Lab 1 - Getting Started with RISC-V (Assembly Language) in VS Code

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Task 3:

Code:

```
.text
.globl main
main:
    li x20, 5         # a = 3
    li x21, 0         # b = 1

    addi x20, x21, 32  # a = b + 32
    add x22, x20, x21   # d = a + b
    addi x22, x22, -5   # d = d - 5
    sub x23, x20, x22   # e = a - d
    sub x24, x21, x20 #temp reg
    add x23, x24, x22
    addi x23, x00, 0 # e = 0
    add x23, x20, x21
    add x23, x22, x23

end:
    j end             # Infinite loop to halt program
```

Results:

```
x20 (s4)   = 0x00000020
x21 (s5)   = 0x00000000
x22 (s6)   = 0x0000001B
x23 (s7)   = 0x0000003B
x24 (s8)   = 0xFFFFFFE0
x25 (s9)   = 0x00000000
x26 (s10)  = 0x00000000
```

Task 4a:

1. Store x10 as unsigned integer at address 0x100.

```
li x9, 0x100
sw x10, 0(x9)
```

2. Store x11 as unsigned integer at address 0x1F0.

```
li x8, 0x1F0
sw x11, 0(x8)
```

3. Load an unsigned short integer (two bytes) from address 0x100 in x12.

```
lhu x12, 0(x9)
```

```
x12 (a2)    = 0x00006464
```

4. Load a short integer from address 0x1F0 in register x13.

```
lh x13, 0(x8)
```

```
x13 (a3)    = 0x00001919
```

5. Load a singed character from address 0x1F0 in register x14.

```
lh x14, 0(x8)
```

```
x14 (a4)    = 0x00001919
```

Task 4b:

Code:

```
.text
.globl main
main:
    #Part b
    li x10, 0x100       #A (Char array)
    li x11, 0x200       #B (short array)
    li x12, 0x300       #C unsigned int array

    #Char Array Init
    li x9, 0x61
    sb x9, 0(x10)
    li x9, 0x62
    sb x9, 1(x10)
    li x9, 0x63
    sb x9, 2(x10)
    li x9, 0x64
    sb x9, 3(x10)

    #Short array init
    li x9, 1
    sh x9, 0(x11)
    li x9, 2
    sh x9, 2(x11)
    li x9, 3
    sh x9, 4(x11)
    li x9, 4
    sh x9, 6(x11)

    #Iteration 1
    lb x13, 0(x10)
    lh x14, 0(x11)
    add x15, x13, x14
```

```
    sw x15, 0(x12)

    #Iteration 2
    lb x13, 1(x10)
    lh x14, 2(x11)
    add x15, x13, x14
    sw x15, 4(x12)

    #Iteration 3
    lb x13, 2(x10)
    lh x14, 4(x11)
    add x15, x13, x14
    sw x15, 8(x12)

    #Iteration 4
    lb x13, 3(x10)
    lh x14, 6(x11)
    add x15, x13, x14
    sw x15, 12(x12)




end:
    j end              # Infinite loop to halt program
```

Results:

0x0000030C	68	00	00	00
0x00000308	66	00	00	00
0x00000304	64	00	00	00
0x00000300	62	00	00	00

Assessment Rubric
Lab 1: Getting Started with RISC-V (Assembly Language) n VS Code

Name	Student ID:	Section:

Points Distribution:

	Task No.	LR 2 (Code)	LR 5 (Results)
In-Lab	**Task 1**	-	/15
	Task 2	-	/15
	Task 3	/10	/5
	Task 4a	/10	/5
	Task 4b	/10	/10
Total Points: 100		**/30**	**/50**
CLO Mapped		**CLO 2**	

Affective Domain Rubric		Points	CLO Mapped
AR7	**Report Submission & Git Upload**	/10 & /10	**CLO 2**

CLO	Total Points	Points Obtained
2	100	
Total	**100**	