



Leibniz-Rechenzentrum
der Bayerischen Akademie der Wissenschaften

Leibniz-Rechenzentrum

Basic C++ | 20.06.2023-22.06.2023 |
Margarita Egelhofer, Carla Guillen, Carmen
Navarrete, Darshan Thummar

Timetable




	Tuesday	Wednesday	Thursday
09:40 – 10:30	1. Introductory topics	5. Containers	9. Overloading
10:30 – 11:15	2. Functions 3. Control Structures	6. Exceptions	10. Templates
11:15 – 12:00	4. User types	7. Algorithms	
12:00 – 13:00	Lunch	Lunch	Lunch
13:00 – 14:00	5. Containers	8. I/O and streaming	11. Pointers
14:00 – 15:00	Hands on	Hands on	12. Inheritance *

Disclaimer

We take no liability on the recommended software and websites. It is completely up to you to install the software or open/use the links we recommend in these slides. You can also follow the course only by watching it.

General Information about the course

1. We, teachers, will use the **jupyter notebook** for teaching purposes. 
 - Instead of a C++ compiler it comes with a C++ interpreter.
 - Typically, you will use only C++ compiler in real life!
 - We will provide the notebook as pdf, and optionally as a **jupyter notebook** source.
 - Using a **jupyter notebook** is up to you. We don't require it.
 - You can certainly use your favourite C++ IDE or a simple editor. This is preferable!
2. We will explain compilation with Linux and MacOS. Windows users could install cygwin, msys2, or a Linux Virtual Machine, and it works the same. We can't give you support on these options though. You can also use online compilers (next slide).
3. **Requisite for this course was to have knowledge in another programming language!**

Online compilers

A quick solution for a Windows user, is to use online C++ compilers:

- https://www.onlinegdb.com/online_c++_compiler
- <https://www.programiz.com/cpp-programming/online-compiler/>
- <https://cpp.sh/>
- https://www.w3schools.com/cpp/cpp_compiler.asp

Installation of a C++ compiler

- It is depending on your Linux distribution:

```
apt install build-essential
```

```
yum install gcc-c++
```

```
zypper install gcc-c++
```

```
pacman -S gcc
```

```
dnf install gcc-c++
```

- **MacOS:**

```
xcode-select --install
```

These commands require root or sudo rights.

Jupyter notebook

- If you decide to install the jupyter notebook check this slide and the next one. (Sorry, we won't have time to give support for it, if it doesn't work properly in your computer). :

Install conda:

- Linux: <https://docs.anaconda.com/free/anaconda/install/linux/>
- Mac-OS: <https://docs.anaconda.com/free/anaconda/install/mac-os/>

Getting started with conda:

- <https://conda.io/projects/conda/en/latest/user-guide/getting-started.html>

The C++ plugin for the jupyter notebook is only available for Linux and MacOS.

Installing Jupyter notebook:

```
conda create -n cling
conda activate cling
conda install xeus-cling -c conda-forge
conda install jupyterlab -c conda-forge
cd /path/to/store/notebook
jupyter notebook
```


To use later:

```
cd /path/to/store/notebook
conda activate cling
jupyter notebook
```

C++ for beginners

- Recommended Textbooks:
 - C++ Primer. *Stanley Lippman, Josee Lajoie, Barbara Moo*
 - The C++ Programming Language. *Bjarne Stroustrup*
- Recommended online reference:
<https://en.cppreference.com>

Interactive questions in zoom 😊

- Yes 

- No 