

Program 4.1: circular queue with insert, delete, display, search an element of a circular queue:

```
#include<stdlib.h>

#include<stdio.h>

#define SIZE 6

int front=-1,rear=-1;

int CQueue[SIZE];

void insert();

int delete();

void display();

void search();

int main()
{
    int w,no;

    for(;;)
    {
        printf("\n Menu \n");

        printf("\n #####\n");

        printf("\n1. Insert");

        printf("\n2. Delete");

        printf("\n3. Display");

        printf("\n4. Search");

        printf("\n5. EXIT");

        printf("\nEnter any option : \n");

        scanf("%d",&w);

        switch(w)
```

```

{
case 1:
    insert();
    break;
case 2:
    no=delete();
    break;
case 3:
    display();
    break;
case 4:
    search();
case 5:
    exit(0);
default:
    printf("\nInvalid Option!!\n");
}
}
}

void insert()
{
    int no;

    if((front ==0 && rear == SIZE-1) || front == rear+1)
    {
        printf("\nCircular Queue Is Full !\n");
    }
}

```

```
        return;
    }

    printf("\nEnter a number to Insert :\n");
    scanf("%d",&no);
    if(front== -1)
        front=front+1;
    if(rear==SIZE-1)
        rear=0;
    else rear=rear+1;
    CQueue[rear]=no;
}

int delete()
{
    int e;
    if(front== -1)
    {
        printf("\nThe Circular Queue is Empty !!\n");

    }
    e=CQueue[front];
    if(front==SIZE-1)
        front=0;
    else if(front==rear)
    {
        front=-1;
```

```

        rear=-1;
    }
    else front=front+1;
    printf("\n%d was deleted !\n",e);
    return e;
}

void display()
{
    int i;
    if(front== -1)
    {
        printf("\nThe Circular Queue is Empty!. Nothing To Display !!\n");
        return;
    }
    i=front;
    if(front<=rear)
    {
        printf("\n\n");
        while(i<=rear)
            printf("%d ",CQueue[i++]);
        printf("\n");
    }
    else
    {
        printf("\n\n");

```

```

while(i<=SIZE-1)
    printf("%d ",CQueue[i++]) ;
i=0;
while(i<=rear)
    printf("%d ",CQueue[i++]);
printf("\n");
}

}

void search()
{

int item,i,c=0;

printf("Enter the element which is to be searched");
scanf("%d", &item);
for(i=front;i<=rear;i++)
{
if(item==CQueue[i])
{
printf("item found at location %d ",i+1);
c++;
}
}
if(c==0)

```

```
printf("item not found");
```

```
}
```

Output

```
× Terminal
Menu
#####
1. Insert
2. Delete
3. Display
4. Search
5. EXIT
Enter any option :
2

The Circular Queue is Empty !!

0 was deleted !

Menu
#####
1. Insert
2. Delete
3. Display
4. Search
5. EXIT
Enter any option :
1

Enter a number to Insert :
2

Menu
#####
1. Insert
2. Delete
3. Display
4. Search
5. EXIT
Enter any option :
3

2

× Terminal
3. Display
4. Search
5. EXIT
Enter any option :
1

Enter a number to Insert :
2

Menu
#####
1. Insert
2. Delete
3. Display
4. Search
5. EXIT
Enter any option :
3

2

Menu
#####
1. Insert
2. Delete
3. Display
4. Search
5. EXIT
Enter any option :
4

Enter the element which is to be searched5
item not found
Process finished.
```