

UNCC, Department of Electrical and Computer Engineering
ECGR4101/5101, Fall 2006, Homework #3, Due: 9/14/06, at the beginning of class (20 points)

Consider the following listing of a program compiled from C. It includes the original C source code as comments for clarity. Show the contents of the stack and registers R0, R1, SP and FB just before the exitd in \$f2 executes. Also identify what each byte represents (e.g. LSB (least significant byte) of argument, MSB of variable, dynamic link, etc.). Assume that execution starts at the beginning of f1, at which point FB is 0804h and SP is 0800h. Assume that the address of the mov.w instruction following jsr \$f2 is ff018h. Use ? to indicate values which are unknown or in boxes which are not used.

```

;## # FUNCTION f2
;## # FRAME AUTO (      arg) size  2,  offset -2
;## # REGISTER ARG (      arg) size  2,  REGISTER R1
;## # ARG Size(0) Auto Size(2) Context Size(5)
;## # C_SRC :      int f2(int arg) {
$f2:
    enter #02H
    mov.w R1,-2[FB] ; arg arg
;## # C_SRC :      return arg+5;
    mov.w -2[FB],R0 ; arg
    add.w #0005H,R0
    exitd

;## # FUNCTION f1
;## # FRAME AUTO (      b) size  2,  offset -2
;## # FRAME AUTO (      a) size  2,  offset -2
;## # ARG Size(0) Auto Size(2) Context Size(5)
;## # C_SRC :      void f1(void) {
_f1:
    enter #02H
;## # C_SRC :      int a=10, b;
    mov.w #000aH,-2[FB] ; a
;## # C_SRC :      b = f2(a);
    mov.w -2[FB],R1 ; a
    jsr $f2
    mov.w R0,-2[FB] ; b
;## # C_SRC :      }
    exitd

```

Address	Contents	Description _____
7f3		
7f4		
7f5		
7f6		
7f7		
7f8		
7f9		
7fa		
7fb		
7fc		
7fd		
7fe		
7ff		
800		

Register	Contents
R0	
R1	
SP	
FB	