IMPLEMENTATION OF QUEUE USING LINKED LIST

```
#include <stdio.h>
#include <stdlib.h>
struct node
{
int Element;
struct node *Next;
}*Front = NULL, *Rear = NULL;
typedef struct node Queue;

int IsEmpty(Queue *List);
void Enqueue(int e);
void Dequeue();
void Display();
int main()
{
int ch, e;
do
{
printf("1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT");
printf("\nEnter your choice : ");
scanf("%d", &ch);
switch(ch)
{
case 1:
printf("Enter the element : ");
scanf("%d", &e);
Enqueue(e);
break;
case 2:
Dequeue();
break;
case 3:
Display();
break;
}
} while(ch <= 3);
return 0;
}
int IsEmpty(Queue *List)
{
if(List == NULL)
return 1;
else
return 0;
}
void Enqueue(int e)
{
Queue *NewNode = malloc(sizeof(Queue));
NewNode->Element = e;
NewNode->Next = NULL;
if(Rear == NULL)
Front = Rear = NewNode;
else
{
Rear->Next = NewNode;
Rear = NewNode;
}
}
```

```
void Dequeue()
{
if(IsEmpty(Front))
printf("Queue is Underflow...!\n");
else
{
Queue *TempNode;
TempNode = Front;
if(Front == Rear)
Front = Rear = NULL;
else
Front = Front->Next;
printf("%d\n", TempNode->Element);
free(TempNode);
}
}
void Display()
{
if(IsEmpty(Front))
printf("Queue is Underflow...!\n");
else
{
Queue *Position;
Position = Front;
while(Position != NULL)
{
printf("%d\t", Position->Element);
Position = Position->Next;
}
printf("\n");
}
}
```

Output

```
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 1
Enter the element : 10
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 1
Enter the element : 20
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 1
Enter the element : 30
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 1
Enter the element : 40
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 1
Enter the element : 50

1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 3
10 20 30 40 50
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 2
10
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 2
20
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 2
```

30
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 2
40
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 2
50
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 2
Queue is Underflow...!
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 4