# ***Lab Session 5***

## *1. Write a C++ program to create a linked list using a function of the following*
## *Prototype:  void createList();*

## *A. CODE:*

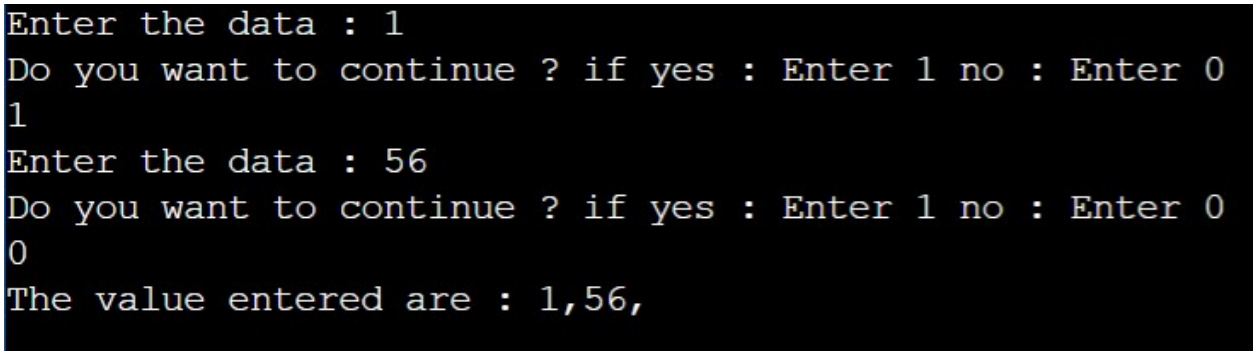
```
#include<iostream>
using namespace std;
void create_list();
void delete_at_position();
void display();
struct node
{
int data;
struct node *next;
};
struct node *head,*new_node,*temp,*prev_node,*next_node;
main()
{
create_list();
delete_at_position();
display();
}
void create_list()
{
int choice = 1;
head = 0;
while(choice == 1)
{
```

```
new_node = (struct node *)malloc(sizeof(struct node));
cout<<"Enter the data : ";
cin>>new_node->data;
new_node -> next = 0;
if(head == 0)
{
head = temp = new_node;
}
else{
temp -> next = new_node;
temp = new_node;
}
cout<<"Do you want to continue ? if yes : Enter 1 no : Enter 0\n";
cin>>choice;
}
}
void delete_at_position()
{

int pos,i=1;
cout<<"Enter the position of the node to delete : ";
cin>>pos;
temp = head;
while(i<pos- 1)
{
temp = temp -> next;
i++;
}
next_node = temp -> next;
temp -> next = next_node -> next;
free(next_node);
cout<<"Node at given position is deleted \n";
}
void display()
{
```

```
temp = head;
cout<<"The values entered are : ";
while(temp!= 0)
{
cout<<temp->data;
temp = temp->next;
}
}
```

## ***SAMPLE INPUT AND SAMPLE OUTPUT:***



## *2. Write a C++ program to create a linked list using a function of the following*
## *Prototype: void createList(struct linkedList *);*

## *A. <u>CODE</u>:*

```
#include <iostream>
#include <cstdlib>
using namespace std;
struct node
{
int data;
struct node *next;
};
struct node *head = NULL, *temp;
void createList(struct node *h)
{
int value=1;
while(1)
{
cout<<"\nEnter value (press 0 to stop): ";
cin>>value;
if(value==0)
break;
if(h==NULL)
{
h = (struct node*)malloc(sizeof(struct node));
temp = h;
}
else
{
temp->next = (struct node*)malloc(sizeof(struct node));
temp = temp->next;
```

```
}
temp->data = value;
}
temp->next = NULL;
head = h;
}
void display()
{
cout<<"\nThe values in the list are: ";
for(temp=head;temp!=NULL;temp=temp->next)
{
cout<<temp->data<<" ";
}
}
int main()
{
createList(head);
display();
}
```

***SAMPLE INPUT AND SAMPLE OUTPUT:***

```
Enter value (press 0 to stop): 1

Enter value (press 0 to stop): 32

Enter value (press 0 to stop): 0

The values in the list are: 1 32
```

