Name: Shreya Palit
Email: palits@oregonstate.edu
Project Name: Functional Decomposition

CS 575 - Project #2

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

I chose my own-choice quantity to be Zombies and called the MyAgent() function in the program. Each zombie will eat two rabbits.

If the number of Zombies >= (number of rabbits / 2), then the number of Zombies will increase by one.

If the number of Zombies < (number of rabbits / 2), the number of Zombies will decrease by one.

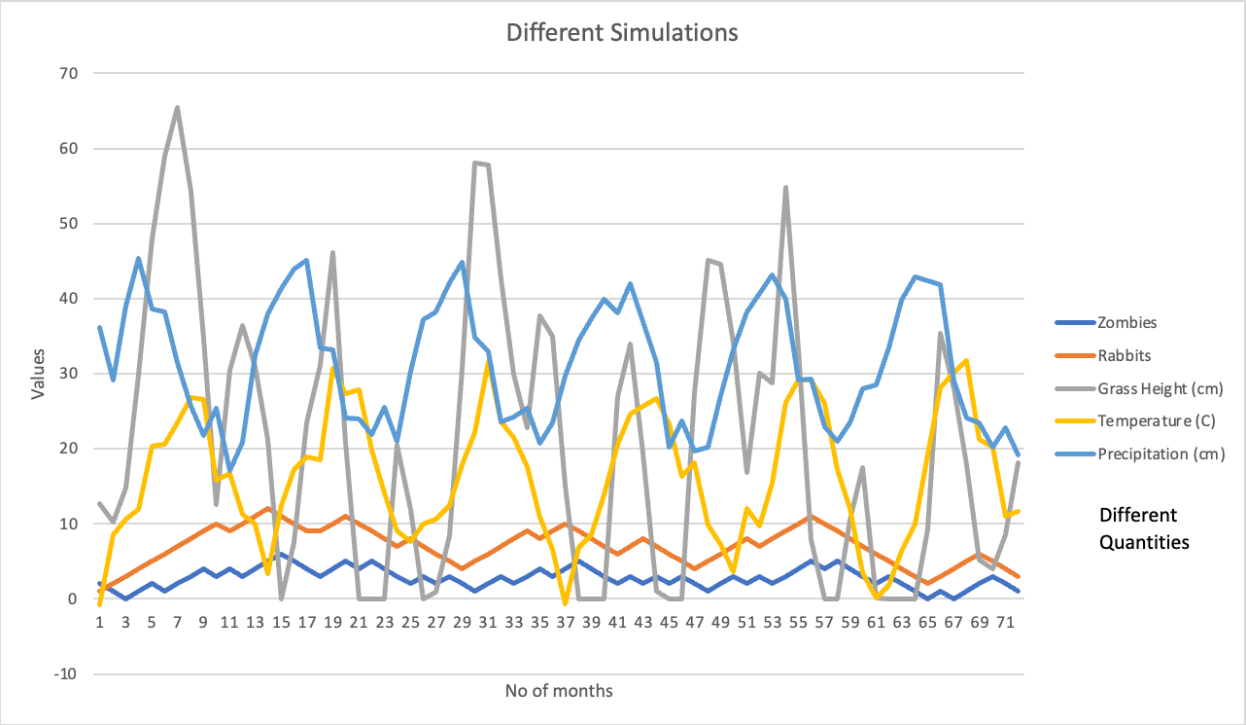
2. A table showing values for temperature, precipitation, number of rabbits, height of the rye grass, and your own-choice quantity as a function of month number.

Month	Year	Zombies	Rabbits	Grass Height (cm)	Temperature (C)	Precipitation (cm)
0	2023	2	1	12.70	-0.73	36.15
1	2023	1	2	10.17	8.54	29.12
2	2023	0	3	14.76	10.63	39.03
3	2023	1	4	29.83	11.88	45.37
4	2023	2	5	47.90	20.34	38.61
5	2023	1	6	59.03	20.65	38.26
6	2023	2	7	65.48	23.44	31.44
7	2023	3	8	54.31	26.77	25.59
8	2023	4	9	34.73	26.58	21.77
9	2023	3	10	12.60	15.75	25.38
10	2023	4	9	30.42	16.67	17.12
11	2023	3	10	36.37	11.28	20.80
0	2024	4	11	31.02	9.96	32.41
1	2024	5	12	21.23	3.32	37.97
2	2024	6	11	0.00	12.46	41.32
3	2024	5	10	7.46	17.26	43.98

