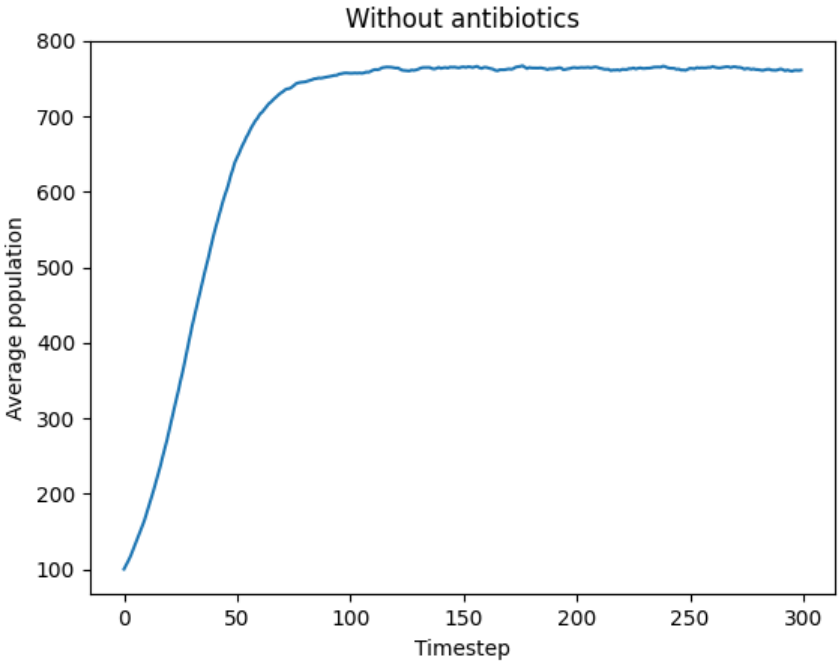
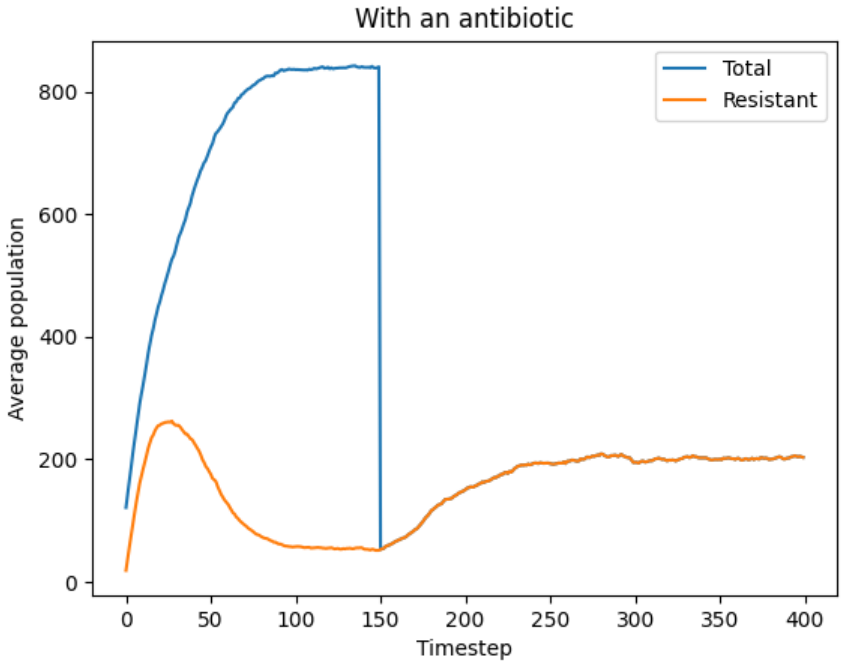
PS4-writeup

Graph generated from Bacteria population sampling without Antibiotic:



With a mean of 763.52 + or – 4.923 (SE) at timestep 299.

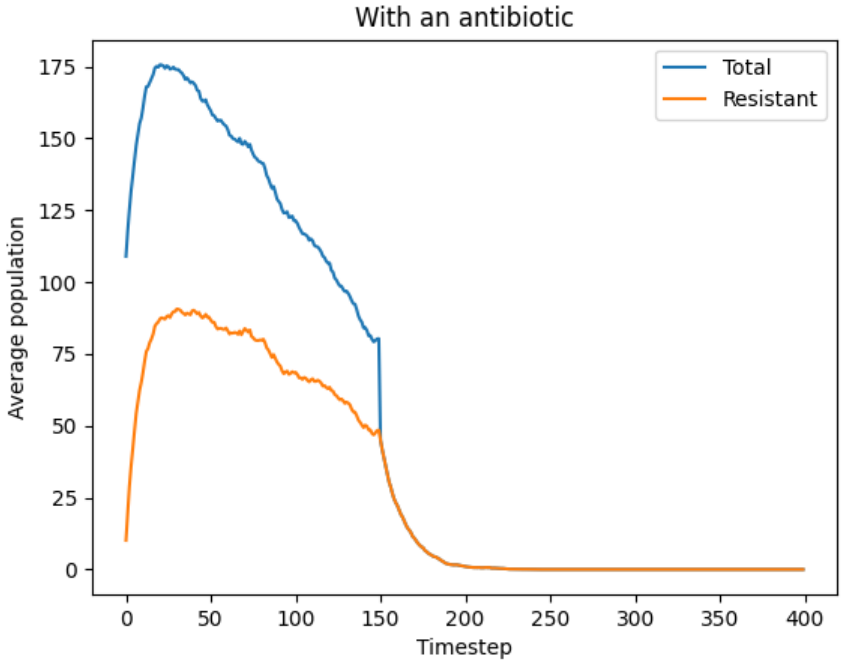
Graph generated from Bacteria ppoulation sampling with Antibiotic:



Simulation A:

Total bacteria population mean at timestep 299 is 201.26, +- 9.774849936280352

Total bacteria population mean at timestep 299 is 201.26, +- 9.774849936280352



Simulation B:

Total bacteria population mean at timestep 299 is 0.0, +- 0.0

Total bacteria population mean at timestep 299 is 0.0, +- 0.0

Writeup:

Simulation A:

1. The total population increased rapidly in the first 50 timesteps, then plateauing at 800 as the average population.
2. The resistant bacteria had an initial increase till 230 at timestep 40, before decreasing to 100 by timestep 75, then staying level at 75.
3. There is a large decrease, where total population is then equal to resistant bacteria, as all killed, goes from 800 to 75.
4. Increases steadily from 150-250 timesteps, from 75 to 200. Then plateaus till the end.

Simulation B:

1. Total population increased rapidly in the first 25 timesteps, till 175, where it then decreased less rapidly, reaching 80 by the time the antibiotic was added (timestep 150)
2. Mirrors total population but smaller, increases to 85, then decreases more slowly to 50 by timestep 150.
3. Total population has a large decrease to level of resistant bacteria (about 50)
4. Resistant bacteria decrease in a non-linear relationship with timesteps, reach 0 by timestep 200, stay at 0.