Objektorientierung in Java

Java-Kurs 2008 - LE 5

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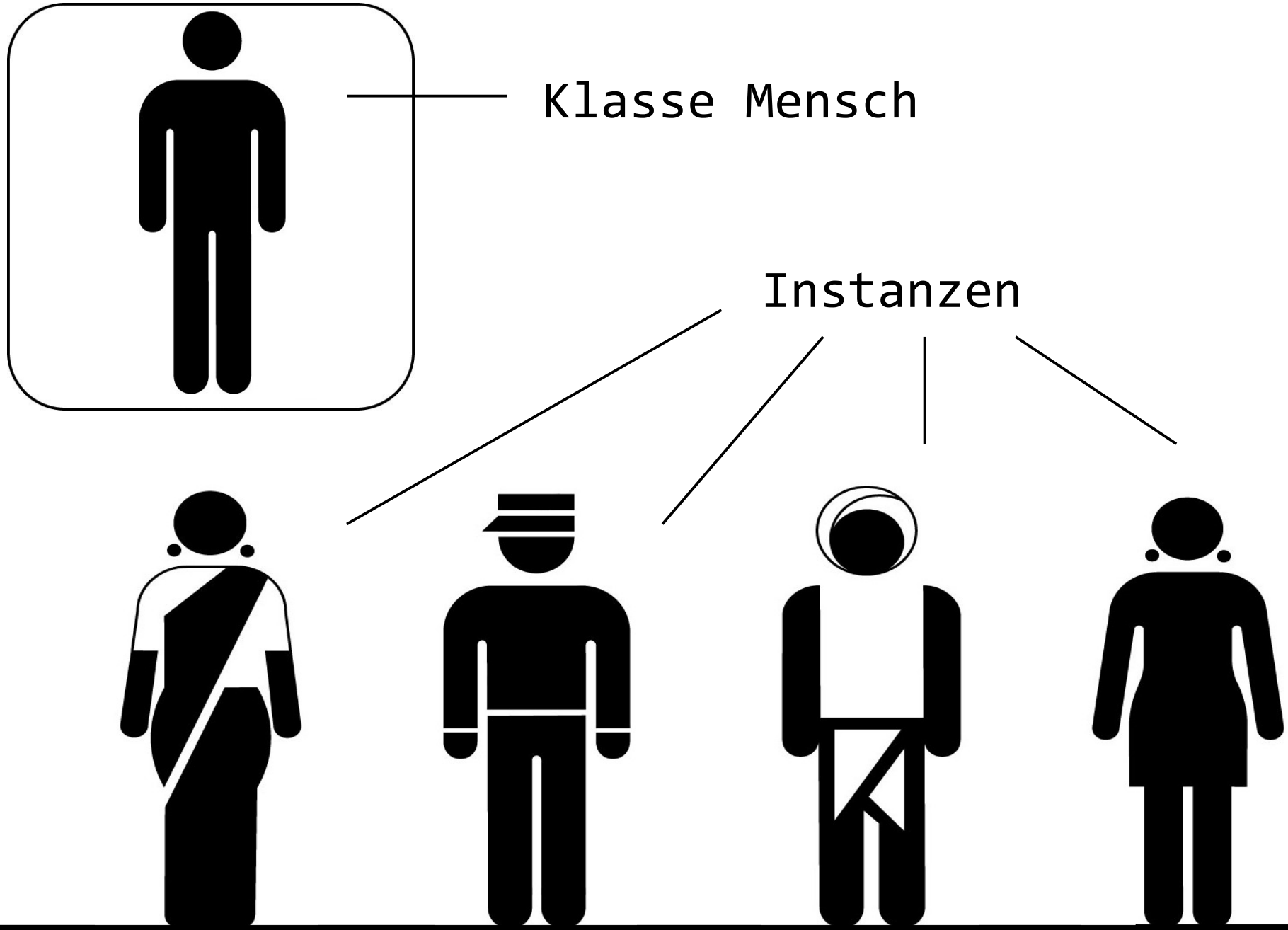
Java-Kurs 2008 - LE 5


```
Human robert =
  new Human("Robert","pulshead@cs.tu-berlin.de“);
```

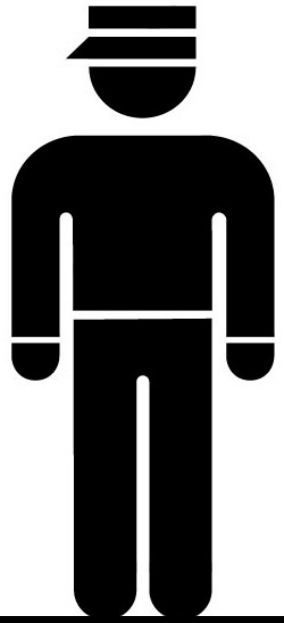

Haarfarbe
Alter
Name
Geschlecht

Picture by Joe Huminiak, flickr.com


Klasse Mensch
Instanzen

```
class Human {

   String name;
   int age;

}
```

```
class Human {

   String name;
   int age;

}
```



```
public static void
    main ( String[] args){

    Human robert= new Human();
}
```

Human.java

```java
class Human {

    String name;
    int age;

}
```

---

z.B.
HumanTest.java
Main-Methode

```java
Human robert= new Human();

robert.name= "Robert Lubkoll";
robert.age= 30;

System.out.println("Name: " + robert.name);
System.out.println("Age: " + robert.age);
```

