Lab2 Report
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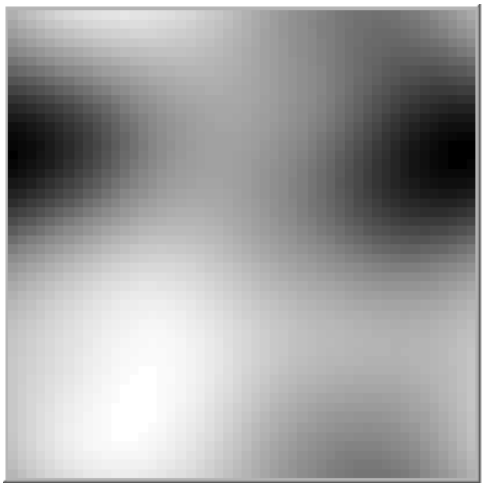
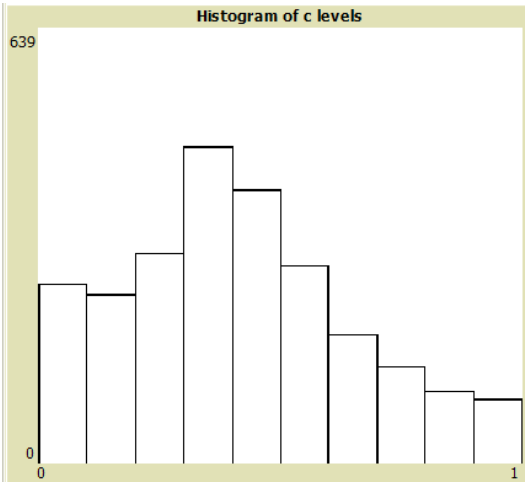
Variant 1

Exercise 1

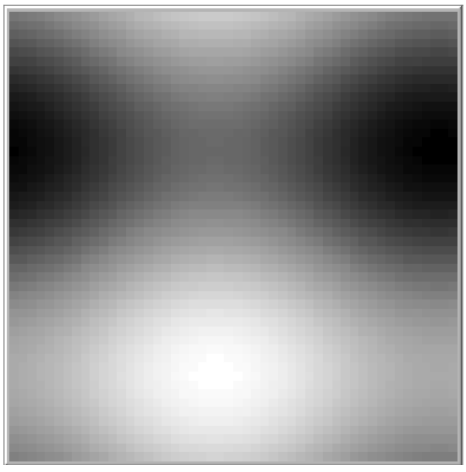
W = 1:
After 100 steps:

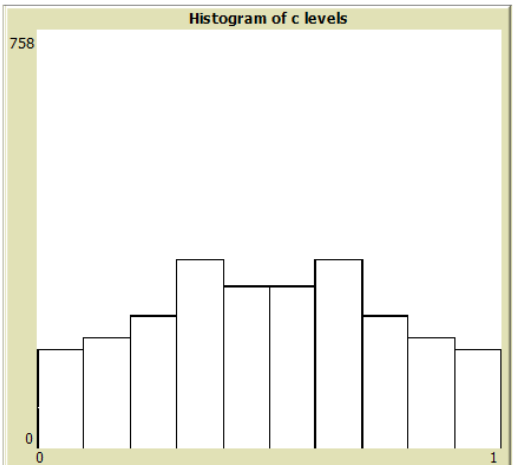




We can see that after 100 steps we got something similar to normal distribution

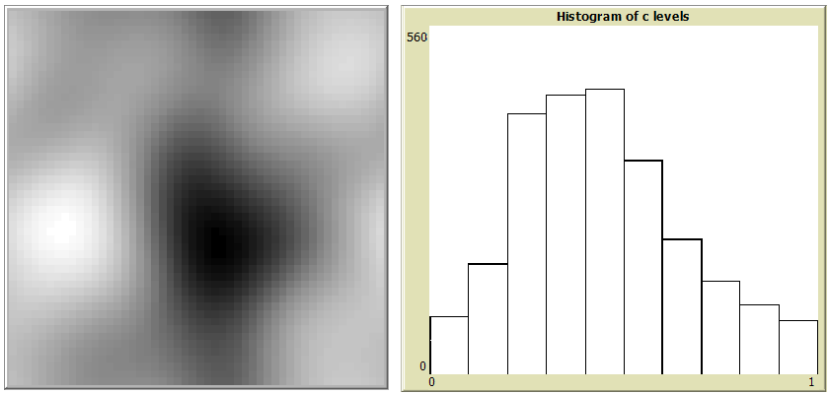
After long run:





