Geometric-Transformation-Example

Question 1

You are given the following (forward) geometric transformation:

> The pixel at coordinate (x, y) in the original picture moves to the location $(\frac{2x+y}{3}, x)$ in the new picture.

Describe the result of applying this transformation to the following picture. Compute the transformed image only in a 4×3 window, where the values of x are $2, 3, 4$, and the values of y are $1, 2, 3, 4$.

	$x=0$	$x=1$	$x=2$	$x=3$	$x=4$
$y=0$	0	1	2	3	4
$y=1$	1	2	3	4	5
$y=2$	2	3	4	5	6
$y=3$	3	4	5	6	7
$y=4$	4	5	6	7	8
$y=5$	5	6	7	8	9
$y=6$	6	7	8	9	9
$y=7$	7	8	9	9	9
$y=8$	8	9	9	9	9

Using **nearest neighbor** the answer is:

	$x=2$	$x=3$	$x=4$
$y=1$			
$y=2$			
$y=3$			
$y=4$			

Using **Bilinear interpolation** the answer is:

	$x=2$	$x=3$	$x=4$
$y=1$			
$y=2$			
$y=3$			
$y=4$			