Human.java

HumanTest.java

Compilieren: javac Human.java HumanTest.java

Ausführen: java HumanTest

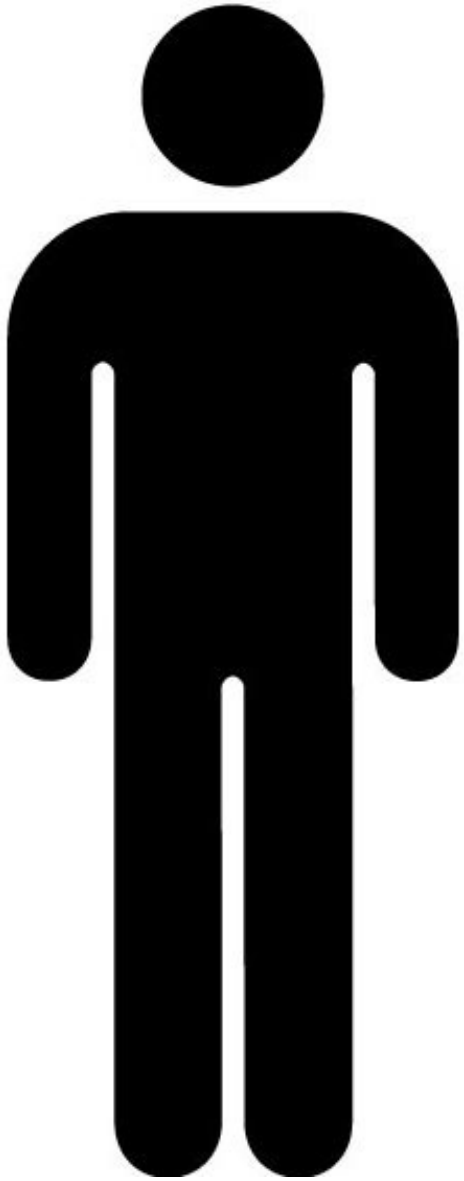

Picture by Kevin Cole, flickr.com
Geburtstag feiern
reden
singen
jaulen
greifen
trinken
bellen
laufen
laufen
essen
beißen
springen
spielen
sabbern

```
class Human {

    String name;
    int age;

    public void celebrateBirthday() {

        this.age= this.age + 1;

        if(this.age >=18){
            //TODO: sex drugs and rock'n'roll
        }
    }
}
```

```
Human robert= new Human();

robert.age= 30;
robert.celebrateBirthday();

System.out.println(„Age: “ + robert.age);
```

Ausgabe

```
Age: 31
```



Ich (**Instanz**)

bin ein Mensch (**Klasse**),

ich habe Beine (**Attribute**),

ich kann laufen (**Methoden**).


Picture by TedsBlog, flickr.com

```
class Human {

      String name;
      int age;

      public Human() {
         this.name= "unnamed";
         this.age= 0;
      }

}
```

```
Human robert= new Human();
```

```
class Human {

      String name;
      int age;

      public Human( String theName, int theAge ) {
         this.name= theName;
         this.age= theAge;
      }

}
```

```
Human robert= new Human("Robert", 30);
```

Picture by yousoundhollow, flickr.com

```
class Human {

  String name;
  int age;



  public Human(String name){
    name= name;
    age= 0;
  }

}
```

