

*Einführung in die
Informatik 2 für Ingenieure*
Übung 1

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Agenda

1. Organisation
2. Umfrage
3. Java
4. UML
5. Übungsblatt 1

Organisation

Termine

- **Vorlesung** (Prof. Alfons Kemper)
 - Montag 10:00 - 11:30
- **Zentralübung** (Christoph Anneser)
 - Montag 11:30 - 12:30
- **Fragestunde** (Sebastian Reichbauer)
 - Donnerstag 15:30- 16:30

Website

The screenshot shows a web browser window with the URL <https://db.in.tum.de/teaching/ss17/ei2/>. The browser's address bar shows the URL and a security lock icon. The page content is as follows:

Navigation: Home, People, Research, Teaching, Summer Term 2017, Implementation of Database Systems, Database Systems on Modern CPU Architectures, Transaction Systems, Einführung in die Informatik 2 für Ingenieure, Perlen der Informatik 4, Oberseminar AG: Forschung im Datenbankbereich, Database Systems, Seminar: Efficient Inference and Large-Scale Machine-Learning.

Breadcrumbs: Home » Teaching » Summer Term 2017 » Einführung in die Informatik 2 für Ingenieure

Course Title: Einführung in die Informatik 2 für Ingenieure

Instructors:

- Prof. Alfons Kemper, Ph.D.
- Alexander van Renen, M.Sc.

Organisation

Vorlesung

- Termin: Montag 10:00
- Ort: BC2 0.01.17

Zentralübung

- Termin: Montag 11:30
- Ort: BC2 0.01.17

Fragestunde

- Termin: Donnerstag 15:30
- Ort: BC2 0.01.17
- Tutor: Moritz Sichert sichert@in.tum.de

Material

Right Sidebar:

