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// Online C compiler to run C program online
#include <stdio.h>
#include<stdbool.h>
#include<stdlib.h>
#define MAX 10

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

bool isEmpty()
{
   if(front == -1 && rear == -1) return true;

   else
   return false;
}

bool isFull()
{
   if((front == 0 && rear==MAX-1) || (front == rear+1))
   return true;

   else
   return false;
}

void push(int x)
{
   if(isFull())
   {
      printf("OVERFLOW!");
   }

   else if(front == -1 && rear == -1)
   {
      front = 0;
      rear=0;
   }

   else if(front !=0 && rear == MAX-1)
   {
      rear=0;
   }

   else
   {
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        rear++;
    }

    q[value]= val;

}

int pop()
{
    if(isEmpty())
    {
        printf("UNDERFLOW!");
    }

    else
    {
        int val= q[front];
        if(front == rear)
        {
            front = -1;
            rear= -1;
        }
        else if (front == MAX-1)
        {
            front=0;
        }

        else
        front++;

        return val;
    }
}

int frontele()
{
    if(isEmpty())
    return -1;

    else
    return q[front];
}

int display()
{
    if(front < rear)
    {
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        for(int i=front; i<=rear; i++)
        {
            printf("%d", q[i]);
        }
    }

    else
    {
        for(int i=front; i<=max-1; i++)
        {
            printf("%d", q[i]);
        }

        for(int i=0; i<=rear; i++)
        {
            printf("%d", q[i]);
        }
    }
}


int main() {
    // Write C code here

    printf("This is a menu driven program!\n\n");
    int choice;

    while(1)
    {
        printf("\n\nEnter a choice from 1 to 6:\n1:Push an element\n2:Pop an
element\n3.See the element at the front\n4.Display size of queue\n5.Display the
queue\n6.Exit the program\n");
        scanf("%d", &choice);

        switch(choice)
        {
            case 1:
            {
                int element;
                printf("Enter an element to be pushed: ");
                scanf("%d", &element);
                push(element);

                printf("The queue after adding %d is: ", element);
                for(int i=front; i<=rear;i++)
                {
                    printf("%d ", q[i]);
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        }
        break;
    }

    case 2:
    {
        int val= pop();
        printf("The element popped is: %d", val);

        printf("\n\nThe queue after popping is: ");
        for(int i=front; i<=rear;i++)
        {
            printf("%d ", q[i]);
        }
        break;
    }

    case 3:
    {
        int f=frontele();
        printf("\n\nThe element at the front of the queue is: %d", f);
        break;
    }

    case 4:
    {
        int size= rear-front+1;
        printf("The size of the queue is: %d", size);
        break;
    }

    case 5:
    {
        printf("The queue is: ");
        display();

        break;
    }

    case 6:
    {
        exit(0);
    }

    default: printf("Invalid input, try again!");
}
```

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    }

}
```