cs281: Introduction to Computer Systems

Lab07 – Y86 CPU Evaluation Rubric

The following is an evaluation rubric for scoring your Y86 CPU circuit.

Points	Item	Description
15	Design	Is the circuit laid out nicely? Does the circuit use tunnels to reduce wiring complexity? Is there an appropriate use of subcircuits to achieve functional decomposition of major parts?
15	Testing	Do the students have an appropriate number and breadth of test cases they've run? Is there documentation on the testing that has been performed? Is there a "debug" section at the bottom of the circuit to facilitate testing of important circuit values?
5	`nop`	Does the `nop` instruction work correctly?
10	`rrmov`	Does the `rrmovq` instruction move values between registers correctly?
10	`irmov`	Does the `irmovq` instruction move values to registers correctly?
15	`Opl`	Do the `Opl` instructions execute the correct operations on the values in registers correctly?
10	`rmmov`	Does the `rmmovq` instruction move values from registers to memory correctly?
10	`mrmov`	Does the `mrmovq` instruction move values from memory to registers correctly?
15	`push`	Does the `pushq` instruction move values to the stack correctly? Note first you will have to set up the stack pointer.
15	`pop`	Does the `popq` instruction move values from the stack correctly? Note first you will have to set up the stack pointer and put values on the stack.
10	`jmp`	Does the `jmp` (unconditional jump) instruction correctly go to another address?
15	`call`	Does the `call` instruction work correctly? It needs to load a new address in the PC and also store the return address on the stack.
15	`ret`	Does the `ret` instruction properly return from a subroutine call? Does it update the stack correctly?
10	`cmovl`	Does the `cmovl` correctly execute a conditional move? You will need to precede this with an appropriate OP instruction to set the condition codes. Demonstrate BOTH a true and false condition execution.
10	`jge`	Does the `jge` correctly execute a conditional jump? You will need to precede this with an appropriate OP instruction to set the condition codes. Demonstrate BOTH a true and false condition execution.
5	`halt`	Does the `halt` execute correctly?
5	`iError`	Does the circuit correctly identify and process an invalid instruction? How will you test this?
5	`iMemError`	Does the circuit correctly identify and process an error on an instruction memory address? How will you test this?
5	`dMemError`	Does the circuit correctly identify and process an error on a data memory address? How will you test this?
	Total	