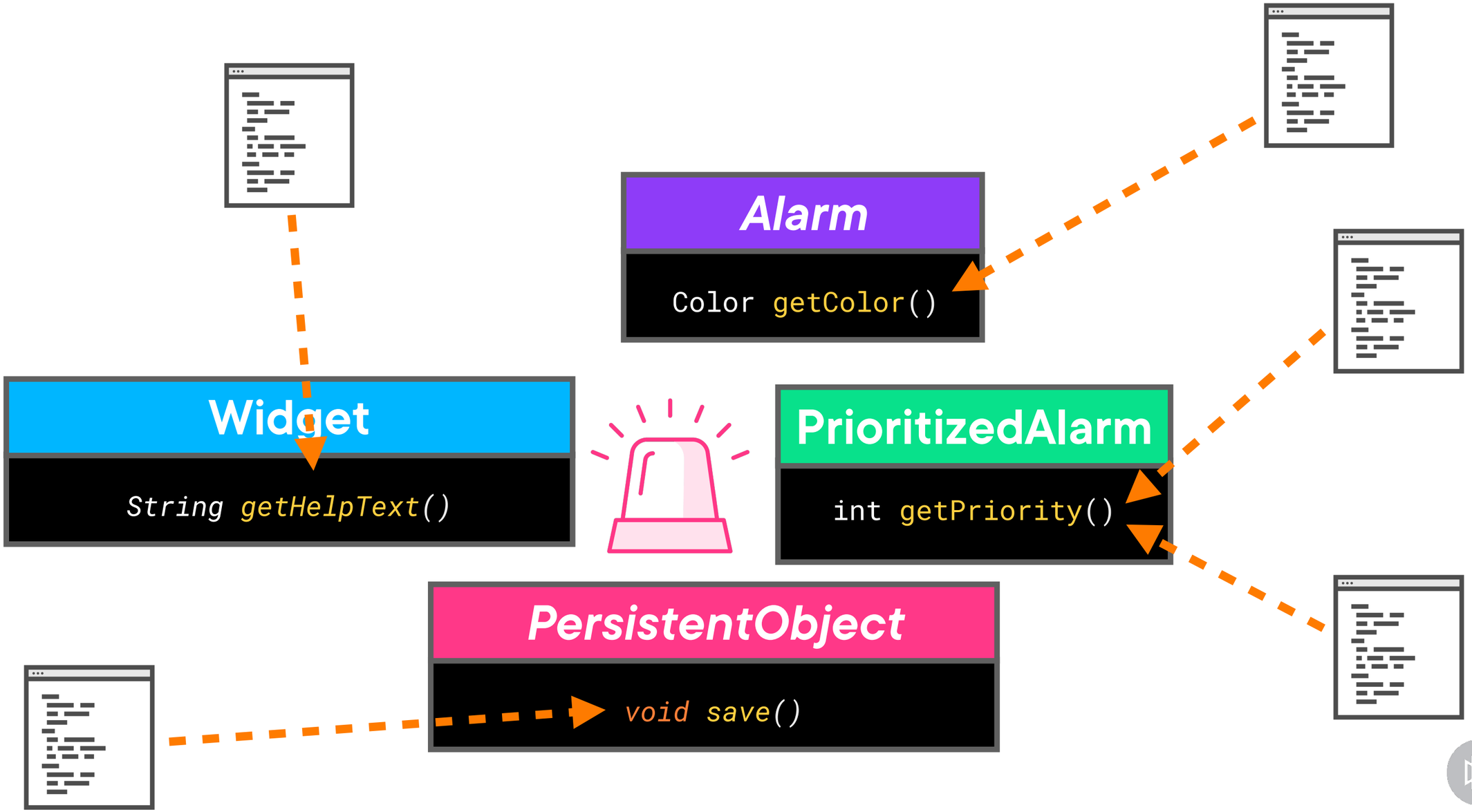
