SIT210: Embedded Device Development

Task 4.2C mBed: PWM Buzzer and I2C Ultrasonic

Hardware Required

mBed
Buzzer
Ultrasonic sensor SRF08 or SR04

Software Required

Browser: mBed online IDE.

Pre-requisites: You must do the following before this task

1) All previous mBed tasks, especially 4.1P

Task Objective

In this task, you are required to build an embedded device that detects if an object is approaching, and notify using vibration motor. The principle of the device is similar to reverse sensing used in modern cars. The device will use ultrasonic sensors to detect if a solid object is approaching and alert the user using a sound buzzer, and as the object gets closer to the device, the sound gets louder or higher pitch.

Steps:

1) Based on the system you built in 4.1P, add a piezobuzzer to the PWM pins of mbed.
2) Modify the code to increase the loudness or pitch of the buzzer when the ultrasonic detects an object approaching the ultrasonic sensor.

Task Submission Details

Q1: Submit a video that demonstrates the system working.

Q2: Create a repository named ultrasonic on Github. Upload your code to the repository. Include the link to your repository here.

Q3: How would you improve the system?

Remember to submit this to Doubtfire, and check the status of any existing tasks. You may need to fix and resubmit some of your work. You want to check out why, so that you can learn from this and make it faster and easier to get later work to the required standard.