

# alpaka Parallel Programming – Online Tutorial

## Lecture 00 – Getting Started with alpaka

### Lesson 04: Installation



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# Lesson 04: Installation

## How to download alpaka

- Install `git` for your operating system:
  - Linux: `sudo dnf install git` (RPM) or `sudo apt install git` (DEB)
  - macOS: Enter `git --version` in your terminal, you will be asked if you want to install `git`
  - Windows: Download the installer from <https://git-scm.com/download/win>
- Open the terminal (Linux / macOS) or PowerShell (Windows)
- Navigate to a directory of your choice: `cd /path/to/some/directory`
- Download alpaka: `git clone -b release-0.5.0 https://github.com/alpaka-group/alpaka.git`

# Lesson 04: Installation

## Install alpaka's dependencies

- alpaka only requires Boost and a modern C++ compiler (g++, clang++, Visual C++, ...)
  - Linux:
    - `sudo dnf install boost-devel` (RPM)
    - `sudo apt install libboost-all-dev` (DEB)
  - macOS:
    - `brew install boost` (Using Homebrew, <https://brew.sh>)
    - `sudo port install boost` (Using MacPorts, <https://macports.org>)
  - Windows: `vcpkg install boost` (Using vcpkg, <https://github.com/microsoft/vcpkg>)
- Depending on your target platform you may need additional packages
  - NVIDIA GPUs: CUDA Toolkit (<https://developer.nvidia.com/cuda-toolkit>)
  - AMD GPUs: ROCm / HIP (<https://rocmdocs.amd.com/en/latest/index.html>)

# Lesson 04: Installation

## Preparing alpaka for installation, Part 1

- CMake is the preferred system for building and installing
  - Linux: `sudo dnf install cmake` (RPM) or `sudo apt install cmake` (DEB)
  - macOS and Windows: Download the installer from <https://cmake.org/download/>
- In the terminal / PowerShell, switch to the downloaded alpaka directory:  
`cd /path/to/alpaka`
- Create a build directory and switch to it:  
`mkdir build`  
`cd build`

## Preparing alpaka for installation, Part 2

- In the `build` directory use CMake for configuration (replace the install prefix with an actual path):  

```
cmake -DCMAKE_INSTALL_PREFIX=/some/other/path/ ..
```
- Your alpaka installation will later reside in `/some/other/path/`
- If you are content with the default directories you can omit the install prefix
  - This requires administrator privileges!
  - This will result in a system-wide installation!
  - On Linux and macOS the default directory will be `/usr/local`
  - On Windows the default directory will be `C:\Program Files`

# Lesson 04: Installation

## Install alpaka

- Execute the installation command (note the dot):  

```
cmake --install .
```
- You should now have a complete alpaka installation in the directory you chose earlier
- Did you encounter problems or errors?
  - Check the documentation: <https://alpaka.readthedocs.io/en/latest/install/instructions.html>
  - Still having problems? Please report them here: <https://github.com/alpaka-group/alpaka/issues>



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