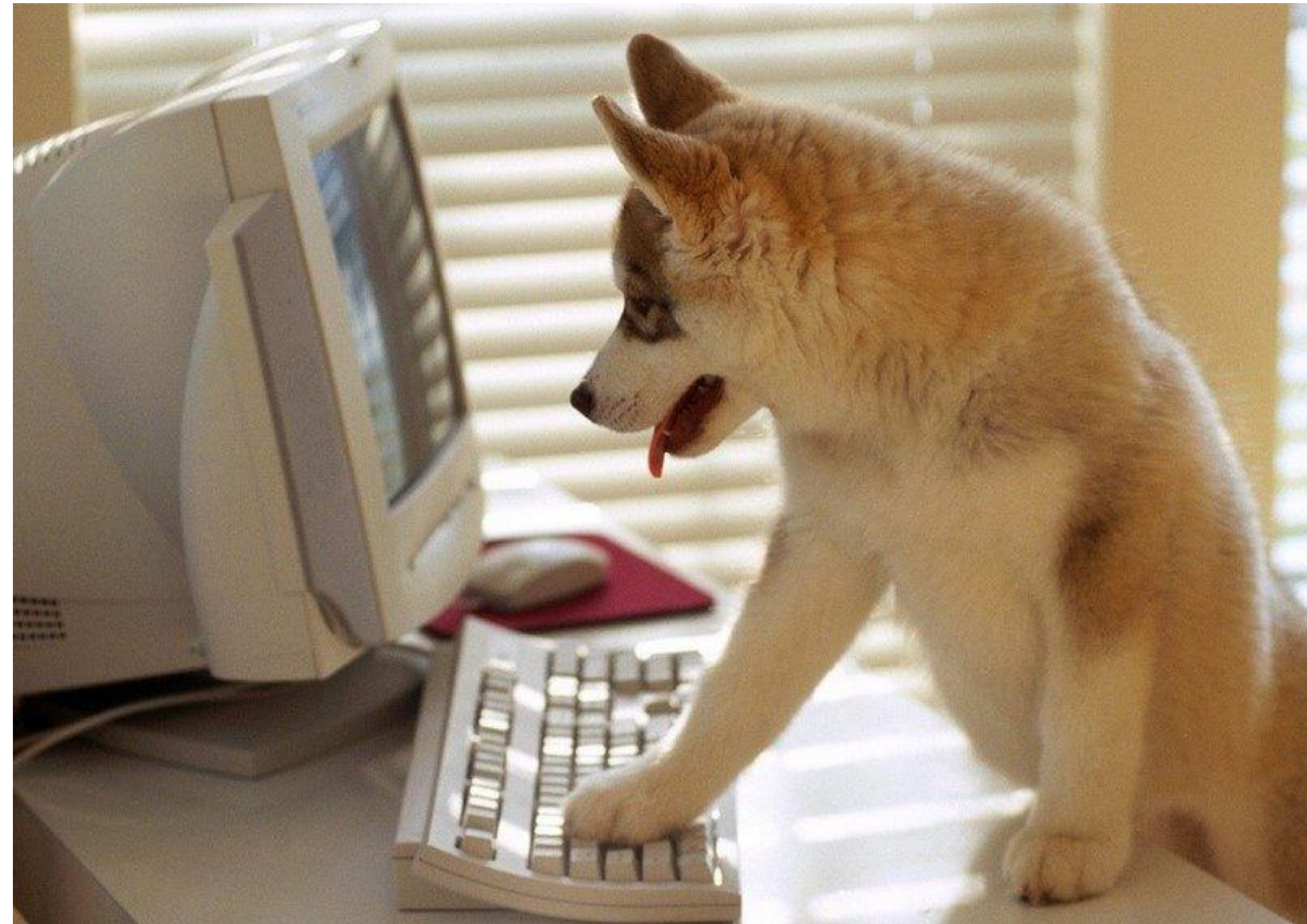


Java Programming



Organizational Stuff

- Digital Engineering Students: 3 ECTS
 - Assignments (don't worry, it is not as bad as it sounds!)
 - NO PLAGIARISM!
 - Mini project
- Students of the faculty of Civil Engineering: It depends
- CS4DM/CSM and HCI Students: No credit points, but still: You have the opportunity to learn Java in roughly two weeks before the classes start.

Organizational Stuff

General Rules:

- Be punctual!
- Be honest!
- Be hard-working!

Organizational Stuff

23.09.: Structures

24.09.: Methods

25.09.: Recursion

26.09.: Arrays

27.09.: Strings

30.09.: OOP

01.10.: Generics & Linked Lists

02.10.: Exceptions & Testing

03.10.: Holiday

04.10.: 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** ;)

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 you local code with the current commits

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/149ybW1R>
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

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);
}
```