

CREATING A WORD CLOCK WITH AN ESP 32

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THE CODE

```
int hour = rtc.getHour(true);  
int minute = rtc.getMinute();  
int second = rtc.getSecond();  
  
int reset = digitalRead(19);  
int hourVal = digitalRead(18);  
int minuteVal = digitalRead(17);
```

Figure 1: Values of the real time clock are assigned to variables

```
switch (minute) {  
  case 0 ... 4:  
    minuteLight(Oclock, minute);  
    break;  
  case 5 ... 9:  
    minuteLight(Five, minute);  
    minuteLight(Past, minute);  
    break;
```

Figure 2: The minutes are lit up with a switch statement

```
if (hour > 12)  
  hour -= 12;  
if (hour == 0)  
  hour = 12;  
if ((hour == 12) && (minute >= 35))  
  hourLight(1);  
else if (minute >= 35)  
  hourLight(hour + 1);  
else  
  hourLight(hour);
```

Figure 3: Various test cases ensure that the correct hour is lit up

BUTTONS

- - Wi-Fi Sync
- - Hour
- - Minute

INTRODUCTION

Using the IDEA Lab's equipment, an ESP 32, and Arduino IDE, a word clock was constructed that features accurate time keeping. The clock displays the exact time to the minute and can be adjusted either manually or through an internet database with the push of a button.

