

Activities Text Editor Aug 8, 15:04

Documents Open [F]

eepts4.c

```
1 #include <stdio.h>
2 #define MAX 10
3
4 int deque[MAX];
5 int left = -1, right = -1;
6
7 void input_deque(void);
8 void output_deque(void);
9 void insert_left(void);
10 void insert_right(void);
11 void delete_left(void);
12 void delete_right(void);
13 void display(void);
14
15 int main() {
16     int option;
17     printf("\n *****MAIN MENU*****");
18     printf("\n 1.Input restricted deque");
19     printf("\n 2.Output restricted deque");
20     printf("\n Enter your option : ");
21     scanf("%d", &option);
22
23     switch (option) {
24         case 1:
25         input_deque();
26         break;
27         case 2:
28         output_deque();
29         break;
30     }
31     return 0;
32 }
33
34 void input_deque() {
35     int option;
36     do {
37         printf("\n INPUT RESTRICTED DEQUE");
```

C Tab Width: 6 Ln 203, Col 11 INS

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Documents Open [F]

eepts4.c

```
37         printf("\n INPUT RESTRICTED DEQUE");
38         printf("\n 1.Insert at right");
39         printf("\n 2.Delete from left");
40         printf("\n 3.Delete from right");
41         printf("\n 4.Display");
42         printf("\n 5.Quit");
43         printf("\n Enter your option : ");
44         scanf("%d", &option);
45
46         switch (option) {
47             case 1:
48             insert_right();
49             break;
50             case 2:
51             delete_left();
52             break;
53             case 3:
54             delete_right();
55             break;
56             case 4:
57             display();
58             break;
59         }
60     } while (option != 5);
61 }
62
63 void output_deque() {
64     int option;
65     do {
66         printf("\n OUTPUT RESTRICTED DEQUE");
67         printf("\n 1.Insert at right");
68         printf("\n 2.Insert at left");
69         printf("\n 3.Delete from left");
70         printf("\n 4.Display");
71         printf("\n 5.Quit");
72         printf("\n Enter your option : ");
```

