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Topic: cis501 hw2: paper review

The Evolution of RISC Technology at IBM by John Cocke and V. Markstein

Q1-Q3: What were three important changes from the 801 to the improved 801? For each of these three changes, list the key advantages and disadvantages (if any), and state whether the change maked the newer processor more RISC-like or CISC-like than its predecessor.

Answer:

1. All instructions would be 32 bits in length. PROS: simplified the instruction decode mechanism; CONS: increase its program size by less than a factor of 33 percent.
2. Ability to branch based on the state of any bit in any general-purpose register. PROS: saving the condition code and then branching on the saved information later. CONS: N/A
3. Floating-point instructions, like rotate, and multiply, plus in RISC System/6000. PROS: improve floating point computation ability. CONS: In RISC System/6000, more than one cycle instructions are added, or say N/A

First two are RISC-like, the last one seems CISC-like.

Q4: Software technology had a large impact on the 801 project. Describe both the role of software simulation of the 801 and the 801 compiler in the 801 project.

Answer:
Simulator: because at that time, there was no software on 801. The simulator can help 801 program running on System/370 for bootstrapping purpose.

Compiler: it played a central role, adapting PL/8 code such that the features in the architecture of 801 are fully utilized.