Problem Set 0

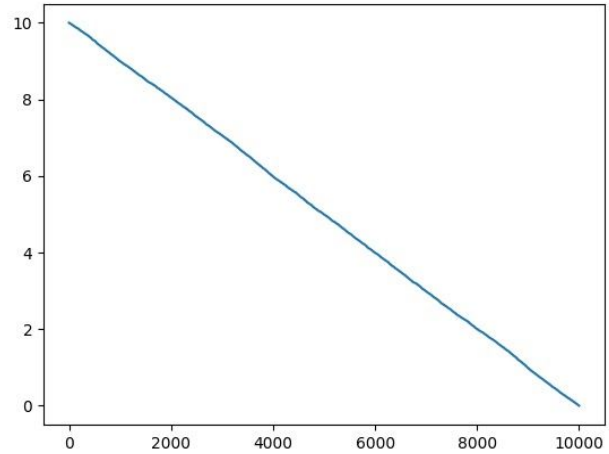
Problem 1

a. Set x to an ndarray of integers 0-999 shuffled randomly.
b. Set ‘b’ equal to the 3rd subarray in the ndarray ‘a’. ‘a’ and ‘b’ still reference the same data.
c. Set ‘b’ equal to a 1D array of the elements in ‘a’ in the given order. ‘a’ and ‘b’ still reference the same data.
d. Set x to a 5x1 ndarray of random floats from a Gaussian distribution with mean 0 and stdev 1. Then set y to a rank 1 array of all the floats from x that are greater than 0.
e. Set x to an ndarray of 10 elements all set to 0.5. Then set y to the same thing (but not a reference to the same data). Then set z to a 10 element ndarray of all 1s by doing an elemental addition of each element in x and y.
f. Set ‘a’ to an array of integers 1-99. Then set ‘b’ to a reversed list of the elements in ‘a’.

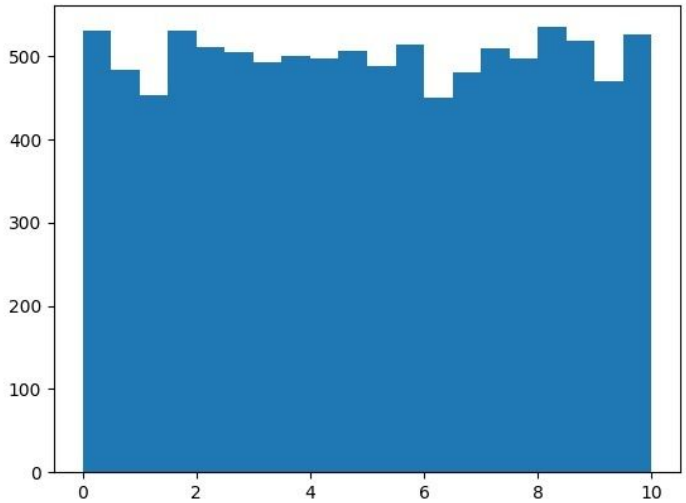
Problem 2

a. def random_dice(N):
   return np.ceil(np.random.rand(N) * 6)
b. def reshape_vector(y):
   return y.reshape((3,2))
c. def max_value(z):
   maxValue = np.max(z, keepdims=True)
   x, y = np.where(z == maxValue)
   return x[0], y[0]
d. def count_ones(v):
   return len(v[v == 1])

