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Project 3- Functional Decomposition

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1. **What your own-choice quantity was and how it fits into the simulation.**
   My agent for this simulation was Hippies. Hippies enter the park for the plant life. When the height of grain gets over 5 inches, a new hippy will enter the park. Each hippy will consume about .2 inch of grain a month. However, hippies only like it when it's cool. If the temperature drops below 40 degrees Fahrenheit or goes above 70 degrees Fahrenheit, a hippy will leave the park.

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.**
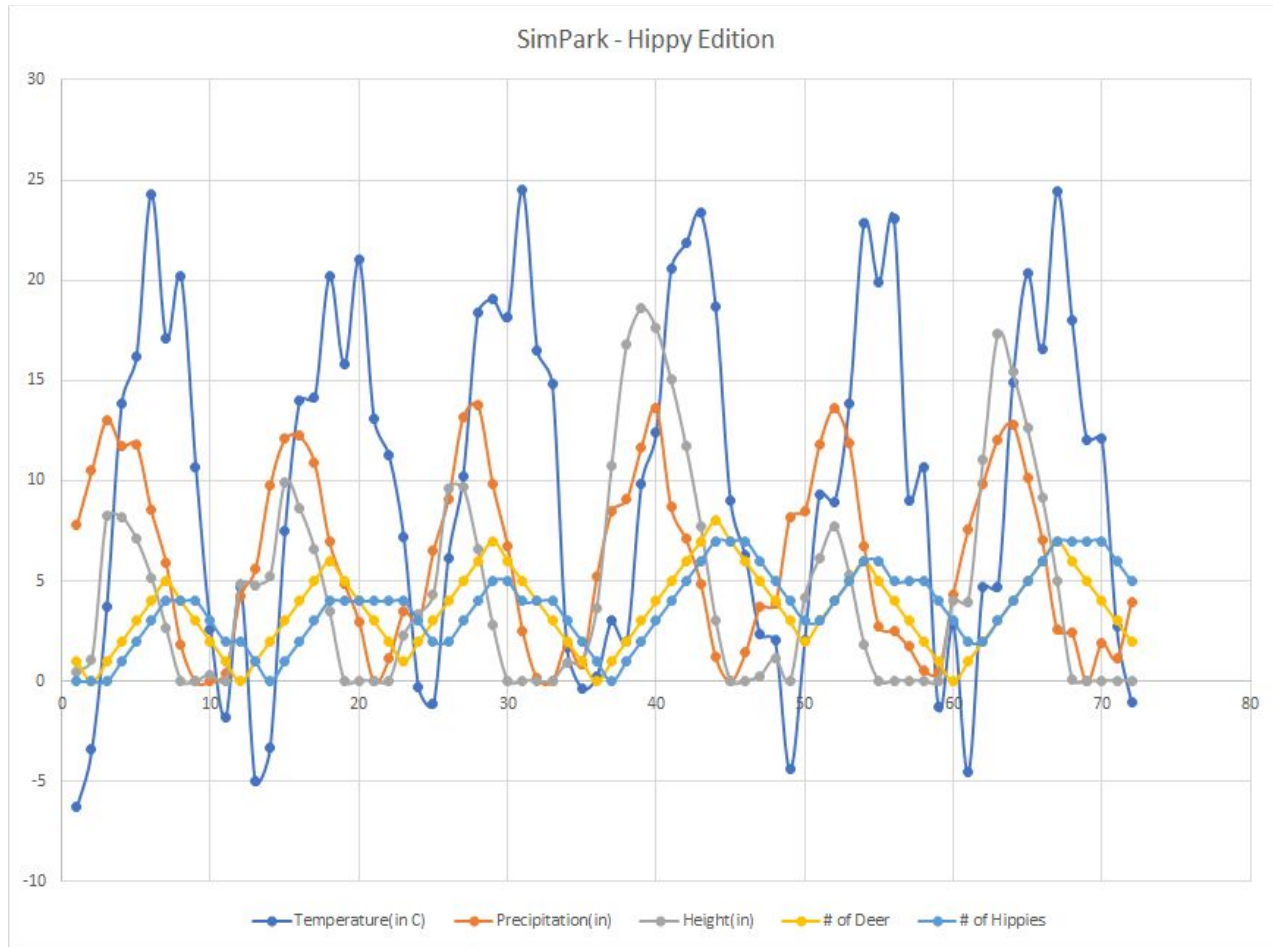
Months	Temperature(in C)	Precipitation(in)	Height(in)	# of Deer	# of Hippies
1	-6.27417	7.80726	0.48433	1	0
2	-3.39839	10.497	1.07201	0	0
3	3.7165	13.0305	8.24578	1	0
4	13.82033	11.715	8.19594	2	1
5	16.19333	11.8265	7.08431	3	2
6	24.31961	8.53933	5.18433	4	3
7	17.1115	5.88286	2.62163	5	4
8	20.19567	1.8115	0	4	4
9	10.69794	0	0	3	4
10	2.584278	0	0.330908	2	3
11	-1.7755	0.420953	0	1	2
12	4.695556	4.22986	4.82277	0	2
13	-4.96494	5.57159	4.79612	1	1
14	-3.31328	9.75416	5.23373	2	0
15	7.476056	12.0803	9.92191	3	1

