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: Getting setup with Git – needed prior to working on the micromouse code [HTML,PDF,docx]

You will work in pairs and share the various tasks required with your partner. 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 demonstrate each exercise to Dr Chris Jobling or Dr Tim Davies when finishing it. You should also keep a record of your work in a laboratory notebook and have it available for assessment, when required; materials presented on loose paper (other than program listings) will not be considered.

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