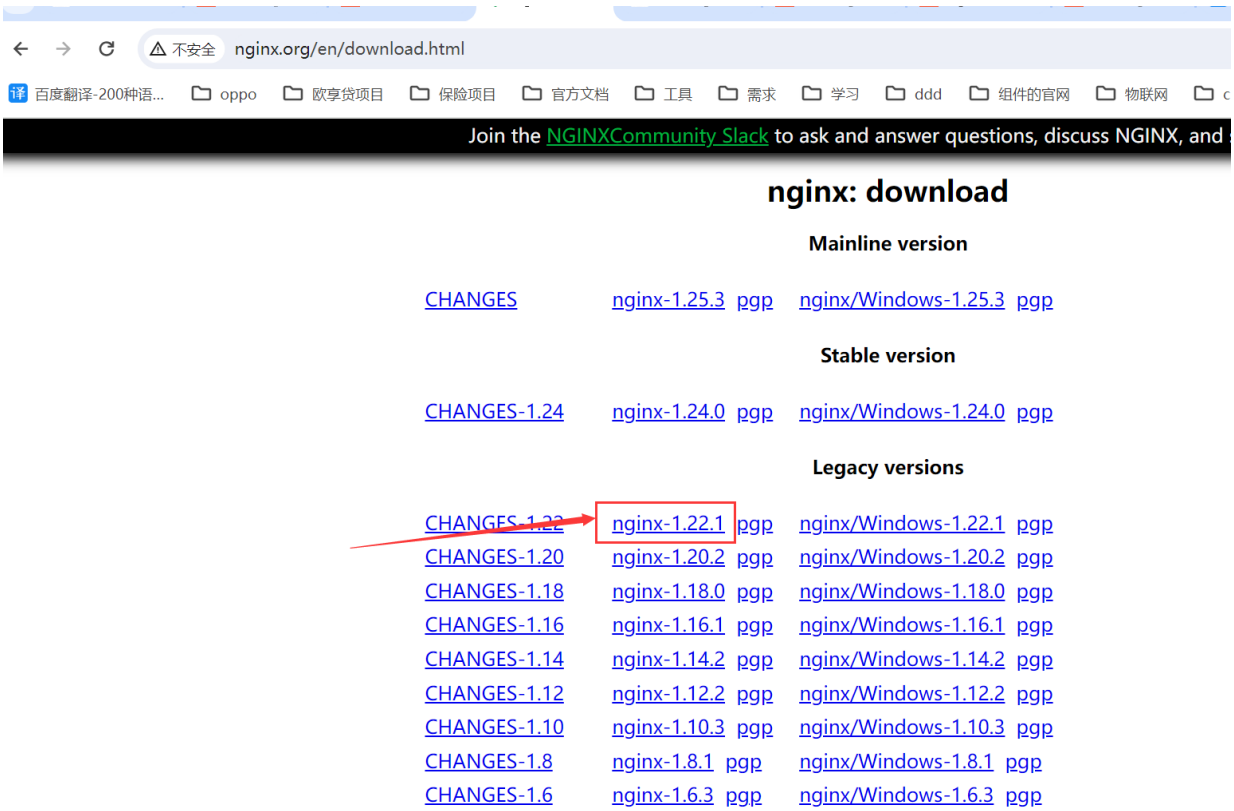
一、进入ubuntu 端

1、下载

先下载nginx源码，可以通过以下链接自行下载，
http://nginx.org/en/download.html



也可以直接通过此连接直接下载，我这边选择的是 1.22.1版本；
http://nginx.org/download/nginx-1.22.1.tar.gz

2、解压

```
tar -zvxf nginx-1.22.1.tar.gz
```

解压后先不要构建和安装
为了避免出现权限问题，我们先将解压好的目录加上最高权限

```
chmod 777 ./nginx-1.22.1
```

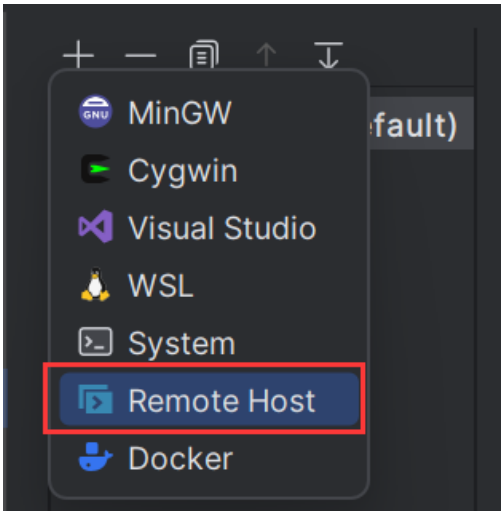
