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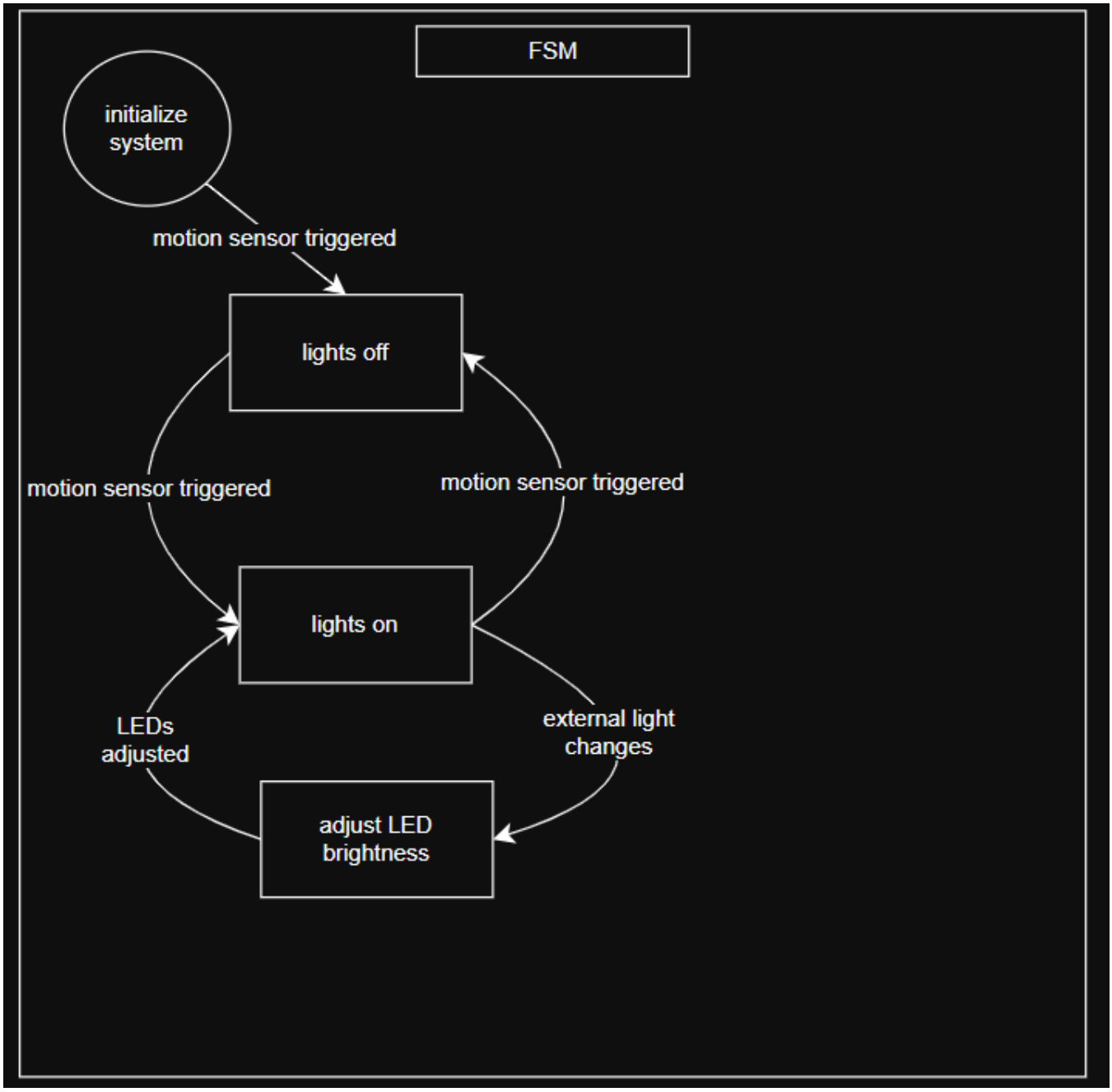
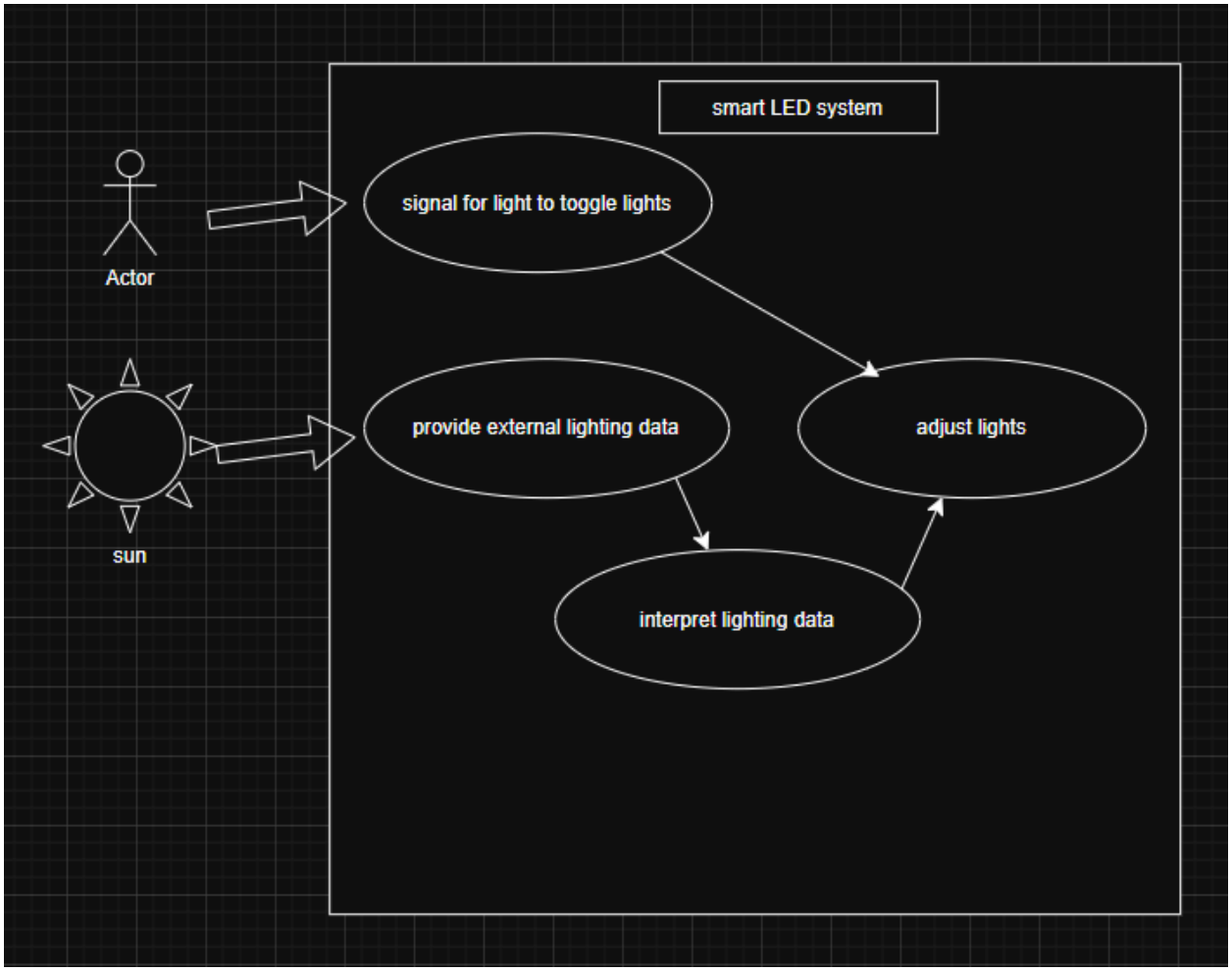
Problem Title and Statement:

