```c
// queue uing LL
#include <stdio.h>
#include <stdlib.h>

typedef struct node
{
    int data;
    struct node *next;
} Node;

typedef struct
{
    Node *front, *rear;
} QueueLL;

void enqueue(QueueLL *q, int x)
{
    Node *p;
    p = (Node *)malloc(sizeof(Node));
    p->data = x;
    p->next = NULL;

    if (q->rear == NULL)
    {
        q->rear = q->front = p; // for first node
    }
    else
    {
        q->rear->next = p;
        q->rear = p;
    }
}

int dequeue(QueueLL *q)
{
    Node *p;

    if (q->front == NULL)
    {
        printf("Queue is empty");
        return -1;
    }
    else
    {
        p = q->front;
        int x = p->data;
        q->front = q->front->next;
```

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        if (q->front == NULL)
        {
            q->rear = NULL; // for dangling pointer
        }
        free(p);
        return x;
    }
}

void display(QueueLL q)
{
    Node *p;
    for (p = q.front; p != NULL; p = p->next)
    {
        printf("\t%d", p->data);
    }
}

int main()
{
    QueueLL q;
    int op, num;

    q.front = NULL;
    q.rear = NULL;

    do
    {
        printf("\n1.enqueue\n2.dequeue\n3.display\n4.exit\n");
        printf("Enter your choice: ");
        scanf("%d", &op);

        switch (op)
        {
        case 1:
            printf("Enter the elemnent: ");
            scanf("%d", &num);
            enqueue(&q, num);
            break;

        case 2:
            printf("Deleted element is %d", dequeue(&q));
            break;

        case 3:
            display(q);
            break;
```

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        case 4:
            printf("Thank you for using this program\n");
        }
    } while (op != 4);

    return 0;
}
```

```
1.enqueue
2.dequeue
3.display
4.exit
Enter your choice: 1
Enter the elemnent: 10

1.enqueue
2.dequeue
3.display
4.exit
Enter your choice: 1
Enter the elemnent: 20

1.enqueue
2.dequeue
3.display
4.exit
Enter your choice: 1
Enter the elemnent: 30

1.enqueue
2.dequeue
3.display
4.exit
Enter your choice: 2
Deleted element is 10
1.enqueue
2.dequeue
3.display
4.exit
Enter your choice: 3
        20      30
1.enqueue
2.dequeue
3.display
4.exit
Enter your choice: 4
Thank you for using this program
PS C:\Users\Mark Lopes\Desktop\ds>
```