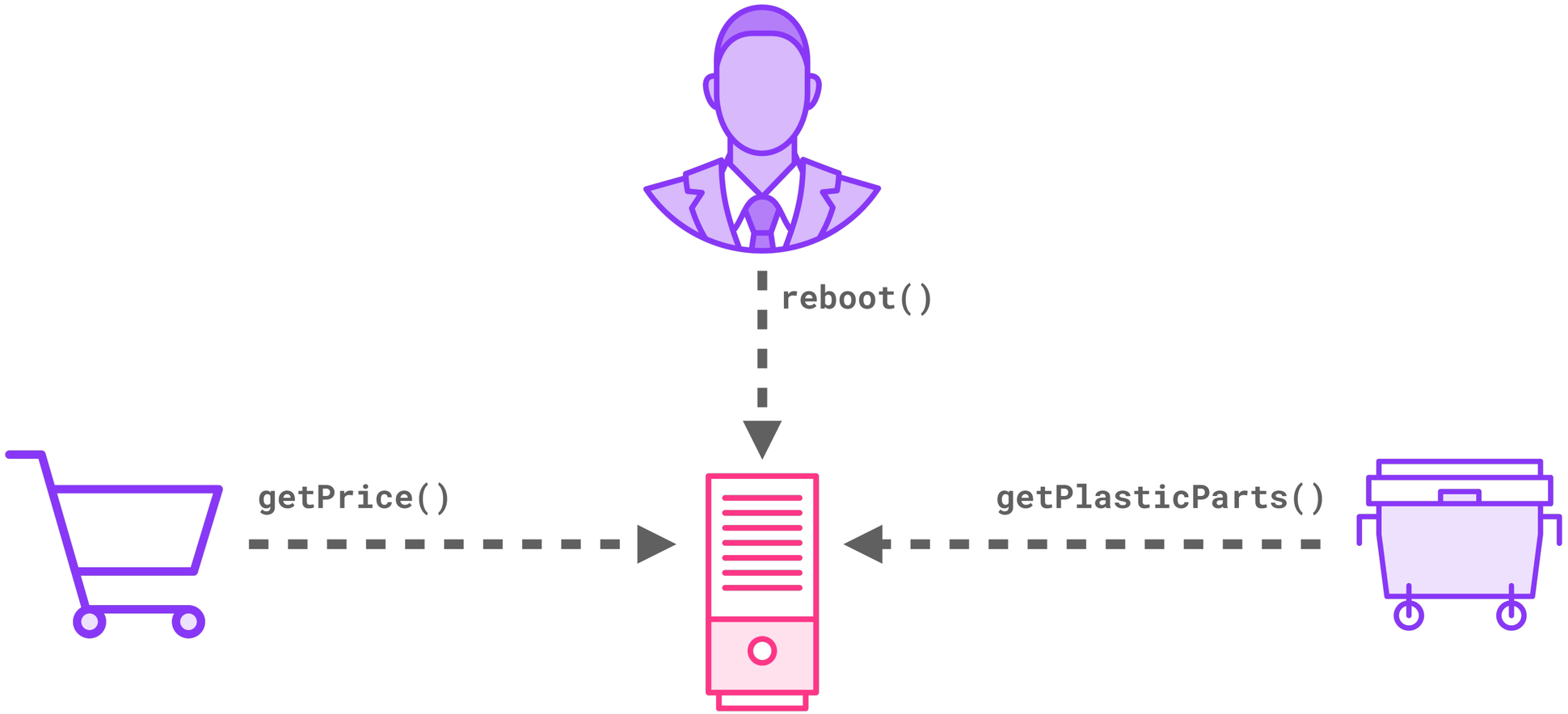


