
PA1 – Playing with OptiX

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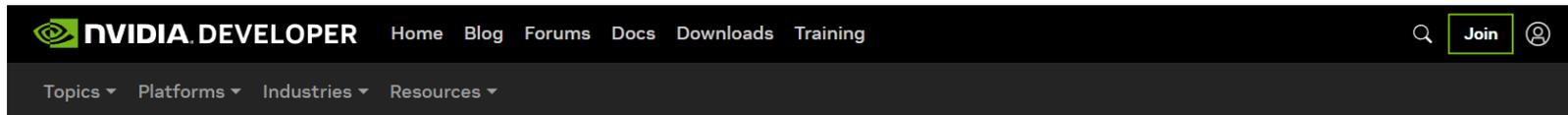
- **NVIDIA OptiX Ray Tracing Engine**
 - **NVIDIA's ray tracing engine based on CUDA**
 - **Requires NVIDIA GPU to work**
 - **Requires Windows or Linux systems**



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:

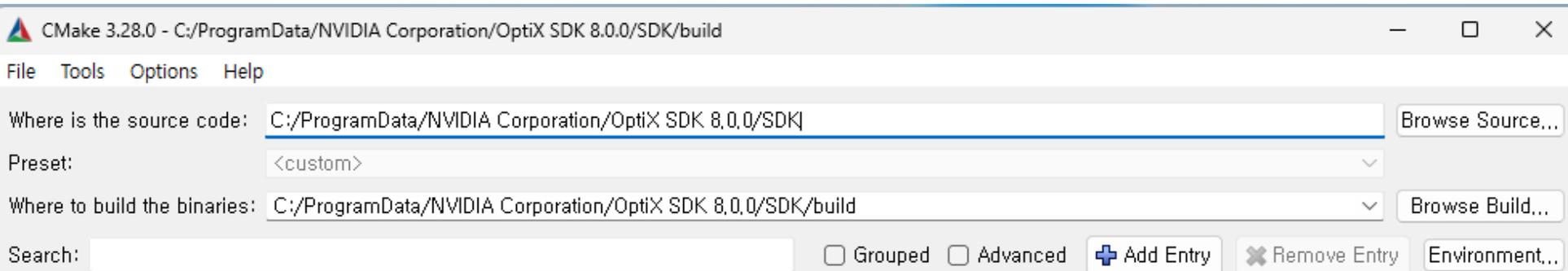
Platform	Files
Windows x64 Installer:	cmake-3.30.3-windows-x86_64.msi
Windows x64 ZIP	cmake-3.30.3-windows-x86_64.zip
Windows i386 Installer:	cmake-3.30.3-windows-i386.msi
Windows i386 ZIP	cmake-3.30.3-windows-i386.zip
Windows ARM64 Installer:	cmake-3.30.3-windows-arm64.msi
Windows ARM64 ZIP	cmake-3.30.3-windows-arm64.zip
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**

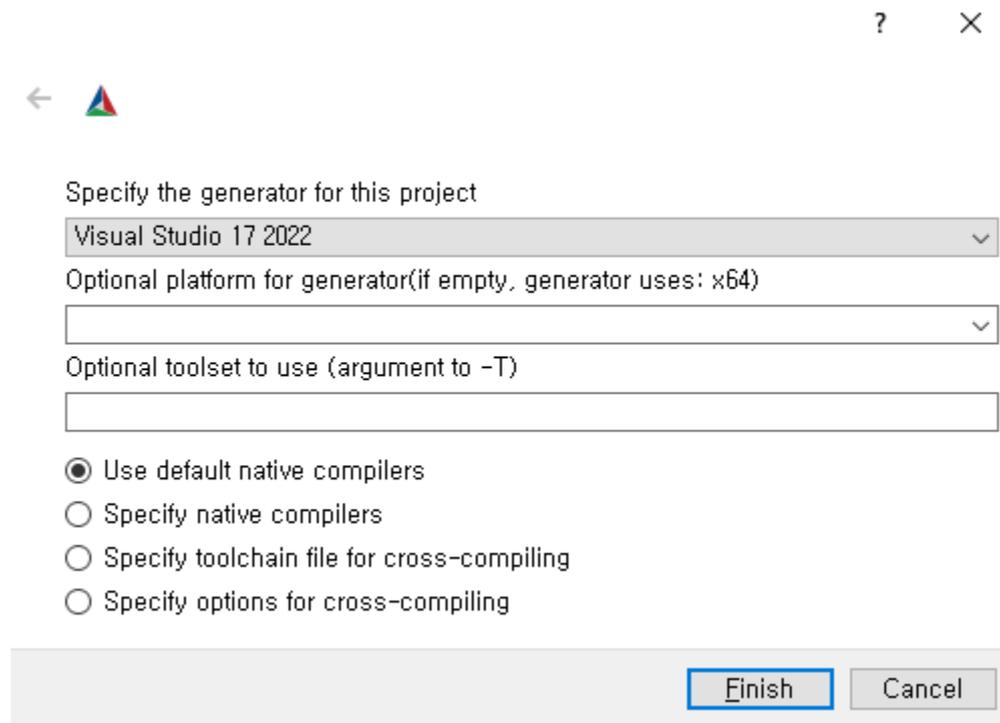
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- **Let's make project files for OptiX samples!**
 - **Run cmake-gui**
 - **1) Set source code to OptiX SDK location**
 - **In Windows, default location is following:**
 - **%ProgramData%\ NVIDIA Corporation\ OptiX SDK {version}\ SDK**
 - **2) Set 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**



