Karlsruhe Institute of Technology

Development of a Campus Routing System

Praxis der Software-Entwicklung

Introduction · April 24, 2013

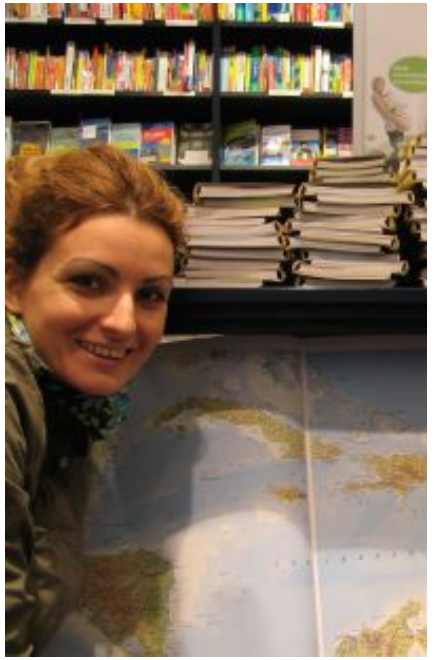
Thomas Bläsius, Tamara Mchedlidze

INSTITUTE OF THEORETICAL INFORMATICS · PROF. DR. DOROTHEA WAGNER

Introduction of the Participants

We are . . .

Thomas Bläsius



Tamara Mchedlidze

Who are you?

- Name
- Previous knowledge/experience

Registration

Two Modules:

- Praxis der Software-Entwicklung – *PSE*
- Teamarbeit in der Software-Entwicklung – *TSE*

- Registration via QISPOS
- Registration phase: 22.4 – 20.5
  It is not possible to register or deregister afterwards!

Aims

Programmingassignments $\approx$ 200 LOC

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Windows Vista $\approx$ 50.000.000 LOC

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Paint.NET	$\approx$ 36.000 LOC
Mozilla Firefox	$\approx$ 100.000 LOC
Mozilla Thunderbird	$\approx$ 500.000 LOC
mySQL	$\approx$ 1.000.000 LOC
KDE core	$\approx$ 4.200.000 LOC
Linux kernel 3.2	$\approx$ 15.000.000 LOC
Windows Vista	$\approx$ 50.000.000 LOC

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Educational Objective

- Realization of a complete software project according to software engineering techniques.

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Five phases:

- Functional specifications document
- Software design
- Implementation
- Validation
- System acceptance

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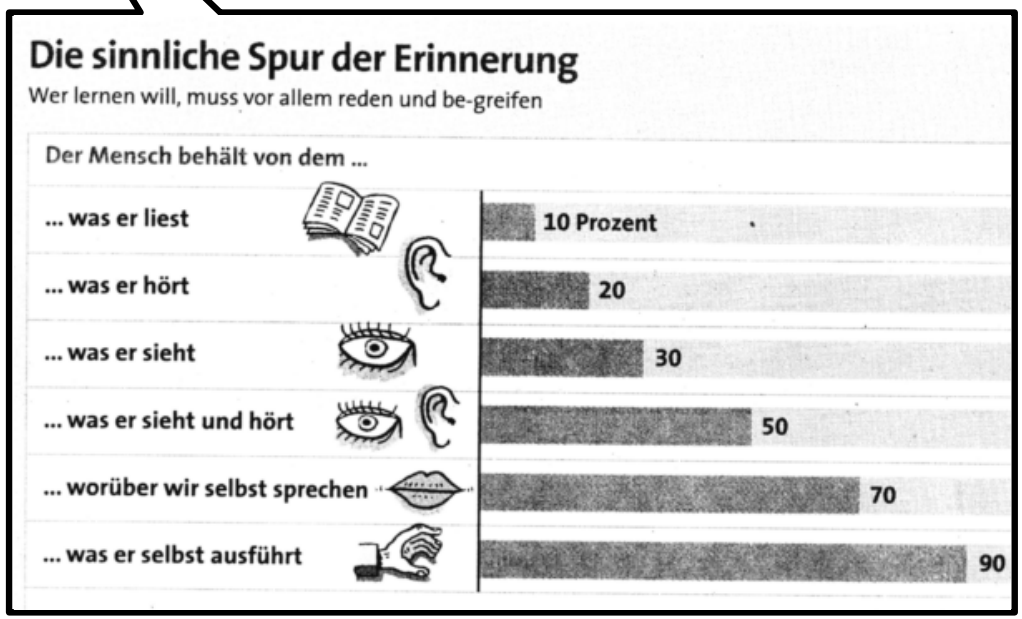

