Java Lab 2022 Experiment

Johannes Hufnagl, Noor Mohammed, Murali Krishna & Paul Spiesberger

Java Lab Experiment 2022

Research Group for Industrial Software (INSO)
https://www.inso.tuwien.ac.at

Welcome and Overview

Research Collaboration between

Welcome and Overview

- Experiment to test new teaching methods – **this is not a test**
- Teaching Java programming
- Duration: 2,5 hours
- IntelliJ and resources are available on GitHub

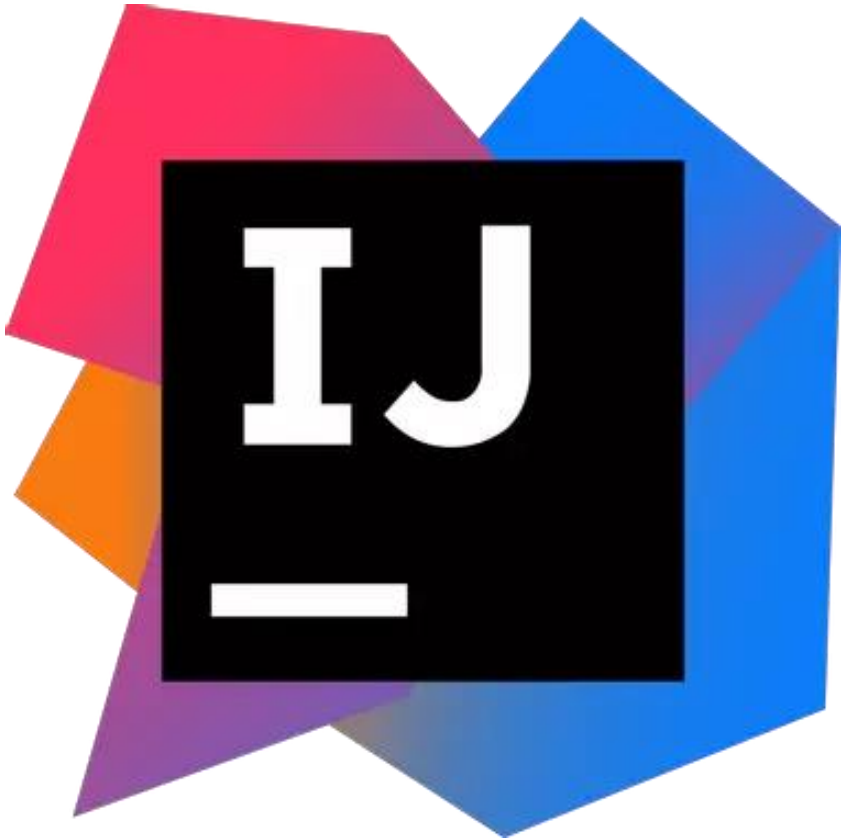
Course of Action

1. Students get instructions to solve a programming assignment
2. Students solve the assignment – **not a test and ask questions!**
3. Assignment showcase by teachers
4. We collect feedback from students

Showcase IntelliJ

Should already be installed on your computer

Project should be available as well, if not then go to "File > Open Recent > OOP-Java-Lab-2022"



Showcase GitHub

All resources and later all solutions for you to study will be available on GitHub:

https://github.com/RIT-at-SSE/OOP-Java-Lab-2022

Theory

- Assignment description:

  Write a Java program that prints all real solutions to the quadratic equation $ax^2+bx+c=0$.
  Read in a, b, c and use the quadratic formula.

- What is now to do?
  1. **Read in variables a, b and c**
  2. **Calculate the equation**

- Follow the instruction in the file and complete the TODOs

```
// TODO: read in b the same way as a

double b = 0; // change this line here
```