WRONG

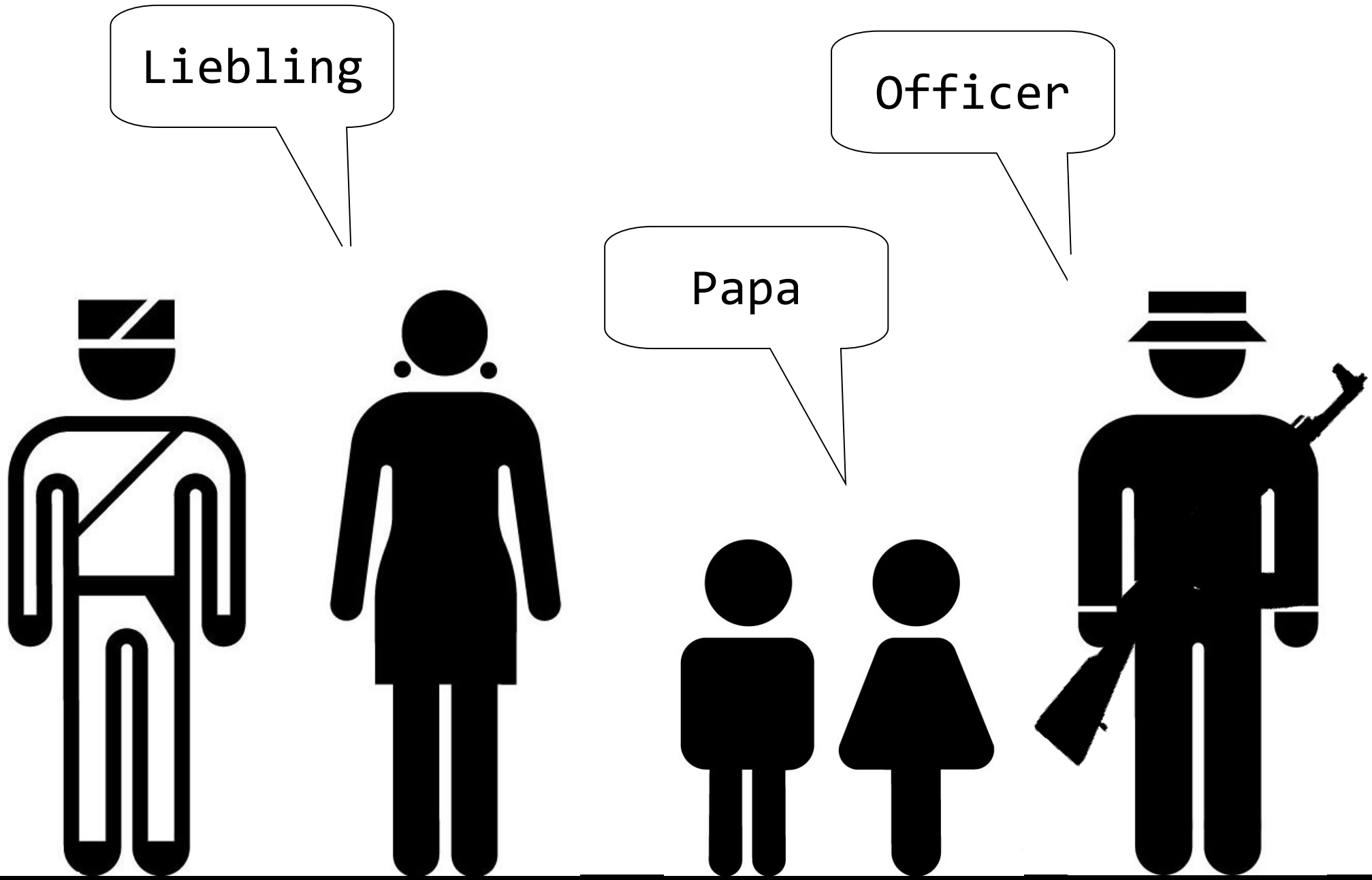
```
class Human {

  String name;
  int age;



  public Human(String theName){
    name= theName;
    age= 0;
  }

}
```

RIGHT

```
class Human {

  String name;
  int age;



