

# COSE321 Computer Systems Design

## Assignment #5

**No late turn-in accepted**

Write your own debugging macro in ARM assembly. The macro prints out all the registers (R0~R15) and CPSR of the current mode to the UART terminal (Tera Term). So, it can be used for the debugging purpose by inserting it to suspicious places in your assembly code.

An example output from the macro is shown below;

```
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r0 = 0x1000_0123, r1 = 0xffee_0112, r2 = 0x9800_ab00, r3 = 0xfe03_0010  
r4 = 0xffff_1000, r5 = 0xc123_0112, r6 = 0x1800_1100, r7 = 0xbe10_0030  
r8 = 0x2200_0140, r9 = 0x55ee_0112, r10 = 0x1200_1200, r11 = 0x9803_2210  
r12 = 0x3300_0100, r13 = 0xccee_0112, r14 = 0x3400_ab00, r15 = 0x0010_0304  
cpsr = nZCv, IF, ARM mode, current mode = SVC (=0x6000_00d3)  
-----
```

Taking your sorting program you did in the assignment #2 as an example, insert your debugging macro at **at least 10 different places**, and show that your sorting program works fine.

### What and How to submit:

1. Upload **your assembly code (sorting and debugging macro)** to Blackboard.
2. Upload **video clip (3-min?)** to Blackboard. Your video clip should have **at least** the following contents:
  - Your smiling face
  - Understandable explanation of your macro assembly code
  - Demo on Zedboard with Tera Term terminal

**Note:** This is an individual assignment. You are welcome to discuss, but **DO NOT COPY** solutions. If you are found to copy solutions from others or slightly modify the solutions from others, both of you will be given 0 credits.