University of Strathclyde
Department of Electronic and Electrical Engineering

EE579 ADVANCED MICROCONTROLLER APPLICATIONS

Assessed Project

Build a vehicle capable of navigating a path along the corridor outside RC3.53 avoiding obstacles in the form of white lines, 38mm wide. You may assume that no line is closer than 50cm to any neighbouring line, but lines may turn, and in particular, lines may touch the side walls. The aim of the exercise is for your vehicle to reach the finish line 10m from the start line along the corridor faster than the other teams#.

You will be given a model car to modify. Teams will compete against the clock, and be given two runs. Runs will be limited to 2 minutes – if a vehicle has not reached the finish line by that point, the linear displacement from the starting point will be recorded.

- The dimensions of the chassis of the vehicle may not be altered. No protrusions further than 30mm from the original extent of the vehicle are permitted
- No **directional** control may be given to the vehicle after it has been started.
- If at any point on the run, the type of the vehicle touches the white line, the run will terminate at that point, and the displacement will be counted for the score.
- No full featured Operating Systems, e.g. Linux

Marks for the project will be calculated on a group basis. The design and construction of the device will be marked out of 400. The team scoring the shortest time (or greatest displacement, should no team finish), will be given at additional 40 bonus marks. The group coming second will get 20 additional marks.

The design is unconstrained. Passive components can be requested from the workshop. Other components may be requested but a case may need to be made.

A Technical Documentation File must be produced for the design. This file must include:

- The specification of the design
- Description of the hardware including circuit diagram and test points/instructions
- Description of the software including a functional description
- Usage instructions

A descriptive report on the project is not required. However, the log books of each project member must be returned with the Technical Documentation File and it is expected that these log books will describe the design and debugging process.

By default, the group mark will be divided equally between all group members. However, group members may ask for a different proportional assignment of marks between group members at the time the project is submitted. It is up to group members themselves to make decisions regarding which group member should

undertake which part of the design. The project is due to be demonstrated at some mutually agreed time during Week 12 of the Second Semester, and the Technical Documentation File must be submitted on or before the Friday of Week 12 of the Second Semester. The mark allocated to each student will be considered to be a percentage, 70% of which will go towards the final course mark. The remaining 30% of the final mark will come from the log book and assignments.

Room RC3.53 is allocated to the class on Friday for constructing and testing the hardware. Safety regulations require that more than one person be present in the room when any work is carried out - attending as a group satisfies this requirement.

DE JONCKHEERE PETER JOSEPH	201423878	1	BARNES JAMIE	201416563	7
FAGAN ANDREW	201446533	1	GRAHAM RORY	201511649	7
HANNAWAY STEPHEN JAMES	201410763	1	KONG WAI-GEIT	201515390	7
STEWART GREG	201446478	1	MCCLEARY JAMES	201514443	7
DUNPHY RAYMOND	201424662	2	CARRANO IVO	201225686	8
GAFFNEY MATTHEW	201426931	2	HAMILTON DANIEL	201425189	8
MILLER KYLE	201427880	2	MACDONALD THOMAS	201425846	8
MACPHERSON LIAM	201446567	2	MCDONALD MATTHEW	201402566	8
BRYDEN PAUL DAVID	201412877	3	CLAYTON ANDREW	201503905	9
CHEUNG JAMES	201516419	3	MCTAGGART AHREN	201515502	9
RUDZKI JAKUB	201502536	3	DOUGALL FINDLAY	201416871	9
VINAYAGAMOORTHY THUSHYANTHAN	201427929	3	SPENCE JOHN	201410118	9
FICKLING CALLUM	201420260	4	WHITE JAMES	201514735	10
MACLEAN ANGUS	201416619	4	HENDERSON LEWIS	201323743	10
MCCUBBIN DAVID	201412788	4	SEATON STUART	201413752	10
SLAVIN JAMES	201402736	4	HIGGINS JAMES	201893226	10
FITZPATRICK GRAEME	201518348	5	BALAN MARIUS-LIVIU	201406454	11
NADEJDE DANIEL	201547397	5	WILLIAMS RHYS	201401318	11
SIAUCIULIS MARIUS	201546650	5	MROZOWSKI MARCIN	201414019	11
SHAHID AAHID	201866365	5	WILCOX MARTIN	201425074	11
AL-KENDI MAZIN ABDALLAH AHMED	201635661	6	BÉCAM MAUD	201840525	12
CANAVAN CHRISTINE	201401026	6	DJOUHRI KENZI	201840876	12
HART GERARD	201516274	6	FRIGNAC TIMOTHÉ	201840949	12
LOELIGER ANDREW	201507875	6	PALANDRI GAËLLE	201841296	12