

Exercise Organization and Submission Environment

Exercise Subscription online

For this lecture, we use `[code]expert` and `codeboard.io`. This is a pair of independent online services that provide an exercise submission system and a web-based integrated development environment (IDE). The two systems communicate with each other.

For your first login to the submission system use the link below. You will be asked to choose one exercise session to attend. This year we offer 23 slots, one on Tuesday (14:15-16:00) and twenty-two on Wednesday (13:15-15:00 and 15:15-17:00). If you attend other classes this semester, register for those first (ie. via `echo.ethz.ch`) and to this class afterwards. You can choose the session based on your preferences about time/location/assistant but to ensure balance between different slots each of them has limited seats. Once the capacity for one slot is reached, registration will only be possible on a different slot. You can find the list of all exercise sessions, including time and place, in the course webpage: <http://lec.inf.ethz.ch/mavt/informatik/2018/>.

The link for the online registration is the following. This will also bring you to the first programming task. For further instruction about how to solve and submit your exercises, please continue reading this document.

<https://expert.ethz.ch/mavt18>
Registration opens: Friday, Feb 23rd 2018, 1 PM

Exercise Organisation

- Exercises will be made available online weekly via <https://expert.ethz.ch/>
- You can work on an exercise for about one week after you have looked at it in the exercise groups (the *submission period*).
- You submit all your solutions via an online submission system.
- Your programming solutions are checked and automatically graded by the submission system. You will get an immediate feedback indicating the correctness of your solution. Your assistant has access to your submissions, will check your solution and give feedback. Solutions to theory exercises will manually be graded by your assistant within the submission system.
- The assistant will look at the final submission only. A submission is final if it was the last submission within the submission period of an exercise or if you explicitly handed it in.
- The assistant has the right to override the points provided by the auto-grader, for example if the auto-grader failed to detect that you did not follow the exercise instructions.
- Within the submission period you can always resubmit unless you have explicitly handed in your solution. Should you want to modify a handed-in solution within the submission period, please inform your assistant.
- In order to submit a program, it has to compile without errors.
- Programs should only contain language constructs that have been discussed in the course or exercise sessions. This may sometimes be harder if you already have some programming experience – it is nevertheless mandatory (and beneficial for you) to respect this rule.
- Program texts are written by and for humans, even if they can be understood by machines. Therefore you must pay attention to the visual appearance of your programs. In particular, this requires commenting as well as indentation and use of spaces, e.g. before and after

operators and keywords. If your coding style is unacceptable in this sense, we reserve the right to deduct points.

- The assistants are asked to correct your submitted exercises within a week.

Bonus Points

During the semester you can collect bonus points for the exam by submitting solutions to specially-marked bonus exercises. You can achieve points for each of these exercise, and the points collected during the semester will be summed up. In order to be able to solve the bonus exercises, you might need to unlock them by collecting experience points (XP) solving the other weekly tasks, which do not count towards the final grade. The achieved grade bonus is proportional to the achieved points over all bonus exercises, with a maximum of 0.25.

Bonus Points Rules

1. **No cheating allowed.** While we encourage *discussing* exercises in groups, each submission must represent the work of a single student. If we discover, that two or more students submitted the same solution, or that you submitted a solution from a previous year, you will lose the complete bonus grade: your assistant will set the achieved points to zero for all exercises of the complete course.
2. **Follow the rules.** Certain exercises have specific rules, e.g., exercise 1.2 does not allow to use multiplications, loops, or recursion. Submitted solutions that do not follow these rules do not receive any points (set to zero manually by your assistant). This includes the rule that your solution can only contain language constructs that have been discussed during the course or the exercise sessions.
3. **No hard coded results.** Solutions that are not solving the given task but only the given test cases count as failed. Your assistant will reduce the score for such hard-coded solutions.

The Programming and Submission Environment

You log into the submission system using the following URL: <https://expert.ethz.ch>. To login, use your regular ETH credentials (nethz username and password).

Note: The submission system is still young. If you encounter issues with the system, please report them. We are in direct contact with the developers. Depending on the issue we may be able to fix it even before the course ends, so you can still benefit. Please report issues using the email contact address on the lecture homepage.

Performing a programming task

We use a web-based integrated development environment (IDE) for the exercises. You can work at any computer providing internet access. Note that ETH features a lot of computing rooms with public computers that you can use to execute the exercises.

Of course, you can also use your own computer, if available. If you intend to buy a (new) notebook you may want to check Neptun, a platform for ETH members providing good conditions (<http://www.neptun.ethz.ch/>).

If you intend to work with your own laptop, then bring it along to the first exercise hour. Goal of the first exercise session is that everyone has access to and knows how to use the web-based IDE and the submission system.

For the first login, use the link <https://expert.ethz.ch/mavt18>. This link allows you to enroll in the online exercise submission. It will also open the programming environment, and take you directly to your first programming task.

