CAD For VLSI (CS6230) Final Project
Project Title : P2. Pipelined double precision(fp64) floating point adder

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Test Cases used

Binary value = (-1) Sign bit * 2 (Exponent – 1023) * 1.Mantissa

Positive + positive

1) A = 64'b0000000001101001000100000000000000000000000000000000000000000000;
//100.25
B = 64'b0000000000101000010110100001110010101100000010000011000100100111;
//6.088
// C = 0000000001101010100101011010000111001010110000001000001100010010
0000000001101010100101011010000111001010110000001000001100010010(expected)
// 106.338

Negative + negative

2) A = 64'b1000000001101001000100000000000000000000000000000000000000000000;
//-100.25
B = 64'b1000000000101000010110100001110010101100000010000011000100100111;
//-6.088
// C = 1000000001101010100101011010000111001010110000001000001100010010

1000000001101010100101011010000111001010110000001000001100010010 (expected)
//-106.338

Positive + Negative

3) A= 64'b0000000001101001000100000000000000000000000000000000000000000000;
//100.25
B = 64'b1000000000101000010110100001110010101100000010000011000100100111;
//-6.088
// C = 0000000001100111100010100101111000110101001111110111110011101110

0000000001100111100010100101111000110101001111110111110011101110 (expected)
//94.162

Negative + Positive

4) A= 64'b1000000001101001000100000000000000000000000000000000000000000000;
//-100.25
B = 64'b0000000000101000010110100001110010101100000010000011000100100111;
//6.088
// C = 1000000001100111100010100101111000110101001111110111110011101110

1000000001100111100010100101111000110101001111110111110011101110 (expected)
//-94.162

-X + +X

5) A= 64'b1000000001101001000100000000000000000000000000000000000000000000;
//-100.25
B = 64'b0000000001101001000100000000000000000000000000000000000000000000;
//100.25
// C = 0000000000000000000000000000000000000000000000000000000000000000

0000000000000000000000000000000000000000000000000000000000000000 (expected)
//-94.162

+Infinity + X

6) A= 64'b0111111111110000000000000000000000000000000000000000000000000000;
//+infinity
B = 64'b0000000001101001000100000000000000000000000000000000000000000000;
//100.25
// C = 0111111111110000000000000000000000000000000000000000000000000000

0111111111110000000000000000000000000000000000000000000000000000 (expected)
//+Infinity

-Infinity + X

7) A= 64'b1111111111110000000000000000000000000000000000000000000000000000;
//-infinity
B = 64'b0000000001101001000100000000000000000000000000000000000000000000;
//100.25
// C = 1111111111110000000000000000000000000000000000000000000000000000

1111111111110000000000000000000000000000000000000000000000000000 (expected)
//-Infinity

NAN + X

8) A= 64’b1111111111110000000000000000000000000000000000000000000000000001;
//NAN
B = 64'b0000000001101001000100000000000000000000000000000000000000000000;
//100.25
// C = 0111111111111111111111111111111111111111111111111111111111111110

0111111111111111111111111111111111111111111111111111111111111110 (expected)
//NAN

+Infinity + -Infinity

9) A= 64’b0111111111110000000000000000000000000000000000000000000000000000;
//+Infinity
B = 64’b1111111111110000000000000000000000000000000000000000000000000000;
//-Infinity
// C = 0111111111111111111111111111111111111111111111111111111111111111

0111111111111111111111111111111111111111111111111111111111111111 (expected)
//Cannot calculate