

Based on <https://opensees.github.io/OpenSeesDocumentation/developer/build.html>

<https://www.youtube.com/watch?v=BLcY1w7a5Ec>

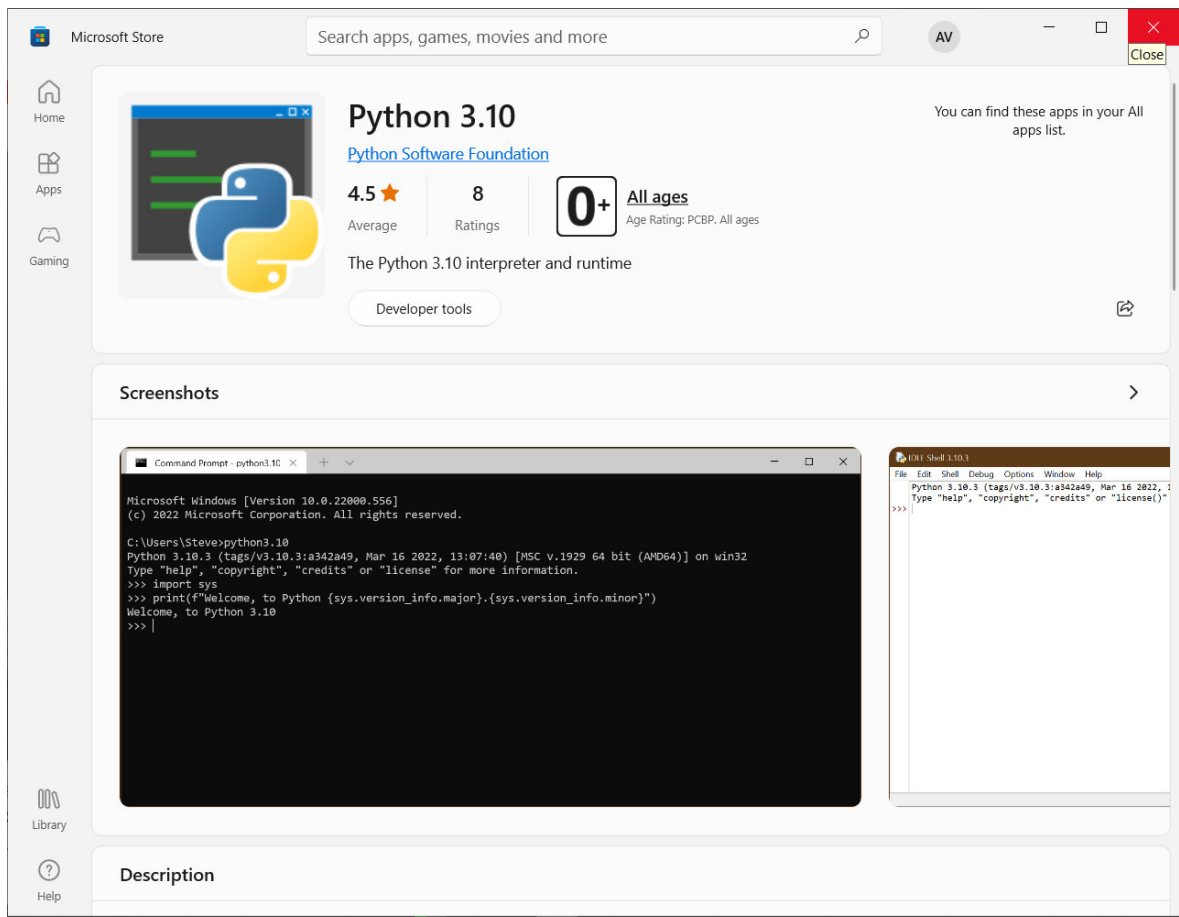
1. Install Visual Studio 2019

2. Download and install packages:

<https://www.intel.com/content/www/us/en/developer/tools/oneapi/base-toolkit-download.html>

<https://www.intel.com/content/www/us/en/developer/tools/oneapi/hpc-toolkit-download.html>

