PA1 – Playing with OptiX

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- **NVIDIA OptiX Ray Tracing Engine**
  - **NVIDIA's ray tracing engine based on CUDA**
  - **Requires NVIDIA GPU to work**
  - **Requires Windows or Linux systems**

NVIDIA's commercial renderer, Iray, is built upon OptiX Technology

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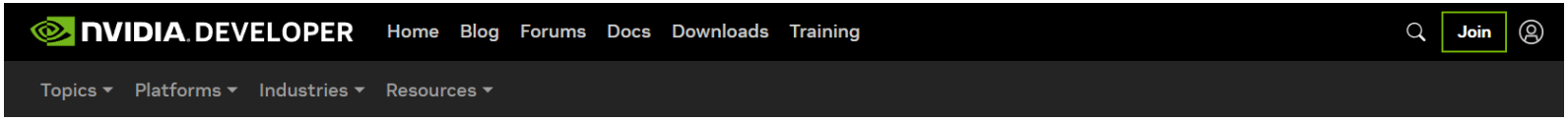
- **Prerequisite - CUDA Toolkit**
  - **NVIDIA's GPGPU interface**
  - **Download latest version at: https://developer.nvidia.com/cuda-downloads**



CUDA Toolkit 12.6 Update 1 Downloads

Select Target Platform

Click on the green buttons that describe your target platform. Only supported platforms will be shown. By downloading and using the software, you agree to fully comply with the terms and conditions of the CUDA EULA.

Operating System Linux Windows

Resources

- CUDA Documentation/Release Notes
- MacOS Tools
- Archive of Previous CUDA Releases
- FAQ

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- **Prerequisite - CMake**
  - **Used for generate various open-source build environments, including OptiX samples**
  - **Download latest version at: http://www.cmake.org/download/**

Binary distributions:

Platform	Files
Windows x64 Installer:	cmake-3.30.3-windows-x86_64.msi
Windows x64 ZIP	cmake-3.30.3-windows-x86_64.zip
Windows i386 Installer:	cmake-3.30.3-windows-i386.msi
Windows i386 ZIP	cmake-3.30.3-windows-i386.zip
Windows ARM64 Installer:	cmake-3.30.3-windows-arm64.msi
Windows ARM64 ZIP	cmake-3.30.3-windows-arm64.zip
macOS 10.13 or later	cmake-3.30.3-macos-universal.dmg
	cmake-3.30.3-macos-universal.tar.gz
macOS 10.10 or later	cmake-3.30.3-macos10.10-universal.dmg
	cmake-3.30.3-macos10.10-universal.tar.gz
Linux x86_64	cmake-3.30.3-linux-x86_64.sh
	cmake-3.30.3-linux-x86_64.tar.gz
Linux aarch64	cmake-3.30.3-linux-aarch64.sh
	cmake-3.30.3-linux-aarch64.tar.gz

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- **Once both prerequisites are installed, grab OptiX from following location:**
  - **Requires to join NVIDIA Developer Program Membership**
  - **https://developer.nvidia.com/designworks/optix/download**
- **Tested environment by TA:**
  - **Windows 11, 64 bit/Visual Studio 2022**
  - **Ubuntu 22.04**
  - **CUDA 12.1 version**
  - **Cmake 3.29.4 version**
  - **Optix 8.0.0**

