NAME: THARUN RAJ I

ROLL NO: 230701362

EX NO: 02

PROGRAM NAME: IMPLEMENTATION OF DOUBLY LINKED LIST

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CODE:

```c
#include<stdio.h>

#include<stdlib.h>

struct node{

    int data;

    struct node*right;

    struct node*left;

}*first=NULL,*last,*temp;

int isEmpty(){

    if(first==NULL)

        return(1);

    else

        return(0);

}

void getput(int elt){

    struct node *newn;

    newn=(struct node*)malloc(sizeof(struct node));

    newn->data=elt;

    if(isEmpty()){

        newn->right=NULL;
```

```c
        newn->left=NULL;
        first=newn;
        last=newn;
    }
    else{
        last->right=newn;
        newn->left=last;
        newn->right=NULL;
        last=newn;
    }
}
void insertany(int elt,int pos){
    int co=1;
    struct node *newn;
    newn=(struct node*)malloc(sizeof(struct node));
    newn->data=elt;
    temp=first;
    if(pos==1){
        first->left=newn;
        newn->right=first;
        newn->left=NULL;
        first=newn;
    }
    else{
```

```c
        while(co!=pos-1){
            temp=temp->right;
            co++;
        }
        newn->right=temp->right;
        temp->right->left=newn;
        temp->right=newn;
        newn->left=temp;
        if(newn->right==NULL){
            last=newn;
        }
    }
}
void delbyelt(int elt){
    temp=first;
    if(temp->data==elt){
        first=first->right;
        free(temp);
    }else{
    while(temp->data!=elt){
        temp=temp->right;
    }
    temp->left->right=temp->right;
    if(temp->right!=NULL)
```

```c
      temp->right->left=temp->left;

   free(temp);

   }


}
void searchpos(int elt){

   temp=first;

   int pos=1;

   while(temp->data!=elt){

      temp=temp->right;

      pos++;

   }

   printf("%d is at %dth position\n",elt,pos);
printf("\n");
}
void searchelt(int pos){

   temp=first;

   int co=1;

   while(co!=pos){

      temp=temp->right;

      co++;

   }

   printf("The value at %dth position is %d\n",pos,temp->data);

   printf("\n");
```

```c
}


void disp(){
    temp=first;
    while(temp!=NULL){
        printf("%d ",temp->data);
        temp=temp->right;
    }
    printf("\n");
}
int main(){
    int n,elt;
    scanf("%d",&n);
    for(int i=0;i<n;i++){
        scanf("%d",&elt);
        getput(elt);
    }
    insertany(8,5);
    disp();
    delbyelt(5);disp();
    searchelt(2);
    searchpos(3);
```

}

OUTPUT:

5

1

2

3

4

5

1 2 3 4 8 5

1 2 3 4 8

The value at 2th position is 2

3 is at 3th position

Process returned 0 (0x0)   execution time : 5.301 s

Press any key to continue.