Computer Organization Quiz 2 – chap 2.

3/31 13:20 ~ 14:00

True or False (9.5 pts / problem)

1. (o) MIPS only offers the addition of two operands rather than more operands, such as the addition of three operands. The main advantage of this scheme is to follow the design principal: simplicity favors regularity.
2. (o) The difference between small Endian and big Endian is the sequence of storing the bytes of a word in the memory.
3. (x) The 32-bit MIPS CPU offers the instructions of immediate mode, where programmers can embed a constant of 32-bit in an instruction. This scheme follows the design principal of making the common case fast.
4. (x) Consider the 2's complement signed integers of *n* bits. The number of 0 has two forms, one is +0 and the other is -0.
5. (o) Singed extension is to guarantee the integrity of translating a signed number represented in less bit number to the same signed number in more bit number.
6. (o) The R-format of MIPS instructions contain 6 fields, including op code, rd, rs, rt, shift amount, and function code.
7. (o) In addition to obeying the design principal of making the common case fast, the I-format MIPS instructions follow the design principal that good design demands good compromises as well.

8. (o) As a function is invoked, OS allocates a memory space in the stack for storing the variables declared and used in this function. In MIPS, if variables *a* and *b* are declared in blocks *A* and *B*, respectively, and block *A* is executed in front of block *B* in the function code. Then the memory location of *a* in the stack is located above that of variable *b*.
9. (o) As a program runs, CPU switches among the invoking of different functions. CPU needs to store its states, including the register contents, for the correct execution of a function such that CPU can switch to execute another function before completing the execution of current function.
10. (x) In MIPS, for the purpose of saving CPU states, as a function is invoked to start its execution, the function needs to save all the registers that will be used in the function; otherwise, the CPU state cannot be correctly restored to the original state.
11. (o) The dynamic linking can reduce the size of an executable file as compared to the static linking technique. The dynamic linking does not embed each library function used in a program into the executable binary file; on the contrary, the binary codes of invoked library functions will be loaded into memory only when they are invoked during the execution of a program.