**Department of Artificial Intelligence**

**College of Computer and Cyber Sciences**

***Introduction to Unity***

1. **Objectives**

By the end of this lab, students will:

* Set up and explore the **Unity development environment**.
* Create a **new Unity project** and customize the workspace.
* Learn how to import and manage **assets** in Unity.
* Build and organize a basic **scene** using GameObjects.
* Apply fundamental object **manipulation techniques**, such as moving, scaling, and grouping.

1. **Lab Requirements**

* **Software:** 
  1. **Unity Account:** Students must have an active account on Unity.
  2. **Unity Hub:** The Unity hub application should be downloaded and installed on the student device.
  3. **Unity Editor:** The Unity editor application should be downloaded and installed on the student device.

1. **Key Concepts**

* **What is Unity?**

Unity is a cross-platform game engine developed by Unity Technologies. It is widely used for creating both 2D and 3D interactive applications, such as video games, simulations, and virtual reality (VR) or augmented reality (AR) experiences.

* **Why Use Unity?**

Cross-Platform Development: Develop your project once and export it to over 20 platforms, including mobile, PC, console, VR/AR, and web.

Beginner-Friendly: Unity has user friendly interface allowing users to drag and drop elements and see results in real-time.

Powerful Features: Unity includes Real-Time 3D Graphic and built-in physics tools to simulate realistic environments.

* **What are the Unity Hub and Unity Editor?**

To work with Unity, you'll start with the Unity Hub. The Unity Hub is a standalone application that streamlines the way you navigate, download, and manage your Unity projects and installations.

From the Hub, you'll download and manage various versions of the Unity Editor. The Unity Editor is the application where you'll build 3D or 2D worlds and create your interactive applications.

1. **Preparation and Setup**
   1. **Unity Account:** To create and activate your Unity account, follow these steps:
      1. Visit the Unity website at ([Unity Real-Time Development Platform | 3D, 2D, VR & AR Engine](https://unity.com/)).
      2. At the top-right corner of the page, click the profile icon and choose “Create a Unity ID”.
      3. Enter your email address, create a password, and provide your full name.
      4. Agree to the terms of service and click "Create a Unity ID".
      5. Verify your email by clicking the link sent to your registered email address.
      6. After activating your account, go to “Plans and pricing” ([Real-time tools for 3D, AR, and VR development | Products](https://unity.com/products)).
      7. Select the "Unity Student" plan and click "Learn More".
      8. Under “Apply for the Unity Student plan” choose “Post-secondary students” and click "Get Started".
      9. Make sure the email you are applying with is your student email then click “Continue”.
      10. Now your student account is activated!
   2. **Unity Hub:** To download, install, and set up the Unity Hub, follow these steps:
      1. Go to the [Start Your Creative Projects and Download the Unity Hub | Unity](https://unity.com/download).
      2. Under “Download Unity” click “Download”.
      3. A file will download named “UnityHubSetup”.
      4. Install and launch the Unity Hub by locating it in your downloads folder.
      5. Run the installer and follow the on-screen instructions to install Unity Hub on your device.
      6. After launching Unity Hub, you will see a screen “Install Unity Editor” click “Install Unity Editor” and wait for it to download.
      7. Sign in using your Unity account.
      8. Go to the settings. Under “Licenses” make sure your student account is activated. If not, use the license key that was sent to your email account.
   3. **Unity Hub:** If the “Install Unity Editor” doesn’t show up, follow these steps:
      1. In Unity Hub, navigate to the "Installs" tab and click "Install Editor".
      2. Choose Unity 6 with LST.

**Note:** The Unity Editor is a large and powerful application! The download and installation process will take some time.

1. **Activities**

In this lab, you will create a simple interactive environment.

* **Exercise 1: Creating a Unity Project and Adding Assets**

In this exercise, students will create a new Unity project, explore the Unity environment, and add assets from the Unity Asset Store.

