Prg:1 DATE:20-5-2020

1. Write a C Program to Reverse a Linked List in groups of given size.

Test Case 1:  
If a linked listis: 1 → 2 → 3 → 4 → 5 → 6 → 7 → 8  
The value of size k is 2  
Then the linked list looks like: 2 → 1 → 4 → 3 → 6 → 5 → 8 → 7

Test Case 2:  
If a linked listis: 1 → 2 → 3 → 4 → 5 → 6 → 7 → 8  
The value of size k is 3  
Then the linked list looks like: 3 → 2 → 1 → 6 → 5 → 4 → 8 → 7

#include<stdio.h>

#include<conio.h>

#include<stdlib.h>

typedef struct node

{

int data;

struct node \*next;

}node;

void reverse(node \*head)

{

if(head == NULL)

return;

if(head -> next == NULL)

return;

reverse(head->next);

head->next->next = head;

head->next = NULL;

}

node \*swap\_in\_a\_group(node \*start , int k)

{

node \*p , \*q ,\*new\_start , \*temp;

int cnt;

p = start;

cnt = 0;

while(cnt != k-1)

{

if(p->next == NULL)

{

return start;

}

p = p->next;

cnt++;

}

new\_start = p;

q = new\_start;

while(1)

{

p = start;

temp = q->next;

if(temp == NULL)

{

reverse(p);

return new\_start;

}

q->next = NULL;

q = temp;

start = temp;

cnt = 0;

while(cnt != k-1)

{

if(temp->next == NULL)

{

reverse(p);

p->next = q;

return new\_start;

}

temp = temp->next;

cnt++;

}

reverse(p);

p->next = temp;

q = temp;

}

return new\_start;

}

int main()

{

int a , i , n , cnt , k=4 , flag = 1;

node \*p,\*q,\*start;

printf("Enter the number of nodes");

scanf("%d",&n);

printf("Enter all the nodes \n");

p = (node\*)malloc(sizeof(node));

scanf("%d",&a);

p->data = a;

p->next = NULL;

start = p;

for(i=1;i<n;i++)

{

q = (node\*)malloc(sizeof(node));

scanf("%d",&a);

q->data = a;

q->next = NULL;

p->next = q;

p = p->next;

}

printf("\n Enter K ");

scanf("%d",&k);

printf("\n swapped list==");

p = swap\_in\_a\_group(start , k);

while(p!=NULL)

{

printf("%d ",p->data);

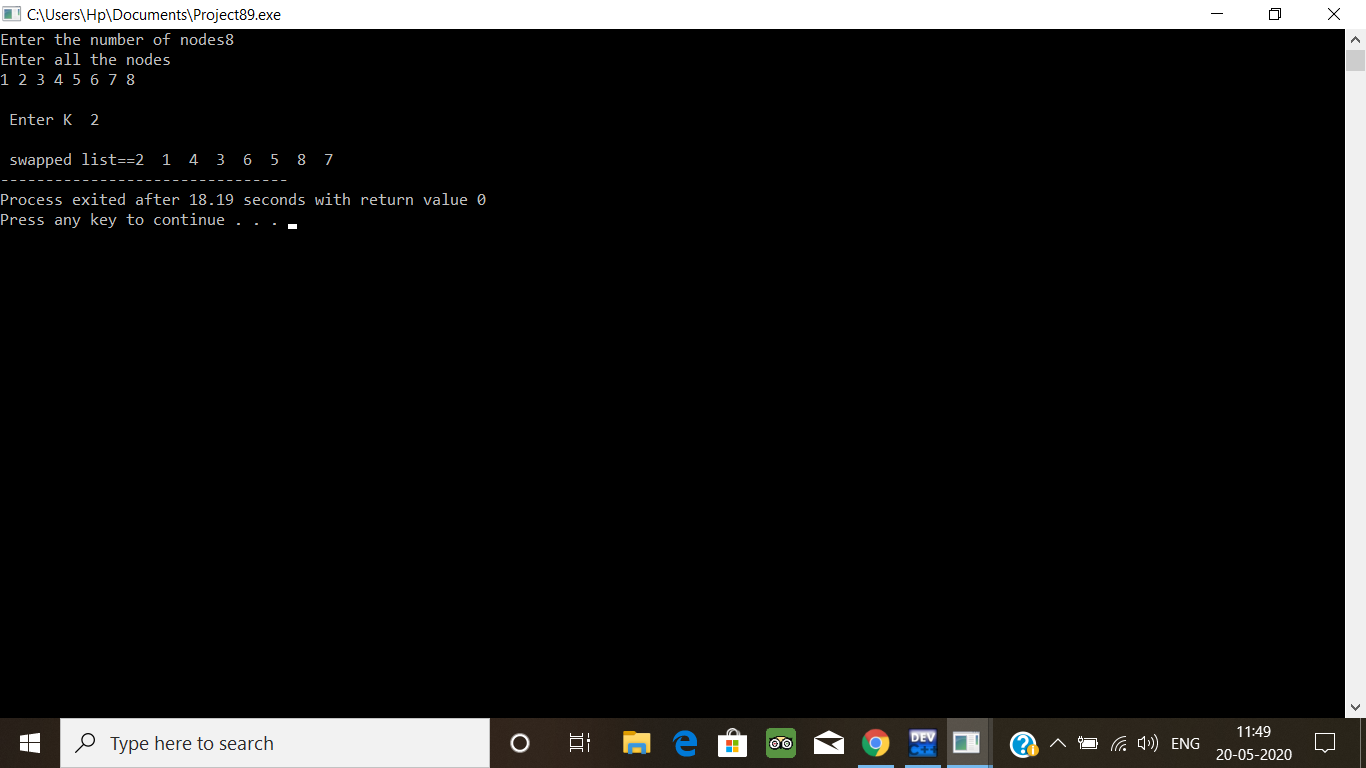
p = p->next;

