CS 475/575 -- Spring Quarter 2017

Project #4

Functional Decomposition

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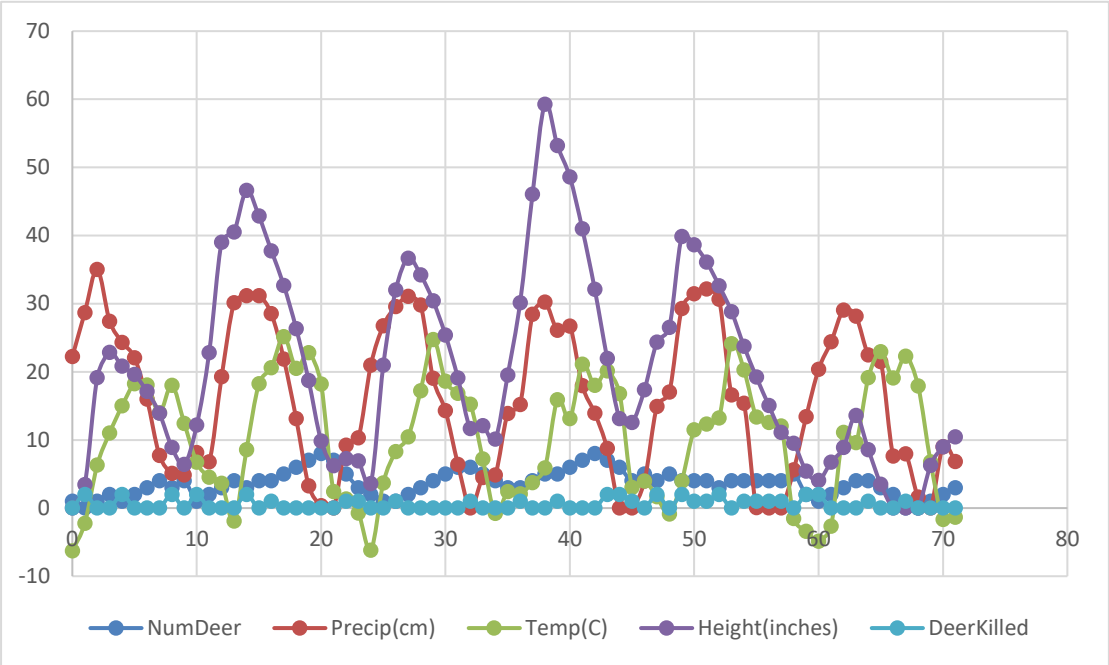
For this project, I simulated with the quantities required, and I also added a human influence, which human will kill deer randomly, every month human will go to this area, and kill 0 to 2 deer. Then I got the following table, which have changed to cm and °C, and graph.

NumDeer	Precip(cm)	Temp(C)	Height(cm)	DeerKilled
1	22.225	-6.283333333	0	0
0	28.702	-2.222222222	3.4544	2
1	35.0266	6.322222222	19.1516	0
2	27.432	11.03333333	22.8346	0
1	24.3332	15.00555556	20.828	2
2	22.0726	18.26666667	19.6088	0
3	16.002	18.05	17.1196	0
4	7.747	13.98333333	13.9446	0
3	5.08	18.01666667	8.9154	2
4	4.8768	12.43888889	6.4262	0
1	8.1534	6.727777778	12.1666	2
2	6.8072	4.527777778	22.8092	0
3	19.2786	3.644444444	39.0398	0
4	30.1244	-1.905555556	40.5384	0
3	31.1658	8.561111111	46.609	2
4	31.1912	18.24444444	42.8498	0
4	28.5242	20.61666667	37.7698	1
5	21.8694	25.17777778	32.6898	0
6	13.1064	20.50555556	26.3398	0
7	3.2766	22.82222222	18.7198	0
8	0.3302	18.19444444	9.8552	0
7	0	2.4	6.223	0
5	9.2456	1.327777778	7.239	1
3	10.3124	-0.722222222	6.9088	1
2	20.9804	-6.172222222	3.6068	0
1	26.7716	3.7	20.955	0
1	29.5656	8.272222222	32.004	1
2	31.0642	10.47222222	36.6776	0
3	29.7942	17.21111111	34.2392	0
4	19.05	24.75	30.4292	0
5	14.3002	18.63333333	25.3746	0
6	6.4262	16.83888889	19.1008	0
6	0	15.26666667	11.6586	1
5	4.4704	7.2	12.0904	0

4	4.8768	-0.772222222	10.1092	0
3	13.8684	2.411111111	19.5072	0
3	15.1892	2.094444444	30.1498	1
4	28.4226	3.733333333	46.0502	0
5	30.226	5.911111111	59.2582	0
5	26.0858	15.90555556	53.1876	1
6	26.7208	13.12222222	48.5902	0
7	17.9832	21.10555556	40.9956	0
8	13.9446	18.02222222	32.131	0
7	8.7376	20.11666667	21.971	2
6	0	16.81666667	13.1318	2
4	0	3.044444444	12.5476	1
5	3.9878	3.983333333	17.3736	0
4	14.9352	1.65	24.3586	2
5	17.018	-0.888888889	26.5176	0
4	29.3116	3.966666667	39.878	2
4	31.4452	11.47222222	38.6588	1
4	32.1564	12.31666667	36.1188	1
3	30.6324	13.24444444	32.639	2
4	16.5862	24.1	28.829	0
4	15.367	20.27222222	23.749	1
4	0.0508	13.36111111	19.2278	1
4	0	12.56666667	15.0368	1
4	0	12.04444444	11.0998	1
5	5.6134	-1.516666667	9.525	0
2	13.4112	-3.388888889	5.4102	2
1	20.3708	-4.844444444	4.064	2
2	24.384	-2.666666667	6.731	0
3	29.0576	11.11666667	8.89	0
4	28.1432	9.583333333	13.6144	0
4	22.479	19.13888889	8.5598	1
3	21.5138	22.97222222	3.4798	0
2	7.6454	19.08333333	0	0
0	7.9756	22.27222222	0	1
0	1.6002	17.92222222	0.0254	0
1	0	6.8	6.2738	0
2	9.017	-1.672222222	8.9916	0
3	6.8326	-1.355555556	10.4394	0



After I adding deer killing quantity, the height affected by temperature and precipitation, when temperature went high, grain will grow higher, precipitation affected in the same way. In addition, there is deer which would eat grain, when deer amount high, grain height will become lower. So, grain, temp and precipitation almost fit cosine curve. Deer should be cosine curve, but because I added human factor, so it not performs like that, and with deer perturbed, grain height have some changes, but not that big.