

## Lab 7

Xavier Thompson

### ChatGPT

Prompt: I am trying to connect a pi4 with an LED through a breadboard so that I can read a message from the command line in linux and transmit it in morse code through the LED. Can you write a C program to help me do this? Can you also write the code so that it takes input as this format: ./send 4 "hello ESP32"? where 4 is the number of times that the message should be sent in morse code

Result:

Certainly! Below is the modified C code for morse\_transmitter.c using the pigpio library:

```
c
#include <stdio.h>
#include <string.h>
#include <pigpio.h>
#include <unistd.h>
#include <stdlib.h>

#define LED_PIN 17 // GPIO pin connected to the LED, adjust as needed

void blinkMorseCode(char character);

int main(int argc, char *argv[]) {
    if (argc != 4) {
        printf("Usage: %s <repetitions> <message>\n", argv[0]);
        return 1;
    }

    int repetitions = atoi(argv[1]);
    if (repetitions <= 0) {
        printf("Invalid number of repetitions. It should be a positive integer.\n");
        return 1;
    }

    if (gpioInitialise() < 0) {
        fprintf(stderr, "Unable to initialize pigpio\n");
```

```

    return 1;
}

// Configure LED pin
gpioSetMode(LED_PIN, PI_OUTPUT);

printf("Transmitting Morse code for: %s\n", argv[3]);

for (int rep = 0; rep < repetitions; rep++) {
    for (int i = 0; i < strlen(argv[3]); i++) {
        char character = argv[3][i];
        blinkMorseCode(character);
    }
    usleep(1000000); // Gap between repetitions in microseconds
}

gpioTerminate(); // Clean up pigpio resources
return 0;
}

void blinkMorseCode(char character) {
    // Define Morse code for letters A-Z and digits 0-9
    const char *morseCode[] = {
        ".-", "-...", "-.-.", "-..", ".", // A-E
        "..-", "--.", "....", "...", "---", // F-J
        "-.-", ".-..", "--", "-.", "---", // K-O
        ".-.", "--.-", ".-.", "...", "-", // P-T
        "..-", "...-", ".--", "-..-", "-.--", // U-Y
        "--..", "-----", ".----", "..---", // Z, 0-2
        "...--", "....-", ".....", "-....", // 3-6
        "--...", "---..", "----." // 7-9
    };
};

if ((character >= 'A' && character <= 'Z') || (character >= 'a' && character <= 'z'))
{
    int index = (character >= 'a') ? (character - 'a') : (character - 'A');
    const char *morse = morseCode[index];

    for (int i = 0; morse[i] != '\0'; i++)
    {

```

```
if (morse[i] == '.')
{
    gpioWrite(LED_PIN, 1);
    usleep(200000); // Dot duration in microseconds
}
else if (morse[i] == '-')
{
    gpioWrite(LED_PIN, 1);
    usleep(600000); // Dash duration in microseconds
}

gpioWrite(LED_PIN, 0);
usleep(200000); // Gap between symbols in microseconds
}

usleep(400000); // Gap between letters in microseconds
}
}
```