CSE 331/503

Computer Organization

Homework 4 Report

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Test1:

Registers before test:

R4 --> 00000000000000000000000000000000

R5 --> 00000000000000000000000000010000

Data memory before test:

The value of the all cells are zero

Test1 Codes (lui, ori, sw, lw, addn, andn):

lui R6, 16'b0000101100011101

ori R7, R6, 16'b1111001011001101

sw R7, 0(R4)

lui R6, 16'b1111010011100010

ori R7, R6, 16'b0000110100110010

sw R7, 4(R4)

lui R6, 16'b0000000011111111

ori R7, R6, 16'b1111111100000000

sw R7, 8(R4)

lui R6, 16'0000b111100001111

ori R7, R6, 16'b1111000011110000

sw R7, 12(R4)

//addn

lw R1, 0(R4)

lw R2, 4(R4)

addn R3, R1, R2

sw R1, 0(R5)

sw R3, 4(R5)

```
lw R1, 8(R4)

lw R2, 12(R4)

addn R3, R1, R2

sw R1, 8(R5)

sw R3, 12(R5)


//andn

lw R1, 0(R4)

lw R2, 4(R4)

andn R3, R1, R2

sw R1, 16(R5)

sw R3, 20(R5)


lw R1, 8(R4)

lw R2, 12(R4)

andn R3, R1, R2

sw R1, 24(R5)

sw R3, 28(R5)
```

Test1 Results:

Data-Memory:

data_regs	00000011 00000000 00000000 00000000 00000000...	Fixed-size Array	Internal
[47]	00000011	Packed Array	Internal
[46]	00000000	Packed Array	Internal
[45]	00000000	Packed Array	Internal
[44]	00000000	Packed Array	Internal
[43]	00000000	Packed Array	Internal
[42]	11110000	Packed Array	Internal
[41]	00001111	Packed Array	Internal
[40]	00000000	Packed Array	Internal
[39]	00000001	Packed Array	Internal
[38]	00000000	Packed Array	Internal
[37]	00000000	Packed Array	Internal
[36]	00000000	Packed Array	Internal
[35]	00000000	Packed Array	Internal
[34]	00000000	Packed Array	Internal
[33]	00000000	Packed Array	Internal
[32]	00000000	Packed Array	Internal
[31]	00000011	Packed Array	Internal
[30]	00000000	Packed Array	Internal
[29]	00000000	Packed Array	Internal
[28]	00000000	Packed Array	Internal
[27]	11110000	Packed Array	Internal
[26]	11101111	Packed Array	Internal
[25]	00001111	Packed Array	Internal
[24]	00010000	Packed Array	Internal
[23]	00000010	Packed Array	Internal
[22]	00000000	Packed Array	Internal
[21]	00000000	Packed Array	Internal
[20]	00000000	Packed Array	Internal
[19]	11111111	Packed Array	Internal
[18]	11111111	Packed Array	Internal
[17]	11111111	Packed Array	Internal
[16]	11111111	Packed Array	Internal
[15]	11110000	Packed Array	Internal
[14]	11110000	Packed Array	Internal
[13]	00001111	Packed Array	Internal
[12]	00001111	Packed Array	Internal
[11]	00000000	Packed Array	Internal
[10]	11111111	Packed Array	Internal
[9]	11111111	Packed Array	Internal
[8]	00000000	Packed Array	Internal
[7]	00110010	Packed Array	Internal
[6]	00001101	Packed Array	Internal
[5]	11100010	Packed Array	Internal
[4]	11110100	Packed Array	Internal
[3]	11001101	Packed Array	Internal
[2]	11110010	Packed Array	Internal
[1]	00011101	Packed Array	Internal
[0]	00001011	Packed Array	Internal

Test1 Results:

Registers:

registers	00000000000000000000000000000000 000000000...	Fixed-size Array	Internal
[31]	00000000000000000000000000000000	Packed Array	Internal
[30]	00000000000000000000000000000000	Packed Array	Internal
[29]	00000000000000000000000000000000	Packed Array	Internal
[28]	00000000000000000000000000000000	Packed Array	Internal
[27]	00000000000000000000000000000000	Packed Array	Internal
[26]	00000000000000000000000000000000	Packed Array	Internal
[25]	00000000000000000000000000000000	Packed Array	Internal
[24]	00000000000000000000000000000000	Packed Array	Internal
[23]	00000000000000000000000000000000	Packed Array	Internal
[22]	00000000000000000000000000000000	Packed Array	Internal
[21]	00000000000000000000000000000000	Packed Array	Internal
[20]	00000000000000000000000000000000	Packed Array	Internal
[19]	00000000000000000000000000000000	Packed Array	Internal
[18]	00000000000000000000000000000000	Packed Array	Internal
[17]	00000000000000000000000000000000	Packed Array	Internal
[16]	00000000000000000000000000000000	Packed Array	Internal
[15]	00000000000000000000000000000000	Packed Array	Internal
[14]	00000000000000000000000000000000	Packed Array	Internal
[13]	00000000000000000000000000000000	Packed Array	Internal
[12]	00000000000000000000000000000000	Packed Array	Internal
[11]	00000000000000000000000000000000	Packed Array	Internal
[10]	00000000000000000000000000000000	Packed Array	Internal
[9]	00000000000000000000000000000000	Packed Array	Internal
[8]	00000000000000000000000000000000	Packed Array	Internal
[7]	00001111000011111111000011110000	Packed Array	Internal
[6]	00001111000011110000000000000000	Packed Array	Internal
[5]	00000000000000000000000000010000	Packed Array	Internal
[4]	00000000000000000000000000000000	Packed Array	Internal
[3]	00000000000000000000000000000011	Packed Array	Internal
[2]	00001111000011111111000011110000	Packed Array	Internal
[1]	00000000000011111111000000000000	Packed Array	Internal
[0]	00000000000000000000000000000000	Packed Array	Internal

Test2:

Registers before test:

R1 ---> 0000000000000000101010101010101

R2 ---> 0000000000000000101010101010101

R5 ---> 0000000000000001100110011001100

R6 ---> 0000000000000000011001100110011

Data memory before test:

The value of the all cells are zero

Test2 Codes (beq, bne, subn):

beq R1, R2, 2

lui R3, 1111111111111111

ori R3, R3, 1111111111111111

bne R1, R2, 1

subn R4, R1, R2

bne R5, R6, 2

lui R7, 1111111111111111

ori R7, R7, 1111111111111111

beq R5, R6, 1

subn R8, R5, R6

Test2 Results:

Registers:

registers	00000000000000000000000000000000 000000000...	Fixed-size Array	Internal
[31]	00000000000000000000000000000000	Packed Array	Internal
[30]	00000000000000000000000000000000	Packed Array	Internal
[29]	00000000000000000000000000000000	Packed Array	Internal
[28]	00000000000000000000000000000000	Packed Array	Internal
[27]	00000000000000000000000000000000	Packed Array	Internal
[26]	00000000000000000000000000000000	Packed Array	Internal
[25]	00000000000000000000000000000000	Packed Array	Internal
[24]	00000000000000000000000000000000	Packed Array	Internal
[23]	00000000000000000000000000000000	Packed Array	Internal
[22]	00000000000000000000000000000000	Packed Array	Internal
[21]	00000000000000000000000000000000	Packed Array	Internal
[20]	00000000000000000000000000000000	Packed Array	Internal
[19]	00000000000000000000000000000000	Packed Array	Internal
[18]	00000000000000000000000000000000	Packed Array	Internal
[17]	00000000000000000000000000000000	Packed Array	Internal
[16]	00000000000000000000000000000000	Packed Array	Internal
[15]	00000000000000000000000000000000	Packed Array	Internal
[14]	00000000000000000000000000000000	Packed Array	Internal
[13]	00000000000000000000000000000000	Packed Array	Internal
[12]	00000000000000000000000000000000	Packed Array	Internal
[11]	00000000000000000000000000000000	Packed Array	Internal
[10]	00000000000000000000000000000000	Packed Array	Internal
[9]	00000000000000000000000000000000	Packed Array	Internal
[8]	00000000000000000000000000000011	Packed Array	Internal
[7]	00000000000000000000000000000000	Packed Array	Internal
[6]	00000000000000000110011001100110	Packed Array	Internal
[5]	00000000000000010011001100110011	Packed Array	Internal
[4]	00000000000000000000000000000001	Packed Array	Internal
[3]	00000000000000000000000000000000	Packed Array	Internal
[2]	00000000000000001010101010101010	Packed Array	Internal
[1]	00000000000000000000000000000000	Packed Array	Internal
[0]	00000000000000000000000000000000	Packed Array	Internal