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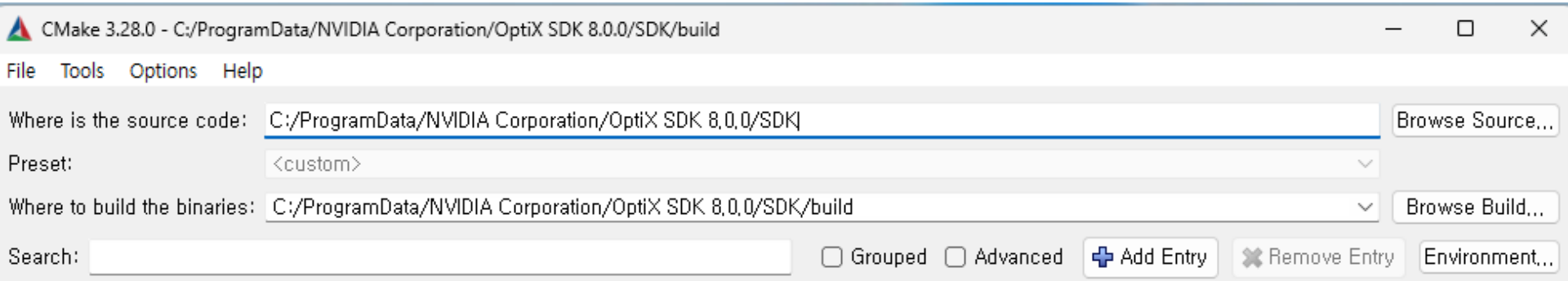
- Let's make project files for OptiX samples!
  - Run cmake-gui
  - 1) Set source code to OptiX SDK location
    - In Windows, default location is following:
    - %ProgramData%\ NVIDIA Corporation\ OptiX SDK {version}\ SDK
  - 2) Set destination to a new folder
    - Don't set it to the same folder of SDK itself



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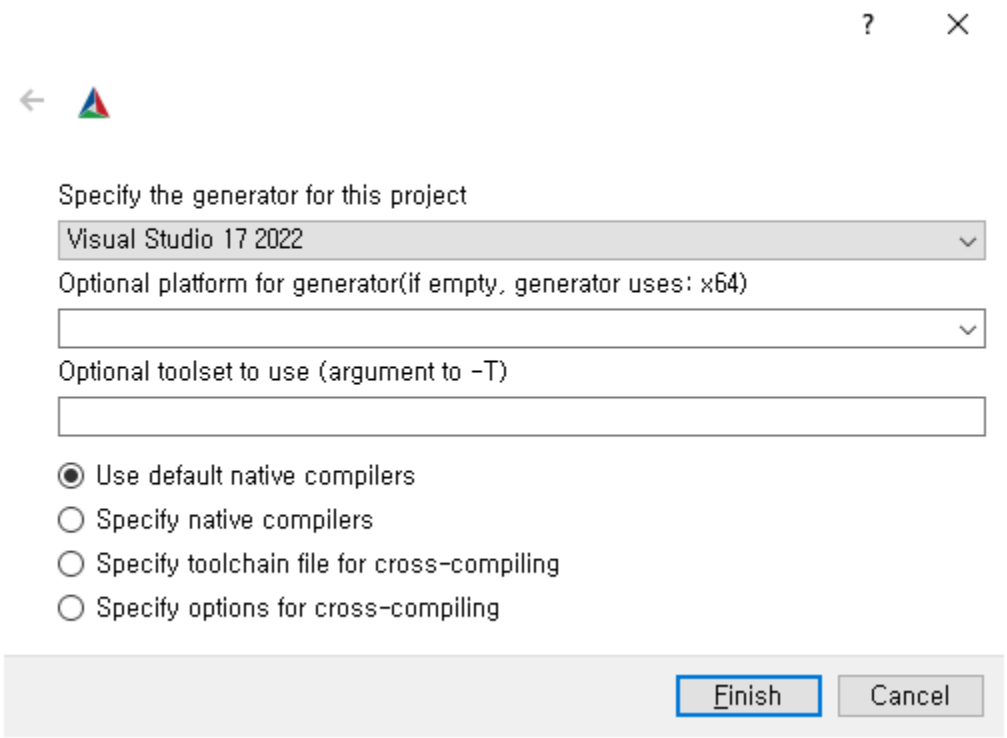
- **Let's make project files for OptiX samples!**
  - **3) Click "Configure" and specify your build environment**



