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TITLE

SMART HOUSE

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PROBLEMA

Create a Smart House using class programmation with C# language and working space Visual Studio. Create Multiple Types of smart devices: Lamp, EcoLamp, TwoLampsDevice, LampsRow, Door, Thermostat, Air Conditioner and A Cctv.

Funzionalità principali

Device

Every device has the following properties: an id, a name and Status.
The devices can have different types of status based on their functionalities.

LampDevice

A lamp that can be turned off or on and that can change its brightness by one or a quantity chosen between a specific range. An EcoLamp with the same functionalities as a lamp but with a reduced brightness to reduce electrical consumption. A device with two lamps which can be Eco or not, in the device is possible to change the state of one lamp or change both. Also, it is possible to change the brightness of one lamp and increase or decrease both lamps or only one.LampsRow: a device with a list of lamps. All of the Lamps can be turned off or on together or alone by specifying the ID of one lamp. The same thing can be done with Brightness: can be increased or decreased on every lamp and it is possible to change to a specific value by giving the lamp ID.

DoorDevice

The door can be opened or closed and it can be locked or unlocked. When the door is locked it is not possible to open it.

CctvDevice

The CCTV can be turned off or on. There are 2 different modes: Normal and Night. There is the possibility of recording a video from the cctv, to save a part. When the CCTV is off it is not possible to change mode or start recording.

AirconditionerDevice

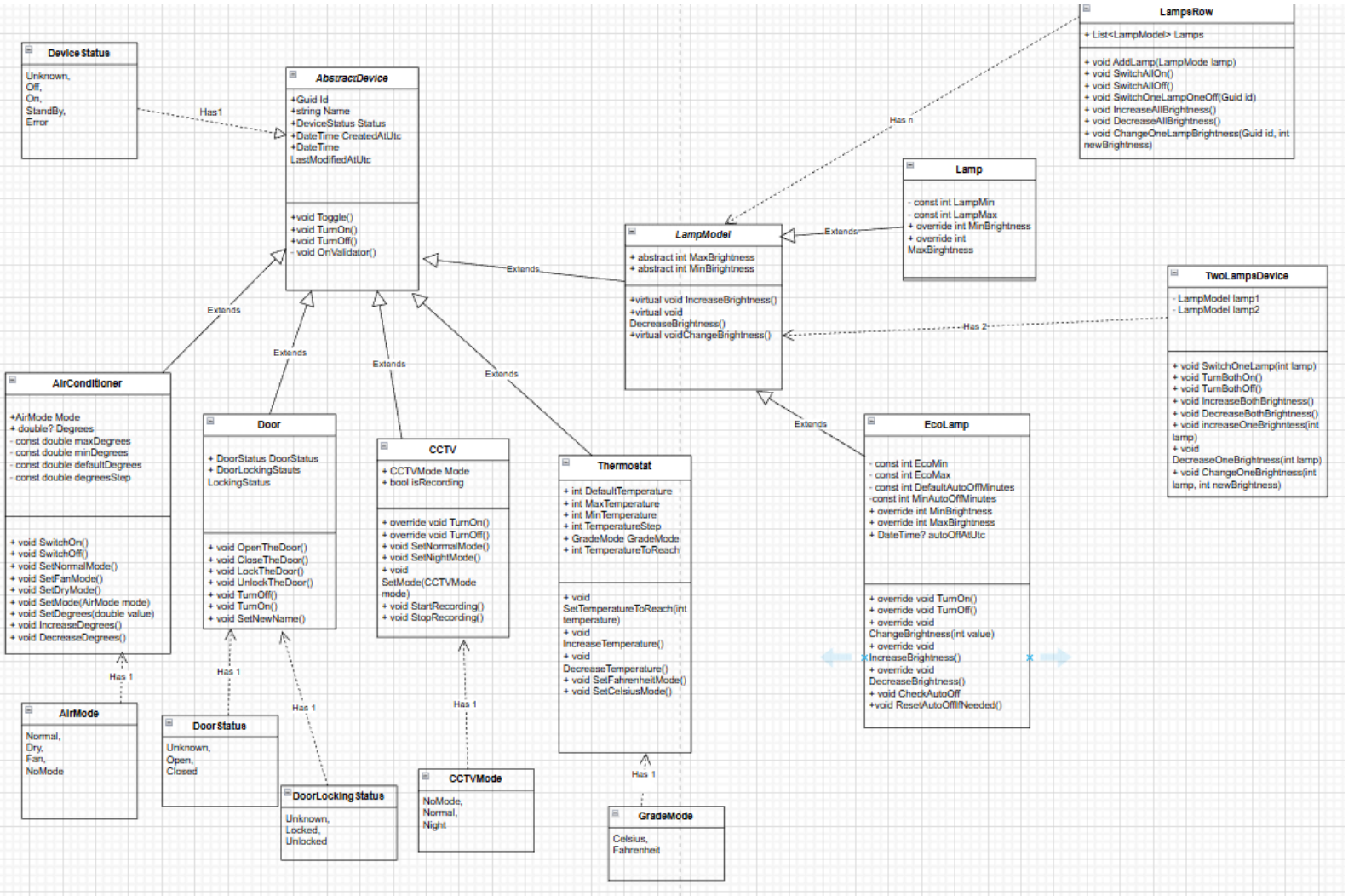
The conditioner can be turned off or on. There are 3 different modes: Normal, Fan or Dry. When the mode is normal it is possible to change Degrees by setting it or simply increasing or decreasing.

ThermostatDevice

The thermostat can be turned on or off. It can change the temperature within the set range and the grades can be chosen to be in celsius or fahrenheit.

UML

Diagramma delle Classi



Testing

The various lamp features that changed the state were tested, as were the various brightness adjustment features, including a possible error when attempting to set an inadmissible brightness level. These tests were also implemented for the Eco-Lamp, but with a brightness error set to match the maximum brightness of the Eco-Lamp. Finally, the various features of the two-lamp device were tested, allowing both lamps to be turned on and off, or to do so for just one lamp of your choice, with a possible error if the chosen lamp was neither the first nor the second. The same was done for the brightness adjustment features for both lamps and for the brightness adjustment of a single lamp, with a possible error if the chosen lamp was neither the first nor the second. Finally, tests were performed to ensure that even if the brightness of both lamps was increased or decreased, it was only increased for the lamps that were not at maximum brightness, or decreased only for the lamps that were not at minimum brightness.For every device that eredited from abstract device has been tested for the features to turn them on or off. Then were tested for the Door the lock or unlock status and the open or closed status; for the Thermostat the celsius or fahrenheit mode for the grades; For the Air conditioner the fan, dry, normal and no mode status for the type of air blowing and for the cctv the type of recording normal or night. Then for the cctv were tested the status of the recording, for the air conditioner and thermostat were tested the possibility to change the grades and for the door the feature to change name.