Lab #3
Exceptions

Part 2 of this this exercise will count towards your final coursework mark for CS1022. Submit your solution to Part 2 using Blackboard no later than 23:59 on Monday 27th March 2017.

1 Undefined Instruction Exceptions

Run the Undefined Instruction Exception example from Blackboard. (The Undef example is available alongside the "Exceptions" lecture slides.) The example provides an Undefined Instruction Exception handler that emulates an invented POWER instruction.

Use the Keil µVision debugger to step through the code **with the "Disassembly" window open**. Observe what happens when the processor tries to execute the POWER instruction (manually assembled and stored using `DCD 0x77F150F4`.) Experiment with different register parameters (by manually re-assembling the POWER instruction) and different register contents.

2 CLZ

(a) Using the POWER example as a starting point, design and write an Undefined Instruction Exception handler that will emulate the `CLZ` instruction for ARM Architecture versions prior to version 5. Your exception handler must adhere to the instruction template provided in the ARM Architecture Reference Manual. You may ignore the conditional execution of the instruction and the use of R13 and R14 as operands.

(b) If time permits, attempt to extend your solution to support conditional execution of the CLZ instruction and the use of R13 and R14 as operands.