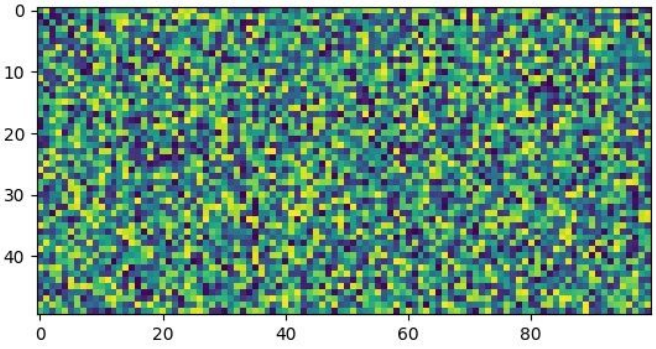
Problem 3


10
8
6
4
2
0
0
2000
4000
6000
8000
10000

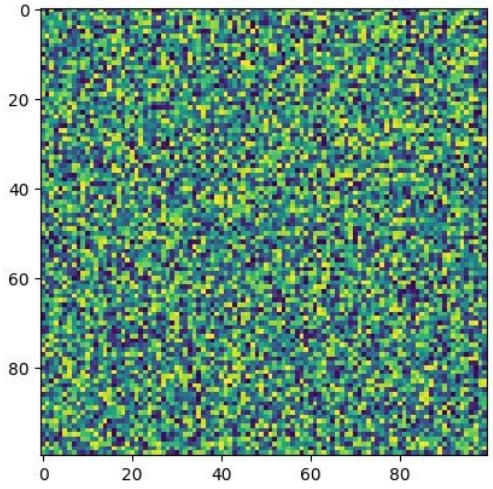
a.


500
400
300
200
100
0
0
2
4
6
8
10

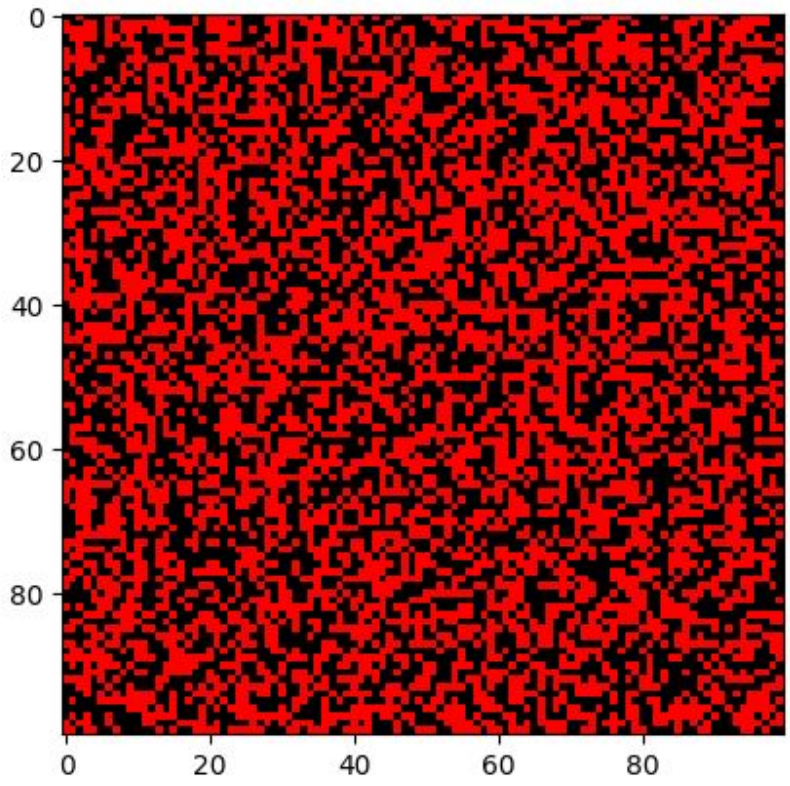
b.



c.

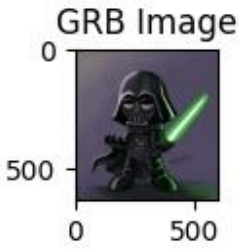


d.



e.

Problem 4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500


Grayscale Image
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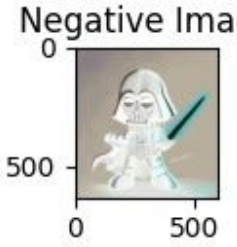
500
0
500


Negative Image
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Flipped Image
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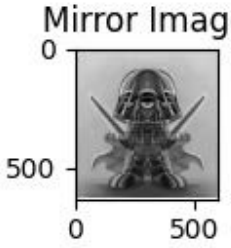
500


Mirror Image
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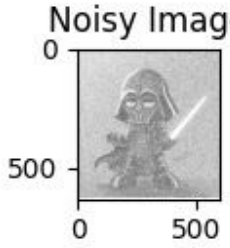
Noisy Image
0
500
0
500