Homework Assignment 1

1. (10 points) For the following C statement, what is the corresponding MIPS assembly code? Assume that the variables f, g, h, and i are given and could be considered 32-bit integers as declared in a C program. Use a minimal number of MIPS assembly instructions.

f = g + (h − 5);

1. (15 points) For the following MIPS assembly instructions above, what is a corresponding C statement?

add f, g, h

add f, i, f

1. (20 points) For the following C statement, what is the corresponding MIPS assembly code? 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.

B[8] = A[i − j];

1. (25 points) 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];

1. (30 points) Translate the following MIPS code to C. 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.

addi $t0, $s6, 4

add $t1, $s6, $0

sw $t1, 0($t0)

lw $t0, 0($t0)

add $s0, $t1, $t0