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: $0000\ 0010\ 0001\ 0000\ 1000\ 0000\ 0010\ 0000_{two}$

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 $0010\ 0000\ 0000\ 0001\ 0100\ 1001\ 0010\ 0100_{two}$ and stores that value to register $t1.