

Homework Assignment 3

(Due 2:10pm, Oct. 4, email to daehyun.kim@wsu.edu or submit a hardcopy)

You can use the following instructions only for this homework.

- Instructions
 - ADD R\$, R%, R&
 - ADD R\$, R%, #imm
 - SUB R\$, R%, R&
 - SUB R\$, R%, #imm
 - AND R\$, R%, R& // logical AND
 - AND R\$, R%, #imm
 - ORR R\$, R%, R& // logical OR
 - ORR R\$, R%, #imm
 - EOR R\$, R%, R& // logical XOR
 - EOR R\$, R%, #imm
 - CMP R\$, R%
 - CMP R\$, #imm
 - BGE, BLT, BGT, BLE, BEQ, BNE, B
 - MOV R\$, R% // R\$ = R%
 - MOV R\$, #imm

1. (30 points) Make an assembly code for the following C code.

```
int a, b, c;

switch ( a ) {
    case 0: b++; c++; break;
    case 1: b++; c--; break;
    case 2: b--; c++; break;
    default: b--; c--; break;
}
```

- Assume that a is R0, b is in R1, and c is in R2.
- The exit point (the end of the switch statement) could be just an address label.

2. (30 points) Make an assembly code for the following C code.

```
int a, b, c;

for ( a = 0 ; a < 10 ; a = a + 2 ) {
    b++;

    if ( a < b )
        c++;
    else
        c--;

    if ( c == 3 )
        break;
}
```

- Assume that a is R0, b is in R1, and c is in R2.
- The exit point (the end of the switch statement) could be just an address label.

3. (40 points) Make an assembly code for the following C code.

```
int a, b, c, n;

// start from here
c = 0;
b = 1;
a = 1;
n = 2;

while ( n < 10 ) {
    n++;
    c = b;
    b = a;
    a = b + c;
}
```

- Assume that a is R0, b is in R1, c is in R2, and n is in R3.
- The exit point (the end of the switch statement) could be just an address label.

Question: what's the value of R0 when the program finishes?