**University Of Nevada Las Vegas. Department Of Electrical And Computer Engineering Laboratories.**

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| Class: | **CpE301L: Embedded System Design** | | | Semester: | **Spring 2016** |
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| Document topic: | **Prelab 3: Atmel Studio Tutorial Part 2** | | |
| Instructor's comments: | | | | | |

**Introduction / Theory of operation**

For this prelab, the following assembly code is provided:

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| --- | --- |
| .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 | .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: |

We are also meant to watch the tutorials for the Atmel Studio IDE.

**Prelab main content**

a.txt

|  |  |
| --- | --- |
| ; Assembly code  .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 | // C code  b = 0  for **(int** i **=** 10; i > 0; i--) {  b **=** b **+** a;  } |

b.txt

|  |  |
| --- | --- |
| ; Assembly code  .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**:** | // C code  if **(**a **<** 6 **||** b **<** 8**)** {  a **-=** b;  **c** **=** a;  }  else {  a **+=** b;  **c** **=** a;  } |