

## PROGRAM 8:

```
#include<stdlib.h>

#include <stdio.h>

void create();

void display();

void insert_begin();

void insert_end();

void insert_pos();

void delete_begin();

void delete_end();

void delete_pos();

struct node

{

    int info;

    struct node *next;

};

struct node *start=NULL;

int main()

{

    int choice;

    while(1){

        printf(" MENU \n");

        printf(" 1.Create \n");

        printf(" 2.Display \n");

        printf(" 3.Insert at the beginning \n");

        printf(" 4.Insert at the end \n");

        printf(" 5.Insert at specified position \n");

        printf(" 6.Delete from beginning \n");

        printf(" 7.Delete from the end \n");

        printf(" 8.Delete from specified position \n");
```

```
printf(" 9.Exit \n");  
printf("-----\n");  
printf("Enter your choice: \n");  
scanf("%d",&choice);  
switch(choice)  
{  
case 1:  
create();  
break;  
case 2:  
display();  
break;  
case 3:  
insert_begin();  
break;  
case 4:  
insert_end();  
break;  
case 5:  
insert_pos();  
break;  
case 6:  
delete_begin();  
break;  
case 7:  
delete_end();  
break;  
case 8:  
delete_pos();  
break;  
case 9:
```

```
exit(0);

break;

default:

printf(" Wrong Choice:");

break;

}

}

return 0;

}

void create()

{

struct node *temp,*ptr;

temp=(struct node *)malloc(sizeof(struct node));

if(temp==NULL)

{

printf("Out of Memory Space:");

exit(0);

}

printf("Enter the data value for the node: ");

scanf("%d",&temp->info);

temp->next=NULL;

if(start==NULL)

{

start=temp;

}

else

{

ptr=start;

while(ptr->next!=NULL)

{

ptr=ptr->next;
```

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}
ptr->next=temp;
}
}
void display()
{
    struct node *ptr;
    if(start==NULL)
    {
        printf("List is empty: ");
        return;
    }
    else
    {
        ptr=start;
        printf("The List elements are: ");
        while(ptr!=NULL)
        {
            printf("%d ",ptr->info );
            ptr=ptr->next ;
        }
    }
}
void insert_begin()
{
    struct node *temp;
    temp=(struct node *)malloc(sizeof(struct node));
    if(temp==NULL)
    {
        printf("Out of Memory Space: ");
        return;
    }
}

```

```

}

printf("Enter the data value for the node: " );
scanf("%d",&temp->info);
temp->next =NULL;
if(start==NULL)
{
start=temp;
}
else
{
temp->next=start;
start=temp;
}
}

void insert_end()
{
struct node *temp,*ptr;
temp=(struct node *)malloc(sizeof(struct node));
if(temp==NULL)
{
printf("Out of Memory Space: ");
return;
}

printf("Enter the data value for the node: " );
scanf("%d",&temp->info );
temp->next =NULL;
if(start==NULL)
{
start=temp;
}
else

```

```

{
ptr=start;
while(ptr->next !=NULL)
{
ptr=ptr->next ;
}
ptr->next =temp;
}
}
void insert_pos()
{
struct node *ptr,*temp;
int i,pos;
temp=(struct node *)malloc(sizeof(struct node));
if(temp==NULL)
{
printf("Out of Memory Space: ");
return;
}
printf("Enter the position for the new node to be inserted: ");
scanf("%d",&pos);
printf("Enter the data value of the node: ");
scanf("%d",&temp->info) ;
temp->next=NULL;
if(pos==0)
{
temp->next=start;
start=temp;
}
else
{

```

```

for(i=0,ptr=start;i<pos-1;i++) { ptr=ptr->next;
if(ptr==NULL)
{
printf("Position not found:[Handle with care] ");
return;
}
}
temp->next =ptr->next ;
ptr->next=temp;
}
}
void delete_begin()
{
struct node *ptr;
if(ptr==NULL)
{
printf("List is Empty: ");
return;
}
else
{
ptr=start;
start=start->next ;
printf("The deleted element is :%d ",ptr->info);
free(ptr);
}
}
void delete_end()
{
struct node *temp,*ptr;
if(start==NULL)

```

```

{
printf("List is Empty:");
exit(0);
}
else if(start->next ==NULL)
{
ptr=start;
start=NULL;
printf("The deleted element is:%d ",ptr->info);
free(ptr);
}
else
{
ptr=start;
while(ptr->next!=NULL)
{
temp=ptr;
ptr=ptr->next;
}
temp->next=NULL;
printf("The deleted element is:%d ",ptr->info);
free(ptr);
}
}

void delete_pos()
{
int i,pos;
struct node *temp,*ptr;
if(start==NULL)
{
printf("The List is Empty: ");

```



```

exit(0);
}
else
{
printf("Enter the position of the node to be deleted: ");
scanf("%d",&pos);
if(pos==0)
{
ptr=start;
start=start->next ;
printf("The deleted element is:%d ",ptr->info );
free(ptr);
}
else
{
ptr=start;
for(i=0;i<pos;i++) { temp=ptr; ptr=ptr->next ;
if(ptr==NULL)
{
printf("Position not Found: ");
return;
}
}
temp->next =ptr->next ;
printf("The deleted element is:%d ",ptr->info );
free(ptr);
}
}
}

```

**OUTPUT:**

```
C:\Users\A.V.NAGA KAVYA\Documents\ds8.exe
-----
Enter your choice:
3
Enter the data value for the node: 23
MENU
1.Create
2.Display
3.Insert at the beginning
4.Insert at the end
5.Insert at specified position
6.Delete from beginning
7.Delete from the end
8.Delete from specified position
9.Exit
-----
Enter your choice:
2
The List elements are: 23 MENU
1.Create
2.Display
3.Insert at the beginning
4.Insert at the end
5.Insert at specified position
6.Delete from beginning
7.Delete from the end
8.Delete from specified position
9.Exit
-----
Enter your choice:

```