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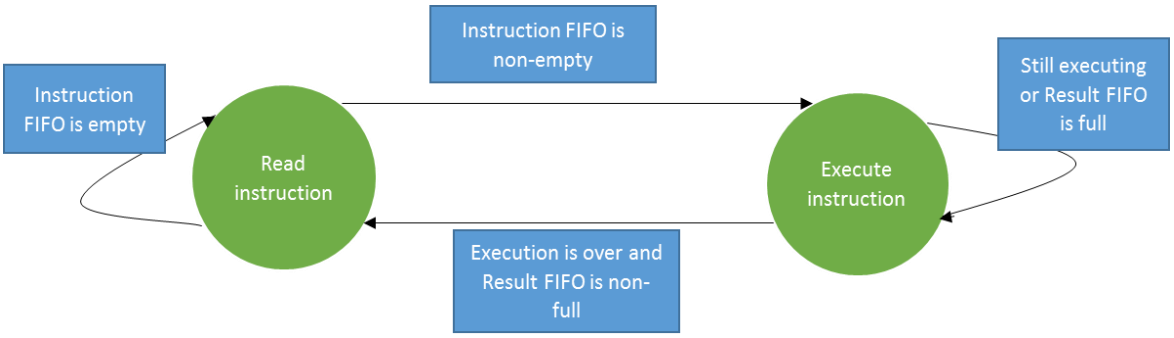
PEA: PEA can have 2 states: a) Read Instruction and b) Execute Instruction (Store data in CV or evaluate depending on instruction).

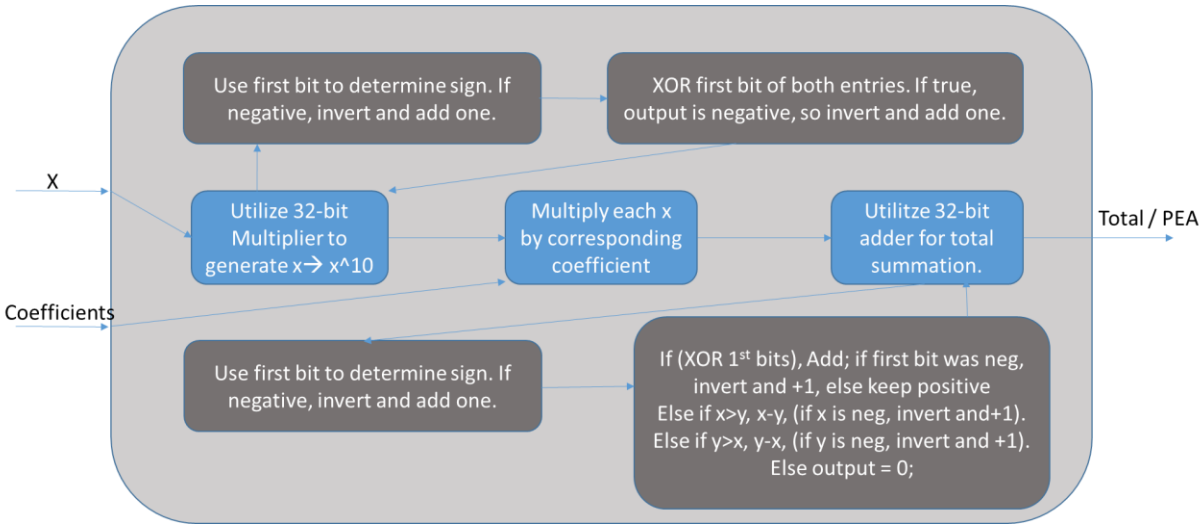


FIFO and Handshaking: Each FIFO is connected to a data source and sink actor as described in the table below. The Read-Enable of the FIFO is driven by the sink it is connected to while the Write-Enable of the FIFO is driven by the source it is connected to. The 'full' signal of the FIFO is sent to the source, while the 'empty' is sent to the sink connected to the FIFO. The handshaking protocol is as follows: if a FIFO is full, then the source actor should not try to push data to it, and if it is empty the sink actor should not try to read from it.

FIFO number	Source	Sink
1	Instruction Source Actor	PEA
2	Data Source Actor	PEA
3	PEA	Result Sink Actor

Instructions: There are 4 types of instructions. Each instruction is 21 bits wide. The first 2 bits denote the instruction type (STP, EVP, EVB or RST). The next 3 bits denote the first argument (since it is used to hold the CV address which can only be 0 to 7) and the last 16 bits hold the second argument. 16 bits are required for the second argument, because EVP requires 'x' as its second argument which needs 16 bits.

Implementation progress: We decided to first implement the combinatorial block that evaluates the polynomial. It has 1 input for 'x', 11 inputs for coefficients, and 1 output for the answer. Its block diagram is shown below. We plan to reuse the FIFOs and Source and Sink actors from the inner product example.



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Connections: The diagram below shows the connections between the different actors and the FIFOs. The signals responsible for the handshaking are shown.