**Singly Linked List** Write a C Program to perform following operations on Singly

Linked List ADT :

i. Create ii. Insert iii. Delete iv. Display

# include <stdio.h>

# include <conio.h>

# include <stdlib.h>

struct node

{

int data;

struct node \*next;

};

typedef struct node NODE;

NODE \*start = NULL;

int menu()

{

int ch;

system("cls");

printf("\n 1.Create a list ");

printf("\n--------------------------");

printf("\n 2.Insert a node at beginning ");

printf("\n 3.Insert a node at end");

printf("\n--------------------------");

printf("\n 4.Delete a node from beginning");

printf("\n 5.Delete a node from Last");

printf("\n--------------------------");

printf("\n 6.Displaying the list");

printf("\n--------------------------");

printf("\n 7.Exit ");

printf("\n\n Enter your choice: ");

scanf("%d",&ch);

return ch;

}

NODE\* getnode()

{

NODE \* newnode;

newnode = (NODE \*) malloc(sizeof(NODE));

printf("\n Enter data: ");

scanf("%d", &newnode -> data);

newnode -> next = NULL;

return newnode;

}

void createlist(int n)

{

int i;

NODE \*newnode, \*temp;

for(i = 0; i < n; i++)

{

newnode = getnode();

if(start == NULL)

{

start = newnode;

}

else

{

temp = start;

while(temp -> next != NULL)

temp = temp -> next;

temp -> next = newnode;

}

}

}

void display()

{

NODE \*temp;

temp = start;

printf("\n The contents of List (Left to Right): \n");

if(start == NULL)

{

printf("\n Empty List");

return;

}

else

{

while(temp != NULL)

{

printf("%d-->", temp -> data);

temp = temp -> next;

}

}

}

void insert\_at\_beg()

{

NODE \*newnode;

newnode = getnode();

if(start == NULL)

{

start = newnode;

}

else

{

newnode -> next = start;

start = newnode;

}

}

void insert\_at\_end()

{

NODE \*newnode, \*temp;

newnode = getnode();

if(start == NULL)

{

start = newnode;

}

else

{

temp = start;

while(temp -> next != NULL)

temp = temp -> next;

temp -> next = newnode;

}

}

void delete\_at\_beg()

{

NODE \*temp;

if(start == NULL)

{

printf("\n No nodes are exist..");

return ;

}

else

{

temp = start;

start = temp -> next;

printf("\n Node deleted %d", temp->data);

free(temp);

}

}

void delete\_at\_last()

{

NODE \*temp, \*prev;

if(start == NULL)

{

printf("\n Empty List..");

return ;

}

else

{

temp = start;

prev = start;

while(temp -> next != NULL)

{

prev = temp;

temp = temp -> next;

}

prev -> next = NULL;

printf("\n Node deleted %d", temp->data);

free(temp);

}

}

void main(void)

{

int ch, n;

while(1)

{

ch = menu();

switch(ch)

{

case 1:

if(start == NULL)

{

printf("\n Number of nodes you want to create: ");

scanf("%d", &n);

createlist(n);

printf("\n List created..");

}

else

printf("\n List is already created..");

break;

case 2:

insert\_at\_beg();

break;

case 3:

insert\_at\_end();

break;

case 4:

delete\_at\_beg();

break;

case 5:

delete\_at\_last();

break;

case 6:

display();

break;

case 7:

exit(0);

}

getch();

}

}