3、安装gcc、 cmkake 23版本以上

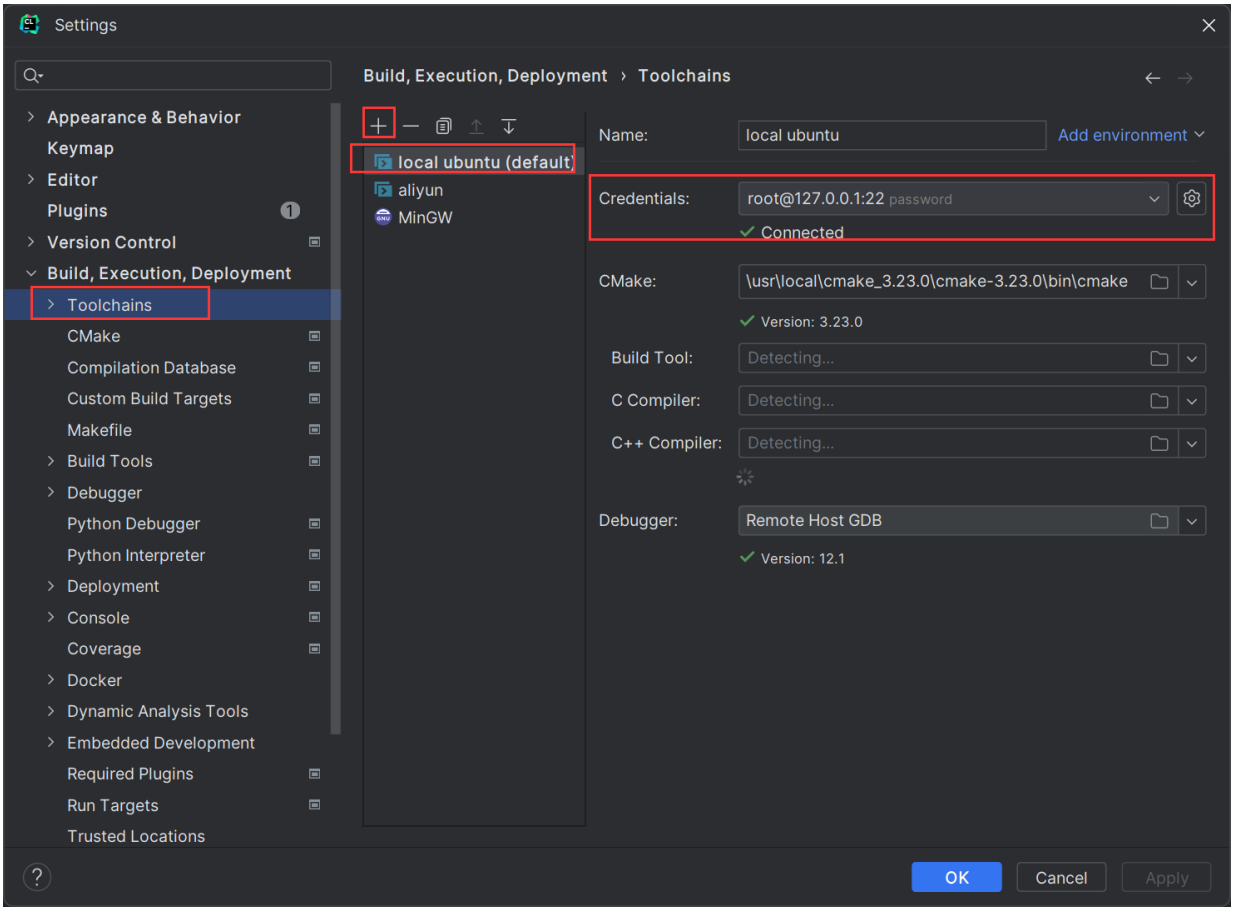
请自行百度安装，也可以看我的博客内有教程

二、切换到windows端

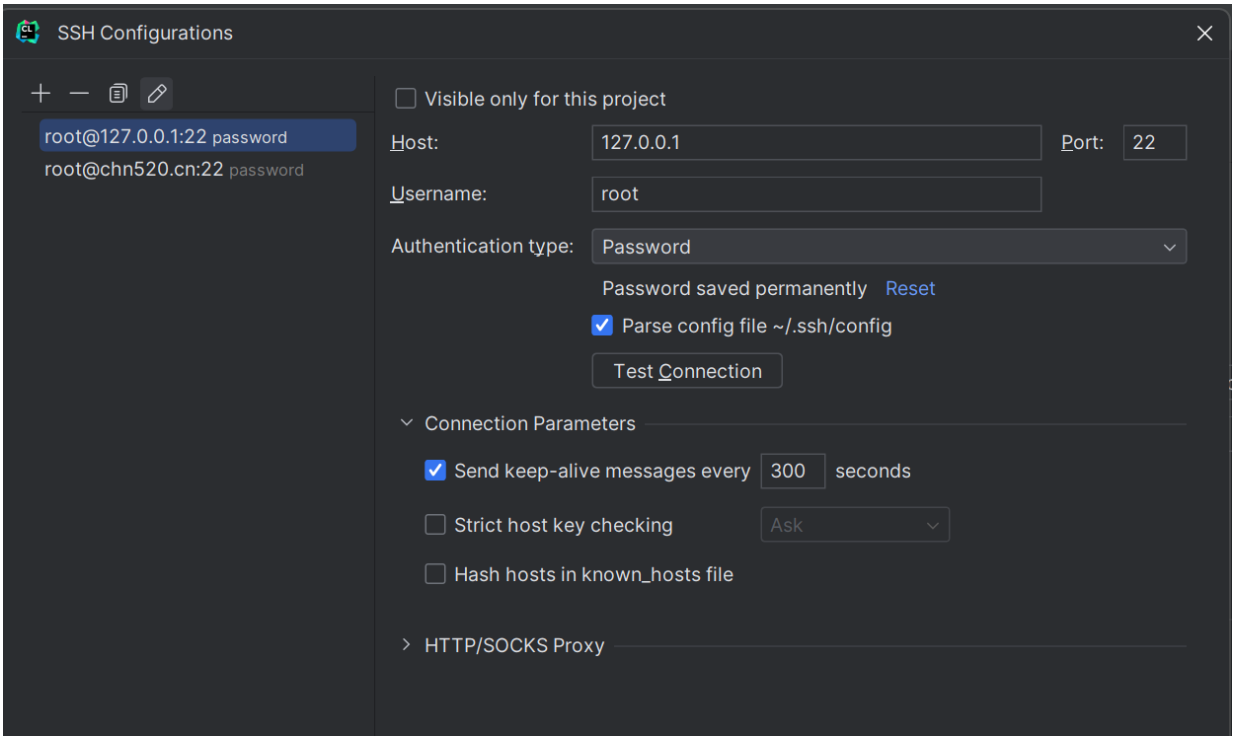
1、clion 添加工具链

选择Build,Execution,Deployment -> Toolchains（工具链）-> 添加 Remote host





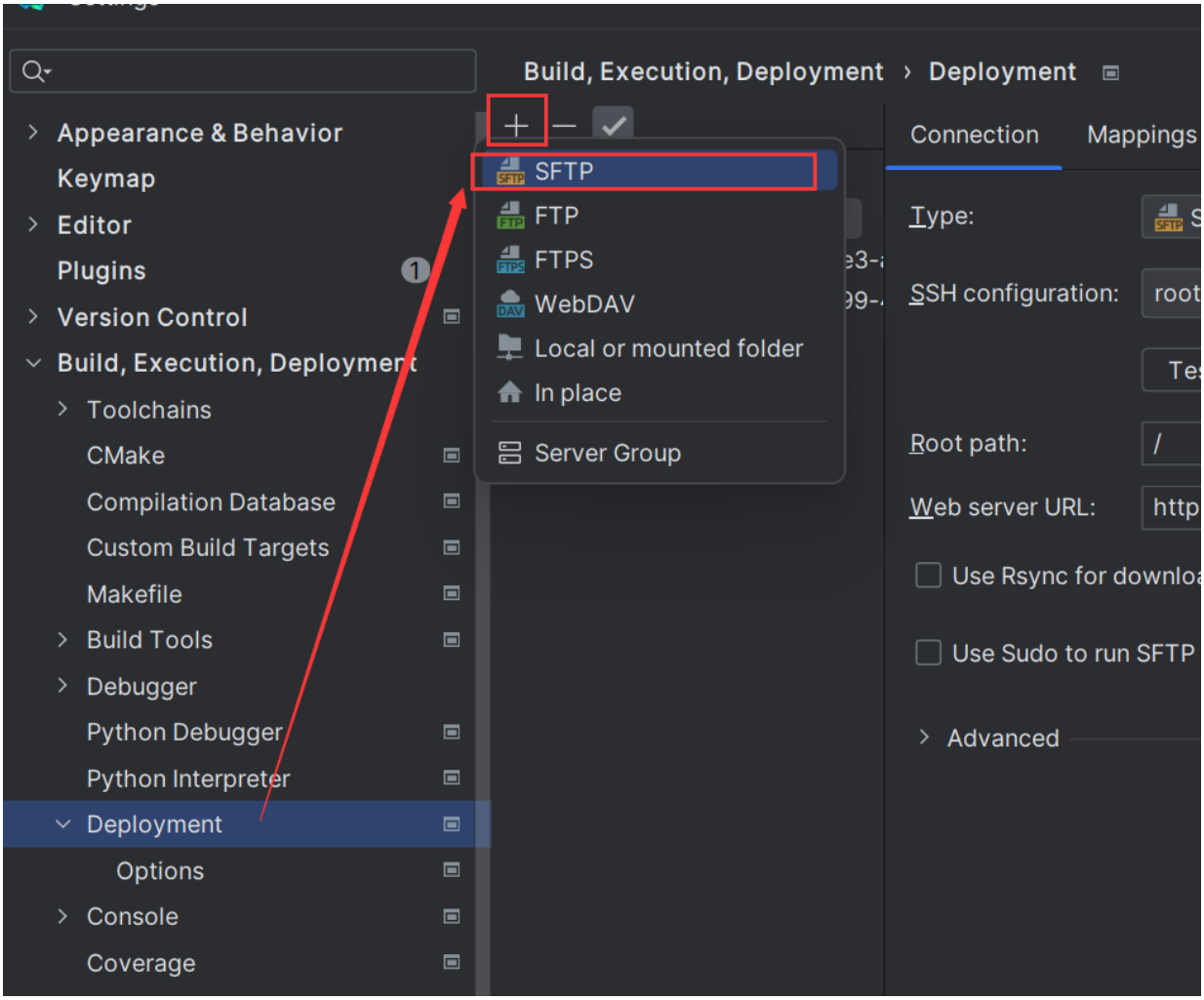
注意需要先配置好SSH configuration



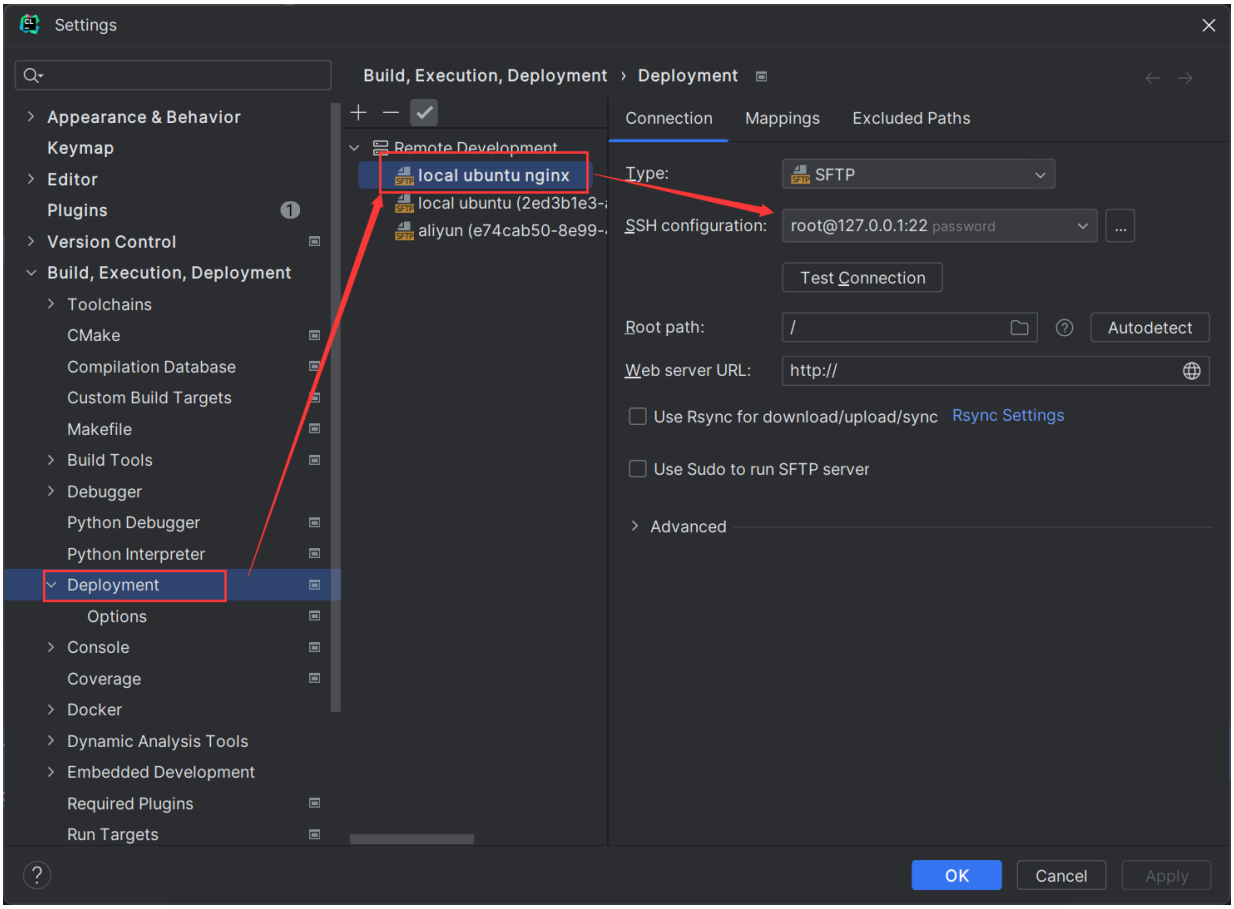
2、clion配置远程开发配置

