

# Funktionale Programmierung in Java

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Problemstellung 1: Sind das gültige Kreditkartennummern<sup>1</sup>?

- ▶ 5555555555554444
- ▶ 5105 1051 0510 5100
- ▶ 4111-1111-1111-1111
- ▶ 378282246310005

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<sup>1</sup>Es handelt sich um für Testzwecke reservierte Nummern

Ansatz 1:

<b>CreditCardNumber</b>
number : String
CreditCardNumber(String number) isValid() : Boolean parseNumber(String number) : String getNumber() : String

```
1  CreditCardNumber cc = new CreditCardNumber(candidate);  
2  System.out.println(cc.getNumber());  
3  System.out.println(cc.isValid());
```

Problemstellung 2: Sind das gültige IMEI<sup>2</sup>?

- ▶ 35411809 746687 6
- ▶ 35411809 829642 1
- ▶ 99781729 757402 4

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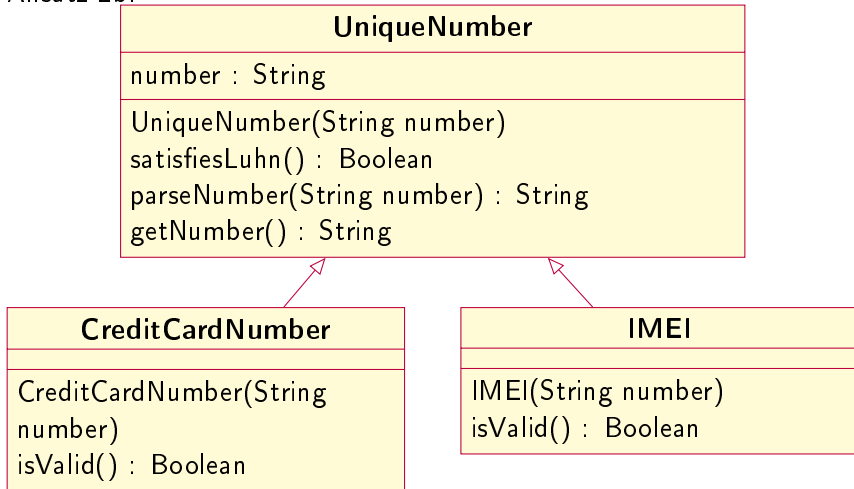
<sup>2</sup>Es handelt sich um zufällig generierte Nummern

Ansatz 2a:

IMEI
number : String
IMEI(String number) isValid() : Boolean parseNumber(String number) : String getNumber() : String

```
1  IMEI imei = new IMEI(candidate);  
2  System.out.println(imei.getNumber());  
3  System.out.println(imei.isValid());
```

Ansatz 2b:





### Problemstellung 3: Kreditkartennummer oder IMEI?

- ▶ 5555555555554444
- ▶ 5105105105105100
- ▶ 4111111111111111
- ▶ 378282246310005
- ▶ 354118097466876
- ▶ 354118098296421
- ▶ 997817297574024

Moment mal ...

- ▶ satisfiesLuhn (IMEI/CreditCardNumber)
- ▶ hasLength15 (IMEI/CreditCardNumber)
- ▶ hasLength16 (CreditCardNumber)
- ▶ hasValidCreditCardPrefix (CreditCardNumber)

## Functional

```
Predicate<String> satisfiesLuhn  
Predicate<String> hasLength15  
Predicate<String> hasLength16  
Function<String, String> toNumeric
```

```
1 Predicate<String> isCreditCardNumber = Functional
2     .satisfiesLuhn
3     .and(Functional.hasLength15
4         .or(Functional.hasLength16))
5     .and(Functional.isValidCreditCardPrefix);
6
7 Predicate<String> isIMEI = Functional
8     .satisfiesLuhn
9     .and(Functional.hasLength15);
10
11 String parsed = Functional.toNumeric.apply(candidate);
12
13 System.out.println(parsed);
14 System.out.println(isCreditCardNumber.test(parsed));
15 System.out.println(isIMEI.test(parsed));
```

*Meditation guides the mind to grasp the reality as it is,  
without the abstractions created by our thoughts.*

– Yehonathan Sharvit - in: Data-Oriented Programming (2022)

# Fragen