

MATH 676

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**Finite element methods in
scientific computing**

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Lecture 3:

Obtaining and installing deal.II

Prerequisites

Operating system:

- Linux or other Unix
- Mac OS X
- Windows

C++ Compiler:

- GNU Compiler Collection (GCC)
- Intel C++
- Clang++

Other software: Perl, CMake, viz software, IDE

Disk space: 1–2GB

Obtaining deal.II

You can obtain deal.II in two different ways:

- **Releases:** Download a .tar.gz file from

<http://www.dealii.org/download/index.html>

Then unpack this file using the command

```
tar xvzf deal.II-8.0.0.tar.gz
```

- **Current development versions:** The current version at any given time is available from the deal.II *github* repository via the command

```
git clone http://github.com/dealii/dealii.git
```

Building deal.II

Detailed instructions:

<http://www.dealii.org/developer/readme.html>

Basic instructions:

- Create build directory:

```
cd deal.II ; mkdir build ; cd build
```

- Determine properties of the system and compilers:

```
cmake -DCMAKE_INSTALL_PREFIX=/a/b/c ..
```

- Compile the entire library (~1 hour):

```
make ; make install
```

- Verify that everything works:

```
cd examples/step-1
```

```
cmake -DDEAL_II_DIR=/a/b/c . ; make run
```

Building deal.II

There are many flags other than

- the installation directory
- the source directory

that can be given to *cmake*. For example:

- Paths to PETSc, Trilinos and other libraries
- Whether to build documentation locally
- Whether to disable or enable multithreading

Detailed instructions:

<http://www.dealii.org/developer/readme.html>

Joining the deal.II community

You may want to join the deal.II mailing list:

<http://www.dealii.org/mail.html>

- Ask questions and find help
- Learn what others do
- Learn by reading other people's questions and answers

You will want to look at the tutorial and manual to learn how to use deal.II:

<http://www.dealii.org/developer/index.html>

(Click on *Tutorial* or *Manual* on the left).

More resources

The deal.II tutorial:

<http://www.dealii.org/7.1.0/doxygen/tutorial/index.html>

The deal.II manual:

<http://www.dealii.org/7.1.0/doxygen/deal.II/index.html>

The deal.II FAQ:

follow the link from <http://www.dealii.org/>

for recommendations on practical questions such as debugging, error messages, what to do when you're stuck, ...

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