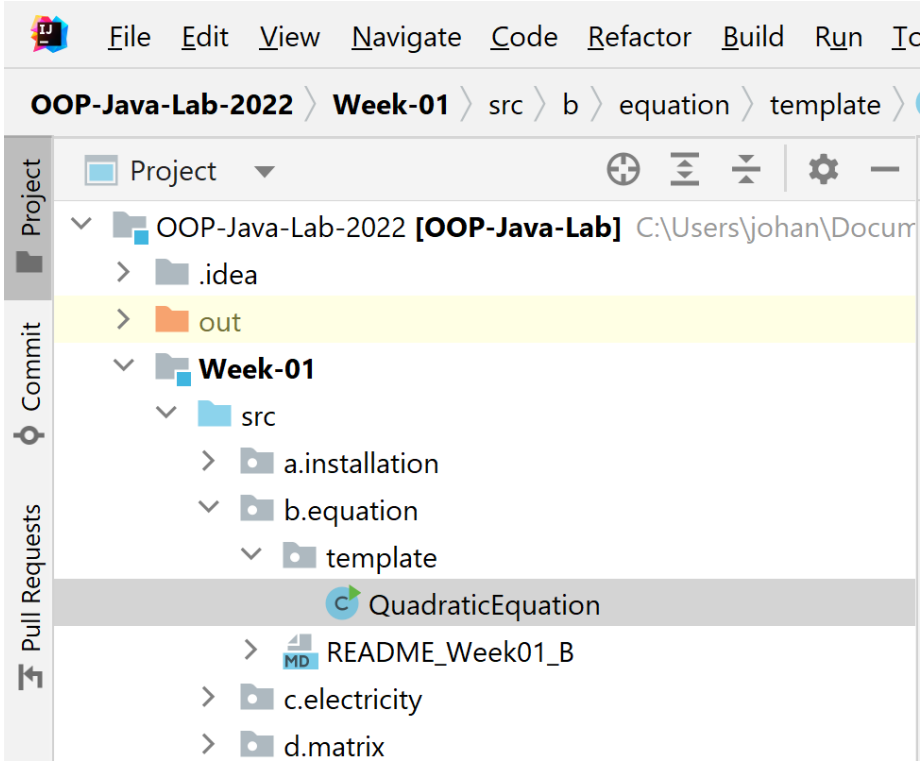
Tips and Tricks

- How do you read in variables?
- How can you calculate the determinant?
- …

- Look into the **README** file for information and further resources

- **Now you have 1 hour to work on the assignment on your own**

Working Time



Ask questions! We can help you

Solve assignments on your own or in groups

Taking Pictures

- QR Code with group, instructions
- shorturl.at/eKM19

Week 1 C

- Assignment description:

  Develop a Java application to generate Electricity bills. […] (more info in the README)

- Template and solution is available, try it yourself after class

- Key Learnings
  - Java Classes
  - Java Objects
  - **Object orientated programming**

Week 1 D

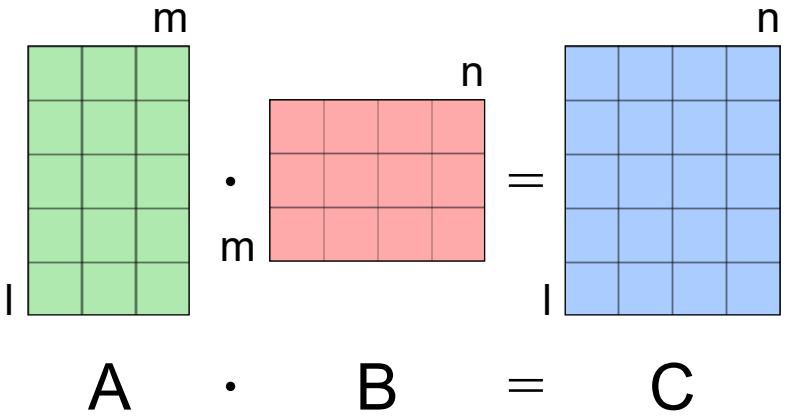
- Assignment description:

  Write a Java program to multiply two given matrices. **(more info in the README)**

