ECE 2510

Lab 6

Objectives:

• Practice loops
• Practice shift instructions.
• Read the lab instructions and submit a prelab prior to attending the lab

Task 1

Write ARM assembly instructions to perform shift right, shift left, rotate right, and rotate left for the following values: 0xFFFFFFFF, 0xC5C5C5C5, 0xA3A3A3A3, 0x2F362F362, 0xD3E7D3E7.

Write the assembly code.
• Notice the NZVC flag changes and record them. Compare them to the ones you hand-calculated in the prelab.
• Take screenshots of the register values after each operation

Task 2

Write a program that shifts each element of an array that consists of 8 64-bit elements to the left. Use a loop and an arithmetic shift instruction. Consider the following array. 0xFC3FFC3FFC3FFC3F, 0xA2A2A2A2A2A2A2A2, 0xFFFEFFFEFFFEFFFE, 0xC523C523C523C523, 0x36AD36AD36AD36AD, 0xFFFFFFFFFFFFFFFF, 0x041D4235041D4235, 0x2FCC2FCC2FCC2FCC
• Draw a flowchart of your program.
• Write the assembly code.
• Notice the NZVC flag changes and record them.
• Repeat the program shifting the array elements arithmetically 1-bit to the right. Hint: Use a combination of shift and or instructions.

Task 3

Write an ARM program that executes the following equation:
F [i] = s *(z2 [i] + z[i] +r)
where z is an input array of 32-bit unsigned 10 elements, s = 0.25, and r is an integer

constant.
• Write a pseudo-code and draw a flow chart of the program before you start coding.
• Use loops and store the result array f in a memory
location different from z.
• Provide screenshots of the memory addresses of the arrays stored.
Hint: pay attention to the array sizes

Submissions

Please submit all items requested in the tasks above