1BM19CS052

Lab Program - 5

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

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

int length () {
    struct node * temp = head;
    int cnt=0;

    while (temp -> next! = NULL) {
     cnt++;
      temp = temp -> next;
    }
    return cnt +1;
}
void insert_at_end () {
     struct node * newnode, * temp
     int item ;
     newnode =( struct node *) malloc (sizeof
                         (struct node));
    printf ("Enter the data : ");
    scanf ("%d, & item);

   newnode -> data = item;
   if (head == NULL) {
      newnode ->next =NULL;
       head =newnode;
       printf ("Node Created\n");
   }
   else {
          temp = head;
          while (temp ->next != NULL) {
             temp = temp -> next;
          }.
          temp ->next =newnode;
          newnode -> next = NULL;
         printf ("Node Created at the end.\n
     }
 }.
void insert at_first() {
        if (head ==NULL) {
              insert_at_end ();
               return;
         }
     struct node *newnode;
     ~~int atend~~ int _at end();
                     reeturn;
     }
    struct node *newnode;
     int ele;
   printf ("Enter the element to be inserted
                at first position: ");
  scanf ("%d", &ele);
  new node =(struct node*) malloc( sizeof
                         (struct node));
  Scanf ("%d", &ele);
```

```
newnode = (struct node *) Malloc(si
   (struct node));

newnode -> data = ele;
newnode -> next = head;
 head = newnode;
 printf ("Element inserted at the fir
          position of the list.\n");
}

void insert_at_any_pos (int pos) {
 if (head == NULL) {
 insert_at_first ();
 return;
}
 if (pos > length()) {
    insert_at_end ();
     return;
 }
 struct node *newnode, *temp;
 temp = head;
 int ele;
 printf ("Enter the element to be
          inserted : ");
 scanf ("%d", &ele);
 int jump = 1;
   While (jump < pos-1) {
    temp = temp -> next;
    jump++;
 }
```

```
newnode = (struct node *) malloc (size
                (struct node));
newnode -> data = ele;
 newnode -> next = temp -> next;
  temp -> next = newnode;
 printf ("Element inserted at
                position %d \n", pos);
}

void display () {
 struct node * ptr = NULL;
 ptr = head;
 if (ptr == NULL)
          printf ("No data to print \n");
else {
          print ("List Content : \n");
           while (ptr != NULL) {
              printf ("%d", ptr -> data);
               ptr = ptr -> next;
          }
          printf ("\n");
     }
  }

int main () {
          int choice;
          int pos;
          printf ("SINGLY LINKED LIST \n");
          printf ("1. Insert at back \t 2. Insert
                    at front \t 3. Insert at any
                 position \t 4. Display \t 5. Exit\n
```

```
    printf ("Enter your choice : ");
    scanf ("%d", &choice);

  while (choice != 5) {
        switch (choice) {
        case 1: insert_at_end();
                    break;
        case 2: insert_at_first();
                    break;
        case 3:
                printf ("Enter the position you
                        want to insert the
                        new element at: ");
                scanf ("%d", &pos);
                if (pos==1) {
                   insert_at_first();
                      break;
                }
                insert_at_anypos();
                    break;
        case 4: display();
                  break;
        }
        printf ("1. Insert at back \t 2. Insert
                 at front \t 3. Insert at any
                 position \t 4. Display \t 5. Exit \n");

        printf ("Enter your choice : ");
        scanf ("%d", &choice);
     }
     return 0;
}
```