Circular Queue

Write a C program that implements a circular queue as (using) an array. OR

Write a C program that performs the basic operations on a circular queue using an array. OR

Write a C program for circular queue with the use of (using) an array.

```
#include <stdio.h>
#include <conio.h>
#include <stdlib.h>

void main()
{
	int queue[5], front = -1, rear = -1, element = 0, choice = 0, i = 0;
	do
	{
		clrscr();
		printf("\n Main Menu (Basic Operations On Circular Queue)");
		printf("\n 1. ADD (INSERT)");
		printf("\n 2. DELETE (REMOVE)");
		printf("\n 3. DISPLAY");
		printf("\n 4. EXIT");
		printf("\n Enter your choice: ");
		scanf("%d", &choice);
		switch(choice)
		{
			case 1:
				if((rear == 4 && front == 0) || (rear+1 == front))
				{
					printf("\n Queue is full (queue overflow)");
				}
				else
				{
					printf("Enter an element to be added: ");
					scanf("%d", &element);
					if(rear == 4)
					{
						rear = 0;
					}
					else
					{
						rear = rear + 1;
					}
					queue[rear] = element;
					if(front == -1)
					{
						front = 0;
					}
```

```
        }
        break;
case 2:
        if(front == -1)
        {
                printf("Queue is empty (queue underflow)");
        }
        else
        {
                element = queue[front];
                if(front == rear)
                {
                        front = -1;
                        rear = -1;
                }
                else
                {
                        if(front == 4)
                        {
                                front = 0;
                        }
                        else
                        {
                                front = front + 1;
                        }
                }
                printf("Deleted element is %d.", element);
        }
        break;
case 3:
        if(front == -1)
        {
                printf("Queue is empty (queue underflow)");
        }
        else
        {
                if(rear >= front)
                {
                        printf("Circular queue elements: ");
                        for(i = front; i <= rear; i++)
                        {
                                printf("\n %d", queue[i]);
                        }
                }
                else
                {
                        printf("Circular queue elements: ");
                        for(i = front; i <= 4; i++)
                        {
                                printf("\n %d", queue[i]);
                        }
```

```
                                        for(i = 0; i <= rear; i++)
                                        {
                                                printf("\n %d", queue[i]);
                                        }
                                }
                        }
                        break;
                case 4:
                        exit(0);
                        break;
                default:
                        printf("\n Invalid choice");
        }
        getch();
    } while(choice != 4);
}
```