

# How to use LLVM to compile your Kaleidoscope toy language

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## Steps to get LLVM set up:

1. Use Linux. You can use Windows and follow this [tutorial](#) but it is not recommended as it can be complex. Instead, use [WSL](#). We will assume that you have a Linux environment throughout this setup tutorial.
2. Run `'sudo apt update'` - The last thing you want is incorrect package information.
3. Now to install all the packages, run:

```
sudo apt install `llvm-g++` llvm clang lldb lld  
sudo apt-get install libc++-dev libc++abi-dev llvm-dev
```

This should get you all the required packages to 'compile' your toy compiler. However, note that some repositories don't have `llvm-g++`, which is perfectly fine! You will get `clang++` from installing `clang` itself then.

4. Execute `llvm-config --version` to see which version of `llvm` you are using. A lot of `llvm` versions are not backward compatible, so this is crucial for resolving your dependencies in code.
5. To find an appropriate version of the Kaleidoscope frontend, go to this [link](#) and choose an appropriate branch corresponding to the `llvm` version you installed.
6. After you have the code on your system, you can compile your compiler using:

```
clang++ -g <input file> `llvm-config --libs all` -O3 -o <output>
```

We use `llvm-config --libs all` for linking the llvm libraries with your compiler code. We have entered 'all' for checking with all possible libraries, but it is ideal to use only what you need. For LLVM 10, you needed core, orcjit, and native. If so, the command would look like this:

```
clang++ -g <input file> `llvm-config --libs core orcjit native` -O3 -o  
<output>
```

7. If at some point you need clarification about which libraries to use, just check the CMakeLists in the repo!

All the best with compiling your compiler :)

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