



DSA BOOTCAMP

SESSION 6



25 FEB 2023



TODAY'S TOPIC :

QUEUE





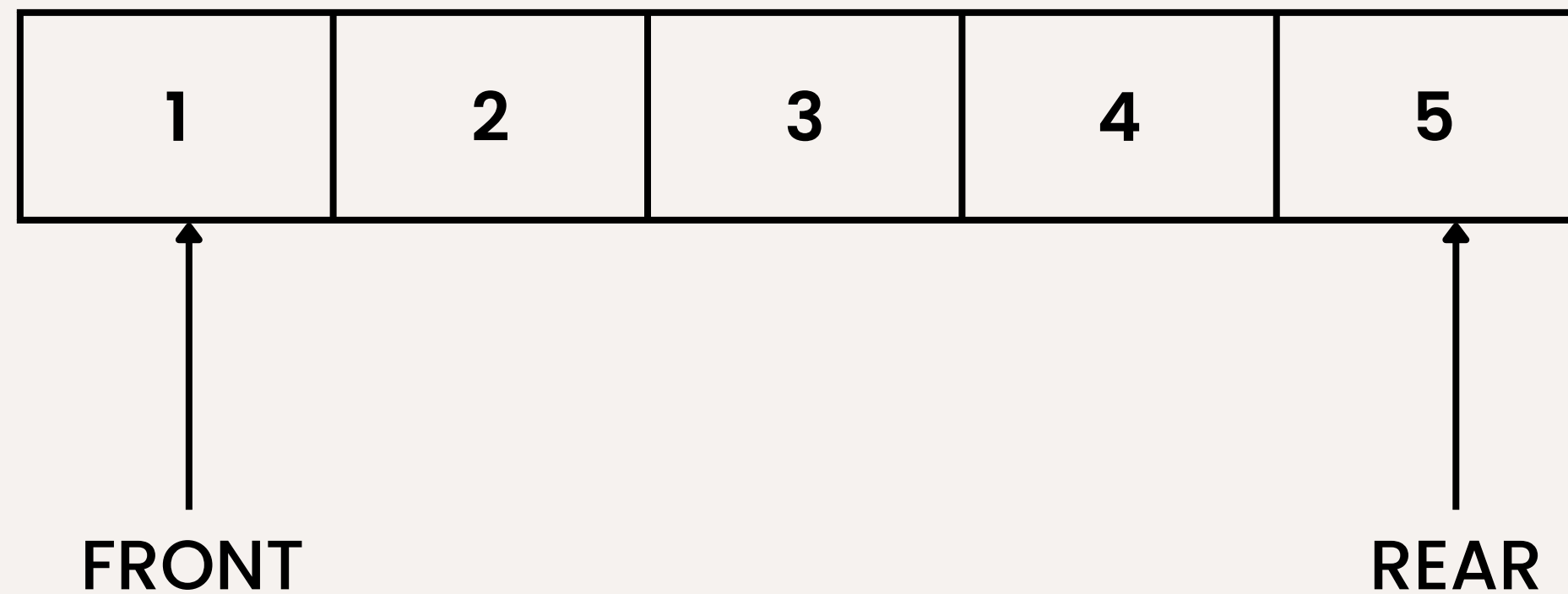
QUEUE :

- Queue is a **linear data structure** which has two ends, one for insertion of elements and other for deletion of elements.
- It is a **homogeneous** collection of elements in which new elements are added at one end called '**REAR**' and the existing elements are deleted from other end called '**FRONT**'.
- Elements are inserted from '**REAR**' end and deleted from '**FRONT**' end.



- Queues are called **FIRST - IN - FIRST - OUT (FIFO)**.

