

CS575:Parallel Programming Functional Decomposition

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Project Number: 3

Project Name: Function Decomposition

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

I add the Human factor, who eats grains and deers both. My implentation tries to make the environment as green as possible, so I set a small number of default human setup. The human factor affects the deers the most. Eventually, the environments reach a balance of number of grain heights, number of deers, number of humans. I think this is what Garden of Eden looks like .

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.

Month	Temp	Precip	Grain(cm)	Deer	Human
2019/1	-6.282825	8.750994	0.000000	2	2
2019/2	2.153058	10.869632	0.600000	2	2
2019/3	3.587123	11.338401	7.173052	1	2
2019/4	15.304239	13.518796	0.000000	2	2
2019/5	19.328215	10.882987	0.600000	1	2
2019/6	24.609697	6.714879	0.000000	2	2

2019/7	24.699228	5.625210	0.000000	2	2
2019/8	17.398580	1.457926	0.000000	3	2
2019/9	12.031661	1.972052	0.000000	3	2
2019/10	9.861810	0.000000	1.371561	4	2
2019/11	4.953448	0.075985	1.543589	4	3
2019/12	-4.139111	5.047771	1.743589	6	2
2020/1	-0.647324	5.817610	1.543012	6	2
2020/2	5.731634	11.686595	6.012820	5	2
2020/3	10.834730	11.454330	1.743589	5	2
2020/4	13.321970	10.857733	1.743589	5	2
2020/5	22.717048	9.405622	0.000000	6	2
2020/6	16.004251	8.838009	1.743589	5	2
2020/7	20.830286	3.330447	1.743589	5	2
2020/8	12.439164	0.534659	2.193742	6	2
2020/9	12.786747	0.000000	0.000000	7	2
2020/10	6.274938	0.000000	3.397498	9	2
2020/11	4.289591	1.682982	3.097543	10	3
2020/12	0.185161	4.187365	4.194973	9	2
2021/1	1.905547	6.193732	4.194973	9	2
2021/2	-0.261127	11.544607	4.194973	9	2

2021/3	11.225313	9.995449	0.898391	10	2
2021/4	10.052196	13.304811	4.194973	10	2
2021/5	13.301353	9.618890	0.000000	10	2
2021/6	16.503904	8.948242	4.194973	10	2
2021/7	16.851588	6.322381	4.194973	9	2
2021/8	18.736492	0.192428	0.000000	10	2
2021/9	17.060225	0.000000	6.327500	11	2
2021/10	1.719831	1.912501	4.410449	13	2
2021/11	0.422317	2.861845	5.195286	14	3
2021/12	-2.862770	3.380054	3.264755	13	2
2022/1	-1.845388	6.654628	9.449733	14	2
2022/2	-0.924672	11.635664	5.410542	13	2
2022/3	1.736707	13.081195	9.449733	13	2
2022/4	16.939985	12.512788	9.449733	14	2
2022/5	23.396361	8.444261	9.449733	14	2
2022/6	23.509191	7.097747	9.449733	14	2
2022/7	21.206029	4.757803	9.449733	13	2
2022/8	22.949049	0.000000	11.518177	14	2
2022/9	8.576139	0.429193	14.020994	16	2
2022/10	11.496696	0.000000	17.049402	16	2

2022/11	-1.302739	3.567229	19.378885	19	3
2022/12	-4.916496	5.482828	19.578886	20	2
2023/1	-2.473236	5.699900	19.578886	16	2
2023/2	5.711920	8.968855	17.992815	17	2
2023/3	3.366623	12.203085	19.578886	16	2
2023/4	10.624777	10.570772	12.792051	20	2
2023/5	18.035673	9.797486	10.999008	16	2
2023/6	16.600719	6.386512	19.578886	17	2
2023/7	22.626012	3.413888	19.578886	16	2
2023/8	16.467537	0.469369	19.575827	16	2
2023/9	15.575015	0.107964	19.575830	16	2
2023/10	6.011314	0.000000	13.693832	16	2
2023/11	7.658785	3.612691	14.782322	15	3
2023/12	2.292035	6.281718	16.471758	17	2
2024/1	-0.876049	7.321977	19.575830	19	2
2024/2	5.173615	10.097671	18.338446	20	2
2024/3	7.670555	11.959850	19.575830	16	2
2024/4	18.302061	13.735444	10.489645	20	2
2024/5	19.227303	8.333481	19.575830	19	2
2024/6	20.743815	6.722820	19.575830	20	2