添加远程开发的作用是可以将windows和ubuntu之间的文件互相同步，这样就不需要将文件拷来拷去了；

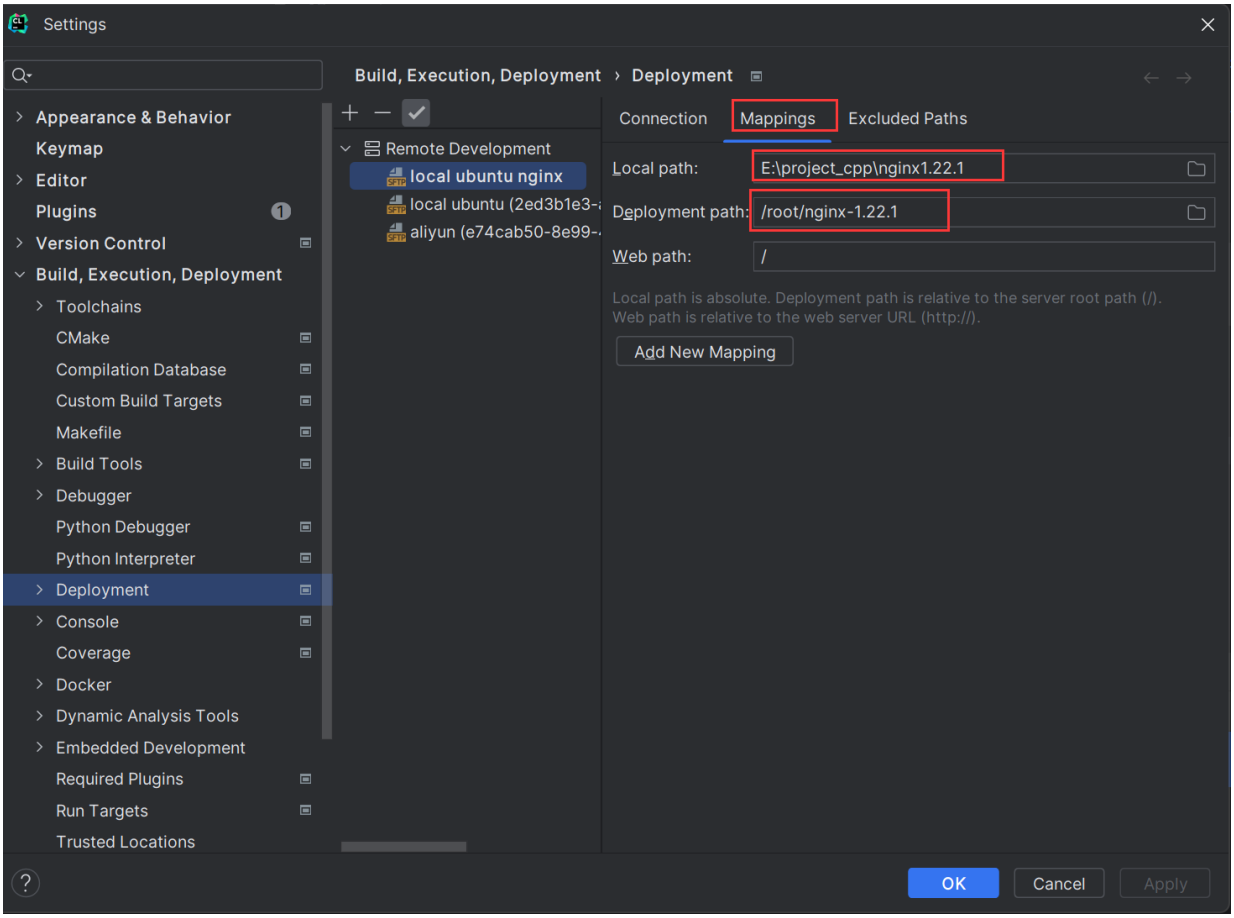
打开设置-> 选择 Deployment -> 添加一个 SFTP 的远程开发



添加好后是这样的，SSH configuration 选择刚刚配置好的



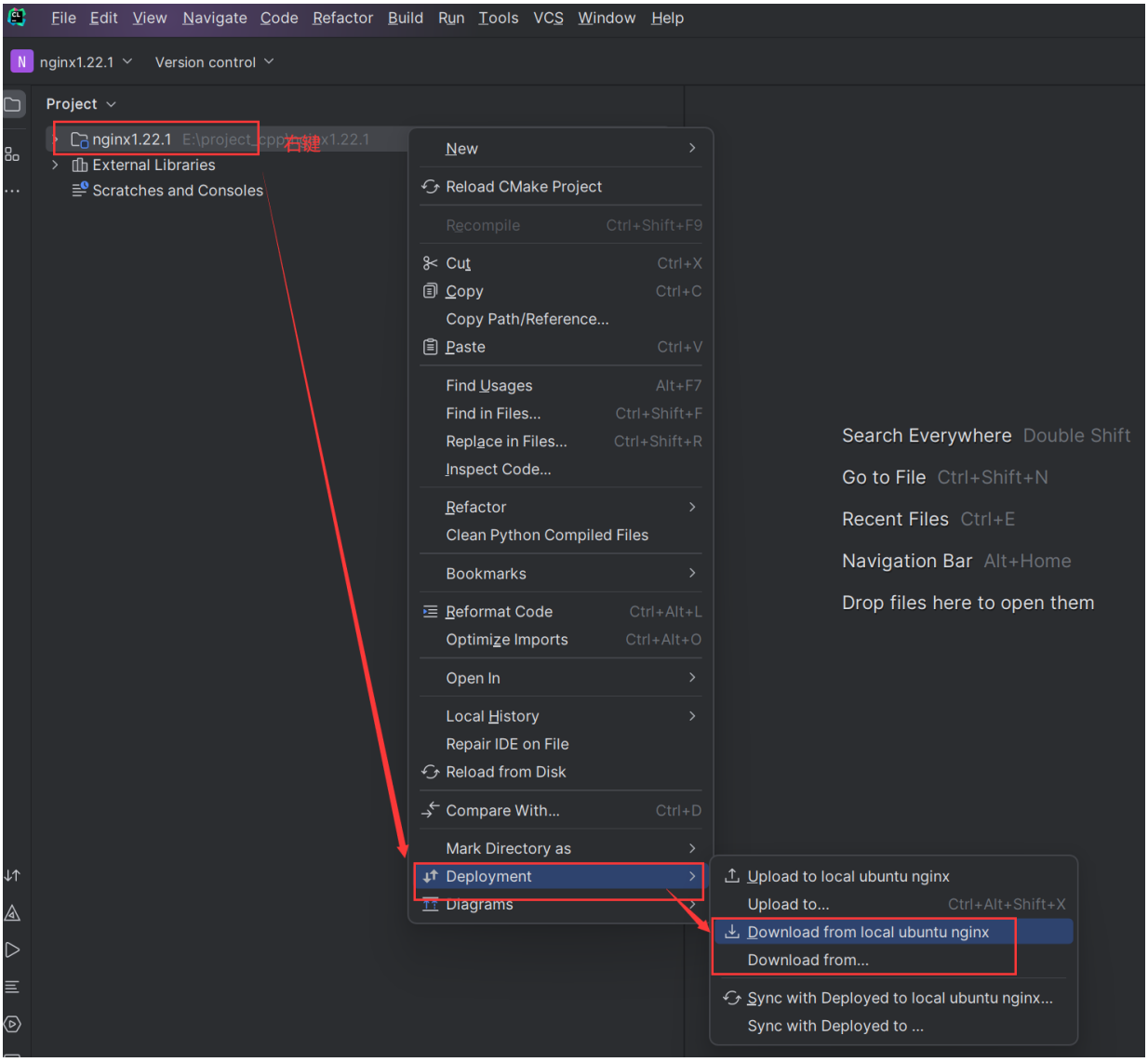
然后切换到Mappings（映射tab页），Local Path 表示windows本地的路径，Deployment path 表示ubuntu的远程路径，
以下例子是将windows 的`E:\project_cpp\nginx1.22.1`路径，映射到ubuntu的`/root/nginx-1.22.1`路径，这样两个不同的系统之间就完成互相同步；