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- Realization of a complete software project according to software engi
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quali
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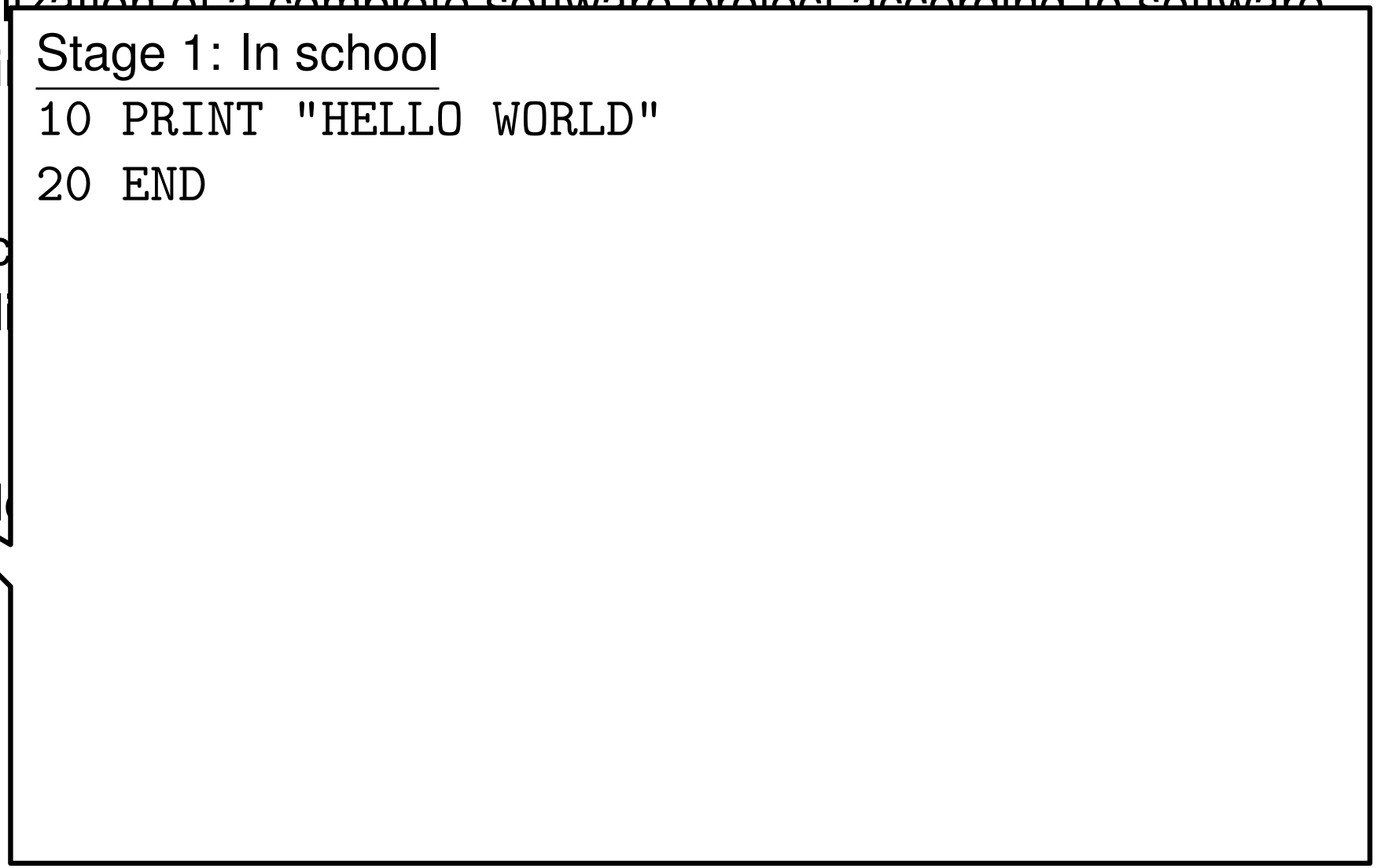

