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/*
Title- Circular Queue Implimentation using array(statically)
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Batch- TechnOrbit(PPA-8)
*/

#include<stdio.h>
#define MAX 10

// ----- STRUCTURE DECLARATION -----
struct QUEUE
{
    int arr[MAX];
    int front;
    int rear;
    int count;
};

// ----- QUEUE INITILIZATION -----

void init_queue(struct QUEUE* queue)
{
    queue->front = -1;
    queue->rear = -1;
    queue->count = 0;
}

// ----- TO CHECK QUEUE IS FULL OR NOT -----

int full(struct QUEUE* queue)
{
    if(queue->count == MAX)
    {
        return 1;
    }
    else
    {
        return 0;
    }
}

// ----- TO CHECK QUEUE IS EMPTY OR NOT -----

int empty(struct QUEUE* queue)
{
    if(queue->count == 0)
    {
        return 1;
    }
    else
    {
        return 0;
    }
}

// ----- FUNCTION TO INSERT ELEMENT IN QUEUE -----

void enqueue(struct QUEUE* queue)
{
    queue->rear = ((queue->rear)+1) % MAX;
    printf("Enter data in Queue: ");
    scanf("%d",&(queue->arr[queue->rear]));
}
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        (queue->count)++;
    }

// ----- FUNCTION TO DELETE ELEMENT FROM QUEUE -----

void dequeue(struct QUEUE* queue)
{
    queue->front = ((queue->front)+1)%MAX;
    printf("Popped element is: %d\n", queue->arr[queue->front]);
    (queue->count)--;
}

// ----- FUNCTUON TO DELETE QUEUE -----

void display(struct QUEUE* queue)
{
    printf("Your Queue is: ");
    int i;
    for(i = ((queue->front)+1)%MAX ; i != ((queue->rear))%MAX ; i = (i+1)%MAX)
    {
        printf("%d <= ", queue->arr[i]);
    }
    printf("%d <= ", queue->arr[i]);
}

// ----- ENTRY POINT FUNCTION -----

void main()
{
    int choice;
    struct QUEUE queue;
    init_queue(&queue);
    do
    {
        printf("*****\n");
        printf("1. Enqueue\n2. Dequeue\n3. IsFull\n4. IsEmpty\n5. Display\n6. Exit\nEnter Your Choice: ");
        scanf("%d", &choice);
        switch(choice)
        {
            case 1: if(full(&queue))
                {
                    printf("Queue is Full.....\n");
                }
                else
                {
                    enqueue(&queue);
                }
                break;

            case 2: if(empty(&queue))
                {
                    printf("Queue is Empty....\n");
                }
                else
                {
                    dequeue(&queue);
                }
                break;

            case 3: if(full(&queue))
                {
                    printf("Queue is full....\n");
                }
        }
    } while(choice != 6);
}

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        else
        {
            printf("Queue is not Full...\n");
        }
        break;
    case 4: if(empty(&queue))
    {
        printf("Queue is empty...\n");
    }
    else
    {
        printf("Queue is not Empty...\n");
    }
    break;

    case 5: if(empty(&queue))
    {
        printf("Queue is Empty...\n");
    }
    else
    {
        display(&queue);
    }
    break;

    case 6: printf("Exiting.....\n");
    break;

    default : printf("Wrong choice please enter proper choice.....\n");
}

}while(choice != 6);
}
```