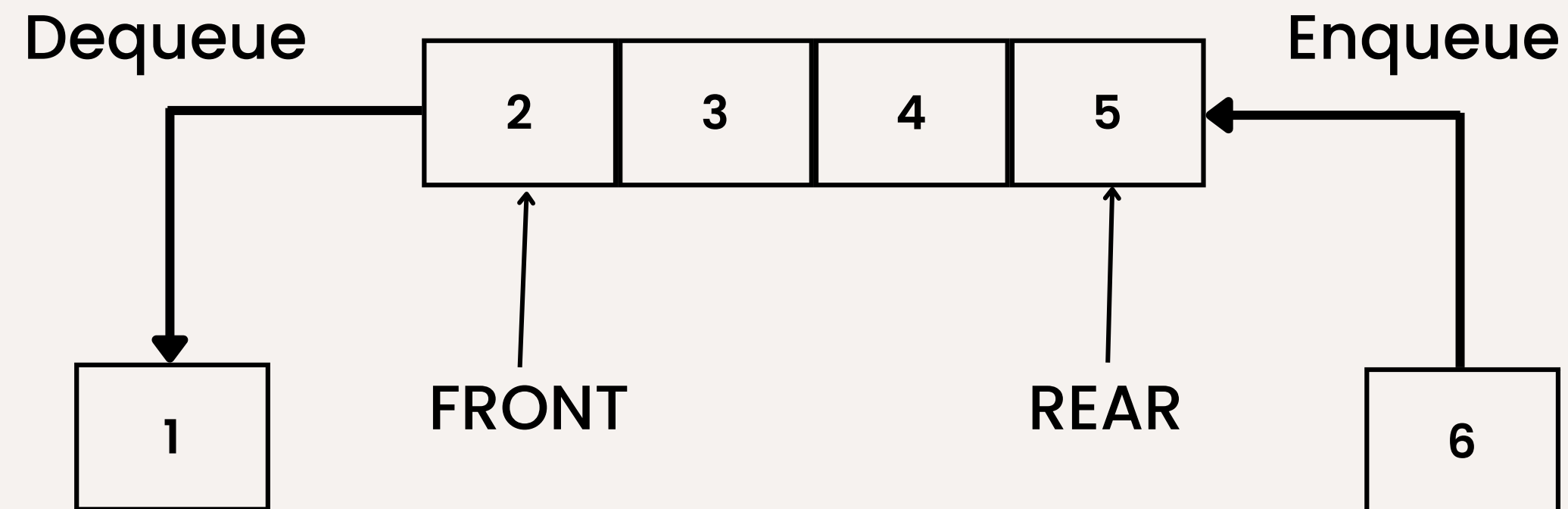
WHY ? Since the first element in a queue will be the first element out of the queue.





The two basic operations are :

- ✿ INSERT (OR Add) an element to the Queue or Enqueue
- ✿ DELETE (OR Remove) an element from the Queue or Dequeue





Enqueue illustration:

