CS2323: Computer Architecture, Autumn 2023
Homework-1: RISC-V Assembly
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1. Write an assembly instruction to achieve the given functionality, defined using C-language syntax (only 1 instruction to be used). Explain in brief. [6 marks]
   a. x8 = x5 - 5
   b. x5 = x3 * 8
   c. x19 += x10
   d. ++x15
   e. x9 = x15/4
   f. x12 = 24

2. Consider an array M consisting of 8 byte integers. The base address of M is stored in register x5. Write the assembly code that achieves each operation given below. [1+1+1+2+2 marks]
   a. M[12] = M[20] + 100
   b. M[20] ++
   c. swap M[5] and M[12]
   d. Make the first 32-bits of M[4] as 0
   e. Swap the most significant 32-bits of M[2] with its least significant 32-bits

3. Write the following decimal numbers in their 2's complement representation, using 8-bits. Show your calculations. [4 marks]
   a. +23
   b. -1
   c. +255
   d. -128

4. Write the equivalent decimal number for given numbers in 2's complement format. Show your calculations. [3 marks]
   a. 11010100
   b. 00101011
   c. 11111110

Submission instructions:
   1. Create a pdf file mentioning the reasoning/observations for the questions asked above. The file should be a maximum of 3 pages, preferably 1-2 page.
   2. The submission should be entirely your work
   3. The pdf file should be named YOUR_ROLLNUM.pdf (e.g., CSYYBTECHXXXXX.pdf)
   4. Submit the pdf file
   5. Deadline: 23-Sep-2023, 11.59 pm