

# — Sprint 0 —

**Deadline: April 10th**

## Task 1 - Software Requirements

During this practical course you are going to implement a new module in the chairs SMT solver *SMT-RAT*. For *SMT-RAT* is amongst others the library *CARL* required, which is also developed at this chair. Since Windows is not supported by neither *SMT-RAT* nor *CARL* you need to use a computer with *Linux* or *MacOS*.

On this computer the following software needs to be available:

- Compiler: *g++*  $\geq 7$  or *clang++*  $\geq 4$
- Tools: *git*, *cmake*
- Libraries: *gmp*, *Eigen3*, *boost*
- Optional: *ccmake*, *doxygen*

Make sure that you have access to a computer that fulfills the requirements stated above.

## Task 2 - Compile SMT-RAT

Download *CARL* and *SMT-RAT* with *git* from github (<https://github.com/smtrat/carl> and <https://github.com/smtrat/smtrat>). Make sure that both compile on your computer. To compile them execute the following commands in their respective root folder (starting with *CARL*):

```
mkdir build
cd build
cmake ../
make
```

You should also ensure that the unit tests in *CARL* (`make test`) run without errors.

## Task 3 - Execute SMT-RAT

To run *SMT-RAT* you execute the binary *smtrat* in the build directory. For more information run

```
./smtrat --help
```

to execute the solver on an input file run

```
./smtrat <file>
```

Try to run *SMT-RAT* on the input file `hong_1.smt2` which can be found in the *SMT-LIB* benchmarks <sup>1</sup>.

## Task 4 - Workspace

Make yourself familiar with your workspace for this practical course. Get to know your team. Have a look at gitlab and discuss how you want to use it: create some tickets, distribute some tasks, test the CI. Learn how to use *ccmake* and *C++*.

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<sup>1</sup>[https://clc-gitlab.cs.uiowa.edu:2443/SMT-LIB-benchmarks/QF\\_NRA/blob/master/hong/hong\\_1.smt2](https://clc-gitlab.cs.uiowa.edu:2443/SMT-LIB-benchmarks/QF_NRA/blob/master/hong/hong_1.smt2)

## Task 5 - Expectations

What do you expect from this practical course? What do you think you are going to learn? Which skills do you expect to develop or improve?

What problems do you expect to occur when working in a team and how do you plan to solve them?

Write down your thoughts and send us the answer until the first meeting.