

Task 7.3D RPi - PWM

Question 1

<https://youtu.be/oole489NjcA>

Question 2

<https://github.com/Kushan-Nilanga/SIT210/tree/master/pwm>

Question 3

This PWM system can be improved with multiple ways.

1. **Smooth transitioning between 2 duty times** - The duty time I have used now changes rapidly making the LED flicker between different systems. I can counter this by using gradual increase in duty times between the 2 distances to make the smoother transition between brightnesses.
2. **Taking average values** - The PWM signals are sensitive to the input of the ultrasonic sensor. There are situations where the output of the ultrasonic sensor becomes 0 due to loose connections of the circuit. We can mitigate this by using a running average of the distance to determine the duty time of the PWM signal.
3. **Reverse sensor scenario** - One important use of this system is as a reverse sensor for vehicles. By setting the duty time and intervals between duty times to reduce when there are obstructions we can achieve a functional reverse sensor feedback. We can follow table to change the duty time and interval to increase the usability.

Distance	Duty Time	Duty Time = 0 Interval
2m	0%	1s
1.5m	25%	0.75s
1m	50%	0.5s
0.5m	75%	0.25s
<0.5m	100%	0s