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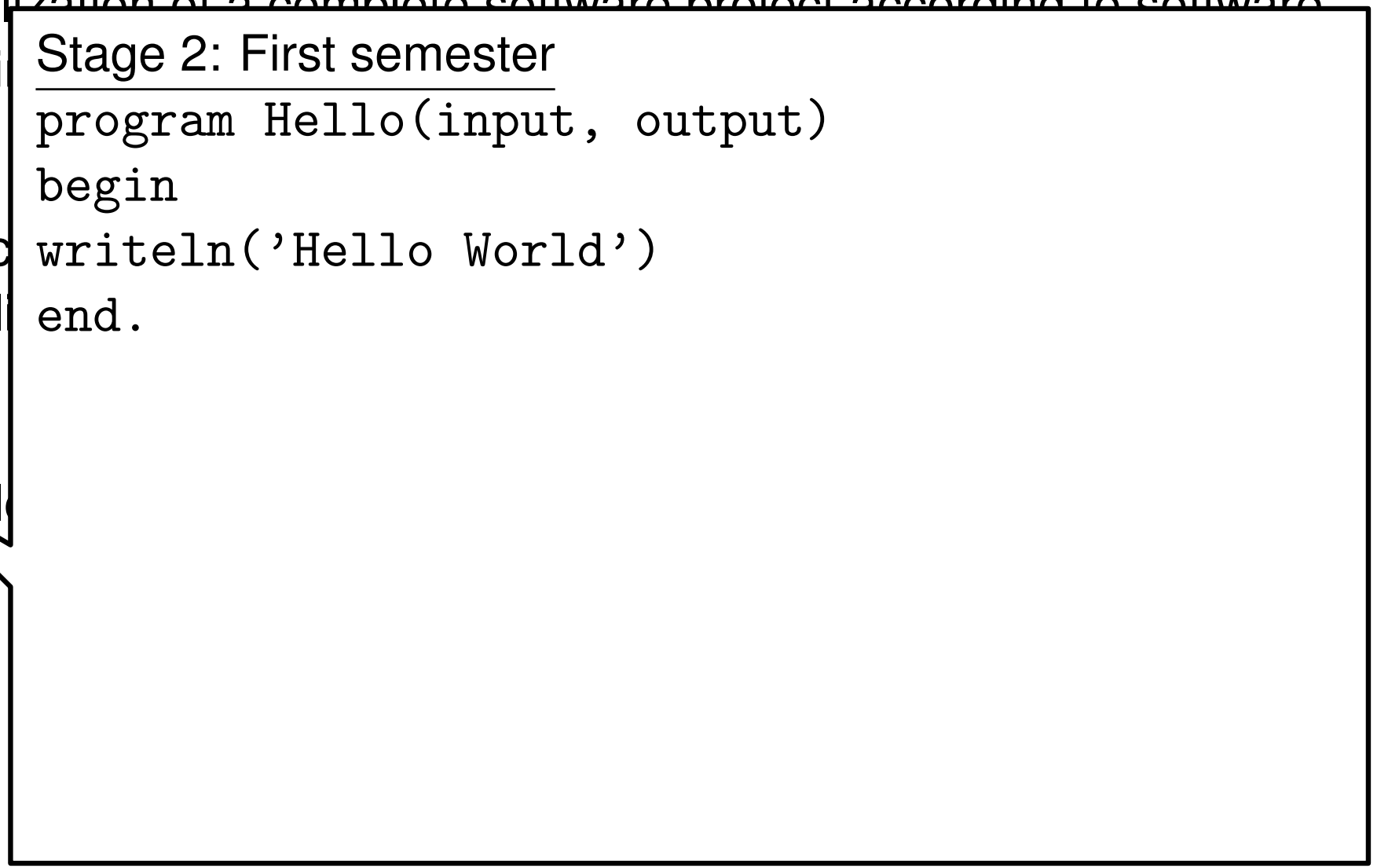