3. Install python 3.10 (windows store)



4. Install conan:

> pip install conan

```
C:\Windows\System32\cmd.exe
d:\projects\OpenSees>pip install conan
Collecting conan
  Downloading conan-1.46.2.tar.gz (745 kB)
----- 745.4/745.4 KB 1.8 MB/s eta 0:00:00
  Preparing metadata (setup.py) ... done
Collecting PyJWT<2.0.0,>=1.4.0
  Downloading PyJWT-1.7.1-py2.py3-none-any.whl (18 kB)
Collecting requests<3.0.0,>=2.25
  Downloading requests-2.27.1-py2.py3-none-any.whl (63 kB)
----- 63.1/63.1 KB 3.3 MB/s eta 0:00:00
Collecting urllib3<1.27,>=1.26.6
  Downloading urllib3-1.26.9-py2.py3-none-any.whl (138 kB)
----- 139.0/139.0 KB 4.0 MB/s eta 0:00:00
Collecting colorama<0.5.0,>=0.3.3
  Downloading colorama-0.4.4-py2.py3-none-any.whl (16 kB)
Collecting PyYAML<6.0,>=3.11
  Downloading PyYAML-5.4.1.tar.gz (175 kB)
----- 175.1/175.1 KB 3.6 MB/s eta 0:00:00
  Installing build dependencies ... done
  Getting requirements to build wheel ... done
  Preparing metadata (pyproject.toml) ... done
Collecting patch-ng<1.18,>=1.17.4
  Downloading patch-ng-1.17.4.tar.gz (17 kB)
  Preparing metadata (setup.py) ... done
Collecting fasteners>=0.14.1
  Downloading fasteners-0.17.3-py3-none-any.whl (18 kB)
Collecting six<=1.16.0,>=1.10.0
  Downloading six-1.16.0-py2.py3-none-any.whl (11 kB)
Collecting node-semver==0.6.1
  Downloading node_semver-0.6.1-py3-none-any.whl (10 kB)
```

```
C:\Windows\System32\cmd.exe
Using legacy 'setup.py install' for patch-ng, since package 'wheel' is not installed.
Using legacy 'setup.py install' for pluginbase, since package 'wheel' is not installed.
Building wheels for collected packages: PyYAML
  Building wheel for PyYAML (pyproject.toml) ... done
  Created wheel for PyYAML: filename=PyYAML-5.4.1-cp310-cp310-win_amd64.whl size=45656 sha256=19c9f886d5b45e1a7297c9177c681a26cff237cb8128e95cdf266e26fc81d3b4
  Stored in directory: c:\users\root\appdata\local\pip\cache\wheels\c7\0d\22\696ee92245ad710f506eee79bb05c740d8abccd3ecd
b778683
Successfully built PyYAML
Installing collected packages: PyJWT, pluginbase, patch-ng, node-semver, certifi, bottle, urllib3, six, PyYAML, pygments, MarkupSafe, idna, fasteners, colorama, charset-normalizer, tqdm, requests, python-dateutil, Jinja2, conan
  WARNING: The script pyjwt.exe is installed in 'C:\Users\root\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.10_qbz5n2kfra8p0\LocalCache\local-packages\Python310\Scripts' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
  Running setup.py install for pluginbase ... done
  Running setup.py install for patch-ng ... done
  WARNING: The script pygmentize.exe is installed in 'C:\Users\root\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.10_qbz5n2kfra8p0\LocalCache\local-packages\Python310\Scripts' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
  WARNING: The script normalizer.exe is installed in 'C:\Users\root\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.10_qbz5n2kfra8p0\LocalCache\local-packages\Python310\Scripts' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
  WARNING: The script tqdm.exe is installed in 'C:\Users\root\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.10_qbz5n2kfra8p0\LocalCache\local-packages\Python310\Scripts' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
  Running setup.py install for conan ... done
Successfully installed Jinja2-3.1.0 MarkupSafe-2.1.1 PyJWT-1.7.1 PyYAML-5.4.1 bottle-0.12.19 certifi-2021.10.8 charset-normalizer-2.0.12 colorama-0.4.4 conan-1.46.2 fasteners-0.17.3 idna-3.3 node-semver-0.6.1 patch-ng-1.17.4 pluginbase-1.0.1 pygments-2.11.2 python-dateutil-2.8.2 requests-2.27.1 six-1.16.0 tqdm-4.63.1 urllib3-1.26.9
```