  public Human(String name){
    this.name= name;
    this.age= 0;
  }

}
```

RIGHT

Picture by pizzo, flickr.com


Liebling
Officer
Papa

```java
int a = 0;
int b = a;

a = a + 1;
```

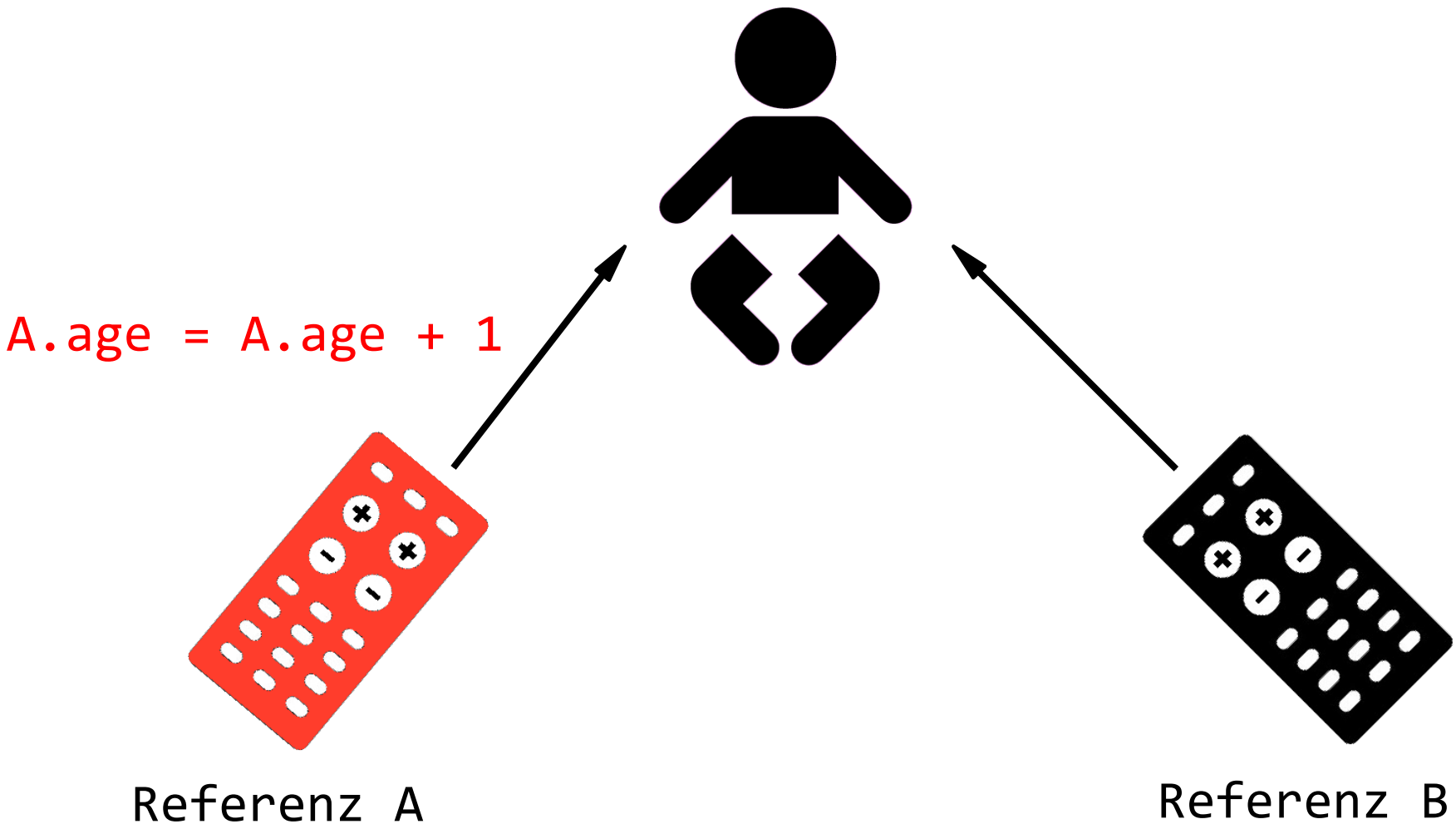
Ergebnis:

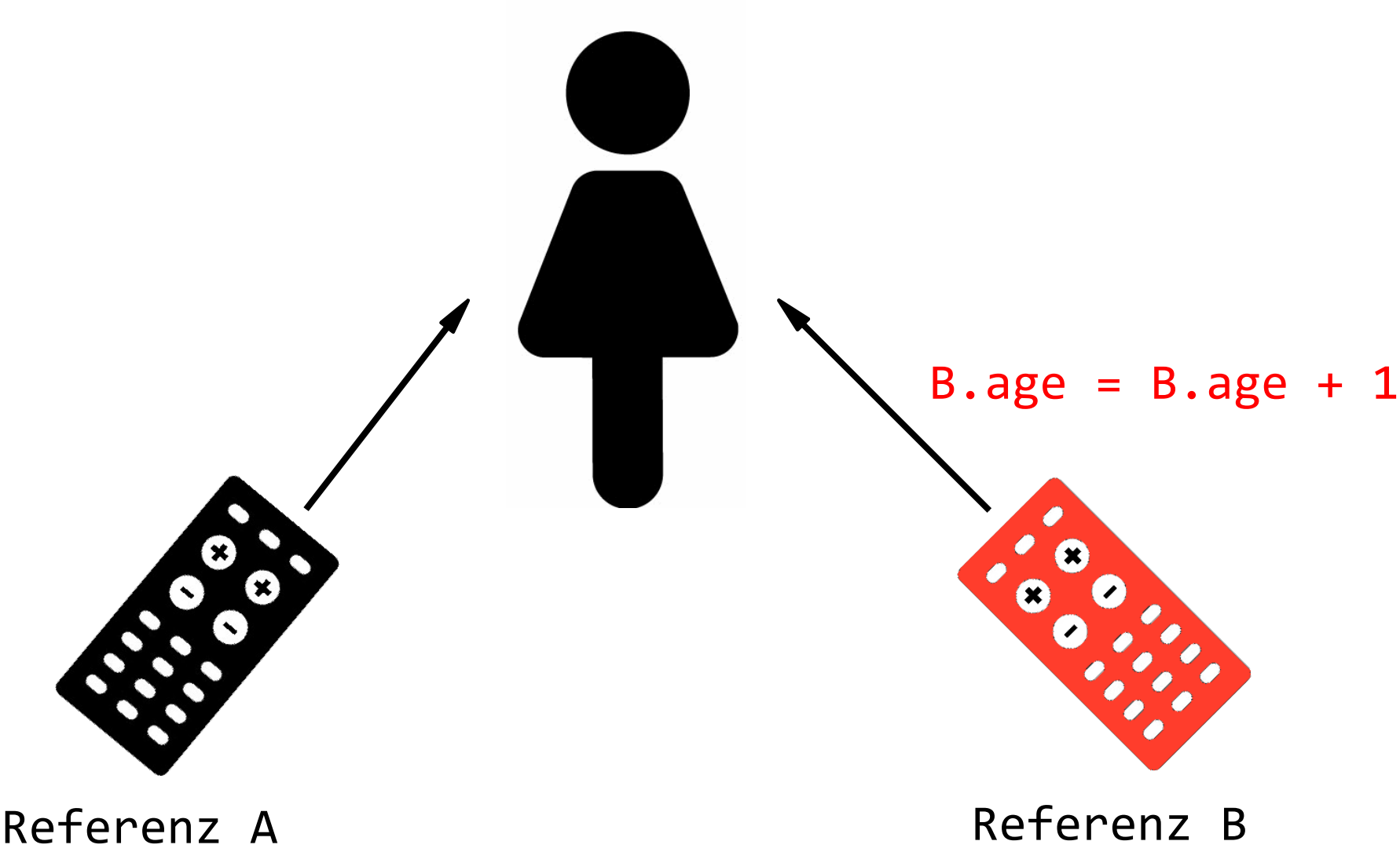
```
a ist: 1
b ist: 0
```

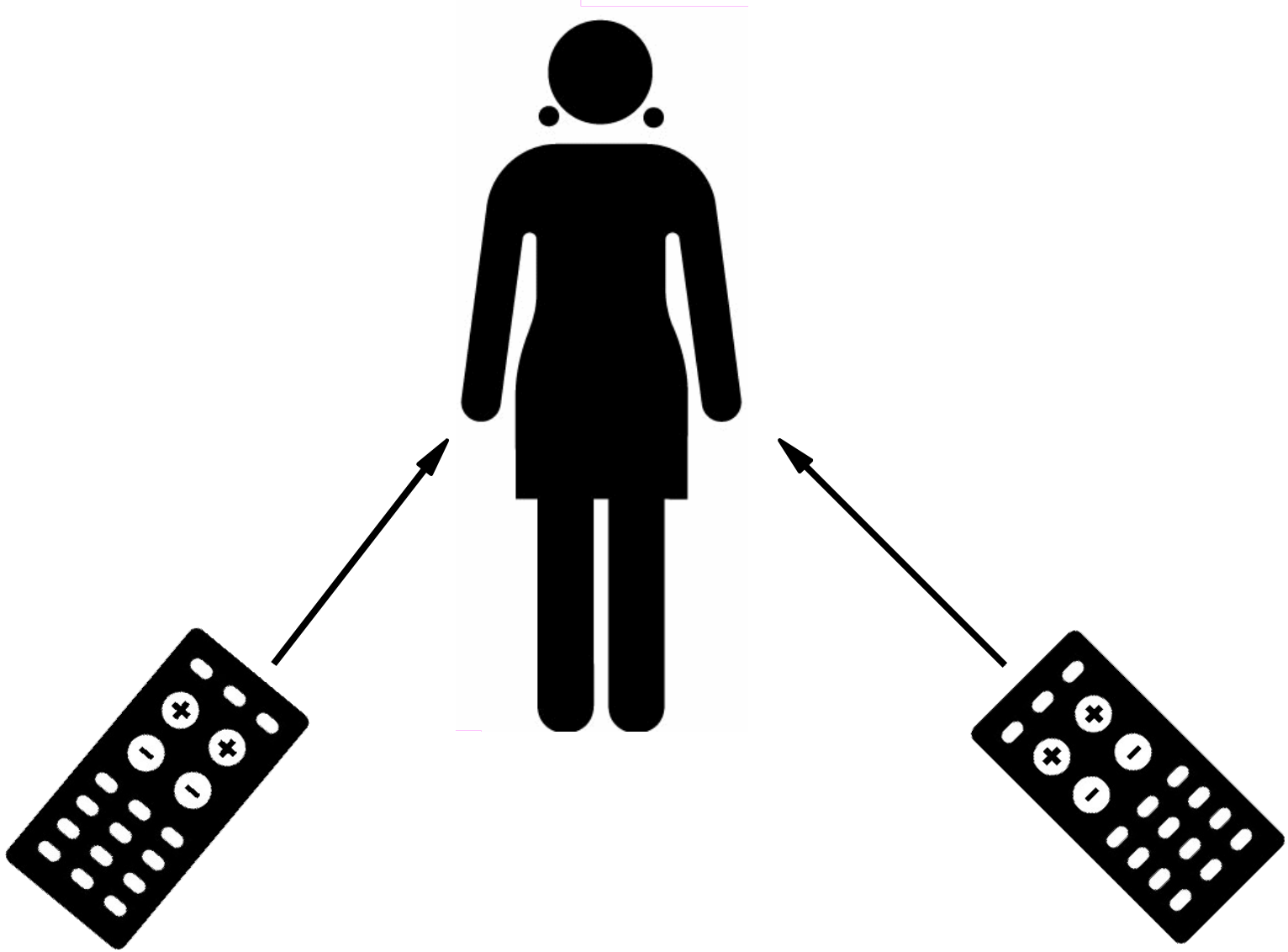
```java
Human a = new Human();
Human b = a;

a.age = a.age + 1;
```