C Tab Width: 6 Ln 203, Col 11 INS

```
Activities Text Editor Aug 8, 15:04
Documents Open eepsta4.c Save
eepsta4.c x 72 printf("\n Enter your option : ");
73 scanf("%d", &option);
74
75 switch (option) {
76     case 1:
77         insert_right();
78         break;
79     case 2:
80         insert_left();
81         break;
82     case 3:
83         delete_left();
84         break;
85     case 4:
86         display();
87         break;
88 }
89 } while (option != 5);
90 }
91
92 void insert_right() {
93     int val;
94     printf("\n Enter the value to be added: ");
95     scanf("%d", &val);
96     if ((left == 0 && right == MAX - 1) || (left == right + 1)) {
97         printf("\n OVERFLOW");
98         return;
99     }
100     if (left == -1) {
101         /* If queue is initially empty */
102         left = 0;
103         right = 0;
104     } else {
105         if (right == MAX - 1) /* right is at the last position of queue */
106             right = 0;
107         else
108             right = right + 1;
```

```
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Documents Open eepsta4.c Save
eepsta4.c x 107
108     right = right + 1;
109 }
110 deque[right] = val;
111 }
112
113 void insert_left() {
114     int val;
115     printf("\n Enter the value to be added: ");
116     scanf("%d", &val);
117     if ((left == 0 && right == MAX - 1) || (left == right + 1)) {
118         printf("\n Overflow");
119         return;
120     }
121
122     if (left == -1) {
123         /* If queue is initially empty */
124         left = 0;
125         right = 0;
126     } else {
127         if (left == 0)
128             left = MAX - 1;
129         else
130             left = left - 1;
131     }
132     deque[left] = val;
133 }
134
135 void delete_left() {
136     if (left == -1) {
137         printf("\n UNDERFLOW");
138         return;
139     }
140     printf("\n The deleted element is: %d", deque[left]);
141     if (left == right) /* Queue has only one element */
142     {
143         left = -1;
```

```
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Documents Open eepts4.c Save
eepts4.c
143     left = -1;
144     right = -1;
145 } else {
146     if (left == MAX - 1)
147         left = 0;
148     else
149         left = left + 1;
150 }
151 }
152
153 void delete_right() {
154     if (left == -1) {
155         printf("\n UNDERFLOW");
156         return;
157     }
158     printf("\n The element deleted is: %d", deque[right]);
159     if (left == right) /* Queue has only one element */
160     {
161         left = -1;
162         right = -1;
163     } else {
164         if (right == 0)
165             right = MAX - 1;
166         else
167             right = right - 1;
168     }
169 }
170
171 void display() {
172     int front = left, rear = right;
173     if (front == -1) {
174         printf("\n QUEUE IS EMPTY");
175         return;
176     }
177     printf("\n The elements of the queue are: ");
178     if (front <= rear) {
179         while (front <= rear) {
180             printf("%d ", deque[front]);
181             front++;
182         }
183     } else {
184         while (front <= MAX - 1) {
185             printf("%d ", deque[front]);
186             front++;
187         }
188         front = 0;
189         while (front <= rear) {
190             printf("%d ", deque[front]);
191             front++;
192         }
193     }
194 }
```

```
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Documents Open eepts4.c Save
eepts4.c
179     printf("\n The elements of the queue are: ");
180     if (front <= rear) /* Queue has only one element */
181     {
182         left = -1;
183         right = -1;
184     } else {
185         if (right == 0)
186             right = MAX - 1;
187         else
188             right = right - 1;
189     }
190 }
191
192 void display() {
193     int front = left, rear = right;
194     if (front == -1) {
195         printf("\n QUEUE IS EMPTY");
196         return;
197     }
198     printf("\n The elements of the queue are: ");
199     if (front <= rear) {
200         while (front <= rear) {
201             printf("%d ", deque[front]);
202             front++;
203         }
204     } else {
205         while (front <= MAX - 1) {
206             printf("%d ", deque[front]);
207             front++;
208         }
209         front = 0;
210         while (front <= rear) {
211             printf("%d ", deque[front]);
212             front++;
213         }
214     }
215 }
```

```
Activities Text Editor Aug 8, 15:04
Documents Open eepsita4.c Save
eepsita4.c
167 }
168 }
169 }
170
171 void display() {
172     int front = left, rear = right;
173     if (front == -1) {
174         printf("\n QUEUE IS EMPTY");
175         return;
176     }
177     printf("\n The elements of the queue are: ");
178
179     if (front <= rear) {
180         while (front <= rear) {
181             printf("%d ", deque[front]);
182             front++;
183         }
184     } else {
185         while (front <= MAX - 1) {
186             printf("%d ", deque[front]);
187             front++;
188         }
189         front = 0;
190         while (front <= rear) {
191             printf("%d ", deque[front]);
192             front++;
193         }
194     }
195     printf("\n");
196 }
197
198
199
200
201
202
203
```

```
Activities Terminal Aug 8, 15:03
d416@radmin: ~
d416@radmin:~$ gedit eepsita4.c
d416@radmin:~$ gcc eepsita4.c
d416@radmin:~$ ./a.out eepsita4.c

*****MAIN MENU*****
1.Input restricted deque
2.Output restricted deque
Enter your option : 1

INPUT RESTRICTED DEQUE
1.Insert at right
2.Delete from left
3.Delete from right
4.Display
5.Quit
Enter your option : 1

Enter the value to be added: 2

INPUT RESTRICTED DEQUE
1.Insert at right
2.Delete from left
3.Delete from right
4.Display
5.Quit
Enter your option : 2

The deleted element is: 2
INPUT RESTRICTED DEQUE
1.Insert at right
2.Delete from left
3.Delete from right
4.Display
5.Quit
Enter your option : 3

UNDERFLOW
INPUT RESTRICTED DEQUE
1.Insert at right
2.Delete from left
3.Delete from right
4.Display
5.Quit
Enter your option : 4

QUEUE IS EMPTY
```

```
Activities Terminal Aug 8 15:03 d416@radmin: -
QUEUE IS EMPTY
INPUT RESTRICTED DEQUE
1.Insert at right
2.Delete from left
3.Delete from right
4.Display
5.Quit
Enter your option : 2
UNDERFLOW
INPUT RESTRICTED DEQUE
1.Insert at right
2.Delete from left
3.Delete from right
4.Display
5.Quit
Enter your option : 2
UNDERFLOW
INPUT RESTRICTED DEQUE
1.Insert at right
2.Delete from left
3.Delete from right
4.Display
5.Quit
Enter your option : 5
d416@radmin:~$ ./a.out eepsta4.c

*****MAIN MENU*****
1.Input restricted deque
2.Output restricted deque
Enter your option : 2
OUTPUT RESTRICTED DEQUE
1.Insert at right
2.Insert at left
3.Delete from left
4.Display
5.Quit
Enter your option : 1
Enter the value to be added: 2
OUTPUT RESTRICTED DEQUE
1.Insert at right
2.Insert at left
3.Delete from left
4.Display
5.Quit
```

```
Activities Terminal Aug 8 15:03 d416@radmin: -
3.Delete from left
4.Display
5.Quit
Enter your option : 1
Enter the value to be added: 2
OUTPUT RESTRICTED DEQUE
1.Insert at right
2.Insert at left
3.Delete from left
4.Display
5.Quit
Enter your option : 1
Enter the value to be added: 3
OUTPUT RESTRICTED DEQUE
1.Insert at right
2.Insert at left
3.Delete from left
4.Display
5.Quit
Enter your option : 2
Enter the value to be added: 2
OUTPUT RESTRICTED DEQUE
1.Insert at right
2.Insert at left
3.Delete from left
4.Display
5.Quit
Enter your option : 3
The deleted element is: 2OUTPUT RESTRICTED DEQUE
1.Insert at right
2.Insert at left
3.Delete from left
4.Display
5.Quit
Enter your option : 1
Enter the value to be added: 3
OUTPUT RESTRICTED DEQUE
1.Insert at right
2.Insert at left
3.Delete from left
4.Display
```

```
Activities Terminal Aug 8, 15:03 d416@Radmin: -
Enter the value to be added: 3
OUTPUT RESTRICTED DEQUE
1.Insert at right
2.Insert at left
3.Delete from left
4.Display
5.Quit
Enter your option : 2

Enter the value to be added: 2
OUTPUT RESTRICTED DEQUE
1.Insert at right
2.Insert at left
3.Delete from left
4.Display
5.Quit
Enter your option : 3

The deleted element is: 2OUTPUT RESTRICTED DEQUE
1.Insert at right
2.Insert at left
3.Delete from left
4.Display
5.Quit
Enter your option : 1

Enter the value to be added: 3
OUTPUT RESTRICTED DEQUE
1.Insert at right
2.Insert at left
3.Delete from left
4.Display
5.Quit
Enter your option : 4

The elements of the queue are: 2 3 3
OUTPUT RESTRICTED DEQUE
1.Insert at right
2.Insert at left
3.Delete from left
4.Display
5.Quit
Enter your option : 5
d416@Radmin:~$ ./a.out eepsta4.d
```