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Stage 4: The first Job

```
#include <stdio.h>
void main(void)
{
char *message[] = {"Hello ", "World"};
int i;

for(i = 0; i < 2; ++i)
printf("%s", message[i]);
printf("\n");
}
```

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Stage 5: Experienced software developer

```
 #include <iostream.h>
#include <string.h>
class string
{
private:
int size;
char *ptr;
public:
string() :  size(0), ptr(new char('\0')) {};
string(const string &s) :  size(s.size)
{
ptr = new char[size + 1];
strcpy(ptr, s.ptr);
};
string()
{
delete [] ptr;
};
friend ostream& operator <<(ostream &, const string &);
string& operator=(const char *);
ostream &operator<<(ostream &stream, const string &s)
{
return(stream << s.ptr);
};
};
```

```
 string& string::operator=(const char *chrs)
{
if (this != &chrs)
{
delete[] ptr;
size = strlen(chrs);
ptr = new char[size + 1];
strcpy(ptr, chrs);
}
return *this;
}
int main(void)
{
string str;
str = "Hello World";
cout << str << endl;
return 0;
}
```

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Stage 12: Management

```
mail -s "Hello, world." bob@b12

Bob, could you please write me a program that
prints "Hello world." on the screen?

I need it by tomorrow.
```

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- Presentation

Requirements

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  - Presentation (results of the phase) + examination talk

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- Grade is composed of
  - Quality of the submitted documents
  - Colloquium
  - Quality of your project

Campus Routing System

From: To: Get directions

Thomas Bläsius, Tamara Mchedlidze – Praxis der Software-Entwicklung

Institute of Theoretical Informatics
Prof. Dr. Dorothea Wagner

Campus Routing System

From: **AUDIMAX**

To:

Get directions

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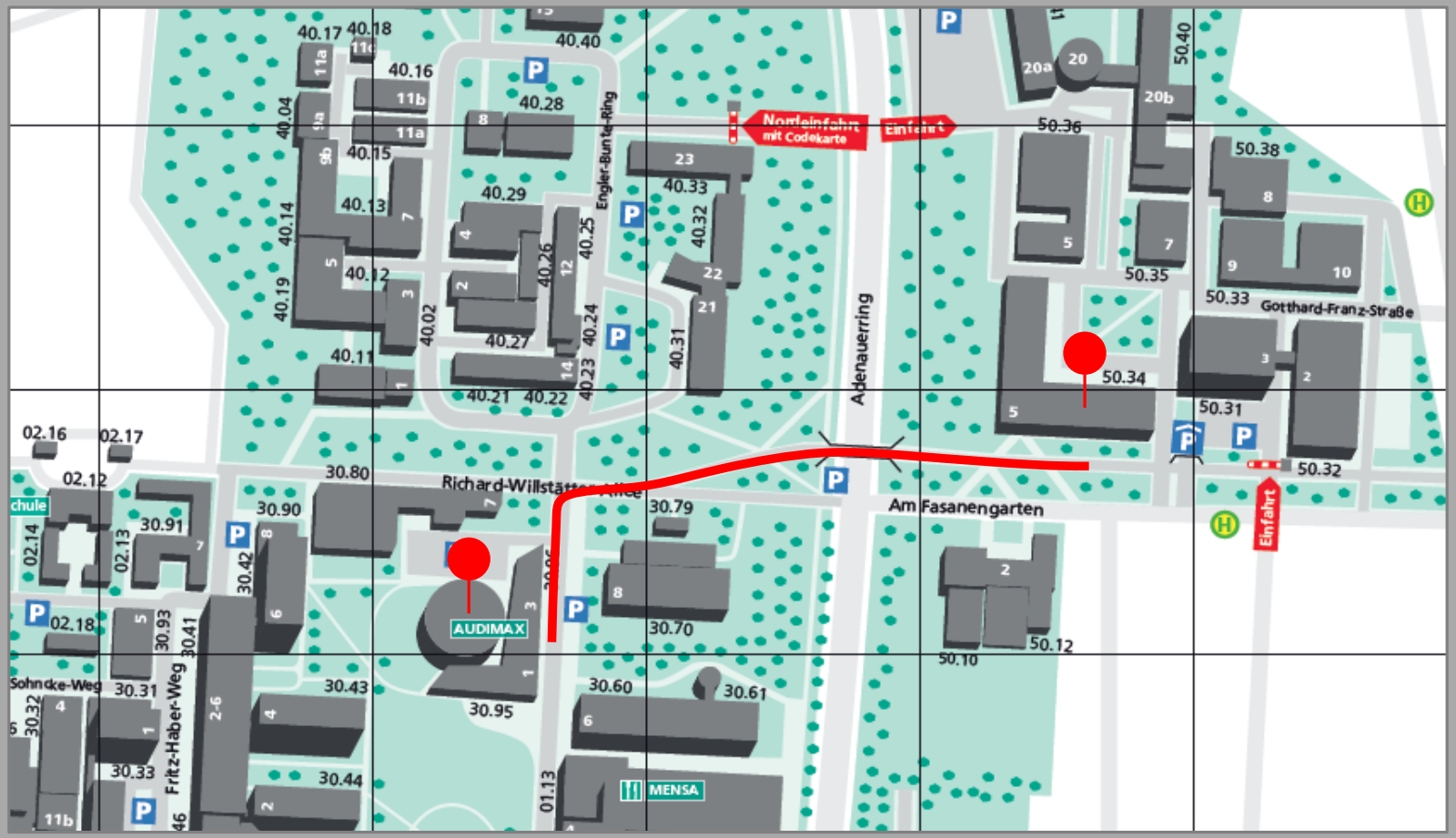