Front = -1 Rear = -1

Insert A



F = R = 1

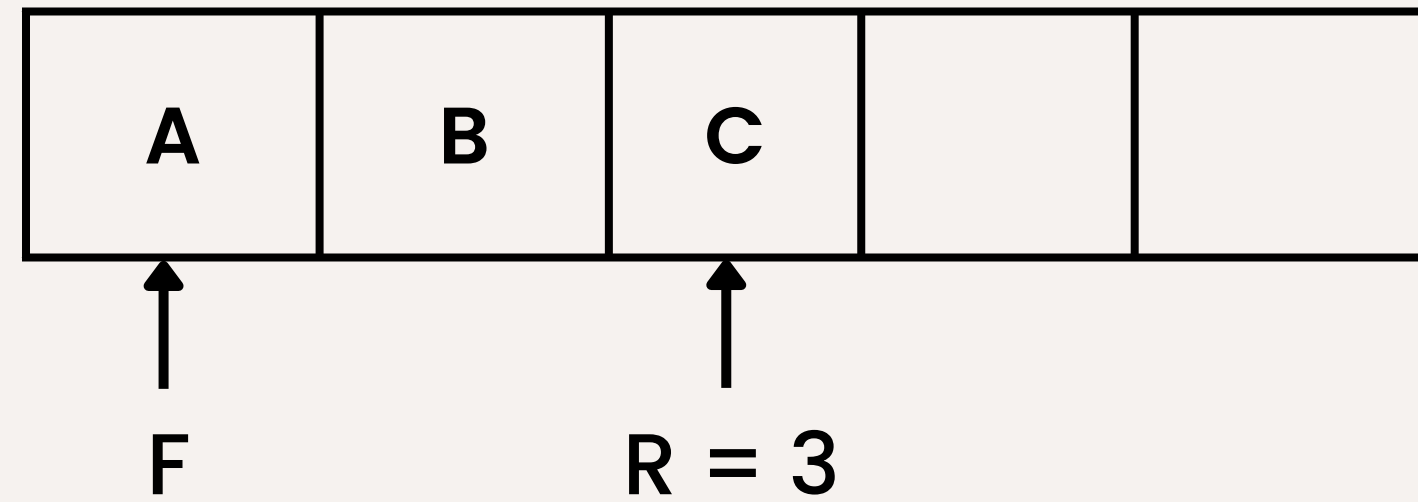
Insert B



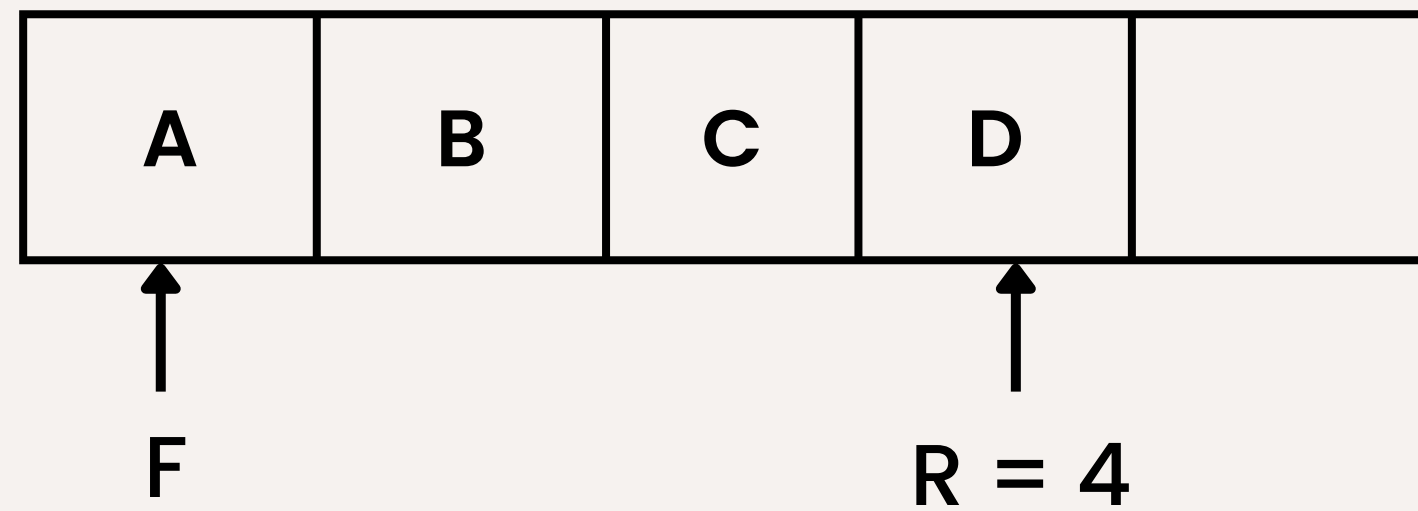
F = 1 R = 2



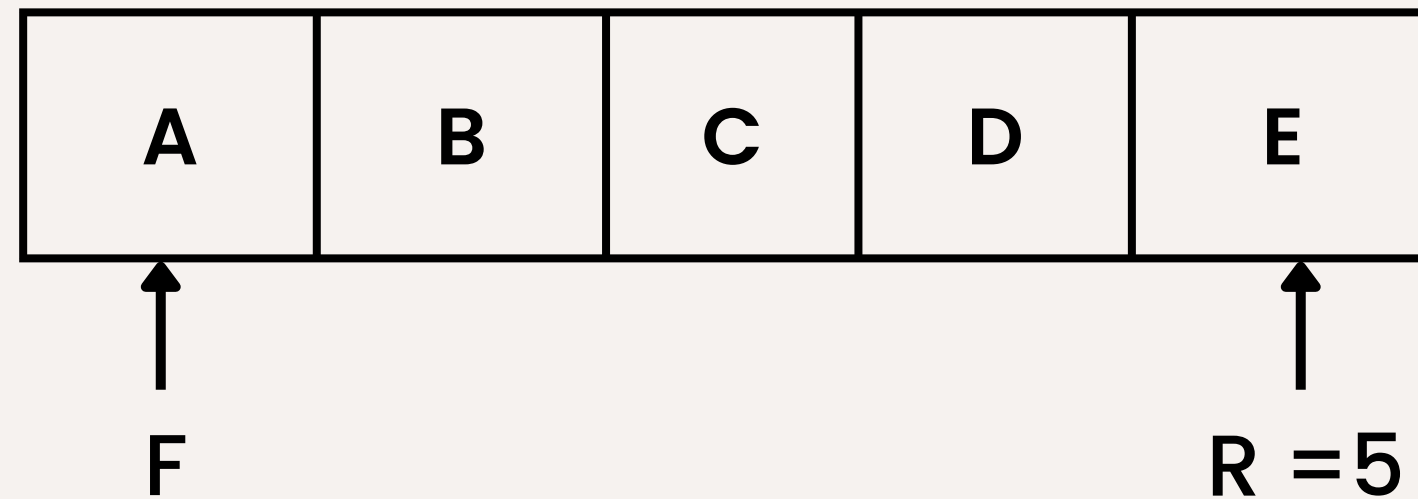
Insert C



