CMSC 234/334 Mobile Computing Chien, Winter 2017

Assignment #1:
Quickstart to Creating Gear VR Apps with Unity

***Release*: Jan 3, 2017** **_Due_: Jan 6-7, 2017 (depends on signup)**
Checkoff Location: variously Ry 277 and Ry 255 (see Piazza)

How to Complete Assignment: TA's (Gushu Li or Ryan Wu) will be available for assignment "checkoff" January 6-7, Ry 255.
The Assignment and Checkoff are individual, each student should come with their own computer and mobile device, build the game using their computer and devices and then show the VR app on the mobile devices.
Please signup immediately for 10-minute checkout slot -- here: http://bit.ly/2hHazZ6

We will use the Unity interface and tools to develop VR applications in the course. If you are interested, you can explore a Gear VR development framework and demos (https://resources.samsungdevelopers.com/Gear_VR), or even Android Studio (https://resources.samsungdevelopers.com/Gear_VR/020_GearVR_Framework_Project/020_Get_Started) as another approach to develop VR apps with 3D models but it requires OpenGL ES programming. Lower level GearVR and Android tools may be useful in your course projects. Given the short time frame for this class, in the labs we focus on use of the higher level Unity interface because it enables both quick development of VR apps, and cross-platform development.

Unity can be used to develop VR apps in different platforms (e.g. Android, iOS, PC). We will support Android for VR in this class. If you use another platform, we cannot provide any support for that -- you are on your own. Unity provides two scripting languages, C# and JavaScript. Don't panic if you did not learn either of those languages. If you know Java, you should be able to handle C# for the labs (and perhaps the project) because they are quite similar.

Unity provides a wide variety of learning resources (https://unity3d.com/learn), including video tutorial, documentations, etc. You can use as much of these as you find helpful. However, here's a recommended learning outline.

You will need the following hardware to develop for Gear VR in Unity:

A Phone: Samsung Gear VR and Samsung Galaxy S7, Galaxy S7 edge, Galaxy Note 5, Galaxy S6 edge+, Galaxy S6, or Galaxy S6 edge.

GearVR Goggles: Samsung Gear VR Innovator Edition for S6 and Samsung Galaxy S6 or S6 edge

We have a limited number of Gear VR devices and Samsung Galaxy devices, and will announce a plan in class for how you can get access. If you have compatible equipment, you may use your own devices.

You will install the Unity development environment on your laptop, and then load applications into the mobile phone, and use them in the GearVR goggles.

1. Install Software
   Follow the steps at :
   https://resources.samsungdevelopers.com/Gear_VR/030_Create_VR_App_or_Game_Using_a_Game_Engine/Set_Up_Your_Development_Environment
   After completing the above steps, you should have:
   a. Java SE Development Kit 8 (remember to set the environment variables)
   b. Samsung USB driver
   c. Unity 5.3.1f1 (The latest version 5.5 may not be able to compile the tutorial code. See Technical FAQ.)
   d. Android SDK and platform tools
   e. An Oculus account and Oculus Signature File for your device

2. Build a "Hello World" app with Unity
   Follow the five exercises at:
   https://resources.samsungdevelopers.com/Gear_VR/030_Create_VR_App_or_Game_Using_a_Game_Engine

Since you will share devices, you may find that your app can not run because of signature issue. In this case, you must generate your own Oculus Signature File with your Oculus account and log in your account in the Oculus app on the phone to execute the app. These two accounts must be the same.

The goal of this tutorial for is to get familiar with Unity IDE and Android App development procedures in Unity.

You may find more about Unity tutorials at https://unity3d.com/learn/tutorials

3. Work through Details of Unity:

Now you should dive into the details of Unity development. Unity provides video tutorials and documentations:

Video Material: https://unity3d.com/learn/tutorials , in the Topics section at the bottom of the website.

Documentations: http://docs.unity3d.com/Manual/index.html

You should complete the interface & Essentials, Scripting, Graphics, Physics, Audio, User Interface, Animation, Mobile & Touch materials. Its up to you if you prefer video or documentation approaches. This will involve range of experimentation and code changes. We encourage you to do more and explore.

Assignment Elements for Checkoff:

Make the several different types of change to the "Hello World" app, to explore how Unity works, and the process of building and loading applications.

a. Move and rotate the camera in the app.
b. Change the color of one object in the app.
c. Add one additional object (anything you like but it should be easy to find) in the scene.
d. Show your name in the scene.
e. Extra Credit: Make some unique, creative changes to the app (showcase your creativity).

At the checkoff, the TA will ask you to show your source code, build the app, and then demonstrate each of these changes.

We have a Technical FAQ page at http://bit.ly/2ivMV0k. Please check the page before reporting your technical issues.