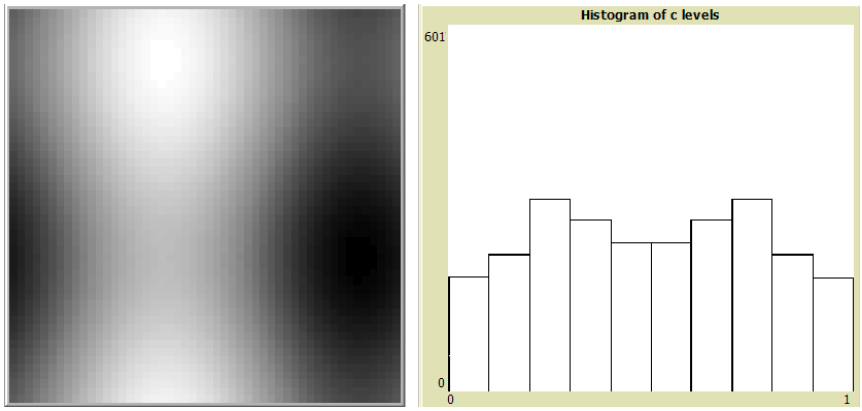
After a long run this distribution is more averaged.

W = 0.5
After 100 steps:



Again we see something similar to normal distribution.

After long run:

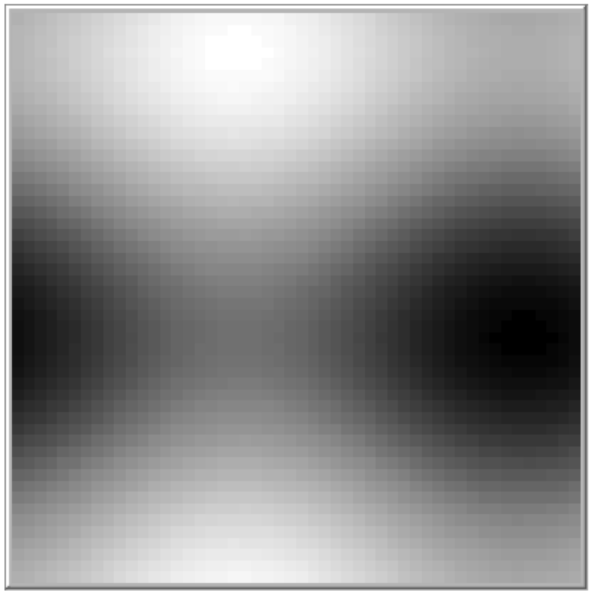


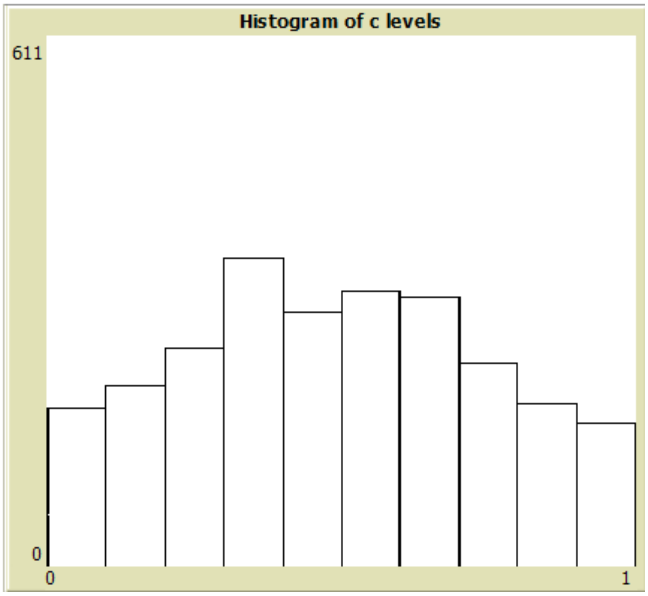
Here we have almost equal number of all possible values of c

After running these simulations we can say that with time this distribution becomes more equal for all values of c.

