

## CS202 Computer Organization HW#2

For all the following problems please show the procedures how you solve the problems.

### Problem 1.

Provide the type and assembly language instruction for the following binary value: 0000 0010 0001 0000 1000 0000 0010 0000<sub>two</sub>

### Problem 2.

Provide the type and hexadecimal representation of following instruction: sw \$t1, 32(\$t2)

### Problem 3.

Translate the following C code to MIPS. Assume that the variables f, g, h, i, and j are assigned to registers \$s0, \$s1, \$s2, \$s3, and \$s4, respectively. Assume that the base address of the arrays A and B are in registers \$s6 and \$s7, respectively. Assume that the elements of the arrays A and B are 4-byte words:

B[8] = A[i] + A[j];

### Problem 4.

Consider the following MIPS loop:

LOOP: slt \$t2, \$0, \$t1

beq \$t2, \$0, DONE

subi \$t1, \$t1, 1

addi \$s2, \$s2, 2

j LOOP

DONE:

- 1) Assume that the register \$t1 is initialized to the value 10. What is the value in register \$s2 assuming \$s2 is initially zero?
- 2) For each of the loops above, write the equivalent C code routine. Assume that the registers \$s1, \$s2, \$t1, and \$t2 are integers A, B, i, and temp, respectively.

### Problem 5.

Write the MIPS assembly code that creates the 32-bit constant 0010 0000 0000 0001 0100 1001 0010 0100<sub>two</sub> and stores that value to register \$t1.