

22-1-24

Linked List

```
struct Node
```

```
{
```

```
    int data;
```

```
    struct Node *Next;
```

```
} *head  
first = Null;
```

```
void insert
```

```
void insert-first (struct Node *p, int x)
```

```
{
```

```
    struct Node *t;
```

```
    t = (struct Node *) malloc (sizeof (struct Node));
```

```
    t->next = head;
```

```
    t->data = x;
```

```
    head = t;
```

```
}
```

```
void insert-last (struct Node *p, int x)
```

```
{
```

```
    while (p->next != Null)
```

```
        p = p->next;
```

```
    struct Node *t;
```

```
    t = (struct Node *) malloc (sizeof (struct Node));
```

```
    t->data = x;
```

```
    p->next = t;
```

```
    t->next = Null;
```

```
}
```



```

void insert_pos (struct node *p, int x, int pos)
{
    struct node *q, *t;
    t = (struct node *) malloc (sizeof (struct node));
    t->data = x;
    for (int i = 1; i < pos; i++) {
        q = p;
        p = p->next;
    }
    t->next = p;
    q->next = t;
}

```

```

void delete_first (struct node *p)
{
    head = head->next;
    if (head->next == Null)
    {
        free (head);
        return;
    }
    head = head->next;
    free (p);
}

```

```

void delete_last (struct node *p)
{
    for struct node *q;
    while (p->next != Null) {
        q = p;
        p = p->next;
    }
    q->next = Null;
    free (p);
}

```


2

```
void delete_pos (struct Node *p, int pos)
```

```
{  
    struct Node *q;  
    for (int i=0; i<pos; i++){  
        q = p;  
        p = p->next;  
    }  
    q->next = p->next;  
    free(p);  
}
```

```
void display (struct Node *p)
```

```
{  
    while (p != NULL) {  
        int x = p->data;  
        printf("%d->%d", x);  
        p = p->next;  
    }  
    printf("Null\n");  
}
```

```
int main() {
```

```
    insert_first(head, 5);  
    insert_first(head, 2);  
    insert_last(head, 4);  
    insert_pos(head, 2, 2);  
    display(head);  
    delete_first(head);  
    display(head);  
    delete_last(head);  
    display(head);  
}
```



```
insert - last(head, 9);  
display(head);  
delete - pos(head, 2);  
display(head);
```

```
return 0;  
}
```

Output

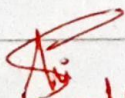
7 → 2 → 5 → 9 → NULL

2 → 5 → 9 → NULL

2 → 5 → NULL

2 → 5 → 9 → NULL

~~2 → 9 → NULL~~


22/01/24