**Building Lighthouse 2**

If you are reading this, you managed to download LightHouse 2. The build process for Lighthouse 2 has been optimized for the Microsoft Windows operating system and the Visual Studio 2019 development environment. Build files for cross-platform development are underway, but in this document we will focus on the default process.

In the main folder you will find a ‘.sln’ solution file, which references a number of projects: two applications that demonstrate the use of the engine, the render system library, and a number of render cores, which implement the low level rendering functionality.

Follow the steps below to produce a functioning executable.

SITUATION 1: NVIDIA GPU USERS

If your development machine is equipped with a reasonably recent NVIDIA GPU:

1. Download and install the latest drivers for your GPU.
2. Download and install [CUDA 11.5](https://developer.nvidia.com/cuda-downloads).
3. Download and install [Visual Studio 2019 Express Edition](https://www.visualstudio.com/thank-you-downloading-visual-studio/?sku=Community&rel=15).
4. Open the .sln file.
5. Select the ‘Release’ build configuration.
6. Right-click the imguiapp project and select ‘Set as Startup Project’.
7. In the main.cpp file of each application, you will find a number of lines that read:  
   renderer = RenderAPI::CreateRenderAPI( … );  
   Uncomment the line that is most appropriate for your hardware.
8. Build and run the application.

SITUATION 2: AMD or INTEL GPU USERS

If you do not have an NVIDIA GPU, several cores will not run on your machine. Since these rely on NVIDIA libraries (CUDA, Optix), they will also not build. Lighthouse 2 does however provide a core that runs on the CPU, which should work on any reasonably recent machine. The steps to get it to work are:

1. Open the .sln file.
2. Select the ‘Release’ build configuration.
3. Of the seven render cores, ‘unload’ all except the ‘rendercore\_softrasterizer’.
4. Right-click the imguiapp project and select ‘Set as Startup Project’.
5. In the main.cpp file of each application, you will find a number of lines that read:  
   renderer = RenderAPI::CreateRenderAPI( … );  
   Uncomment the line for the software rasterizer, i.e. RenderCore\_SoftRasterizer.
6. Build and run the application.

Some trouble shooting tips are available on the [LH2 wiki](https://github.com/jbikker/lighthouse2/wiki/TroubleShooting), but in most cases the above instructions should result in a working demo.