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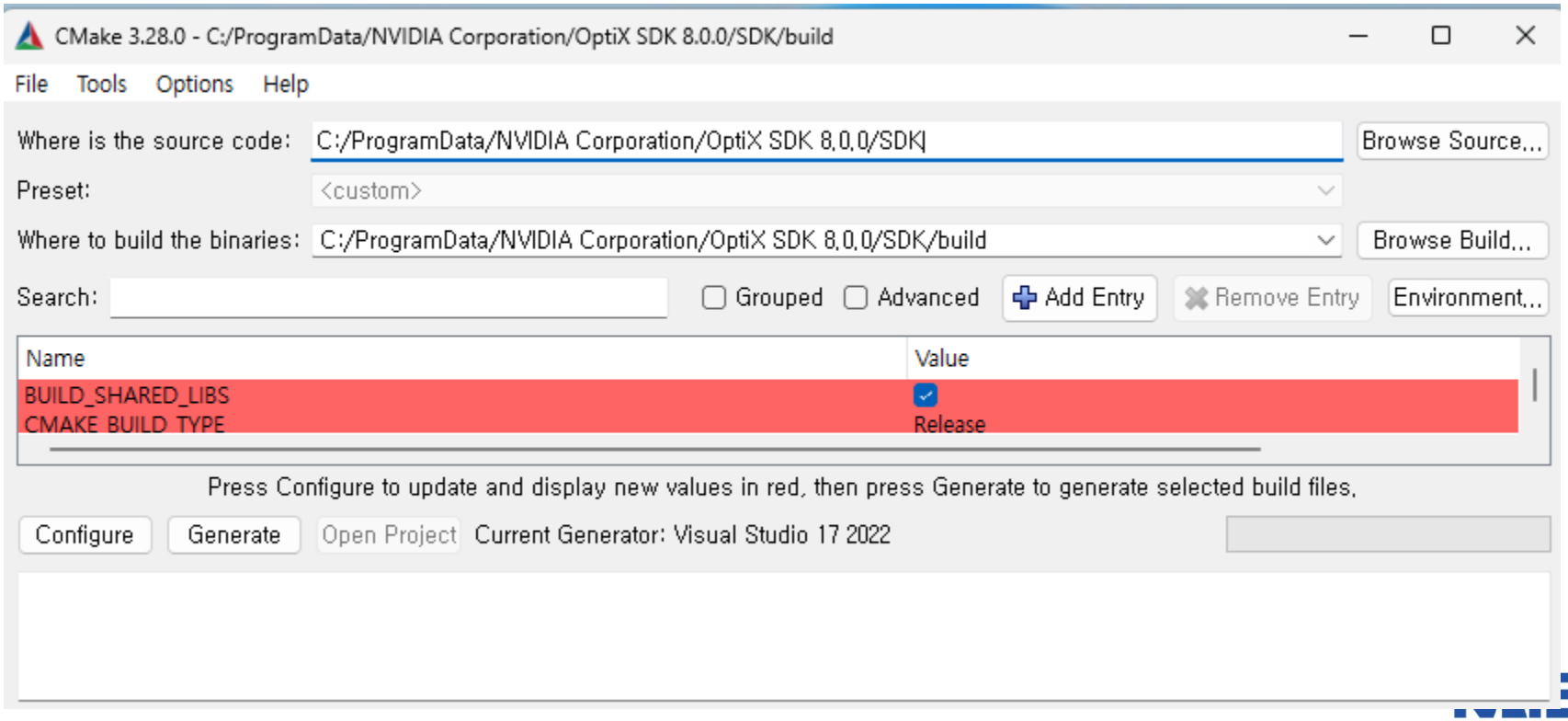
- **Let's make project files for OptiX samples!**
  - **4) If configuring is done, click "Generate" to generate build files.**



