Microcontroller Laboratory Overview

EG-252 Group Design Exercise – Microcontroller Laboratory

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The microcontroller laboratory exercises are designed to introduce the basics of interfacing and controlling microcontrollers through C and assembly programs, which are required for you to build a micromouse in the second term of this module.

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There will be a short Getting Started session and this will be followed by four exercises on the following topics:

- Exercise 1: Keyboard interrupt (10 marks) [HTML,PDF,docx]
- Exercise 2: Analogue to digital conversion (ADC) (6 marks) (HTML,PDF,docx]
- Exercise 3: Timer/pulse-width modulation (PWM) (14 marks) [HTML,PDF,docx]
- Exercise 4: Version Control with Git (5 marks) – needed prior to working on the micromouse code [HTML,PDF,docx]

You would normally work in pairs and share the various tasks required with your partner, but this year, because of Covid-19, you will work on these exercises as an individual. It is advised to spend some time prior to the timetabled laboratory sessions on preparing designs, leaving the laboratory time for essential testing and consultation. You should complete the end-of-exercise assessment, which requires you to upload upload a copy of your code, at the end of each laboratory exercise.

Note that the references listed in this document (and many others) are available in the Canvas LMS site.

All source code, which includes the source for this document, is in the EG-252 Group Design Exercise Resources repository on GitHub.

References

[1] Freescale Semiconductor, *MC9S08AW60 Data Sheet*, Rev. 2, Dec. 2006.

[2] –, *DEMO9S08AW60E Evaluation Board User's Guide*, Rev. 0.3, Jan. 2006.

[3] –, *CodeWarrior^{TM} Development Studio IDE 5.9 User's Guide*, Jul. 2010.

[4] –, *Getting Started with HCS08 and CodeWarrior Using C*, Rev. 2, Jul. 2006.