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## Assignment - 11

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### Problem Statement:

Queues are frequently used in computer programs & typical example is creation of job queue by an OS. If OS does not use priorities, jobs are processed in order entered. Write a program to add delete job from queues.

### Objectives:

To implement concept of queue in C++.

### Outcome:

Student will be able to write & execute C++ program to create job queue & queue operations.

S/W H/W Req:

Windows 10, VS CODE, mingw, 8GB RAM, 512GB SSD.

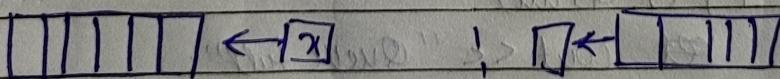
### Theory:

Queue is a data structure that follows FIFO convention.

The element that first enters, leaves first.

pushback (x)

pop front ()



They are also called enqueue, dequeue operations.

Pseudocode  
Class JobQue

```
{
    struct queue {
        int que [size], front, rear; } Q;
public:
    JobQue(); // Constructor
    int Qfull();
    int insert (int);
    int Qempty();
    int Delete();
    void Display();
}
```

```
JobQue { Q.front = -1; Q.rear = -1; }
Qfull { if Q.rear > size-1 return 1 else 0. }
insert { if Q.front = -1 increment front . increment rear
        & add element to rear position. }
isEmpty { if Q.front = -1 or Q.front > Q.rear return 1 else 0 }
```

```
Delete { item = Q.que [Q.front]; Q.front ++ }
```

Main menu:

JobQue J;

case Add : if (J.Qfull)

~~cout~~ cout << "Queue full";

else { J.insert (); }

case Delete : ~~cout~~ & J.delete ();

case Display : J.display ();

Default : Wrong choice!

## Algorithm

1. Start
2. Define class JobQue
3. Define struct que which contains array, front, rear.
4. Define functions for enqueue, dequeue, display, full, empty.
5. Enque:
  - a) Set front++ if front = -1.
  - b) add the req element to que [++ rear] = item.
  - c) Return & rear.
6. Delete:
  - a) Increment value of front of que.
  - b) return & front.
7. Display
  - a) Traverse through array
  - b) Print each element.
8. Main menu
  - a) Print menu
  - b) Take input from user for task to be performed.
  - c) Exit.