## 5. Set conan path:

> SET

```
PATH=%PATH%;c:\users\????\appdata\local\packages\pythonsoftwarefoundation.python.3.10_qbz5n2kfra8p0\localcache\local-packages\Python310\Scripts\
```

```
C:\Windows\System32\cmd.exe
Pygments 2.11.2 c:\users\root\appdata\local\packages\pythonsoftwarefoundation.python.3.10_qbz5n2kfra8p0\loc
alcache\local-packages\python310\site-packages pip
PyJWT 1.7.1 c:\users\root\appdata\local\packages\pythonsoftwarefoundation.python.3.10_qbz5n2kfra8p0\loc
alcache\local-packages\python310\site-packages pip
python-dateutil 2.8.2 c:\users\root\appdata\local\packages\pythonsoftwarefoundation.python.3.10_qbz5n2kfra8p0\loc
alcache\local-packages\python310\site-packages pip
PyYAML 5.4.1 c:\users\root\appdata\local\packages\pythonsoftwarefoundation.python.3.10_qbz5n2kfra8p0\loc
alcache\local-packages\python310\site-packages pip
requests 2.27.1 c:\users\root\appdata\local\packages\pythonsoftwarefoundation.python.3.10_qbz5n2kfra8p0\loc
alcache\local-packages\python310\site-packages pip
six 1.16.0 c:\users\root\appdata\local\packages\pythonsoftwarefoundation.python.3.10_qbz5n2kfra8p0\loc
alcache\local-packages\python310\site-packages pip
tqdm 4.63.1 c:\users\root\appdata\local\packages\pythonsoftwarefoundation.python.3.10_qbz5n2kfra8p0\loc
alcache\local-packages\python310\site-packages pip
urllib3 1.26.9 c:\users\root\appdata\local\packages\pythonsoftwarefoundation.python.3.10_qbz5n2kfra8p0\loc
alcache\local-packages\python310\site-packages pip

d:\projects\OpenSees>SET PATH=%PATH%;c:\users\root\appdata\local\packages\pythonsoftwarefoundation.python.3.10_qbz5n2kfra
8p0\localcache\local-packages\Python310\Scripts\

d:\projects\OpenSees>echo %PATH%
C:\Program Files\Eclipse Foundation\jdk-8.0.302.8-hotspot\bin;C:\Program Files (x86)\Common Files\Oracle\Java\javapath;C
:\WINDOWS\system32;C:\WINDOWS;C:\WINDOWS\System32\Wbem;C:\WINDOWS\System32\WindowsPowerShell\v1.0\;C:\WINDOWS\System32\O
penSSH;C:\Program Files\dotnet;C:\Program Files\Microsoft SQL Server\130\Tools\Binn\;C:\Program Files\Microsoft SQL Se
rver\Client SDK\ODBC\170\Tools\Binn\;C:\Program Files\Docker\Docker\resources\bin;C:\ProgramData\DockerDesktop\version-b
in;C:\Program Files (x86)\glab;C:\Program Files\PowerShell\7\;C:\Program Files (x86)\GitExtensions\;C:\Program Files\Git
\cmd;C:\Program Files\Cloudflare\Cloudflare WARP\;C:\Users\root\scoop\shims;C:\Users\root\AppData\Local\Microsoft\Window
sApps;C:\Users\root\.dotnet\tools;c:\users\root\appdata\local\packages\pythonsoftwarefoundation.python.3.10_qbz5n2kfra8p
0\localcache\local-packages\Python310\Scripts\
```

## 6. Create conan profile

> conan profile new default --detect

```
C:\Windows\System32\cmd.exe
d:\projects\OpenSees>conan profile new default --detect
Found Visual Studio 16
Profile created with detected settings: C:\Users\root\.conan\profiles\default

d:\projects\OpenSees>
```

## 7. Check conan profile

> conan profile show default

```
C:\Windows\System32\cmd.exe

d:\projects\OpenSees>conan profile new default --detect
Found Visual Studio 16
Profile created with detected settings: C:\Users\root\.conan\profiles\default

d:\projects\OpenSees>conan profile show default
Configuration for profile default:

[settings]
os=Windows
os_build=Windows
arch=x86_64
arch_build=x86_64
compiler=Visual Studio
compiler.version=16
build_type=Release
[options]
[conf]
[build_requires]
[env]

d:\projects\OpenSees>
```

## 8. Build steps

### 8.1 Setup environment

> "C:\Program Files (x86)\Intel\oneAPI\setVars" intel64 mod

```
Intel(r) oneAPI Tools

d:\projects\OpenSees>"C:\Program Files (x86)\Intel\oneAPI\setVars" intel64 mod
:: initializing oneAPI environment...
  Initializing Visual Studio command-line environment...
  Visual Studio version 16.11.11 environment configured.
  "C:\Program Files (x86)\Microsoft Visual Studio\2019\Professional\"
  Visual Studio command-line environment initialized for: 'x64'
: compiler -- latest
: dal -- latest
: debugger -- latest
: dev-utilities -- latest
: dpcpp-ct -- latest
: dpl -- latest
: inspector -- latest
: itac -- latest
: mpi -- latest
: tbb -- latest
:: oneAPI environment initialized ::

d:\projects\OpenSees>mkdir build

d:\projects\OpenSees>cd build

d:\projects\OpenSees\build>conan install .. --build missing
WARN: Remotes registry file missing, creating default one in C:\Users\root\.conan\remotes.json
Configuration:
[settings]
arch=x86_64
arch_build=x86_64
build_type=Release
```

