SOURCE CODE: DEQUEUE:

```
#include<stdio.h>
#include<conio.h>
#define size 10
int dequeue[10],front=-1,rear=-1;
void input_dequeue();
void output_dequeue();
void delete_left();
void delete_right();
void insert_left();
void insert_right();
void display();
void main()
{
	int n;
	clrscr();
	printf("Select option\n1-Input Dequeue\t2-Output Dequeue\n");
	scanf("%d",&n);
	switch(n)
	{
		case 1:
			input_dequeue();
			break;
		case 2:
			output_dequeue();
			break;
		default:
			printf("Invalid choice\n");
	}
```

```
	getch();
}
void input_dequeue()
{
	int option;
	do
	{
		printf("Input Restricted Dequeue\n1.Insert at Right\n2.Delete from Left\n3.Delete from Right\n4.Display\n5.Quit\nEnter your option\n");
		scanf("%d",&option);
		switch(option)
		{
			case 1:
				insert_right();
				break;
			case 2:
				delete_left();
				break;
			case 3:
				delete_right();
				break;
			case 4:
				display();
				break;
			default:
				printf("Invalid Choice");
		}
	}while(option!=5);
}
```

```
void output_dequeue()
{
	int option;
	do
	{
		printf("Output Restricted Dequeue\n1.Insert at Right\n2.Insert at Left\n3.Delete from Left\n4.Display\n5.Quit\nEnter your option\n");
		scanf("%d",&option);
		switch(option)
		{
			case 1:
				insert_right();
				break;
			case 2:
				insert_left();
				break;
			case 3:
				delete_left();
				break;
			case 4:
				display();
				break;
			default:
				printf("Invalid Choice");
		}
	}while(option!=5);
}
void insert_left()
{
```

```
	int val;
	printf("Enter the value to be added\n");
	scanf("%d",&val);
	if(((front==0)&&(rear==size-1))||(front==rear+1))
	{
		printf("Overflow\n");
		return;
	}
	if(front==-1)
	{
		front=0;
		rear=0;
	}
	else
	{
		if(front==0)
			front=size-1;
		else
			front--;
	}
	dequeue[front]=val;
}
void insert_right()
{
	int val;
	printf("Enter the value to be added\n");
	scanf("%d",&val);
	if(((front==0)&&(rear==size-1))||(front==rear+1))
	{
```

```
		printf("Overflow\n");
		return;
	}
	if(front==-1)
	{
		front=0;
		rear=0;
	}
	else
	{
		if(rear==size-1)
			rear=0;
		else
			rear++;
	}
	dequeue[rear]=val;
}
void delete_left()
{
	if(front==-1)
	{
		printf("Underflow\n");
		return;
	}
	printf("Deleted item is %d \n",dequeue[front]);
	if(front==rear)
	{
		front=-1;
		rear=-1;
```

```
        }
        else
        {
                if(front==size-1)
                        front=0;
                else
                        front++;
        }
}
void delete_right()
{
        if(front==-1)
        {
                printf("Underflow\n");
                return;
        }
        printf("Deleted item is %d \n",dequeue[rear]);
        if(front==rear)
        {
                front=-1;
                rear=-1;
        }
        else
        {
                if(rear==0)
                        rear=size-1;
                else
                        rear--;
        }
```

```
}
void display()
{
	int left=front,right=rear;
	if(front==-1)
	{
		printf("Queue is empty");
		return;
	}
	printf("The elements of dequeue are\n");
	if(left<=right)
	{
		while(left<=right)
		{
			printf("%d\t",dequeue[left]);
			left++;
		}
	}
	else
	{
		while(left<=size-1)
		{
			printf("%d\t",dequeue[left]);
			left++;
		}
		left=0;
		while(left<=right)
		{
			printf("%d\t",dequeue[left]);
```

```
                        left++;
                }
        }
        printf("\n");
}
```

OUTPUT:

```
Select option
1-Input Dequeue 2-Output Dequeue
1
Input Restricted Dequeue
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
10
Input Restricted Dequeue
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
20
Input Restricted Dequeue
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
30
Input Restricted Dequeue
1.Insert at Right
2.Delete from Left
3.Delete from Right
4.Display
5.Quit
Enter your option
2
Deleted item is 10
```

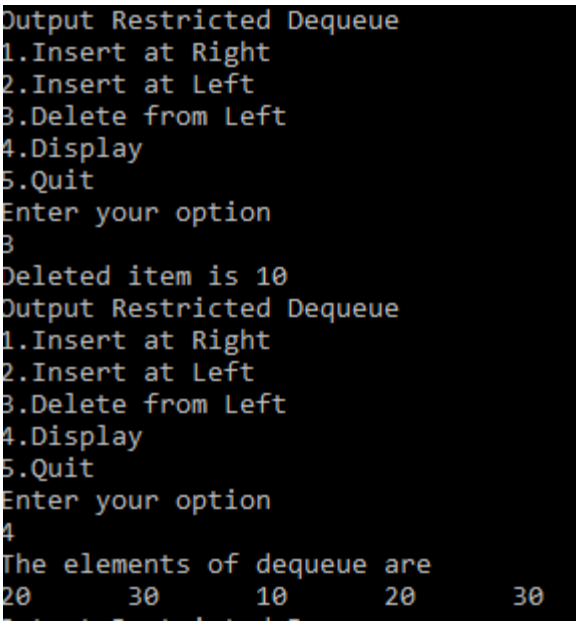
```
Input Restricted Dequeue
1.Insert at Right
2.Delete from Left
3.Delete from Right
4.Display
5.Quit
Enter your option
3
Deleted item is 30
Input Restricted Dequeue
1.Insert at Right
2.Delete from Left
3.Delete from Right
4.Display
5.Quit
Enter your option
4
The elements of dequeue are
20
Input Restricted Dequeue
1.Insert at Right
2.Delete from Left
3.Delete from Right
4.Display
5.Quit
Enter your option
5
Invalid Choice
```

```
Select option
1-Input Dequeue 2-Output Dequeue
2
Output Restricted Dequeue
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
10
Output Restricted Dequeue
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
20
```

```
Output Restricted Dequeue
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
30
Output Restricted Dequeue
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
30
```

```
Output Restricted Dequeue
1.Insert at Right
2.Insert at Left
3.Delete from Left
4.Display
5.Quit
Enter your option
5
Invalid Choice
```

```
Output Restricted Dequeue
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
20
Output Restricted Dequeue
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
10
```


Output Restricted Dequeue
1.Insert at Right
2.Insert at Left
3.Delete from Left
4.Display
5.Quit
Enter your option
3
Deleted item is 10
Output Restricted Dequeue
1.Insert at Right
2.Insert at Left
3.Delete from Left
4.Display
5.Quit
Enter your option
4
The elements of dequeue are
20 30 10 20 30