FIGURE e4.5.10 R-type instructions can be implemented with a simple two-state finite- state machine. These states correspond to the box labeled "R-type instructions" in Figure e4.5.7. The first state causes the ALU operation to occur, while the second state causes the ALU result (which is in ALUOut) to be written in the register file. The three signals asserted during state 7 cause the contents of ALUOut to be written into the register file in the entry specified by the rd field of the Instruction register.