C, C++, DSA in depth

# Queue

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# Agenda

1. What is Queue ?
2. Operations on Queue
3. Ways to implement Queue

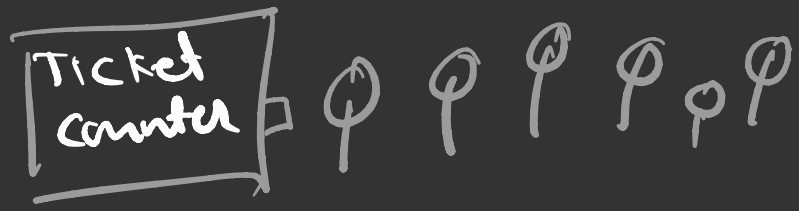
# What is Queue?

- Queue is a linear data structure.
- Working principle of queue is First in First out.

- In stack only one end is open for insertion and deletion
- In queue one end is for insertion and another end is for deletion


- Insertion is done on one end known as rear or back
- Deletion is done on another end known as Front

# Real world examples



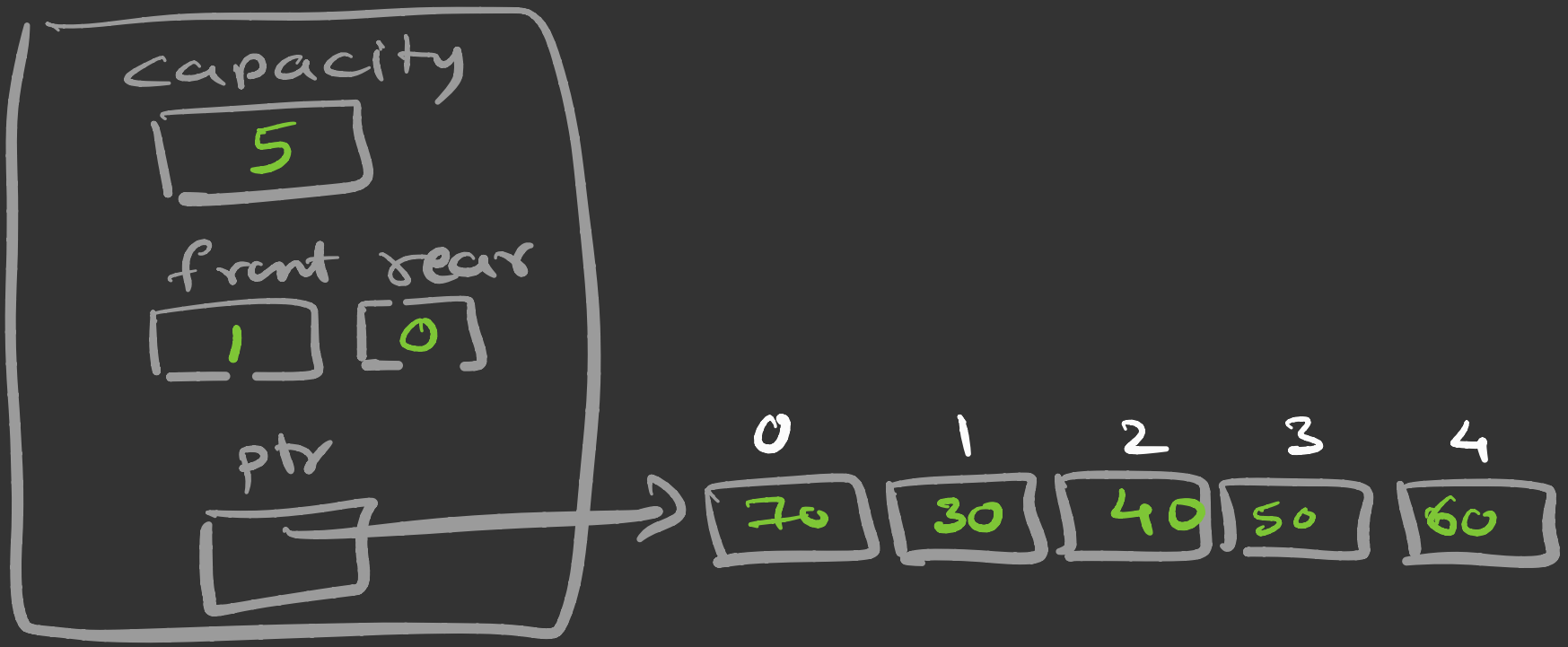

# Operations on Queue


## Operations

1. Insertion — enqueue
2. Deletion — dequeue
3. getFront
4. getBack

# Ways to implement Queue

1. using Arrays
2. using Dynamic Arrays
3. using Linked List



# Implementing Queue using Arrays

$\frac{n_1}{d_1}$ $\frac{n_2}{d_2}$ $\frac{n_1 \times d_2}{d_1 \times d_2}$ $\frac{n_2}{d_2} \times \frac{d_1}{d_1}$ $\frac{1}{2} + \frac{3}{4}$

$L = Lcm(d_1, d_2)$

$\frac{2+3}{4} = \frac{5}{4}$

$N = n_1 \times \frac{L}{d_1} + \frac{L}{d_2} * n_2$ $\frac{1}{3} + \frac{3}{4}$

$\frac{4+9}{12}$ $\frac{13}{12}$