

```

1  #include <stdio.h>
2  #include <stdlib.h>
3
4  #define MAX_SIZE 10
5
6  int queue[MAX_SIZE];
7  int front = -1;
8  int rear = -1;
9
10 void enqueue(int x);
11 int dequeue();
12 void display();
13
14 int main(){
15     int op,x;
16     while(1){
17         printf("1.Enqueue\n2.Dequeue\n3.Display\n4.Exit\nEnter Your choice: ");
18         scanf("%d",&op);
19         switch(op){
20             case 1:
21                 if(rear == MAX_SIZE - 1){
22                     printf("Overflow.\n");
23                 }else{
24                     printf("Enter the item: ");
25                     scanf("%d",&x);
26                     enqueue(x);
27                 }
28                 break;
29             case 2:
30                 if(front == rear+1 || front == -1){
31                     printf("Underflow.\n");
32                 }else{
33                     x = dequeue();
34                     printf("Removed %d from queue.\n",x);
35                 }
36                 break;
37             case 3:
38                 if(front == rear+1 || front == -1){
39                     printf("Queue is empty.\n");
40                 }else{
41                     printf("The elements of queue are: ");
42                     display();
43                 }
44                 break;
45             case 4:
46                 exit(0);
47             default:
48                 printf("Invalid Input.\n");
49         }
50     }
51     return 0;
52 }
53
54 void enqueue(int x){
55     if(front == -1){
56         front = 0;
57     }
58     rear++;
59     queue[rear] = x;
60 }
61
62 int dequeue(){
63     int x = queue[front];
64     front++;
65     return x;
66 }
67
68 void display(){
69     for(int i = front; i <= rear; i++){
70         printf("%d -> ",queue[i]);
71     }
72     printf("NULL\n");
73 }

```

```
74 |
75 |
76 | /*
77 | OUTPUT
78 |
79 | PS S:\Workspace\CollegeWork\DataStructure> gcc .\queue-using-array.c
80 | PS S:\Workspace\CollegeWork\DataStructure> ./a
81 | 1.Enqueue
82 | 2.Dequeue
83 | 3.Display
84 | 4.Exit
85 | Enter Your choice: 1
86 | Enter the item: 12
87 | 1.Enqueue
88 | 2.Dequeue
89 | 3.Display
90 | 4.Exit
91 | Enter Your choice: 1
92 | Enter the item: 31
93 | 1.Enqueue
94 | 2.Dequeue
95 | 3.Display
96 | 4.Exit
97 | Enter Your choice: 3
98 | The elements of queue are: 12 -> 31 -> NULL
99 | 1.Enqueue
100 | 2.Dequeue
101 | 3.Display
102 | 4.Exit
103 | Enter Your choice: 2
104 | Removed 12 from queue.
105 | 1.Enqueue
106 | 2.Dequeue
107 | 3.Display
108 | 4.Exit
109 | Enter Your choice: 2
110 | Removed 31 from queue.
111 | 1.Enqueue
112 | 2.Dequeue
113 | 3.Display
114 | 4.Exit
115 | Enter Your choice: 2
116 | Underflow.
117 | 1.Enqueue
118 | 2.Dequeue
119 | 3.Display
120 | 4.Exit
121 | Enter Your choice: 3
122 | Queue is empty.
123 | 1.Enqueue
124 | 2.Dequeue
125 | 3.Display
126 | 4.Exit
127 | Enter Your choice: 4
128 | PS S:\Workspace\CollegeWork\DataStructure>
129 | */
```