Our project will be called the Smart LED Controller. The purpose of this project is to create an LED controller that automatically turns on/off lights, with automatically controlled brightness based on ambient light. The light toggle will be triggered using an infrared sensor with a range of 4-16mm, guaranteeing on/off requests are intentional. There will be a motion sensor so motions can be detected. The brightness will be controlled by a daylight sensor placed near a window, so during the day the lights will be brighter, and will dim as evening comes. This logic may be inverted while prototype testing if it makes more sense. The LED will be powered by a wall adapter, which will also be used to power the arduino.


FSM
initialize system
motion sensor triggered
lights off
motion sensor triggered
motion sensor triggered
lights on
LEDs adjusted
external light changes
adjust LED brightness


smart LED system
Actor
signal for light to toggle lights
sun
provide external lighting data
adjust lights
interpret lighting data

CRC cards

Light Controller

Responsibilities:

-increase brightness with high high external light and vice versa

-turn lights on and off

Collaborators:

toggle sensor manager

sunlight sensor manager

Toggle Sensor Controller

Responsibilities:

-detect and monitor motion sensor inputs

-pass data to light controller

Collaborators:

Light Controller

Sunlight Sensor Controller

Responsibilities:

-convert sunlight sensor readings to usable data

-pass data to light controller

Collaborators:

Light Controller

component list

Broad Item Description	specific item	status
arduino board	(1x) ELEGOO Uno R3	not ordered
LED strip	(1x) 16.4ft WS281B led strip	not ordered
5V power supply	(1x) 12W multi voltage adapter plug	not ordered
Light sensors	(x3) Adafruit BH1750 ambient light sensor	not ordered
infrared sensor	(x2) Grove- infrared reflective sensor	not ordered
breadboard, wires, capacitors, resistors	will update once specifics are known (likely during build)	already have (sourced from EE312 lab kit)