Queue-1

Assignment Solutions

1. **Ques: Design Circular Deque [Leetcode – 641]**
   (Use Array / Vector)

Solution:

```cpp
class MyCircularDeque {
public:
    int *a;
    int size, f, r;
    MyCircularDeque(int k) {
        size = k;
        a = new int[size];
        f = -1, r = -1;
    }
    bool insertFront(int value) {
        if ((r + 1) % size == f)
            return false;
        if (f == -1 && r == -1) {
            f++;
            r++;
            a[f] = value;
            return true;
        }
        f--;
        f = (f + size) % size;
        a[f] = value;
        return true;
    }
    bool insertLast(int value) {
        if ((r + 1) % size == f)
            return false;
        if (f == -1 && r == -1) {
            f++;
            r++;
            a[r] = value;
            return true;
        }
        r++;
        r %= size;
        a[r] = value;
        return true;
    }
    bool deleteFront() {
        if (f == -1 && r == -1)
            return false;
        if (f == r) {
            f = -1;
```

```cpp
            r = -1;
            return true;
        }
        f++;
        f = f % size;
        return true;
    }
    bool deleteLast() {
        if (f == -1 && r == -1)
            return false;
        if (f == r) {
            f = -1;
            r = -1;
            return true;
        }
        r--;
        r = (r + size) % size;
        return true;
    }
    int getFront() {
        if (isEmpty())
            return -1;
        return a[f];
    }
    int getRear() {
        if (isEmpty())
            return -1;
        return a[r];
    }
    bool isEmpty() {
        if (f == -1)
            return true;
        return false;
    }
    bool isFull() {
        if ((r + 1) % size == f)
            return true;
        return false;
    }
};
```