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Project 4

Function Decomposition

1. Programmer's Choice

My choice of a quantity to add to the simulation was deer ticks. The deer tick population will increase as the deer population increases.

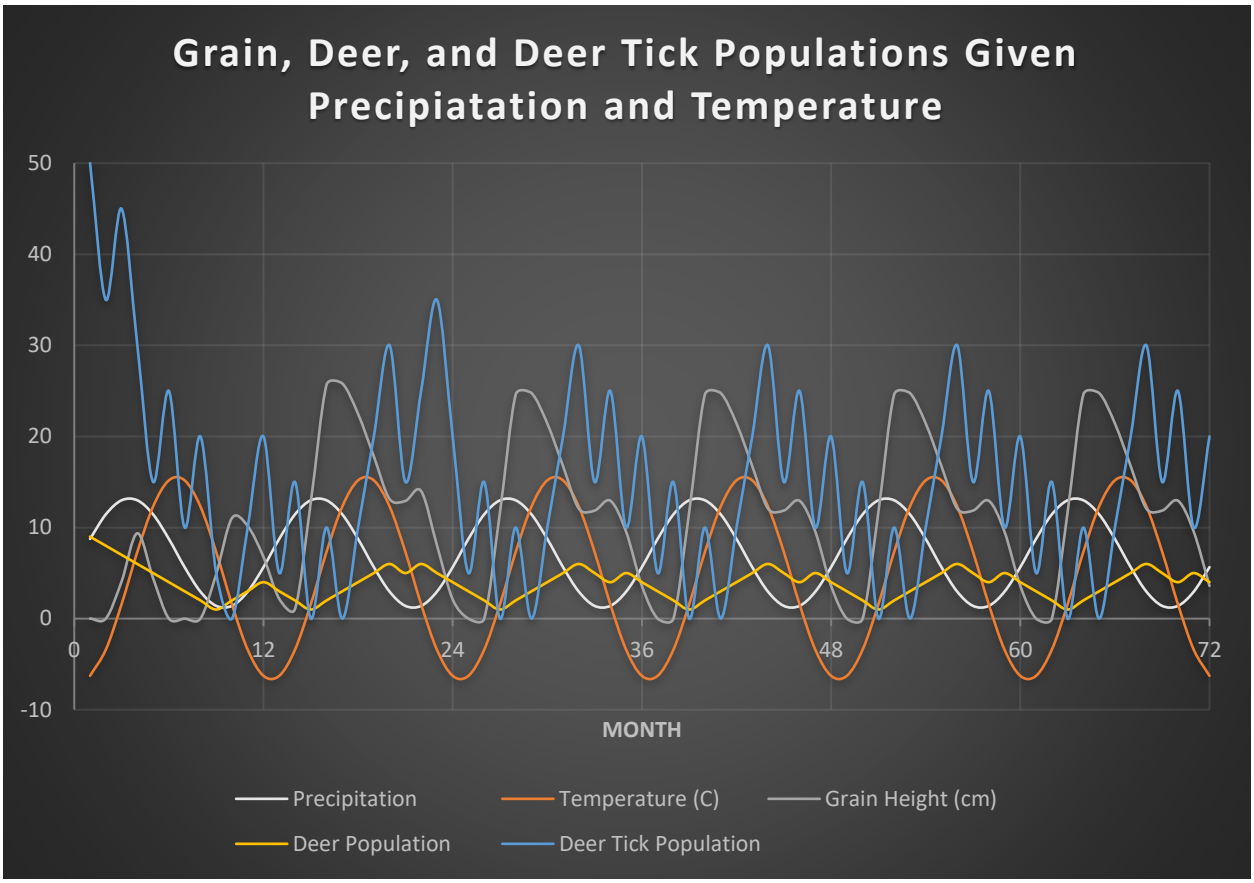
2. Performance Data

2.1 Table

Month	Precipitation	Temperature	Grain Height	Deer Pop.	Deer Tick Pop.
1	8.75	-6.28	0	9	50
2	11.44	-3.41	0	8	35
3	12.99	1.57	4.07	7	45
4	12.99	7.33	9.37	6	30
5	11.44	12.31	4.44	5	15
6	8.75	15.18	0	4	25
7	5.65	15.18	0	3	10
8	2.96	12.31	0	2	20
9	1.4	7.33	4.88	1	5
10	1.4	1.57	11.03	2	0
11	2.96	-3.41	10.17	3	10
12	5.65	-6.28	6.77	4	20
13	8.75	-6.28	2.17	3	5
14	11.44	-3.41	1.06	2	15
15	12.99	1.57	12.74	1	0
16	12.99	7.33	25.67	2	10
17	11.44	12.31	25.82	3	0
18	8.75	15.18	22.48	4	10
19	5.65	15.18	17.81	5	20
20	2.96	12.31	13.13	6	30
21	1.4	7.33	12.92	5	15
22	1.4	1.57	14	6	25
23	2.96	-3.41	8.06	5	35
24	5.65	-6.28	2.11	4	20
25	8.75	-6.28	0	3	5
26	11.44	-3.41	0	2	15
27	12.99	1.57	11.69	1	0
28	12.99	7.33	24.61	2	10
29	11.44	12.31	24.76	3	0

30	8.75	15.18	21.43	4	10
31	5.65	15.18	16.75	5	20
32	2.96	12.31	12.07	6	30
33	1.4	7.33	11.86	5	15
34	1.4	1.57	12.94	4	25
35	2.96	-3.41	9.54	5	10
36	5.65	-6.28	3.59	4	20
37	8.75	-6.28	0	3	5
38	11.44	-3.41	0	2	15
39	12.99	1.57	11.69	1	0
40	12.99	7.33	24.61	2	10
41	11.44	12.31	24.76	3	0
42	8.75	15.18	21.43	4	10
43	5.65	15.18	16.75	5	20
44	2.96	12.31	12.07	6	30
45	1.4	7.33	11.86	5	15
46	1.4	1.57	12.94	4	25
47	2.96	-3.41	9.54	5	10
48	5.65	-6.28	3.59	4	20
49	8.75	-6.28	0	3	5
50	11.44	-3.41	0	2	15
51	12.99	1.57	11.69	1	0
52	12.99	7.33	24.61	2	10
53	11.44	12.31	24.76	3	0
54	8.75	15.18	21.43	4	10
55	5.65	15.18	16.75	5	20
56	2.96	12.31	12.07	6	30
57	1.4	7.33	11.86	5	15
58	1.4	1.57	12.94	4	25
59	2.96	-3.41	9.54	5	10
60	5.65	-6.28	3.59	4	20
61	8.75	-6.28	0	3	5
62	11.44	-3.41	0	2	15
63	12.99	1.57	11.69	1	0
64	12.99	7.33	24.61	2	10
65	11.44	12.31	24.76	3	0
66	8.75	15.18	21.43	4	10
67	5.65	15.18	16.75	5	20
68	2.96	12.31	12.07	6	30
69	1.4	7.33	11.86	5	15
70	1.4	1.57	12.94	4	25
71	2.96	-3.41	9.54	5	10
72	5.65	-6.28	3.59	4	20

2.2 Graph



3. Patterns

The deer population increases as the grain height increases and decreases as the grain height decreases. The grain height increases after precipitation and temperature are at moderate levels and deer numbers are low. The grain height decreases when precipitation and temperature are at extreme level and deer numbers are high. I added deer ticks to the simulation with the idea that deer tick numbers would increase with the deer population and also decreases with the deer population. You can see this is true from the graph because the peaks and valleys of the deer tick population numbers mirror the peaks and valleys of the deer population numbers .