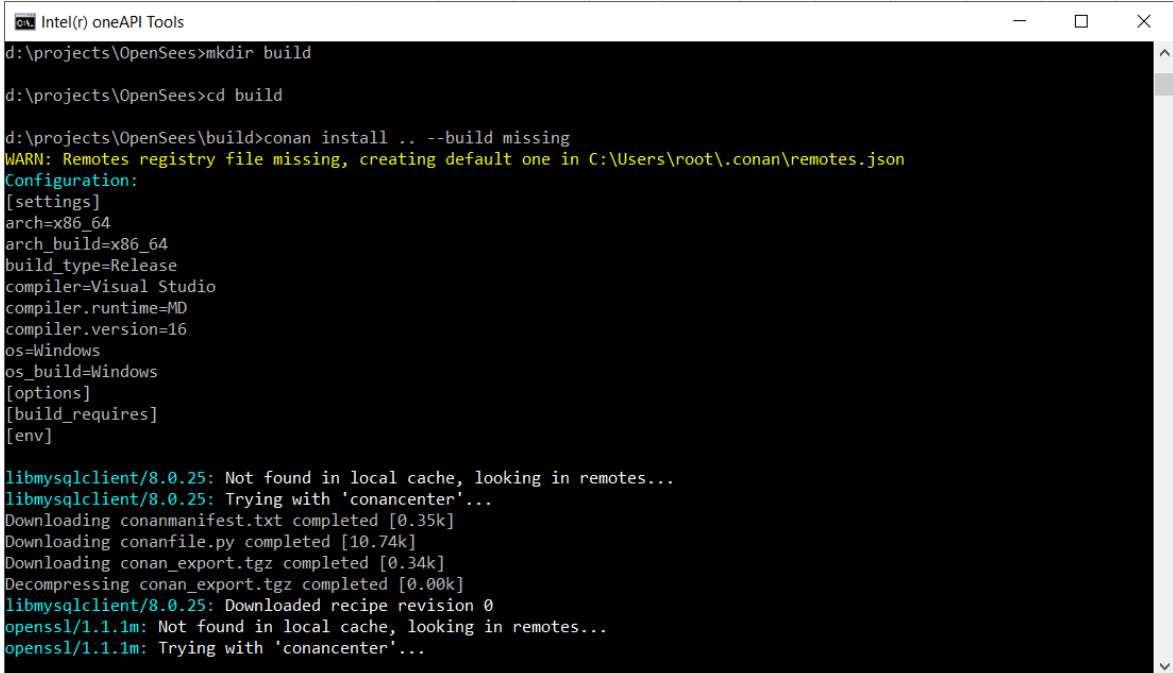
### 8.2 Create dirs

> mkdir build

> cd build

### 8.3 Install dependencies

> conan install .. --build missing

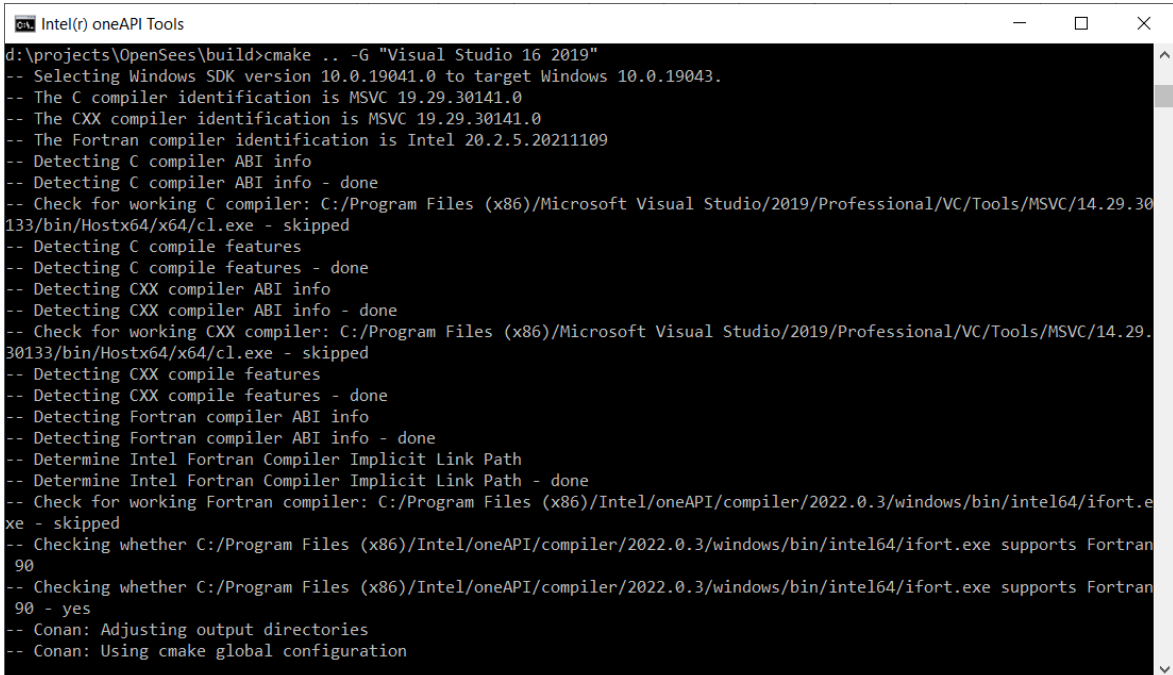


```
Intel(r) oneAPI Tools
d:\projects\OpenSees>mkdir build
d:\projects\OpenSees>cd build
d:\projects\OpenSees\build>conan install .. --build missing
WARN: Remotes registry file missing, creating default one in C:\Users\root\.conan\remotes.json
Configuration:
[settings]
arch=x86_64
arch_build=x86_64
build_type=Release
compiler=Visual Studio
compiler.runtime=MD
compiler.version=16
os=Windows
os_build=Windows
[options]
[build_requires]
[env]

libmysqlclient/8.0.25: Not found in local cache, looking in remotes...
libmysqlclient/8.0.25: Trying with 'conancenter'...
Downloading conanmanifest.txt completed [0.35k]
Downloading conanfile.py completed [10.74k]
Downloading conan_export.tgz completed [0.34k]
Decompressing conan_export.tgz completed [0.00k]
libmysqlclient/8.0.25: Downloaded recipe revision 0
openssl/1.1.1m: Not found in local cache, looking in remotes...
openssl/1.1.1m: Trying with 'conancenter'...
```

### 8.4 Prepare for build

> cmake .. -G "Visual Studio 16 2019"



```
Intel(r) oneAPI Tools
d:\projects\OpenSees\build>cmake .. -G "Visual Studio 16 2019"
-- Selecting Windows SDK version 10.0.19041.0 to target Windows 10.0.19043.
-- The C compiler identification is MSVC 19.29.30141.0
