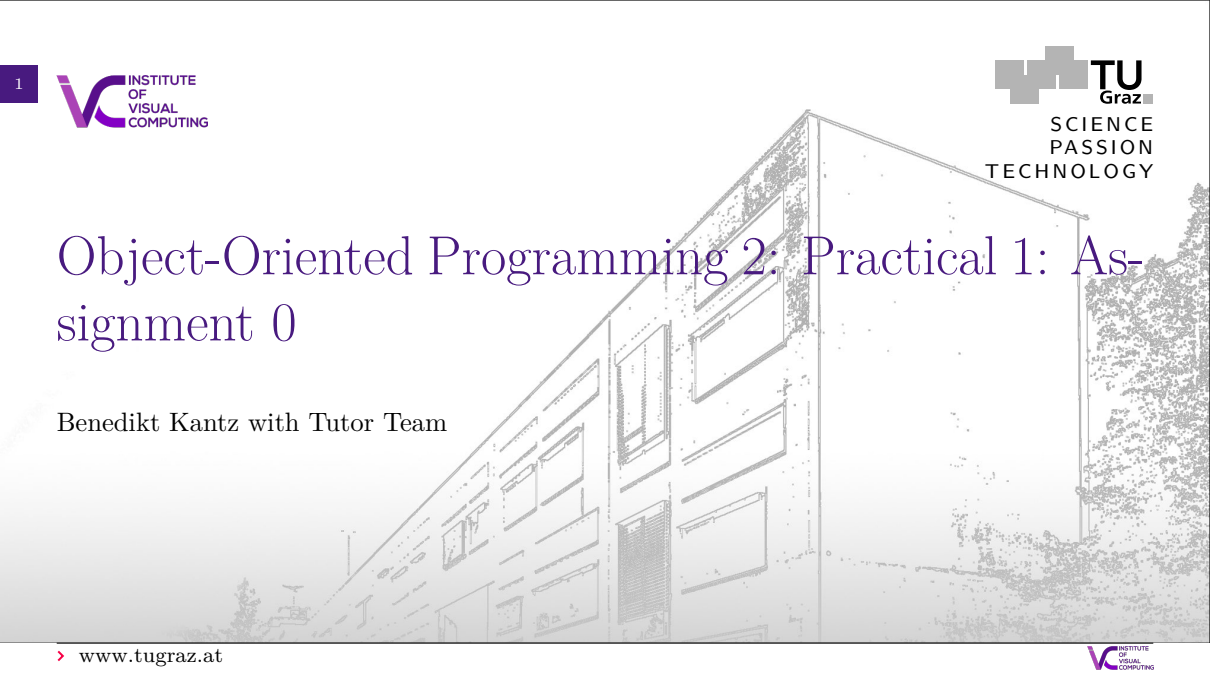
INSTITUTE OF VISUAL COMPUTING

TU Graz
SCIENCE
PASSION
TECHNOLOGY

Object-Oriented Programming 2: Practical 1: Assignment 0

Benedikt Kantz with Tutor Team



Slido for Q&A

Resources

- Teach Center for slides and administrative matters: link
- Code examples: gitlab
- Gitlab-Teaching for code hand-ins: gitlab-teaching
- Mail tutors.oop2.le@mlist.tugraz.at: for organizational matters

Practical Schedule

KW	Date	#	KU Topic
40	2.10.2025	00	Modalities
41	9.10.2025	01	**Introduction to A0**
42	16.10.2025	-	Q&A A0
43	23.10.2025	-	Q&A A0, Deadline A0, A1 Group Sign-Up
44	30.10.2025	02	Intro to A1, Deadline A1 Group Sign-Up
45	6.11.2025	03	Libraries Usage, Q&A A1
46	13.11.2025	-	Q&A A1
47	20.11.2025	-	Q&A A1
48	27.11.2025	-	Q&A A1
49	4.12.2025	-	Q&A A1
50	11.12.2025	04	Deadline A1, Introduction to A2
51	17.12.2025	-	Q&A A2
2	8.1.2026	-	Q&A A2
3	15.1.2025	-	Q&A A2, A2 Deadline
4	23.-29.1.2026	-	Assignment Interviews (AG)

Java Wiki ⚠

- Wiki on the TC!
- Click to Download!

Java Wiki for Object-Oriented Programming 2

Paul Raith
Sebastian David Albu

July 2025

Institute of Visual Computing

Assignment 0 Introduction I

- Mock responses (10P)
  - return data in the correct format - no actual data required for now
  - no error handling (accept the correct parameters though!)
  - just get started with Spring Boot and the REST framework
- Environment arguments (5P)
  - this is required as we will test using these!
  - please make sure to properly parse and use them!
  - hint: `System.getenv().getOrDefault()`

Assignment 0 Introduction II

- Error handling of arguments (5P)
  - Important: check you inputs!
  - What can you expect? (Strings, out-of-bounds, . . .)

