

Steps for installation NS-3 2.9 version

1. Visit the site given below for the installation of ns-3.35.

<https://www.nsnam.org/releases/ns-3-35/>

Download

The ns-3.35 release download is available from [this link](#)

commands to be run in the terminal

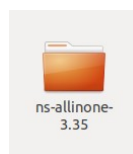
1. `sudo apt-get update`
2. `sudo apt upgrade`
3. `sudo apt install g++ python3 python3-dev python-dev pkg-config sqlite3 python3-setuptools git qt5-default gir1.2-gooCanvas-2.0 python3-gi python3-gi-cairo python3-pygraphviz gir1.2-gtk-3.0 ipython3 openmpi-bin openmpi-common openmpi-doc libopenmpi-dev autoconf cvs bzip2 unrar openmpi-bin openmpi-common openmpi-doc libopenmpi-dev tcpdump wireshark libxml2 libxml2-dev`

```
1003 sudo apt install g++ python3 python3-dev python-dev pkg-config sqlite3 python3-setuptools git qt5-default gir1.2-gooCanvas-2.0 python3-gi python3-gi-cairo python3-pygraphviz gir1.2-gtk-3.0 ipython3
1004 openmpi-bin openmpi-common openmpi-doc libopenmpi-dev autoconf cvs bzip2 unrar openmpi-bin openmpi-common openmpi-doc libopenmpi-dev tcpdump wireshark libxml2 libxml2-dev
1005 cd documents/
```

Go to the directory where the ns3 is downloaded. If possible move it to the home /desktop or document directory

Extract the folder using the command:

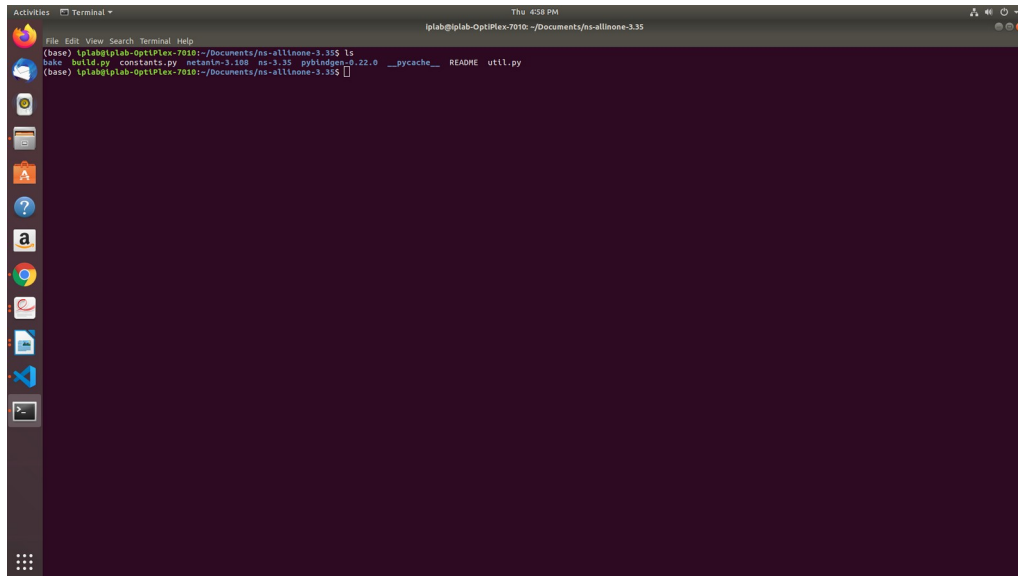
`tar xjf ns-allinone-3.29.tar.bz2`



5. **`cd ns-allinone-3.35/`**

type ls command to check the list of files:

bake constants.py **build.py** netanim-3.108 ns-3.29
pybindgen-0.17.0.post58+ngcf00cc0 README util.py



6. Be in the directory **cd ns-allinone-3.35/**

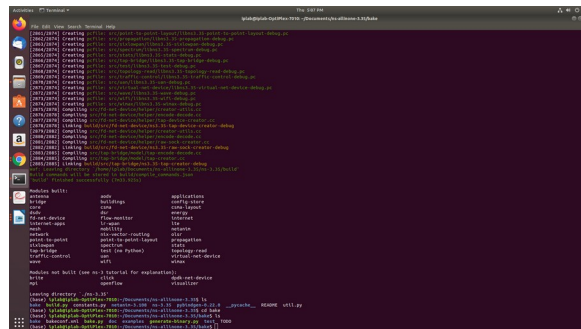
you can see **build.py**, now execute the command below

