

Specification of the MIN_MAX_AVR circuit

Function

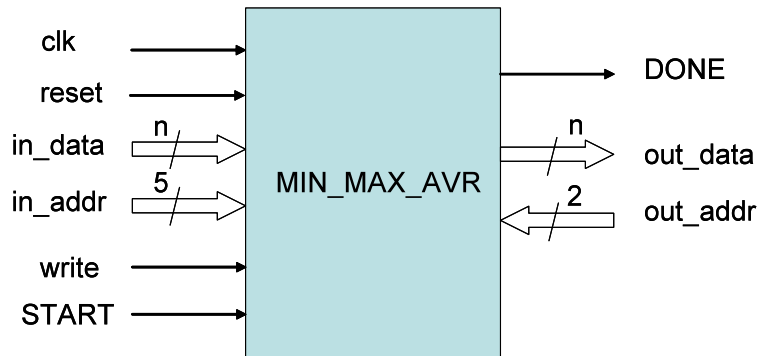
Design a circuit capable of calculating the minimum, maximum, and average of 32 n-bit numbers.

Optimization

Optimize your circuit for the minimum total execution time. When choosing between two circuits with the same or very similar execution time, give preference to the circuit with the smaller area.

Interface

Assume the following interface to your circuit:



Port	Width	Meaning
clk	1	System clock
reset	1	System reset – clears internal registers
in_data	n	Input data bus
in_addr	5	Address of the internal memory where input data is stored
write	1	Synchronous write control signal
START	1	Starts the computations
DONE	1	Asserted when all results are ready
out_data	n	Output data bus used to read results
out_addr	2	01 – reading minimum 10 – reading maximum 11 – reading average