下载

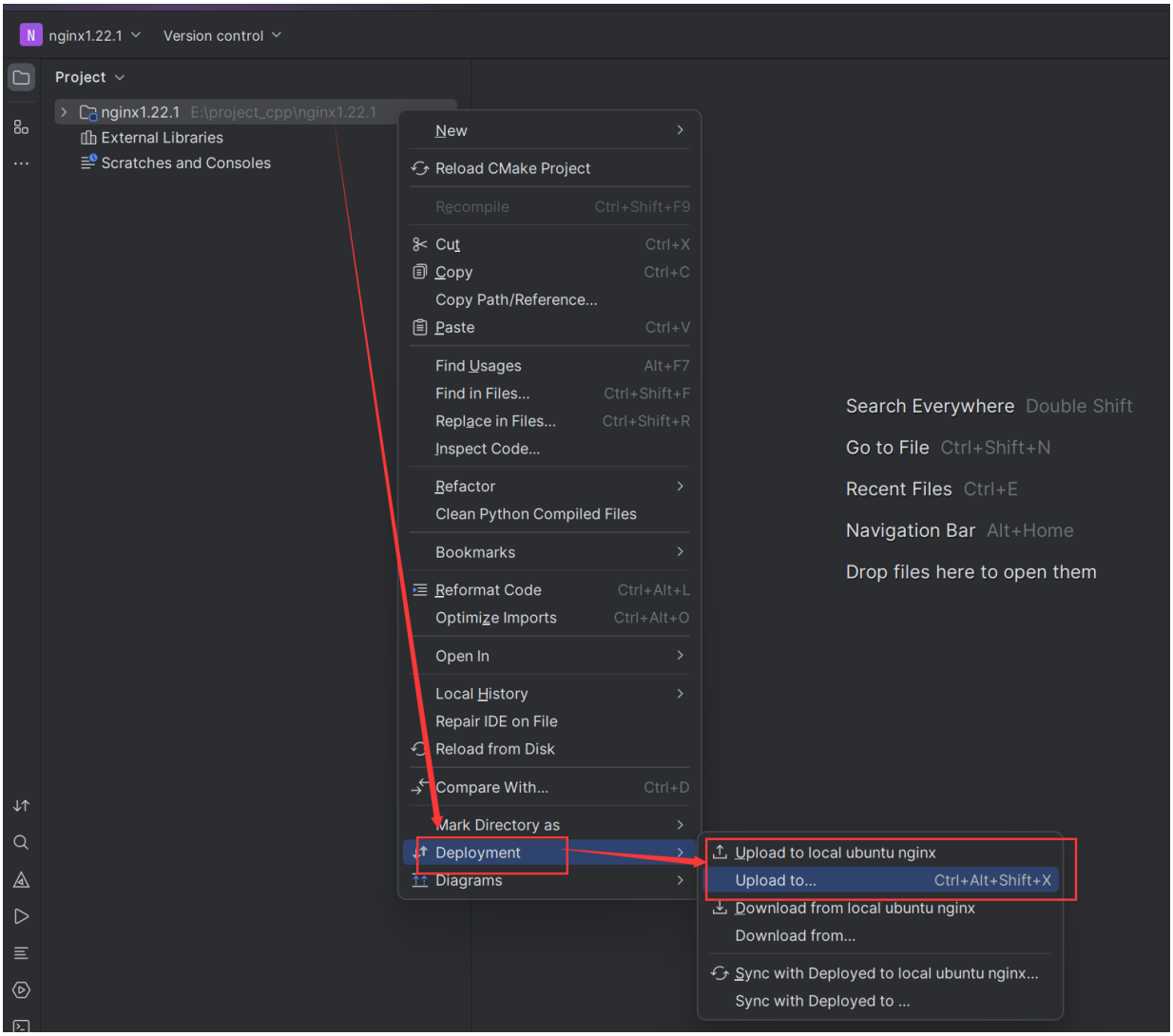
设置好之后，右击项目目录 -> `Deployment` -> `Downloan from ...`（选择刚刚配置好的远程开发SFTP）或者直接选择`Downloan from local ubuntu nginx`也可以

经过一段进度条之后就会将nginx的源码下载下来了



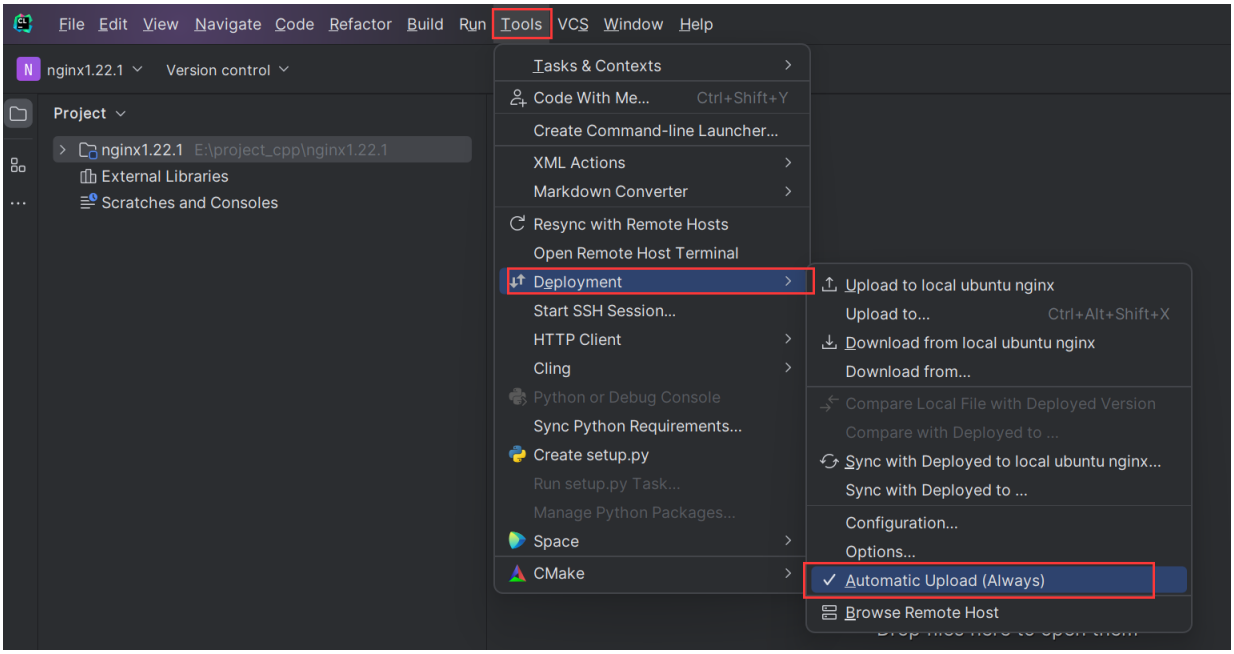
上传

如果想要将本地的文件上传上去，只需要选择 upload to ··· 即可



自动上传配置

当然，以上方法是手动上传文件，如果想要实现自动上传，可以在 Tools -> Deployment -> Automatic Upload(Always) 打上勾，即可实现自动上传功能；