Insert D

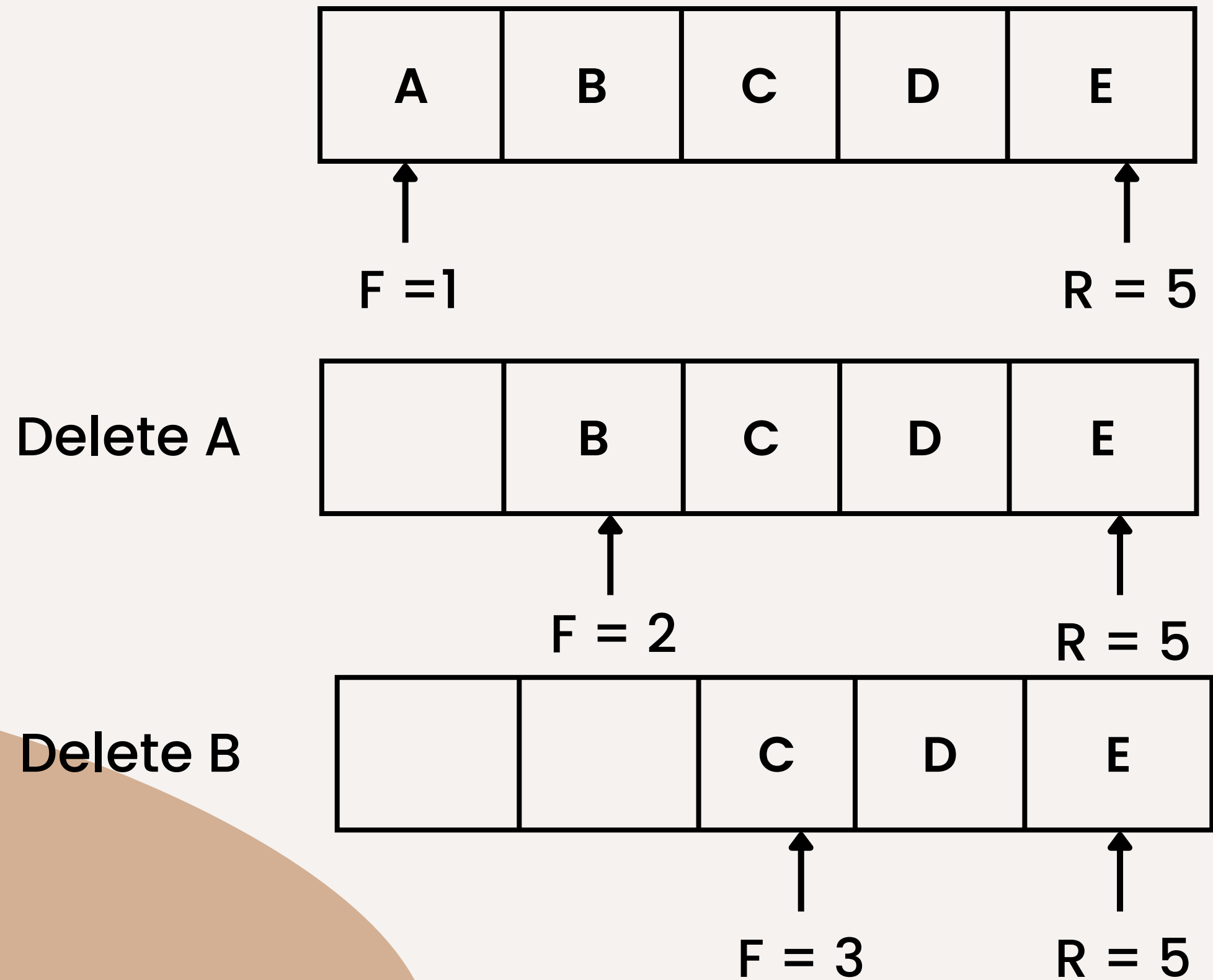


Insert E

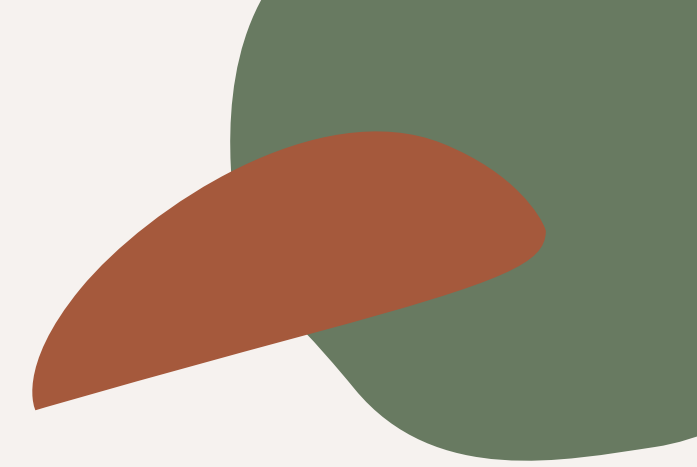




Deque illustration:

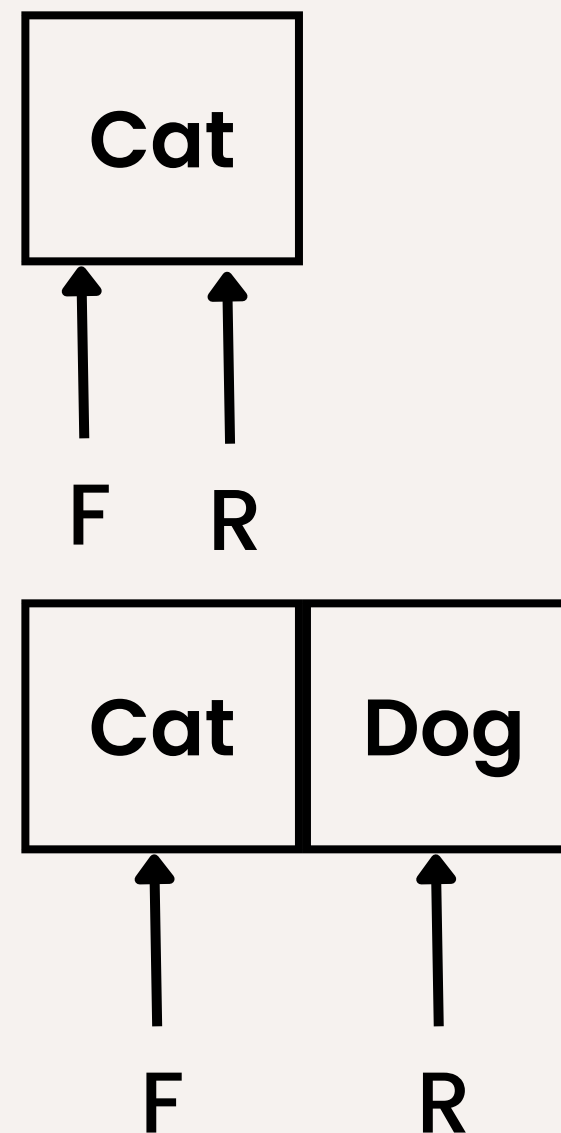


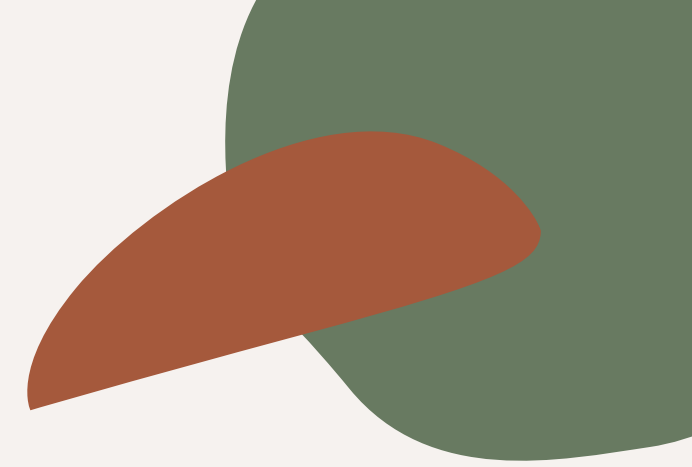
Insert Element to a queue:



```
int main() {  
    queue<string> animals;  
    animals.push("Cat");  
    animals.push("Dog");  
    animals.push("Bear");  
  
    return 0;  
}
```