CONSTRUCTION OF THE CLOCK



Figure 1: A laser cutter was used to create the face plate for the clock



Figure 2: A 2x4 was used to assemble the outer bezel of the frame



Figure 3: The bezel was primed and spray painted

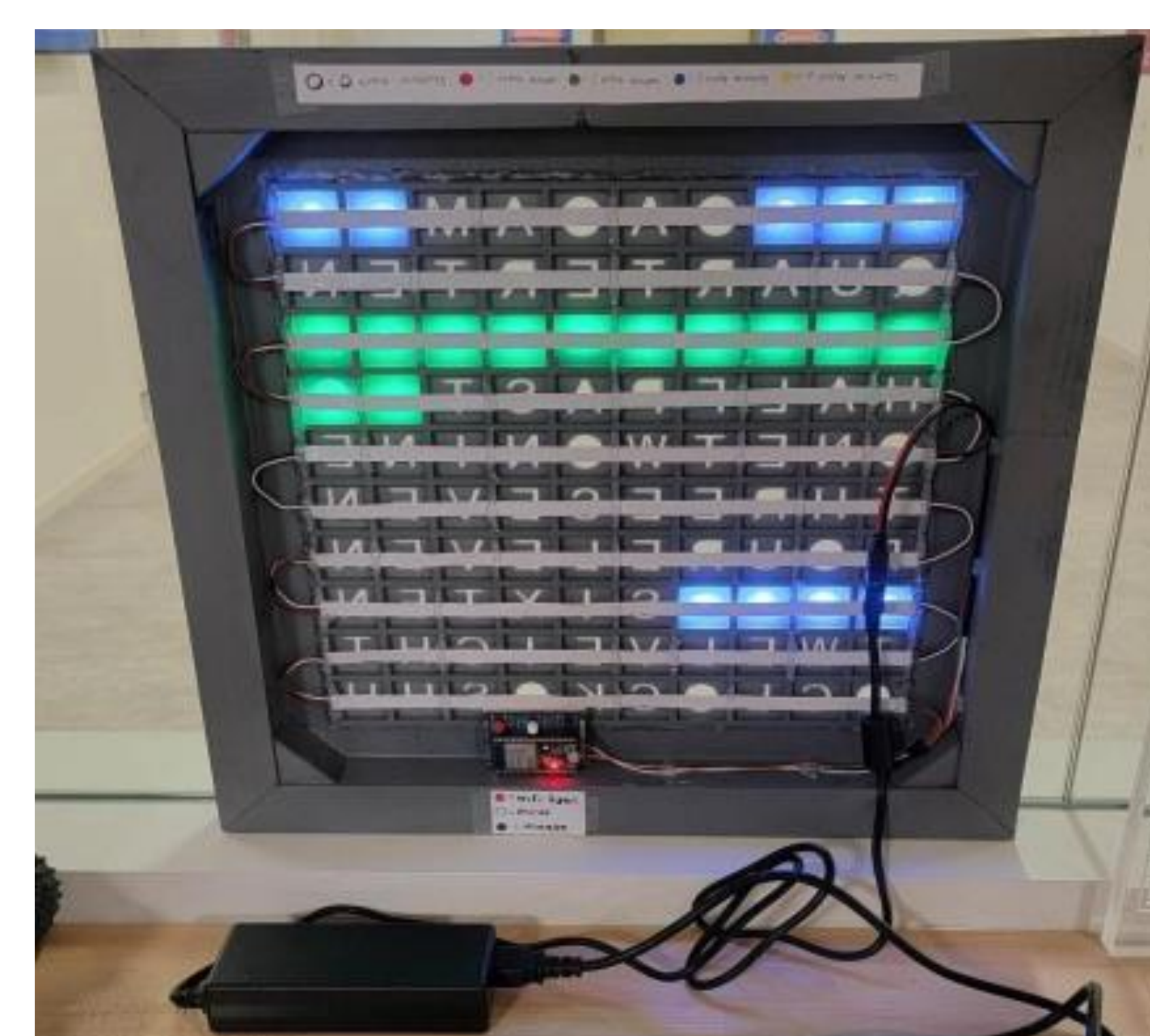
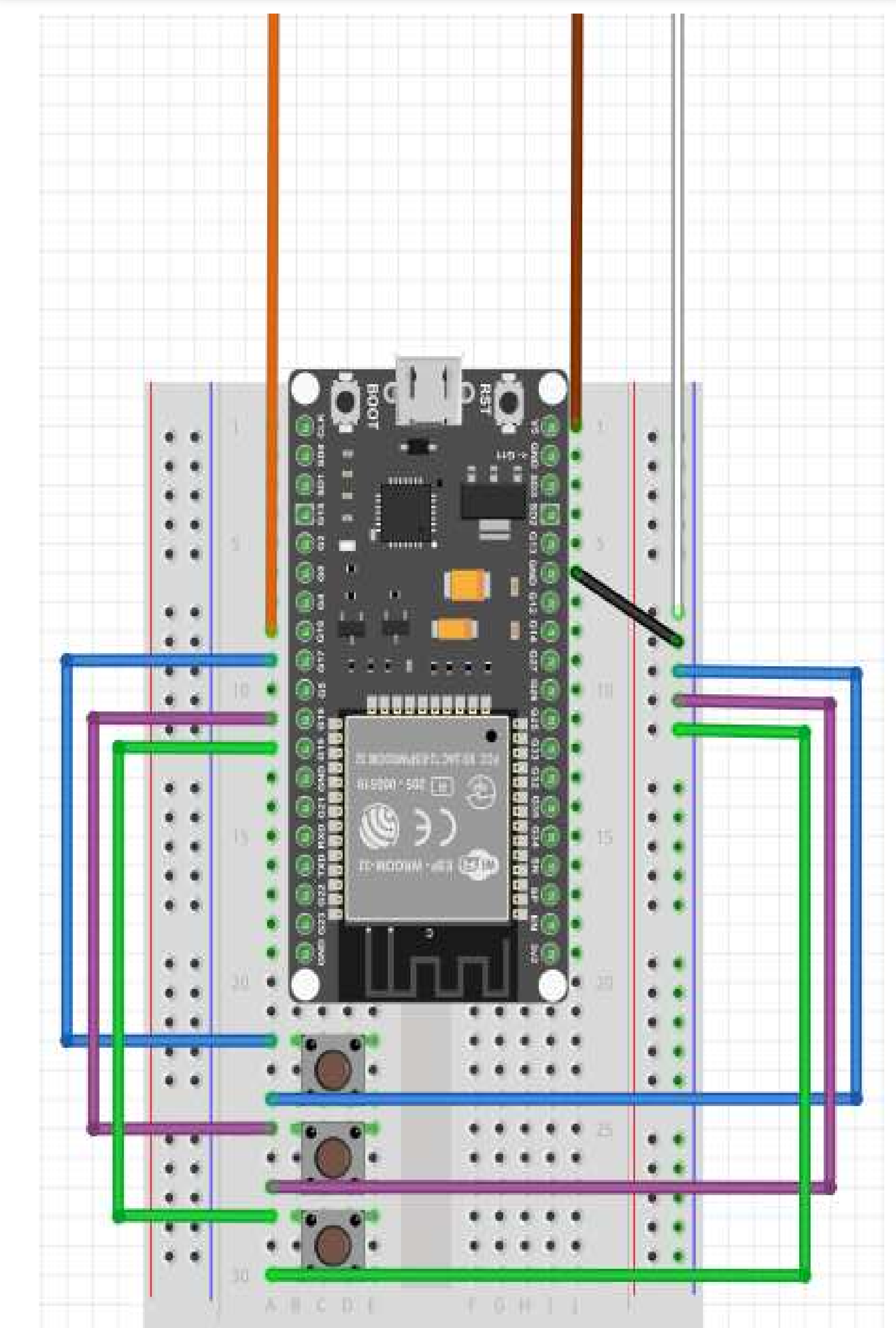


Figure 4: The electronic components were installed in the frame

SCHEMATIC



WORD DISPLAY

Hour: Updates at X:35, aka "Twenty-Five Minutes to X."

Minute: Updates every five minutes. The color of the words represents the minute.

- White: +0 Red: +1
- Green: +2 Blue: +3
- Yellow: +4