

# 3D1 Microprocessor Systems

## Logic and Shift Instructions

### Assignment 2

### Due by: Week 5

Write an ARM assembly language program that takes a nine bit number in register r0 and produces a count of the number of bits set in register r1 and the number of bits cleared in register r2. Your program must not use any branch instructions – just arithmetic, logic and shift instructions.

Your programming assignments will be assessed based on two components:

- Written report in lab book.
- Demonstration of working code on computer.

You must show both of these to the Demonstrator by the deadline for each assignment. You must buy and maintain a hardcover lab book and write a report covering each programming assignment. In your report you should:

- Include title and date on each page.
- Describe what you are attempting to do in English.
- Outline your algorithm using diagrams and pseudo code as appropriate.
- Write down the actual ARM assembly code used, including comments.
- Explain how you tested it and the results.
- Size of report should be between one and two A4 pages in length.

Assignments are only accepted in a lab book, it is not feasible to accept material on individual pieces of paper. Throughout this course marks are awarded for punctuality, neatness, organisation, spelling, ability to communicate technical information and results as well as assembly programming skill. Of particular importance in assembly language programming are indentation, comments and quality of label names. The lab book must be kept up to date and will be examined by the Lecturer or Demonstrator during the term. You must hand in your lab book no later than 4pm Wednesday, 16th December 2015, to the School of Computer Science and Statistics Reception, Ground Floor, The O'Reilly Institute. The office does not accept submissions after 4pm. Do not forget to write your name, student number and course clearly on the cover.