Circular Queue

08-01-2024

```
#include <stdio.h>
#include <stdlib.h>
#define MAX 5
int q[MAX], front = -1, rear = -1;

int isempty()
{  if (front == -1)
        return 1;
   return 0; }
int isfull()
{ if((front == rear+1) || (front==0 && rear=MAX-1)
        return 1;
   return 0; }

void insert()
{  int num;
   printf("Enter a value");
   scanf("%d", &num);
   if isfull()
      printf("Queue is full. Overflow");
   else
   {  if (front == -1 && rear == -1)
        {front = 0; rear = 0; }
      printf("Enter a value");
      scanf("%d", &num);
      rear = (rear+1) % MAX;
      q[rear] = num;
      printf("Insertion Successfull");
   }
}
```

```
Void deleteele()
{  int val;
   if isempty()
      printf("Queue is empty. Underflow");
   else
   {  val = q[front];
      if (front == rear)
      {  front = -1;
         rear = -1; }
      else
      { front = (front+1) % MAX; }
      printf("Deleted item is %d", val);
   }
}
Void display()
{  int i;
   If isempty()
     printf("Queue is empty. Underflow");
   else
   {  printf("The elements of queue are:")
      for(i = front; i != rear; i = (i+1)%MAX)
      {
        printf("%d\t", &q[i]);
      }
      printf("%d\t", &q[i]);
   }
}

Void main()
{  int choice;
   while(1)
   {  printf("Enter 1: INSERT\t 2: DELETE\t
                3: DISPLAY\t 4: Exit\t);
```

```
scanf("%d", &choice);
switch(choice)
{ case 1: insertion();
          break;
  case 2: delete_ele();
          break;
  case 3: display();
          break;
  case 4: exit(0);
  default: printf("Invalid input");
}
}
```

Output:

```
**MENU**
Enter 1: INSERT 2: DELETE 3.DISPLAY 4.EXIT.
1
Enter a value: 10
Insertion successful.
**MENU**
Enter 1: INSERT 2: DELETE 3. DISPLAY. 4. EXIT
2
Deleted item is : 10
** MENU **
Enter 1 : INSERT 2. DELETE 3. DISPLAY 4. EXIT
2
Stack is empty. Overflow.
** MENU **
Enter 1 : INSERT 2. DELETE 3. DISPLAY 4. EXIT
3
Stack is empty. Overflow.
```

```
"C:\Users\tanma\OneDrive\D

 ***** MAIN MENU *****
 1. Insert an element
 2. Delete an element
 3. Display the queue
 4. EXIT
 Enter your option : 1

 Enter the number to be inserted in the queue : 10
Inserted successfully
 ***** MAIN MENU *****
 1. Insert an element
 2. Delete an element
 3. Display the queue
 4. EXIT
 Enter your option : 1

 Enter the number to be inserted in the queue : 20
Inserted successfully
 ***** MAIN MENU *****
 1. Insert an element
 2. Delete an element
 3. Display the queue
 4. EXIT
 Enter your option : 2

 The number deleted is : 10
 ***** MAIN MENU *****
 1. Insert an element
 2. Delete an element
 3. Display the queue
 4. EXIT
 Enter your option : 3

The elements of the queue are:   20
 ***** MAIN MENU *****
 1. Insert an element
 2. Delete an element
 3. Display the queue
 4. EXIT
```