CS5272 – Assignment 2 Report

In this assignment, we design a light controller for a smart room that will respond to changes in door and air conditioner state by switching on and off the light as necessary, dimming the light to a lower intensity when the room is left, and turning on the alarm when the air conditioner is on while the room door is opened. The light controller is designed to meet the requirement given in the assignment.

Aside from the predefined requirement, we add the following assumption to the system to enhance the performance of the light controller in creating a better smart room.

1. If the door is open while the air conditioner is on, then the alarm is turned on.

2. If the door is not open or the air conditioner is off, then the alarm is turned off.

3. Door switch and air conditioner switch cannot be simultaneously pressed in one clock tick. If this happens, we will assume that only door switch is pressed.

4. When the door is closed and the air-conditioner is on, thereby indicating that the person is ready to sleep or sleeping, hence, if the door is closed after air-conditioner is on, the lamp will have maximum brightness but immediately start dimming and will turn off completely after 10 seconds.

5. If the air-conditioner is turned off while the room is closed and the lamp is dimming, the lamp will continue dimming down to its lowest intensity, but will not be turned off after 10 seconds.

The specification for led light for alarm and room light is as follows.

1 The alarm has blinking period 400 ms. The led light will be on for 200 ms and will be off for the next 200 ms.

2. The room light can dim down to 1/128 times its highest intensity.