

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
40 int main() {
41     int choice;
42     while (1) {
43         printf("\n1.Insert\n2.Delete\n3.Display\n4.Exit\n");
44         printf("Enter choice: ");
45         scanf("%d", &choice);
46         switch (choice) {
47             case 1: insert(); break;
48             case 2: delete(); break;
49             case 3: display(); break;
50             case 4: return 0;
51             default: printf("Invalid choice\n");
52         }
53     }
54 }
```

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 }
70
```

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.
```