- Template and solution is available, try it yourself after class

- Key Learnings
  - Loops in Java
  - Arrays in Java

Week 1 D




```
int a[][] = {{1, 1, 1},
             {2, 2, 2},
             {3, 3, 3}};

int b[][] = {{1, 1, 1},
             {2, 2, 2},
             {3, 3, 3}};
```

https://math.tools/calculator/matrix/multiplication/

Feedback

- QR code + Link
- shorturl.at/rtyUX

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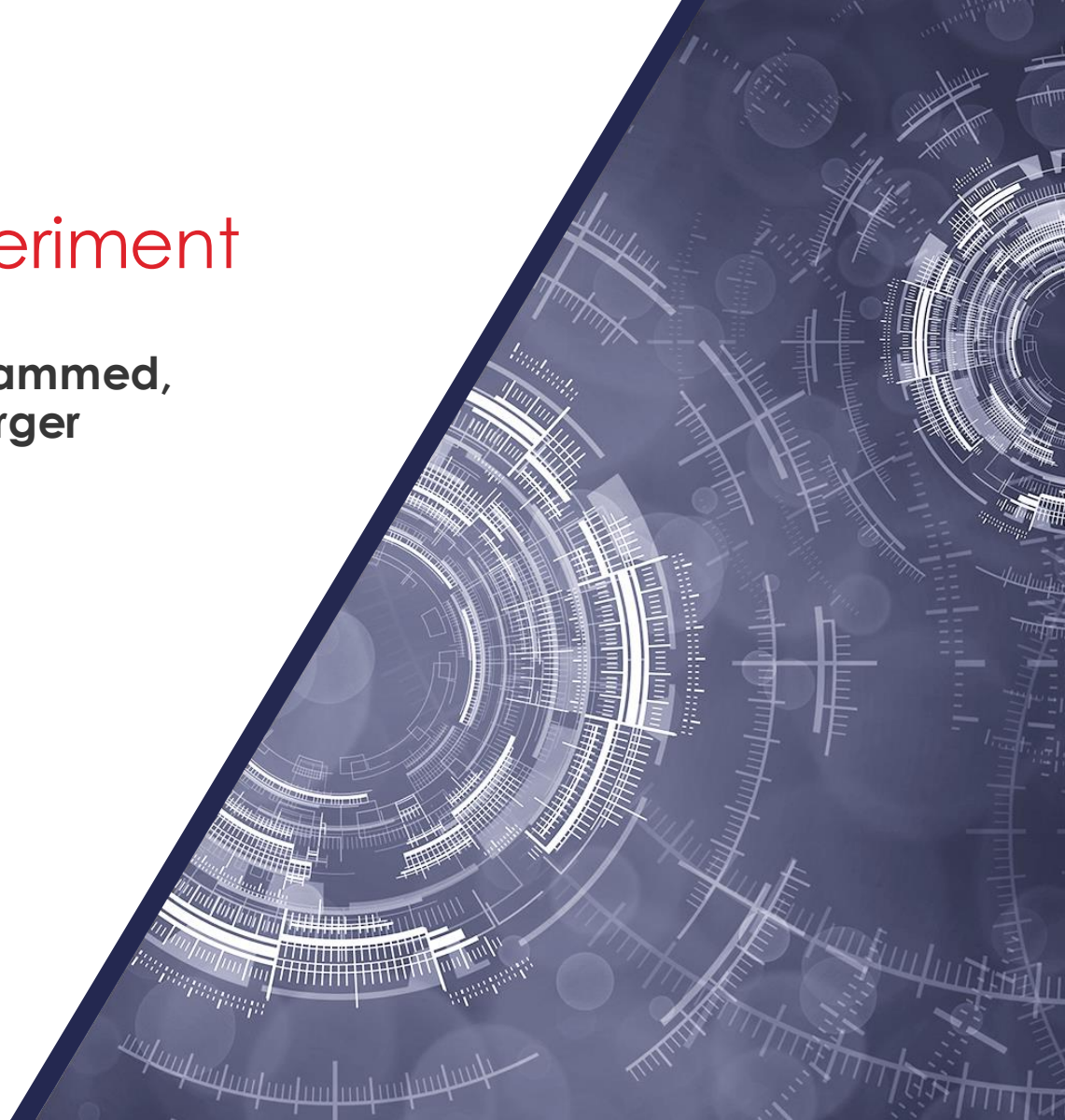


Week 2 A

- Assignment description:

  Write Java program on use of inheritance, preventing inheritance using final, abstract classes.

