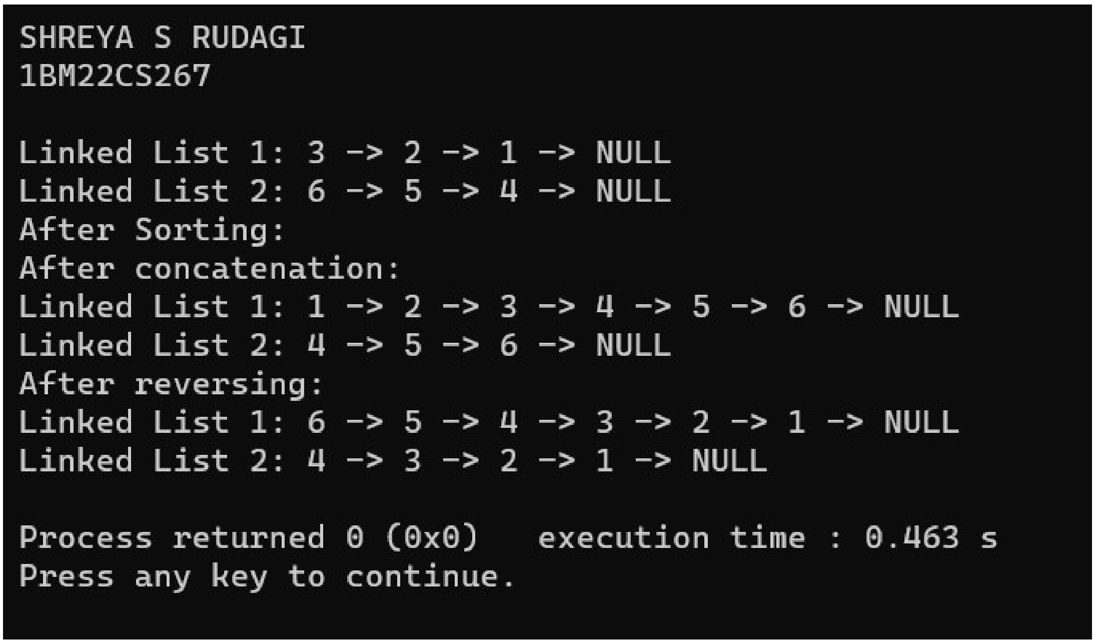
WAP to Implement Single Link List with following operations: Sort the linked list, Reverse the linked list, Concatenation of two linked lists.

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

typedef struct Node
{
   int data;
   struct Node *next;
} Node;

struct Node *createNode(int value)
{
   struct Node *newNode = (struct Node *)malloc(sizeof(struct Node));
   if (newNode == NULL)
   {
      printf("Memory allocation failed.\n");
      exit(1);
   }
   newNode->data = value;
   newNode->next = NULL;
   return newNode;
}

struct Node *insertAtBeginning(struct Node *head, int value)
{
   struct Node *newNode = createNode(value);
   newNode->next = head;
   return newNode;
}

struct Node *concat(Node *head1, Node *head2)
{
   Node *temp = head1;
   while (temp->next != NULL)
      temp = temp->next;
   temp->next = head2;
   return head1;
}

struct Node *sort(Node *head)
{
   Node *temp, *current;
   int t;

   current = head;
   while (current != NULL)
   {
      temp = head;
      while (temp->next != NULL)
      {
         if (temp->data > temp->next->data)
         {
            t = temp->data;
```

```
                temp->data = temp->next->data;
                temp->next->data = t;
            }
            temp = temp->next;
        }
        current = current->next;
    }

    return head;
}

struct Node *reverse(Node *head)
{
    Node *prev, *temp, *next;
    temp = head;
    prev = NULL;

    while (temp != NULL)
    {
        next = temp->next;
        temp->next = prev;
        prev = temp;
        temp = next;
    }

    head = prev;

    return head;
}

void displayLinkedLists(struct Node *head1, struct Node *head2)
{
    printf("Linked List 1: ");
    while (head1 != NULL)
    {
        printf("%d -> ", head1->data);
        head1 = head1->next;
    }
    printf("NULL\n");

    printf("Linked List 2: ");
    while (head2 != NULL)
    {
        printf("%d -> ", head2->data);
        head2 = head2->next;
    }
    printf("NULL\n");
}

int main()
{
   printf(“SHREYA S RUDAGI”);
   printf(“1BM22CS267”);
    struct Node *list1 = NULL;
    struct Node *list2 = NULL;
    int choice, data;
    list1 = insertAtBeginning(list1, 1);
    list1 = insertAtBeginning(list1, 2);
    list1 = insertAtBeginning(list1, 3);
    list2 = insertAtBeginning(list2, 4);
    list2 = insertAtBeginning(list2, 5);
    list2 = insertAtBeginning(list2, 6);
    displayLinkedLists(list1, list2);
    printf("After Sorting:\n");
    list1 = sort(list1);
   list2 = sort(list2);
   displayLinkedLists(list1,list2);
    printf("After concatenation:\n");
    list1 = concat(list1, list2);
    displayLinkedLists(list1, list2);
    printf("After reversing:\n");
    list1 = reverse(list1);
    displayLinkedLists(list1, list2);
    return 0;
}
```



```
SHREYA S RUDAGI
1BM22CS267

Linked List 1: 3 -> 2 -> 1 -> NULL
Linked List 2: 6 -> 5 -> 4 -> NULL
After Sorting:
After concatenation:
Linked List 1: 1 -> 2 -> 3 -> 4 -> 5 -> 6 -> NULL
Linked List 2: 4 -> 5 -> 6 -> NULL
After reversing:
Linked List 1: 6 -> 5 -> 4 -> 3 -> 2 -> 1 -> NULL
Linked List 2: 4 -> 3 -> 2 -> 1 -> NULL

Process returned 0 (0x0)   execution time : 0.463 s
Press any key to continue.
```