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Augmented Reality, Fall 2022
Assignment 1
Due: September 15th 2022, 23:59

Submission Guidelines:

1. There are usually two types of questions: written and programming.
2. For written:
   - Scan your written solution or compile it as a pdf file
   - Submit the pdf to https://www.gradescope.com/ under *written* solution assignment box (Entry Code: **4V24DD**)
3. For programming:
   - Write a readme file to describe how to compile and run your codes on which platform *Codes that do not run will not be graded!*
   - Save the readme and all your source codes (no binary) as a zip file.
   - Submit the archive to https://www.gradescope.com/ under *programming* solution assignment box (Entry Code: **4V24DD**)
4. Some questions may be marked as ***(UG Optional)*** . They are voluntary for undergraduate students. If answered, they will be graded and will count as bonus points; however, the maximum score can get from one assignment remains 100%. E.g., if you get 45/40 in total, you will get 100% instead of 112.5%. **Graduate students must answer all questions.**

Assignment 1: Roll-a-Ball

In this assignment, you will work through the basic Unity tutorial Roll-a-Ball, which will help develop your final project during this class. You will learn the built-in capabilities, custom scripts, basic UI, and overall experience for building a game on Unity. You will also be asked to extend the project with your own ideas at the end of the assignment.

1 Install Unity Hub and Unity Editor

- For this tutorial, it is recommended to install Unity ver.2019.4. However, it should also work with the newer versions. Follow the link https://unity.com/download and install Unity Hub. Then, go to the installed Unity Hub application, select the "Installs" tab, and click the "Install Editor" button. You should be able to select the long-term support (LTS) versions of Unity Editors (we recommend installing the 2021 version).
- Install Microsoft Visual Studio Tools for Unity and Windows .NET Scripting Backend.
- Remember, there are often issues that can be resolved by changing a different version of Unity, especially when you are developing your projects. If you encounter any bugs, you should first search for the bug and see if it is an existing problem. Check the Unity Editor version and compare it with the information you found. For most cases, you can look them up in the Unity Community or Stackoverflow.

- Unity community: https://unity.com/community

2 Develop the Roll-a-Ball Game [15 points]

- Go to the link https://learn.unity.com/project/roll-a-ball
- Follow the steps in the tutorial and complete the game development.

3 Get Creative! [10 points]

- After completing the tutorial, create a new scene (or duplicate your existing one), and try to design your own game.
- Create a hero, a villain, and add some collectible items like coins.
  - You do not necessarily need to design your own models. Your models also do not need to be very complex. There are multiple resources online that you could use to create your characters.
  - If you are an experienced Unity user (or even if you are not), you may want to use rigged models and characters. This exercise may give you some ideas for your projects in the future.
- The only requirement for this part of the assignment is to design one game level, but don't let this requirement limit your imagination. If you want to include multiple levels, feel free to do it.
- Be creative and make it fun to play.

4 Submit your Assignment

- Save your project as a Unity package. You can find very useful information in the documentation: https://docs.unity3d.com/2018.1/Documentation/Manual/HOWTO-exportpackage.html
- This is the file you will be submitting to Gradescope.
- If your file is too heavy to be uploaded, please reach out to any of our team members to find a solution. But please, do it with considerable time before the deadline.