CS 475 -- Spring Quarter 2021

Project #3

Functional Decomposition

Xufeng Liu

liuxuf@oregonstate.edu

1. own-choice quantity

I add the hunter into this system,

First, I each month pass, there will be 1 more hunter in the area,

During the hunting season, from October, November, December, there will be more hunter in the area, so I use +2.

But right after the hunting season, in the January, most of the Hunter going back to home and stop hunting, so there will be less hunter in this area. So -2.

Then if there two times amount of the hunter is more than Deer, the area manager will stop 20% of people hunting in the area, so the deer will have time to grow.

One hunter will hunter a deer by 33%.

Overall hunter will slow down the deer grows.

Below is my function in the program,

nextNumDeer = nextNumDeer - NowNumHunter/3;

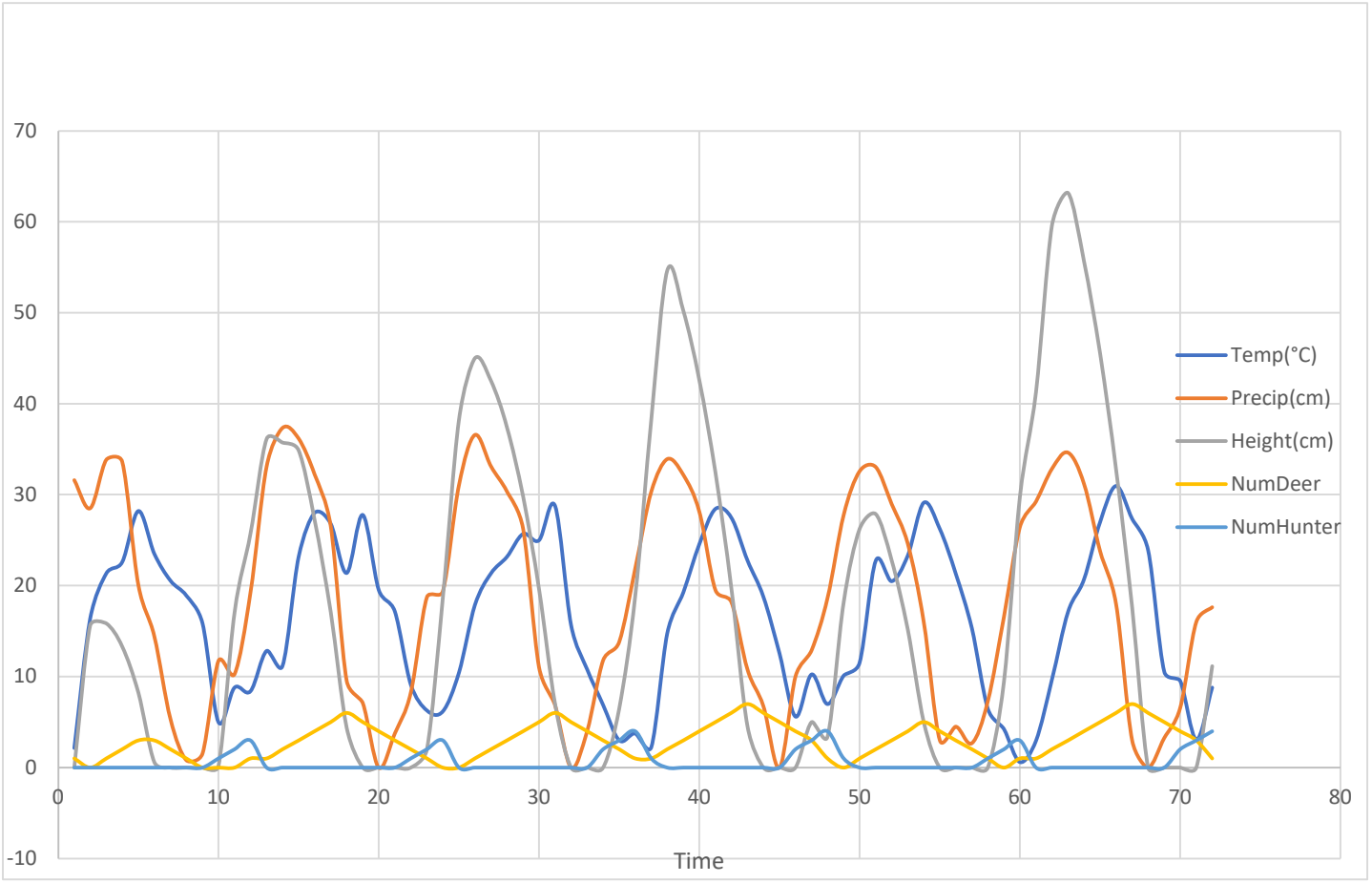
```
int nextNumHunter = NowNumHunter++;
if(NowMonth == 9 || NowMonth == 10 || NowMonth == 11){
    nextNumHunter = nextNumHunter + 2;
}
if(NowMonth == 0){
    nextNumHunter = nextNumHunter - 2;
}
if(nextNumHunter * 2 > NowNumDeer){
    nextNumHunter = nextNumHunter - nextNumHunter * 0.2;
}
if (nextNumHunter < 0.){
    nextNumHunter = 0.;
}
```