./build.py --enable-examples --enable-tests

```
1079 ./build.py --enable-examples --enable-tests
1080
```

7. once build succeeds you will see list of source files in ns3 like wave, wifi, wimax, lte, antenna, bridge, core, dsdv, flow monitor etc..

last line will be leaving directory ./ns-3.35

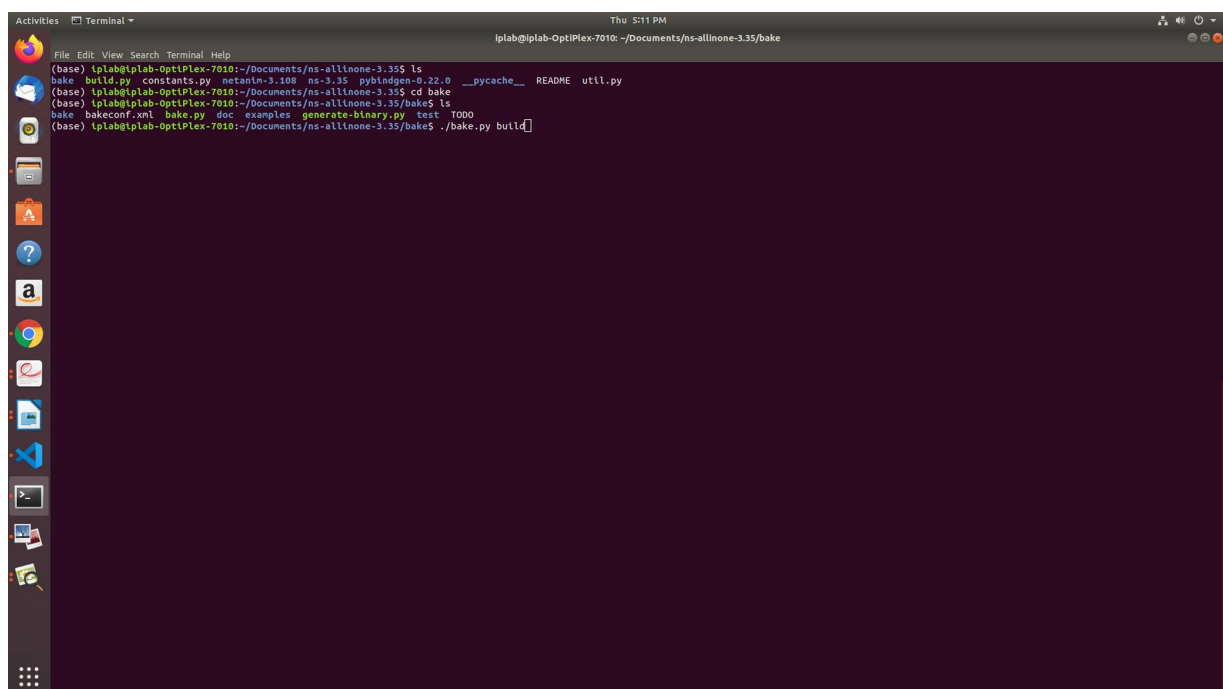


```
[base] iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35$ ls
[base] iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35$ cd bake
[base] iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35/bake$ ls
bake bakeconf.xmln bake.py doc examples generate-binary.py test TODO
[base] iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35/bake$ ./bake.py build
...
leaving directory ./ns-3.35
```

After 7th step stop your execution and run the following command to see the output

