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**American University of Sharjah**

**COE487 – Virtual and Augmented Reality**

**Fall 2021**

**Assignment 5 - Unity Development in 3D with AI**

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This assignment consists of our Library game developed in Unity that can be played in 3D in Unity using your computer keyboard and mouse.

In this version, we have implemented a library that looks just like a normal library in real life. The room was built using tools (ProBuilder & ProGrids) available in Unity. In order to make the room look like a library several objects were imported from the assets imported from the Unity asset store and several modifications were made to meet the requirements. The Main library room consists of 4 shelves and 2 tables. One of the table is filled with 4 books. Multiple lightings were also added to illuminate the room.

**Controls:**

The player can move (First Person View) by using the arrow keys. The player can also jump by using the space bar. The player can look around the room by moving the mouse. This was possible by making use of the First Person All in one controller asset available in the Unity Asset Store.

**Interaction with book:**

The player can interact with the book on the tables by holding the left mouse button and dropping them anywhere within the room by leaving the left mouse button. This was possible due to PickUp.cs script that has 2 functions. 1 function is active when the mouse button is down and here the ray is assigned to the camera’s position and therefore wherever the mouse is moved the book held also moves along with the mouse on the screen. The other function is active when the mouse button is up. Over here the gravity component in rigid body of book is set to true so that the book falls to the ground.

**Animation**:

The revolving doors have an animation that runs non stop when played.

**AI:**

This game contains a walking cat that follows the player where it moves. This is possible by using the Nav Mesh Agent and a script ‘CatFollow.cs’ which updates the destination of cat to that of players position after every frame movement of the player

**Dynamic attributes for objects:**

1. Revolving door: It has animation
2. Book: Rigid body component for physics (gravity effect), box collider for collision detection, and the ‘PickUp.cs’ script to pick the book up.
3. Cat: It has a walking animation. The cat also follows the player wherever player moves.

**References:**

Automatic Revolving Door: <https://assetstore.unity.com/packages/3d/props/furniture/automatic-revolving-door-153549>

Monitor, Lights: <https://assetstore.unity.com/packages/3d/environments/lowpoly-server-room-props-197268>

Wall, roof texture: <https://assetstore.unity.com/packages/2d/textures-materials/nice-materials-pack-vol-2-67599>

Shelf: <https://assetstore.unity.com/packages/templates/packs/snaps-art-hd-school-158106>

Table: <https://assetstore.unity.com/packages/3d/props/furniture/table-162871>

Books: <https://assetstore.unity.com/packages/3d/props/interior/books-3356>

Angular Table: <https://assetstore.unity.com/packages/3d/props/furniture/table-angular-164855>

First Person Mode: <https://assetstore.unity.com/packages/tools/input-management/first-person-all-in-one-135316>

Walking Cat: <https://assetstore.unity.com/packages/3d/characters/animals/mammals/cartoon-cat-70180>