

Class:	CpE301L: Embedded System Design			Semester:	Spring 2016
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Instructor's comments:					

Introduction / Theory of operation

For this prelab, the following assembly code is provided:

<pre>.dseg a: .byte 1 b: .byte 1 .cseg lds r17, a ldi r18, 0 ldi r16, 10 l1: add r18, r17 dec r16 cpi r16, 0 brne l1 sts b, r18</pre>	<pre>.dseg a: .byte 1 b: .byte 1 c: .byte 1 .cseg lds r16, a lds r17, b cpi r16, 6 brlt l1 cpi r17, 8 brlt l1 add r16, r17 sts c, r16 jmp l2 l1: sub r16, r17 sts c, r16 l2:</pre>
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We are also meant to watch the tutorials for the Atmel Studio IDE.

Prelab main content

a.txt

; Assembly code	// C code
<pre> .dseg a: .byte 1 ; byte a; b: .byte 1 ; byte b; .cseg lds r17, a ; r17 = a ldi r18, 0 ; r18 = 0 ldi r16, 10 ; r16 = 10 l1: add r18, r17 ; r18 = r18 + r17 dec r16 ; r16-- cpi r16, 0 ; if r16 == 0: brne l1 ; goto l1 sts b, r18 ; b = r18 </pre>	<pre> b = 0 for (int i = 10; i > 0; i--) { b = b + a; } </pre>

b.txt

; Assembly code	// C code
<pre> .dseg a: .byte 1 ; byte a; b: .byte 1 ; byte b; c: .byte 1 ; byte c; .cseg lds r16, a ; r16 = a lds r17, b ; r17 = b cpi r16, 6 ; if r16 < 6: brlt l1 ; goto l1 cpi r17, 8 ; if r17 < 8: brlt l1 ; goto l1 add r16, r17 ; r16 += r17 sts c, r16 ; c = r16 jmp l2 ; goto l2 l1: sub r16, r17 ; r16 -= r17 sts c, r16 ; c = r16 l2: </pre>	<pre> if (a < 6 b < 8) { a -= b; c = a; } else { a += b; c = a; } </pre>