CSE 190 Discussion 1

PA1: Where's Waldo 3D

Agenda

- Introduction to Project 1
- Environment Setup
- Setup the Minimal Example
- Using Assimp to import 3D Models

Next week: import touch controllers, more technical tips
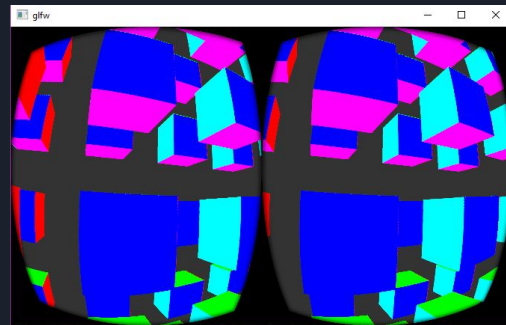
Project 1

- Link to the assignment: [Project1](#)
- Due Date: April 19th 2pm
  - Present project in person
- Features you need to implement:
  - You will generate a 3D grid of spheres (5 x 5 x 5)
  - Randomly highlight one of them
  - Select it with the Touch Controller
 - More specifications in the assignment page.

Environment Setup

- Visual Studio 2017 and Oculus drivers
  - Computers in the lab should already have them installed
  - If you are working on your own VR ready pc/laptop, you can download the needed environment at:
    - Visual Studio: https://www.visualstudio.com/vs/
    - Oculus Home: https://www.oculus.com/setup/
  - Run couple demos to make sure the environment works (See following slides)
- Oculus SDK for Windows:
  - If you are using the minimal example, the basic Oculus SDK should already be included.
  - Otherwise, download it at:
    https://developer.oculus.com/downloads/package/oculus-sdk-for-windows/

Setup the Minimal Example

- Git clone from the https://github.com/wangtim1996/MinimalVR
- Open MinimalStarter.sln.
- In the Visual Studio Solution, go to Project/Manage NuGet Packages, and add any missing libraries if needed.
  - See this tutorial from CSE 167 for more instructions on how to add packages
- Right click on the project name "Minimal " in the explorer and select "build" to build the exe file or just click start icon to run.
- If compile errors like "cannot find LibOVR.lib" happens, see the next slide on how to specify the library locations for the project
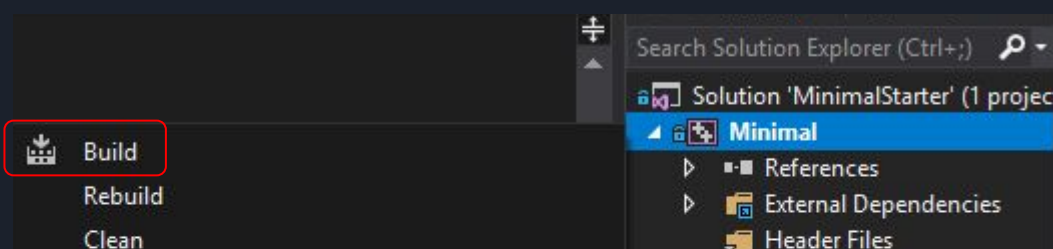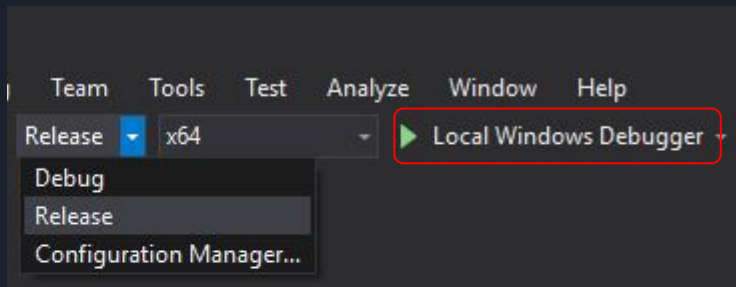
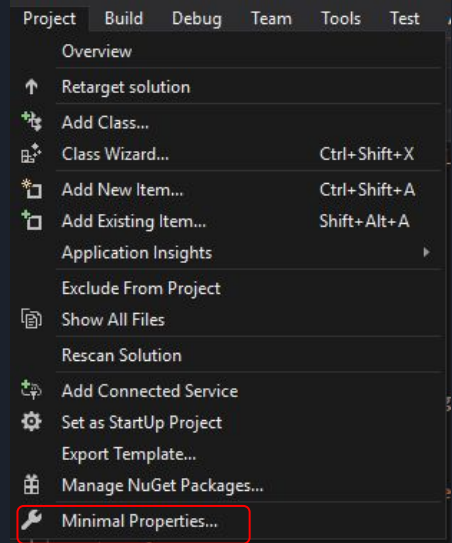# Adding Libraries to Visual Studio