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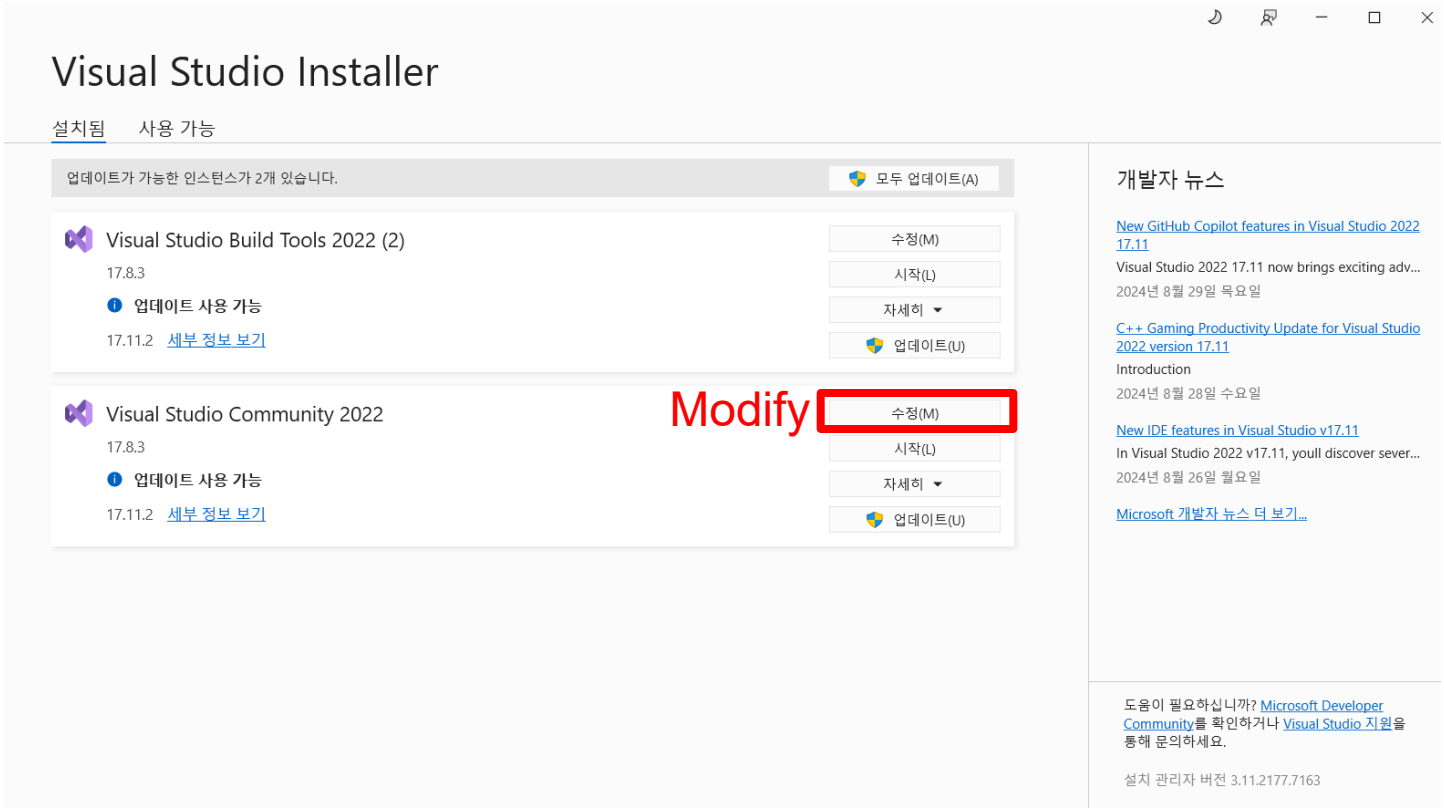

