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CS575: Introduction to Parallel Programming
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Project #3

Background :

Machine in which I ran my code
Flip3 OSU Server

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

   My choice of quantity is 'Angels'. At the end of each year when the number of deer gets low due to the decrease in the height of the grains, angels are sent to earth to save them from getting extinct. So, when the grain quantity goes low, angels save few deer depending upon the current quantity of grain and deer population.

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

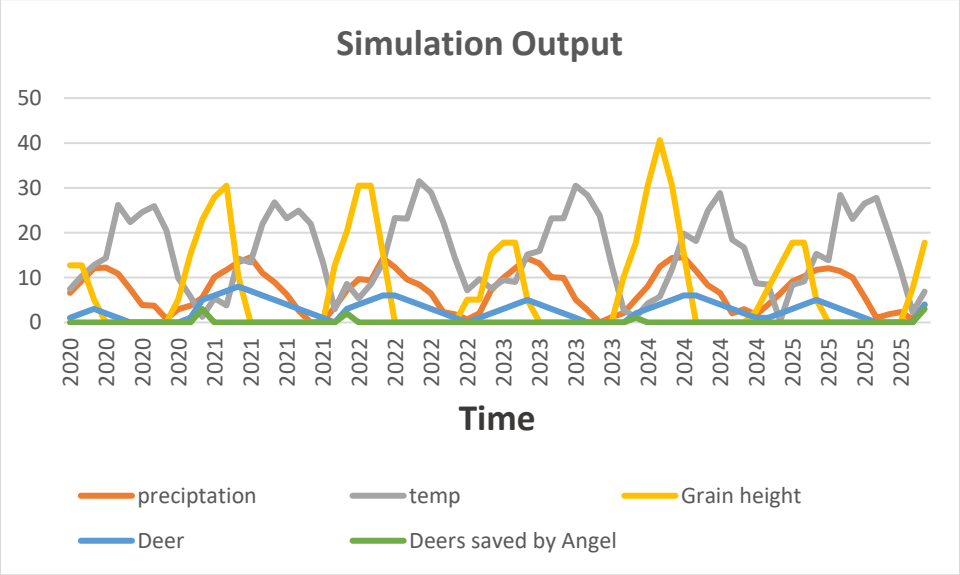
Table :

Date	Preciptation	temp	Grain height	Deer	Deers saved by Angel
0/2020	6.621593	7.48283	12.7	1	0
1/2020	9.311319	10.3586	12.7	2	0
2/2020	12.053729	12.7872	5.08	3	0
3/2020	12.250937	14.3447	0	2	0
4/2020	10.86889	26.2058	0	1	0
5/2020	7.417061	22.3611	0	0	0
6/2020	3.883803	24.589	0	0	0
7/2020	3.738206	25.9148	0	0	0
8/2020	0.783254	20.4994	0	0	0
9/2020	2.976147	9.9064	5.08	0	0
10/2020	3.724059	5.77419	15.24	1	0
11/2020	5.507654	1.25943	22.86	5	3
0/2021	10.082515	5.38394	27.94	6	0
1/2021	11.710108	3.79078	30.48	7	0
2/2021	13.422061	14.2262	10.16	8	0

3/2021	14.525345	13.3725	0	7	0
4/2021	11.015046	21.9553	0	6	0
5/2021	8.951287	26.8075	0	5	0
6/2021	6.23424	23.1965	0	4	0
7/2021	2.667771	24.9045	0	3	0
8/2021	0	21.9795	0	2	0
9/2021	0.235859	13.4529	0	1	0
10/2021	3.411119	2.94572	12.7	0	0
11/2021	7.126873	8.59811	20.32	3	2
0/2022	9.654806	5.35153	30.48	4	0
1/2022	9.361198	8.54046	30.48	5	0
2/2022	14.308416	13.3514	15.24	6	0
3/2022	12.311623	23.3077	0	6	0
4/2022	9.574893	23.1677	0	5	0
5/2022	8.471577	31.4889	0	4	0
6/2022	6.436563	28.9997	0	3	0
7/2022	2.298992	22.4185	0	2	0
8/2022	1.841072	14.2798	0	1	0
9/2022	0.684385	7.19371	5.08	0	0
10/2022	2.053762	9.6656	5.08	1	0
11/2022	7.223336	7.59315	15.24	2	0
0/2023	9.911476	9.42617	17.78	3	0
1/2023	12.106483	9.02614	17.78	4	0
2/2023	14.273146	15.1711	5.08	5	0
3/2023	13.187765	15.9302	0	4	0
4/2023	10.053725	23.1819	0	3	0
5/2023	9.964823	23.1861	0	2	0
6/2023	5.116233	30.4545	0	1	0
7/2023	2.711181	28.35	0	0	0
8/2023	0	23.8465	0	0	0
9/2023	1.183839	12.8803	0	0	0
10/2023	2.098163	2.71197	10.16	0	0
11/2023	5.131348	1.14708	17.78	2	1
0/2024	7.997296	4.2521	30.48	3	0
1/2024	12.448679	5.7544	40.64	4	0
2/2024	14.338758	11.8547	30.48	5	0
3/2024	14.490859	19.7762	15.24	6	0
4/2024	11.537755	18.1261	0	6	0
5/2024	8.304567	24.9238	0	5	0
6/2024	6.619892	28.8463	0	4	0
7/2024	2.007638	18.4048	0	3	0
8/2024	2.92519	16.7102	0	2	0
9/2024	1.745924	8.6963	2.54	1	0

10/2024	3.958997	8.48196	7.62	1	0
11/2024	6.462353	0.29324	12.7	2	0
0/2025	9.13845	8.37637	17.78	3	0
1/2025	10.281543	9.13705	17.78	4	0
2/2025	11.74162	15.3134	5.08	5	0
3/2025	12.092222	13.8696	0	4	0
4/2025	11.453646	28.3931	0	3	0
5/2025	10.020287	23.0777	0	2	0
6/2025	5.749493	26.4966	0	1	0
7/2025	1.063439	27.7877	0	0	0
8/2025	1.837474	19.9563	0	0	0
9/2025	2.285591	11.8553	0	0	0
10/2025	0.761375	2.31543	7.62	0	0
11/2025	3.848857	6.85839	17.78	4	3

3. A graph showing temperature, precipitation, number of graindeer, height of the grain, and your own-choice quantity as a function of month number.



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?

Each of the factors such as temperature, precipitation, grain height, deer population are dependent on each other. When the temperature goes low, the more grain growth is and at high temperature it can be seen there is a drop in the grain height.

It can also be seen from the graph that when the population of the deer increases, the growth of grain decreases rapidly. On the other hand, it can also be said that increase in number of deer, reduces the grain height. Additionally, the population of the deer is affected by the angels. When the grain quantity goes low, Angels come and save the deers as they would decrease when food is not available. It can be seen from the graph that when the grain height is low and number of deer decreases, the number of deer saved increases towards the end of each year. We can see this as slight increase curve.

From the above graph let us take a sample year to analyze this. For the period between 2020 to 2021, it can be observed that towards the end of the year the grain height decreases there by affecting the deer population and it can also be seen that there is a hike in the number of deers saved by the angels. Thereafter it can be seen that as the temperature decreases, grain height increases.