Summary Description: Controlling Lights via WIFI Access Point from a Esp8266 Web Server

Tags: electronics; software; ESP8266; Arduino; WIFI Web Server

Why I did this: I wanted to make an ESP8266 into a WIFI access point so that anyone who connects to it could control its webpage server; I figured that a fun example could be to control a string of holiday scenery lights (so any passerby stranger could change the flickering mode of the lights).

(summary pic of system)

Design Walkthrough:

Parts: Arduino WIFI compatible microcontroller (Espressif Esp8266); SG90 servo; lights with mode control

I used the ChatGPT tool to help me generate the Arduino Esp8266 html code and control functions. ChatGPT is neat tool for cutting through the logistics of googling for coding tutorials, but it’s far from perfect. I had to ask and re-ask it many times to find me proper html code for updating webpage integer values before I chose a different programming direction.

The Esp8266 creates an open WIFI access point that allows a connected user access to the 192.168.4.1 webpage where they can click a button to activate the microcontroller’s servo. The servo (which is attached beside the holiday light’s button to change modes) will rotate its arm a few degrees to manually the light’s button, thereby changing the light display mode.

(pics of system)

Lessons Learned and Future Changes:

Servos are clunky. The servo can work, but it requires precise pre-positioning in order to work properly; otherwise, if you reset the microcontroller it can automatically rotate towards the button and freeze. It would be better to open the light’s control piece (near the button) and wiring a jumper line from the button to an Esp8266 I/O port, then program the same effects as clicking the button.

References:

ChatGPT AI tool: https://chat.openai.com/