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CS308 - HW4

Probability of Deadlock - Variable Queue Size
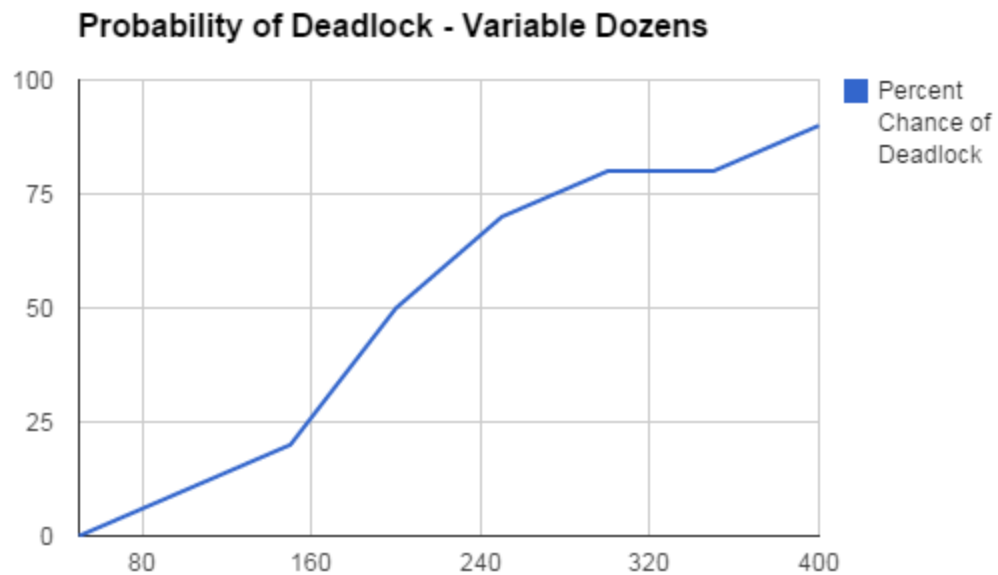

The queue size which gives a 50% chance of deadlock is 600, and is used when varying the number of dozens for the following chart.

Probability of Deadlock - Variable Dozens

Queue Size	Percent Chance of Deadlock		Number of Dozens	Percent Chance of Deadlock
900	0		50	0
800	30		100	10
650	40		150	20
600	50		200	50
550	60		250	70
500	70		300	80
400	80		350	80
300	90		400	90

Discussion:

I had a great degree of success while performing this assignment. I didn't identify any major issues. All tests were run using 50 consumers and 30 producers.

In changing the size of the ring buffers, I found the line graph to be relatively linear. I ran only 10 trials for each queue size. I found the smaller the queue size, the greater the probability of deadlock, and the larger the queue size, the less chance of becoming deadlocked. I found a queue size of 600 gives a 50% chance of deadlock when using 30 producers and 50 consumers.

In keeping the queue size constant at 600, I found a linear correspondence between the number of dozens requested and the probability of deadlock. As the number of dozens increased, the probability of deadlock increased. Decreasing the number of dozens demanded by each consumer decreased the chance of deadlock. I ran 10 loops for each of my data points in all trials.