The Problem with Hierarchies



One Object, Multiple Roles



Interfaces

```
public interface Widget {

    String getHelpText();

}
```

Interfaces

```
public interface Widget {

    String getHelpText();

}
```

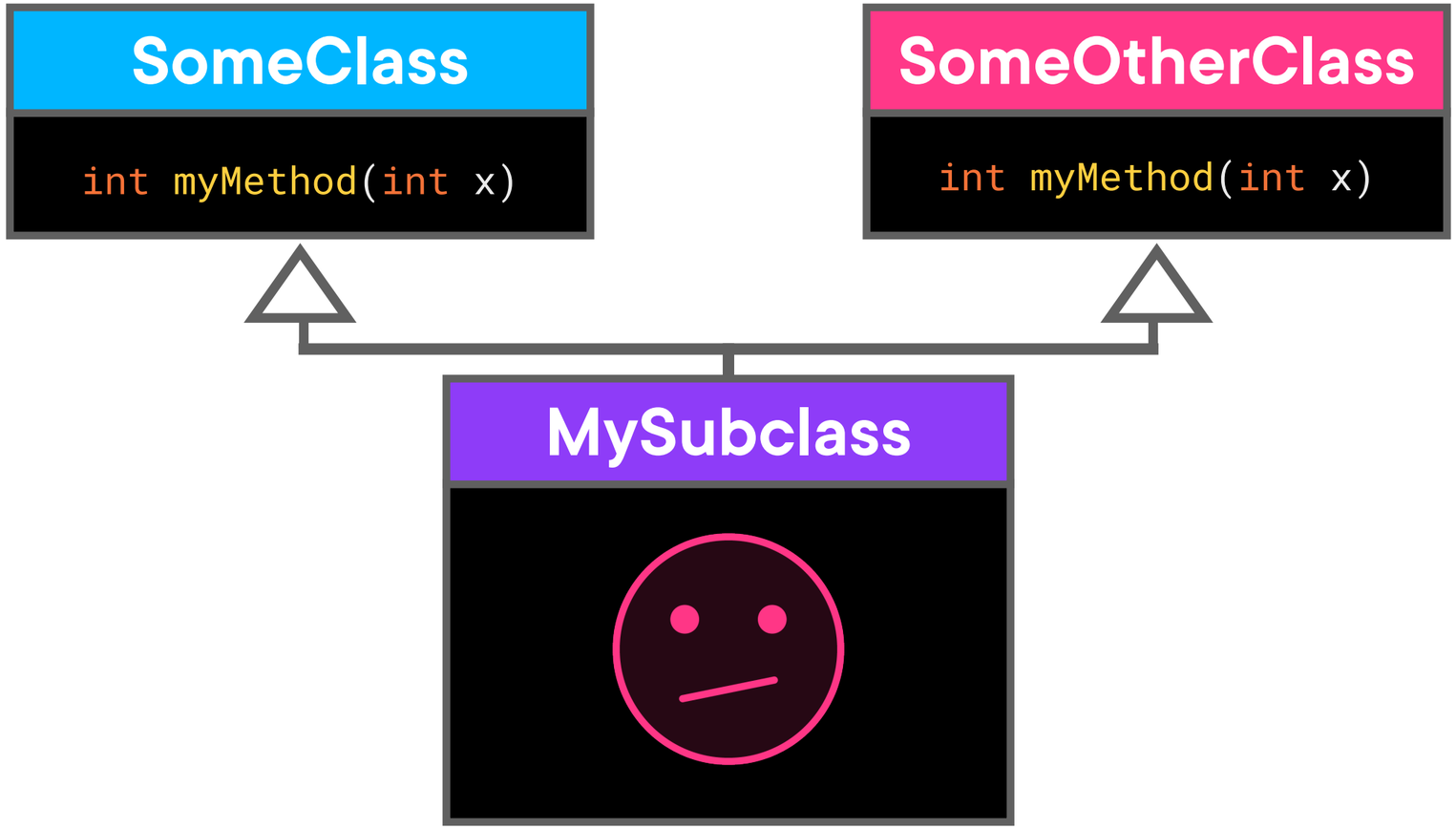
```
public interface PersistentObject {

    void save();

}
```

