

# Computer Science II

Course at D-BAUG, ETH Zurich

Felix Friedrich & Hermann Lehner

SS 2019

## Welcome!

Course homepage

<http://lec.inf.ethz.ch/baug/informatik2/2019/>

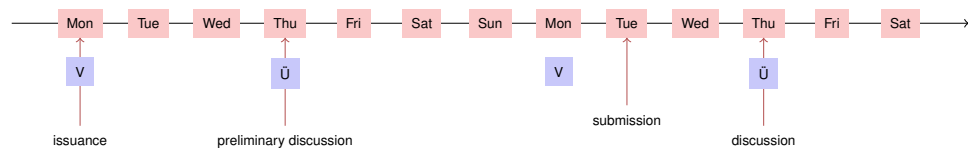
The team:

Lecturers	Felix Friedrich Hermann Lehner
Assistants	Patrick Gruntz Aristeidis Mastoras Chris Wendler Manuel Winkler
Back-office	Katja Wolff

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## Exercises



- Exercises available at lectures.
- Preliminary discussion in the following recitation session
- Solution of the exercise until two days before the next recitation session.
- Discussion of the exercise in the next recitation session.

## Exercises

- The solution of the weekly exercises is voluntary but *strongly* recommended.

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## It is so simple!

For the exercises we use an online development environment that requires only a browser, internet connection and your ETH login.

If you do not have access to a computer: there are a a lot of computers publicly accessible at ETH.

## Literature

**Algorithmen und Datenstrukturen**, *T. Ottmann, P. Widmayer*, Spektrum-Verlag, 5. Auflage, 2011

**Algorithmen - Eine Einführung**, *T. Cormen, C. Leiserson, R. Rivest, C. Stein*, Oldenbourg, 2010

**Introduction to Algorithms**, *T. Cormen, C. Leiserson, R. Rivest, C. Stein*, 3rd ed., MIT Press, 2009

**Algorithmen Kapiern**, *Aditya Y. Bhargava*, MITP, 2019.

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## Exams

The exam will cover

- Lectures content (lectures, handouts)
- Exercise content (recitation hours, exercise tasks).

Written exam.

We will test your practical skills (algorithmic and programming skills) and theoretical knowledge (background knowledge, systematics).

## Offer

- Doing the weekly exercise series → bonus of maximally 0.25 of a grade points for the exam.
- The bonus is proportional to the achieved points of **specially marked bonus-task**. The full number of points corresponds to a bonus of 0.25 of a grade point.
- The **admission** to the specially marked bonus tasks can depend on the successful completion of other exercise tasks. The achieved grade bonus expires as soon as the course has been given again.

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## Offer (concretely)

- 3 bonus exercises in total; 2/3 of the points suffice for the exam bonus of 0.25 marks
- You can, e.g. fully solve 2 bonus exercises, or solve 3 bonus exercises to 66% each, or ...
- Bonus exercises must be unlocked (→ experience points) by successfully completing the weekly exercises
- It is again not necessary to solve all weekly exercises completely in order to unlock a bonus exercise
- Details: exercise sessions, online exercise system (Code Expert)

## Academic integrity

**Rule:** You submit solutions that you have written yourself and that you have understood.

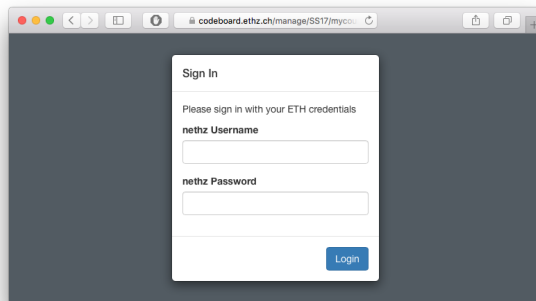
We check this (partially automatically) and reserve our rights to adopt disciplinary measures.