Lehrstuhl III
Datenbanksysteme

Prof. Kemper
Prof. Neumann
Prof. Günemann

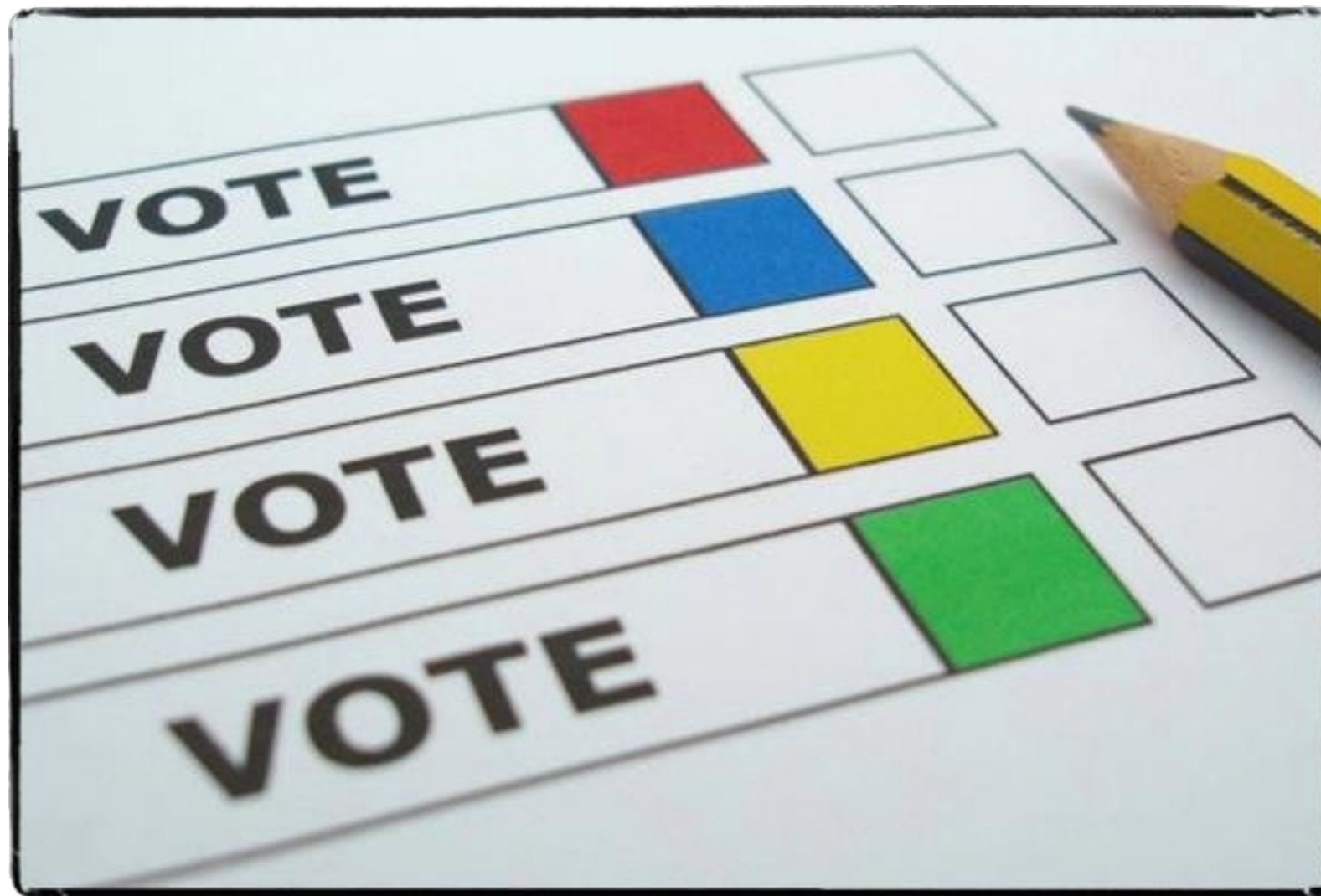
Fakultät für Informatik
TU München

Language: de en

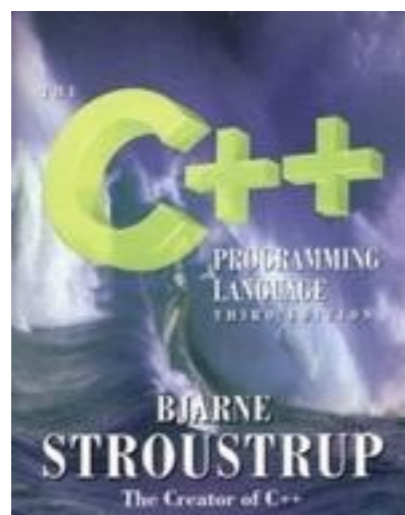
<http://db.in.tum.de/teaching/ss23/ei2/>

Umfrage

<https://ars.particify.de/participant/room/44487625>



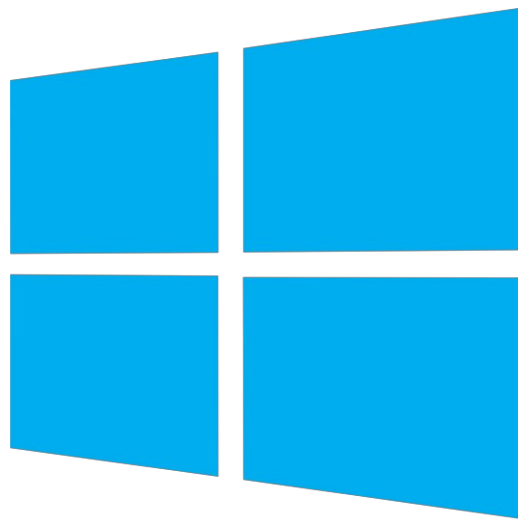
Programmiersprachen ?



C#



Betriebssysteme ?



Datenbanken ?

