

## Tutorial 7

### Question 1: (10)

a) Write a single line of C code which will: (3)

- set bits 9 and 10
- clear bits 3, 4 and 5
- leave the other bits unchanged

of the 2 bytes of data at effective address 0x2000 001C

b) Write an equivalent block of assembly code for the above. Do not use the '=' syntax. (3)

c) When writing to the GPIOB MODER to set the pins connected to the LEDs to outputs in C, what is the most appropriate operator to use? Explain why. (2)

d) Why is it necessary to write function prototypes? (2)

### Question 2: (9)

a) In C, what is an automatic variable? (1)

b) When automatic variables are defined, where do they get placed in memory and what is done to allocated space for them there? (2)

c) Discuss the lifetime of automatic variables and what advantages this lifetime has. (3)

d) When space is being allocated for variables, what determines how much space will be allocated? (1)

e) Write an if statement which will execute if the 10th bit of the variable foo is high. (2)