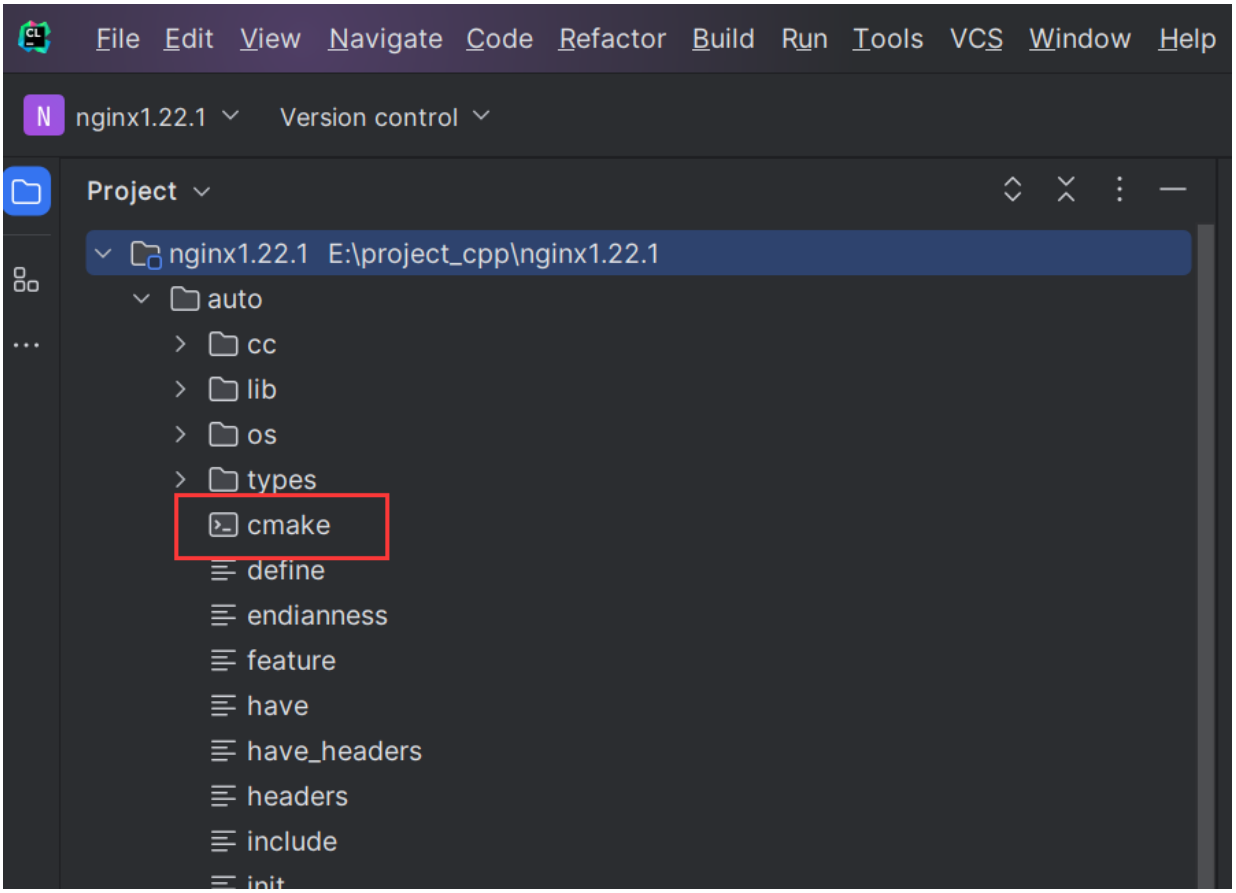


2、转换cmake

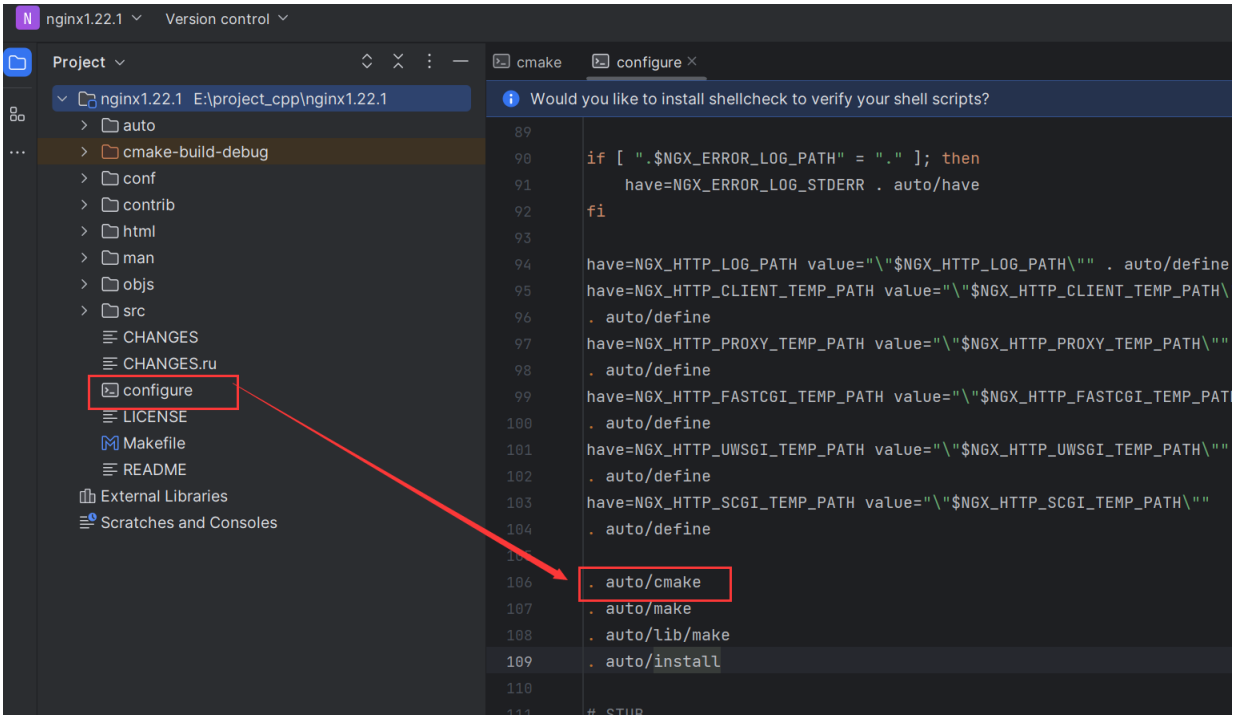
默认情况下，nginx是一个make项目，我们需要将其转为cmake项目，就需要 CMakeLists.txt 文件，
在auto目录下新建一个 cmake 文件，内容如下

```
#!/usr/bin/env bash
#NGX_CMAKE_FILE=$NGX_OBJS/CMakeLists.txt
#********此处生成到项目跟目录，修改$NGX_OBJS/CMakeLists.txt为CMakeLists.txt
NGX_CMAKE_FILE=CMakeLists.txt
NGX_CMAKE_TMP=$NGX_OBJS/tmp
#output includes
cmake_ngx_incs=`echo $CORE_INCS $NGX_OBJS $HTTP_INCS $MAIL_INCS\
             | sed -e "s/  *\([^ ][^ ]*\)/$ngx_regex_cont\1/g" \
                   -e "s/\//$ngx_regex_dirsep/g"`
cat << END                                    > $NGX_CMAKE_TMP
cmake_minimum_required(VERSION 3.6)
include_directories(
    .
    $cmake_ngx_incs)
END
#output src
cmake_ngx_src="$CORE_SRCS $HTTP_SRCS $MAIL_SRCS $NGX_MISC_SRCS $NGX_ADDON_SR
cmake_ngx_src=`echo $cmake_ngx_src | sed -e "s/  *\([^ ][^ ]*\)/$ngx_regex_c
                            -e "s/\//$ngx_regex_dirsep/g"`
#******** 次数将ngx_modules.c修改为$NGX_OBJS/ngx_modules.c
cat << END                                     >> $NGX_CMAKE_TMP
set(SOURCE_FILES
    $NGX_OBJS/ngx_modules.c
    $cmake_ngx_src)
END
#output target
cat << END                                    >> $NGX_CMAKE_TMP
add_executable(nginx \${SOURCE_FILES})
END
#output lib
echo ${CORE_LIBS}
  CMAKE_CORE_LIBS=`echo ${CORE_LIBS} | sed -e "s/-l//g"`
cat << END                                    >> $NGX_CMAKE_TMP
target_link_libraries(nginx $CMAKE_CORE_LIBS)
END
if [ -f $NGX_CMAKE_TMP ]
then
    (cat $NGX_CMAKE_TMP | sed -e "s/\\\//g") > $NGX_CMAKE_FILE
    rm $NGX_CMAKE_TMP
fi
```

创建好之后如下图



然后在configure文件的 `. auto/make` 上面加上 `. auto/cmake` ,注意一定要加在 auto/make 上面，否则安装无法通过



三、切换到ubuntu

1、构建nginx

在nginx解压后所在的目录运行以下命令

```
./configure
```

pcre缺失

如果出现以下报错,表示缺少PCRE库;

```
./configure: error: the HTTP rewrite module requires the PCRE library.You can
```

通过以下命令安装pcre

```
sudo apt-get install libpcre3 libpcre3-dev -y
```

zlib缺失

若出现以下错误

```
./configure: error: the HTTP gzip module requires the zlib library.You can ei
```

通过以下命令安装zlib

```
sudo apt-get install zlib1g-dev -y
```

重新构建

出现以下内容就表示安装成功

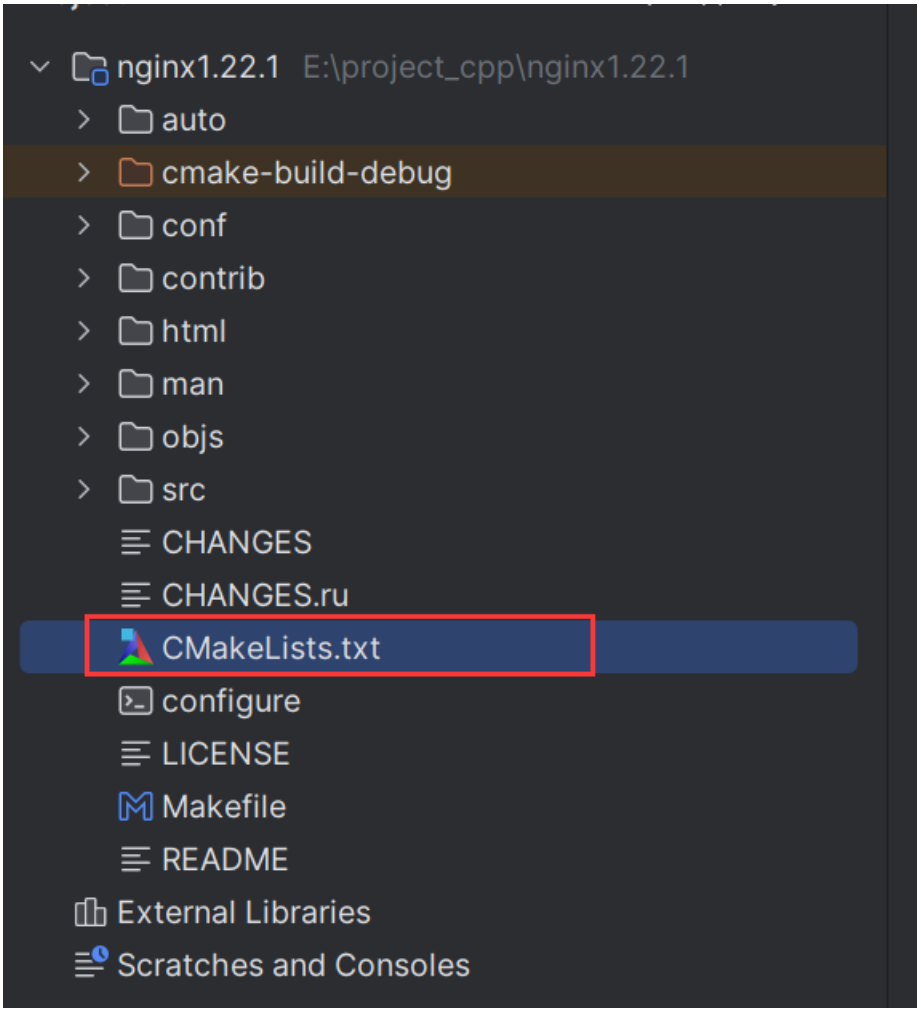
```
-lcrypt -lpcre -lz
creating objs/Makefile

Configuration summary
  + using system PCRE library
  + OpenSSL library is not used
  + using system zlib library

  nginx path prefix: "/usr/local/nginx"
  nginx binary file: "/usr/local/nginx/sbin/nginx"
  nginx modules path: "/usr/local/nginx/modules"
  nginx configuration prefix: "/usr/local/nginx/conf"
  nginx configuration file: "/usr/local/nginx/conf/nginx.conf"
  nginx pid file: "/usr/local/nginx/logs/nginx.pid"
  nginx error log file: "/usr/local/nginx/logs/error.log"
  nginx http access log file: "/usr/local/nginx/logs/access.log"
  nginx http client request body temporary files: "client_body_temp"
  nginx http proxy temporary files: "proxy_temp"
  nginx http fastcgi temporary files: "fastcgi_temp"
  nginx http uwsgi temporary files: "uwsgi_temp"
  nginx http scgi temporary files: "scgi_temp"

root@yexindong:~/nginx-1.22.1#
```

