

COMP2611: Computer Organization

Introduction to MIPS programs (Solution)

Question 1: Write down the shortest sequence (any one) of MIPS instructions for the following C++ code, assuming each variable is stored in a different register (you name it):

```
a = a - 1;
```

Solution:

#note: no such MIPS instruction called subi

```
addi $s0, $s0, -1    #s0 stores a
```

Question 2: Write down the shortest sequence (any one) of MIPS instructions for the following C++ code, assuming each variable is stored in a different register (you name it):

`b = a * 5;`

Solution:

```
sll $s1, $s0, 2      #s0 stores a and s1 stores b
add $s1, $s1, $s0
```

Question 3: Write down the shortest sequence (any one) of MIPS instructions for the following C++ code, assuming the base address of the array A of int elements is stored in the register s0. You can use some registers for storing temporary values.

$A[2] = A[7] + 11;$

Solution:

```
lw $t0, 28($s0)
addi $t0, $t0, 11
sw $t0, 8($s0)
```