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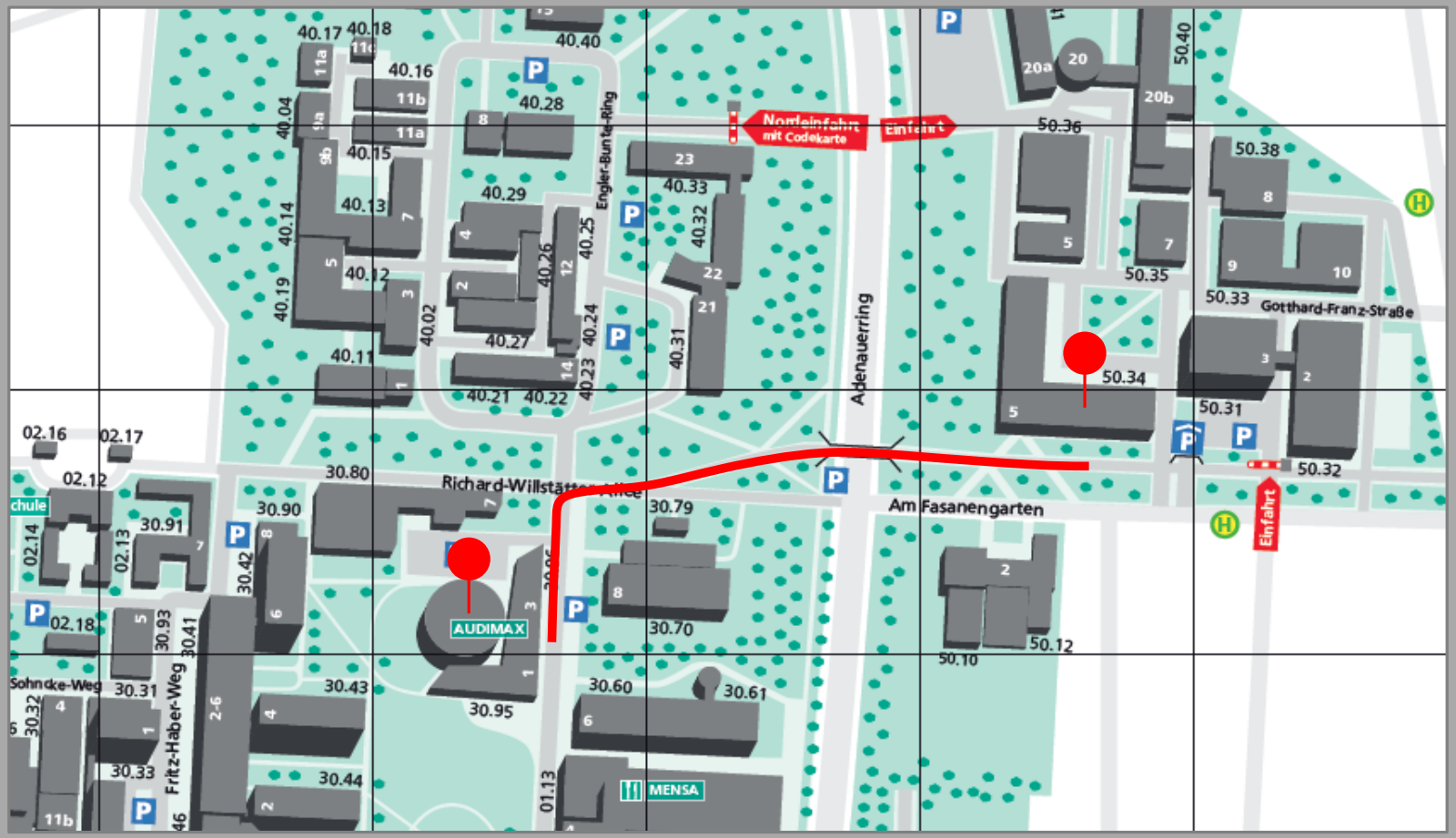