-- The CXX compiler identification is MSVC 19.29.30141.0
-- The Fortran compiler identification is Intel 20.2.5.20211109
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Check for working C compiler: C:/Program Files (x86)/Microsoft Visual Studio/2019/Professional/VC/Tools/MSVC/14.29.30133/bin/Hostx64/x64/cl.exe - skipped
-- Detecting C compile features
-- Detecting C compile features - done
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Check for working CXX compiler: C:/Program Files (x86)/Microsoft Visual Studio/2019/Professional/VC/Tools/MSVC/14.29.30133/bin/Hostx64/x64/cl.exe - skipped
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- Detecting Fortran compiler ABI info
-- Detecting Fortran compiler ABI info - done
-- Determine Intel Fortran Compiler Implicit Link Path
-- Determine Intel Fortran Compiler Implicit Link Path - done
-- Check for working Fortran compiler: C:/Program Files (x86)/Intel/oneAPI/compiler/2022.0.3/windows/bin/intel64/ifort.exe - skipped
-- Checking whether C:/Program Files (x86)/Intel/oneAPI/compiler/2022.0.3/windows/bin/intel64/ifort.exe supports Fortran 90
-- Checking whether C:/Program Files (x86)/Intel/oneAPI/compiler/2022.0.3/windows/bin/intel64/ifort.exe supports Fortran 90 - yes
-- Conan: Adjusting output directories
-- Conan: Using cmake global configuration
```

### 8.5 Build

> cmake --build . --config Release

8.6 Finish build

```
> cmake --install .
```

```
cd ..
```