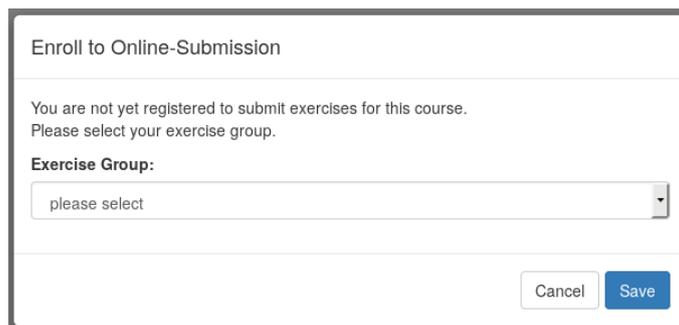
Performing a programming task is generally done in the following steps:

1. Open the programming environment (via exercise link or overview)
2. Write the program as requested in the exercise.
3. Test the program manually using your own inputs (compile & run).
4. Use the automated tests (using `#include "tests.h"`).
5. Submit. Remember, you can submit multiple times.

Of course, you can go back to a previous step if you are not satisfied with the result. The following sections explain the above steps in more detail.

Some of the tasks will not require any coding. In this case, instead of a coding environment you will see a simple text editor to write your answer. Within this editor you can also upload attachments. For example you can upload screenshot images if asked in the task description.

Enrolling in the Online Submission



The first time you log into the system, and select a programming task of this course you are automatically enrolled in the online exercise submission of this course. Before you can start working on the task, you have to find and select your exercise group.

Important: This selection does not replace exercise group assignment. It is your task to select the exact same exercise group as the one that you are enrolled in via the subscription link that your received via email at the begin of the semester.

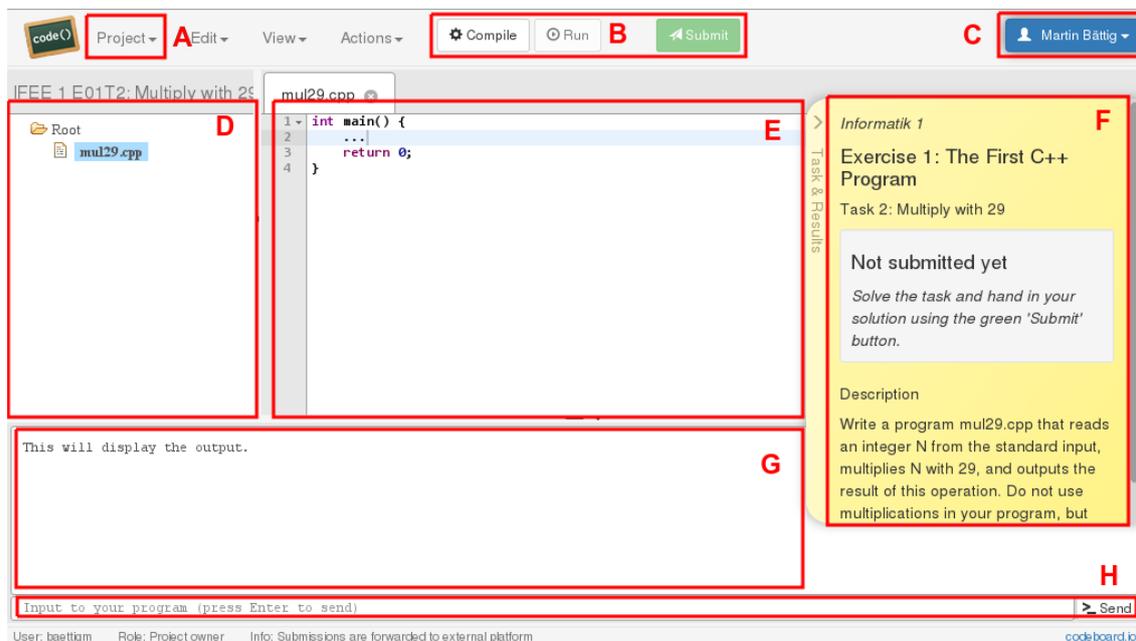
The Overview Page

Informatik Einführung Gruppe 1 (Martin Bättig)			
A	#	Name	Handout Due
	1	B Exercise 1: Variables	C Thu Sep 01 2016 Wed Sep 07 2016
		D First Task: Print Variables Not submitted yet E	
	2	Exercise 2: Statements	Thu Sep 08 2016 Thu Sep 15 2016
		First Task: Create Statements Not submitted yet	
		Second Task: Blocks Not submitted yet	

The overview page shows the available exercises and your progress on completion of the programming tasks. You reach the overview page by selecting overview in the top right menu or if you login to the system via <https://expert.ethz.ch>. In the overview, you can see the course that you are enrolled in and your group assignment (A). For each exercise sheet (B) you can see the handout date and the due date (C). The due date is not strictly enforced by the system to allow exceptions (e.g., late hand-ins due to sickness). Per exercise sheet you see the links to the programming tasks (D). Clicking on a programming task link opens the programming environment. These are the same links that you find on the exercises sheets themselves. For each programming task, the overview page shows its submission status (E). The section *Submission* contains an overview of the different submission statuses.