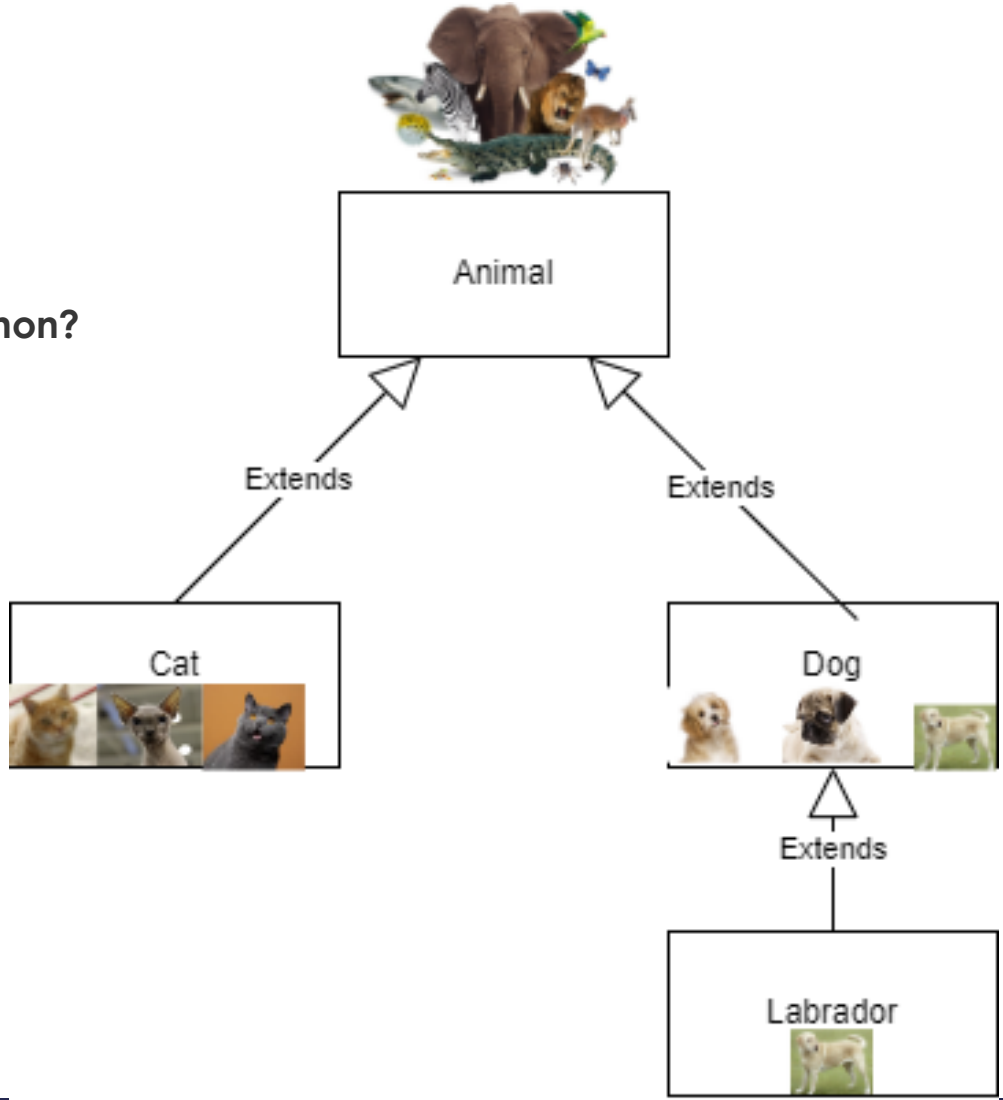
- Key learnings:
  - Abstraction
  - Inheritance

Week 2 A

What do dogs and cats have in common?

They share similiar attributes (name, weight, age)

➡ Code reusability



Week 2 B

- Assignment description:

  Write Java program on dynamic binding, differentiating method overloading and overriding.

- Key learnings:
  - Methods and Objects
  - Inheritance

Week 2 C

- Assignment description:

  Develop a java application to implement currency converter (Dollar to INR, EURO to INR, Yen) using Interfaces.

- Key learnings:
  - Interfaces

Feedback

- QR code + Link
- shorturl.at/ajLY5

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