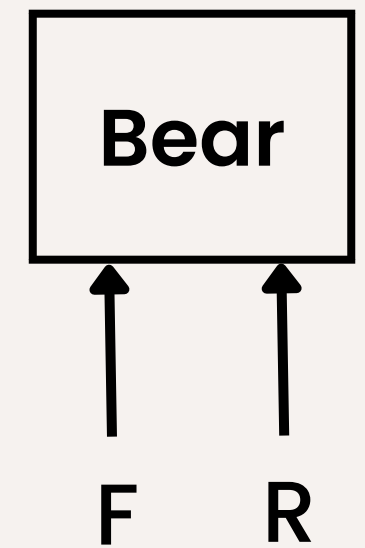
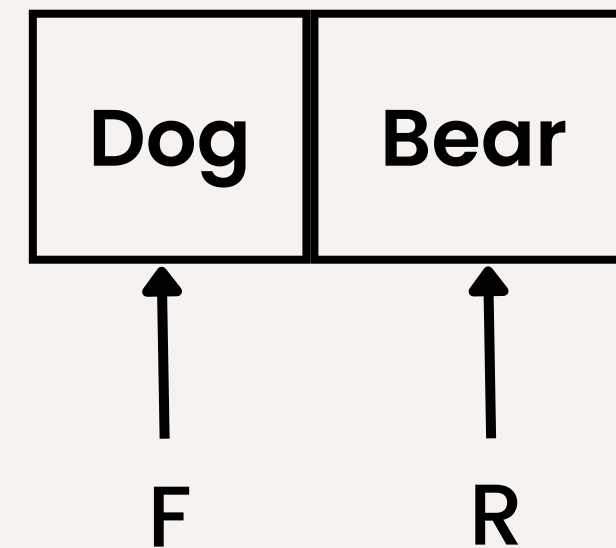
FRONT = -1 REAR = -1





Remove Element from the Queue:

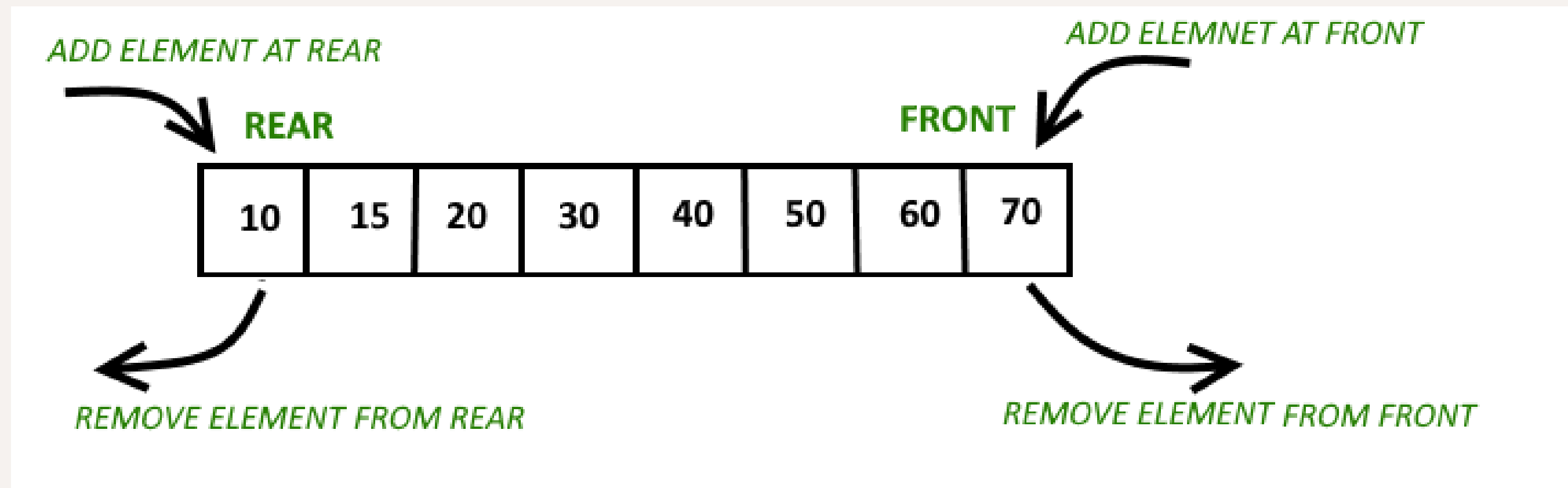
```
int main() {  
    queue<string> animals;  
    animals.push("Cat");  
    animals.push("Dog");  
    animals.push("Bear");  
    animals.pop();  
    animals.pop();  
  
    return 0;  
}
```





Deque

In deque, both insertion and deletion operations are performed at either end of the queues.





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Thank You

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