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   DATE            :1/12/22
   PROGRAM         :IMPLEMENTATION OF CIRCULAR QUEUE USING ARRAY
   INSTITUTION     :MES COLLEGE OF ENGINEERING */


#include<stdio.h>
int choice,front=-1,rear=-1,SIZE,a[100],x,i;
void enqueue();
void dequeue();
void display();
void main()
{
        printf("Enter the Queue length");
        scanf("%d",&SIZE);
        do
        {
                printf("\nMENU\n.....\n");
                printf("1.ENQUEUE\n2.DEQUEUE\n3.DISPLAY\n4.EXIT\n");
                printf("ENTER YOUR CHOICE\t");
                scanf("%d",&choice);
                switch(choice)
                {
                        case 1:enqueue();
                                break;
                        case 2:dequeue();
                                break;
                        case 3:display();
                                break;
                        case 4:printf("EXITED FROM MENU");
                                break;
                         default:printf("\nWrong selection....\n");
                }

        }while(choice!=4);
}
void enqueue()
{
        if(rear==-1 && front==-1)
        {
                printf("Enter the element to be inserted:    ");
                scanf("%d",&x);
                if(front==(rear+1)%SIZE)
         {
                   printf("\n!!! OVERFLOW !!!");
         }
                rear=0;
                   front=0;
                  a[rear]=x;
                printf("\nInsertion is success");
        }
        else if(front==(rear+1)%SIZE)
         {
                   printf("\n!!! OVERFLOW !!!");
         }
        else
```

```
        {
                printf("Enter the element to be inserted:    ");
                  scanf("%d",&x);
                  rear=(rear+1)%SIZE;
                 a[rear]=x;
                  printf("\nInsertion is success");
        }

}
void dequeue()
{
        if(rear==-1 && front==-1)
                printf("\n!!! UNDERFLOW !!!");
        else if(rear==front)
        {
                printf("\nDeleted Element:%d",a[front]);
                rear= -1;
                front= -1;
        }
        else
        {
                 printf("\nDeleted Element:%d",a[front]);
                 front=(front+1)%SIZE;
        }
}
void display()
{
         if(front==-1 && rear==-1)
                printf("\n!!! UNDERFLOW !!!");
        else
        {
                printf("\nQueue elements are:\n");
                for(i=front; i!=rear; i=(i+1)%SIZE)
                {
                        printf("%d\n",a[i]);
                }
                printf("%d\n",a[rear]);
        }
}
```

Output :-

```
Enter the Queue length
2
MENU
.....
1.ENQUEUE
2.DEQUEUE
3.DISPLAY
4.EXIT
ENTER YOUR CHOICE    1
Enter the element to be inserted:    3
Insertion is success
MENU
```

.....
1.ENQUEUE
2.DEQUEUE
3.DISPLAY
4.EXIT
ENTER YOUR CHOICE 1
Enter the element to be inserted: 4
Insertion is success
MENU
.....
1.ENQUEUE
2.DEQUEUE
3.DISPLAY
4.EXIT
ENTER YOUR CHOICE 1
!!! OVERFLOW !!!
MENU
.....
1.ENQUEUE
2.DEQUEUE
3.DISPLAY
4.EXIT
ENTER YOUR CHOICE 2
Deleted Element:3
MENU
.....
1.ENQUEUE
2.DEQUEUE
3.DISPLAY
4.EXIT
ENTER YOUR CHOICE 1
Enter the element to be inserted: 5
Insertion is success
MENU
.....
1.ENQUEUE
2.DEQUEUE
3.DISPLAY
4.EXIT
ENTER YOUR CHOICE 3
Queue elements are:
4
5

MENU
.....
1.ENQUEUE
2.DEQUEUE
3.DISPLAY
4.EXIT
ENTER YOUR CHOICE 4
EXITED FROM MENU