Custom neighborhood patches:
Now I will take only some of neighbors

		X
X	C	
	X	X





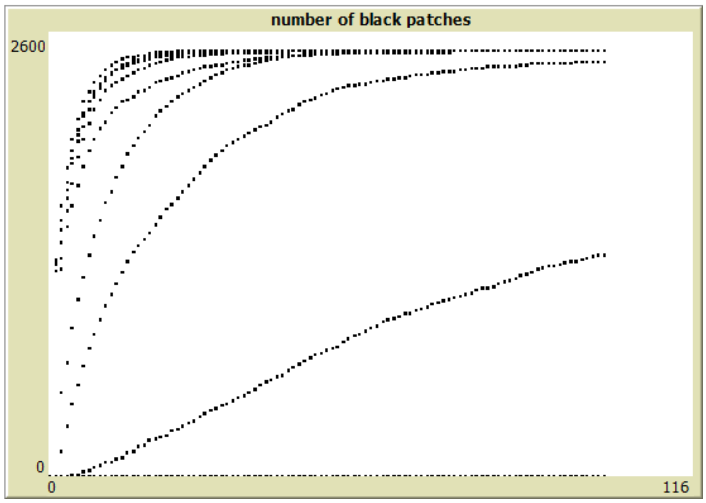
We will have something like this and it will be changing all the time but there will be a constant pattern.

The higher w is the less influence c value of patch will have on a result.

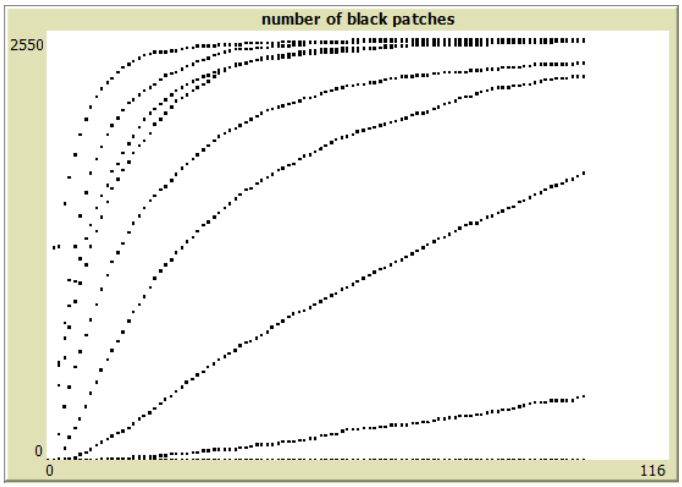
If we remove rescaling then after some time all values of c will be averaged and we will have only one color

Exercise 2

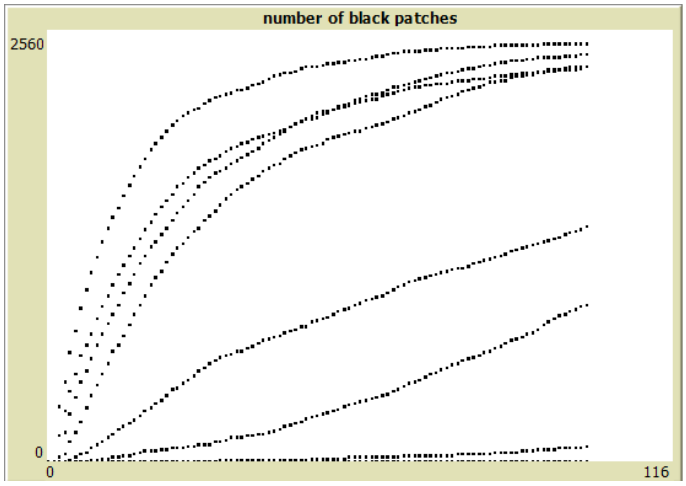
Plots with ticks on x axis and number of black patches on y axis for different noise level values
Noise level values: 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1