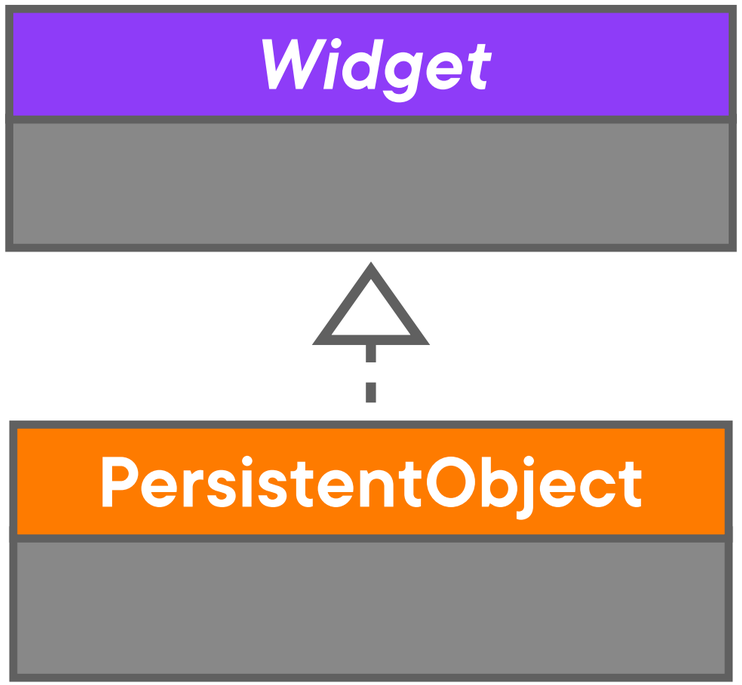
```
public class Gizmo extends Gizmo implements Widget, PersistentObject {
    ...
}
```

Multiple Inheritance



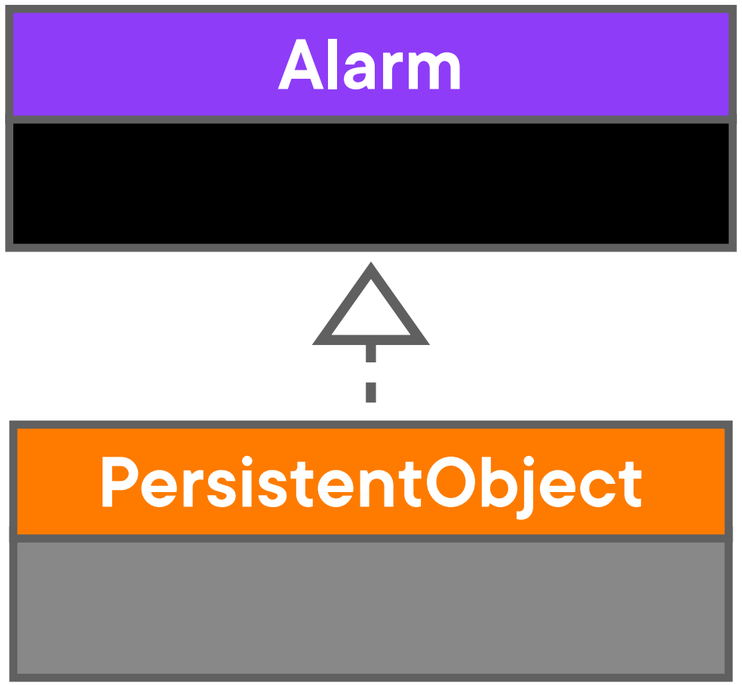
Interfaces make up for the lack of multiple inheritance.

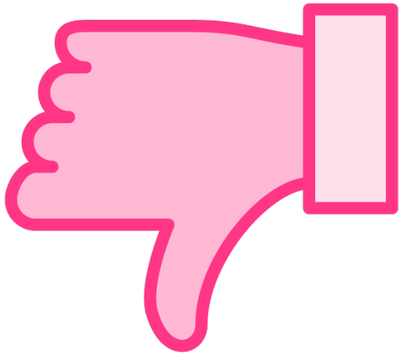
Interfaces and Inheritance



```
PersistentObject extends Widget
```

