Program 3b

Write A Program to simulate the working of a circular queue of integers using an array. Provide the following operations: Insert, Delete & Display

The program should print appropriate messages for queue empty and queue overflow conditions

```
Code:
#include <stdio.h>
#include <stdlib.h>
#define MAX 5
int queue[MAX];
int front = -1;
int rear = -1;
int isFull() {
       return (front == (rear + 1) % MAX);
}
int isEmpty() {
       return (front == -1);
}
void insert(int value) {
       if (isFull()) {
```

```
printf("Queue Overflow: Unable to insert %d\n", value);
     return;
       }
       if (isEmpty()) {
     front = 0; // Set front to 0 if the queue is empty
       }
       rear = (rear + 1) \% MAX;
  queue[rear] = value;
  printf("Inserted %d into the queue\n", value);
}
void delete() {
       if (isEmpty()) {
     printf("Queue Underflow: Unable to delete from the queue\n");
     return;
       }
       int deletedValue = queue[front];
       if (front == rear) {
     front = -1; // Queue becomes empty
     rear = -1;
       } else {
     front = (front + 1) \% MAX;
       }
```

```
printf("Deleted %d from the queue\n", deletedValue);
}
void display() {
       if (isEmpty()) {
     printf("Queue is empty\n");
     return;
       }
  printf("Queue elements: ");
       int i = front;
       while (1) {
     printf("%d ", queue[i]);
       if (i == rear) break;
       i = (i + 1) \% MAX;
  printf("\n");
}
int main() {
       int choice, value;
       while (1) {
     printf("\nCircular Queue Operations:\n");
     printf("1. Insert\n");
     printf("2. Delete\n");
```

```
printf("3. Display\n");
printf("4. Exit\n");
printf("Enter your choice: ");
scanf("%d", &choice);
switch (choice) {
  case 1:
     printf("Enter value to insert: ");
    scanf("%d", &value);
     insert(value);
     break;
  case 2:
    delete();
    break;
  case 3:
    display();
     break;
  case 4:
    exit(0);
  default:
    printf("Invalid choice. Please try again.\n");
```

```
return 0;
```

```
Circular Queue Operations:

1. Insert

2. Delete

3. Display

4. Exit
Enter your choice: 1
Enter value to insert: 85
Inserted 85 into the queue

Circular Queue Operations:

1. Insert

2. Delete

3. Display

4. Exit
Enter your choice: 1
Enter value to insert: 56
Inserted 56 into the queue

Circular Queue Operations:

1. Insert

2. Delete

3. Display

4. Exit
Enter your choice: 3
Queue elements: 85 56

Circular Queue Operations:

1. Insert

2. Delete

3. Queue elements: 85 56

Circular Queue Operations:

1. Insert

2. Delete

3. Display

4. Exit
Enter your choice: 2
Deleted 85 from the queue
```

	return:
	1 Carried to
WAP to simulate the working of a circular queue of integers using an array Provide the fall operations	if (front -: -1)
of julgary wine on array: Provide the fet sperations	
hert, delve, display.	hout 0;
The prevam escould disday appropriate unwages for	2 roue V)
The program about display appopriate manages for	Trear = (((ar + 1) + 5126);
- dina sales	queue (rear) = element;
Hinchde (Adio-h)	print (" bested to , element);
Hinduda (soup. h)	2 mirt inserted to , elements,
	Will be ()
#define size 5	Void delete()
The second secon	The same and the s
int autre (51257 lans) very 1:	if (is Empy()) {
int que (5126), front = 1, rear = -1; pass by	min's (" Sweet Under flow !! "),
int (4Fulle) \$	Yekurn; (Falso 1"14"
if ((front == 0 22 year == 5126-1) (front == Year+1))	
1 100 - 31 pe-1) // trime - 1 carry	printf ("Deleted 1-d", queue (front)); if (front = rear) {
Yeturn 1:	if Grant = rear / 1
7	front = Year = 1;
YEAUTH Di	Annal Annal
3	du 9
	front = (grout +1) N. 5126;
int istangly () f	Charles & Carlot Carried Production
il (book > 2-1) {	Charles I Charle
return!;	Hid display () 9
3	if (isturply ())?
Yehon O:	minit (" Queue is empty");
	rdum;
yord inert (9 gill dement) 5	Conto
il (isfull()) f	int i 5 front i
printf (" Surve overflew !!");	print ("Bueno elements:");
The state of the s	while(1) &

}

	store 67/
printf ("+d", queue (i));	Can 4:
if (in- Year) f	(nit())
brak;	11/11/19
. (11)	default:
[= (i41) 1 S126;	printf("" (muslid desice");
	13
PART.	3 3 5 6 6 1 1 1 1
The Mark C / 1	return 0;
int choice, element;	
while) {	& courts
	Bright & Com M.
Pt ["In Circular Quene Operations In");	general Jacobs 10 20 24
pf (" mert");	The state of the s
pt ("Delek"); pt ("Delek"); pt ("Gente");	THE RESIDENCE OF THE PARTY OF T
pf ("Display"))	Dulput
p((" Exit");	La Bourt in 2
pf(" Enter your choice");	Circular que ue operations:
Sf ["I'd", Rehoice);	1. hypert
15	2. Duece
Switch (choice) {	3. Display
a case 1: printf ("futer the element b insert");	4. Exit
Sf ("Id", Lelement);	Enter the choice:
wert (alement);	muchd 3:
brenk;	Insured 3.
(asc 2:	
deletel);	Circular queue operation:
prenk;	1 Inuit
Case 3:	2. Delice 3. display
display();	4. Gylt
display(); brok;	
	Enter for element to insert: 4
	investigation in the contract to the

	10	
100		
	Circular Queue operations	193 (197)
179	1. Ingert	
	2. Delete	100000
	3 - Display	
P Sept	4 · Crit	ON THE PARTY OF TH
	Ever your choice: 2	
	Deleted 3	To move 197
		41
	Circular Queue operations	21. Co 1. co
3.2	1- Insert	Yeselal Sant
	2. Delete	
100	3. Disday 4. Grit	
		Junta C
	Euler your choice: 3 Queux element + 34	
	The state of the s	s spenip yalida
		\$40%
	Circular Quene operations	3391.7 . 2
	1. Inurb	Salata C
	2. Pilete	thank are send to
	3. Display U. Exit	
70.00	u Exit	SERVED TO SERVED
	Ener your Choice: 4	
	with themesi	No. of the Control of
	Essay 1	350
1		A Sixel H
	A STATE OF THE STA	Walt Suan VX S