DSA SERIES

- Learn Coding

Topic to be Covered today

Deque

LETS START TODAY'S LECTURE

Deque

```
#include <iostream>
using namespace std;

class Deque
{

private:
    int *arr;
    int front;
    int rear;
    int size;
    int capacity;

public:
    Deque(int cap)
    {
        capacity = cap;
        arr = new int[capacity];

        front = 0;
        rear = -1;
        size = 0;
```

```
}

// Insertion at front

void insertFront(int x)
{

    if (isFull())
    {
        cout << "The deque is full.";
        return;
    }

    // Shifting
    for (int i = size - 1; i >= 0; i--)
    {
        arr[i + 1] = arr[i];
    }

    arr[0] = x;
    rear++;
    size++;
}
```

```
// Insertion at back

void insertRear(int x)
{
    if (isFull())
    {
        cout << "The deque is full.";
        return;
    }

    rear++;
    arr[rear] = x;
    size++;
}

// Deletion at front

void deleteFront()
{
    if (isEmpty())
    {
        cout << "The deque is empty.";
        return;
    }
```

```
// Shifting

        for (int i = 0; i < rear; i++)
        {
            arr[i] = arr[i + 1];
        }
        rear--;
        size--;
    }

    // Deletion at rear

    void deleteRear(){
        if(isEmpty()){
            cout<<"The deque is empty.";
            return;
        }

        rear--;
        size--;
    }
```

```
// Get element from front
    int getFront(){
        if(isEmpty()){
            cout<<"The deque is empty.";
            return -1;
        }

        return arr[0];

    }

    // Get element from back
    int getRear(){
        if(isEmpty()){
            cout<<"The deque is empty.";
            return -1;
        }

        return arr[rear];
    }

    // The deque is full or not
```

```
bool isFull()
{
    return size == capacity;
}

// The deque is empty or not

bool isEmpty()
{
    return size == 0;
}

// Displaying the elements

void display(){
    if(isEmpty()){
        cout<<"The deque is empty.";
        return;
    }

    cout<<"Deque elements are : ";
    for(int i = 0;i<=rear;i++){
        cout<<arr[i]<<" ";
    }
```

```
        cout<<endl;
    }
};

int main()
{

    Deque d(5);

    d.insertFront(6); // 6
    d.insertRear(10); // 6 10
    d.insertRear(11); // 6 10 11
    d.insertRear(15); // 6 10 11 15
    d.insertFront(68);
    // d.insertRear(78);

  d.deleteFront();
  d.deleteRear(); // 6 10 11


  d.deleteRear();
  d.deleteRear();
  d.deleteRear();
```

```
  d.deleteRear();

  cout<<"Front : "<<d.getFront();
  cout<<endl;
  cout<<"Rear : "<<d.getRear();
  cout<<endl;



    d.display();
    // cout<<d.isFull();
    // cout<<d.isEmpty();


    return 0;
}
```

Learn coding

THANK YOU