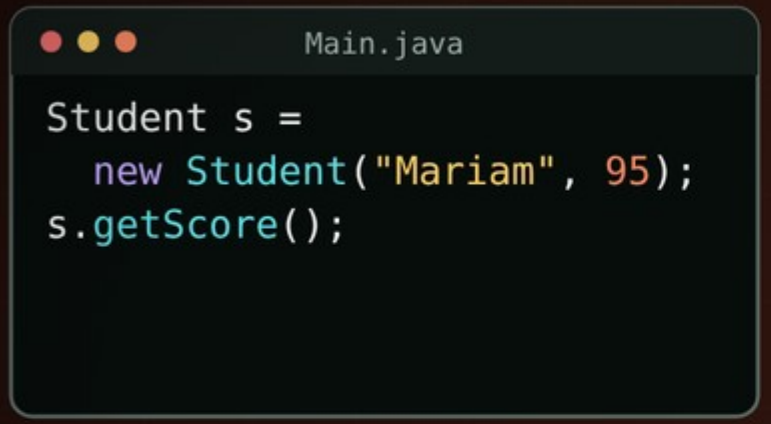
LESSON 5



Java

Classes & Objects

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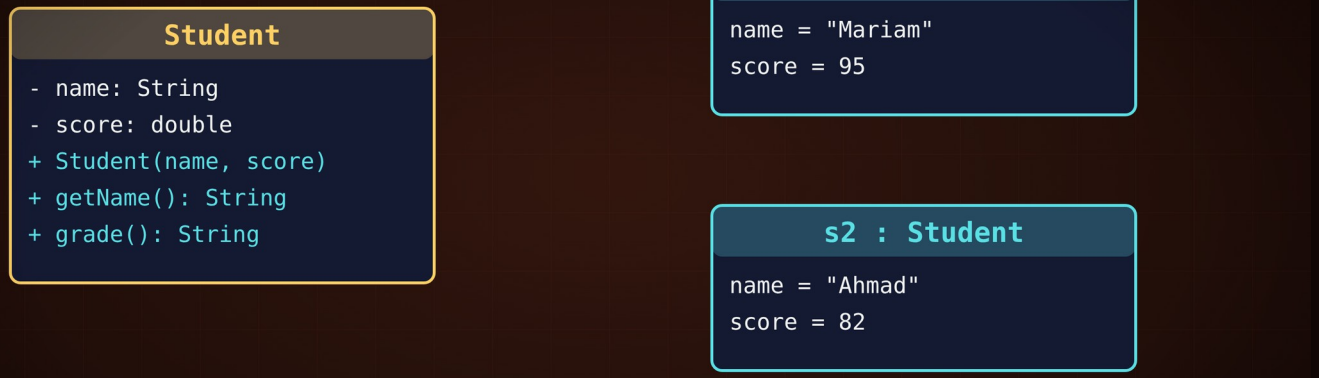
JAVA PROGRAMMING

LESSON 5

Classes and Objects

Fields, constructors, this, encapsulation, getters, toString and static

A Class Is a Blueprint



- A class describes fields, the data, and methods, the behavior. new creates an object, an ...
- Every object has its own copy of the fields.

01

Constructors and this

Student.java

```
public class Student {
    private String name;
    private double score;

    public Student(String name, double score) {
        this.name = name;
        this.score = score;
    }
}
Student s = new Student("Mariam", 95);
```

- A constructor has the class name and no return type. It runs when you call new and sets up …
- this refers to the current object, which is how you tell the field name apart from a …

02

Encapsulation

Student.java

```
public double getScore() {
    return score;
}
public void setScore(double score) {
    if (score < 0 || score > 100) {
        throw new IllegalArgumentException("0 to 100 only");
    }
    this.score = score;
}
```

- Make fields private and expose public methods. Getters read values, and setters change them …
- Now no other code can put the object into a broken state, like a negative score.

03

toString and equals

Student.java

```
@Override
public String toString() {
    return name + " (" + score + ")";
}

System.out.println(s);    // Mariam (95.0)
// without it: Student@1b6d3586
```

- Override toString to control how an object prints. Without it, you see the class name and a …
- Override equals and hashCode together when two objects with the same data should count as …

04

static Members

Student.java

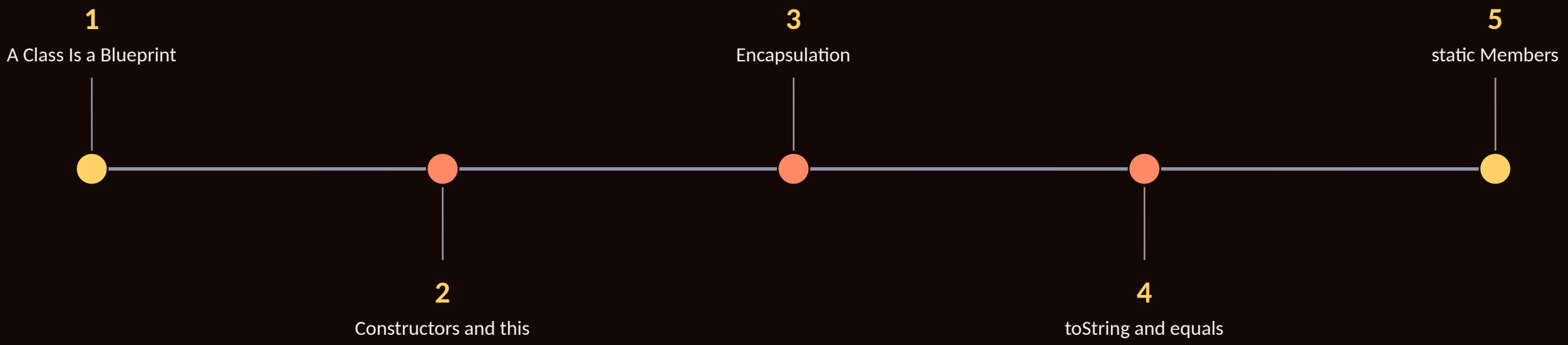
```java
private static int count = 0;
public static final int PASS_MARK = 50;

public Student(String name, double score) {
    this.name = name; this.score = score;
    count++;
}
public static int getCount() { return count; }
```

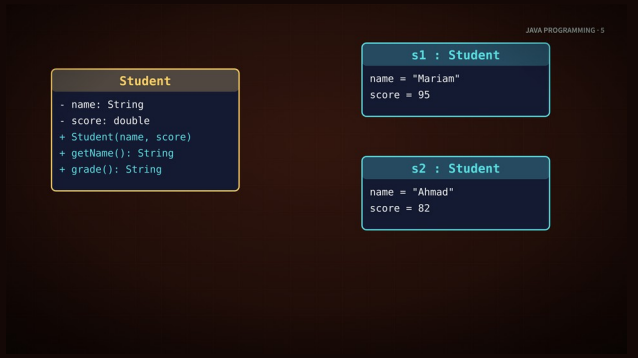
- A static field belongs to the class, not to each object, so all objects share one copy. Use …
- Static methods cannot use this, because there is no object. Math dot max is a static method.

05

Lesson Map


1
A Class Is a Blueprint
2
Constructors and this
3
Encapsulation
4
toString and equals
5
static Members

Sources and Further Reading





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