In floating point reppresentation, the significant part is in sign-magnitude form. When two numbers of different signs are added up, subtraction is to be performed. In other word, for a negative number, we need to add the two's complement of the magnitude. That's why in step (3) of my algorithm, you see

$$s_1^* = \begin{cases} 0\#\#s_1\#\#0^3 & sign = 0\ (positive) \\ \overline{0\#\#s_1\#\#0^3} + 1 & sign = 1\ (negative) \end{cases}$$

$$s_2^* = \begin{cases} 0\#\#s_2\#\#g\#\#r\#\#sticky & sign = 0 \\ \overline{0\#\#s_2\#\#g\#\#r\#\#sticky} + 1 & sign = 1 \end{cases}$$

After the two's complement addition is performed, if the result is negative, we need to put it back to the sign-magnitude form.

The block diagram in my hint to the homework indicates how to use the one's complement adder to reduce the number of steps in floating point addition. It is a review of the integer addition arithmetic, and an elaboration on the floating point addition.