Apply High Boost filter on the given matrix with A = 2.

Matrix

$$\begin{bmatrix} 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \\ 3 & 2 & 1 & 2 \\ 5 & 1 & 3 & 9 \end{bmatrix} \times \begin{bmatrix} -1 & -1 & -1 \\ -1 & A+8 & -1 \\ -1 & -1 & -1 \end{bmatrix}$$

8D High Boost mask

Group 1:

$$g(0,0) = -1(1+2+3+5+7+3+2+1) + 6(A+8)$$

$$= -1(24) + 6(2+8)$$

$$= -24 + 6(10)$$

$$= -24 + 60$$

$$= 36$$

Group 2:

$$g(0,1) = -1(2+3+4+6+8+2+1+2) + 7(2+1$$

$$= -1(28) + 7(10)$$

$$= -28 + 70$$

$$= 42$$

Group 3:

$g(1,0) = -1(5+6+7+3+1+5+1+3) + 1(2+8)$

$= -1(31) + 1(10)$

$= -31 + 10$

$= -11$

$g(1,1) = -1(6+7+8+2+2+1+5+9) + 1(2+8)$

$= -1(38) + 10$

$= -38 + 10$

$= -28$

Hence:

Resultant Matrix

$$\begin{bmatrix} 1 & 2 & 3 & 4 \\ 5 & 36 & 42 & 8 \\ 3 & -11 & -28 & 2 \\ 5 & 1 & 3 & 9 \end{bmatrix}$$

END

4D High Boost mask:

$$\begin{bmatrix} 0 & -1 & 0 \\ -1 & A+4 & -1 \\ 0 & -1 & 0 \end{bmatrix}$$