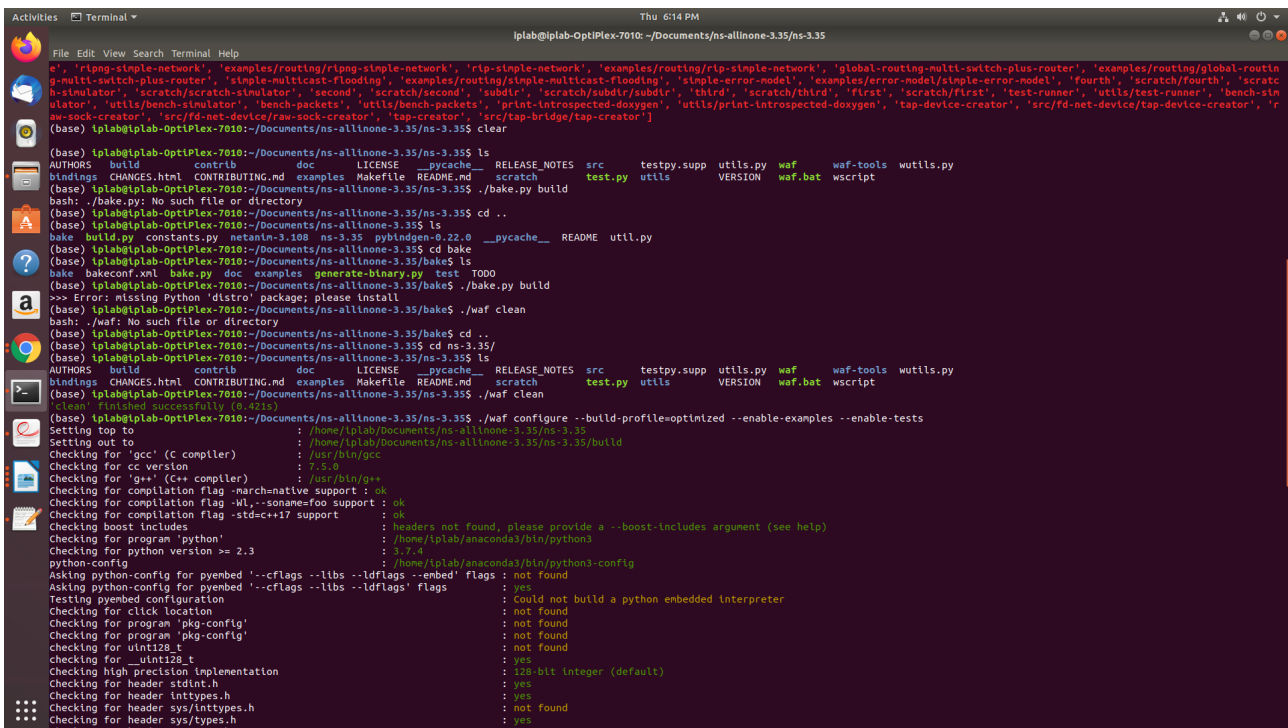
Be in the directory ns-3.35

8. Now go to the directory **cd ns-allinnone-3.35/bake**
type the command below
./bake.py build



```
File Edit View Search Terminal Help
Thu 5:11 PM
iplab@iplab-OptiPlex-7010: ~/Documents/ns-allinnone-3.35/bake
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35$ ls
[base] iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35$ cd bake
[base] iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35/bake$ ls
bake bakeconf.xmln bake.py doc examples generate-binary.py test TODO
[base] iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35/bake$ ./bake.py build
```

