17# Summarizer

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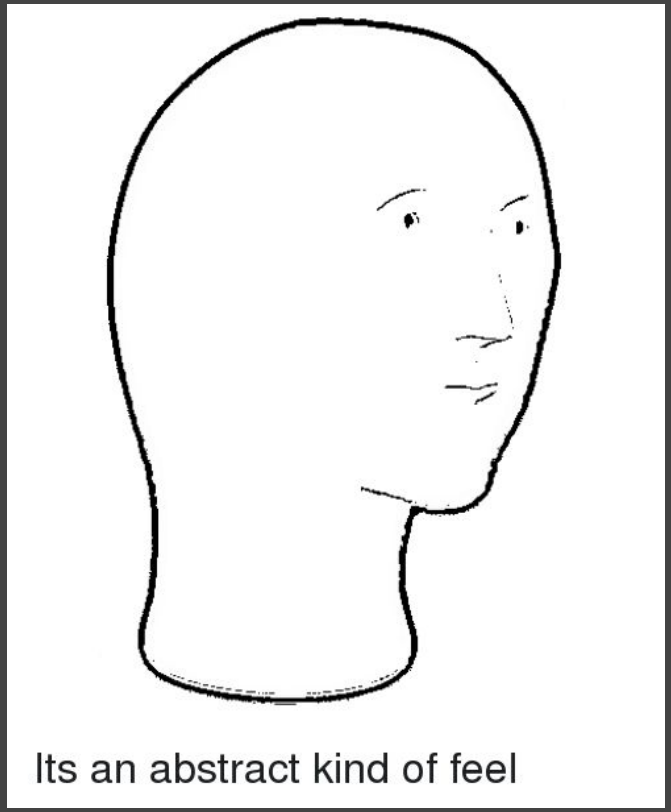
Abstract Classes

Conceptual classes that cannot be instantiated, but can be subclassed.

Why this?!?!

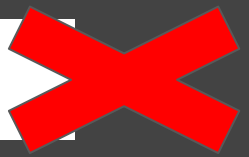
Providing a base skeleton with properties and methods with the sole purpose of being extended.



Abstract Classes - example

```
/**
* Character.java
*/

public abstract class Character {

	private String name;

	public abstract void talk(String message);

}
```

Character newCharacter = new Character();



Abstract Methods

Methods that ensure the existence of a specific behaviour without declaring an implementation.

A class with an abstract method must be abstract as well.

An abstract method has no body.

A subclass must implement all the abstract methods otherwise it must be abstract as well.

The method must be overridden.

Abstract Methods - Example

```
/**
* Character.java
*/

public abstract class Character {

	private String name;

	// I want my characters to talk but I have no idea how each one will do it
	public abstract void talk(String message);

}
```

Overriding the Abstract method

```
/**
* Yoda.java
*/

public class Yoda extends Character {

	@Override
	public void talk(String message) {
		System.out.println(message);
	}

}
```

The Object Class

Every class, in Java, extends class Object:
When we don't explicitly extend another class, we are implicitly extending the Object class.

Object Methods - examples

- **equals(Object o);**
- **getClass();**
- **toString();**
- **hashCode();**

instanceof

The instanceof operator is used to test whether the object is an instance of the specified class.

Example:

```
Genie genie = new HappyGenie();


if (genie instanceof HappyGenie) {
        System.out.println("Happy");
        HappyGenie happyGenie = (HappyGenie) genie;
}
```

Now we all know “The Four Pillars of OOP”!!!!!

- Encapsulation ✓
- Polymorphism ✓
- Inheritance ✓
- Abstraction ✓

Let’s Practice…….

Car Crash Exercise

“Mestre” Suggestions!!

1 - Make a “bus” appear;

2 - Turn the “bus” into a car;

3 - Try to move the car;

4 - Move the car without leaving the limits;

5 - Add more cars;

6 - Put them crashing.


IT'S FINALLY THE END
OF THE PRESENTATION
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