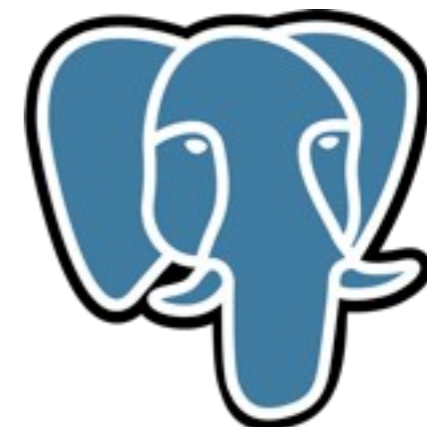
ORACLE®

IBM

Microsoft®
SQL Server®

SQLite

MySQL®



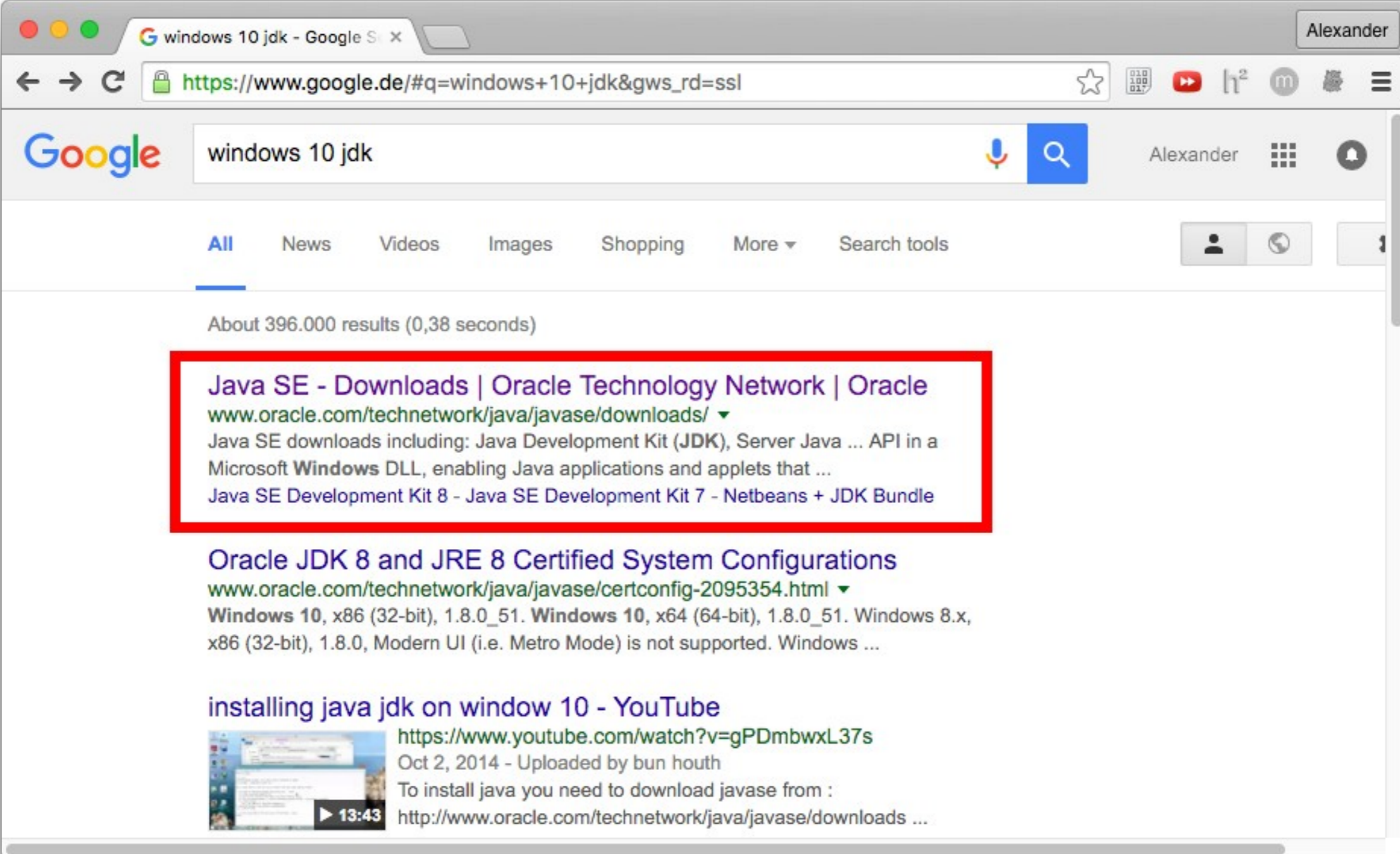
Einführung in



Java Setup

1. Java Development Kit (JDK)

Java Setup (Windows)



A screenshot of a web browser window showing a Google search for "windows 10 jdk". The search results page displays several links, with the top result highlighted by a red box. The highlighted result is "Java SE - Downloads | Oracle Technology Network | Oracle" with the URL www.oracle.com/technetwork/java/javase/downloads/. Below the URL, it states "Java SE downloads including: Java Development Kit (JDK), Server Java ... API in a Microsoft Windows DLL, enabling Java applications and applets that ..." and lists "Java SE Development Kit 8 - Java SE Development Kit 7 - Netbeans + JDK Bundle". Other search results include "Oracle JDK 8 and JRE 8 Certified System Configurations" and a YouTube video titled "installing java jdk on window 10".

