DSA Lab Assignment

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Assignment - 12 (Circular Queue using Linked list)

Write a C program (menu driven) to implement the following operations on a circular queue. (Represent the QUEUE using Linked List).
1. Insert
2. Delete
3. Display
4. Exit

```c
#include<stdio.h>
#include<stdlib.h>
struct node
{
    int data;
    struct node* next;
};
struct node *f = NULL;
struct node *r = NULL;
void enqueue(int d) //Insert elements in Queue
{
    struct node* n;
    n = (struct node*)malloc(sizeof(struct node));
```

```
    n->data = d;
    n->next = NULL;
    if((r==NULL)&&(f==NULL))
    {
        f = r = n;
        r->next = f;
    }
    else
    {
        r->next = n;
        r = n;
        n->next = f;
    }
}
void dequeue() // Delete an element from Queue
{
    struct node* t;
    t = f;
    if((f==NULL)&&(r==NULL))
        printf("\nQueue is Empty");
    else if(f == r){
        f = r = NULL;
        free(t);
    }
    else{
        f = f->next;
        r->next = f;
        free(t);
    }


}
void print(){ // Print the elements of Queue
    struct node* t;
    t = f;
    if((f==NULL)&&(r==NULL))
        printf("\nQueue is Empty");
    else{
```

```
        do{
            printf("\n%d",t->data);
            t = t->next;
        }while(t != f);
    }
}
int main()
{
    int opt,n,i,data;
    printf("Enter Your Choice:-");
    do{
        printf("\n\n1. to insert the Data in Queue\n2.
display the Data in Queue \n3 to delete the data from the
Queue\n0 for Exit \n");
        scanf("%d",&opt);
        switch(opt){
            case 1:
                printf("\nEnter the number of data : ");
                scanf("%d",&n);
                printf("\nEnter your data : ");
                i=0;
                while(i<n){
                    scanf("%d",&data);
                    enqueue(data);
                    i++;
                }
                break;
            case 2:
                print();
                break;
            case 3:
                 dequeue();
                break;
            case 0:
                break;
            default:
                printf("\nIncorrect Choice");
```

```
        }
    }while(opt!=0);
return 0;
}
```

OUTPUT :-

```
PS C:\Users\lenovo\Desktop\C DSA lab> cd "c:\Users\lenovo\Des
 }
Enter Your Choice:-

1. to insert the Data in Queue
2. display the Data in Queue
3 to delete the data from the Queue
0 for Exit
1

Enter the number of data : 6

Enter your data : 12 43 65 78 90 100


1. to insert the Data in Queue
2. display the Data in Queue
3 to delete the data from the Queue
0 for Exit
2

12
43
65
78
90
100
```

```
1. to insert the Data in Queue
2. display the Data in Queue
3 to delete the data from the Queue
0 for Exit
3


1. to insert the Data in Queue
2. display the Data in Queue
3 to delete the data from the Queue
0 for Exit
3


1. to insert the Data in Queue
2. display the Data in Queue
3 to delete the data from the Queue
0 for Exit
3


1. to insert the Data in Queue
2. display the Data in Queue
3 to delete the data from the Queue
0 for Exit
2

78
90
100
```

```
1. to insert the Data in Queue
2. display the Data in Queue
3 to delete the data from the Queue
0 for Exit
1

Enter the number of data : 1

Enter your data : -5


1. to insert the Data in Queue
2. display the Data in Queue
3 to delete the data from the Queue
0 for Exit
2

78
90
100
-5

1. to insert the Data in Queue
2. display the Data in Queue
3 to delete the data from the Queue
0 for Exit
0
PS C:\Users\lenovo\Desktop\C DSA lab>
```

----------END----------