SEAL 2.3.1

Windows (still not fixed, try Linux):

Build failed in Visual Studio: `Set environment variable TRACEDESIGNTIME=true and restart Visual Studio to investigate.`

- Follow this tutorial: https://ourcodeworld.com/articles/read/414/visual-studio-2017-ide0006-compiler-error-encountered-while-loading-the-project
- Will probably end up with the error message below:

```
Build FAILED.

C:\Program Files (x86)\Microsoft Visual Studio\2017\Community\MSBuild\15.0\Bin\Microsoft.Common.CurrentVersion.targets(1179,5): error MSB3644:
The reference assemblies for framework ".NETFramework,Version=v4.6.1" were not found. To resolve this, install the SDK or Targeting Pack for
this framework version or retarget your application to a version of the framework for which you have the SDK or Targeting Pack installed.
Note that assemblies will be resolved from the Global Assembly Cache (GAC) and will be used in place of reference assemblies. Therefore your
assembly may not be correctly targeted for the framework you intend.
    0 Warning(s)
    1 Error(s)

Time Elapsed 00:00:00.13
```

The build failed because it could not find the framework ".NETFramework,Version-v4.6.1"

- Install the latest .NET Framework SDK from Microsoft at https://www.microsoft.com/en-us/download/details.aspx?id=49978
- Install the Windows standalone SDK at https://developer.microsoft.com/en-us/windows/downloads/windows-10-sdk

^^^ still not fixed

Linux:

Installing: Download SEAL and follow the instructions in INSTALL.txt

- Step 1: cd SEAL
- Step 2: cmake .

  For this, cmake version 3.10 or higher is required; if you don't have this, download the most recent version from https://cmake.org/download/, then extract the files from the compressed folder. To install it, navigate to the directory where cmake was downloaded, and run the following commands:

  - cmake .
  - make
  - sudo make install

Then run “cmake --version" to check that cmake 3.10 or higher is being used. If you were using an earlier version before, you may get this error message:

```
CMake Error: Could not find CMAKE_ROOT !!!
CMake has most likely not been installed correctly.
Modules directory not found in
/usr/local/share/cmake-3.5
cmake version 3.5.1
```

If this occurs, run these commands:

```
sudo apt-get remove cmake cmake-data
```

Now perform the update via

```
sudo -E add-apt-repository -y ppa:george-edison55/cmake-3.x
sudo -E apt-get update
sudo apt-get install cmake
```

Now, run cmake --version again and it should show the correct version (3.10 or higher), and we can try Step 2 again. Now the command ‘cmake .’ should be successful.

It didn’t work for me. I need to download the library from:

https://cmake.org/download/

and run these commands:

./bootstrap

make

make install

We should also correct the path to cmake_root:

export CMAKE_ROOT=/usr/local/share/cmake-3.12

source ~/.bashrc

- Step 3: make

If you aren’t using the proper GCC version, the following error will occur:

```
In file included from /home/julia/Downloads/SEAL_2.3.1/SEAL/seal/util/defines.h:68:0,
                 from /home/julia/Downloads/SEAL_2.3.1/SEAL/seal/bigpolyarray.h:4,
                 from /home/julia/Downloads/SEAL_2.3.1/SEAL/seal/bigpolyarray.cpp:3:
/home/julia/Downloads/SEAL_2.3.1/SEAL/seal/util/gcc.h:7:2: error: #error "SEAL requires __GNUC__ >= 6"
 #error "SEAL requires __GNUC__ >= 6"
  ^
```

To get GCC 6, run the commands found at (screenshot below as well):
https://gist.github.com/application2000/73fd6f4bf1be6600a2cf9f56315a2d91

```
sudo apt-get update && \
sudo apt-get install build-essential software-properties-common -y && \
sudo add-apt-repository ppa:ubuntu-toolchain-r/test -y && \
sudo apt-get update && \
sudo apt-get install gcc-snapshot -y && \
sudo apt-get update && \
sudo apt-get install gcc-6 g++-6 -y && \
sudo update-alternatives --install /usr/bin/gcc gcc /usr/bin/gcc-6 60 --slave /usr/bin/g++ g++ /usr/bin/g++-6 && \
sudo apt-get install gcc-4.8 g++-4.8 -y && \
sudo update-alternatives --install /usr/bin/gcc gcc /usr/bin/gcc-4.8 60 --slave /usr/bin/g++ g++ /usr/bin/g++-4.8;
```

Running 'make' again should be successful now

- Step 4: sudo make install

  SEAL should now be installed successfully!

Building SEALExamples:

Navigate to **/usr/local/include/seal/util** and access the locks.h file by entering "sudo gedit locks.h" and change all instances of **shared_mutex** to **shared_timed_mutex**, then save.

Now navigate back to SEALExamples and try to compile the main.cpp file by entering the command: "**g++ -o "main.o" main.cpp /home/<username>/Downloads/SEAL_2.3.1/lib/libseal.a -lpthread**"

**Note: the path may need to be edited if you have downloaded SEAL somewhere else

After running this, you should be able to execute main.o by saying **./main.o**