

CE-1921-11 - Dr. Durant - Quiz 4  
Spring 2016, Week 4

1. (5 points) Assemble the following instruction to ARMv4 machine code: **eorge** <sup>Rd Rn Rm</sup> r7, r5, r13
- Label and box in each field above the boxes below. "cond" has been done for you.
  - Box in and fill each field in the next row with the value for that field.
  - Convert values to binary in the following row.
  - Convert values to hexadecimal in the final row.

	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0			
a	cond				op	I	opcode					S	Rn			Rd			shamt			sh	0	Rm											
b	ge = 1010				00	0	eor = 1					0	5			7			x > 0			x > 0	0	13											
c	1	0	1	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
d	A				0			2					5			7			0			0			D										

2. (5 points) Assemble the following instruction to ARMv4 machine code: **str** r9, <sup>Rd Rn</sup> [r6], #12 (post-index)

	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0				
a	cond				op	I	P	U	B	W	L	Rn			Rd			imm																		
b	al/none				01	0	0	1	0	0	0	6			9			12																		
c	1	1	1	0	0	1	0	0	1	0	0	0	0	1	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
d	E				4			8					6			9			0			0			C											

CE-1921-12 - Dr. Durant - Quiz 4  
Spring 2016, Week 4

1. (5 points) Assemble the following instruction to ARMv4 machine code: **subs** <sup>Rd Rn Rm</sup> r13, r7, r11
- Label and box in each field above the boxes below. "cond" has been done for you.
  - Box in and fill each field in the next row with the value for that field.
  - Convert values to binary in the following row.
  - Convert values to hexadecimal in the final row.

	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
a	cond				op	I	opcode				S	Rn	Rd	shamt				shl	0	Rm												
b	HS=0010				0	0	2=00010				0	7	13	x=0				0	0	11												
c	0	0	1	0	0	0	0	0	0	1	0	0	0	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	1
d	2				0		4				7	D	0				0	B														

2. (5 points) Assemble the following instruction to ARMv4 machine code: **ldr** r3, [r13, #-24]

	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0		
a	cond				OP	I	P	U	B	W	L	Rn	Rd	imm																				
b	AL/none				01	0	1	0	0	0	1	13	3	24																				
c	1	1	1	0	0	1	0	1	0	0	0	1	1	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0
d	E				S		1				D	3	0				1	8																