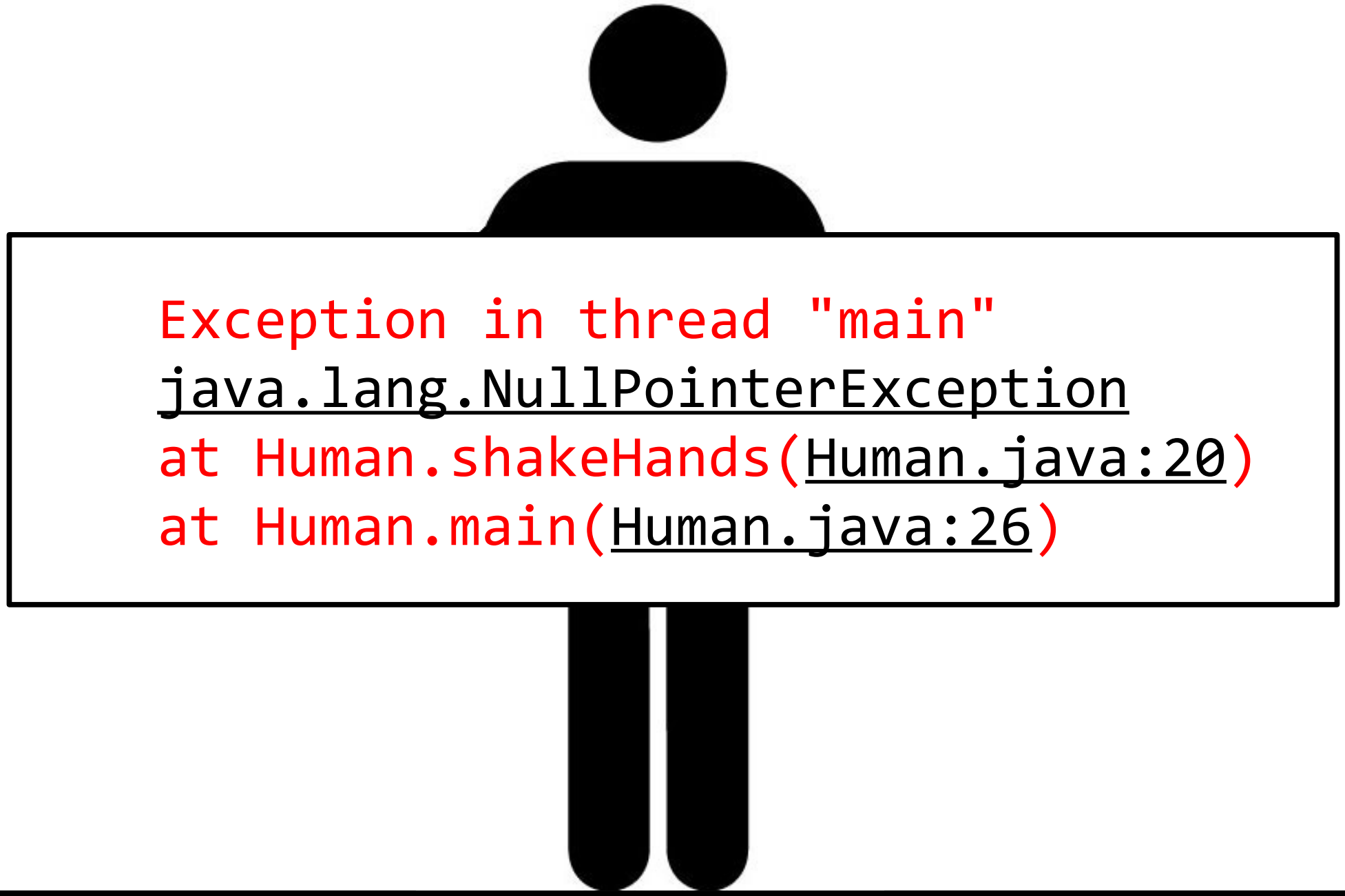
Ergebnis:

```
a.age ist: 1
b.age ist: 1  !!!
```


A.age = A.age + 1
Referenz A
Referenz B


B.age = B.age + 1
Referenz A
Referenz B


Referenz A
Referenz B


Exception in thread "main"
java.lang.NullPointerException
at Human.shakeHands(Human.java:20)
at Human.main(Human.java:26)

```
Human nobody;
nobody.celebrateBirthday();
```

Compilerfehler !

```
Human nobody = null;
nobody.celebrateBirthday();
```

Laufzeitfehler !

```
Human somebody = new Human();
somebody.celebrateBirthday();
```

OK

```
Human alsoSomebody = somebody;
alsoSomebody.celebrateBirthday();
```

OK

```
Human alsoNobody = nobody;
alsoNobody.celebrateBirthday();
```

Laufzeitfehler !


Picture by Helga Kopp (Helga_262), flickr.com

```
Human robert= new Human();

robert.age= 30;
robert.celebrateBirthday();

System.out.println(„Age: “ + robert.age);
```

