

## **Lab 3: Queue**

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### **Code:**

```
#include <stdio.h>
#include <stdlib.h>
#define max 3

int front=-1, rear=-1, i, queue[10], ch, item;

void insert();
int del();
void display();

void main()
{
    while (1)
    {
        printf("\n1. INSERT \n2. DELETE \n3. DISPLAY \n4. EXIT \nEnter Your Choice: ");
        scanf("%d",&ch);
        switch (ch)
        {
            case 1: insert();
                    break;
            case 2: item=del();
                    if (item!=-1)
                    {
                        printf("The Deleted Item is:%d\n", item);
                    } break;
        }
    }
}
```

```
        case 3: display();
            break;
        case 4: exit(0);
    }
}
```

```
void insert()
{
    if (rear==max-1)
    {
        printf("Queue is Full \n");
        return;
    }
    printf("Enter Element: \n");
    scanf("%d",&item);
    if (rear ==-1 && front ==-1)
    {
        rear=0;
        front=0;
    }
    else
    {
        rear=rear+1;
    }
    queue[rear]=item;
    return;
}
```

```
int del()
{
    if (front==-1 && rear==-1)
```

```
{
    printf("Queue is Empty\n");
    return -1;
}
item=queue[front];

if (front==rear)
{
    front=-1;
    rear=-1;
}
else
{
    front=front+1;
}
return item;
}

void display()
{
    if (front== -1 && rear== -1)
    {
        printf("Queue is Empty \n");
        return;
    }
    printf("The Elements of the Queue are: \n");
    for (i=front;i<=max-1;i++)
    {
        printf("%d \n", queue[i]);
    }
    return;
}
```

### Output:

```
1. INSERT
2. DELETE
3. DISPLAY
4. EXIT
Enter Your Choice: 3
Queue is Empty
```

```
1. INSERT
2. DELETE
3. DISPLAY
4. EXIT
Enter Your Choice: 1
Enter Element:
4
```

```
1. INSERT
2. DELETE
3. DISPLAY
4. EXIT
Enter Your Choice: 1
Enter Element:
7
```

```
1. INSERT
2. DELETE
3. DISPLAY
4. EXIT
Enter Your Choice: 1
Enter Element:
9
```

1. INSERT
2. DELETE
3. DISPLAY
4. EXIT

Enter Your Choice: 1

Queue is Full

1. INSERT
2. DELETE
3. DISPLAY
4. EXIT

Enter Your Choice: 3

The Elements of the Queue are:

4  
7  
9

1. INSERT
2. DELETE
3. DISPLAY
4. EXIT

Enter Your Choice: 2

The Deleted Item is:4

1. INSERT
2. DELETE
3. DISPLAY
4. EXIT

Enter Your Choice: 2

The Deleted Item is:7

```
1. INSERT
2. DELETE
3. DISPLAY
4. EXIT
Enter Your Choice: 2
The Deleted Item is:9

1. INSERT
2. DELETE
3. DISPLAY
4. EXIT
Enter Your Choice: 2
Queue is Empty

1. INSERT
2. DELETE
3. DISPLAY
4. EXIT
Enter Your Choice: 4

=== Code Execution Successful ===
```