到这一步，ubuntu的工作就已经做完了；

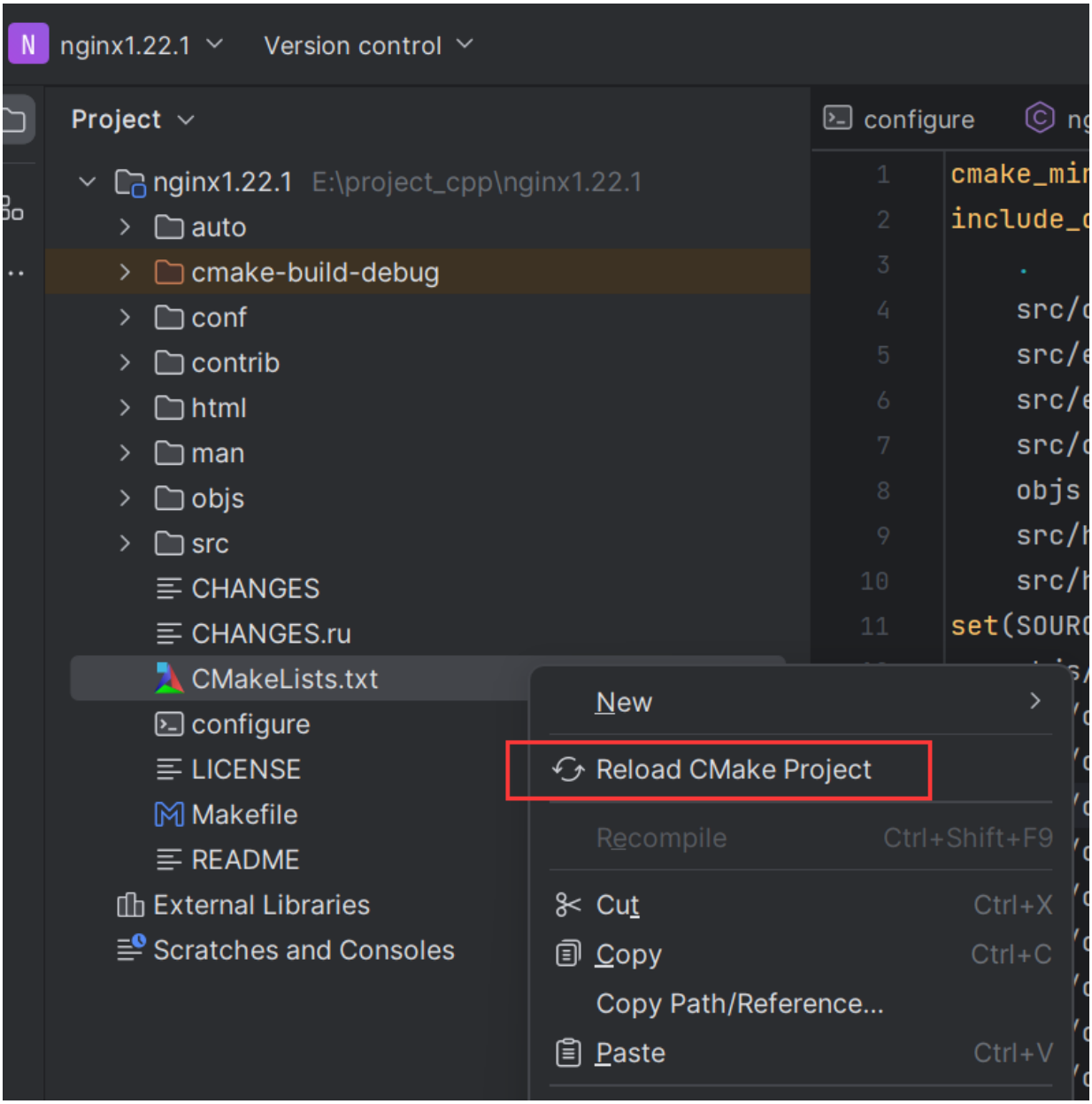
四、切换到windows

加载 cmake

刚刚构建后，通过 Deployment Download from … 下载文件后就可以看到，项目中多出了一个CMakeLists.txt文件，这个就是cmake的关键文件；



右键CMakeLists.txt文件，选择 Reload CMake Project

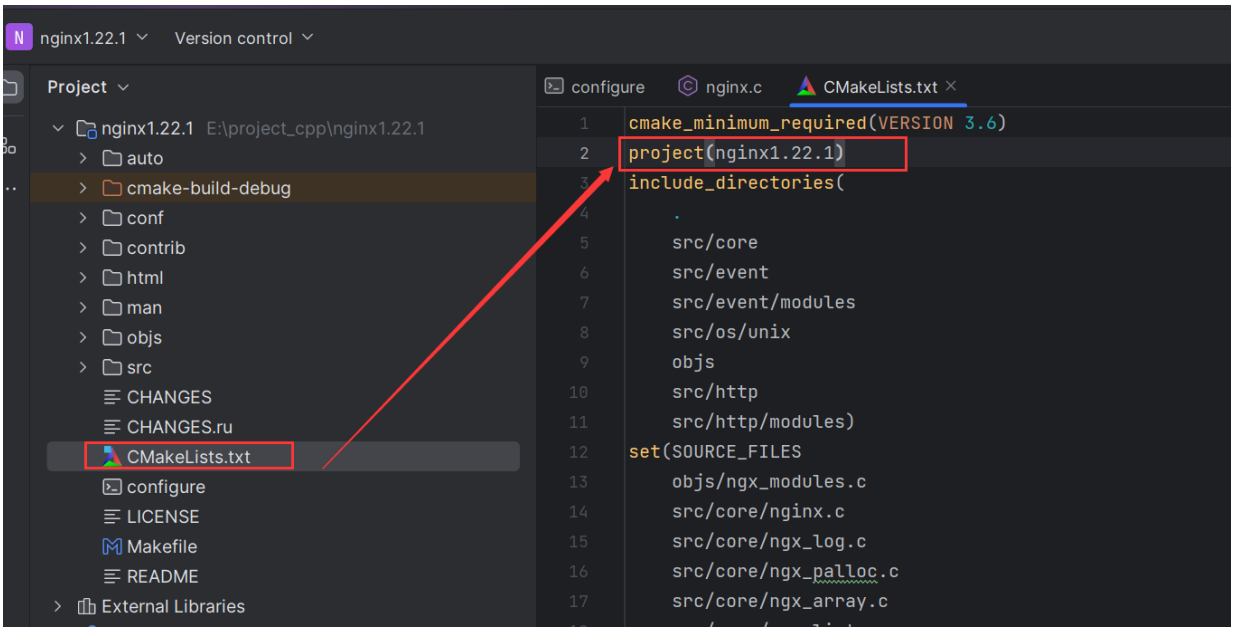


警告处理（可不处理）

重新加载后，有个警告

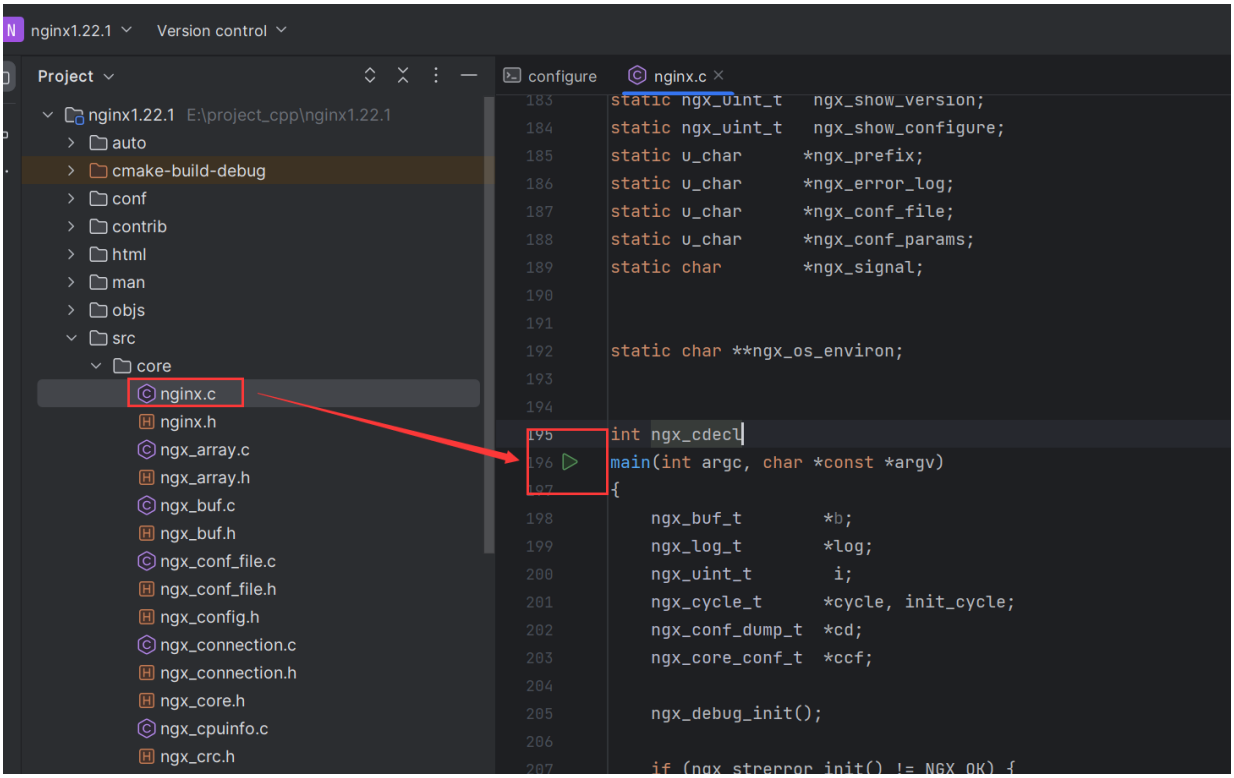
```
CMake    Debug
/usr/local/cmake_3.23.0/cmake-3.23.0/bin/cmake -DCMAKE_BUILD_TYPE=Debug -G "CodeBloc
CMake Warning (dev) in CMakeLists.txt:
  No project() command is present.  The top-level CMakeLists.txt file must
  contain a literal, direct call to the project() command.  Add a line of
  code such as

    project(ProjectName)

  near the top of the file, but after cmake_minimum_required().

  CMake is pretending there is a "project(Project)" command on the first
  line.
This warning is for project developers.  Use -Wno-dev to suppress it.

-- Configuring done
-- Generating done
-- Build files have been written to: /tmp/tmp.EwNhc4Wnig/cmake-build-debug
```

