

Numerical Methods for CSE

Exercise Session Week 39

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Today's Plan

1. About me
2. General information
3. Preliminary discussion for exercise 1

About Me

- ▶ Giuseppe Accaputo
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General information

- ▶ Homepage with all the exercise slides:
www.accaputo.ch/hilfsassistenz/num-cse-d-math-2016/
- ▶ Language: English or German?
- ▶ Try to solve the exercises as good as possible
- ▶ You're encouraged to send me your solutions (complete or incomplete)
- ▶ If you have questions don't hesitate to contact me or to ask during the exercise sessions
- ▶ If you have feedback in regard to the exercise sessions, just let me know please. I'm always very thankful for feedback!

List of Useful Links for This Course

- ▶ Lecture homepage:
<https://www.sam.math.ethz.ch/~grsam/HS16/NumCSE/>
- ▶ Full list of problems:
<https://www.sam.math.ethz.ch/~grsam/HS16/NumCSE/NCSEProblems.pdf>
- ▶ Source code repository:
<https://gitlab.math.ethz.ch/NumCSE/NumCSE>
- ▶ Hints and solutions:
https://www.sam.math.ethz.ch/~grsam/HS16/NumCSE/hints_and_solutions/

Installation and Configuration

- ▶ git and GitLab
- ▶ Eigen3 installation
- ▶ Working with the code

Linux

- ▶ Final exam will be done in the computer lab
- ▶ Computers in the computer lab run on Linux (Fedora Linux with the Gnome desktop environment)
- ▶ Try to get used to the Linux environment

git and GitLab

- ▶ Source code repository:

`https://gitlab.math.ethz.ch/NumCSE/NumCSE`

1. Generate an SSH key (if you do not already have one):

`https://gitlab.math.ethz.ch/help/ssh/README`

2. Add the public part of the SSH key to

`https://gitlab.math.ethz.ch/profile/keys`

3. Clone the repository:

```
git clone https://gitlab.math.ethz.ch  
↪ /NumCSE/NumCSE.git
```

4. Update the repository to get the new exercises etc.:

```
git pull
```


Eigen3 Installation

1. Download the Eigen3 source code:

```
wget --no-check-certificate http://  
  ↪ bitbucket.org/eigen/eigen/get  
  ↪ /3.2.9.tar.bz2
```

2. Unpack it:

```
tar xf 3.2.9.tar.bz2
```

3. Move the Eigen folder to /usr/include:

```
sudo mv Eigen/ /usr/include
```

Working with the Code (1 of 2)

1. First always get the most current version of the source code:

```
git pull
```

2. Navigate to the folders containing the templates:

```
Assignments/Codes/<Chapter>/<  
    ↪ ProblemName>/templates_nolabels
```

3. Open the CMakeLists.txt file and remove the following lines:

```
find_package(Eigen3 REQUIRED)  
include_directories(${  
    ↪ EIGEN3_INCLUDE_DIR})
```

Working with the Code (1 of 2)

4. Create a build directory and run `cmake` to generate the make files:

```
mkdir build && cd build
cmake ..
make
```

`make` will write something like this on the console when the build was successful:

```
...
[100%] Built target arrowmatvec
```

5. Run the program:

```
./arrowmatvec
```

Preliminary Discussion for Exercise 1

1. Exercise 1.1
2. Exercise 1.2