ALGORITHMS AND DATA STRUCTURES

CS106.3

1. **What is a circular queue.**

   - A circular queue is the extended version of a regular queue where the last element is connected to the first element. This is also known as ring bus, is a data structure that follows first in first out (FIFO) principle. It is implemented as an array with a fixed size, where that last index is connected to the first position forming a circular behaviour.

2. **What are the characteristics of circular queue.**

   - Pointers- front, rear:
   - Circular behaviour:
   - Fixed size:

3. **Give applications of circular queue.**

   - In a page replacement algorithm, a circular list of pages is maintained and when a page needs to be replaced, the page in the front of the queue will be chosen.
   - Computer systems supply a holding area for maintaining communication between two processes or two programs. This memory area is also known as a ring buffer.
   - CPU Scheduling: In the Round-Robin scheduling algorithm, a circular queue is utilized to maintain processes that are in a ready state.
   - Inter-process communication: Circular queue can be used for communication between different processes.
   - Resource allocation: In operating systems, circular queue is used for managing resources.