CS 575

Project #3

Functional Decomposition

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1. **What your own-choice quantity was and how it fits into the simulation.**

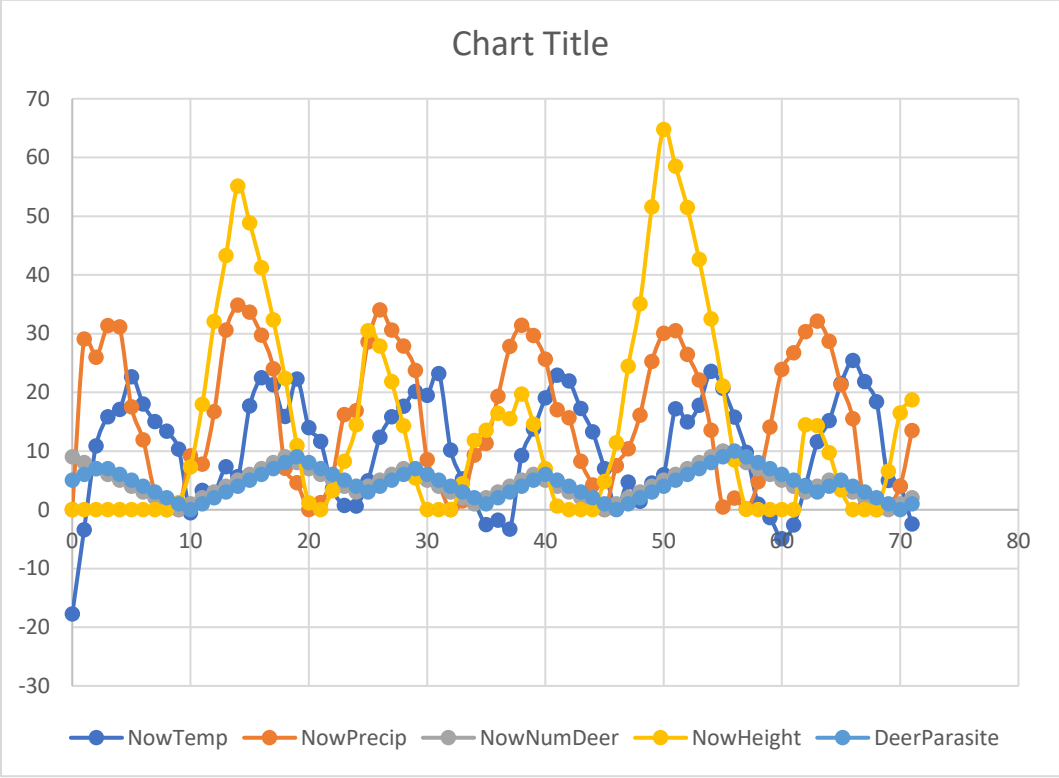
   I took the deer parasite as my simulation agent. These parasites grow in number when there is a increase in the number of deers and decrease when there is reduction in the number of deers. I wanted to make this simulation as realistic as it can.

2. **A table showing values for temperature, precipitation, number of deer, height of the grain, and your own-choice quantity as a function of month number.**

