WEEK - 4 (18-01-24)

Three ways of deletions in linked list.

```
#include <stdio.h>
#include <stdlib.h>

struct node
{
    int data;
    struct node * next;
};
struct node * head = NULL;

void dbegin()
{
    struct node * ptr;
    if (head == NULL)
    {
        printf("List is empty \n");
    }
    else
    {
        ptr = head;
        head = head -> next;
        free(ptr);
        printf("First element is deleted \n");
    }
}

void dend()
{
    struct node * ptr;
    struct node * ptr1;
```

Date / / Page

```
if (head == NULL)
{
    printf ("List is empty \n");
}
else if (head -> next == NULL)
{
    free(head);
}
else
{
    ptr = head;
    while (ptr -> next != NULL)
    {
        ptr1 = ptr;
        ptr = ptr -> next;
    }
    free (ptr);
    ptr1 -> next = NULL;
    printf (" Element at the end is deleted \n");
}
}
void dpos()
{
    struct node *ptr;
    struct node *ptr1;
    int pos, i;
    printf (" Enter the position from which data to
            be deleted \n");
    scanf (" %d", &pos);
    ptr = head;
    if (head == NULL)
    {
```

```
    printf("List is empty\n");
}
else if (head -> next == NULL)
{
    free(head);
}
for (i=0; i<pos; i++)
{
    ptr1 = ptr;
    ptr = ptr -> next;
}
ptr1 -> next = ptr -> next;
free(ptr);
printf("Element at the position %d is deleted\n", pos);
}

void display()
{
    struct node * node = head;
    if (head == NULL)
    {
        printf("List is empty\n");
    }
    else
    {
        while (node != NULL)
        {
            printf("%d -> ", node -> data);
            node = node -> next;
        }
        printf("\n");
    }
}
```

Date / / Page

```
void main()
{
    int n, i, data;
    printf("Enter the number of elements in linked
            list \n");
    scanf("%d", &n);
    printf("Enter the data to be inserted \n");
    for (i=0; i<n; i++)
    {
        struct node * last = head;
        struct node * new_node;
        new_node = (struct node*) malloc (sizeof(
                struct node));
        scanf("%d", &data);
        new_node -> data = data;
        new_node -> next = NULL;
        if (head == NULL)
        {
            head = new_node;
        }
        else
        {
            while (last -> next != NULL)
            {
                last = last -> next;
            }
            last -> next = new_node;
        }
    }
    int ch;
    printf(" Enter \n 1: Delete from beginning
\n 2: Delete at particular position \n 4:
Display elements \n 5: Exit \n");
```

```
while (ch != 5)
{
    printf ("Enter your choice \n");
    scanf ("%d", &ch);
    switch (ch)
    {
        case 1 : dbegin();
                 break;
        case 2 : dend();
                 break();
        case 3 : dpos();
                 break;
        case 4 : display();
                 break;
    }
}
}
```

Output :

Enter the number of elements in linked list.
5
Enter the data to be inserted.
1 2 3 4 5
Enter
1: Delete from begin
2: Delete at end
3: Delet at pos
4; Display
5 : Exit.
Enter your choice
1

First element is deleted
Enter your choice
2
Element at the end is deleted
Enter your choice
3
Enter the position from which data to be deleted.
1
Element at the position 1 is deleted
Enter your choice
4
2 → 4 →
Enter your choice
5