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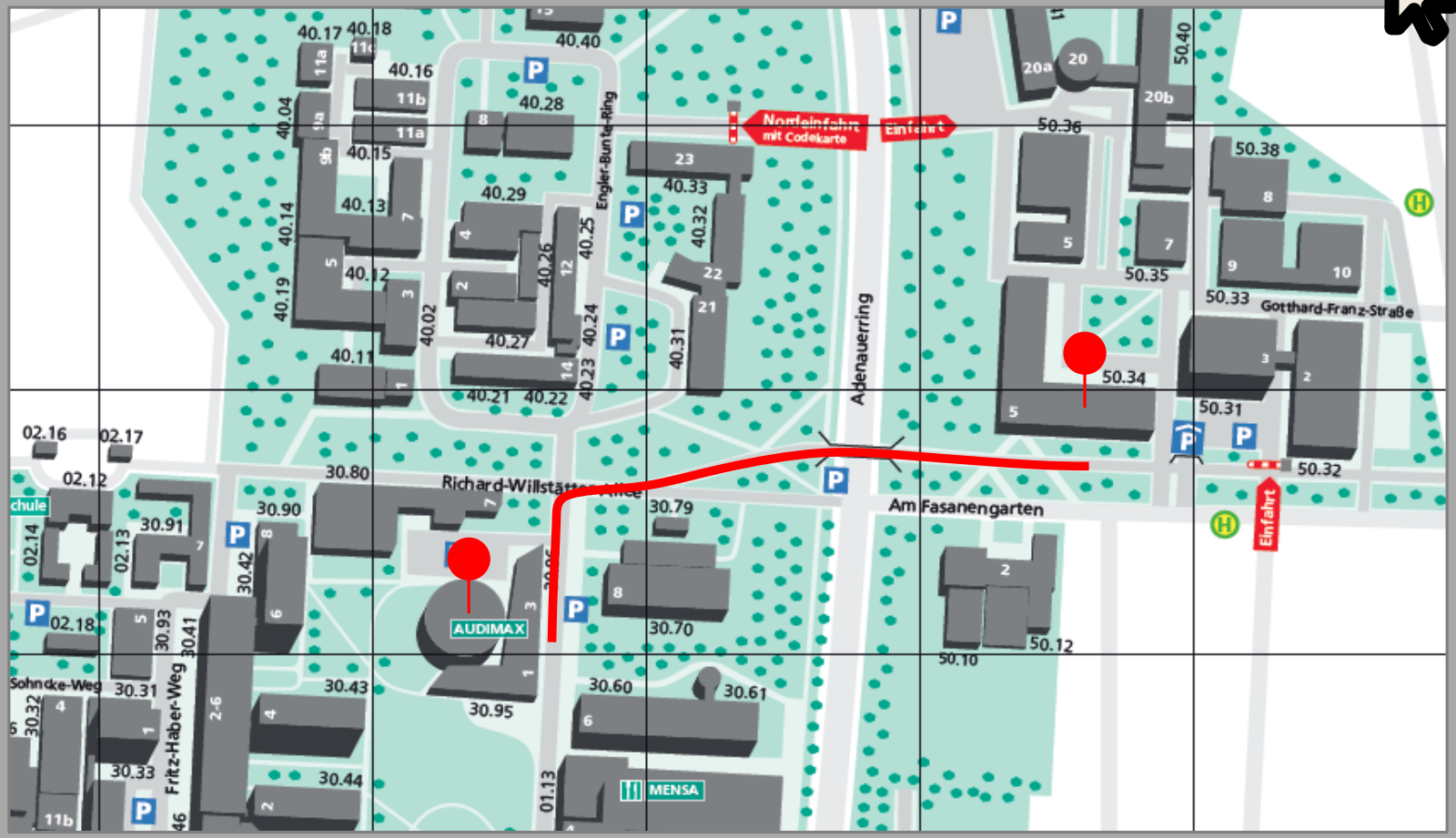

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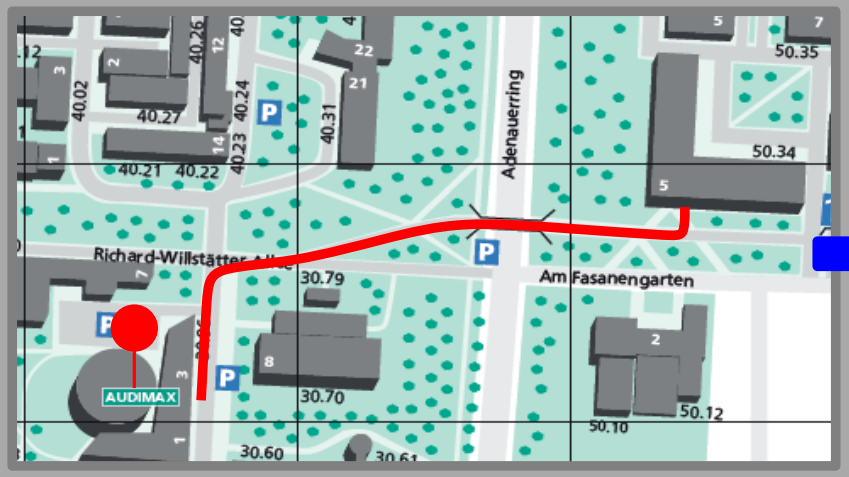