Windows 10 jdk - Google S x Alexander

https://www.google.de/#q=windows+10+jdk&gws_rd=ssl

Google windows 10 jdk Alexander

All News Videos Images Shopping More Search tools

About 396.000 results (0,38 seconds)

Java SE - Downloads | Oracle Technology Network | Oracle
www.oracle.com/technetwork/java/javase/downloads/
Java SE downloads including: Java Development Kit (JDK), Server Java ... API in a Microsoft Windows DLL, enabling Java applications and applets that ...
Java SE Development Kit 8 - Java SE Development Kit 7 - Netbeans + JDK Bundle

Oracle JDK 8 and JRE 8 Certified System Configurations
www.oracle.com/technetwork/java/javase/certconfig-2095354.html
Windows 10, x86 (32-bit), 1.8.0_51. Windows 10, x64 (64-bit), 1.8.0_51. Windows 8.x, x86 (32-bit), 1.8.0, Modern UI (i.e. Metro Mode) is not supported. Windows ...

installing java jdk on window 10 - YouTube
<https://www.youtube.com/watch?v=gPDmbwxL37s>
Oct 2, 2014 - Uploaded by bun houth
To install java you need to download javase from :
<http://www.oracle.com/technetwork/java/javase/downloads> ...

Java Setup (Windows)

The screenshot shows a web browser window displaying the Oracle Java SE Downloads page. The browser's address bar shows the URL `www.oracle.com/technetwork/java/javase/downloads/index.html`. The page features the Oracle logo on the left and a navigation menu with links for Products, Solutions, Downloads, Store, Support, Training, Partners, and About. A search bar is also present. The main content area is titled "Java SE Downloads" and includes tabs for Overview, Downloads, Documentation, Community, Technologies, and Training. Two download options are highlighted with red boxes: "Java Platform (JDK) 8u77" and "NetBeans with JDK 8". Below these, a section titled "Java Platform, Standard Edition" provides information about the Java SE 8u77 release, including a note that it includes important security fixes and a link to "Learn more". On the right side, there are sections for "Java SDKs a" and "Java Reso" with various links.

Oracle Technology Network > Java > Java SE > Downloads

Overview Downloads Documentation Community Technologies Training

Java SE Downloads

Java Platform (JDK) 8u77

NetBeans with JDK 8

Java Platform, Standard Edition

Java SE 8u77
Java SE 8u77 includes important security fixes. Oracle strongly recommends that all Java SE 8 users upgrade to this release.
[Learn more](#)

Java SDKs a

- [Java SE](#)
- [Java EE and Gl](#)
- [Java ME](#)
- [Java Card](#)
- [NetBeans IDE](#)
- [Java Mission C](#)

Java Reso

- [Java APIs](#)
- [Technical Article](#)
- [Demos and Vid](#)
- [Forums](#)
- [Java Magazine](#)
- [Java.net](#)

Java Setup (Windows)

See also:

- Java Developer Newsletter: From your Oracle account, select **Subscriptions**, expand **Technology**, and subscribe to **Java**.
- Java Developer Day hands-on workshops (free) and other events
- Java Magazine

JDK 8u77 Checksum

Java SE Development Kit 8u77

You must accept the [Oracle Binary Code License Agreement for Java SE](#) to download this software.

Accept License Agreement Decline License Agreement

Product / File Description	File Size	Download
Linux ARM 32 Soft Float ABI	77.7 MB	jdk-8u77-linux-arm32-vfp-hflt.tar.gz
Linux ARM 64 Soft Float ABI	74.68 MB	jdk-8u77-linux-arm64-vfp-hflt.tar.gz
Linux x86	154.74 MB	jdk-8u77-linux-i586.rpm
Linux x86	174.92 MB	jdk-8u77-linux-i586.tar.gz
Linux x64	152.76 MB	jdk-8u77-linux-x64.rpm
Linux x64	172.96 MB	jdk-8u77-linux-x64.tar.gz
Mac OS X	227.27 MB	jdk-8u77-macosx-x64.dmg
Solaris SPARC 64-bit (SVR4 package)	139.77 MB	jdk-8u77-solaris-sparcv9.tar.Z
Solaris SPARC 64-bit	99.06 MB	jdk-8u77-solaris-sparcv9.tar.gz
Solaris x64 (SVR4 package)	140.01 MB	jdk-8u77-solaris-x64.tar.Z
Solaris x64	96.18 MB	jdk-8u77-solaris-x64.tar.gz
Windows x64	187.31 MB	jdk-8u77-windows-x64.exe

