```cpp
#include<iostream>
#define SIZE 5

using namespace std;

class dequeue {
    int a[10], front, rear, count;

public:
    dequeue();
    void add_at_beg(int);
    void add_at_end(int);
    void display();
    void delete_fr_front();
    void delete_fr_rear();
};

dequeue::dequeue() {
    front = -1;
    rear = -1;
    count = 0;
}

void dequeue::add_at_beg(int item) {
    int i;
    if (front == -1) {
        front++;
        rear++;
        a[rear] = item;
        count++;
    } else if (rear >= SIZE - 1) {
        cout << "\nInsertion is not possible, overflow!!!";
    } else {
        for (i = count; i >= 0; i--) {
            a[i] = a[i - 1];
        }
        a[i] = item;
        count++;
        rear++;
    }
}

void dequeue::add_at_end(int item) {
    if (front == -1) {
        front++;
        rear++;
        a[rear] = item;
        count++;
    } else if (rear >= SIZE - 1) {
        cout << "\nInsertion is not possible, overflow!!!";
        return;
    } else {
        a[++rear] = item;
    }
}

void dequeue::display() {
    for (int i = front; i <= rear; i++) {
        cout << a[i] << " ";
    }
}
```

```
void dequeue::delete_fr_front() {
    if (front == -1) {
        cout << "Deletion is not possible::Dequeue is empty";
        return;
    } else {
        if (front == rear) {
            front = rear = -1;
            return;
        }
        cout << "The deleted element is " << a[front];
        front = front + 1;
    }
}

void dequeue::delete_fr_rear() {
    if (front == -1) {
        cout << "Deletion is not possible::Dequeue is empty";
        return;
    } else {
        if (front == rear) {
            front = rear = -1;
        }
        cout << "The deleted element is " << a[rear];
        rear = rear - 1;
    }
}

int main() {
    int c, item;
    dequeue d1;

    do {
        cout << "\n\n****DEQUEUE OPERATION****\n";
        cout << "\n1-Insert at beginning";
        cout << "\n2-Insert at end";
        cout << "\n3-Display";
        cout << "\n4-Deletion from front";
        cout << "\n5-Deletion from rear";
        cout << "\n6-Exit";
        cout << "\nEnter your choice<1-4>:";
        cin >> c;

        switch (c) {
            case 1:
                cout << "Enter the element to be inserted:";
                cin >> item;
                d1.add_at_beg(item);
                break;

            case 2:
                cout << "Enter the element to be inserted:";
                cin >> item;
                d1.add_at_end(item);
                break;

            case 3:
                d1.display();
                break;

            case 4:
```

```
                d1.delete_fr_front();
                break;

            case 5:
                d1.delete_fr_rear();
                break;

            case 6:
                exit(1);
                break;

            default:
                cout << "Invalid choice";
                break;
        }
    } while (c != 7);

    return 0;
}

/*---------OUTPUT----------

****DEQUEUE OPERATION****

1-Insert at beginning
2-Insert at end
3-Display
4-Deletion from front
5-Deletion from rear
6-Exit
Enter your choice<1-4>:1
Enter the element to be inserted:12


****DEQUEUE OPERATION****

1-Insert at beginning
2-Insert at end
3-Display
4-Deletion from front
5-Deletion from rear
6-Exit
Enter your choice<1-4>:2
Enter the element to be inserted:32


****DEQUEUE OPERATION****

1-Insert at beginning
2-Insert at end
3-Display
4-Deletion from front
5-Deletion from rear
6-Exit
Enter your choice<1-4>:3
12 32

****DEQUEUE OPERATION****

1-Insert at beginning
2-Insert at end
```

```
3-Display
4-Deletion from front
5-Deletion from rear
6-Exit
Enter your choice<1-4>:
4
The deleted element is 12

****DEQUEUE OPERATION****

1-Insert at beginning
2-Insert at end
3-Display
4-Deletion from front
5-Deletion from rear
6-Exit
Enter your choice<1-4>:5
The deleted element is 0

****DEQUEUE OPERATION****

1-Insert at beginning
2-Insert at end
3-Display
4-Deletion from front
5-Deletion from rear
6-Exit
Enter your choice<1-4>:6

--------------------------------
Process exited after 48.66 seconds with return value 1
Press any key to continue . . .
*/
```