

## **CS1021 Tutorial 6**

### **Reading and Writing to Memory**

- Q1 If a, b and c are 32bit signed integers stored at memory addresses 0x40000000, 0x40000004 and 0x40000008 respectively, write ARM assembly language instructions to compute:
- (i)  $a = a + b$
  - (ii)  $c = a - b$
  - (iii)  $b = a * a$
- Q2 If a, b and c are 256 bit integers stored at memory addresses 0x40000000, 0x40000020 and 0x40000040 respectively, write ARM assembly language instructions to compute:
- (i)  $a = a | b$
  - (ii)  $c = a \& b$
  - (iii)  $c = a + b$
- Q3 If a zero terminated string of ASCII characters is stored at memory address 0x40000000, write ARM assembly language instructions to count the number of characters in the string (not including the zero). For example, if the string of ASCII characters is 0x31 0x32 0x33 0x00, its length is 3.
- Q4 If a zero terminated string of ASCII characters is stored at memory address 0x40000000, write ARM assembly language instructions to store the string in reverse order at memory address 0x40001000. For example, if the string of ASCII characters is 0x31 0x32 0x33 0x00 the reverse string stored at memory location 0x40001000 is 0x33 0x32 0x31 0x00.
- Q5 If a zero terminated string of ASCII characters is stored at memory address 0x40000000, write ARM assembly language instructions to reverse the string in situ (without using any other memory locations).