Java SE Development Kit 8u77 Demos and Samples Downloads

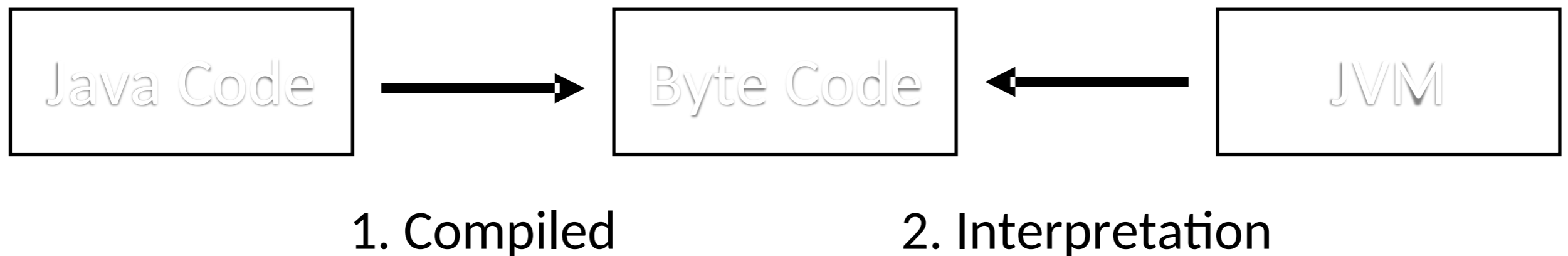
Java Setup

1. Java Development Kit (JDK) 
2. Code schreiben

Hello World ...

```
public class Test {  
    public static void main(String[] args) {  
        System.out.println("hello my world !");  
    }  
}
```

Hello World ...



1. Java Code wird vom java compiler (javac) in Java Byte Code übersetzt.
2. Der Java Byte Code wird dann von der Java Virtual Machine (JVM) ausgeführt.

Java Setup

1. Java Development Kit (JDK) ✓
2. Code schreiben ✓
3. Integrated Development Environment (IDE)

IDE Overview

- IntelliJ IDEA CE
- Eclipse
- Netbeans

IntelliJ IDEA



<https://www.jetbrains.com/idea/>

Files & Packages

- Eine Klasse pro File
- Packages entsprechen der Ordner Struktur

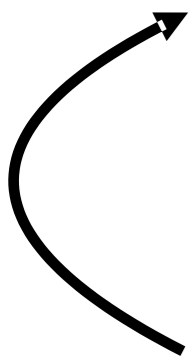
```
package source;
```

```
public class Blub {
```

```
    public static void main(String[] args) {  
        System.out.println("hello my world !");  
    }  
}
```

Java Setup

1. Java Development Kit (JDK) ✓
2. Code schreiben ✓
3. IntelliJ IDEA installieren ✓
4. Code schreiben
5. Debuggen
6. Goto 4



Ein paar Links

- IDE: IntelliJ IDEA:
<https://www.jetbrains.com/idea/>
- Online IDE:
http://www.tutorialspoint.com/compile_java_online.php
- Zusätzliche Übungsaufgaben:
<https://www.hackerrank.com/>
- Java Reference:
<https://docs.oracle.com/javase/8/docs/api/overview-summary.html>

Java Objekte



Klassen & Objekte

- Eine Klasse ... zB: Punkt
 - ... beschreibt einen Daten-Typen.
 - ... ist sowas wie ein 'struct' in C.
- Ein Objekt ... zB: (1;3)
 - ... ist eine Ausprägung eines Daten-Typen.
 - ... ist sowas wie eine Instanz von einer 'struct' in C.