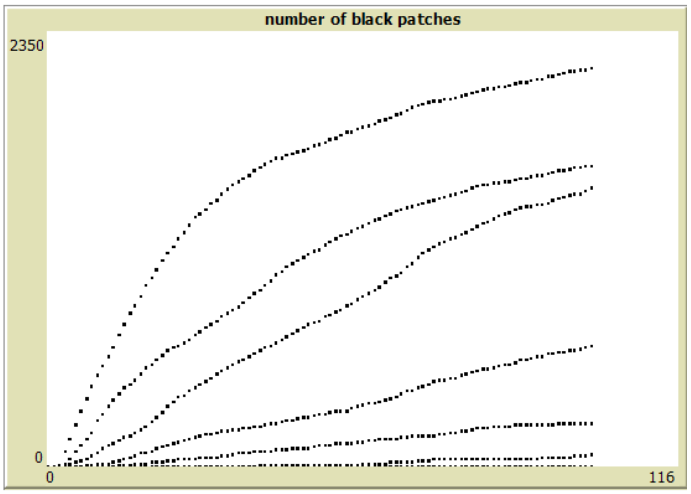
threshold = 0.5



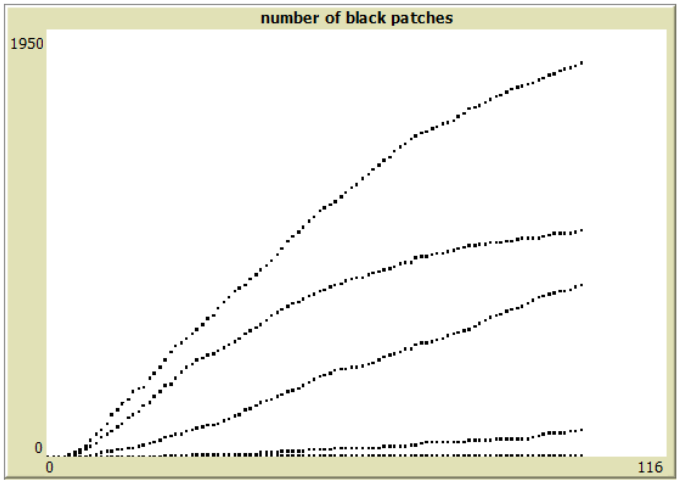
threshold = 1



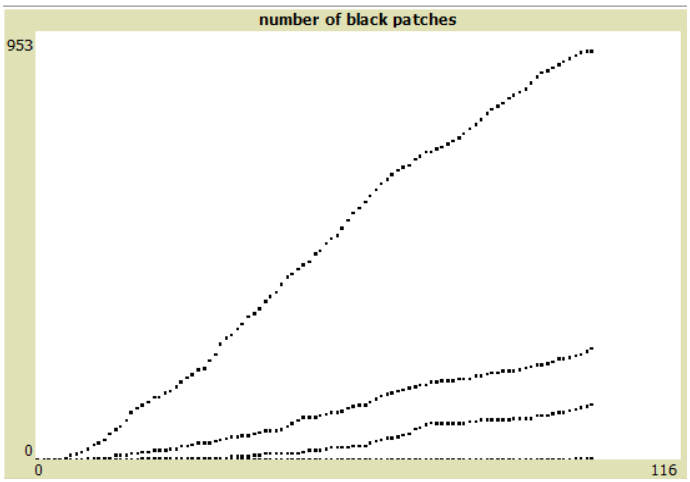
threshold = 1.5



threshold = 2



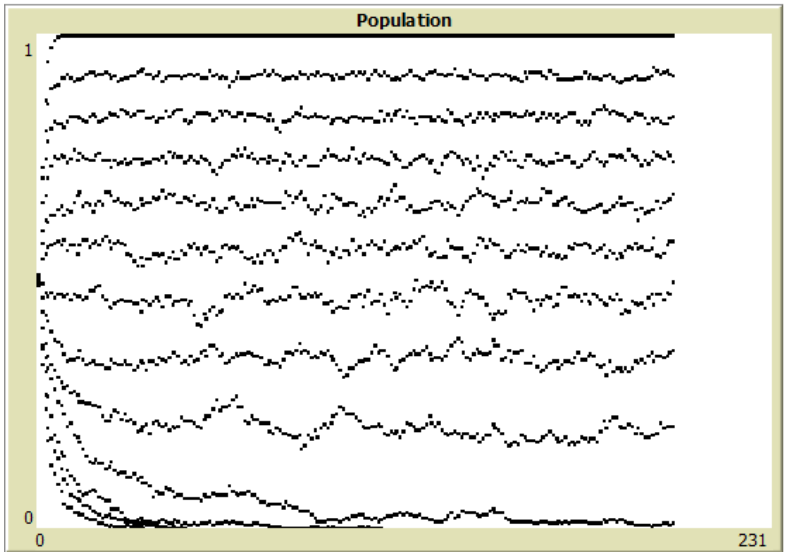
threshold = 2.5



threshold = 3

So we can see that for smaller thresholds simulations will have more black patches. Also the higher noise the more black patches we will have.

Exercise 3



Population of simulations where:
initial pop = 50
delta from 0 to 100 with step 8

So we can see that with smaller delta population are decreasing quickier and it is because there are higher probability that our particle will die