

Linked Lists

struct Node

```
{
    int data;
    struct Node *next;
} *head = NULL;
```

void insert-first (struct Node *p, int x) ^{head}

```
{
    struct Node *t;
    t = (struct Node *) Malloc (size of (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 (size of (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 (size of (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-pos (struct Node *p)

```
{
    if (head->next == NULL)
    {
        free(head);
        return;
    }
    head->next->next = head->next->next;
    free(p);
}
```

~~void delete~~

void delete-last (struct Node *p)

```
{
    struct Node *q;
    while (p->next != NULL) {
        q = p;
        p = p->next;
    }
    q->next = NULL;
    free(p);
}
```

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

```
151 head = insertAtEnd(head, 4);  
152 head = insertAtEnd(head, 5);  
153  
154 // Displaying the original linked list  
155 printf("Original ");  
156 displayLinkedList(head);  
157  
158 // Deleting elements from the linked list  
159 head = deleteFirst(head);
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS SEARCH ERROR

```
PS C:\Users\Admin\Desktop\1bm22cs331> cd "c:\Users\Admin\Desktop\1bm22cs331\" ; if ($?) { gcc 112.c -o 112 } ; if ($?) { .\112 }  
Original Linked List: 1 -> 2 -> 3 -> 4 -> 5 -> NULL  
After deleting the first element: Linked List: 2 -> 3 -> 4 -> 5 -> NULL  
After deleting element '3': Linked List: 2 -> 4 -> 5 -> NULL  
After deleting the last element: Linked List: 2 -> 4 -> NULL  
PS C:\Users\Admin\Desktop\1bm22cs331>
```