

Deadlock and starvation

1 Introduction

This lab encourages you to develop your understanding of deadlock and starvation as they might arise in the development of concurrent systems.

2 In the lab

1. Download the file `workspace.zip` into a suitable directory either on a pen drive or in your University workspace. I suggest you call the directory `EN572/labs/lab09`. Unzip `workspace.zip`.
2. Start up EWARM and load the workspace `workspace/workspace.eww`.
3. Connect a LPC-2378-STK board to a USB port on your computer.
4. Download and debug the project `lab09`. Run the program and observe its behaviour. Answer the following questions:
 - (a) What are the four conditions required for deadlock in a concurrent program?
 - (b) For each of those four conditions, which feature of the program in `lab09` ensures that the condition is satisfied.
 - (c) Which of the four conditions is it easiest to break in this example?
5. Fix `lab09` so that it no longer deadlocks. Maintain the use of both semaphores in your solution.
6. Suggest an experiment that would allow you to explore the occurrence of starvation in the readers/writers solution that was given in lecture B08. Discuss your proposal with the lab tutor.
7. Make further progress with the assignment.