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## 1. Referenzsemantik

### 1.1. Wertsemantik - pass by value

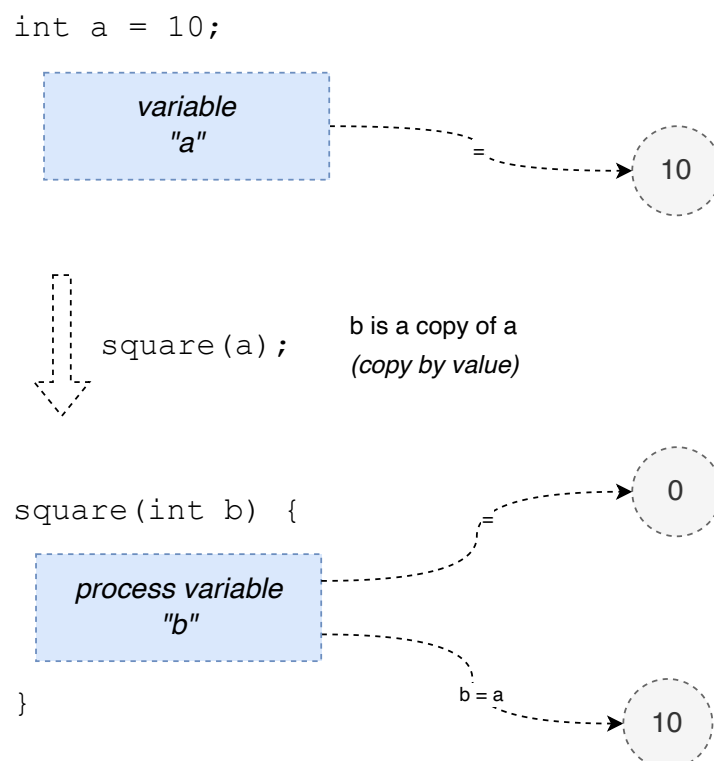
In the **pass by value** concept, the method is called by passing a value. The argument is a **copy** of the original one. This is called *pass by value*. It does not affect the original parameter.

A small unit test example (**Demo 1**):

```
1 public void demo1() {
2     // given - a primitive value
3     int number = 10;
4
5     // when
6     logger.log("Before square : " + number);
7     square(number);
8     logger.log("After square : " + number);
9
10    // then
11    assertEquals(100, number);
12 }
```

JAVA

Graphical explanation:



## 1.2. Referenzsemantik - pass reference

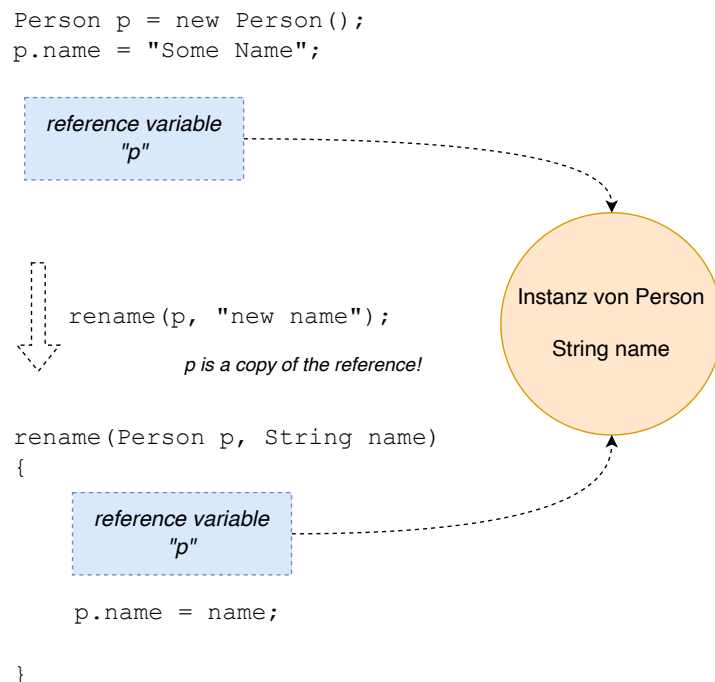
Although the argument variable is passed in a method, the **reference** itself is copied. The object that is really referenced is still the same and can thus be changed!

A Unit Test example (**Demo 2**):

```
1 public void demo2() {
2     // given - an object reference
3     Person person = new Person();
4     person.name = "Johnny Walker";
5
6     // when
7     logger.log("Before renaming : " + person.name);
8     renameForDemo2(person, "Jenny Tonic");
9     logger.log("After renaming : " + person.name);
10
11    // then
12    assertEquals("Jenny Tonic", person.name);
13 }
```

JAVA

Graphical explanation:



► Click to reveal details for "pass by reference"

## 2. Übungen

### Übungsaufgabe 1

Erläutere Wertsemantik und Referenzsemantik anhand einer Grafik!