9. ./waf clean



```
Activities Terminal
Thu 6:14 PM
iplab@iplab-OptiPlex-7010: ~/Documents/ns-allinone-3.35/ns-3.35
e', 'ripng-single-network', 'examples/routing/ripng-single-network', 'rip-single-network', 'examples/routing/rip-single-network', 'global-routing-multi-switch-plus-router', 'examples/routing/global-routin
g-multi-switch-plus-router', 'single-multicast-flooding', 'examples/routing/single-multicast-flooding', 'simple-error-model', 'examples/error-model/simple-error-model', 'fourth', 'scratch/fourth', 'scratc
h-simulator', 'scratch/scratch-simulator', 'second', 'scratch/second', 'subdir', 'scratch/subdir/subdir', 'third', 'scratch/third', 'first', 'scratch/first', 'test-runner', 'utils/test-runner', 'bench-sin
ulator', 'utils/bench-simulator', 'bench-packets', 'utils/bench-packets', 'print-introspected-doxgen', 'utils/print-introspected-doxgen', 'tap-device-creator', 'src/fd-net-device/tap-device-creator', 'r
aw-sock-creator', 'src/fd-net-device/raw-sock-creator', 'tap-creator', 'src/tap-bridge/tap-creator']
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35$ clear
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35$ ls
AUTHORS  build      contrib    doc         LICENSE    __pycache__  RELEASE_NOTES  src      testpy.sup  utils.py    waf         waf-tools  wutils.py
bindings  CHANGES.html  CONTRIBUTING.md  examples  Makefile   README.md    scratch        test.py    utils      VERSION    waf.bat    wscript
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35$ ./bake.py build
bash: ./bake.py: No such file or directory
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35$ cd ..
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35$ ls
__pycache__  README  util.py
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35$ cd bake
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/bake$ ls
bake  bakeconf.xml  bake.py  doc  examples  generate-binary.py  test  TODO
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/bake$ ./bake.py build
>>> Error: missing python 'distro' package; please install
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/bake$ ./waf clean
bash: ./waf: No such file or directory
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/bake$ cd ..
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35$ cd ns-3.35/
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35$ ls
AUTHORS  build      contrib    doc         LICENSE    __pycache__  RELEASE_NOTES  src      testpy.sup  utils.py    waf         waf-tools  wutils.py
bindings  CHANGES.html  CONTRIBUTING.md  examples  Makefile   README.md    scratch        test.py    utils      VERSION    waf.bat    wscript
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35$ ./waf clean
clean: finished successfully (0.421s)
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35$ ./waf configure --build-profile=optimized --enable-examples --enable-tests
Setting top to : /home/iplab/Documents/ns-allinone-3.35/ns-3.35
Setting out to : /home/iplab/Documents/ns-allinone-3.35/ns-3.35/build
Checking for 'gcc' (C compiler) : /usr/bin/gcc
Checking for cc version : 7.5.0
Checking for 'g++' (C++ compiler) : /usr/bin/g++
Checking for compilation flag -march=native support : ok
Checking for compilation flag -Wl,-soname=foo support : ok
Checking for compilation flag -std=c++17 support : ok
Checking boost includes : headers not found, please provide a --boost-includes argument (see help)
Checking for program 'python' : /home/iplab/anaconda3/bin/python3
Checking for python version >= 2.3 : 3.7.4
python-config : /home/iplab/anaconda3/bin/python3-config
Asking python-config for pyembed '--cflags --libs --ldflags --embed flags : not found
Asking python-config for pyembed '--cflags --libs --ldflags flags : yes
Testing pyembed configuration : Could not build a python embedded interpreter
Checking for click location : not found
Checking for program 'pkg-config' : not found
Checking for program 'pkg-config' : not found
checking for uint128_t : not found
checking for __uint128_t : yes
Checking high precision implementation : i28-bit integer (default)
Checking for header stdint.h : yes
Checking for header inttypes.h : yes
Checking for header sys/inttypes.h : not found
Checking for header sys/types.h : yes
```