Ausgabe

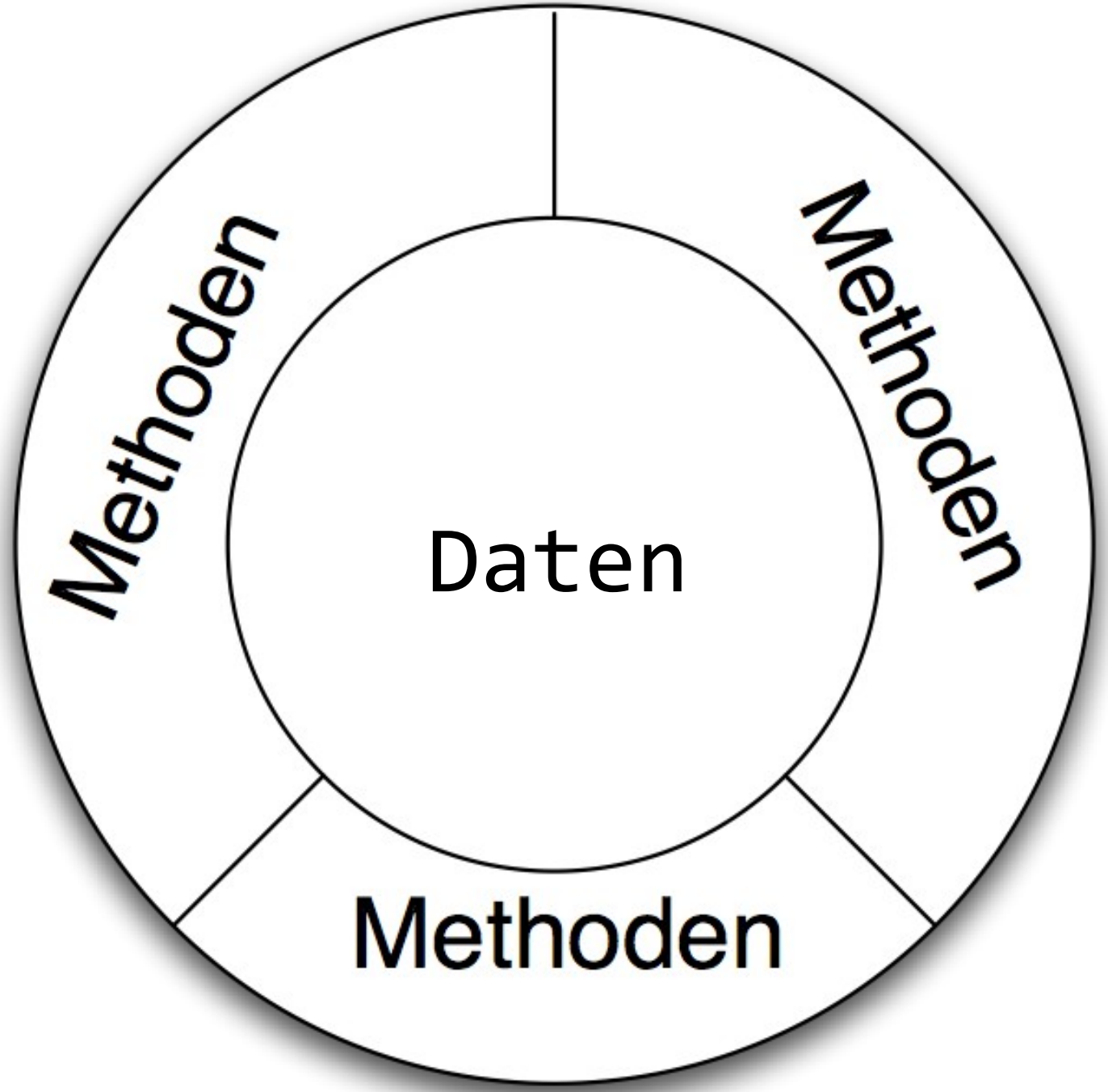
```
Age: 31
```

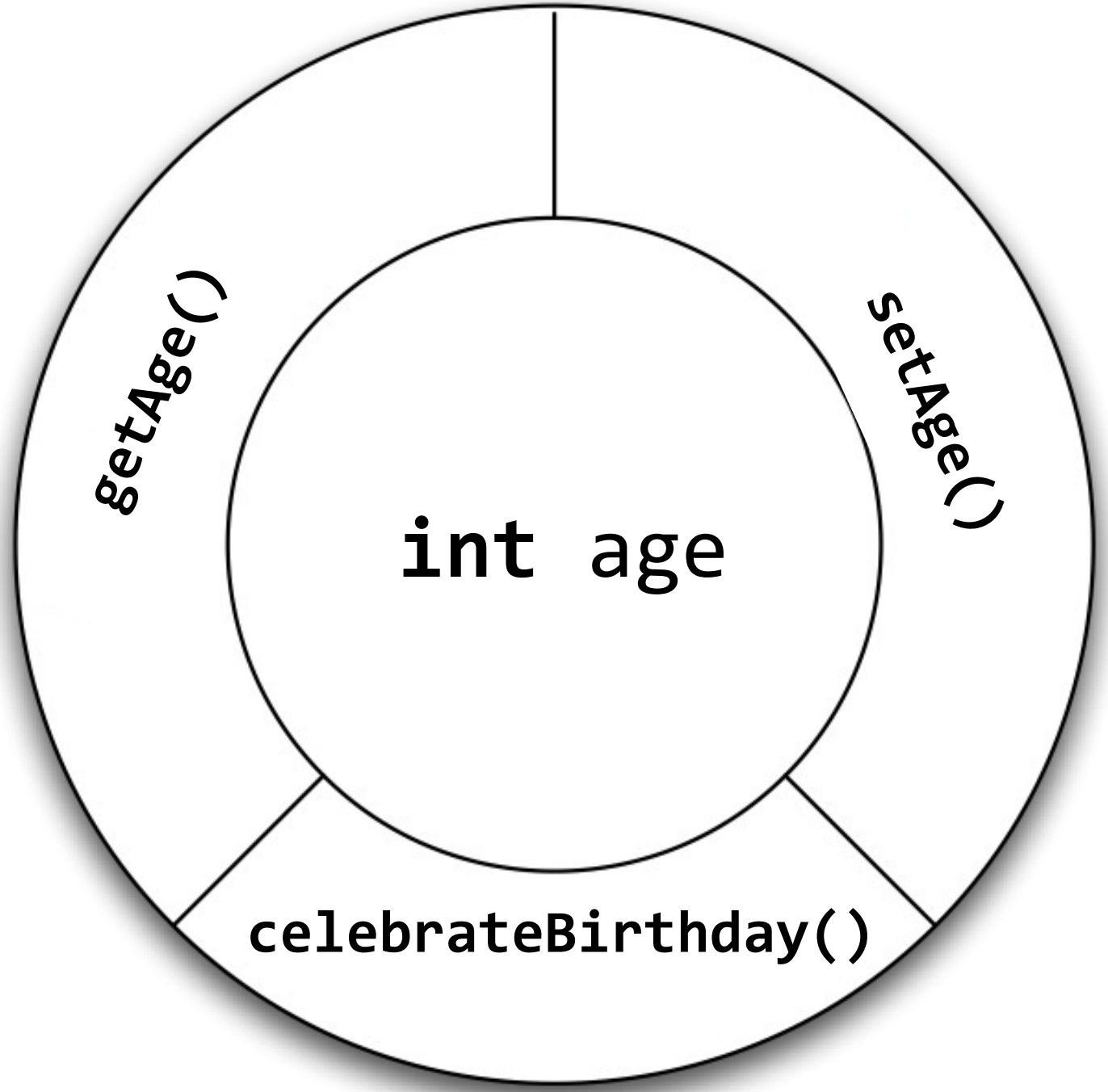
```
Human robert= new Human();

robert.age= -2;
robert.celebrateBirthday();

System.out.println(„Age: “ + robert.age);
```