Programming

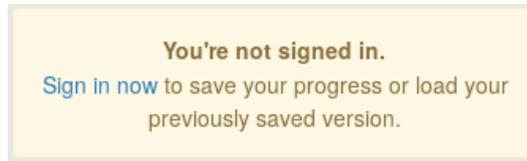
By clicking on a programming task link in the overview page, or by using a link on the exercise sheet, you will open the specific task in the programming environment. The screen looks like this:



The file overview (D) lets you select a file to edit. The file is then opened in the editor. The name of the file that is important for the programming task is usually mentioned in the exercise task description. In the editor (E), you will write the actual code. If you have multiple files open, you can switch between them by using the tabs above the editor. After you wrote your program, you have to compile it (B). Compile time errors are listed in the output area (G). If your program compiles without errors, you can execute it by clicking on the run button (B). During program execution, the output area (E) shows the output of your program. In the input area (H), you can enter the input for the program. Use return or the send button to send the input to your program. Further, there is the task area (F). The task area shows the programming task you are currently working on, the result of your previous submissions, and a short description of the task.

Saving a Program

To save your program, use the project menu (A), and chose option *save changes*. The first time you do this, you need to create a user account on codeboard.io to be able to save your progress:



This user account is different from the nethz account. To create a new user, click on *Sign in now*, and then on *Sign up* (top right), and follow the directions on the page. Note: This account is not under control of ETH, thus make sure to use a password different than the one of your nethz account.¹

Useful keyboard shortcuts

The following table lists some useful keyboard shortcuts for the text editor:

Combination	Action
Ctrl-/	Toggle comment
Tab	Indent
Shift-Tab	Outdent
Ctrl-Z	Undo
Ctrl-Shift-Z, Ctrl-Y	Redo
Ctrl-F	Find
Ctrl-H	Replace
Ctrl-K	Find next
Ctrl-Shift-K	Find previous
Ctrl-L	Go to line

Testing

To test your solution, you can run it against a set of predefined test inputs. By default these tests are disabled, i.e., the required line in the source code is commented. To enable the tests, remove the comment sign (the two forward slashes), so that the line becomes:

```
#include "tests.h"
```

Then recompile your program by clicking the compile button again. Now you can click on the run button and your program is tested automatically. It will produce a report like the following:

Test case	Input	Expected Output	Actual Output	Score	Result	Time [ms]	Timeout [ms]
both_0	0 0	Sum is: 0	Sum is: 0	1	Correct	4	1000
both_negative	-1 -2	Sum is: -3	Sum is: -3	1	Correct	3	1000
both_positive	1 2	Sum is: 3	Sum is: 3program terminated by signal: Floating point exception	1	Program Error	1	1000
first_neg_second_pos	-18464 3367	Sum is: -15097		1	Timeout	1043	1000
first_pos_second_neg	3 -28	Sum is: -25		1	Wrong Answer	1	1000

The system tests your program using multiple test cases. Each test case consists of an input and an expected output. Your program passes a test if it produces an actual output for an input that matches the expected output of the test case. The comparison is quite tolerant. It is performed line by line and ignores redundant lines such as "Please enter a number:". Further, the comparison ignores white space such as spaces and newlines and the casing of words.

The result of a test case can be:

- **Correct.** Your program returns the correct answer, i.e., the actual output matches the expected output.

¹The reason for this separate account is that [code]expert uses the Codeboard service to provide the programming environment. <https://www.codeboard.io>. Your program is stored on this Codeboard service.

- **Wrong Answer:** Your program does not return the correct answer, i.e., the actual output does not match the expected output.
- **Program Error:** The program either crashed (e.g. division by zero), or returned an exit code unequal to zero.
- **Timeout:** The duration of the test case exceeded the maximal allowed duration. The timeout settings are usually generous and are primarily there to catch endless loops.

Submitting

To submit your programming task, use the submit button in the programming environment. The system automatically enables the tests and uses them to rate your solution according to the score assigned to each test case. Note that your assistant is only required to look at the last submitted version of each programming task, so make sure that your last submitted version is the one you want to be corrected.

A programming task can have the following submission statuses:

- **Not submitted.** This task is not submitted: .
- **Submitted.** This task is submitted, but not yet reviewed. This is indicated with a percentage showing your score in this task. Example: .
- **Reviewed with comment.** This task is submitted and reviewed. Your teaching assistant left a comment. This is indicated by a small mail icon on the right hand side of the score. Example: .
- **Reviewed without comment.** This task is submitted and reviewed. Your teaching assistant did not leave a comment. This is indicated by a small eye icon on the right hand side of the score. Example: .