SOURCE CODE: CIRCULAR QUEUE USING ARRAY:

```c
#include<stdio.h>

#include<conio.h>

#define MAX 10

int queue[MAX],front=-1,rear=-1;

void insert();

int delete_element();

int peek();

void display();

void main()
{
        int option,val;
        clrscr();
        do
        {
                printf("\n******MAIN MENU******\n");
                printf("1.Insert\n2.Delete\n3.Peek\n4.Display\n5.Exit\nEnter your option");
                scanf("%d",&option);
                switch(option)
                {
                        case 1:
                                insert();
                                break;
                        case 2:
                                val=delete_element();
                                if(val!=-1)
                                        printf("The number deleted is %d\n",val);
                                break;
                        case 3:
                                val=peek();
                                if(val!=-1)
```

```c
                                    printf("The first element in queue is %d\n",val);
                        break;
                case 4:
                        display();
                        break;
        }
    }while(option!=5);
    getch();
}
void insert()
{
    int n;
    printf("Enter the number to be inserted in the queue\n");
    scanf("%d",&n);
    if(front==0&&rear==MAX-1)
            printf("Overflow\n");
    else if(front==-1&&rear==-1)
    {
            front=rear=0;
            queue[rear]=n;
    }
    else if(rear==MAX-1&&front!=0)
    {
            rear=0;
            queue[rear]=n;
    }
    else
    {
            rear++;
            queue[rear]=n;
    }
```

```c
}
int delete_element()
{
        int val;
        if(front==-1&&rear==-1)
        {
                printf("Underflow\n");
                return -1;
        }
        val=queue[front];
        if(front==rear)
                front=rear=-1;
        else
        {
                if(front==MAX-1)
                        front=0;
                else
                        front++;
        }
        return val;
}
int peek()
{
        if(front==-1&&rear==-1)
        {
                printf("Queue is Empty\n");
                return -1;
        }
        else
        {
                return queue[front];
```

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        }
}
void display()
{
        int i;
        if(front==-1&&rear==-1)
                printf("Queue is Empty\n");
        else
        {
                if(front<rear)
                {
                        for(i=front;i<=rear;i++)
                                printf("%d\t",queue[i]);
                }
                else
                {
                        for(i=front;i<MAX;i++)
                                printf("%d\t",queue[i]);
                        for(i=0;i<=rear;i++)
                                printf("%d\t",queue[i]);
                }
        }
}
```

OUTPUT:

```
******MAIN MENU******
1.Insert
2.Delete
3.Peek
4.Display
5.Exit
Enter your option
1
Enter the number to be inserted in the queue
10

******MAIN MENU******
1.Insert
2.Delete
3.Peek
4.Display
5.Exit
Enter your option
          1
Enter the number to be inserted in the queue
20

******MAIN MENU******
1.Insert
2.Delete
3.Peek
4.Display
5.Exit
Enter your option
1
Enter the number to be inserted in the queue
30

******MAIN MENU******
1.Insert
2.Delete
3.Peek
4.Display
5.Exit
Enter your option
          2
The number deleted is 10
```

```
******MAIN MENU******
1.Insert
2.Delete
3.Peek
4.Display
5.Exit
Enter your option
3
The first element in queue is 20

******MAIN MENU******
1.Insert
2.Delete
3.Peek
4.Display
5.Exit
Enter your option
```
```
        4
20      30
******MAIN MENU******
1.Insert
2.Delete
3.Peek
4.Display
5.Exit
Enter your option
5
```