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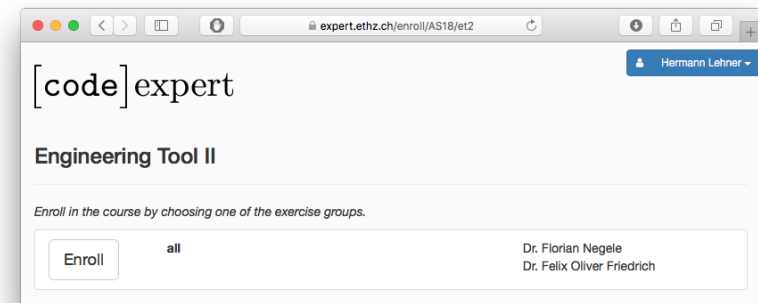
## Exercise group registration I

- Visit <http://expert.ethz.ch/enroll/SS19/ifbaug2>
- Log in with your nethz account.



## Exercise group registration II

Register with the subsequent dialog for an exercise group.



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# Overview

The screenshot shows the [code]expert web interface. At the top, it displays the user's name 'Felix Oliver Friedrich' and the current semester 'Autum 2017'. Below this, there are tabs for 'Enrolled Courses', 'My Exercise Groups', and 'My Courses'. The main content area is titled 'Demo Course' and lists 'Coding Demo Exercise' with 'Earned XP' of 1,000 / 1,000 and 'Submissions' of 1,000 with a 100% completion rate. It also shows 'Handout Date' as 9. Sep. 2017 00:00 and 'Due Date' as 31. Dez. 2027 00:00. A 'Hand in now' button is visible. Below this, there is a 'Markdown Editor Manual' section with 'Submissions' and 'Handout Date' of 1. Aug. 2017 00:00 and 'Due Date' of 1. Aug. 2017 00:01. Links for 'Basic Markdown Syntax' and 'Code Blocks and Inline Code' are also present.

# Programming Exercise

The screenshot shows a code editor with C++ code for a 'Minimax' exercise. The code is as follows:

```
1 #include <iostream>
2
3 int main () {
4     int min; int max;
5     std::cin >> min; std::cin >> max;
6     max = min - 1;
7     for (int i = 0; i < 8; ++i){ // (there is
8         int v;
9         std::cin >> v;
10        if (v < min) min = v;
11        if (v > max) max = v;
12    }
13    std::cout << min << "/" << max << std::endl;
14 }
```

Annotations on the screenshot include:

- A red box labeled 'D: description' pointing to the problem description on the right.
- A red box labeled 'E: History' pointing to the 'History' button in the top right.
- A red box labeled 'A: compile' pointing to the compile button (A).
- A red box labeled 'B: run' pointing to the run button (B).
- A red box labeled 'C: test' pointing to the test button (C).

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# Test and Submit

The screenshot shows the code editor with test results. A red box labeled 'Submission' points to the 'new Submission' button. A red box labeled 'Test' points to the test results section. The test results are as follows:

```
Running tests.....
min_first passed
min_last passed
min_middle passed
max_first failed
Input:
100250 45 0 0 1 -1000001 1 0 0 45 100250 0
expected output:
-1000001/100251
actual output:
-1000001/100250
.....
max_test passed
max_middle passed
unique passed
Tests result: passed 6 of 7 / score: 86% [ ]
```

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# Where is the Save Button?

- The file system is transaction based and is saved permanently (“autosave”). When opening a project it is found in the most recent observed state.
- The current state can be saved as (named) *snapshot*. It is always possible to return to saved snapshot.
- The current state can be submitted (as snapshot). Additionally, each saved named snapshot can be submitted.

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# Snapshots

# Should there be any Problems ...

Look at snapshot

Submission

Go Back

```
1 #include <iostream>
2
3 int main () {
4     int min; int max;
5     std::cin >> min; std::cin >> max;
6     max = min;
7     for (int i = 0; i < 8; ++i) { // (there is a bug here)
8         int v;
9         std::cin >> v;
10        if (v < min) min = v;
11        if (v > max) max = v;
12    }
13    std::cout << min << " / " << max << endl;
14 }
```

Running tests.....

```
min_first passed
min_last passed
min_middle passed
max_first passed
max_last passed
max_middle passed
unique passed

Tests result: passed 7 of 7 / score: 100%
```

- with the course content
  - definitely attend all recitation sessions
  - ask questions there
  - and/or contact the assistant
- further problems
  - Email to lecturer (Felix Friedrich, Hermann Lehner)
- We are willing to help.