Assignment 0: Getting started I

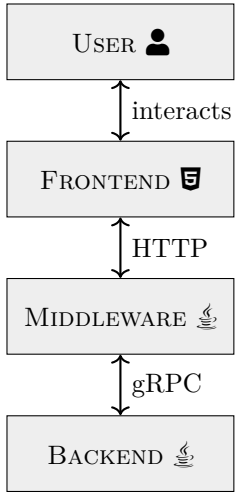
- ~~You will get the repositories (ideally) *today*~~ (should have them!)
- ~~No need to start right away~~ start today!
- Resources: Overview PDF
- Instructions: Assignment

Assignment 0: Getting started II

- What we assume you did already:
  - Install IntelliJ/IDE
  - Check out you repository & Start the code
  - Install Insomnia
  - Check out the example code on gitlab

Architecture

- Standard Web Architecture
- Frontend: Provided
- Middleware: Spring Boot Server, your task!
- Backend: gRPC Server, your task!



Have you used Spring Boot for programming?

Do you know HTTP/REST?

Spring Boot

- Library for HTTP/RESTful servers
- What is HTTP/RESTful?
  - You are using it every day!
  - Backbone of the Web as we know it...
  - Defines protocol between servers & browsers
- Spring Boots helps you to build it!

Request Types

`GET` – Retrieve data (e.g., list or single item)
`POST` – Create new data
`PUT` – Update existing data (replace)
`PATCH` – Update part of existing data
`DELETE` – Remove data

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Getting Started: Spring Boot

- Example code on gitlab
- Tutorial: Spring Boot Doc
- Do **NOT** hardcode the responses as just strings!

```
@SpringBootApplication
@RestController
public class DemoApplication {
    @GetMapping("/helloworld")
    public String hello() {
    return "Hello World!";
    }
}
```

Environment Arguments

- Effectively just a dictionary in your system.
- You can access and set them using system calls.
- Essential to configuring systems.

```cpp
#include <cstdlib>
#include <iostream>
int main() {
    const char* value =
    ↪  std::getenv("MY_ENV_VAR");
    std::cout << "Value: " << (value ? value :
    ↪  "default_value") << std::endl;
    return 0;
}
```

Environment Arguments

- Effectively just a dictionary in your system.
- You can access and set them using system calls.
- Essential to configuring systems.

```
String value =
↪  System.getenv().getOrDefault("MY_ENV_VAR",
↪  "default_value");
System.out.println("Value: " + value);
```

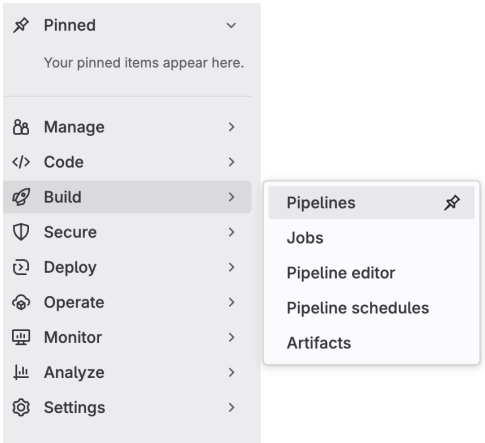
Error Handling

- Use the provided ranges for all parameters!
- Latitude, Longitude, Integers, Strings...
- This is essential for resilient systems!

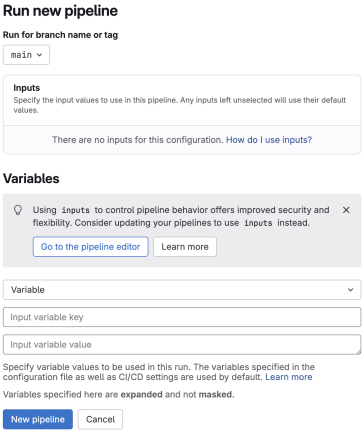
Demo Time!

- IntelliJ Setup
- Spring Boot Getting started (Event Example)
- Pipeline starting

Starting a Pipeline I



Starting a Pipeline II



Pipeline Results

Seems to work ✔

```
* A0 Startup Tests:  0 / 5
* A0 Amenities:  0 / 3
* A0 Amenity:  0 / 2
* A0 Error Handling:  0 / 5
* A0 Roads:  0 / 3
* A0 Road:  0 / 2
```

Q&A