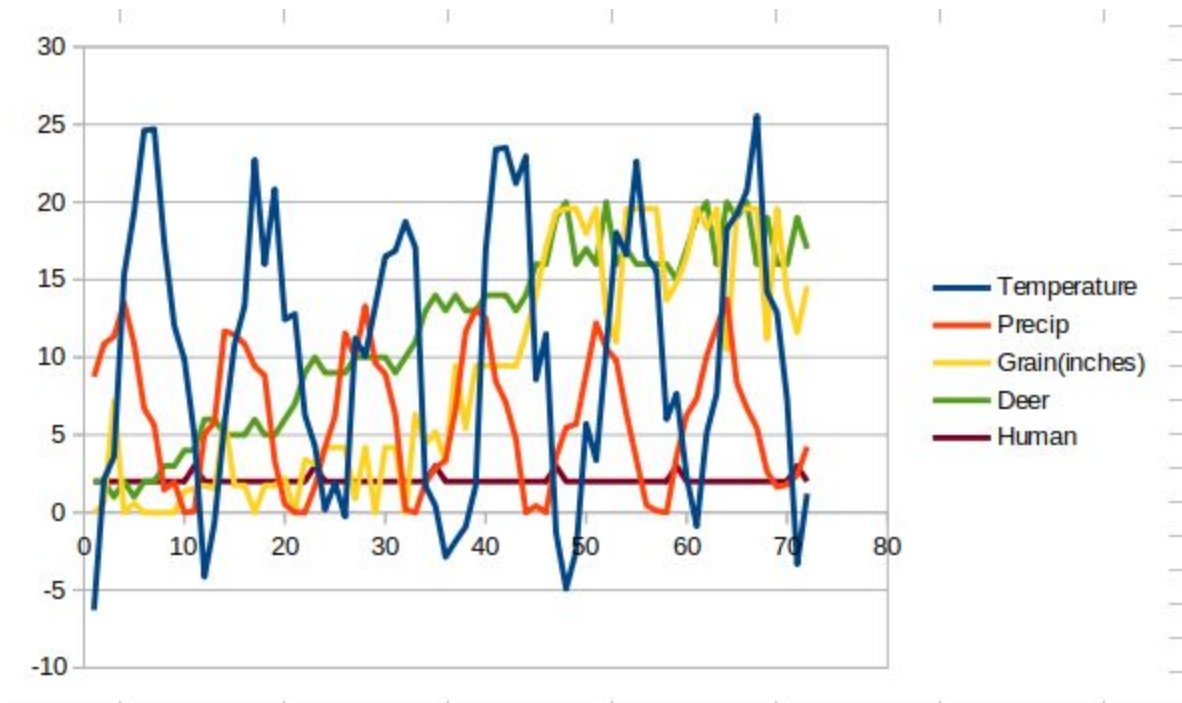
2024/7	25.544056	5.438935	19.575830	16	2
2024/8	14.207645	2.634666	11.187778	19	2
2024/9	12.880247	1.632068	19.575830	16	2
2024/10	7.296706	1.793312	14.109978	16	2
2024/11	-3.322651	2.429249	11.614517	19	3
2024/12	1.221148	4.244472	14.578163	17	2

3. A graph showing temperature, precipitation, number of graindeer, 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.

cm = inches * 2.54

°C = (5./9.)*(°F-32)



This will make your heights have larger numbers and your temperatures have smaller numbers.

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?**

My human factor starts with few people, despite the rare increment between the years, it does not change much except decreasing the number of deers.