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CS475

Project 4 Write Up

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

   Answer: I choose to create a predator. There was only 1 predator throughout the simulation. The predator had a 20% or 1/5 chance of hunting down and killing a deer.

   This meets the project requirement since it directly effects the number of deer and indirectly effects the grain, since if a deer is killed off then less grain will be eaten.

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	Year	Deer	Precip	Temperature	Height	Predators
0	2017	1	0	0	3.58E-07	1
1	2017	0	11.4407	25.8673	0.563272	1
2	2017	0	12.9936	34.833	6.16374	1
3	2017	1	12.9936	45.1858	11.7533	1
4	2017	2	11.4407	54.1516	12.3109	1
5	2017	3	8.75099	59.3279	11.4988	1
6	2017	4	5.64516	59.3279	10.1567	1
7	2017	4	2.95544	54.1516	8.81406	1
8	2017	5	1.40252	45.1858	9.73337	1
9	2017	6	1.40252	34.833	10.1584	1
10	2017	7	2.95544	25.8673	7.8193	1
11	2017	8	5.64517	20.6909	4.47833	1
0	2018	7	8.75099	20.6909	0.667607	1
1	2018	6	11.4407	25.8673	0	1
2	2018	5	12.9936	34.833	2.60046	1
3	2018	4	12.9936	45.1858	5.69	1
4	2018	5	11.4407	54.1516	4.74762	1
5	2018	4	8.75099	59.3279	2.43552	1
6	2018	3	5.64516	59.3279	0.593399	1
7	2018	2	2.95544	54.1516	0	1
8	2018	1	1.40252	45.1858	1.91932	1
9	2018	2	1.40252	34.833	4.34434	1
10	2018	1	2.95544	25.8673	4.00524	1
11	2018	2	5.64517	20.6909	3.66428	1

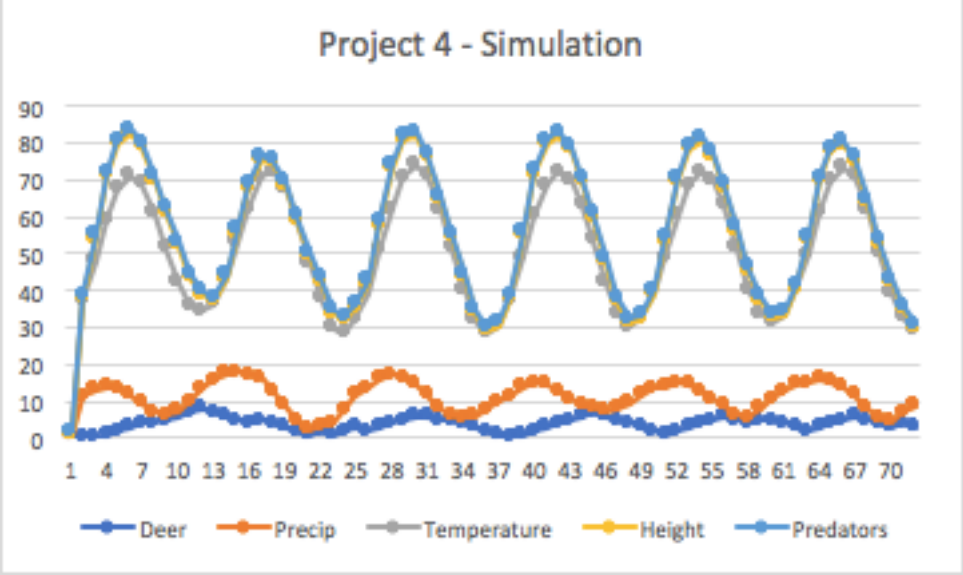
0	2019	3	8.75099	20.6909	2.85355	1
1	2019	2	11.4407	25.8673	2.41682	1
2	2019	3	12.9936	34.833	7.01729	1
3	2019	4	12.9936	45.1858	11.1068	1
4	2019	5	11.4407	54.1516	10.1644	1
5	2019	6	8.75099	59.3279	7.85234	1
6	2019	6	5.64516	59.3279	5.01022	1
7	2019	5	2.95544	54.1516	2.66761	1
8	2019	5	1.40252	45.1858	3.08692	1
9	2019	4	1.40252	34.833	3.51194	1
10	2019	3	2.95544	25.8673	2.17285	1
11	2019	2	5.64517	20.6909	0.831884	1
0	2020	1	8.75099	20.6909	0.0211568	1
1	2020	0	11.4407	25.8673	0.584429	1
2	2020	1	12.9936	34.833	6.18489	1
3	2020	2	12.9936	45.1858	11.2744	1
4	2020	3	11.4407	54.1516	11.332	1
5	2020	4	8.75099	59.3279	10.0199	1
6	2020	5	5.64516	59.3279	8.17783	1
7	2020	6	2.95544	54.1516	6.33521	1
8	2020	7	1.40252	45.1858	6.25453	1
9	2020	6	1.40252	34.833	5.67955	1
10	2020	5	2.95544	25.8673	3.34045	1
11	2020	4	5.64517	20.6909	0.99949	1
0	2021	3	8.75099	20.6909	0	1
1	2021	2	11.4407	25.8673	0	1
2	2021	1	12.9936	34.833	4.60046	1
3	2021	2	12.9936	45.1858	9.69	1
4	2021	3	11.4407	54.1516	9.74762	1
5	2021	4	8.75099	59.3279	8.43552	1
6	2021	5	5.64516	59.3279	6.5934	1
7	2021	6	2.95544	54.1516	4.75078	1
8	2021	5	1.40252	45.1858	4.6701	1
9	2021	4	1.40252	34.833	5.09512	1
10	2021	5	2.95544	25.8673	3.75602	1
11	2021	5	5.64517	20.6909	1.41506	1
0	2022	4	8.75099	20.6909	0	1
1	2022	3	11.4407	25.8673	0	1
2	2022	2	12.9936	34.833	4.10046	1
3	2022	3	12.9936	45.1858	8.69	1

4	2022	4	11.4407	54.1516	8.24762	1
5	2022	5	8.75099	59.3279	6.43552	1
6	2022	6	5.64516	59.3279	4.0934	1
7	2022	5	2.95544	54.1516	1.75078	1
8	2022	4	1.40252	45.1858	2.1701	1
9	2022	3	1.40252	34.833	3.09512	1
10	2022	4	2.95544	25.8673	2.25602	1
11	2022	3	5.64517	20.6909	0.415062	1

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?

Answer: The simulation graph shows a clear curve where temperature, precipitation, height, and number of deers all follow which makes sense since this would represent the seasons. The predators I created will be eating the deers with 1/5 chance so any

month where the number of deers drops very low would probably be a result of the predator I created.