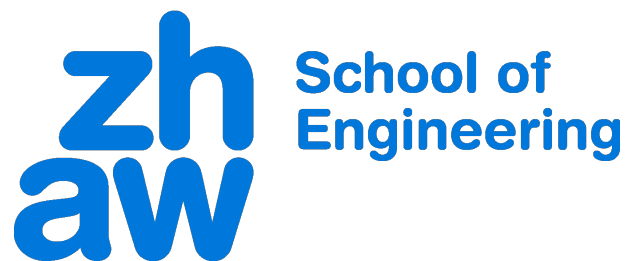


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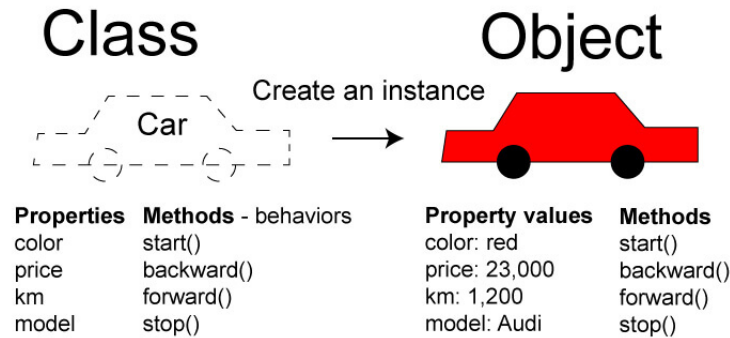
# Zusammenfassung INF2 Studienwochen 6-7

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Zf. INF2 SW 6-7

# 1 What is Java?

Java is a cross-platform object oriented programming language. The language is cross-platform because of the use of the JVM (Java Virtual Machine). When Java is compiled during development, it is compiled into byte code that can be executed on the JVM.

# 2 What is a object?



# 3 The syntax

The syntax is the same of all basic building blocks, like conditionals and loops. With one difference: The condition passed to a conditional needs to be of the type **boolean**.

## 3.1 File names

**Very important!** The class defined in a file has to have the exactly same name as the file it is defined in.

## 3.2 Datatype

| Type | byte | char | short | int | long | float | double | boolean | String |
|------|------|------|-------|-----|------|-------|--------|---------|--------|
| Bits | 8    | 8    | 16    | 32  | 64   | 32    | 64     | 1       |        |

**Important!** String isn't terminated with a `\0` like in C, can be concatenated using `+` and have a method `.length()` to get the strings length.

## 3.3 Conversion

- Casting to types like in C
- Parse using for eg. `Integer.parseInt(String)`

## 3.4 String methods

```
str1.equals(str2)
str1.equalsIgnoreCase(str2)
str1.split(",")
str1.substring(4, 7)
str1.toLowerCase()
str1.toUpperCase()
str1.replace("foo", "bar")
str1.startsWith("guggus")
```

## 4 Basic functions

### 4.1 Main function

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

### 4.2 Constructor

The constructor is a "method" on a class that is called when a new instance of that class is created. The constructor needs to have the same name as the class itself and has no return value. A class can have multiple constructors with different types of arguments.

```
public myTestClass () {}
```

### 4.3 Print to CLI

```
System.out.print(String) System.out.println(String)
```

### 4.4 Read from CLI

```
Scanner scanner = new Scanner(System.in);  
double foo = scanner.nextDouble();  
int bar = scanner.nextInt();
```

### 4.5 Math class

```
Math.E  
Math.PI  
double Math.ceil(double x)  
double Math.floor(double x)  
int Math.round(float x)  
double Math.random()
```

### 4.6 Date class

```
Date now = new Date();  
String nowStr = now.toString();
```

### 4.7 ArrayList class

```
import java.util.ArrayList;  
ArrayList<String> guggus = new ArrayList<String>();  
guggus.add("foo"); guggus.add("bar");
```

### 4.8 Arrays

**Declaration:** `int[] foo;`

**Definition:** `foo = new Int[8];`

**Initialization on declaration:** `int[] bar = {1, 2, 3, 4};`

**Access:** `int guggus = bar[0];` // Important! Can't read out of bounds in Java.

### 4.9 Final

A variable that is defined `final` can't be reassigned.

### 4.10 Static

For executing a static method of a class, no instance is needed and static functions can't modify data on the class.

### 4.11 This

`this` is a reference to the current object and can be used to assign variables on the object.

```
this.guggus = guggus;
```