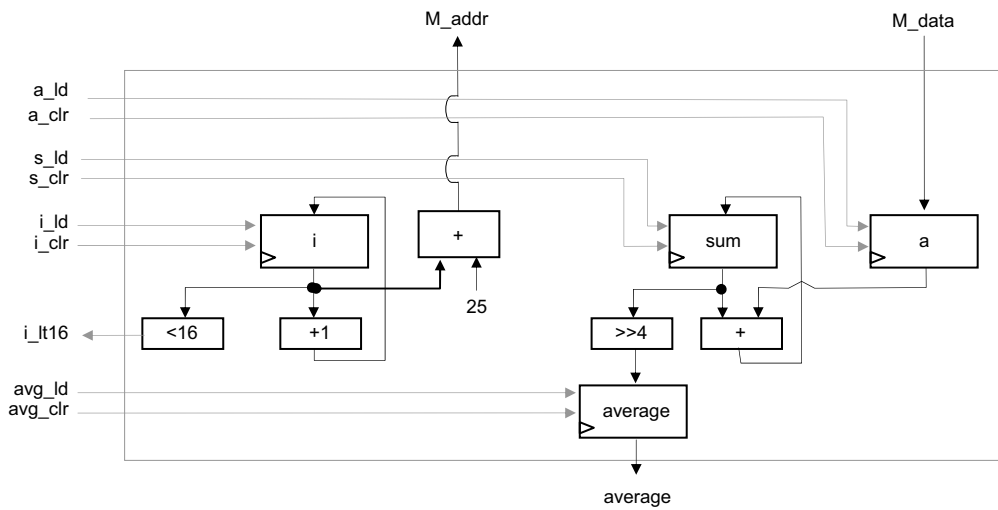


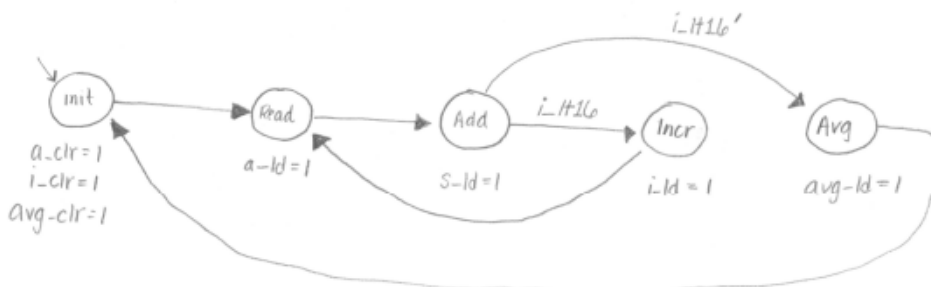
4. Create an FSM that interfaces the datapath shown below. The FSM should use the datapath to compute the average value of the 16 32-bit elements of any array A. Array A is stored in a memory, with the first element at address 25, the second at address 26, and so on. Assume that putting a new value onto the address lines M_addr causes the memory to almost immediately output the read data on the M_data lines. Ignore the possibility of overflow.



inputs: *i_It16*
 outputs: *a_ld*, *a_clr*, *s_ld*, *s_clr*, *i_ld*, *i_clr*, *avg_ld*, *avg_clr*

Increment so that *i* = 15, Read state grabs value, Add state $sum = sum + Mem[25+15]$, 15 < 16 so go to Incr state

Now *i* = 16, Read state grabs value, Add state $sum = sum + Mem[25+16]$, then 16 < 16 not true, go to Avg and output



If we can't just fix the datapath to look at 15, then we can move the comparison before we decided to add

inputs: *i_It16*
 outputs: *a_ld*, *a_clr*, *s_ld*, *s_clr*, *i_ld*, *i_clr*, *arg_ld*, *arg_clr*

