WAP 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.

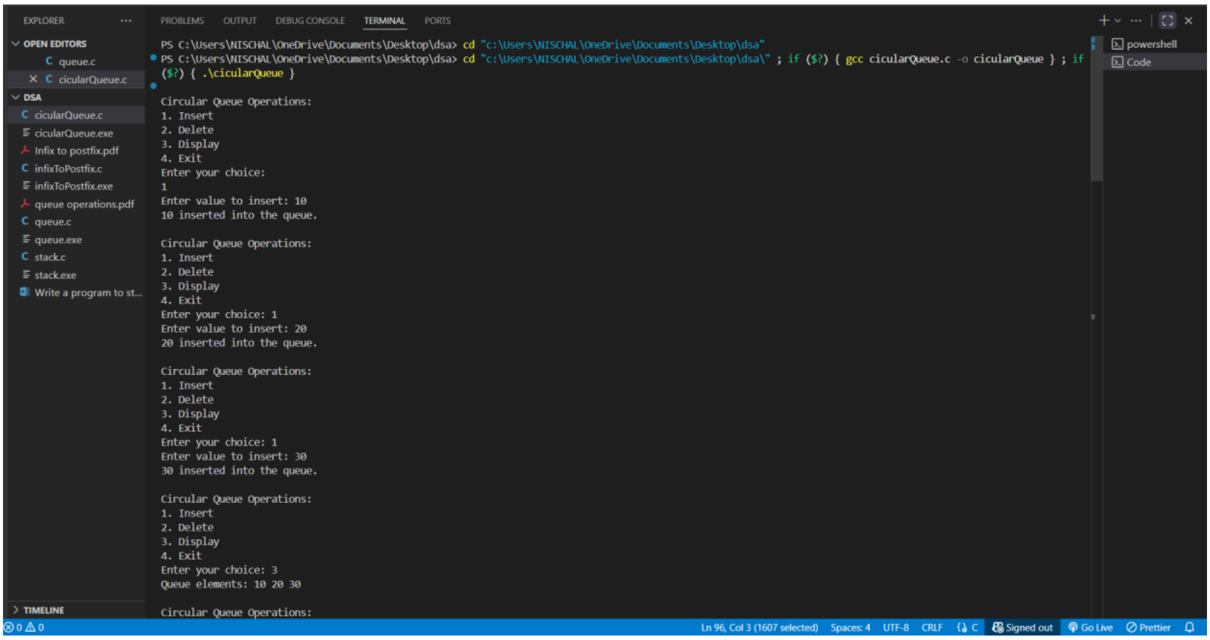
```
#include <stdio.h>
#define MAX 5
int queue[MAX];
int front = -1, rear = -1;
void insert(int value)
{
if ((front == 0 && rear == MAX - 1) || (front == (rear + 1) % MAX))
{
printf("Queue Overflow! Cannot insert %d\n", value);
}
else
{
if (front == -1)
{
front = 0;
rear = 0;
}
else
{
rear = (rear + 1) % MAX;
}queue[rear] = value;
printf("%d inserted into the queue.\n", value);
```

```
}
}
void delete()
{
if (front == -1)
{
printf("Queue Underflow! Queue is empty.\n");
}
else
{
printf("Deleted element: %d\n", queue[front]);
if (front == rear)
{
front = -1;
rear = -1;
}
else
{
front = (front + 1) % MAX;
}
}
}
void display(){
if (front == -1)
{
printf("Queue is empty.\n");
```

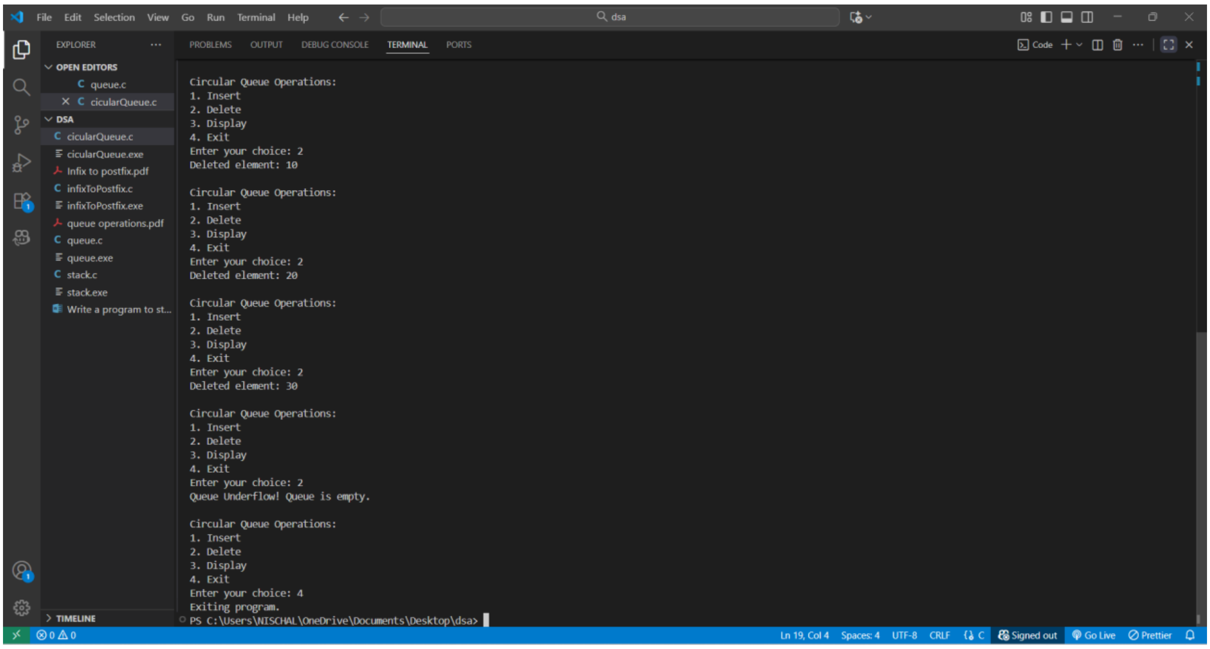
```
}
else
{
printf("Queue elements: ");
int i = front;
while (1)
{
printf("%d ", queue[i]);
if (i == rear)
break;
i = (i + 1) % MAX;
}
printf("\n");
}
}
int main()
{
int choice, value;
while (1)
{
printf("\nCircular Queue Operations:\n");
printf("1. Insert\n");
printf("2. Delete\n");
printf("3. Display\n");printf("4. 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:
printf("Exiting program.\n");
return 0;
default:
printf("Invalid choice! Please try again.\n");
}
}
return 0;
}
```

Output:



```
PS C:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa> cd "c:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa"
PS C:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa> cd "c:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa\" ; if ($?) { gcc cicularQueue.c -o cicularQueue } ; if
($?) { .\cicularQueue }

Circular Queue Operations:
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice:
1
Enter value to insert: 10
10 inserted into the queue.

Circular Queue Operations:
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 1
Enter value to insert: 20
20 inserted into the queue.

Circular Queue Operations:
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 1
Enter value to insert: 30
30 inserted into the queue.

Circular Queue Operations:
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 3
Queue elements: 10 20 30

Circular Queue Operations:
```



```
Circular Queue Operations:
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 2
Deleted element: 10

Circular Queue Operations:
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 2
Deleted element: 20

Circular Queue Operations:
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 2
Deleted element: 30

Circular Queue Operations:
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 2
Queue Underflow! Queue is empty.

Circular Queue Operations:
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 4
Exiting program.
PS C:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa>
```