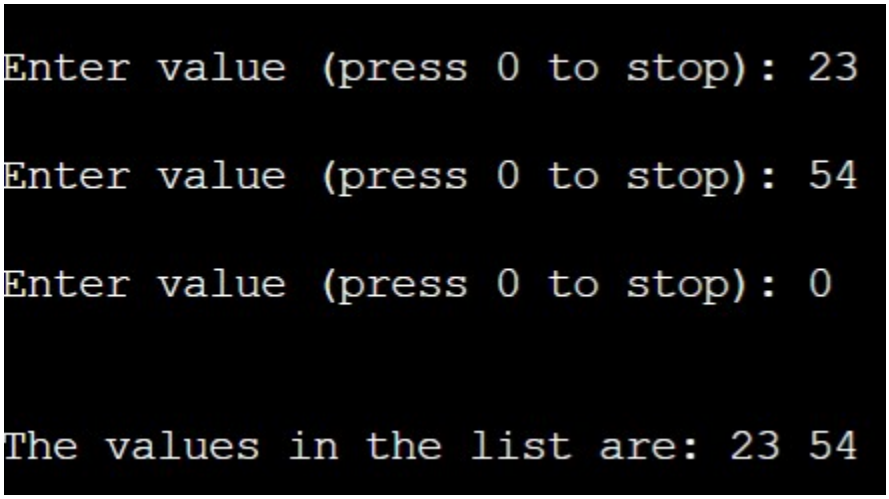
## *3. Write a C++ program to create a linked list using a function of the following*
## *Prototype: struct linkedList* createList(struct linkedList *);*

## *A. CODE:*

```
#include <iostream>
using namespace std;
struct node
{
int data;
struct node *next;
};
struct node *head, *temp;
struct node* createList(struct node *head)
{
int value=1;
while(1)
{
cout<<"\nEnter value (press 0 to stop): ";
cin>>value;
if(value==0)
break;
if(head!=NULL)
{
temp->next = (struct node*)malloc(sizeof(struct node));
temp = temp->next;
}
else
{
head = (struct node*)malloc(sizeof(struct node));
temp = head;
```

```
}
temp->data = value;
}
temp->next = NULL;
return head;
}
void display(struct node *head)
{
cout<<"\n\nThe values in the list are: ";
for(temp=head;temp!=NULL;temp=temp->next)
{
cout<<temp->data<<" ";
}
}
int main()
{
head=NULL;
head = createList(head);
display(head);
}
```

## ***SAMPLE INPUT AND SAMPLE OUTPUT:***



## *4. Write a C++ program to delete a given element form a linked list using a function of the following Prototype: Int deleteElement (int x);*

## *A. CODE:*

```
#include<iostream>
using namespace std;
void create_list();
void delete_at_position();
void display();
struct node
{
int data;
struct node *next;
};
struct node *head,*new_node,*temp,*prev_node,*next_node;
main()
{
create_list();
delete_at_position();
display();
}
void create_list()
{
int choice = 1;
head = 0;
while(choice == 1)
{
new_node = (struct node *)malloc(sizeof(struct node));
cout<<"Enter the data : ";
cin>>new_node->data;
new_node -> next = 0;
```

```
if(head == 0)
{
head = temp = new_node;
}
else{
temp -> next = new_node;
temp = new_node;
}
cout<<"Do you want to continue ? if yes : Enter 1 no : Enter 0\n";
cin>>choice;
}
}
void delete_at_position()
{

int pos,i=1;
cout<<"Enter the position of the node to delete : ";
cin>>pos;
temp = head;
while(i<pos- 1)
{
temp = temp -> next;
i++;
}
next_node = temp -> next;
temp -> next = next_node -> next;
free(next_node);
cout<<"Node at given position is deleted \n";
}
void display()
{
temp = head;
cout<<"The values entered are : ";
while(temp!= 0)
{
```

```
cout<<temp->data;
temp = temp->next;
}
}
```

## ***SAMPLE INPUT AND SAMPLE OUTPUT:***

```
Enter the data : 1
Do you want to continue ? if yes : Enter 1 no : Enter 0
1
Enter the data : 46
Do you want to continue ? if yes : Enter 1 no : Enter 0
0
Enter the position of the node to delete : 1
Node at given position is deleted
The values entered are : 1
```