1. Do RISC instructions sets use prefix opcode? Why?

No because prefix code is an extra part in the instruction set that can vary the length of the instruction and that will violate the fact that all RISC instructions set have a fixed length that can not be varied

2. MIPS instruction typically includes a 6-bit opcode instruction field. However when this opcode has the value 000000, an additional 6 bits are used to determine the function. What is the term that describes this increase in the number of opcode bits?

EXPANDING OPCODe

3. How are branch instructions different from call subroutine instruction?

4. Consider a CPU that has an instruction the form load A, B, where B is the register, A is the accumulator, and the instruction loads data into the accumulator. If the instruction is using register addressing, what rule the operand in the instruction? If the instruction is using register indirect addressing what role does the operand B play in the instruction?

• B is the register that has the data

• B is the pointer to the operand

5. What is the operanding is direct addressing?

It is the actual value of the address

6. Many CPUs have a flag register. What role do these play with branching?

Reflect the status of the result of the most recent operation

7. Given an eight bit register that contains the value 10100110

What is the value of the register after an arithmetic right shift?

11010011

What is the value of the register after a logical shift right?

01010011

What is the value of the register after a rotate left?

01001101

8. you are drelgning as instruction set for CPU that has 32 register. Instructions are 16 bids wide. how many opcodes can you have if the instructions have 2 registers as operands?

2^5 = 32 in 1 register

5 bit wide in the CPU

2^5 + 2^5 = 2^10

2 registers = 10 bits

but we have instructions that are 2^16 bid wide

2^16 – 2^10 = 2^6 which is equal to 64 register as operands

9. MIPS instructions are 32 bits wide. MIPS data values are 32 bits wide. Why do all MIPS instructions that use immediate mode data only allow for 16 bits of data?

Because the operands is embedded inside the encode instruction

2 complement number.

-2^15 = -32.769 < value < +2^15 – 32.768

10. Why do subroutine call instructions save the program counter?

Because it can change the counter back to the main program.

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