**B38DF Computer Architecture and Embedded Systems. Part II. Tutorial 1 – coding**

1. Code (produce the hexadecimal number) for each instruction for the following code fragments. Assume data file registers are loaded: D0 = 23d, D1 = 25d, D2= 74d.

**LD R1, D0**

**LD R2, D1**

**LD R3, D2**

**ADD R2, R3**

**SUB R1, R2**

Determine the value held in R1.

1. Code (in hexadecimal) the following, assuming the data registers D0 – D2 start with same values as that given in Question 1

**LD R0, D0**

**LD R1, D1**

**MUL R1, R0**

**MUL R1, R0**

**LD D3, R1**

Determine the value held in D3

1. Assuming again the starting values in D0 – D2 are the same and D3=10d, Code the following in assembler (machine mnemonics) and determine the final value in D4
2. **D4 = D2 – D1 + D0**
3. **D4 = (D3)2**
4. Code the following high level code in assembler. Assume data holds an initial value of 0x41 (ASCII ‘A’)

**for (y=0; y < 10; y++)**

**for (x = 0; x < 10; x++)**

**{**

**out = data;**

**data = data + 1;**

**}**

* 1. If this was sent to a display terminal what would you see?

1. A programme is required to output the Fibonacci series. Using the formula y(n) = y(n-2) + y(n-1), where y(n) is the current number and y(n-1) and y(n-2) are previous two numbers of the series. Write a programme in HWU machine mnemonics to output the first 10 numbers. Start from 1.