4 Bit signed Adder

Range with 4-bit binary is -8 to 7.

The module has ovflw port .

Algorithm for detecting overflow :

If A(MSB)==B(MSB)==1 and Sum(MSB)==0:

ovflw=1

Elsif A(MSB)==B(MSB)==0 and Sum(MSB)==1:

ovflw=1

else: ovflw=0

If ovflw ==1 then overflow occurred .

If ovflw==0 then no overflw.

- 4+4=8 , ovflw =1
- 3+5=8 ,ovflw=1.
- …….
- 1+7=8 , ovflw=1.
- (-4)+ (-5)=-9 , ovflw=1.
- (-3)+ (-6) = -9 , ovflw=1.
- ……
- -1 -8 =-9 , ovflw=1
- -8-8 = -16 , ovflw=1