김성준 2016320256

COSE222 Computer Architecture

Assignment #5

2.1.1

a)
```
sub f, g, h
```

b)
```
sub f, h, 5
add f, f, g
```

2.1.4

a) f = f + 4

b) f = g + h + I;

2.4.1

a)
```
lw    $s0, 16($s6)
sub   $t0, $zero, $s1
sub   $s0, $t0, $s0
```

b)
```
sub   $t0, $s3, $s4
sll   $t0, $t0, 2
add   $t0, $s6, $t0
lw    $t1, 0($t0)
sw    $t1, 32($s7)
```

2.4.4

a) f = (j*2) + I + g;

b) B[g] = A[f] + A[f+1];

2.6.1

a)
```
lw    $t0, 8($s6)
add   $s0, $s0, $t0
```

b)
```
sll   $t0, $s3, 2
add   $t0, $s6, $t0
lw    $t1, 0($t0)
sll   $t2, $s4, 2
```

```
add   $t2, $s6, $t2
lw    $t3, 0($t2)
add   $t4, $t1, $t3
sw    $t4, 32($s7)
```

2.6.4

a) f = ((f – g) – i) + g
   f = f – i;

b) t0 = A[1]
   t1 = A
   A[1] = A
   t0 = A[1]
   f = A + A[1] = 2 *A

2.8.1

a) $t0 = 0x50000000
   overflow

b) $t0 = 0x00000000
   desired result

2.8.2

a) $t0 = 0xB0000000
   desired result

b) $t0 = 0x00000002
   desired result

2.8.4

a) Yes, 0x90000000 overflow

b) yes, 0xA0000000 overflow

2.8.5

a) Yes, 0x80000000 overflow

b) Yes, 0xA0000000 overflow

2.8.6

a) Yes, 0x2FFFFFFF overflow

b) Yes, 0x5FFFFFFF overflow

2.10.1

a) add $s0, $s0, $s0

b) sub $t1, $t2, $t3

2.10.4

a) 0010 0001 0000 1000 0000 0000 0000 0000

0x21080000

b) 1010 1101 0100 1001 0000 0000 0010 0000

0xAD490020

2.13.1

a) $t2 = 0x12345678

b) $t2 = 0x11111111

2.13.2

a) $t2 = 0x0000AAA0

b) $t2 = 0x000000D0

2.13.3

a) $t2 = 0x00005545

b) $t2 = 0x0000BA01

2.16.1

a) t0<t1

$t2 = 1

b) t0>t1

$t2 = 2

2.17.4

a) $s2 = 20

b) $s2 = 20

2.17.5

a)
```
B = 0;
for (i=10; i != 0; i--) {
        B += 2;
}
```

b)
```
B  = 0
for (i=10; i>0; i--) {
        B+=2;
}
```