WAP to Implement Single Link List with following operations: Sort the linked list, Reverse the linked list, Concatenation of two linked lists.

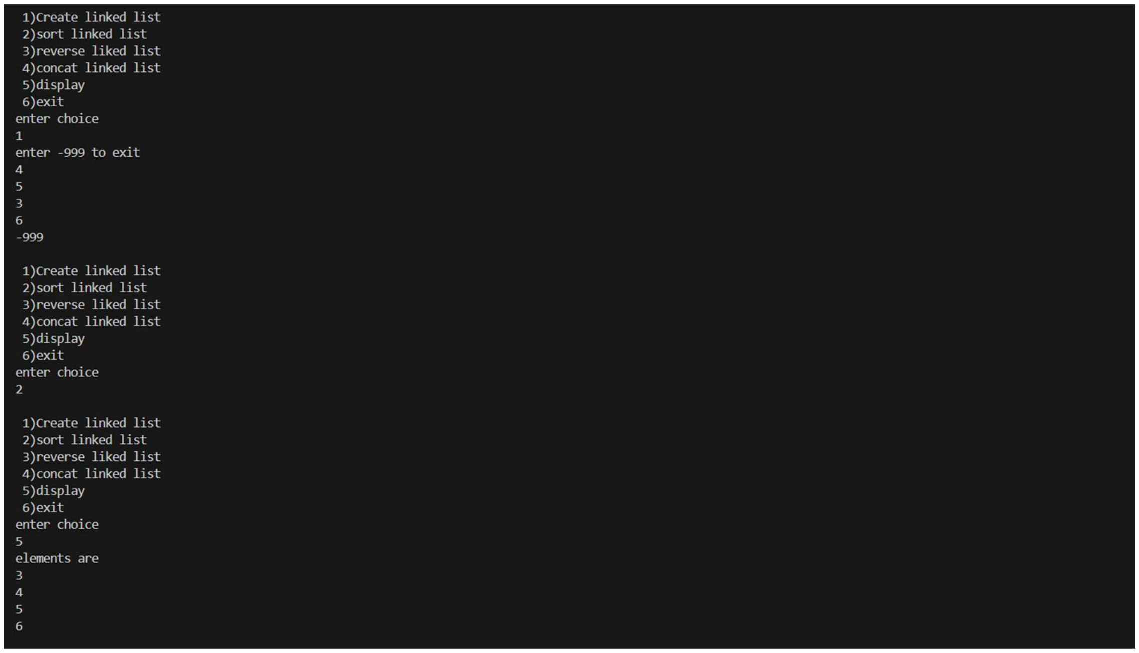
```
#include <stdio.h>
#include <stdbool.h>
#include <stdlib.h>

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

struct node * createlk(){
    struct node * p;
    struct node* start=NULL,*last;
    int item;
    printf("enter -999 to exit\n");
    scanf("%d",&item);
    while(item!=-999){
        p=(struct node*)malloc(sizeof(struct node));
        p->info=item;
        if(start==NULL){
            p->next=NULL;
            start=p;
            last=p;
        }
        else{
            p->next=NULL;
            last->next=p;
            last=p;

        }
        scanf("%d",&item);
    }
    return start;

}

struct node * sort(struct node * start){
    bool swap;
    if(start==NULL){
        return start;
    }
    struct node * temp,*next;
    do{
        temp=start;
        swap=false;

        int val;
        while(temp->next!=NULL){
            next=temp->next;
            if(temp->info > next-> info){
                val=next->info;
                next->info=temp->info;
                temp->info=val;
                swap=true;
            }
            temp=temp->next;
        }
    }while(swap);
    return start;
}

struct node * reverse(struct node * start){
    if(start==NULL){
        return start;
    }
    struct node * prev=NULL,*curr,*next;
    curr=start;
    while(curr!=NULL){
        next=curr->next;
        curr->next=prev;
        prev=curr;
        curr=next;
    }
    return prev;
}

struct node * concat(struct node* start,struct node * start2){
    if(start==NULL){
        return start2;
    }
    if(start2==NULL){
```

```
    return start;
  }

  struct node * temp;
  temp=start;
  while(temp->next!=NULL){
    temp=temp->next;
  }
  temp->next=start2;

  return start;

}

void displaylk(struct node*start){
 struct node*temp;
 if(start==NULL){
  printf("linked list is empty\n");
 }
 else{
  temp=start;
  printf("elements are\n");
  while(temp!=NULL){
    printf("%d\n",temp->info);
    temp=temp->next;
  }
 }
}
```

