Homework 2

Graded

Student

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Total Points

7 / 8 pts

Question 1

(no title) **1** / 1 pt

The rubric is hidden for this question.

Question 2

(no title) **0** / 1 pt

The rubric is hidden for this question.

Question 3

(no title) **3** / 3 pts

3.1 **(no title)** **1** / 1 pt

The rubric is hidden for this question.

3.2 **(no title)** **1** / 1 pt

The rubric is hidden for this question.

3.3 **(no title)** **1** / 1 pt

The rubric is hidden for this question.

Question 4

(no title) **1** / 1 pt

The rubric is hidden for this question.

Question 5

(no title) **1** / 1 pt

The rubric is hidden for this question.

Question 6

(no title) **1** / 1 pt

The rubric is hidden for this question.

Q1
1 Point

Write a MIPS program that multiplies the content of register $s1 by 10 using only shift operations and add operation.

```
sll $t1, $s1, 3
sll $t2, $s1, 1
add $s1, $t1, $t2
```

Q2
1 Point

Write a MIPS program that divides the content of register $s0 by 8 using only bit shift.

```
sra $s0, $s0, 3
```

Q3
3 Points

The content of a part of MIPS memory and the contents of three registers are provided below. Answer the following questions?

..	....
0x00000018	C45D76F1
0x00000014	998703A0
0x00000010	005B0032
0x0000000C	04C76581
0x00000008	EFF17761
0x00000004	54000231
0x00000000	EF002476

[$s0]=3
[$s1]=9
[$s2]=4

Q3.1
1 Point

`lw $s0, 4($0)`

What's the value of register $s0 in hex?
Note that $0 is not a typo. Do not write 0x, same below

54000231

Q3.2
1 Point

`lb $s1, 5($s2)`

What's the value of $s1 in hex?

00000077

Q3.3
1 Point

`lbu $s2, 5($s2)`

What's the content of $s2 in hex?

00000077

Q4
1 Point

Write MIPS assembly instructions for the following code:

```
x = 5;
int y= 5 * x * x + 2 * x + 3
```

Assume register $t0 represents variable x and register $t1 represents variable y.

```
addi $t0, $0, 5
sll $t2, $t0, 1
addi $t2, $t2, 3
sll $t3, $t0, 2
add $t3, $t3, $t0
mul $t3, $t3, $t0
add $t1, $t3, $t2
```

Q5
1 Point

For the following assembly pseudo code, write the assembly instructions using ori and lui instructions:

You may use add instruction once as the last line of your solution

`addi $s0, $s2, OxFE32148A`

```
lui $t0, 0xFE32
ori $t0, $t0, 0x148a
add $s0, $s2, $t0
```

Q6
1 Point

Write a program to check if the content of the register $s0 is even or odd using sll or srl only.

The core logic of your program can only use ssl and srl. You can also use sw, beq, and j for control flow of your program

```
sll $t0, $s0, 31
srl $t0, $t0, 31
#if t0 is 0 then $s0 is even; if it is 1, then it is odd
```