Klassen & Objekte

- Objekt Attribute/Methoden gehören zu einem Objekt.

```
public class Point {  
    float x; // Objekt Attribut  
    float y; // Objekt Attribut  
    float length() { /* .. */ } // Objekt Methode  
}
```

Objekt Methoden

- Nachgebaut in C

```
struct Point {  
    float x;  
    float y;  
};  
float pointGetLength(Point* this) { /* .. */ }
```

- Java

```
public class Point {  
    float x;  
    float y;  
    float length() { /* .. */ }  
}
```


Copy-by-reference vs -by-value

- C: By-value

```
// The pointer itself by value  
Point* a = malloc(sizeof(Point));  
Point* b = a;
```

```
// By value  
Point a;  
Point b = a;
```

- Java: Objects by-reference, primitive Typen by-value

```
// By reference  
Point a = new Point();  
Point b = a;
```

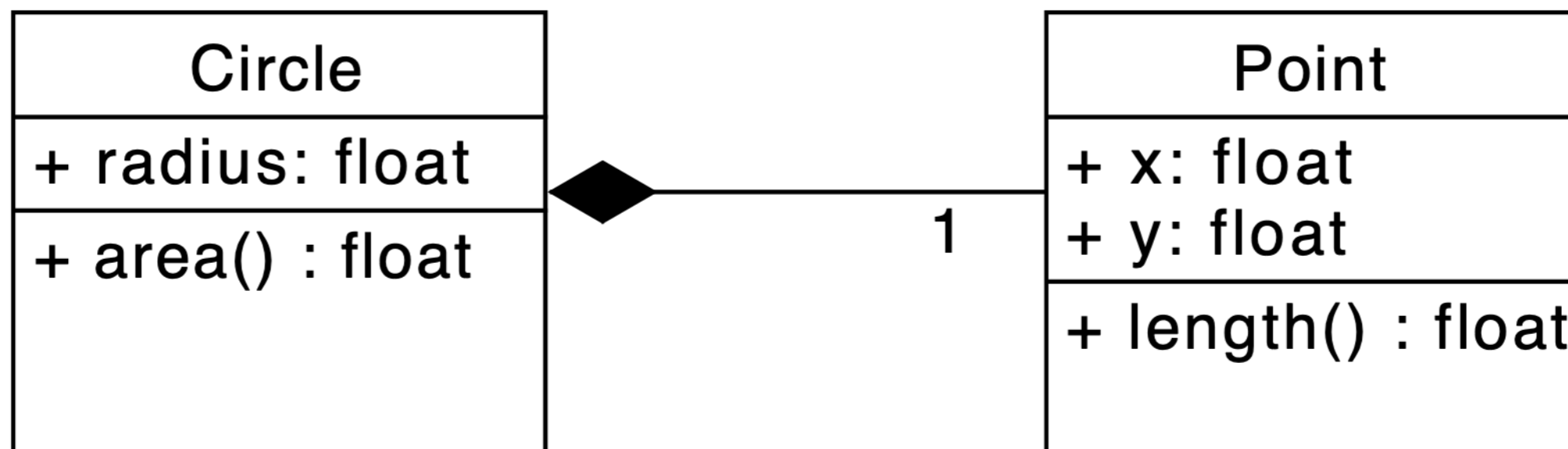
```
// By value  
int a = 3;  
int b = a;
```

