B37VB - Edinburgh – Robotics – Groups – 9 – Final Report

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Revision Table:

Contributor:	Date	Version number	Notes
Robert Reid	03/04/25	1	Added overview as discussed. Fox edited in person.
Fox Murray	04/04/25	1.1	Added Fox student No. And group project prose.
Robert Reid	04/04/25	1.1	Finishing touches / final check.

Contents

Introduction:

The aim was to get the buggy to follow light.

Theory of Operation:

LDR functions as voltage divider and outputs a voltage proportional to the light level detected. The Arduino reads the pin voltage, then converts the voltage to bits. Code compares both bit inputs from both LDR's. When both are similar the buggy travels in a straight line. If one is bigger, the buggy turns that way by changing the motors to the turning functions.

Light-Tracking Algorithm:

Two LDRs and two 2.2k Ohm resistors were fitted. The source code was then successfully uploaded. The buggy when turned on would follow light. If light was being shone on one the LDR's, the opposing wheel would speed up, allowing the buggy to turn towards that direction. Threshold for the LDR and the values for PWM are the same as in the given source code.

Results:

Buggy is functional. It can travel in a straight line and turn appropriately when following light.

Conclusions and Lesson's Learned:

Originally the resistors used were too high, so we had to switch them for lower value ones. Otherwise, the light intensity would have to be very large for the buggy to even react. Lots of minor adjustments to get the buggy to go straight and to turn.

For the group conga line project we contributed by investigating the properties and tolerances of the light bulbs used on the rear of the buggies. By using a light sensing circuit and an oscilloscope we managed to measure the voltage change using the light bulb at different distances, this information will help us in developing our "proximity circuit" used to make sure the buggies don't rear end each other or can catch up if need be. In conclusion getting a buggy to follow light was not as hard as initially though.