

```
typedef struct Node {  
    int data;  
    struct Node *prev;  
    struct Node *next;  
} node;
```

```
void insertAtEnd (node **head, int d) {  
    node *n, *tmp = head;  
    if (head == NULL) {  
        *head = (node *) malloc (sizeof (node));  
        (*head) -> prev = NULL;  
        (*head) -> data = d;  
        (*head) -> next = NULL;  
    }  
    else {  
        while (tmp -> next != NULL) {  
            tmp = tmp -> next;  
        }  
        n = (node *) malloc (sizeof (node));  
        n -> data = d;  
        n -> next = NULL;  
        n -> prev = tmp;  
        tmp -> next = n;  
    }  
}
```

```
void insertLeft (node **h, int d, int ele) {  
    node *head = *h;  
    if (head -> data == ele) {  
        node *tmp1 = NULL;  
        tmp1 = (node *) malloc (sizeof (node));  
        tmp1 -> prev = NULL;
```

```

temp1 → data = d
temp1 → next = *h;
(*h) → prev = temp1;
*h = temp1;

```

```

} }

```

```

node *temp;
while (head != NULL) {
    if (head → data == d) {
        head = head → prev;
        temp = (node *) malloc (sizeof (node));
        temp → data = d;
        temp → prev = head;
        temp → next = head → next;
        temp → next → prev = temp;
        head → next = temp;
        break;
    }
}

```

```

}

```

```

else {

```

```

    head = head → next;

```

```

}

```

```

}

```

```

void deleteNode (node **head, int d) {
    node *temp = *head;
    if (*head == NULL) {
        printf ("No element in the list to delete\n");
        return;
    }
}

```

```

while (temp != NULL) {
    if (temp → data == d) {

```

```
if (temp == *head) {  
    *head, (*head) → next;  
    (*head) → prev = NULL;  
}
```

}

```
else if (temp → next == NULL) {  
    temp → prev → next = NULL;  
    free(temp);  
}
```

}

```
printf("%d was deleted\n", d);  
return;
```

}

```
temp = temp → next;
```

}

```
printf("%d is not present in the list\n", d);
```

}

```
void display (node **head) {  
    if (head == NULL) {  
        printf("Empty list\n");  
        return;  
    }
```

```
while (head != NULL) {
```

```
    printf("%d <- %d -> ", head → data,  
        head = head → next);
```

}

```
printf("\n");
```

}