Modellierungsbeispiel



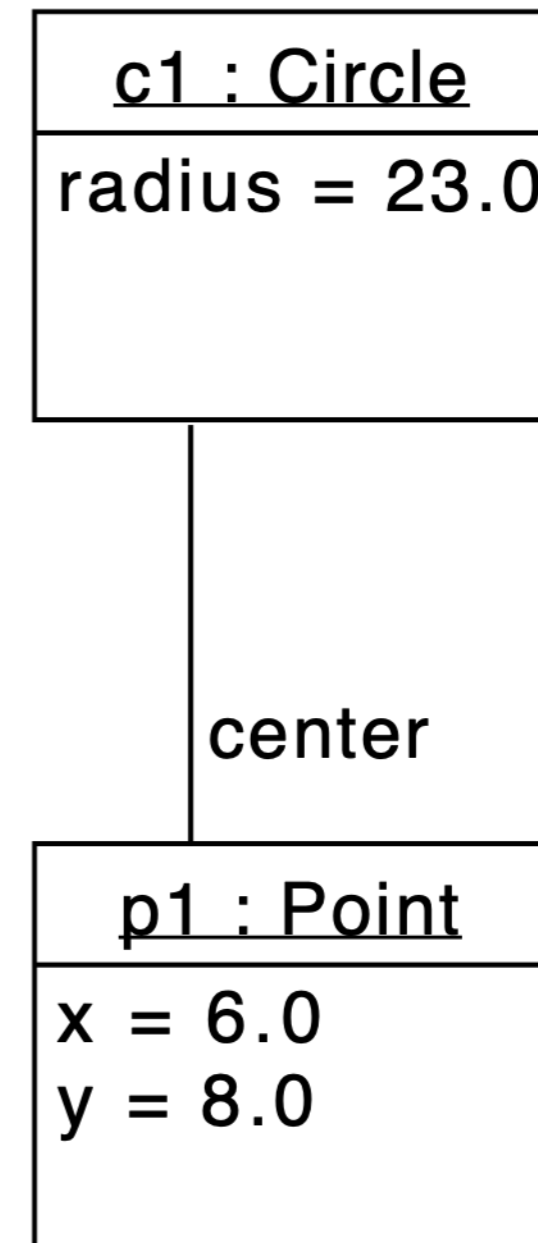
Klassendiagramm

- Zeigt die Struktur des modellierten Systems
- Beschreibt Klassen mit Attributen und Operationen
- Zeigt Beziehungen zwischen Klassen



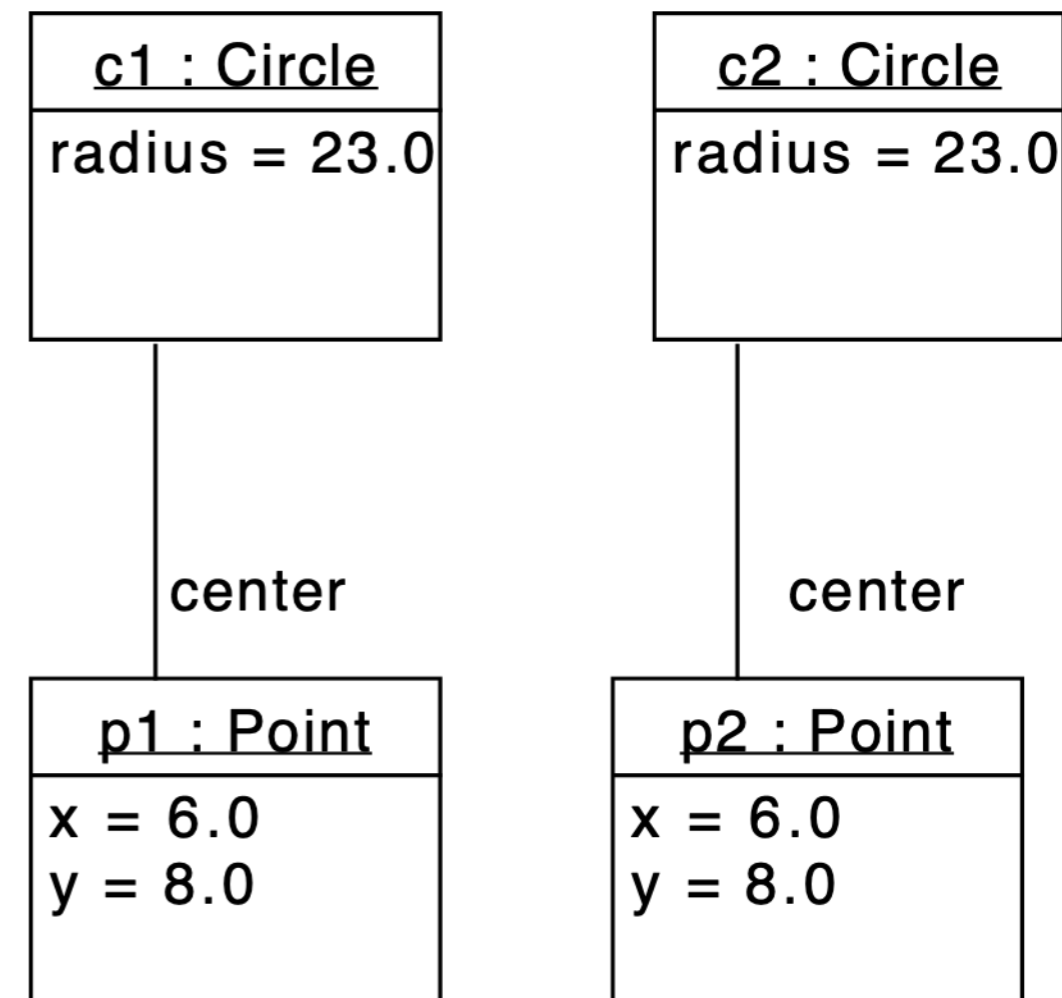
Objektdiagramm

- Zeigt das modellierte System zu einem Zeitpunkt
- Enthält Instanzen von Klassen und Assoziationen



