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#include<stdio.h>
#define MAX 5

int cqueue_arr[MAX];
int front = -1;
int rear = -1;

/Begin of insert/
void insert(int item)
{
    if((front == 0 && rear == MAX-1) || (front == rear+1))
    {
        printf("Queue Overflow \n");
        return;
    }
    if (front == -1) /*If queue is empty */
    {
        front = 0;
        rear = 0;
    }
    else
    {
        if(rear == MAX-1) /*rear is at last position of queue */
            rear = 0;
        else
            rear = rear+1;
    }
    cqueue_arr[rear] = item ;
}
/End of insert/

/Begin of del/
void del()
{
    if (front == -1)
    {
        printf("Queue Underflow\n");
        return ;
    }
    printf("Element deleted from queue is : %d\n",cqueue_arr[front]);
    if(front == rear) /* queue has only one element */
    {
        front = -1;
        rear=-1;
    }
    else
    {

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        if(front == MAX-1)
            front = 0;
        else
            front = front+1;
    }
}
/*End of del() */

/Begin of display/
void display()
{
    int front_pos = front, rear_pos = rear;
    if(front == -1)
    {
        printf("Queue is empty\n");
        return;
    }
    printf("Queue elements :\n");
    if( front_pos <= rear_pos )
        while(front_pos <= rear_pos)
        {
            printf("%d ",cqueue_arr[front_pos]);
            front_pos++;
        }
    else
    {
        while(front_pos <= MAX-1)
        {
            printf("%d ",cqueue_arr[front_pos]);
            front_pos++;
        }
        front_pos = 0;
        while(front_pos <= rear_pos)
        {
            printf("%d ",cqueue_arr[front_pos]);
            front_pos++;
        }
    }
    printf("\n");
}
/End of display/

/Begin of main/
int main()
{
    int choice,item;
    do

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{
    printf("1.Insert\n");
    printf("2.Delete\n");
    printf("3.Display\n");
    printf("4.Quit\n");

    printf("Enter your choice : ");
    scanf("%d",&choice);

    switch(choice)
    {
        case 1 :
            printf("Input the element for insertion in queue : ");
            scanf("%d", &item);

            insert(item);
            break;
        case 2 :
            del();
            break;
        case 3:
            display();
            break;
        case 4:
            break;
        default:
            printf("Wrong choice\n");
    }
}while(choice!=4);

return 0;
}

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