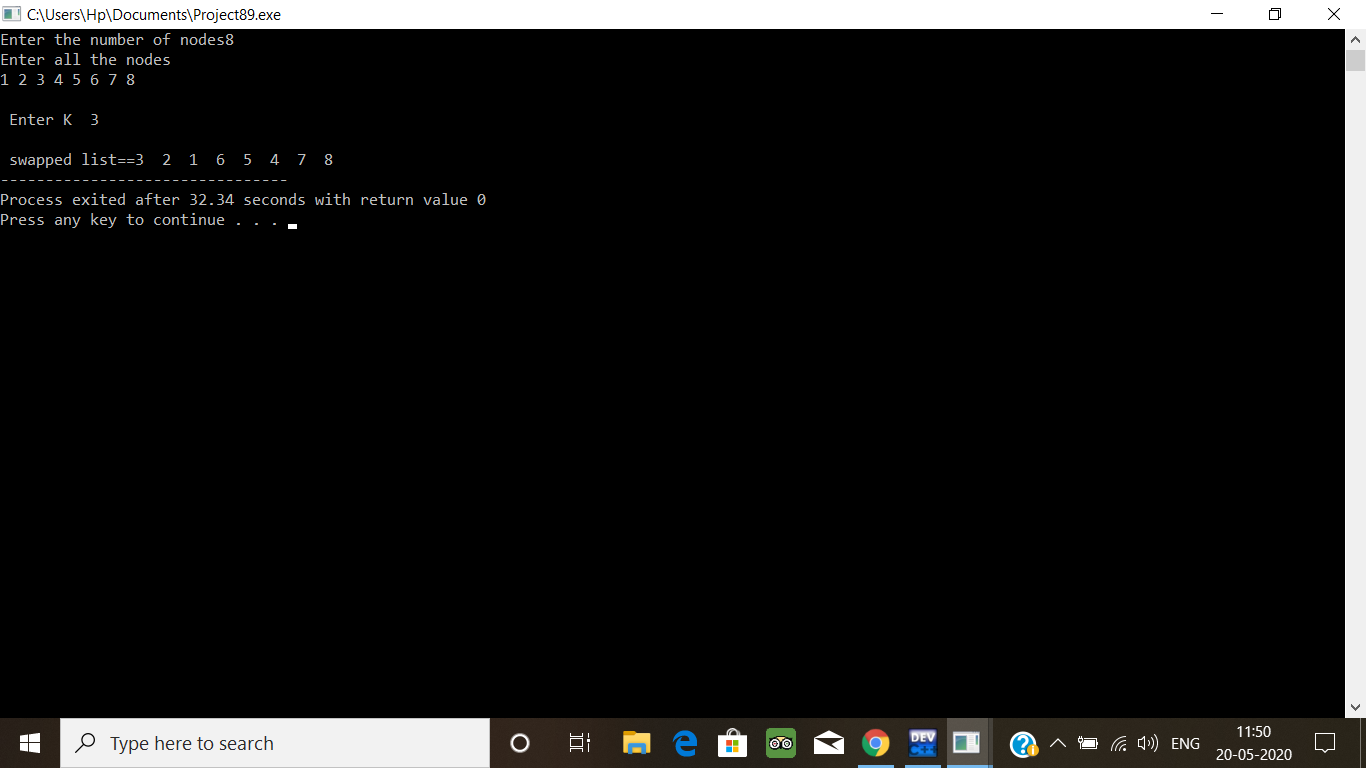
}

return 0;

}

**Output:**

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