意思是必须在CMakeLists.txt文件头部加上 `project(项目名称)`，表示这个项目的名字，这个可以不处理，不会影响运行，但我是个强迫症，既然这样我们就加上呗



运行nginx

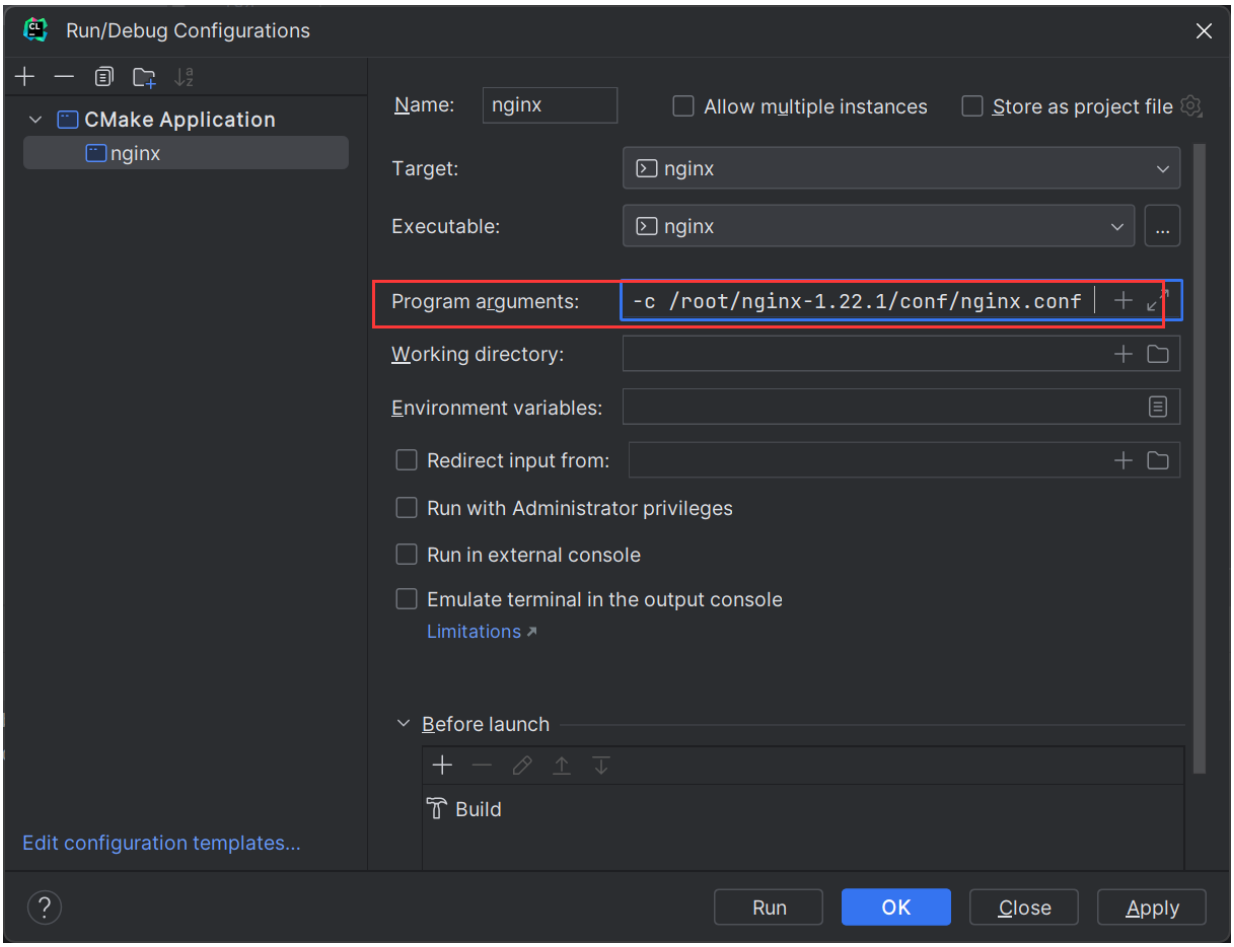
找到 src/core/nginx.c 文件，运行里面的main函数



在运行的配置里面

Program arguments加入以下配置,指定nginx的配置文件

```
-c /root/nginx-1.22.1/conf/nginx.conf
```



运行报错解决

运行后报错了，信息如下，意思是`/usr/local/nginx/`这个目录不存在；

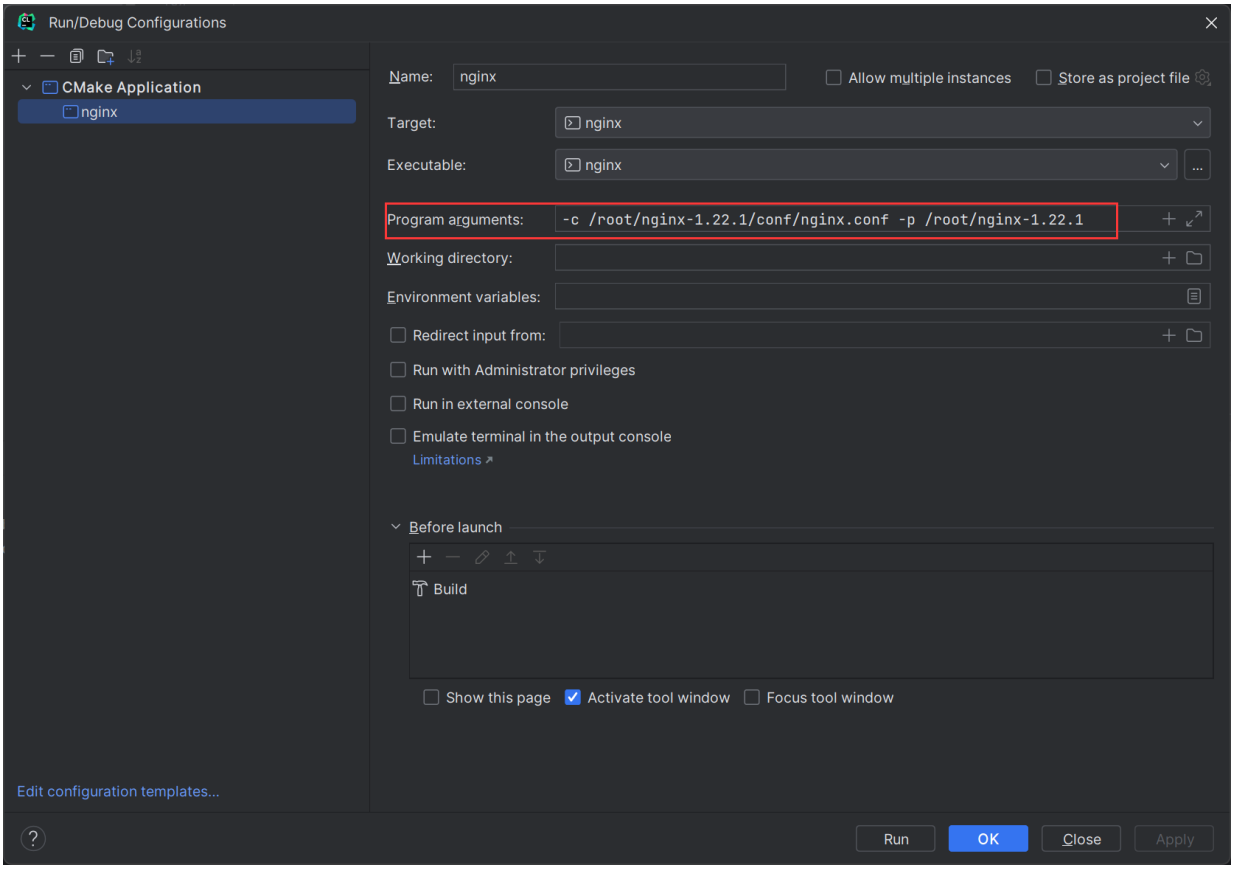
```
/tmp/tmp.EwNhc4Wnig/cmake-build-debug/nginx -c /root/nginx-1.22.1/conf/nginx
```