1. Header Location
   a. [C/C++ -> General -> Additional Include Directories] Add the directory where you copied over the Include folder
   b. i.e. "$(SolutionDir)\Include\LibOVR;"
2. Library Location
   a. [Linker -> General -> Additional Library Directories] Add the directory where you copied over the .lib file
   b. i.e. "$(SolutionDir)\lib"
3. Library File
   a. [Linker -> Input -> Additional Dependencies] Add the library "LibOVR.lib"

Note: $(SolutionDir) is where the .sln file is and $(ProjectDir) is where the .vcxproj file is

Project	Build	Debug	Team	Tools	Test

Overview

↑ Retarget solution

Add Class...

Class Wizard...   Ctrl+Shift+X

Add New Item...   Ctrl+Shift+A

Add Existing Item...   Shift+Alt+A

Application Insights

Exclude From Project

Show All Files

Rescan Solution

Add Connected Service

Set as StartUp Project

Export Template...

Manage NuGet Packages...

Minimal Properties...

Select the right graphic card for your exe file

- Double clicked the exe file but it doesn't run?
  - There is a case that you are not able to launch the exe file built from the Visual Studio solution because the system assumes to run the exe file using the Integrated graphic card.
- This usually happens if your computer uses NVIDIA graphic card.
- If this happens to you,
  - Go to NVIDIA control panel
  - In Program settings, add your exe file to customize
  - Change the preferred graphic processor to the one that is able to run VR programs.
  - Click Apply
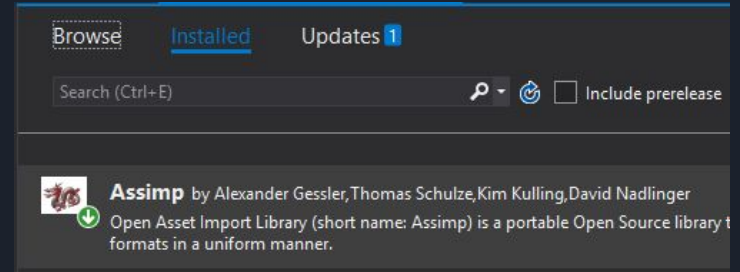 - Go back to the folder and relaunch the exe file
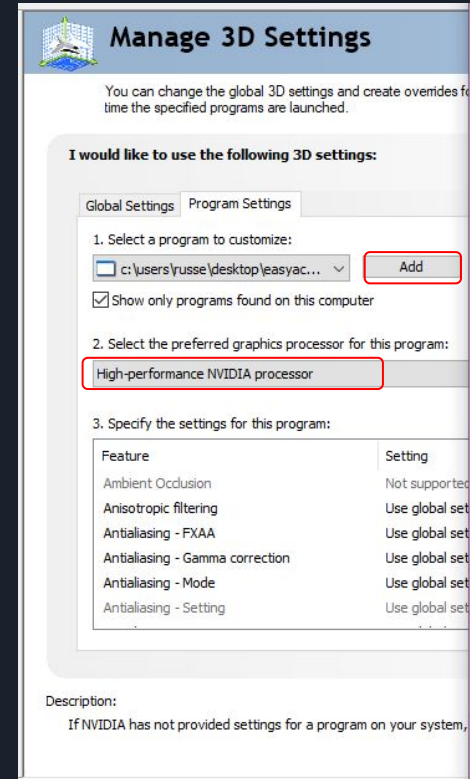
More Demos to play with

- The Minimal Example demo uses glm and might be easier to understand
  - https://github.com/wangtim1996/MinimalVR
- Oculus has several demos in the SDK you can try
  - OculusRoomTiny
  - OculusWorld
  - See https://developer.oculus.com/documentation/pcsdk/latest/concepts/gsg-intro-oneworld/
- You may use any of these as starter code for your project
  - Or you could follow the Oculus documentation to set it up on your own

NOTE: Some of the demo codes use DirectX, but we encourage you to use OpenGL and C++. With being said, we will not be able to offer much help if you want to use DirectX

3D Model Loading

- Use the Assimp library to load 3D Models:
  - http://assimp.sourceforge.net/
- You can install through the NuGet Package Manager, or compile the library yourself.
- Tutorial for using Assimp: https://learnopengl.com/Model-Loading/Assimp
  - You don't need to load textures for this assignment, but you will for future assignments
- Couple classes that might be helpful for Assimp (Details in the tutorial)
  - Mesh.h
  - Model.h

QUESTIONS?