Interfaces and Inheritance





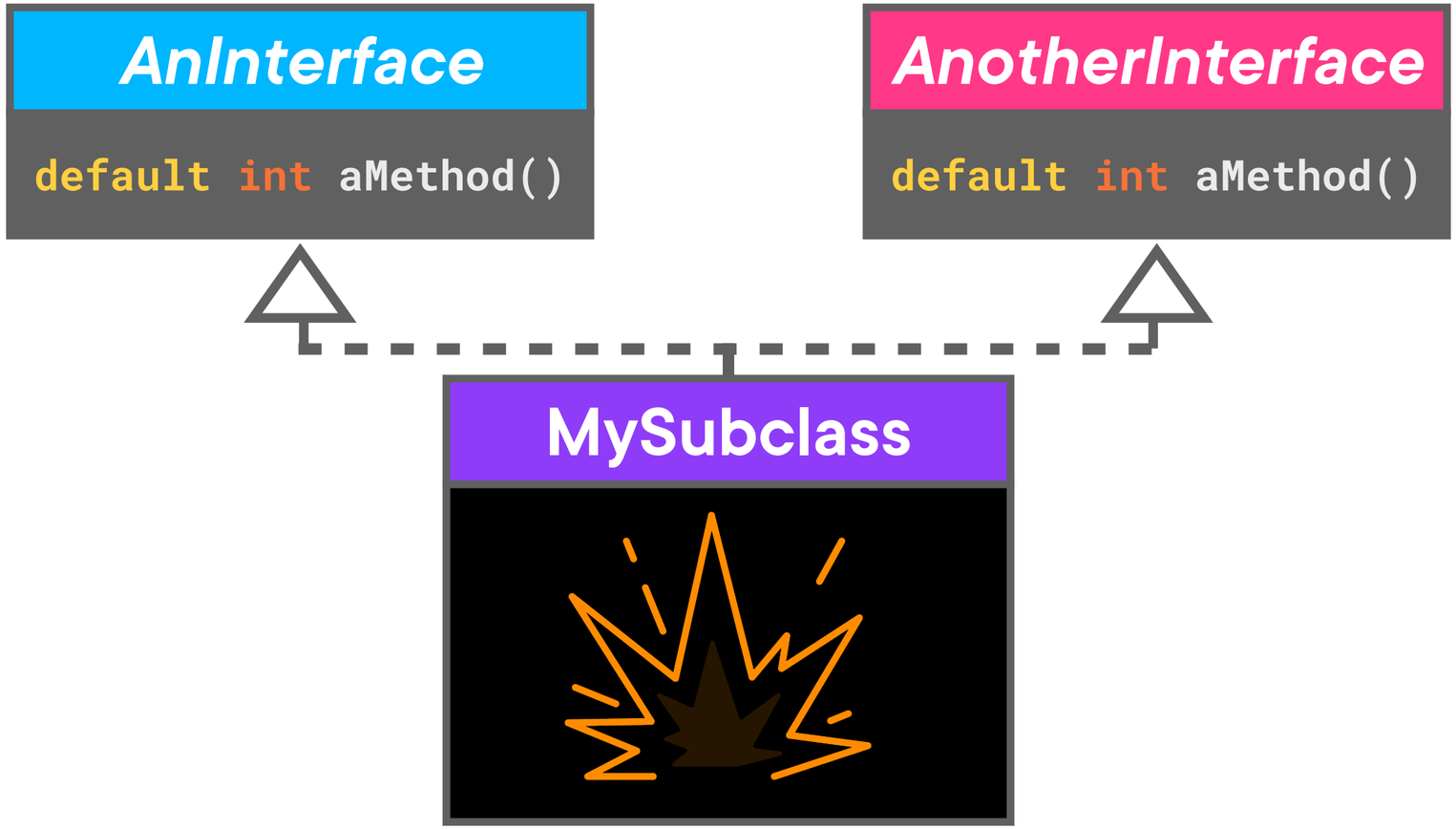
```
PersistentObject extends Widget
```

Default Method

```
public interface Widget {

    default String getHelpText() {
        return "I wouldn't know... Maybe read the manual?";
    }
}
```

Default Methods Clashing



An Interface Can Have...

- Fields that are “public static final”
- Methods that are “public abstract”
- Static methods
- Default methods

Recapping Interfaces

They can have public methods

- Either abstract…
- …or default

They can have static members

- Either static methods…
- …or public static final fields

Summary

Abstract Classes

Interfaces

Same object, different roles

Up Next:

Designing with Inheritance and Polymorphism