W1A Written Assignment 1 Part A

100 Points

CS 281 Systems Architecture I

The following exercises come from the main text (20 points each).

- 2.1 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);
- 2.3 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];
- 2.11 For each MIPS instruction, show the value of the opcode (OP), source register (RS), and target register (RT) fields. For the I-type instructions, show the value of the immediate field, and for the R-type instructions, show the value of the destination register (RD) field.
  - addi $t0, $s6, 4
  - add $t1, $s6, $0
  - sw $t1, 0($t0)
  - lw $t0, 0($t0)
  - add $s0, $t1, $t0
- 2.15 Provide the type and hexadecimal representation of following instruction:

  sw $t1, 32($t2)
- 2.39 Write the MIPS assembly code that creates the 32-bit constant 0010 0000 0000 0001 0100 1001 0010 0100 base two and stores that value to register $t1.

What to hand in:

Please submit the solutions to the problems above **through BBlearn**. Make sure your answers are concise and clear. Make sure you completely explain all your answers. We will deduct points if it is not obvious how you got your answer -- even if your answer is correct.