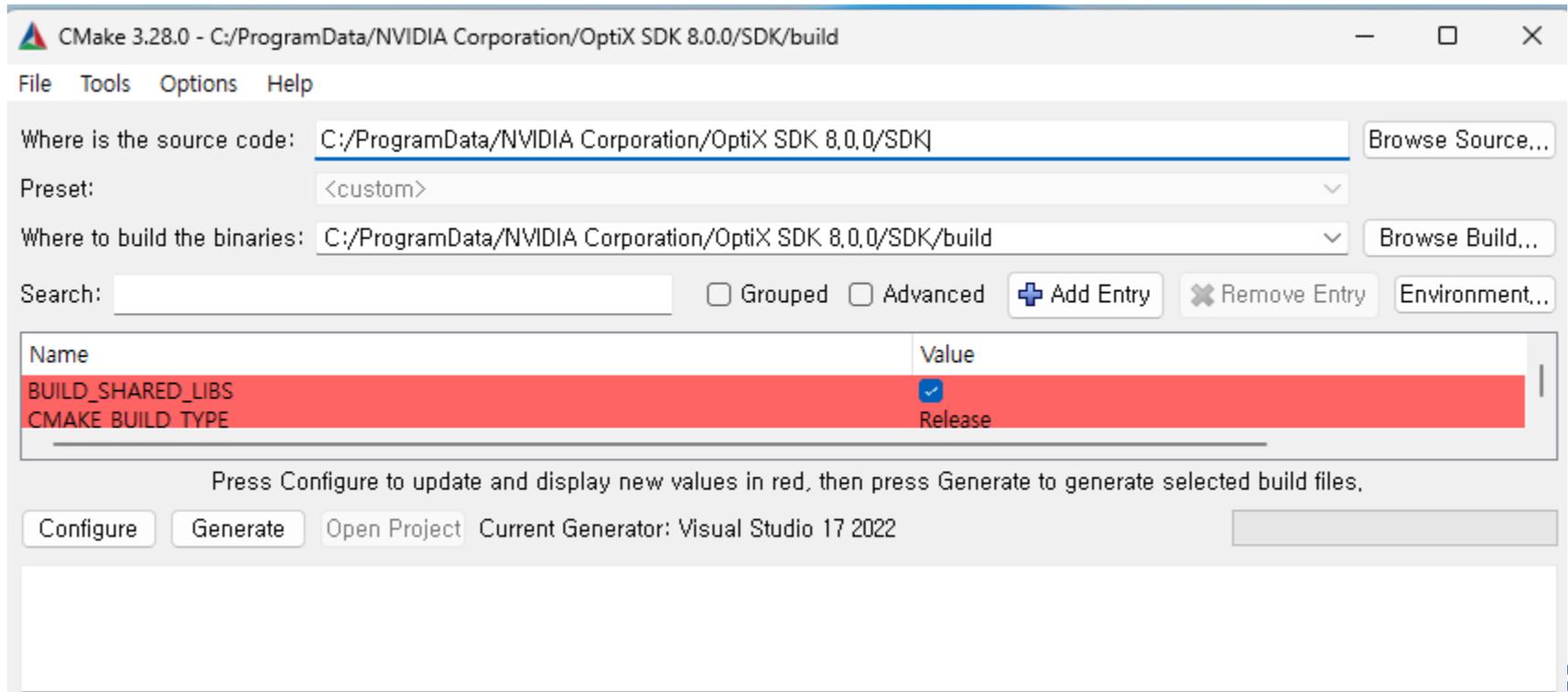
A screenshot of a configuration dialog box in Visual Studio. The dialog has a title bar with a question mark and a close button (X). On the left side, there is a back arrow and the Visual Studio logo. The main content area contains the following fields and options:

- Label: "Specify the generator for this project"
- Dropdown menu: "Visual Studio 17 2022" (with a downward arrow)
- Label: "Optional platform for generator(if empty, generator uses: x64)"
- Dropdown menu: (empty) (with a downward arrow)
- Label: "Optional toolset to use (argument to -T)"
- Text input field: (empty)
- Radio button options:
 - Use default native compilers
 - Specify native compilers
 - Specify toolchain file for cross-compiling
 - Specify options for cross-compiling

At the bottom right, there are two buttons: "Finish" (highlighted with a blue border) and "Cancel".

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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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- **Let's make project files for OptiX samples!**
 - **If Cmake does not find the compiler, you should modify your Visual Studio to install Universal Windows App Development Tools.**

The screenshot shows the Visual Studio Installer window. The title bar reads 'Visual Studio Installer'. Below the title bar, there are two tabs: '설치됨' (Installed) and '사용 가능' (Available). The main content area is divided into two columns. The left column lists installed components. The right column contains developer news and a help link. A red box highlights the '수정(M)' (Modify) button for 'Visual Studio Community 2022', with the word 'Modify' written in red text to its left.

Visual Studio Installer

설치됨 사용 가능

업데이트가 가능한 인스턴스가 2개 있습니다. 모두 업데이트(A)

Component Name	Version	Buttons
Visual Studio Build Tools 2022 (2)	17.8.3	수정(M), 시작(L), 자세히 ▾, 업데이트(U)
Visual Studio Community 2022	17.8.3	수정(M), 시작(L), 자세히 ▾, 업데이트(U)

개발자 뉴스

[New GitHub Copilot features in Visual Studio 2022 17.11](#)
Visual Studio 2022 17.11 now brings exciting adv...
2024년 8월 29일 목요일

[C++ Gaming Productivity Update for Visual Studio 2022 version 17.11](#)
Introduction
2024년 8월 28일 수요일

[New IDE features in Visual Studio v17.11](#)
In Visual Studio 2022 v17.11, you'll discover sever...
2024년 8월 26일 월요일

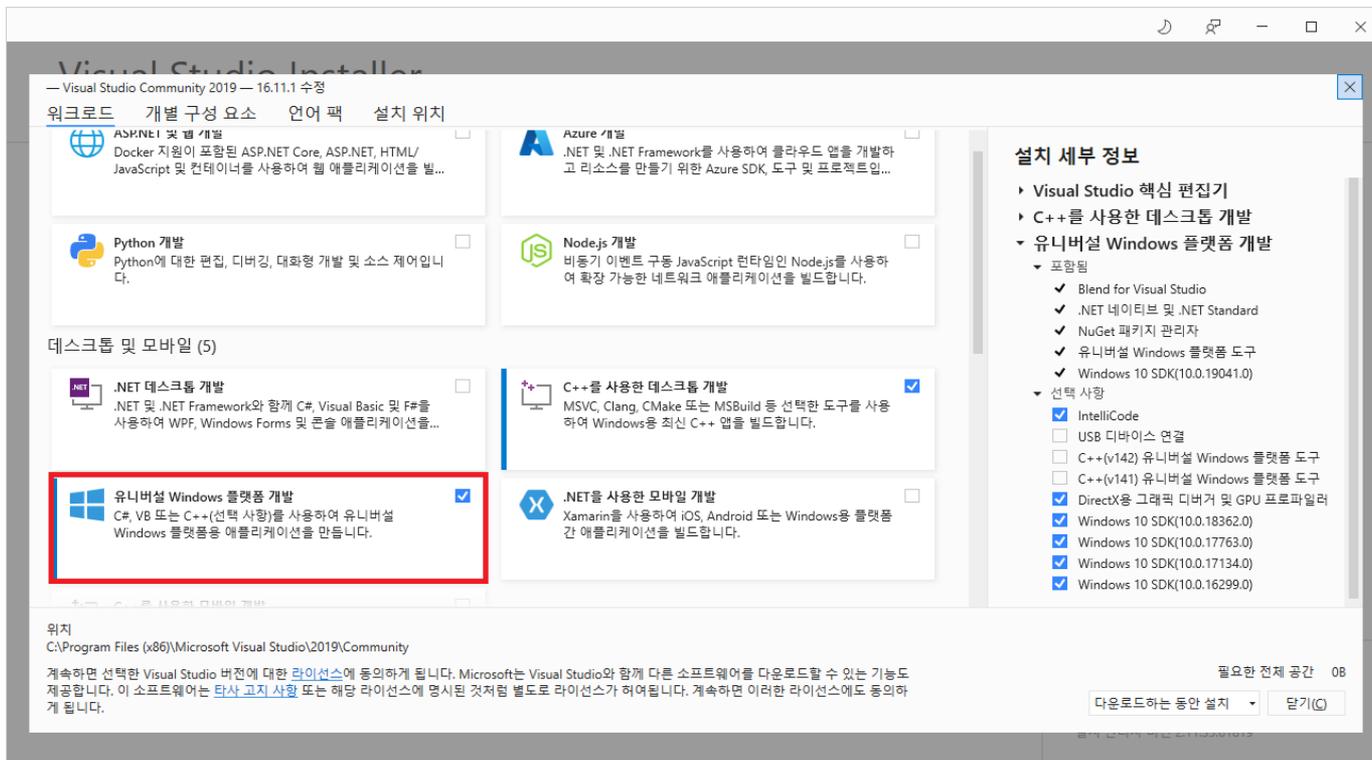
[Microsoft 개발자 뉴스 더 보기...](#)