16	14.0065	12.2242	8.6155	4	2
17	14.14822	10.8948	6.59101	5	3
18	20.18572	6.9614	3.49339	6	4
19	15.81072	4.87782	0	5	4
20	21.00472	2.96778	0	4	4
21	13.09667	0	0	3	4
22	11.30172	1.11115	0	2	4
23	7.208833	3.46023	2.27211	1	4
24	-0.29522	3.01644	3.34447	2	3
25	-1.15383	6.49423	4.30726	3	2
26	6.168167	9.08105	9.61195	4	2
27	10.2315	13.1702	9.65649	5	3
28	18.39572	13.7943	6.56913	6	4
29	19.09561	9.81239	2.77676	7	5
30	18.13489	6.74204	0	6	5
31	24.51189	2.54206	0	5	4
32	16.4775	0.127854	0	4	4
33	14.84472	0	0	3	4
34	1.666333	1.87961	0.921909	2	3
35	-0.34689	0.848945	0.967703	1	2
36	0.244278	5.21182	3.65926	0	1
37	3.018722	8.45889	10.7736	1	0
38	1.975889	9.06408	16.783	2	1
39	9.832389	11.6694	18.6204	3	2

40	12.40867	13.5922	17.621	4	3
41	20.57272	8.67576	15.0227	5	4
42	21.83306	7.09385	11.7231	6	5
43	23.34372	4.88295	7.72315	7	6
44	18.66122	1.20272	3.02843	8	7
45	9.004167	0	0	7	7
46	6.292611	1.41597	0	6	7
47	2.333333	3.71732	0.26608	5	6
48	2.0625	3.82933	1.11477	4	5
49	-4.4105	8.18215	0	3	4
50	2.053222	8.4968	4.19859	2	3
51	9.343778	11.8148	6.15515	3	3
52	8.959056	13.5939	7.68763	4	4
53	13.87422	11.8631	5.32093	5	5
54	22.87578	6.76511	1.82105	6	6
55	19.9165	2.72859	0	5	6
56	23.04133	2.49011	0	4	5
57	9.022833	1.71346	0	3	5
58	10.69844	0.532641	0	2	5
59	-1.28617	0.468928	0	1	4
60	2.791889	4.34815	4.02026	0	3
61	-4.55972	7.5686	3.96552	1	2
62	4.721222	9.865	11.0442	2	2
63	4.675111	12.0705	17.2953	3	3

64	14.90067	12.819	15.4092	4	4
65	20.32244	10.1438	12.6115	5	5
66	16.54383	7.02415	9.17523	6	6
67	24.45117	2.58747	4.97524	7	7
68	18.04578	2.4093	0.086454	6	7
69	12.056	0	0	5	7
70	12.11689	1.88998	0	4	7
71	2.693778	1.14131	0	3	6
72	-1.04667	3.94701	0	2	5

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

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SimPark - Hippy Edition

Legend: Temperature(in C) — Precipitation(in) — Height(in) — # of Deer — # of Hippies

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?**
The temperature and precipitation logic was provided by you and creates almost a sinusoidal graph, almost being due to the introduction of randomness. The grain height follows these curves for the most part. As grain height gets high, more graindeer and hippies move in. As there are more and more graindeer/hippies, the grain height starts to plummet. When the grain height goes down, graindeer start "wandering off" but hippies will stick around until the weather isn't cool anymore. When the weather gets too cold or hot, hippies start to leave.

Summary:
I enjoyed this assignment. It was a cool use of functional decomposition in relation to parallel programming. I enjoyed the creative task of introducing our own agent.