4	2024	4	9	23.48	18.94	45.10
5	2024	3	9	31.08	18.52	33.38
6	2024	4	10	46.18	30.66	33.20
7	2024	5	11	20.81	27.39	24.15
8	2024	4	10	0.00	27.89	24.00
9	2024	5	9	0.00	19.87	21.87
10	2024	4	8	0.00	14.12	25.58
11	2024	3	7	20.41	9.05	20.94
0	2025	2	8	11.88	7.58	30.37
1	2025	3	7	0.00	10.00	37.17
2	2025	2	6	0.83	10.63	38.28
3	2025	3	5	8.46	12.45	42.11
4	2025	2	4	30.56	17.83	44.83
5	2025	1	5	58.00	22.12	34.88
6	2025	2	6	57.84	31.61	32.91
7	2025	3	7	42.61	23.54	23.53
8	2025	2	8	29.99	21.52	24.27
9	2025	3	9	22.85	17.62	25.45
10	2025	4	8	37.77	10.84	20.68
11	2025	3	9	35.01	6.63	23.43
0	2026	4	10	15.21	-0.62	29.64
1	2026	5	9	0.00	6.89	34.53
2	2026	4	8	0.00	8.54	37.34
3	2026	3	7	0.00	13.83	39.90
4	2026	2	6	27.01	20.58	38.10
5	2026	3	7	33.93	24.61	42.03
6	2026	2	8	19.49	25.64	36.88
7	2026	3	7	1.04	26.63	31.52
8	2026	2	6	0.00	23.27	20.19
9	2026	3	5	0.00	16.33	23.66
10	2026	2	4	27.29	18.10	19.74
11	2026	1	5	45.05	9.85	20.20
0	2027	2	6	44.63	7.22	27.05
1	2027	3	7	34.16	3.66	33.18
2	2027	2	8	16.89	12.01	38.19

3	2027	3	7	30.04	9.77	40.72
4	2027	2	8	28.71	15.46	43.17
5	2027	3	9	54.82	26.23	39.89
6	2027	4	10	33.19	29.11	29.11
7	2027	5	11	7.91	29.17	29.30
8	2027	4	10	0.00	26.03	22.91
9	2027	5	9	0.00	17.22	20.94
10	2027	4	8	10.49	12.07	23.44
11	2027	3	7	17.48	3.47	28.01
0	2028	2	6	0.11	0.09	28.55
1	2028	3	5	0.00	1.80	33.45
2	2028	2	4	0.00	6.38	39.80
3	2028	1	3	0.00	9.97	42.93
4	2028	0	2	9.37	19.16	42.36
5	2028	1	3	35.34	28.08	41.82
6	2028	0	4	28.01	30.23	29.07
7	2028	1	5	17.90	31.77	24.12
8	2028	2	6	5.21	21.27	23.50
9	2028	3	5	4.05	20.27	20.20
10	2028	2	4	8.51	10.94	22.85
11	2028	1	3	18.18	11.69	19.21

3. A graph showing temperature, precipitation, number of rabbits, height of the rye grass, and your own-choice quantity as a function of month number.



4. Commentary

The height of the rye grass is maximum every year around May (June for 2023 and 2024). This can be due to the fact that around March-April every year the precipitation is the highest thus contributing to the growth of ryegrass in the following month.

The number of rabbits has a general trend to increase in the first half of the year and then decrease in the second half of the year as can be seen from the graph. The number of zombies too follow a somewhat similar pattern with the number of zombies being the most when the number of rabbits is the most. Various other quantities also play a part such as when the rye grass height reaches the various peaks, the number of rabbits too reach their respective peaks in the year. This is because the number of rabbits is significantly tied to the ryegrass height, and the number of zombies is related to the number of rabbits. Due to the ryegrass height, the number of rabbits and zombies will decrease from around January to around July (except in 2023 and 2027), and the cycle will repeat itself each year. More rabbits mean more rye grass will be eaten, leading to less height of grass

We can also notice from the graph that the general trend of all curves starts to increase till around month 6 and then starts to decrease till month 11.