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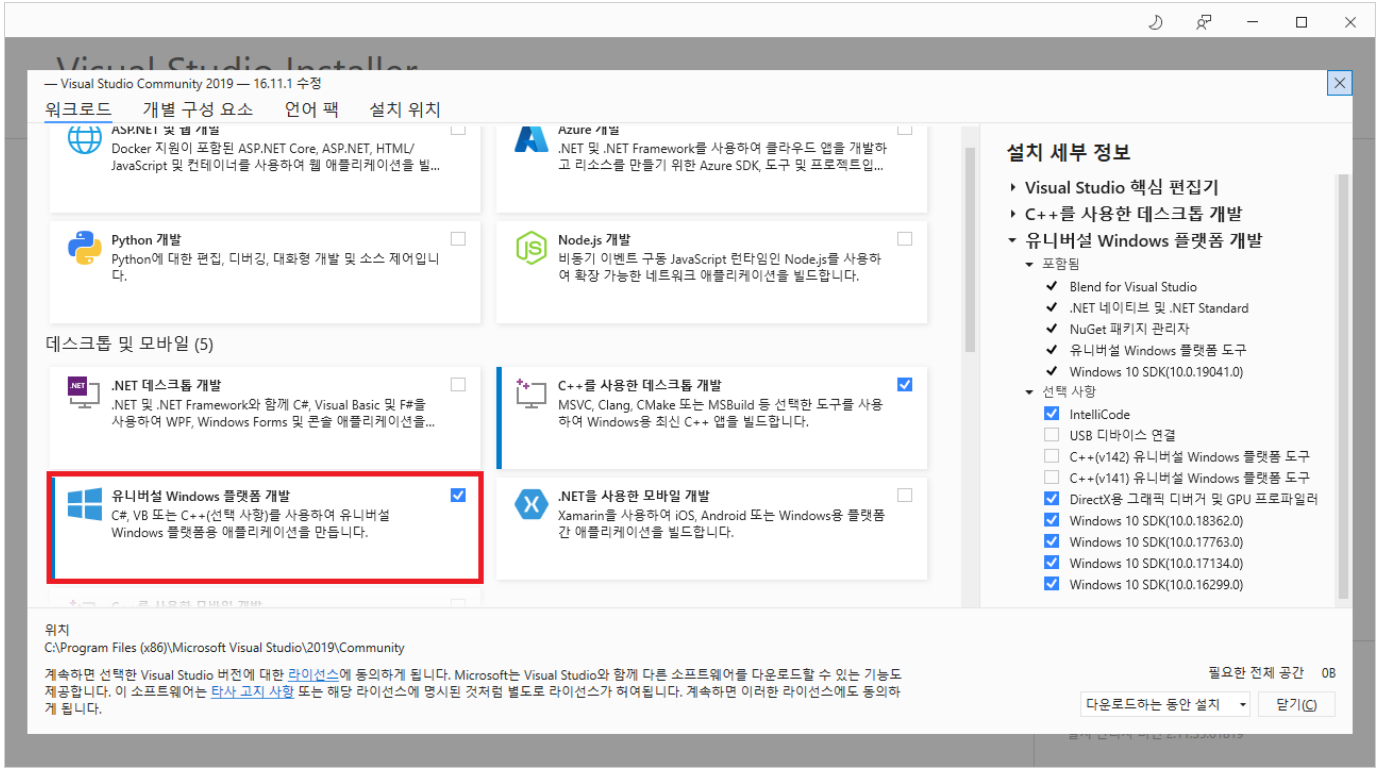

