XMUT202 Digital Electronics

Tutorial 5: Stack

A. Stacks in 8051

1. What is a stack? [2 marks]
2. What register is used for stack programming? [2 marks]
3. What is the default memory address of stack pointer? [2 marks]
4. What is the relationship between the stack pointer and the register Bank 1 in the 8051 microcontrollers? [2 marks]
5. What do you do when you need more space to store for your stack in the 8051 microcontrollers? [2 marks]
6. Describe two mechanisms for interacting with the content in the stack? [2 marks]
7. Describe the process involved in storing and retrieving items to and from the stack. [4 marks]

B. Stack Programming

1. Describe the mechanism of storing data to the stack in 8051. Write a short assembly language code that stores data onto the stack [4 marks]

2. Describe the mechanism of retrieving data from the stack in 8051. Write a short assembly language code in 8051 that retrieves data from the stack. [4 marks]

3. Write a code that moves values 0x25H and 0x45H to registers R1 and R4 and store and retrieve them to the stack to the registers R3 and R6 respectively. Describe line-by-line the code in the program. [4 marks]