NowYear	NowMonth	NowTemp	NowPrecip	NowNumDeer	NowHeight	DeerParasite
2022	0	-17.7778	0	9	0	5
2022	1	-3.40706	29.0594	8	0	6
2022	2	10.8421	25.967	7	0	7
2022	3	15.8029	31.328	6	0	7
2022	4	17.0551	31.094	5	0	6
2022	5	22.6451	17.501	4	0	5
2022	6	17.9658	11.8952	3	0	4
2022	7	15.0069	2.79151	2	0	3
2022	8	13.3624	0	1	0	2
2022	9	10.2948	0	0	1.19617	1
2022	10	-0.536864	9.18078	1	7.24523	0
2022	11	3.2568	7.75224	2	17.9544	1
2023	12	2.84843	16.6934	3	32.0505	2
2023	13	7.28243	30.5709	4	43.2578	3
2023	14	5.61657	34.8226	5	55.1144	4
2023	15	17.6411	33.6168	6	48.8292	5
2023	16	22.4393	29.7045	7	41.2098	6
2023	17	21.2373	23.9927	8	32.322	7
2023	18	15.8361	7.01421	9	22.3416	8
2023	19	22.2335	4.55651	8	10.9119	9
2023	20	13.9781	0	7	1.14523	8
2023	21	11.6061	1.2248	6	0	7
2023	22	3.57864	5.6702	5	3.22773	6
2023	23	0.711952	16.2062	4	8.22763	5
2024	24	0.616199	16.8254	3	14.4251	4
2024	25	4.90082	28.5357	4	30.4932	3
2024	26	12.301	34.0233	5	27.8641	4
2024	27	15.8044	30.5795	6	21.8119	5
2024	28	17.6309	27.8307	7	14.2639	6
2024	29	20.1305	23.7244	6	5.38088	7

2024	30	19.445	8.51047	5	0	6
2024	31	23.1764	4.26414	4	0	5
2024	32	10.1229	0	3	0	4
2024	33	5.22886	1.49184	2	4.40275	3
2024	34	1.33035	9.24909	1	11.7682	2
2024	35	-2.56736	11.3057	2	13.5348	1
2025	36	-1.80107	19.3146	3	16.4164	2
2025	37	-3.29719	27.8069	4	15.4951	3
2025	38	9.18822	31.384	5	19.687	4
2025	39	13.714	29.6377	6	14.5582	5
2025	40	19.0036	25.618	5	6.95932	6
2025	41	22.8858	16.9884	4	0.609618	5
2025	42	21.9329	15.6637	3	0	4
2025	43	17.2117	8.23251	2	0	3
2025	44	13.2191	4.19292	1	0	2
2025	45	6.983	0	0	4.79668	1
2025	46	0.0460095	7.45642	1	11.3878	0
2025	47	4.69132	10.3645	2	24.4031	1
2026	48	1.41833	16.0898	3	35.0675	2
2026	49	4.53565	25.2186	4	51.571	3
2026	50	5.95744	30.0322	5	64.7412	4
2026	51	17.1907	30.4906	6	58.4923	5
2026	52	14.9426	26.4386	7	51.443	6
2026	53	17.7639	22.0614	8	42.6167	7
2026	54	23.5538	13.5193	9	32.4568	8
2026	55	20.6825	0.460438	10	21.0283	9
2026	56	15.7559	1.97222	9	8.46571	10
2026	57	9.74448	0.132361	8	0.0757597	9
2026	58	0.930019	4.73977	7	0	8
2026	59	-1.33873	14.0655	6	0	7
2027	60	-4.95745	23.8977	5	0	6
2027	61	-2.59047	26.7154	4	0	5
2027	62	4.10349	30.3023	3	14.4234	4
2027	63	11.5562	32.0992	4	14.2951	3
2027	64	15.1466	28.6553	5	9.70388	4
2027	65	21.4606	21.2485	4	3.35554	5
2027	66	25.3953	15.4525	3	0	4
2027	67	21.7949	0.426731	2	0	3
2027	68	18.3588	0	1	0	2
2027	69	4.9804	0.719311	0	6.56135	1
2027	70	3.98093	3.99994	1	16.4838	0
2027	71	-2.47098	13.4748	2	18.6753	1

3. **A graph showing temperature, precipitation, number of deer, height of the grain, and your own-choice quantity as a function of month number. Note: if you change the units to °C and centimeters, the quantities might fit better on the same set of axes.**



4. **A commentary about the patterns in the graph and why they turned out that way. What evidence in the curves proves that your own quantity is actually affecting the simulation correctly?**

   From the graph we can see how the “deer parasite” is directly proportional to the population of deers at a particular amount of time. And talking about the population of deers, the grain height reduces as there are a greater number of deers in the area and increases as there is less number of deers. This successfully simulated our results.