

Write a Windows program implementing the producer/consumer problem using semaphores.

- Producer thread will write in a buffer, which will be an array of 10 integers. Array will be used as a circular buffer: a pointer will indicate the next location to write in. It begins at the start of the array, and is incremented after each writing. When pointer reaches the end of array, it points again to its start.
- Consumer thread will read from buffer into a local variable, also using the array as a circular buffer.
- Both producer and consumer threads will repeat accessing the buffer 30 times. Display an output with each read or write operation to indicate the order of operations.
- Use Sleep() function or an equivalent to delay repeating the operations of producer and consumer, hence studying the cases of slow/fast producer and consumer.

Send a report of your solution to [helsayed@eng.cu.edu.eg](mailto:helsayed@eng.cu.edu.eg). Due date is May 2, 2020.

Your report should include:

- Program listing.
- How you ran the program (compiler type,...etc.)
- Screenshots for outputs
  - I. Without delay of Sleep().
  - II. Fast producer and slow consumer.
  - III. Slow producer and fast consumer.
- Your comments.