

When the input is positive, the InRemain just the input without the sign bit. The RegimeValue is m-1 when RegimeCheck (The MSB of InRemain, the second bit of In) is 1 and it is -m when RegimeCheck is 0.

For negative input, the InRemain is the two’s compliment of the input without sign bit. Take care that the RegimeValue and other components are corresponding to the InRemain for negative input NOT THE ORIGINAL INPUT.