GAME250: Technical Game Development (Spring 2023)

Lab 04

Objectives

By the end of this lab, you'll be able to:

- Use movement vectors and dot products
- Create your own blueprints

In-Lab Mission Brief

You will be making a door that can swing open in either direction, depending on the way the player walks towards it. The door should always swing away from the player.

In-Lab Instructions

Create a new project with Scalable 3D or 2D and With Starter Content.

Create a new blueprint for the door, which contains the following components in the given hierarchy:

- Frame (Static Mesh SM_DoorFrame; root component)
    - Door (Static Mesh SM_Door)
        - Walk Through Collision Box (Box Collision; to prevent the player from walking through a closed door)
    - Interact Collision (Box Collision; to trigger opening the door when the player gets near it)

HINT: set the Walk Through Collision's collision presets (found in the Details tab) set to BlockAllDynamic. Typically, these invisible collision boxes do not prevent players from walking through them, but in this case we want to prevent players from walking through the closed door.

The door should have the following behavior when a player approaches it:

- If the door is open (in either direction), close it
- If the door is closed, open it away from the player.

To open the door away from the player, the game must be able to tell the direction from which the player approaches it. The following blueprint snippet (blueprintue.com/blueprint/2fij1lnp/) can be used to determine this information:

The rest of the blueprint, including closing and opening the door, can be accomplished by using SetRelativeRotation to adjust the door's rotation relative to the door frame.

In-Lab Submission

Take a screenshot of the completed blueprint for the door.

Submit the screenshot to Canvas before the deadline.

Lab Mission Brief

You will add a key blueprint that can be used to unlock the door you have implemented in the In-Lab.

Also, if the player gets frustrated, they may shoot the door! If it gets hit too many times, the door should be destroyed off its frame so that the player may walk through it, even without the key.

Lab Instructions

In the FirstPersonCharacter blueprint, you will need to add a variable to keep track of the number of keys picked up by the player.

Create a new blueprint for the key, which contains the following components in the given hierarchy:

- Key (Static Mesh SM_Statue; root component)
    - Interact Collision (Capsule Collision)

The key blueprint should include logic so that the game knows the player picked it (or multiple keys) up.

The door should have the following behavior:

- If the projectiles hit it 5 times, destroy it.
- If the player does not have a key and walks through the door, do not open it.
- If the player has at least one key and walks through the door, open it
    - Once the key is used to open it, it becomes permanently stuck on the doorknob.
        - The key must be visible on the doorknob!
            - HINT: add a SM_Statue static mesh component to the door blueprint, but have it be invisible by default.
        - The key must be placed on the correct doorknob, on the same side as the player!
            - HINT: use the given blueprint snippet to determine the correct side.
    - The player will end up with one fewer key

The door should use variables to keep track of the following info:

- Number of times hit by projectiles
- Whether a key has been placed on the door

Lab Submission

Take screenshots of the door and key blueprints. You may need to take multiple screenshots of the same blueprint to show everything. Create multiple door instances and open them up different ways.

The doors should be:

- One whose door is destroyed
- One which is opened away from the player
- One which is opened from the other side and so should have the key on the opposite doorknob.

Submit the screenshots of the blueprints and the three doors to Canvas before the deadline.