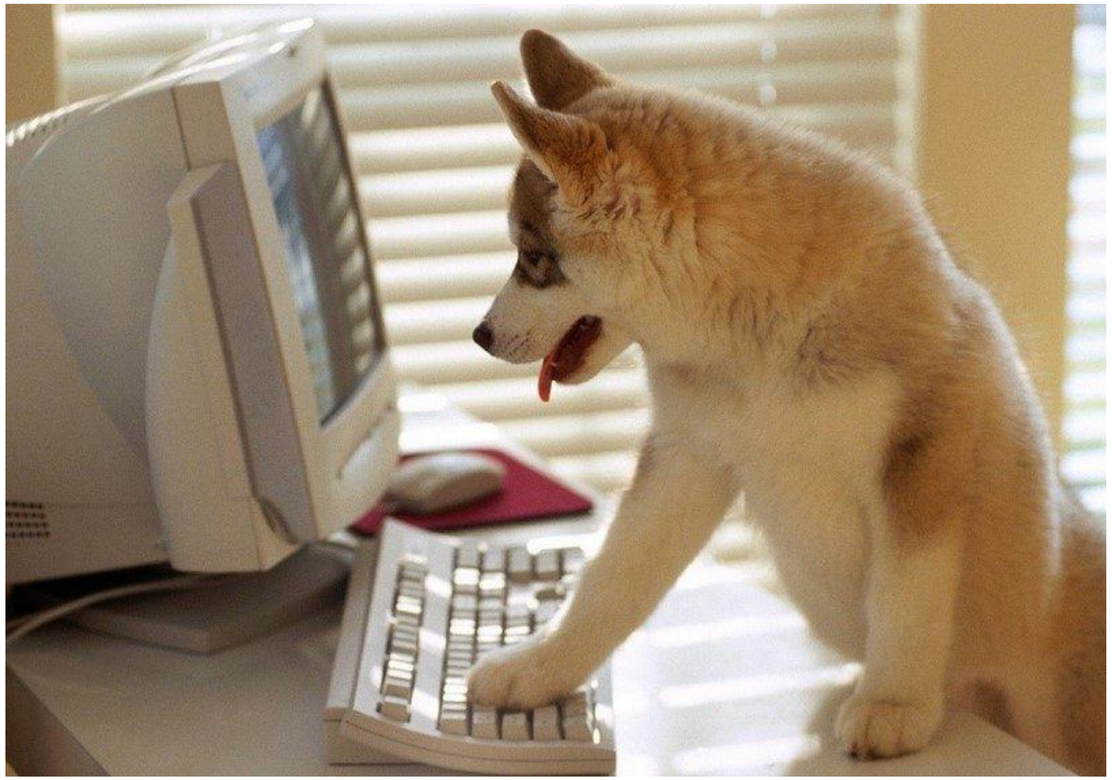
Programming Tutorial [Basics]



Organizational Stuff

- ECTS?
  - It depends…
  - More information after 24 April
- No ECTS for Computer Science Students (CS4DM, HCI, DE with Computer Science Bachelor)
- No ECTS if you already completed the Java Programming Seminar
- Students from other courses: Discuss this with your professor and tell me

Organizational Stuff

To get ECTS, you have to:

- Complete all assignments **in time**.
  - Individual assignments
  - Late submissions = No submissions
  - “I did it, but I did not push” = no submission
    - If you have problems with git, you have enough time to contact and to ask me
  - Only *.java files
    - Other file formats = no submission
- Complete a graded mini project in the end of the semester
  - Teams of 2 students
  - Submission = Code + Documentation (~3-10 pages) + Presentation
- **Never** plagiarise!

Note: We still do not know if you can get ECTS for this course!

Organizational Stuff

If you own a laptop, please bring it here and use it!

Otherwise, use the Lint-Pool computers with Linux, **not with Windows**!

Organizational Stuff

18.03.: Structures
19.03.: Methods
20.03.: Recursion
21.03.: Arrays
22.03.: Strings

25.03.: OOP1
26.03.: OOP2
27.03.: Generics
28.03.: Exceptions & Enums
29.03.: GUI

Organizational Stuff

Help needed?

- Java Dokumentation: https://docs.oracle.com/en/java/javase/11/
- A good Java Tutorial: https://www.tutorialspoint.com/java/
- Books:
  - B.Bates & K.Sierra: *Head first Java* https://www.oreilly.com/library/view/head-first-java/0596009208/
  - OpenBook: *Java ist auch eine Insel* (German) http://openbook.rheinwerk-verlag.de/javainsel/
- Most important: **Google** and **Stackoverflow** ;)

Java Variables

- Different Datatypes:
  - int
  - float
  - double
  - boolean
  - String (this is a special one)
  - char
  - …
- Structure:
  - `public static <DATATYPE> <NAME>;` (Declaration)
  - `public static <DATATYPE> <NAME> = <VALUE>;` (Declaration & Initialization)
  - Example:
    - `public static int x;`
    - `public static int x = 7;`

If-Else

```
if (<CONDITION>){
   <STATEMENT>;
}
else{
   <STATEMENT>;
}
```

```
if (1<7){
   System.out.println(“Juuhuu”);
}
else{
   System.out.println(“Buuuh”);
}
```

Switch Case

```
switch <VARIABLE>{
   case <VALUE>:
      <STATEMENT>;
      break;
   …
   default:
      <STATEMENT>;
}
```

```
switch x{
   case 1:
      System.out.println(“1”);
      break;
   …
   default:
      System.out.println(“:(”)
;
}
```

Loops

```
int x = 0;
while(x<5){
   System.out.println(x);
   x++;
}
```

```
int x = 0;
do{
   System.out.println(x);
   x++;
}while(x<5);
```

```
for(int x = 0; x<5; x++){
   System.out.println(x);
}
```

GIT Dictionary

- *Repository*: Contains not just the code, but also important metadata
- *Commit*: Updates code with your changes and important metadata
- *Push*: Adds your local commits to the repository
- *Pull*: Updates your local code with the current commits

GIT

Different ways to use GIT

1. Through the console (recommended for better understanding):
   https://github.com/javaprogrammingbuw/structures/wiki/Git-commands
   (Windows users: Download git (https://git-scm.com/downloads) and use *git bash*)
2. Different GIT GUIs (you can use them, but you have to figure out by yourself how they work)

First Steps

In this course we will use Github Classroom

1. Get a Github Account if you don’t have one
2. Go to: https://classroom.github.com/a/YkdYsLN0 (or scan the QR Code with your phone)
3. Authorize Github and accept the assignment
4. Click on the repository

First Steps

How to clone the repository?

1. Click on *Clone or Download*
2. Copy the link
3. Create a new folder on your computer
4. Open the console and navigate into the newly created folder
5. Type into the folder: `git clone <INSERT LINK>`
6. Press Enter and see the magic happen

First Steps

How to compile?

```
javac YourJavaFile.java
```

How to run?

```
java YourJavaFile
```