

LAB_3[Queue-Operations]

```
1 #include <stdio.h>
2 #define MAX 5
3
4 int queue[MAX];
5 int front = -1, rear = -1;
6
7 void insert() {
8     int item;
9     if (rear == MAX - 1) {
10         printf("Queue Overflow\n");
11         return;
12     }
13     printf("Enter element to insert: ");
14     scanf("%d", &item);
15     if (front == -1)
16         front = 0;
17     queue[++rear] = item;
18 }
19 void delete() {
20     if (front == -1 || front > rear) {
21         printf("Queue Empty\n");
22         return;
23     }
24     printf("Deleted element: %d\n", queue[front++]);
25 }
26 void display() {
27     int i;
28     if (front == -1 || front > rear) {
29         printf("Queue Empty\n");
30         return;
31     }
32     for (i = front; i <= rear; i++)
33         printf("%d ", queue[i]);
34     printf("\n");
35 }
36 int main() {
37     int choice;
38     while (1) {
39         int main() {
40             int choice;
41             while (1) {
42                 printf("\n1.Insert\n2.Delete\n3.Display\n4.Exit\n");
43                 printf("Enter choice: ");
44                 scanf("%d", &choice);
45                 switch (choice) {
46                     case 1: insert(); break;
47                     case 2: delete(); break;
48                     case 3: display(); break;
49                     case 4: return 0;
50                     default: printf("Invalid choice\n");
51                 }
52             }
53         }
54     }
55 }
```

OUTPUT:

```
C:\Users\Hrishikesh\OneDrive\Desktop\ds_report\lab-3\prg_3_insert.exe

1.Insert
2.Delete
3.Display
4.Exit
Enter choice: 1
Enter element to insert: 2

1.Insert
2.Delete
3.Display
4.Exit
Enter choice: 1
Enter element to insert: 3

1.Insert
2.Delete
3.Display
4.Exit
Enter choice: 1
Enter element to insert: 4

1.Insert
2.Delete
3.Display
4.Exit
Enter choice: 3
2 3 4

1.Insert
2.Delete
3.Display
4.Exit
Enter choice: 2
Deleted element: 2

1.Insert
2.Delete
3.Display
4.Exit
Enter choice: 2
Deleted element: 3

1.Insert
2.Delete
3.Display
4.Exit
Enter choice: 4

Process returned 0 (0x0)  execution time : 20.162 s
Press any key to continue.
```

LAB_3[Circular-Queue operations]

```
1 #include <stdio.h>
2 #define MAX 5
3 int cq[MAX];
4 int front = -1, rear = -1;
5
6 void insert() {
7     int item;
8     if ((front == 0 && rear == MAX - 1) || (front == rear + 1)) {
9         printf("Queue Overflow\n");
10        return;
11    }
12    printf("Enter element to insert: ");
13    scanf("%d", &item);
14    if (front == -1) {
15        front = rear = 0;
16    } else if (rear == MAX - 1) {
17        rear = 0;
18    } else {
19        rear++;
20    }
21    cq[rear] = item;
22}
23
24 void delete() {
25    if (front == -1) {
26        printf("Queue Empty\n");
27        return;
28    }
29    printf("Deleted element: %d\n", cq[front]);
30    if (front == rear) {
31        front = rear = -1;
32    } else if (front == MAX - 1) {
33        front = 0;
34    } else {
35        front++;
36    }
37}
38
39 void display() {
40    int i;
41    if (front == -1) {
42        printf("Queue Empty\n");
43        return;
44    }
45    i = front;
46    while (1) {
47        printf("%d ", cq[i]);
48        if (i == rear)
49            break;
50        i = (i + 1) % MAX;
51    }
52    printf("\n");
53}
54
55 int main() {
56    int choice;
57    while (1) {
58        printf("\n1.Insert\n2.Delete\n3.Display\n4.Exit\n");
59        printf("Enter choice: ");
60        scanf("%d", &choice);
61        switch (choice) {
62            case 1: insert(); break;
63            case 2: delete(); break;
64            case 3: display(); break;
65            case 4: return 0;
66            default: printf("Invalid choice\n");
67        }
68    }
69}
```

OUTPUT:

```
1.Insert
2.Delete
3.Display
4.Exit
Enter choice:
1
Enter element to insert: 100

1.Insert
2.Delete
3.Display
4.Exit
Enter choice: 1
Enter element to insert: 200

1.Insert
2.Delete
3.Display
4.Exit
Enter choice: 1
Enter element to insert: 300

1.Insert
2.Delete
3.Display
4.Exit
Enter choice: 2
Deleted element: 100

1.Insert
2.Delete
3.Display
4.Exit
Enter choice: 3
200 300

1.Insert
2.Delete
3.Display
4.Exit
Enter choice: 4

Process returned 0 (0x0)  execution time : 19.781 s
Press any key to continue.
```