도움이 필요하신가요? [Microsoft Developer Community](#)를 확인하거나 [Visual Studio 지원](#)을 통해 문의하세요.

설치 관리자 버전 3.11.2177.7163

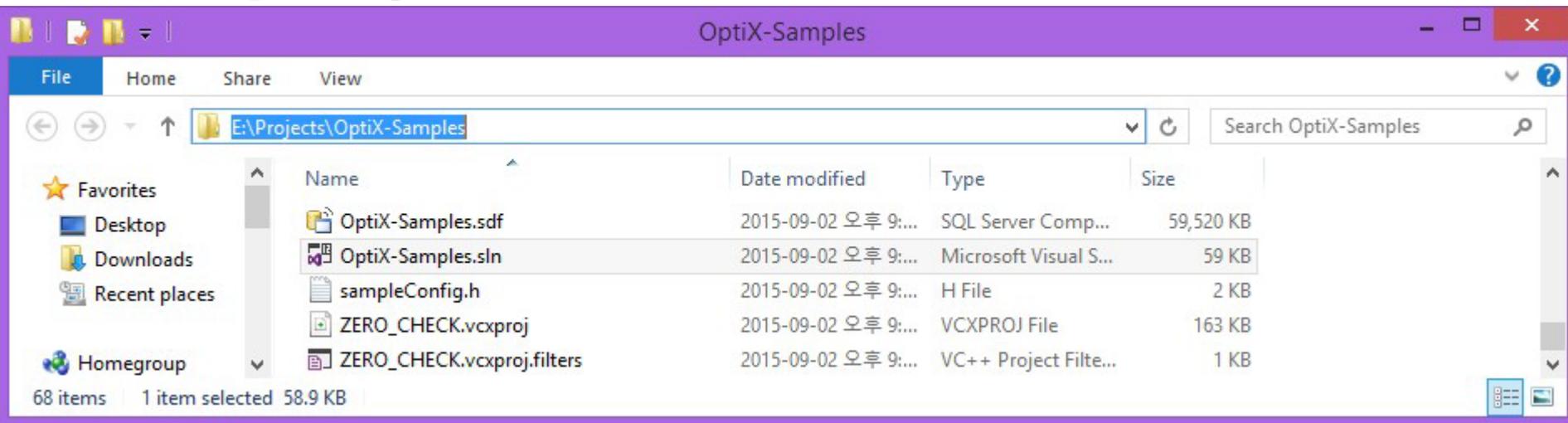
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- Let's make project files for OptiX samples!
 - If Cmake does not find the compiler, you should modify your Visual Studio to install **Universal Windows App Development Tools**.



PA1 – Playing with OptiX

- **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`, ...

