

6a) WAp to implement Singly linked list with following operations.

Sort the linked list, reverse linked list, concatenate two linked list.

```
#include <stdio.h>

#include <stdlib.h>

struct node
{
    int data;
    struct node *next;
};

void insertatbeg(struct node** head,int value)
{
    struct node* new_node=(struct node*)malloc(sizeof(struct node));
    new_node->data=value;
    new_node->next=*head;
    *head=new_node;
}

void concat(struct node *head1,struct node *head2)
{
    if (head1->next == NULL)
        head1->next = head2;
    else
        concat(head1->next,head2);
}

void sortlist(struct node** head1)
{

```

```

struct node *temp,*i;

for(temp=*head1;temp!=NULL;temp=temp->next)
{
    for(i=temp->next;i!=NULL;i=i->next)
    {
        if(i->data < temp->data)
        {
            int tem=i->data;

            i->data=temp->data;

            temp->data=tem;
        }
    }
}

void reverse(struct node** head1)
{
    struct node *prev=NULL;

    struct node *current=*head1;

    struct node* next=NULL;

    while(current!=NULL)
    {
        next=current->next;

        current->next=prev;

        prev=current;

        current=next;
    }
}

```

```

        *head1=prev;
    }

void printlist(struct node* node)
{
    struct node* temp=node;
    while(temp!=NULL)
    {
        printf("%d-->",temp->data);
        temp=temp->next;
    }
    printf("NULL\n");
}

int main()
{
    struct node *head1=NULL;

    insertatbeg(&head1,10);
    insertatbeg(&head1,40);
    insertatbeg(&head1,20);
    insertatbeg(&head1,50);
    printf("List 1:");
    printlist(head1);

    struct node *head2=NULL;
    insertatbeg(&head2,50);
    insertatbeg(&head2,70);

```

```
insertatbeg(&head2,60);


printf("List 2:");
printlist(head2);

concat(head1,head2);
printf("List after concatenation:");
printlist(head1);

sortlist(&head1);
printf("List after sorting:");
printlist(head1);

reverse(&head1);
printf("Reversed Linked list");
printlist(head1);
}
```

Output:

 "C:\Users\bmsce\Desktop\DS LAB 244\sort.exe"

List 1:50-->20-->40-->10-->NULL

List 2:60-->70-->50-->NULL

List after concatenation:50-->20-->40-->10-->60-->70-->50-->NULL

List after sorting:10-->20-->40-->50-->50-->60-->70-->NULL

Reversed Linked list70-->60-->50-->50-->40-->20-->10-->NULL

Process returned 0 (0x0) execution time : 0.172 s

Press any key to continue.