Objektdiagramm

- Zeigt das modellierte System zu einem Zeitpunkt
- Enthält Instanzen von Klassen und Assoziationen

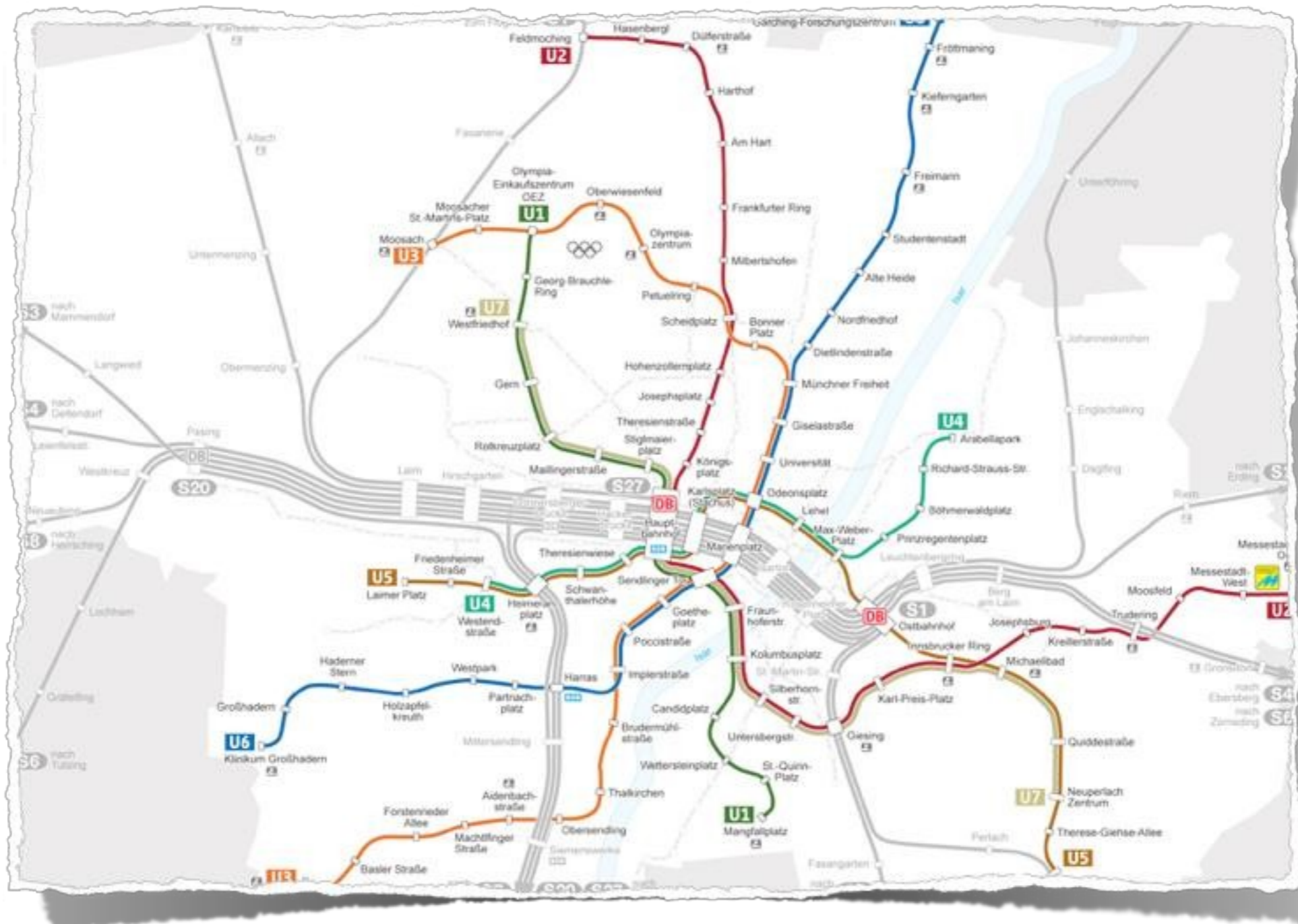


Übungsblatt 1

- Verfügbar auf der Webseite
- Benötigt Java Compiler und Laufzeitumgebung



Aufgabe 1



Aufgabe 2

