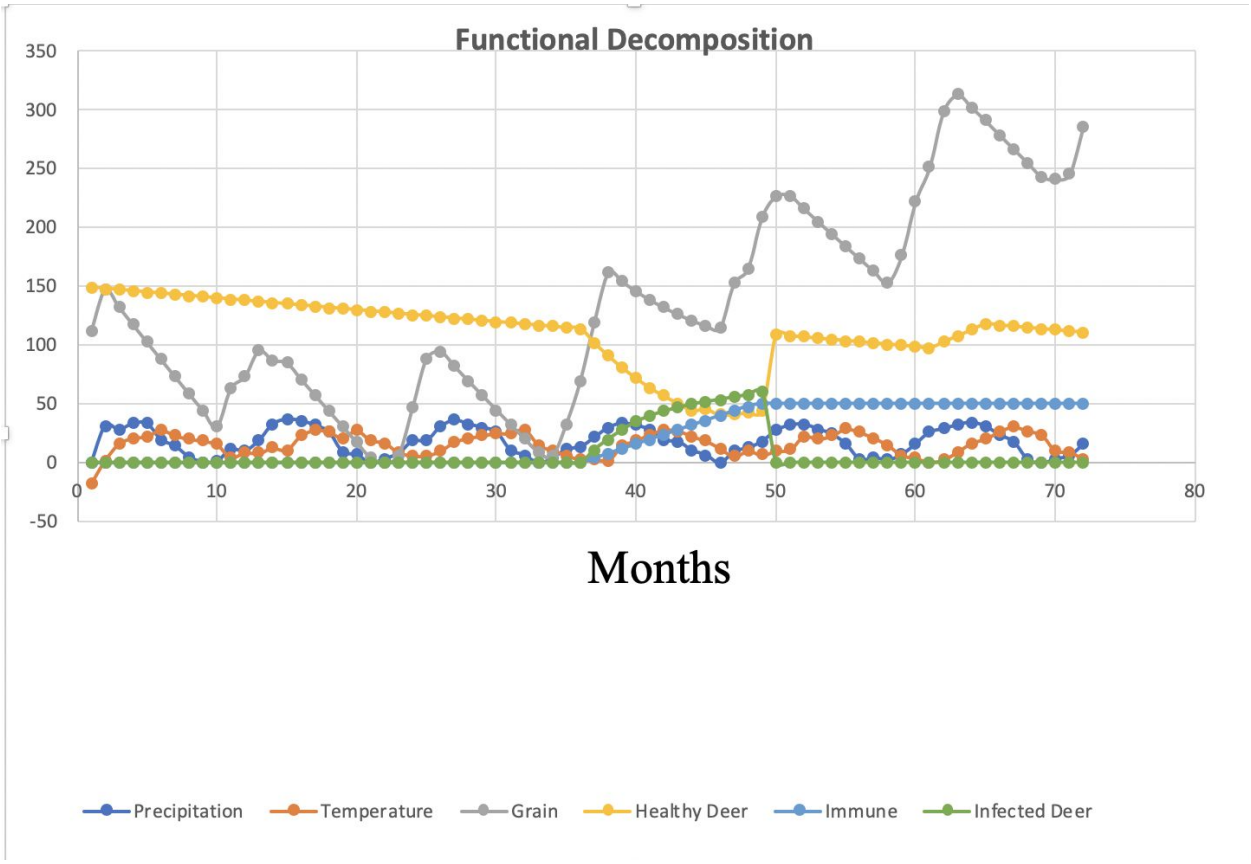
CS575(Introduction To Parallel Programming)
Project3

Project Title : Functional Decomposition(Project 3)
Name : Si Thu Lin
ID : 933-957-884
Email : linsi@oregonstate.edu

In my project, I create a virus which mimics COVID-19 as my agent. The virus I create is highly contagious. However, it is not very deadly. The deers will have a 10% chance to contract the virus every month. The infected deers will have a 3% chance to die of the virus. The virus will start spreading in 2023. To resist the virus, the metabolism will automatically improve the immune system. When the immune system reaches a high enough level(I assume that that level is 50 in my project), the virus will stop spreading and the infected deer will not suffer from the virus anymore. In the graph, the line for the infected deer is stable at the 0 value before 2023(36th month). When the outbreak starts in 2023, the immune system will increase by 4 every month. Therefore, the immune system will take around 13 months to reach the value of 50 and fight back the virus. When the immune system is perfect, all infected deers will recover during a month.
Another notable fact about my project is that I have to use four barriers instead of only three.
I use 25.0 and 0.04 for the value of “GRAIN_GROWS_PER_MONTH” and “ONE_DEER_EAT_PER_MONTH” respectively so that there will be enough deer for me to show the function of the virus I create.
I also try to increase the number of deer by 5 instead of 1 when the height of the grain is greater than the number of deer to increase the number of deer.
“NowHeight” and “NowNumDeer” are also made start with the values of 50 and 150 respectively to have the big number of deer at the beginning.


