4. Queue

Queue is data structure that stores item in a First-In/First-out manner.

need?
- utilize first coming data first, while other wait for their turn
- Fifo method - First in first out
Ex- point sale system at restaurant
- printer queue
- call center phone system

} real life application

Queue operation:
- create queue
- enqueue (inserting)
- dequeue (removing)
- peek
- is empty
- is Full
- delete queue

Implementation
1. Array
   - linear queue
   - circular queue
2. linked list

Linear Queue using Array

Time and Space complexity of LQ using Array

linear Queue - Array	Time complexity	Space complexity
create queue	O(1)	O(N)
enQueue	O(1)	O(1)
deQueue	O(1)	O(1)
peek		
isEmpty		
is full		
delete entire queue		

* All methods are in PC!

Circular Queue using Array?

need?

- deQueue method causes blank cells

Time and space complexity of CQ using Array

circular Array-Queue	Time complexity	Space complexity
create queue	O(1)	O(N)
enQueue	O(1)	O(1)
deQueue		
peek		
isempty		
is full		
delete entire queu		

* methods in PC.!

Queue using linked list

Time and space complexity of queue using linked list

Queue-linked list	Time complexity	space complexity
create queue	O(1)	O(1)
enqueue		
dequeue		
peek		
isEmpty		
Delete entire queue		

#	Array Queue	Linked list queue → preferable in queue
Space efficient	X	✓

when to use/Avoid Queue

use
- FIFO functionality
- The chance of data corruption is minimum

Avoid
- Random access is not possible