Juniorprogrammierer.de

Java 14: Interface & JUnit

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Agenda

- Keyword ”abstract” again
- Interface I + II
- Exercises
- JUnit
- Example Unittest
- Exercise

Keyword ”abstract” again

- You can only declare abstract methods in an abstract class
- **You cant create an object of an Abstract class**, so these classes are used to slimmen their child-classes
- Next to classes **you can also define abstract-methods**
  - **The have no content**
  - **All children need them but they have different content**
  - Child without parental abstract class definition shows and error

Inheritence > J Vehicle.java > ...

```
3   public abstract class Vehicle {
29      }
30
31      // Define an abstract method
32      public abstract void startEngine();
33  }
34
```



```
1   package Inheritence;
2
3   public class Motorbike extends Vehicle{
4
5       public Motorbike(){
6           super(numberWheels:2);
7       }
8
9       public void honk(){
10          super.honk();
11          System.out.println(x:"Miiib miiib");
12      }
13
14      public void startEngine(){
15          System.out.println(x:"Start with kickstarter");
16      }
```

Interface I

- In modern Software engineering you usually don’t work with parental abstract classes
- Instead you use interfaces which are automatically abstract classes and only consists of abstract methods
- Instead of the keyword “class” you implement the interface with a keyword “interface”
- Child classes don’t use the keyword “extends” but “implements” to inherit the interfaces methods

```
// Interface
interface Animal {
  public void animalSound(); // interface method (does not have a body)
  public void sleep(); // interface method (does not have a body)
}

// Pig "implements" the Animal interface
class Pig implements Animal {
  public void animalSound() {
    // The body of animalSound() is provided here
    System.out.println("The pig says: wee wee");
  }
  public void sleep() {
    // The body of sleep() is provided here
    System.out.println("Zzz");
  }
}

class Main {
  public static void main(String[] args) {
    Pig myPig = new Pig();  // Create a Pig object
    myPig.animalSound();
    myPig.sleep();
  }
}
```

Interface II

- The implementing class must override all methods of the interface
- All attributes of an interface are public, static and final
- An interface cannot have a constructor
- Java does not support multible inheritances but can implement several interfaces
  - Separate the interfaces with a “,”

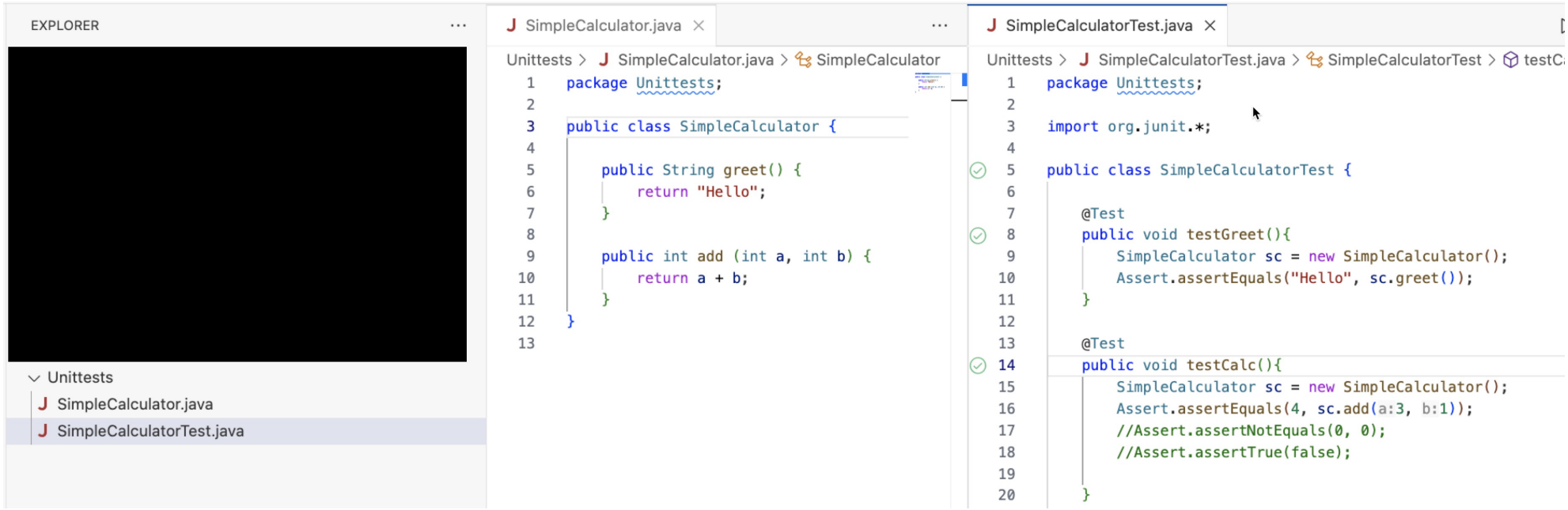
Exercise

- Create a new Interface based on the known Vehicle.java in folder “IntExercise” called VehicleInterface.java
- Create in the same folder the Car.java and implement the corresponding interface

JUnit

- How to install: https://code.visualstudio.com/docs/java/java-testing
- Unittests are classbased and should test the class independent of other method involved in this class
- Unittests should have a positive and a negative Test
- Unittest should be coded according to “First”-Principle
  - F => Fast
  - I => Independent
  - R => Repeatable
  - S => Self-Validating
  - T => Timely

Example Unittest



Exercise

- Create a ”Calculator.java”
  - It contains a int substract, int multiply and int divide methods
  - Int divide throws a `IllegalArgumentException` if divided by zero
- Write all methods and a positive and negative test where it makes sense