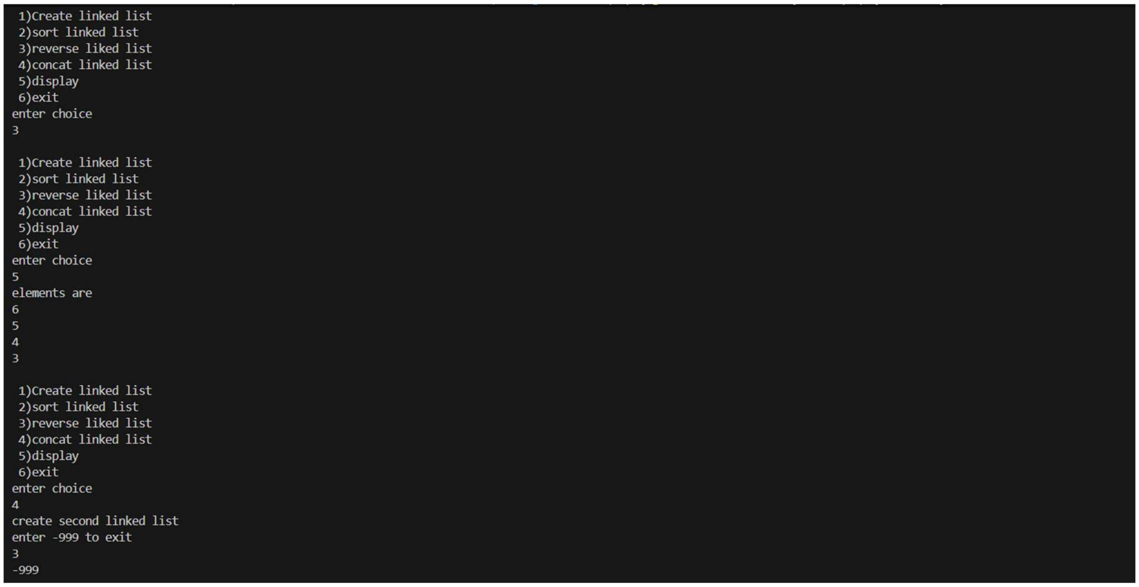
```
int main(){
  struct node *head=NULL,*head2=NULL;
  int choice;
  while(1){
    printf("\n 1)Create linked list\n 2)sort linked list\n 3)reverse liked list\n ");
    printf("4)concat linked list\n 5)display\n 6)exit\n");
    printf("enter choice\n");
    scanf("%d",&choice);

    switch(choice){

      case 1:
      head=createlk();
      break;

      case 2:
      head=sort(head);
      break;

      case 3:
      head=reverse(head);
      break;

      case 4:
      printf("create second linked list \n");
      head2=createlk();
      head=concat(head,head2);
```

```
            break;

            case 5:
            displaylk(head);
            break;

            case 6:
            printf("exiting program\n");
            return 0;

            default:
            return 0;
        }

    }

    return 0;
}
```

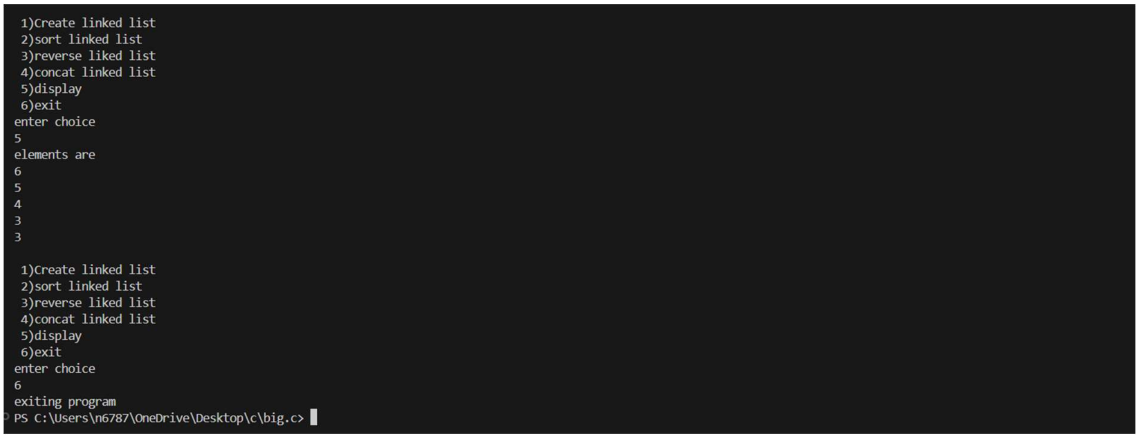
Output:



```
 1)Create linked list
 2)sort linked list
 3)reverse liked list
 4)concat linked list
 5)display
 6)exit
enter choice
1
enter -999 to exit
4
5
3
6
-999

 1)Create linked list
 2)sort linked list
 3)reverse liked list
 4)concat linked list
 5)display
 6)exit
enter choice
2

 1)Create linked list
 2)sort linked list
 3)reverse liked list
 4)concat linked list
 5)display
 6)exit
enter choice
5
elements are
3
4
5
6
```



```
 1)Create linked list
 2)sort linked list
 3)reverse liked list
 4)concat linked list
 5)display
 6)exit
enter choice
3

 1)Create linked list
 2)sort linked list
 3)reverse liked list
 4)concat linked list
 5)display
 6)exit
enter choice
5
elements are
6
5
4
3

 1)Create linked list
 2)sort linked list
 3)reverse liked list
 4)concat linked list
 5)display
 6)exit
enter choice
4
create second linked list
enter -999 to exit
3
-999
```



```
 1)Create linked list
 2)sort linked list
 3)reverse liked list
 4)concat linked list
 5)display
 6)exit
enter choice
5
elements are
6
5
4
3
3

 1)Create linked list
 2)sort linked list
 3)reverse liked list
 4)concat linked list
 5)display
 6)exit
enter choice
6
exiting program
PS C:\Users\n6787\OneDrive\Desktop\c\big.c>
```