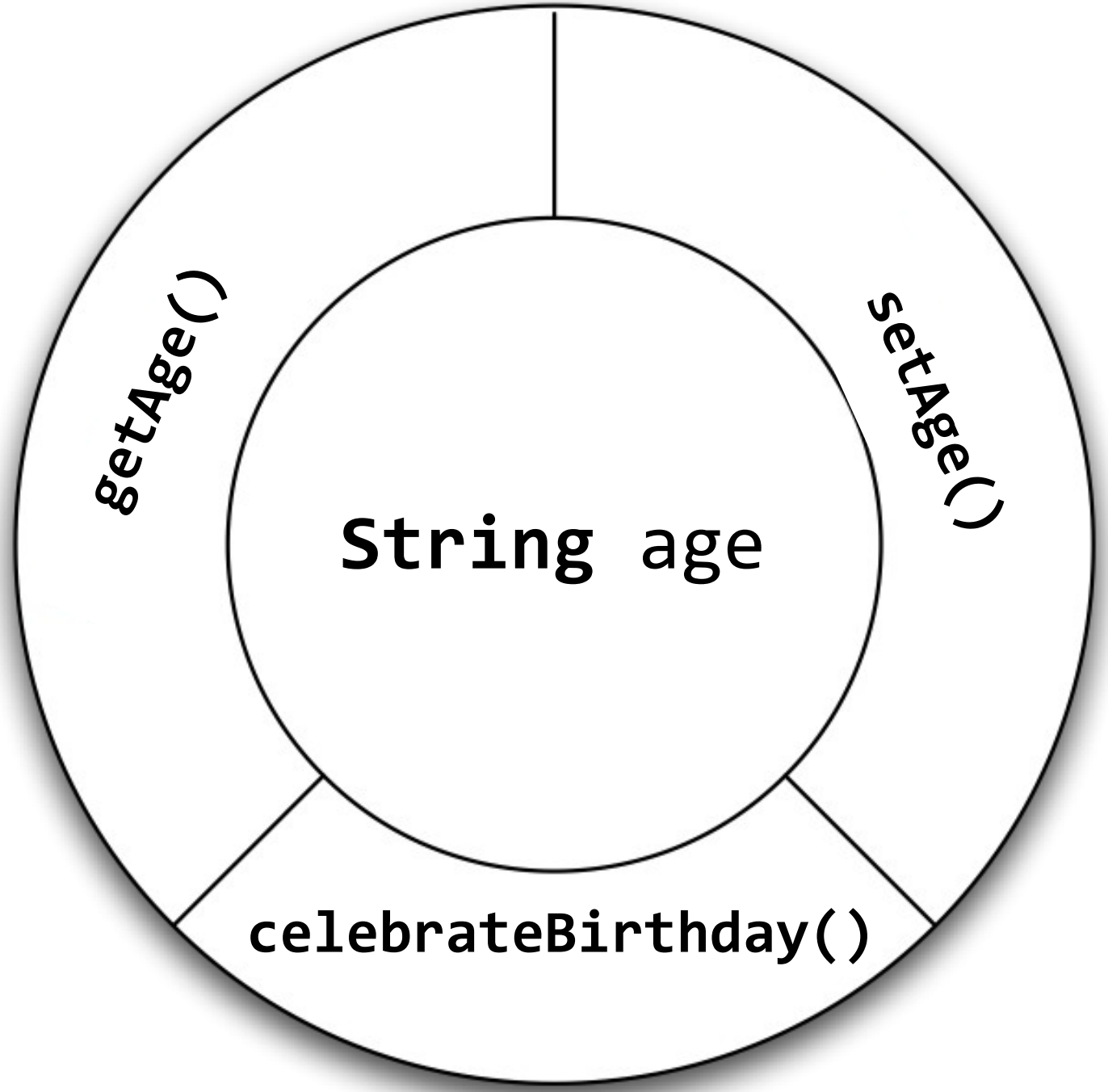
Ausgabe

```
Age: -1
```

```
class Human {

     String name;
     int age;

     public void setAge(int theAge) {
          if(theAge > 0){
               this.age= theAge;
          }
     }

     public int getAge(){
          return this.age;
     }
}
```


Methoden
Methoden
Daten
Methoden


getAge()
setAge()
int age
celebrateBirthday()


getAge()
setAge()
String age
celebrateBirthday()

```
class Human {

  String name;
  int age;

  public Human( String theName, int theAge ){
    this.name= theName;
    this.age= theAge;
  }

  public void celebrateBirthday() {
    this.age = this.age +1;
  }
}
```

```
static void main(String [] args) {
  Human robert = new Human(„Robert“, 30);
  robert.celebrateBirthday();
}
```

Danke!

Quellen:

Piktogramme: IIT Bombay
http://www.designofsignage.com

Fotos:
http://www.flickr.com