The degree of success with this project is about 100%. The main method that I take to handle this project is that I learn how to build share memory segment, how to use semaphore and binary semaphore to safely manipulate the elements shared by the consumers and producer in multiple processes. Then I try to figure out how to use “p”,”v” function, how to attach share memory segment, and how to count the serial number of the donut of each flavor, how to use “in” and “out” pointer in ring buffer. After I finish the main frame of my project, I finish the detailed code of this program.

I experiment with the relationship between the queue size and deadlock probability, the relationship between the numbers of consumers and deadlock probability. I find something interesting, the deadlock probability keeps decreasing when queue size increases, and the distribution of my result is linear, the 50% deadlock queue size is 40. When numbers of consumers range from 1 to 10 sequentially, the deadlock probability keeps increasing, the distribution of my results is also linear.

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