Test3:

Registers before test:

R1 --> 00010010001101000101011001111000

R2 --> 10011010101111001101111011110000

R3 --> 00000000000000000000000000000000

R4 --> 00000000000000000000000000101100

R5 --> 00000000111111110000000011111111

R6 --> 11111111000000000000000011111111

R7 --> 00000000000000000000000000000000

R8 --> 00010010001101000101011001111000

R9 --> 10011010101111001101111011110000

R10--> 00000000000000000000000000000000

R11--> 00000000111111110000000011111111

R12--> 00000000111111110000000011111111

R13--> 00000000000000000000000000000000

R14--> 00000000000000000000000001011000

Data memory before test:

The value of the all cells are zero

Test3 Codes (j, jal, jr, xorn, orn):

0 -> j 3

1 -> lui R1, 1111111111111111

2 -> ori R1, R1, 1111111111111111

3 ->xorn R3, R1, R2

4 -> jal 7

5 -> lui R2, 1111111111111111

6 -> ori R2, R2, 1111111111111111

7 -> xorn R7, R5, R6

8 -> jr R4

9 -> lui R3, 1111111111111111

10-> ori R3, R3, 1111111111111111

11-> orn R10, R8, R9

12-> j 15

13-> lui R4, 1111111111111111

14-> ori R4, R4, 1111111111111111

15-> orn R13, R11, R12

16-> jal 19

17-> lui R5, 1111111111111111

18-> ori R5, R5, 1111111111111111

19-> jr R14

20-> lui R6, 1111111111111111

21-> ori R6, R6, 1111111111111111

22->

Test3 Results:

Registers:

registers	0000000000000000000000001000100 000000000...	Fixed-size Array	Internal
[31]	0000000000000000000000001000100	Packed Array	Internal
[30]	00000000000000000000000000000000	Packed Array	Internal
[29]	00000000000000000000000000000000	Packed Array	Internal
[28]	00000000000000000000000000000000	Packed Array	Internal
[27]	00000000000000000000000000000000	Packed Array	Internal
[26]	00000000000000000000000000000000	Packed Array	Internal
[25]	00000000000000000000000000000000	Packed Array	Internal
[24]	00000000000000000000000000000000	Packed Array	Internal
[23]	00000000000000000000000000000000	Packed Array	Internal
[22]	00000000000000000000000000000000	Packed Array	Internal
[21]	00000000000000000000000000000000	Packed Array	Internal
[20]	00000000000000000000000001000000	Packed Array	Internal
[19]	00000000000000000000000000000000	Packed Array	Internal
[18]	00000000000000000000000000000000	Packed Array	Internal
[17]	00000000000000000000000000000000	Packed Array	Internal
[16]	00000000000000000000000000000000	Packed Array	Internal
[15]	00000000000000000000000000000000	Packed Array	Internal
[14]	00000000000000000000000010011000	Packed Array	Internal
[13]	00000000000000000000000000000011	Packed Array	Internal
[12]	00000000111111110000000011111111	Packed Array	Internal
[11]	00000000111111110000000011111111	Packed Array	Internal
[10]	00000000000000000000000000000010	Packed Array	Internal
[9]	10011010101111001101111011110000	Packed Array	Internal
[8]	10011010101111001101111011111000	Packed Array	Internal
[7]	00000000000000000000000000000010	Packed Array	Internal
[6]	11111111000000000000000011111111	Packed Array	Internal
[5]	11111111111111110000000000000000	Packed Array	Internal
[4]	00000000000000000000000000101100	Packed Array	Internal
[3]	00000000000000000000000000000010	Packed Array	Internal
[2]	10011010101111001101111011110000	Packed Array	Internal
[1]	10001000100010001000100010001000	Packed Array	Internal
[0]	00000000000000000000000000000000	Packed Array	Internal