

Overview

The Day/Night Cycle system simulates the rising and the setting of the sun within the world of the game. It does so by determining the rate at which the scene's rotational light rotates, as well as determining the color and intensity of said directional light at predetermined junctures. The system can also update the colors of selected materials at these junctures to further simulate the movement of the sun.

Scripts

The Day/Night Cycle system uses the following three scripts, *DayNightCycle*, *DayNightGUI*, and *LightingTemplateObject*.

The *DayNightCycle* script controls the rotation and speed of the directional light that represents the sun in a given scene. This script is also in charge of updating lights and materials based on provided Lighting Templates.

The *DayNightGUI* script controls the scenes GUI elements and calls the *DayNightCycle* script based on user input.

The *LightingTemplateObject* allows developers to make a “Lighting Template Object”. These objects help the *DayNightCycle* script determine when and how to update the directional light's settings as well as the settings of provided materials.

How to Use

-Scripts

DayNightCycle

- Start Hour:
The in-game hour the game should start at. Updating this in the editor updates the scene.
- Start Min
The in-game minute the game should start at. Updating this in the editor updates the scene.
- Cycle Rate
Determines how quickly the Day/Night cycle goes. This rate is measured by how many in game minutes pass per real world second.
- Lighting Templates
An array of lighting templates to determine how the light and materials are updated at specified times.
- Dir Light
The Directional Light that represents the sun in the given scene. This light should be the child of an empty game object. See the 'Light Pivot' prefab for an example.
- Ori Time
The orientation time is the time represented when the directional light's starting angle. This is used as a reference point to determine what time it is within the game.

DayNightGUI

- Dn Cycle
A reference to the *DayNightCycle* script of the scene

The following are references to GUI elements

- Hour Input
A reference to the Set Hour Input field (*HourInputField*)
- Min Input
A reference to the Set Minute Input field (*MinInputField*)
- Rate Input
A reference to the Set Rate Input field (*RateInputField*)
- Clock
A reference to the Clock Display Text object (*Clock*)

-LightingTemplate

The LightingTemplate allows the user to break a day into distinct parts to fine tune lighting events throughout an in game day. The system keeps track of how many lighting templates are provided, and will seamlessly transition between them in order.

All Lighting Templates are currently stored in the 'Assets/'Scripts/'DayNightCycle/'Lighting Template' folder. New Lighting Templates can be created by right clicking in the console window, selecting 'Create', mousing over 'LightingTemplate' and then selecting 'LightingTemplateObject'.

Each Lighting Template object has the following inputs:

Start Time:

This determines when, in game time, the rest of the template should start going into effect. This input is a float value where the whole value represents the hour, and the decimal value represents the minute in military time. For example 6.5 would be 6:30 AM whereas 17.75 would be 5:45 PM.

Light Settings:

Here the user determines how the directional light will start changing once the *Start Time* has passed. As of this writing, the following settings can be changed

- Light Color: The color emitted by the light.
- Light Intensity: The brightness of the light.

Material List: Here the user provides a list of materials they would like the template to effect. As of this writing the following settings can be provided per material.

- Material: The material the user wishes to be updated.
- Material Color Names: A list of the property names of the colors the user wishes to change. These names can be seen by looking at the Properties attached material's shader. Make sure these names match the property names exactly.
- Material Colors: A list of colors corresponding to that of the 'Material Color Names'. The elements of this array are matched with the element of the same placement of the 'Material Color Names' array.

-GUI

While the game is running, the player has access to various GUI inputs that give them control over the Day/Night Cycle.

Set Time

On the right hand side of the screen, the player is given two text inputs field as well as a button. The top input field is used to determine the desired in-game hour, while the bottom input field is used to determine the in-game minute. When the button is pressed, the scene is set to the time described in the two text input fields.

Rate

On the left hand side of the screen, the player is given yet another text input field. When modified, this field sets the rate of the Day/Night Cycle. This rate is measured by how many in game minutes pass per real world second. The higher the value, the quicker the Day/Night cycle will go. If the player sets the rate value to zero, the cycle will stop. If the player sets the rate to a negative value, the cycle will go in reverse.

Clock

Above the rate input field there is a constantly updating text element that tells the player what time it is within the game.