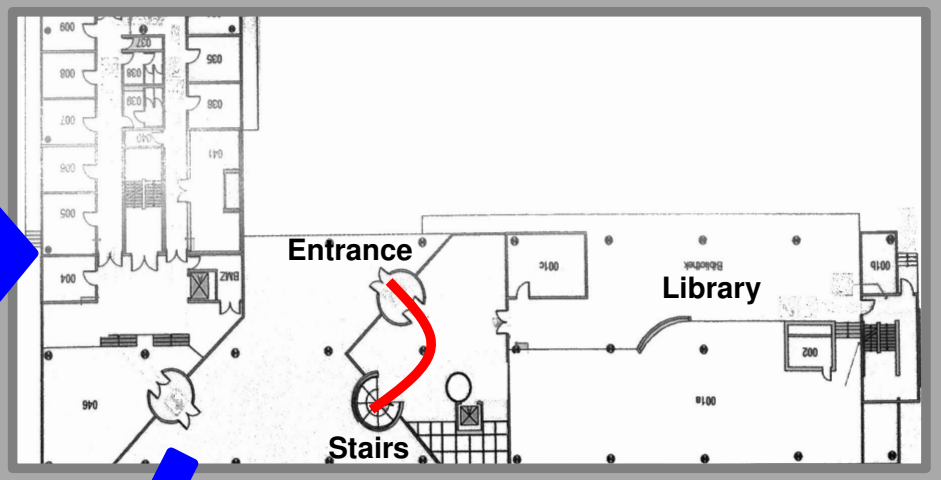

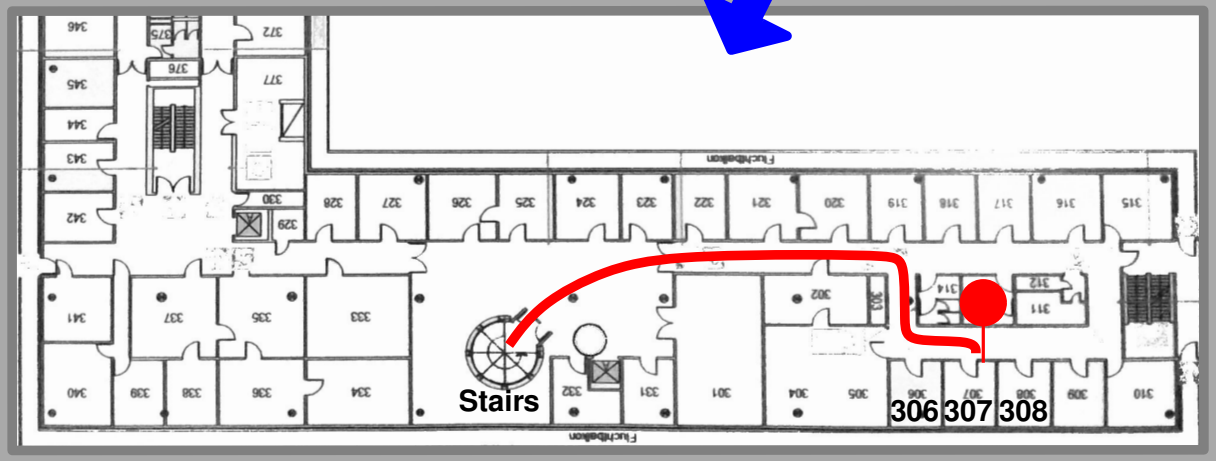

Campus Routing System

Karlsruhe Institute of Technology

Task

- Design and implementation of a routing system for the KIT campus
- Easy specification of the start and destination
- Display a shortest path
- Dijkstra's Algorithm for routing
- Route from and to Buildings
- Search for a destination
- **Adminitsration tool**
  - Load a map
  - Delete/Add buildings and attach information to them
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Campus Routing System

Features

- Different routes
- Routing to the nearest entrence
- Close roads under construction
- Shorter routes: Going through a building, Using tram
- Display nicely a route passing under a building
- Java applet for the Routing System
- ...

Until the Next Meeting . . .

- Learn to use Git & Latex
- Look into other tools like: Argouml, Eclipse, Junit, CodeCover
- Read the Assignment!!!
- Log into pool computer
- Team leader for first phase (Functional Specifications)
- Discuss about features/structure of your system + write up

Tools

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- It is mandatory to use it!
- Get a repository: `https://algohub.iti.kit.edu/`

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Programming

- Eclipse
- JUnit
- CodeCover