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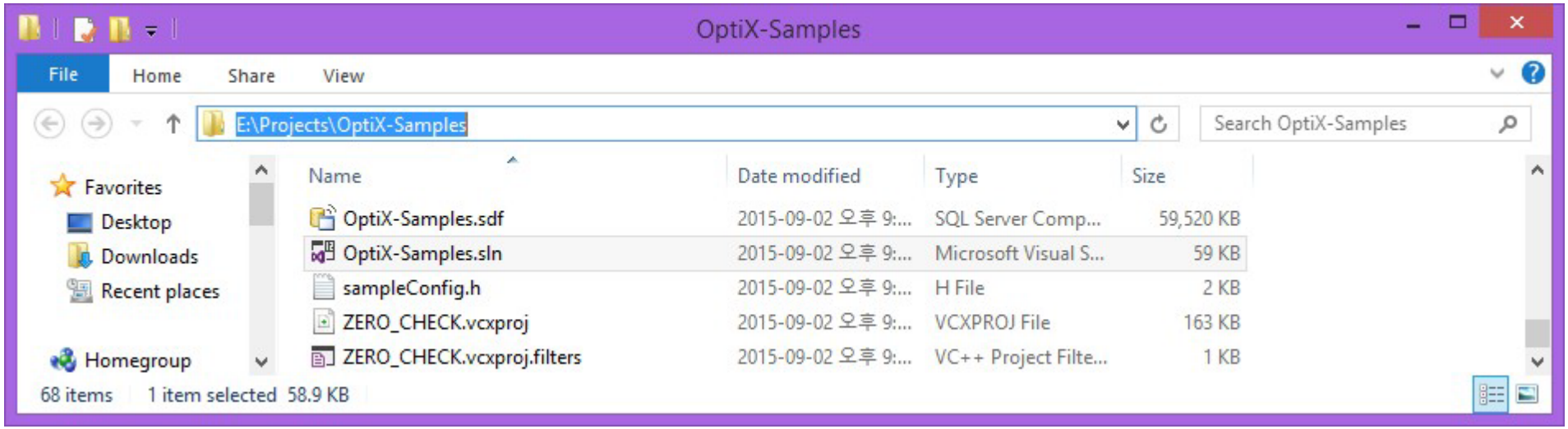
- Compile with your environments
  - In Unix-like OS, default is Makefile
- Just compile it with "make all"
  - In Windows, use Visual Studio solutions
- Build "ALL_BUILD" project to compile everything



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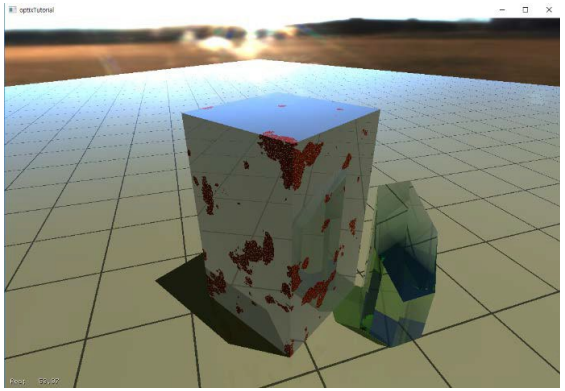
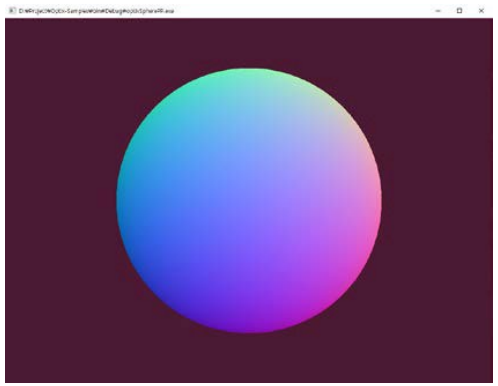
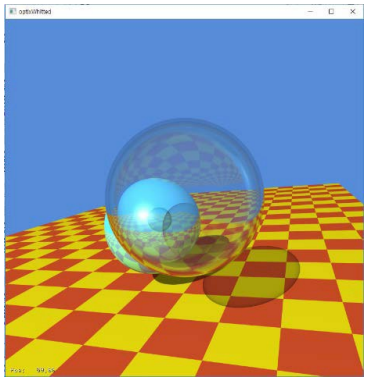
- **What to submit**
- **Submit screenshots of following projects:**
  - **optixPathTracer, optixSimpleMotionBlur, optixCutouts**
- **Also, take a look at codes for simple projects to learn how they works**
  - **Will be helpful for further course & project**
  - **optixTriangle, optixSphere, optixWhitted, …**

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