10. ./waf configure --build-profile=optimized --enable-examples --enable-tests

11. ./waf clean

12. ./waf configure --build-profile=debug --enable-examples --enable-tests

13. ./waf

```
Activities Terminal Thu 6:14 PM
iplab@iplab-OptiPlex-7010: ~/Documents/ns-allinnone-3.35/ns-3.35

e', 'ripng-simple-network', 'examples/routing/ripng-simple-network', 'rip-simple-network', 'examples/routing/rip-simple-network', 'global-routing-multi-switch-plus-router', 'examples/routing/global-routin
g-multi-switch-plus-router', 'simple-multicast-flooding', 'examples/routing/simple-multicast-flooding', 'simple-error-model', 'examples/error-model/single-error-model', 'fourth', 'scratch/fourth', 'scratc
h-simulator', 'scratch/scratch-simulator', 'second', 'scratch/second', 'subdir', 'scratch/subdir/subdir', 'third', 'scratch/third', 'first', 'scratch/first', 'test-runner', 'utils/test-runner', 'bench-sin
ulator', 'utils/bench-simulator', 'bench-packets', 'utils/bench-packets', 'print-introspected-doxxygen', 'utils/print-introspected-doxxygen', 'tap-device-creator', 'src/tap-bridge/tap-creator', 'r
aw-sock-creator', 'src/fd-net-device/raw-sock-creator', 'tap-creator', 'src/tap-bridge/tap-creator']
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35/ns-3.35$ clear

(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35/ns-3.35$ ls
AUTHORS  build      contrib    doc         LICENSE    __pycache__  RELEASE_NOTES  src      testpy.sup  utils.py    waf         waf-tools    wuttlis.py
bindings  CHANGEES.html  CONTRIBUTING.md  examples  Makefile    README.md    scratch        test.py    utils      VERSION    waf.bat      wscript

(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35/ns-3.35$ ./bake.py build
bash: ./bake.py: No such file or directory
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35/ns-3.35$ cd ..
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35$ ls
bake  build.py  constants.py  netanim-3.108  ns-3.35  pybindgen-0.22.0  __pycache__  README  util.py
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35$ cd bake
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35/bake$ ls
bake  bakeconf.xml  bake.py  doc  examples  generate-binary.py  test  TODO
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35/bake$ ./bake.py build
>>> Error: missing Python 'distro' package; please install
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35/bake$ ./waf clean
bash: ./waf: No such file or directory
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35/bake$ cd ..
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35$ cd ns-3.35/
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35/ns-3.35$ ls
AUTHORS  build      contrib    doc         LICENSE    __pycache__  RELEASE_NOTES  src      testpy.sup  utils.py    waf         waf-tools    wuttlis.py
bindings  CHANGEES.html  CONTRIBUTING.md  examples  Makefile    README.md    scratch        test.py    utils      VERSION    waf.bat      wscript

(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35/ns-3.35$ ./waf clean
[Clean] finished successfully (0.421s)
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinnone-3.35/ns-3.35$ ./waf configure --build-profile=optimized --enable-examples --enable-tests
Setting top to : /home/iplab/Documents/ns-allinnone-3.35/ns-3.35
Setting out to : /home/iplab/Documents/ns-allinnone-3.35/ns-3.35/build
Checking for 'gcc' (C compiler) : /usr/bin/gcc
Checking for cc version : 7.5.0
Checking for 'g++' (C++ compiler) : /usr/bin/g++
Checking for compilation flag -march=native support : ok
Checking for compilation flag -Wl,--soname=foo support : ok
Checking for compilation flag -std=c++17 support : headers not found, please provide a --boost-includes argument (see help)
Checking boost includes : /home/iplab/anaconda3/bin/python3
Checking for program 'python' : 3.7.4
Checking for python version >= 2.3 : /home/iplab/anaconda3/bin/python3-config
python-config
Asking python-config for pyembed '--cflags --libs --ldflags --embed' flags : not found
Asking python-config for pyembed '--cflags --libs --ldflags' flags : yes
Testing pyembed configuration : Could not build a python embedded interpreter
Checking for click location : not found
Checking for program 'pkg-config' : not found
Checking for program 'pkg-config' : not found
checking for uint28_t : not found
checking for _uint28_t : yes
Checking high precision implementation : 128-bit integer (default)
Checking for header stdint.h : yes
Checking for header inttypes.h : yes
Checking for header sys/inttypes.h : not found
Checking for header sys/types.h : yes
Checking for header sys/stat.h : yes
```

Documents/ns-allinone-3.35/ns-3.35\$

./waf --run scratch/first

After build is successfull, the ouput will be

```
Activities Terminal
Fri 1:26 PM
iplab@iplab-OptiPlex-7010: ~/Documents/ns-allinone-3.35/ns-3.35

(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35/scratch$ cd ..
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35$ ./waf --run scratch/first
waf: Entering directory '/home/iplab/Documents/ns-allinone-3.35/ns-3.35/build'
waf: Leaving directory '/home/iplab/Documents/ns-allinone-3.35/ns-3.35/build'
build commands will be stored in build/compile_commands.json
build: finished successfully (1.15s)

At time +2s client sent 1024 bytes to 10.1.1.2 port 9
At time +2.00369s server received 1024 bytes from 10.1.1.1 port 49153
At time +2.00369s server sent 1024 bytes to 10.1.1.1 port 49153
At time +2.00737s client received 1024 bytes from 10.1.1.2 port 9
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35$ cd scratch
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35/scratch$ pwd
/home/iplab/Documents/ns-allinone-3.35/ns-3.35/scratch
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35/scratch$ cd ..
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35$ cd examples/
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35/examples$ cd tutorial/
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35/examples/tutorial$ ls
examples-to-run.py  first.cc  first.py  fourth.cc  hello-simulator.cc  second.cc  second.py  seventh.cc  sixth.cc  thtrd.cc  thtrd.py  wscript
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35/examples/tutorial$ cd ../..
bash: ../: is a directory
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35/examples/tutorial$ cd ../..
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35$ cd scratch
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35/scratch$ ls
first.cc  second.cc  subdtr
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35/scratch$ cd ..
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35$ ./waf --run scratch/second
waf: Entering directory '/home/iplab/Documents/ns-allinone-3.35/ns-3.35/build'
[2481/2533] Compiling scratch/second.cc
[2482/2533] Compiling scratch/subdtr/scratch-simulator-subdtr.cc
[2483/2533] Compiling scratch/first.cc
[2482/2533] Linking build/scratch/subdtr/subdtr
[2493/2533] Linking build/scratch/first
[2494/2533] Linking build/scratch/second
waf: Leaving directory '/home/iplab/Documents/ns-allinone-3.35/ns-3.35/build'
build commands will be stored in build/compile_commands.json
build: finished successfully (2.246s)

At time +2s client sent 1024 bytes to 10.1.2.4 port 9
At time +2.0078s server received 1024 bytes from 10.1.1.1 port 49153
At time +2.0078s server sent 1024 bytes to 10.1.1.1 port 49153
At time +2.01761s client received 1024 bytes from 10.1.2.4 port 9
(base) iplab@iplab-OptiPlex-7010:~/Documents/ns-allinone-3.35/ns-3.35$
```

