SWEN20003

Workshop 2, Week 3

Eleanor McMurtry, University of Melbourne

Anatomy of a Class

An example

1. What is a *constructor*?
2. What is the keyword *this* used for?
3. What does *null* represent in Java?

```java
public class Book {
    private String title;
    private String author;
    private String borrowedBy   = null;
    private boolean borrowed    = false;
    private int borrowDuration;

    public Book(String author, String title) {
        this.author = author;
        this.title = title;
    }

    public void borrow(String owner, int duration) {
        borrowed = true;
        borrowedBy = owner;
        borrowDuration = duration;
    }
}
```

```java
class IntegerHolder {
    int value;
    public IntegerHolder(int value) {
        this.value = value;
    }
}
```

What is the output of this code?

```java
public static void increment(IntegerHolder integerHolder) {
    integerHolder.value = integerHolder.value + 1;
}

public static void main(String[] args) {
    int a = 0;
    IntegerHolder holder = new IntegerHolder(a);
    increment(holder);
    System.out.println(holder.value);
    System.out.println(a);
}
```

Getters & setters

```java
class Circle {
    double r;
    double circumference;

    public static void main(String[] args) {
        Circle c = new Circle();
        c.r = 1.0;
        c.circumference = Math.PI * 2 * c.r;
    }
}
```

Getters & setters

```java
class Circle {
    private double r;
    private double circumference;

    public void setRadius(double r) {
        this.r = r;
        circumference = Math.PI * 2 * r;
    }


    public void printInfo() {
        System.out.format("Circle: radius %f, circumference %f",
                r,
                circumference);
    }


    public static void main(String[] args) {
        Circle c = new Circle();
        c.setRadius(1);
        c.printInfo();
    }
}
```
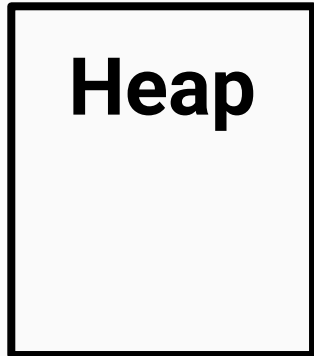
Static attributes and methods

```
private double r;
Circle c = new Circle();
c.setRadius(2.0);
```

Heap

```
private static int numCircles;
System.out.println("Hello World");
```

Static