Python Assignment1 Tezuka Kei – HS6REY

Block1,

Class AutomationSystem: to control the automatic system.

add_device: to add device to this class's device array.
toggle_automation: to toggle the status when a user put the automation button.

Class Light: to control Light object.

turn_on: to turn on the object's status.
turn_off: to turn off the object's status.
set_brightness: to set the object's brightness.
gradual_dimming: in 5 seconds, the brightness changes to setted brightness gradually.

Class Thermostat: to control Thermostat object

turn_on: to turn on the object's status.
turn_off: to turn off the object's status.
set_temperature: to set the object's temperature.

Class Camera: to control Camera object

turn_on: to turn on the object's status.
turn_off: to turn off the object's status.
turn_on: to turn on the object's motion status.
turn_off: to turn off the object's motion status.

Block2,

I made these instances for the GUI

```
automation_system = AutomationSystem()

light1 = Light("device1")
automation_system.add_device(light1)

thermostat1 = Thermostat("device2")
automation_system.add_device(thermostat1)

camera1 = Camera("device3")
automation_system.add_device(camera1)
```

Block3,

start_automation: in every 5sec, it shows to us, the condition of the system, like whether the status is on or off on each device and current brightness, temperature and front camera's status.

toggle_automation: to control the appearance of Button, Label and Text field. And When a user put this button all device's status turn on automatically and this function is connected to start_automation function. When a user put this button again, all device's status turn off automatically.

toggle_Light: to control the appearance of Text. When a user put this button and the light status is on, it turns off, and vice versa.

toggle_Therostat: to control the appearance of Text. When a user put this button and the thermostat status is on, it turns off, and vice versa.

toggle_Camera: to control the appearance of Text. When a user put this button and the camera status is on, it turns off, and vice versa.

detect_motion: when a user this button, it's taken the case the camera found a someone and the light will be on for 20 seconds.

Test Case,

Toggle Automation On/Off:

Click the "Automation ON/OFF" button to toggle the automation status between ON and OFF.
Check if the automation status label (Automation Status: ON or Automation Status: OFF) is updated accordingly.
Toggle Light On/Off:

Click the "Toggle ON/OFF" button for the Living Room Light.
Check if the light status (Living Room Light - 25% or Living Room Light - OFF) is updated accordingly.
Check if the console (CentralT) displays the appropriate messages for turning the light on or off.
Toggle Thermostat On/Off:

Click the "Toggle ON/OFF" button for the Living Room Thermostat.
Check if the thermostat status (Living Room Thermostat - 25% or Living Room Thermostat - OFF) is updated accordingly.
Check if the console (CentralT) displays the appropriate messages for turning the thermostat on or off.
Toggle Camera On/Off:

Click the "Toggle ON/OFF" button for the Front Door Camera.
Check if the camera status (Front Door Camera - Motion: Detected or Front Door Camera - Motion: Not Detected) is updated accordingly.
Check if the console (CentralT) displays the appropriate messages for turning the camera on or off.
Random Detect Motion:

Click the "Random Detect Motion" button for the Front Door Camera.
Check if the camera status is updated to "Front Door Camera - Motion: Detected" for a brief period.
After 20 seconds, check if the camera status is updated back to "Front Door Camera - Motion: Not Detected."
Automation Rules:

Toggle automation ON.
Turn on the camera and observe if motion detection triggers the automation rule (turning on lights).
Check the console for relevant messages.