2. table showing data

Year.Month	Count(month)	Temp(°C)	Precipitation(cm)	Height of the grain(cm)	Num of Deer	Num of Hunter
2021.2	1	2.1485	31.5994	9.08E-07	1	0
2021.3	2	16.3977	28.507	15.6164	0	0
2021.4	3	21.3585	33.868	15.8363	1	0
2021.5	4	22.6107	33.634	13.2982	2	0
2021.6	5	28.2007	20.041	8.21867	3	0
2021.7	6	23.5214	14.4352	0.598667	3	0
2021.8	7	20.5625	5.33151	0	2	0
2021.9	8	18.918	0.802143	0	1	0
2021.1	9	15.8503	1.53447	0	0	0
2021.11	10	5.01869	11.7208	0.139666	0	1
2021.12	11	8.81235	10.2922	17.0625	0	2
2022.1	12	8.40399	19.2334	25.7117	1	3
2022.2	13	12.838	33.1109	36.1396	1	0
2022.3	14	11.1721	37.3626	35.7264	2	0
2022.4	15	23.1967	36.1568	34.8717	3	0
2022.5	16	27.9948	32.2445	27.2519	4	0
2022.6	17	26.7929	26.5327	17.0919	5	0
2022.7	18	21.3916	9.55421	4.39193	6	0
2022.8	19	27.7891	7.0965	0	5	0
2022.9	20	19.5336	0	0	4	0
2022.1	21	17.1617	3.76481	0	3	0
2022.11	22	9.13419	8.2102	0	2	1
2022.12	23	6.26751	18.7462	2.01069	1	2
2023.1	24	6.17175	19.3654	18.6356	0	3
2023.2	25	10.4564	31.0757	38.2502	0	0
2023.3	26	17.8565	36.5633	44.9926	1	0
2023.4	27	21.36	33.1195	42.5081	2	0
2023.5	28	23.1865	30.3707	37.4301	3	0
2023.6	29	25.6861	26.2644	29.8103	4	0
2023.7	30	25.0006	11.0505	19.6503	5	0
2023.8	31	28.732	6.80414	6.95034	6	0
2023.9	32	15.6784	0	0	5	0
2023.1	33	10.7844	4.03184	0	4	0
2023.11	34	6.88591	11.7891	0	3	2
2023.12	35	2.98819	13.8457	6.52147	2	3
2024.1	36	3.75449	21.8546	18.7942	1	4
2024.2	37	2.25837	30.3469	38.33	1	1

2024.3	38	14.7438	33.924	54.642	2	0
2024.4	39	19.2696	32.1777	50.219	3	0
2024.5	40	24.5592	28.158	42.6162	4	0
2024.6	41	28.4414	19.5284	32.4562	5	0
2024.7	42	27.4885	18.2037	19.7562	6	0
2024.8	43	22.7672	10.7725	4.51624	7	0
2024.9	44	18.7746	6.73292	0	6	0
2024.1	45	12.5386	0	0	5	0
2024.11	46	5.60157	9.99642	0	4	2
2024.12	47	10.2469	12.9045	4.9936	3	3
2025.1	48	6.97388	18.6298	3.40225	1	4
2025.2	49	10.0912	27.7586	18.1681	0	1
2025.3	50	11.513	32.5722	26.2342	1	0
2025.4	51	22.7463	33.0306	27.8763	2	0
2025.5	52	20.4981	28.9786	22.7967	3	0
2025.6	53	23.3194	24.6014	15.182	4	0
2025.7	54	29.1094	16.0593	5.02218	5	0
2025.8	55	26.2381	3.00044	0	4	0
2025.9	56	21.3114	4.51222	0	3	0
2025.1	57	15.3	2.67236	0	2	0
2025.11	58	6.48557	7.27977	0	1	1
2025.12	59	4.21683	16.6055	9.46678	0	2
2026.1	60	0.598109	26.4377	29.7102	1	3
2026.2	61	2.96508	29.2554	41.3013	1	0
2026.3	62	9.65904	32.8423	59.5715	2	0
2026.4	63	17.1117	34.6392	63.1845	3	0
2026.5	64	20.7022	31.1953	55.6751	4	0
2026.6	65	27.0161	23.7885	45.5192	5	0
2026.7	66	30.9508	17.9925	32.8192	6	0
2026.8	67	27.3505	2.96673	17.5792	7	0
2026.9	68	23.9144	0	0	6	0
2026.1	69	10.536	3.25931	0	5	0
2026.11	70	9.53648	6.53994	0	4	2
2026.12	71	3.08457	16.0148	0	3	3
2027.1	72	8.80936	17.6421	11.1629	1	4

3. graph showing data



4. Commentary

The graph is perfecting correct, when it start, there not much deer in this area, but when grain grew a little bit, the deer is start eating food and growing.

Grain growing faster after each raining. There is not much hunter before and after hunting season, but when October comes, the number of hunters grow, and the number of deer is smaller because there are hunter hunting them down.

After hunting season, hunter leaves the area and deer start growing.

When temperature get high, and it more likely to getting a rain, after the big rain, the Precipitation and temperature will be getting lower.

Raining help the grain growing, and deer eat grew grain. Then there will be less deer if there no more grain to eat until next rain.