Functional Decomposition
350
300
250
200
150
100
50
0
-50
0
10
20
30
40
50
60
70
80
Months
Precipitation
Temperature
Grain
Healthy Deer
Immune
Infected Deer

	Precipitation	Temperature	Grain	Healthy Deer	Immune	Infected Deer
1	0	−17.7778	111.76	149	0	0
2	31.59943	2.148497	147.0561	148	0	0
3	28.50703	16.39767	132.63	147	0	0
4	33.86799	21.35846	117.7002	146	0	0
5	33.63395	22.61069	102.8679	145	0	0
6	20.04104	28.20066	88.13586	144	0	0
7	14.43519	23.52137	73.50586	143	0	0
8	5.331507	20.56246	58.98458	142	0	0
9	0.802143	18.918	44.58542	141	0	0
10	1.53447	15.85034	30.64778	140	0	0
11	11.72078	5.018692	63.43176	139	0	0
12	10.29224	8.812353	73.33479	138	0	0
13	19.23337	8.40399	95.33601	137	0	0
14	33.11091	12.83799	87.32446	136	0	0
15	37.36265	11.17212	85.24391	135	0	0
16	36.1568	23.1967	71.52852	134	0	0
17	32.24454	27.99483	57.91412	133	0	0
18	26.53269	26.79286	44.40133	132	0	0
19	9.554208	21.39164	30.99404	131	0	0
20	7.096505	27.78905	17.68444	130	0	0
21	0	19.53362	4.491055	129	0	0
22	3.764805	17.16168	0	128	0	0
23	8.210197	9.134191	6.691562	127	0	0
24	18.7462	6.267505	47.02429	126	0	0
25	19.36541	6.171754	88.70773	125	0	0
26	31.07567	10.45638	94.7366	124	0	0
27	36.56328	17.85652	82.29227	123	0	0
28	33.11955	21.35998	69.80091	122	0	0
29	30.37073	23.18647	57.40641	121	0	0
30	26.26439	25.68607	45.11284	120	0	0
31	11.05047	25.00059	32.92089	119	0	0

30	26.26439	25.68607	45.11284	120	0	0
31	11.05047	25.00059	32.92089	119	0	0
32	6.804138	28.73197	20.83049	118	0	0
33	0	15.67844	9.233132	117	0	0
34	4.031839	10.78442	5.853749	116	0	0
35	11.78909	6.88591	33.35	115	0	0
36	13.84567	2.98819	69.868	114	0	0
37	21.85461	3.754489	119.6073	102	4	11
38	30.34687	2.258368	161.6108	91	8	20
39	33.92399	14.74378	154.1901	81	12	28
40	32.17774	19.2696	146.0083	72	16	35
41	28.15803	24.55918	138.6932	64	20	40
42	19.52842	28.44137	132.1908	57	24	44
43	18.2037	27.48847	126.3996	51	28	47
44	10.77251	22.76724	121.2189	45	32	50
45	6.732917	18.77463	116.6946	46	36	52
46	0	12.53855	114.8175	41	40	54
47	9.996423	5.601565	152.7452	42	44	56
48	12.90449	10.24688	165.2243	43	48	58
49	18.62982	6.973883	208.9274	44	50	60
50	27.75861	10.0912	226.8627	109	50	0
51	32.57223	11.51299	227.4052	108	50	0
52	33.03056	22.74626	216.4335	107	50	0
53	28.97857	20.49813	205.577	106	50	0
54	24.60142	23.31941	194.808	105	50	0
55	16.05929	29.10938	184.14	104	50	0
56	3.000438	26.23806	173.5736	103	50	0
57	4.512218	21.31143	163.112	102	50	0
58	2.672361	15.30003	153.3752	101	50	0
59	7.279772	6.485575	176.4658	100	50	0
60	16.6055	4.216825	222.5374	99	50	0
61	26.43772	0.598109	251.7323	98	50	0
62	29.25542	2.965081	299.5815	103	50	0
63	32.84225	9.659044	313.2639	108	50	0
64	34.63918	17.11172	302.5983	113	50	0
65	31.19528	20.70216	291.129	118	50	0

61	26.43772	0.598109	251.7323	98	50	0
62	29.25542	2.965081	299.5815	103	50	0
63	32.84225	9.659044	313.2639	108	50	0
64	34.63918	17.11172	302.5983	113	50	0
65	31.19528	20.70216	291.129	118	50	0
66	23.7885	27.01614	279.1402	117	50	0
67	17.99249	30.95081	267.253	116	50	0
68	2.966731	27.35046	255.4674	115	50	0
69	0	23.91435	243.7835	114	50	0
70	3.259311	10.53596	241.1271	113	50	0
71	6.539939	9.536483	245.4399	112	50	0
72	16.01478	3.084573	286.2353	111	50	0