Homework-2 Solutions

Question 1

	$x=0$	$x=1$	$x=2$	$x=3$	$x=4$	$x=5$	$x=6$	$x=7$
$y=0$	10	20	30	40	50	0	70	80
$y=1$	40	50	60	30	50	0	60	70
$y=2$	70	80	90	20	50	0	50	60
$y=3$	100	110	120	10	50	0	40	50
$y=4$	130	140	150	0	50	0	30	40
$y=5$	160	170	180	0	50	0	20	30
$y=6$	190	200	210	0	50	0	10	20

The above picture is transformed by a geometric transformation. The (forward) description of this transformation is:

> The pixel at coordinate (x, y) in the original picture moves to the location $(6-3y, 6-2x)$ in the new picture.

A.

Compute the transformed image using Nearest-Neighbor interpolation over the 2×2 window specified below:

	$x=0$	$x=1$
$y=0$	20	20
$y=1$	20	20

This result is obtained with $round(2.5) = 3$.

B.

Compute the transformed image using Bilinear interpolation over the 2×2 window specified below:

Answer:

	$x=0$	$x=1$
$y=0$	20	23
$y=1$	55	52