

4) WAP to Implement Singly Linked List with following operations

a) Create a linked list.

b) Insertion of a node at first position, at any position and at end of list.

Display the contents of the linked list.

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

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

```
Struct node{
```

```
    Int data;
```

```
    Struct node* next;
```

```
};
```

```
Void insertAtBeginning(struct node** head ,int val){
```

```
    Struct node* newnode=(struct node*)malloc(sizeof(struct node));
```

```
    Newnode->data=val;
```

```
    Newnode->next=*head;
```

```
    *head=newnode;
```

```
}
```

```
Void insertAtEnd(struct node** head,int val){
```

```
    Struct node* newnode=(struct node*)malloc(sizeof(struct node));
```

```
    Struct node* temp=*head;
```

```
    Newnode ->data=val;
```

```
    Newnode->next=NULL;
```

```
    If(*head==NULL){
```

```
        *head=newnode;
```

```
    Return;
```

```

    }
    While(temp->next != NULL){
        Temp=temp->next;
    }
    Temp->next=newnode;

}

```

```

Void insertAtPosition(struct node** head,int val,int pos){
    If(pos<=0){
        Printf("Invalid position\n");
        Return;
    }
    If(pos==1 || *head==NULL){
        insertAtBeginning(head,val);
        return;
    }
    Struct node* newnode=(struct node*)malloc(sizeof(struct node));
    Newnode->data=val;
    Struct node* temp=*head;
    Int count=1;

    While(count<pos-1 && temp->next !=NULL){
        Temp=temp->next;
        Count++;
    }

    If(count<pos-1){
        Printf("Invalid Position\n");
    }
}

```

```
    Return;  
}
```

```
    Newnode->next=temp->next;  
    Temp->next=newnode;  
}
```

```
Void display(struct node* head){  
    Struct node* temp=head;  
  
    If(temp==NULL){  
        Printf("Linked List is Empty");  
        Return;  
    }  
    While(temp!=NULL){  
        Printf("%d\t",temp->data);  
        Temp=temp->next;  
    }  
    Printf("\n");  
}
```

```
Int main()  
{  
    Int ch,new,pos;  
    Struct node* head=NULL;  
    While(ch!=5)  
    {  
        Printf("Menu 1:Insert at beginning 2:Insert at a specific position 3:Insert at end 4:Display 5:Exit\n");  
        Printf("Enter your choice\n");
```

```
Scanf("%d",&ch);
Switch(ch)
{
    Case 1:
    {
        Printf("Enter the data you want to insert at beginning\n");
        Scanf("%d",&new);
        insertAtBeginning(&head,new);
        break;
    }
    Case 2:
    {
        Printf("Enter the data and position at which you want to insert \n");
        Scanf("%d%d",&new,&pos);
        insertAtPosition(&head,new,pos);
        break;
    }
    Case 3:
    {
        Printf("Enter the data you want to insert at end\n");
        Scanf("%d",&new);
        insertAtEnd(&head,new);
        break;
    }
    Case 4:
    {
        Printf("Created linked list is:\n");
        Display(head);
        Break;
    }
}
```

```

    }
    Case 5:
    {
        Return 0;
        Break;
    }
    Case 6:
    {
        Printf("Invalid data!");
        Break;
    }
}
Return 0;
}

```

Output:

Menu 1:Insert at beginning 2:Insert at a specific position 3:Insert at end 4:Display 5:Exit

Enter your choice

1

Enter the data you want to insert at beginning

3

Enter your choice

1

Enter the data you want to insert at beginning

5

Enter your choice

2

Enter the data and position at which you want to insert

4 3

Enter your choice

3

Enter the data you want to insert at end

7

Enter your choice

4

Created linked list is:

5 3 4 7

Enter your choice

5

Process returned 0 (0x0) execution time : 53.109 s

Press any key to continue.