**Step 1: Create a New Project.**

* In Unity Hub, navigate to the "Projects" tab and click "New Project".
* Choose the template to be “Universal 3D”, name your project, and choose a save location.
* Click "Create Project" to open your new project in Unity.

**Step 2: Explore the Unity Environment.**

* Customize your workspace layout by going to the "Window" menu and selecting "Layouts". Browse through the available layouts, such as 2 by 3 (recommended for this lab).
* Add the Console window to your workspace for debugging purposes. Navigate to "Window > General > Console", and it will appear as a new panel.

**Step 3: Add Assets into the project.**

* Open your browser and go to the [The Best Assets for Game Making | Unity Asset Store](https://assetstore.unity.com/).
* Search for “Simple Water Shader URP” asset.
* Click "Add to My Assets".
* Accept the terms of service by clicking "Accept".
* A confirmation message, "Added to My Assets," will appear.
* Click "Open in Unity" from the Asset Store, or in Unity Hub, go to "Window > Package Manager" and select My Assets.
* If the assets do not appear, click the refresh arrow to update the list.
* Select the asset, click the "Download" button, and wait for the process to complete.
* Once downloaded, click "Import" to add the asset to your project.
* A window will display the files included in the asset. Click "Import" to confirm.
* The imported assets will now be available under the Project tab.
* **Exercise 2: Adding an Ocean and a Cube**

In this exercise, students will create a simple scene by adding an ocean and placing a cube inside it.

**Step 1: Add the Ocean.**

* In the “Hierarchy” tab, right-click and select "Create Empty" to add a new empty GameObject.
* Select the new GameObject, and in the **“Inspector”** tab, rename it to **Ocean**.
* Locate the water Prefab in the “Project” tab by navigating to the “Assets > Prefabs” folder.
* Find the prefab named "WaterBlock\_50m".
* Drag the "WaterBlock\_50m" prefab into the Ocean GameObject in the “Hierarchy” tab.
* The water will now be visible in both the “Scene” and “Hierarchy” tabs.
* Use the Move Tool in the “Scene” tab to adjust the water's position until it is clearly visible in the “Game” tab.

**Step 2: Add the Cube.**

* In the “Hierarchy” tab, right-click and select "Create Empty" to add a new empty GameObject.
* Select the new GameObject, and in the “Inspector” tab, rename it to **MoveableEntities**.
* This MoveableEntities GameObject will serve as a container for all cubes or other movable objects in your project.
* Under the MoveableEntities GameObject, create another empty GameObject.
* Rename it to **CubeEntity** in the “Inspector” tab.
* Under the CubeEntity GameObject, right-click and select "3D Object > Cube".
* The cube will now appear in the “Scene” and “Hierarchy” tabs.
* Use the Move Tool in the “Scene” tab to adjust the cube's position until it is clearly visible in the “Game” tab.

1. **Submission**

Students should follow these steps to submit their work:

* Go to the "File" tab and select "Save" (or press Ctrl+S).
* From the "File" tab, click "Build Profiles".
* In the “Build Profiles” window, click "Build".
* Choose or create a folder where your build will be saved and confirm.
* Once the build process is complete, locate the *project\_name.exe* file in the folder.
* Run the *.exe* file to test your project.
* Show the result to your instructor for confirmation.
* Take a screenshot of the running project.
* Add the screenshot to this document.
* Save the document and submit it.

1. **References**

[Unity Real-Time Development Platform | 3D, 2D, VR & AR Engine](https://unity.com/)

[Unity Student plan – Access the real-time 3D development platform and workflows professionals use to create immersive experiences across industries.](https://unity.com/products/unity-student)

[Learn game development w/ Unity | Courses & tutorials in game design, VR, AR, & Real-time 3D | Unity Learn](https://learn.unity.com/tutorial/install-the-unity-hub-and-editor)

[Unity Tutorials - YouTube](https://www.youtube.com/playlist?list=PLrXtiYmpe-is1exkozMKWU8GkNPdo-dFr)