10220 CS410001 – Computer Architecture 2014

Appendix B - Input Samples

An Example C program:

```
sum = 0;
for( i = 0; i < 3; i++ ) {
    sum += i;
}
```

Suppose that

1. The sizes of *sum* & *i* are words.
2. The address of *sum* is located at 0x00000000 in D memory, while the address of *i* is at 0x00000008 in D memory.
3. PC is initially 0, and $sp is initially 0x400.

Translate into assembly:

```
        andi $t0, $0, 0      # sum = $t0 = 0
        andi $t1, $0, 0      # i = $t1 = 0
loop:   slti $t2, $t1, 3     # $t2 = ( i < 3 )
        beq $t2, $0, end     # if (i >= 3), go to end
        add $t0, $t0, $t1    # sum = sum + i
        addi $t1, $t1, 1     # i++
        j loop               # jump to loop
end:    sw $t0, 0($0)        # store sum
        halt
        halt
        halt
        halt
        halt
```

Then, this program will be provided as the following binary contents. Note that no comments are allowed in your submitted input files; the comments are here to help you understand the meaning of each line. Additionally, the content of each line is of hexadecimal format and is irrelevant to little-endian or big-endian.

iimage.bin:

```
0x00000000  # initial value of PC
0x0000000D  # number of words to be loaded into I memory
0x30080000  # contents of I memory begins
0x30090000
0x292A0003
```

```
0x11400003



0x01094020
0x21290001
0x08000002
0xAC080000
0xFFFFFFFF
0xFFFFFFFF
0xFFFFFFFF
0xFFFFFFFF
0xFFFFFFFF
```

dimage.bin:

```
0x00000400  # initial value of $sp
0x00000003  # number of words to be loaded into D memory
0x12345678  # content of D memory begins
0x9ABCDEF0
0x13572468
```