

3.2. Out-of-source build

in-source build: 应该就是一些中间生成结果和你的源代码是放在一起,很显然,这样是一种很不好的呢方式;总之,in-source build模式就是你的源代码文件和你的生成式文件都将混杂在一起的一种模式

不推荐 in-source build

这两种模式到底如何设置:就应该将binary tree设置为和source tree不同的目录

The next important term is “out-of-source build”. “Out-of-source build” is a good practice of keeping separately generated files from binary tree and source files from source tree. CMake do support contrary “in-source build” layout but such approach has no real benefits and unrecommended.

3.2.1. Multiple configurations

Out-of-source build allow you to have different configurations simultaneously without conflicts, e.g. Debug and Release variant:

```
> cmake -H. -B_builds/Debug -DCMAKE_BUILD_TYPE=Debug
> cmake -H. -B_builds/Release -DCMAKE_BUILD_TYPE=Release
```

or any other kind of customization, e.g. options:

```
> cmake -H. -B_builds/feature-on -DFOO_FEATURE=ON
> cmake -H. -B_builds/feature-off -DFOO_FEATURE=OFF
```

generators:

```
> cmake -H. -B_builds/xcode -G Xcode
> cmake -H. -B_builds/make -G "Unix Makefiles"
```

platforms:

```
> cmake -H. -B_builds/osx -G Xcode
> cmake -H. -B_builds/ios -G Xcode -DCMAKE_TOOLCHAIN_FILE=./../ios.cmake
```

3.2.2. VCS friendly

Out-of-source build allow you to ignore temporary binaries by just adding `_builds` directory to the no-tracking-files list:

```
# .gitignore

_builds
```

compare it with similar file for in-source build:

```
# .gitignore

*.sln
*.vcxproj
*.vcxproj.filters
*.xcodeproj
CMakeCache.txt
CMakeFiles
CMakeScripts
Debug/*
Makefile
Win32/*
cmake_install.cmake
foo
foo.build/*
foo.dir/*
foo.exe
x64/*
```

3.2.3. Other notes

In-source build at the first glance may look more friendly for the developers who used to store projects/solution files in VCS. But in fact out-of-source build will remind you one more time that now your workflow changed, CMake is in charge and you should not edit your project settings in IDE.

Another note is that out-of-source means not only set `cmake -B _builds` but also remember to put any kind of automatically generated files to `_builds`. E.g. if you have C++ template `myproject.h.in` which is used to generate `myproject.h`, then you need to keep `myproject.h.in` in source tree and put `myproject.h` to the binary tree.

就是说，对于生成式的文件，都应该放置到 binary tree 中去，凡是自己编写的文件，都应该设置到 source tree 中去。