通过nginx的帮助命令可以看到，默认的前缀是`/usr/local/nginx/`；

```
root@yexindong:~/nginx-1.22.1# /tmp/tmp.EwNhc4Wnig/cmake-build-debug/nginx -h
nginx version: nginx/1.22.1
Usage: nginx [-?hvVtTq] [-s signal] [-p prefix]
             [-e filename] [-c filename] [-g directives]

Options:
  -?,-h         : this help
  -v            : show version and exit
  -V            : show version and configure options then exit
  -t            : test configuration and exit
  -T            : test configuration, dump it and exit
  -q            : suppress non-error messages during configuration testing
  -s signal     : send signal to a master process: stop, quit, reopen, reload
  -p prefix     : set prefix path (default: /usr/local/nginx/)
  -e filename   : set error log file (default: logs/error.log)
  -c filename   : set configuration file (default: conf/nginx.conf)
  -g directives : set global directives out of configuration file
```

所以我们在启动的时候只需要加上`-p`参数修改下前缀就行了，在启动配置里面 Program arguments加入以下配置

```
-c /root/nginx-1.22.1/conf/nginx.conf -p /root/nginx-1.22.1
```



得注意下哈，日志是放在`/root/nginx-1.22.1/logs`目录下的，logs 这个目录得自己手动创建

```
mkdir /nginx-1.22.1/logs
```

再次启动（后台运行）

当看到以下信息时就表示已经启动成功了

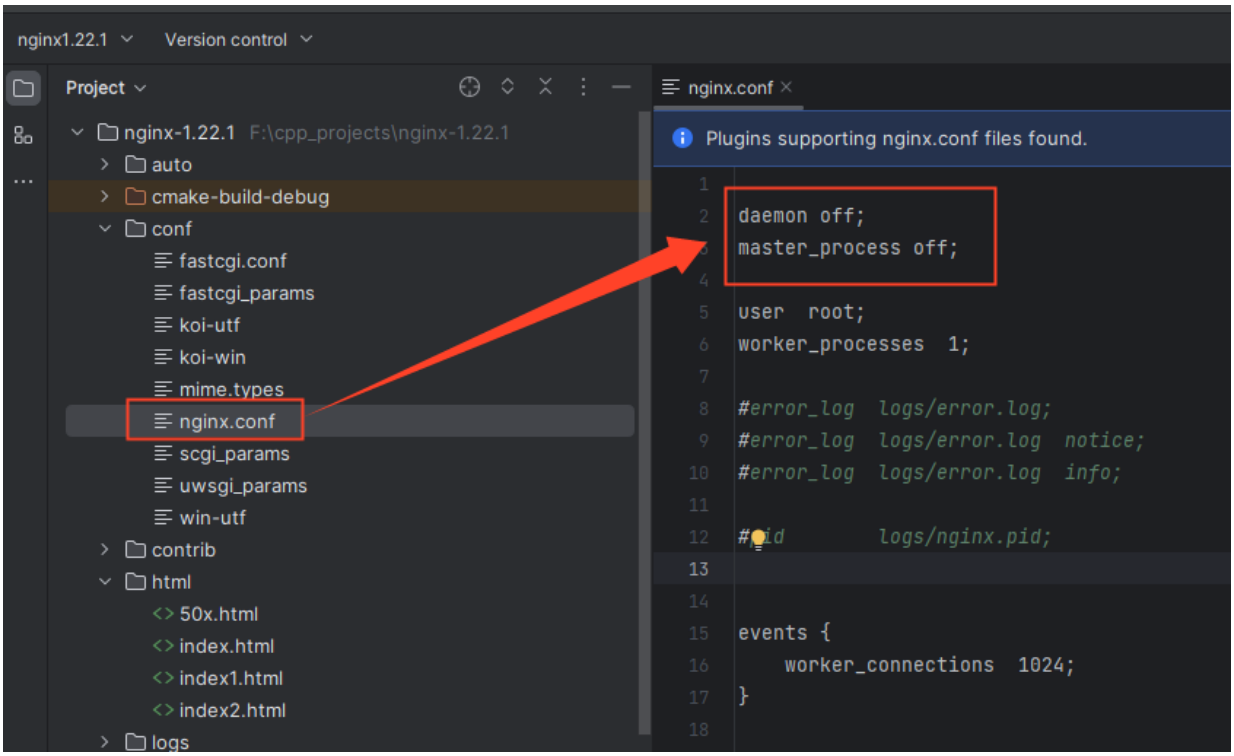
只是默认情况下，nginx的后台运行的，在ubuntu通过`ps`命令即可看到正在运行的nginx进程

```
root@yexindong:~/nginx-1.22.1# ps -ef | grep nginxroot      17168    14  0 00
```

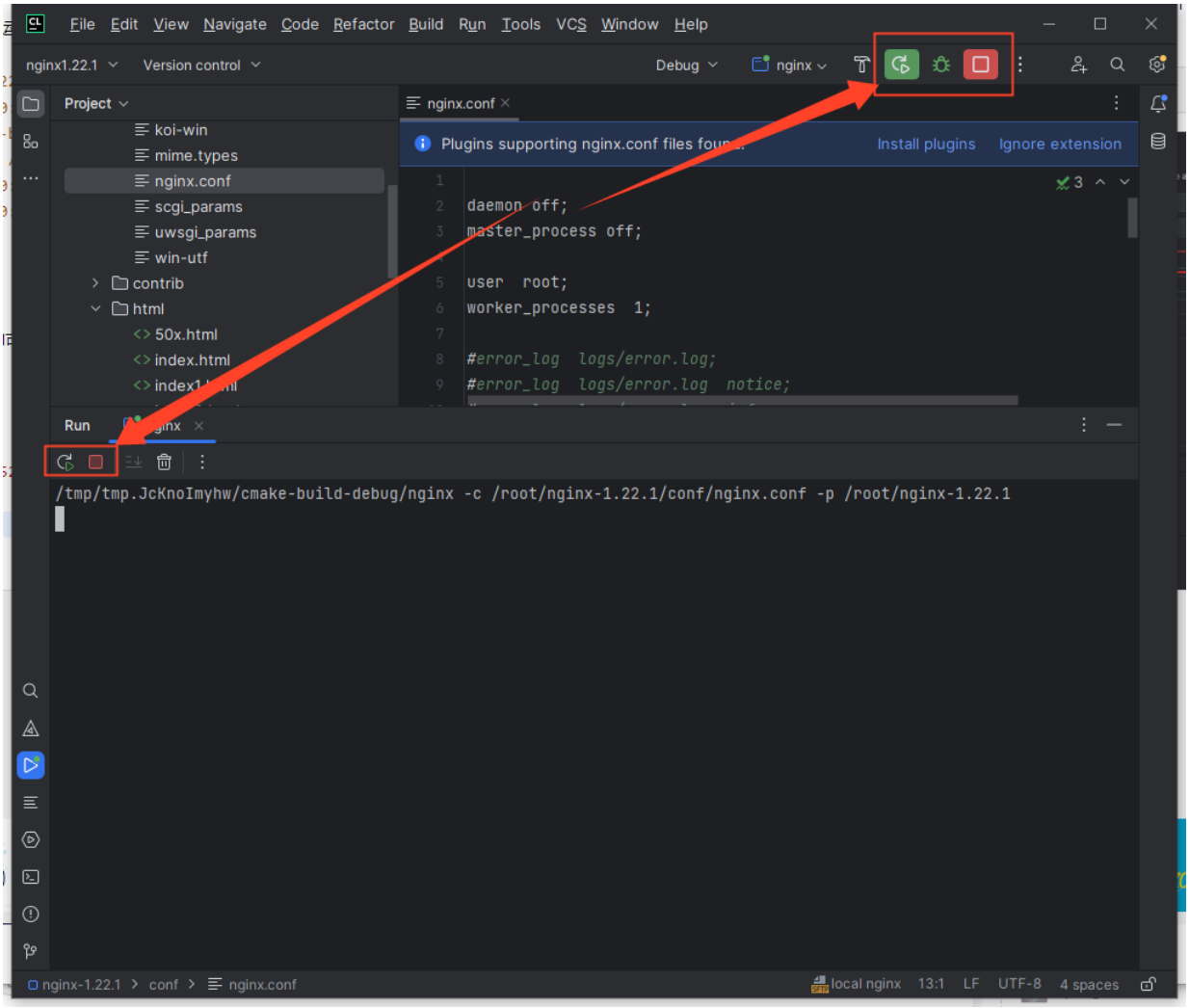
设为单进程模式工作（前台运行）

在 nginx.conf 加入以下2行即可

```
daemon off;
master_process off;
```



然后再次启动nginx，就会直接在前台运行，而不是后台运行，这时候想要debug也是可以的



访问

默认情况下用的80端口，输入：127.0.0.1 进行访问，发现无法访问，

查看 error.log 日志，发现以下信息，意思没有权限访问

```
2023/12/08 15:14:31 [error] 13305#0: *1 "/root/nginx-1.22.1/html/index.html"
```

既然没权限，那就加上权限,给nginx目录以及子目录都加上最高权限

```
chmod -R 777 /root/nginx-1.22.1
```

加完后发现还是一样的错误，依然显示无权限，最后通过ps命令查看nginx进程

```
root@PW9033927:~/nginx-1.22.1/conf# ps -ef | grep nginxroot     13382     1
```

发现一个问题，nginx 的master进程所有者是root，而工作进程的所有者是 nobody；nobody是一个默认的系统用户，肯定是没有权限访问root用户的文件；要解决这个问题，就得让工作进程也以root来运行，修改 nginx.conf文件，将`# user nobody;`改为`user root;`

然后重启nginx，在用ps命令查看，可以发现，master进程和工作进程的所有者都是root了

```
root@PW9033927:~/nginx-1.22.1/logs# ps -ef |grep nginxroot     13632     1
```

页面也已经可以访问成功了,访问的html文件路径 为：`/root/nginx-1.22.1/html/index.html`