Only if we dont get output we need to execute the commands below

If required the following commands can be executed

14. ./waf --check-profile

15. ./waf configure --build-profile=debug --enable-examples --enable-tests

16. ./waf

17. ./waf --check-profile

18. ./build.py -- --disable-python

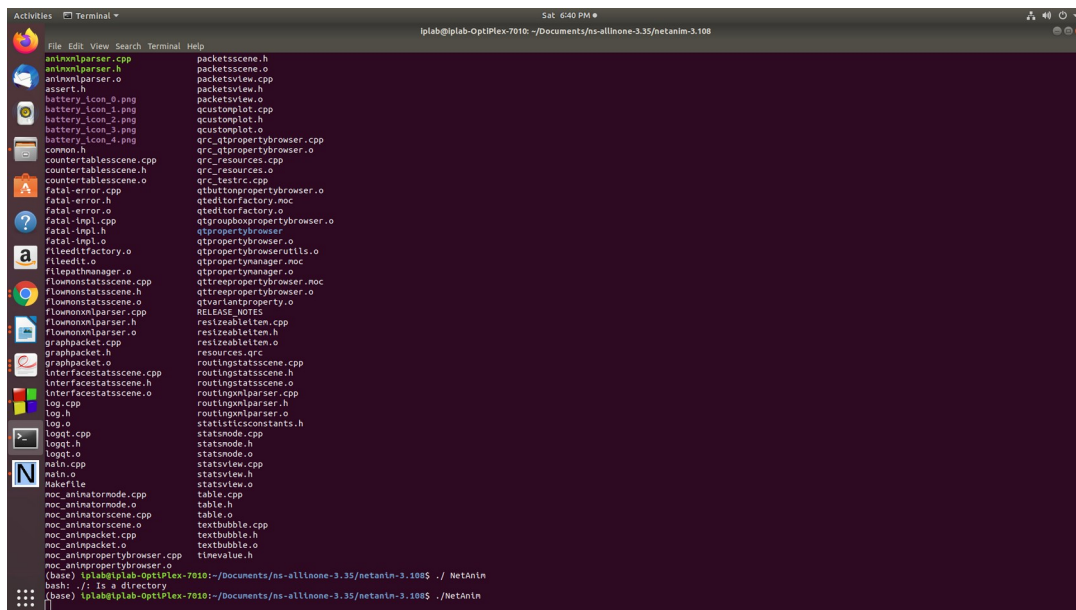
19. ./waf configure --disable-werror --enable-examples --enable-tests

20. ./waf configure --build-profile=debug --out=build/debug


21. ./waf build

22. ./waf configure --build-profile=optimized --out=build/optimized

23. ./waf build




```
sudo apt install default-jdk
```



tracemetrics-
1.4.0.zip

Go to tracemetrics directory

Trace Metrics: `cd tracemetrics-1.4.0/`

Run the jar file with the following command

`tracemetrics-1.4.0$ java -jar tracemetrics.jar`

```
(base) iplab@iplab-OptiPlex-7010:~$ cd tracemetrics-1.4.0/
(base) iplab@iplab-OptiPlex-7010:~/tracemetrics-1.4.0$ java -jar tracemetrics.jar
```

