

Circular Queue

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Arr[5]

Circular Queue full condition

Rear = -1
Front = -1

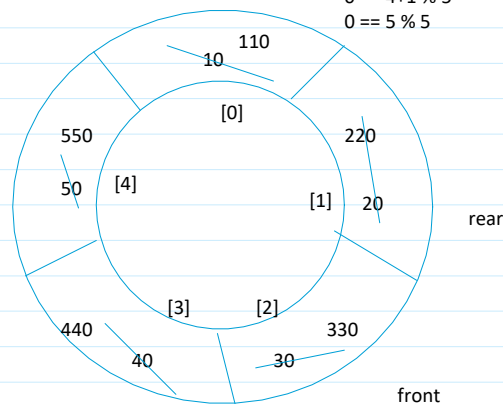
Front == rear + 1 % 5
 $0 == 4 + 1 \% 5$
 $0 == 5 \% 5$

When Queue is full,

Rear = 0 front = 1
Rear = 1, front = 2
Rear = 2 front = 3
Rear = 3 front = 4
rear = 4, front = 0

Enqueue:

- 1) Check if queue is not full
- 2) Increment rear as
 $\text{Rear} = (\text{rear} + 1) \% \text{SIZE}$
- 3) Add element at rear position
- 4) If front == -1, make front = 0



Front == rear + 1
 $3 == 2 + 1$

Dequeue :

Check if Queue is not empty.

Increment front .

If front is 4 and rear is 0

to delete the rear position, we cannot increment front as front ++ Will be index 5 but we want to delete index 0;

So,

Front = front + 1 % SIZE

If deleting the last element in queue

If (front == rear)

Front = rear = -1

Queue empty condition

If (rear == -1) queue is empty

But when rear = 4 front = 0

$0 == 4 + 1$ does not satisfy the above condition

So the queue full condition can be

Front == (rear + 1) % SIZE

$0 == (4 + 1) \% 5$

$0 == 5 \% 5$

$0 == 0$

To enqueue, instead of rear++

We say,

Rear = (rear + 1) % SIZE

Option 2:

If rear == SIZE - 1

Rear = 0;

Else

Rear++;