Success with this project:

I was able to compute all the required graphs, So I achieved 100% of the goals of this project.

Difficulties while making the project:

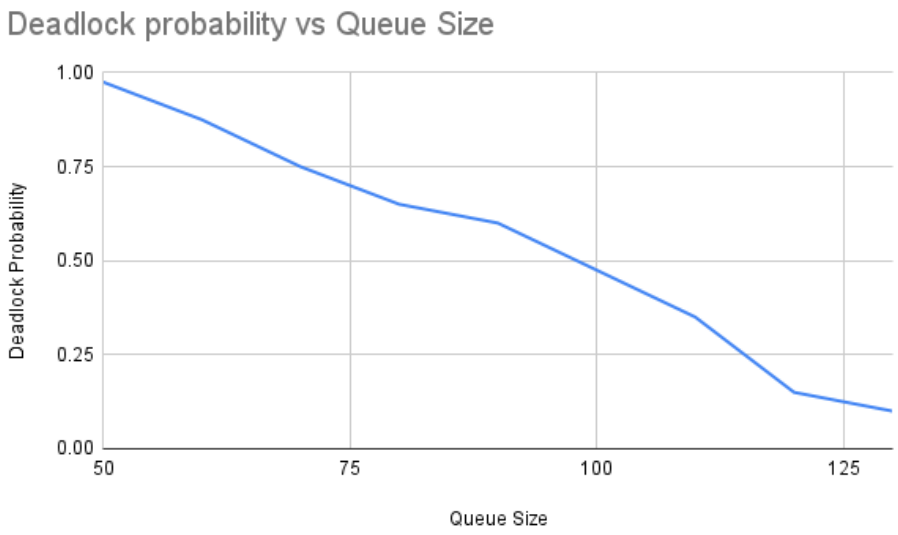
1. I had difficulty understanding the scope of variables, which ones should be global and which ones local.
2. I had difficulties figuring out how to change the number of consumers for plotting the second graph.
3. I had difficulties deciding a large enough sample size to get accurate deadlock probabilities. I ended up using a sample size of 50 for getting each deadlock probability.

Results:

Graph 1: Deadlock Probability vs Queue Size

1. I've varied the queue size from 50 to 130 which varies the probability of deadlock from almost 1 to almost 0.
2. We get an almost linear trend which is expected because the demand by consumers remains the same but the queues to store donuts for consumers is increased linearly and more donuts become available for consumers, hence fewer deadlocks.

3. The sample size to calculate the probability of deadlock is 50.



Graph 2: Deadlock probability vs Number of Consumers

1. The probability of deadlock with 5 consumers is 47.5% at queue size 100 in Graph 1.
2. In this experiment, we varied consumers from 1 to 10 by keeping queue size constant.
3. We expect an almost linear trend here as well because we're increasing the number of consumers linearly the queue size is constant hence a linear increase in deadlock probability.