EXPERIMENT NO.4

```c
#include<stdio.h>
#define MAX 10
int deque[MAX];
int left = -1, right = -1;
void input_deque(void);
void output_deque(void);
void insert_left(void);
void insert_right(void);
void delete_left(void);
void delete_right(void);
void display(void);
int main()
{
int option;
printf("\n******MAIN MENU******\n");
printf("1.Input Restricted Deque\n");
printf("2.Output Restricted Deque\n");
printf("Enter your option\n");
scanf("%d",&option);
switch(option)
{
case 1:
input_deque();
break;
case 2:
output_deque();
break;
}
return 0;
}
```

```c
31 void input_deque()
32 {
33 int option;
34 do
35 {
36 printf("\nINPUT RESTRICTED DEQUE\n");
37 printf("1.Insert from Right\n");
38 printf("2.Delete from Left\n");
39 printf("3.Delete from Right\n");
40 printf("4.Display\n");
41 printf("5.Quit\n");
42 printf("Enter your choice\n");
43 scanf("%d",&option);
44 switch(option)
45 {
46 case 1:
47 insert_right();
48 break;
49 case 2:
50 delete_left();
51 break;
52 case 3:
53 delete_right();
54 break;
55 case 4:
56 display();
57 break;
58 }
59 }while(option!=5);
60 }
61 void output_deque()
62 {
63 int option;
64 do
65 {
66 printf("\nOUTPUT RESTRICTED DEQUE\n");
67 printf("1.Insert from Right\n");
68 printf("2.Insert from Left\n");
69 printf("3.Delete from Left\n");
70 printf("4.Display\n");
71 printf("5.Quit\n");
72 printf("Enter your choice\n");
73 scanf("%d",&option);
74 switch(option)
75 {
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 }
```

```c
91 void insert_right()
92 {
93 int val;
94 printf("Enter the value to be added\n");
95 scanf("%d",&val);
96 if((left==0 && right==MAX-1||left==right+1))
97 {
98 printf("OVERFLOW\n");
99 return;
100 }
101 if(left==-1)
102 {
103 left=0;
104 right=0;
105 }
106 else
107 {
108 if(right==-1)
109 right=0;
110 else
111 right=right+1;
112 }
113 deque[right]=val;
114 }
115 void insert_left()
116 {
117 int val;
118 printf("Enter the value to be added\n");
119 scanf("%d",&val);
120 if((left==0 && right==MAX-1||left==right+1))
121 {
122 printf("OVERFLOW\n");
123 return;
124 }
125 if(left==-1)
126 {
127 left=0;
128 right=0;
129 }
130 else
131 {
132 if(left==0)
133 left=MAX-1;
134 else
135 left=left-1;
136 }
137 deque[left]=val;
138 }
```

```c
void delete_left()
{
if(left==-1)
{
printf("UNDERFLOW\n");
return;
}
printf("\nThe deleted element is %d",deque[left]);
if(left==right)
{
left=-1;
right=-1;
}
else
{
if(left==MAX-1)
left=0;
else
left=left+1;
}
}
void delete_right()
{
if(left==-1)
{
printf("UNDERFLOW\n");
return;
}
printf("\nThe element deleted is %d",deque[right]);
if(left==right)
{
left=-1;
right=-1;
}
else
{
if(right==0)
{
right=MAX-1;
}
else
right=right-1;
}
}
```

```
******MAIN MENU******
1.Input Restricted Deque
2.Output Restricted Deque
Enter your option
1

INPUT RESTRICTED DEQUE
1.Insert from Right
2.Delete from Left
3.Delete from Right
4.Display
5.Quit
Enter your choice
1
Enter the value to be added
25

INPUT RESTRICTED DEQUE
1.Insert from Right
2.Delete from Left
3.Delete from Right
4.Display
5.Quit
Enter your choice
1
Enter the value to be added
35

INPUT RESTRICTED DEQUE
1.Insert from Right
2.Delete from Left
3.Delete from Right
4.Display
5.Quit
Enter your choice
4
The elements of the Queue are:
2535
```

```c
183 void display()
184 {
185 int front=left, rear=right;
186 if(front==-1)
187 {
188 printf("Queue is Empty\n");
189 return;
190 }
191 printf("The elements of the Queue are:\n");
192 if(front<=rear)
193 {
194 while(front<=rear)
195 {
196 printf("%d",deque[front]);
197 front++;
198 }
199 }
200 else
201 {
202 while(front<=MAX-1)
203 {
204 printf("%d",deque[front]);
205 front++;
206 }
207 front=0;
208 while(front<=rear)
209 {
210 printf("%d",deque[front]);
211 front++;
212 }
213 }
214 printf("\n");
215 }
```

```
INPUT RESTRICTED DEQUE
1.Insert from Right
2.Delete from Left
3.Delete from Right
4.Display
5.Quit
Enter your choice
2

The deleted element is 25
INPUT RESTRICTED DEQUE
1.Insert from Right
2.Delete from Left
3.Delete from Right
4.Display
5.Quit
Enter your choice
4
The elements of the Queue are:
35

INPUT RESTRICTED DEQUE
1.Insert from Right
2.Delete from Left
3.Delete from Right
4.Display
5.Quit
Enter your choice
```

```
dl406@itadmin:~$ gcc Expt4.c
dl406@itadmin:~$ ./a.out

******MAIN MENU******
1.Input Restricted Deque
2.Output Restricted Deque
Enter your option
2

OUTPUT RESTRICTED DEQUE
1.Insert from Right
2.Insert from Left
3.Delete from Left
4.Display
5.Quit
Enter your choice
2
Enter the value to be added
45

OUTPUT RESTRICTED DEQUE
1.Insert from Right
2.Insert from Left
3.Delete from Left
4.Display
5.Quit
Enter your choice
2
Enter the value to be added
65

OUTPUT RESTRICTED DEQUE
1.Insert from Right
2.Insert from Left
3.Delete from Left
4.Display
5.Quit
Enter your choice
3
```

```
                    ment is 65
OUTPUT RESTRICTED DEQUE
1.Insert from Right
2.Insert from Left
3.Delete from Left
4.Display
5.Quit
Enter your choice
4
The elements of the Queue are:
45

OUTPUT RESTRICTED DEQUE
1.Insert from Right
2.Insert from Left
3.Delete from Left
4.Display
5.Quit
Enter your choice
```

Ubuntu Software