S.No: 15	Exp. Name: ***Write the code to reverse elements of a single linked list***	Date:2023-06-14

Aim:

Write a C program to reverse elements of a single linked list.

Source Code:

reverseElements.c

```
#include<stdio.h>
#include<stdlib.h>
#include<malloc.h>
struct node
{
   int data;
   struct node * next;
}*first;
int main()
{
   int n,c;
   printf("Enter the total number of nodes: ");
   scanf("%d",&n);
   createNodes(n);
   printf("Data in the list\n");
   printlist();
   printf("Press 1 to reverse the order of singly linked list\n");
   scanf("%d",&c);
   if(c==1)
   {
      reverselist();
   }
   printf("Data in the list\n");
   printlist();
   return 0;
}
void createNodes(int n)
{
   struct node *newnode,*temp;
   int data,i;
   if(n<=0)
   {
      printf("list is empty\n");
      return;
   }
   first=(struct node *)malloc(sizeof(struct node));
   if(first==NULL)
   {
      printf("Unable to allocate memory\n");
   }
   else
   {
      printf("Enter the data of node 1: ");
      scanf("%d",&data);
      first->data=data;
      first->next=NULL;
```


ID: 22K61A05A9

```
      temp=first;
      for(i=2;i<=n;i++)
      {
      newnode=(struct node *)malloc(sizeof(struct node));
      if(newnode==NULL)
      {
         printf("Unable to allocate memory");
         break;
      }
      else
      {
         printf("Enter the data of node %d: ",i);
         scanf("%d",&data);
         newnode->data=data;
         newnode->next=NULL;
         temp->next=newnode;
         temp=temp->next;
      }
      }
  }
}
void reverselist()
{
   struct node *pre,*cur;
   if(first!=NULL)
   {
      pre=first;
      cur=first->next;
      first=first->next;
      pre->next=NULL;
      while(first!=NULL)
      {
         first=first->next;
         cur->next=pre;
         pre=cur;
         cur=first;
      }
      first=pre;
   }
}
void printlist()
{
   struct node *temp;
   if(first==NULL)
   {
      printf("List is empty\n");
   }
   else
   {
      temp=first;
      while(temp!=NULL)
      {
         printf("Data = %d\n",temp->data);
         temp=temp->next;
      }
```


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```
    }
}
```

Execution Results - All test cases have succeeded!

Test Case - 1
User Output
Enter the total number of nodes: 5
Enter the data of node 1: 26
Enter the data of node 2: 394
Enter the data of node 3: 145
Enter the data of node 4: 624
Enter the data of node 5: 731
Data in the list 1
Data = 26 1
Data = 394 1
Data = 145 1
Data = 624 1
Data = 731 1
Press 1 to reverse the order of singly linked list 1
Data in the list
Data = 731
Data = 624
Data = 145
Data = 394
Data = 26

Test Case - 2
User Output
Enter the total number of nodes: 8
Enter the data of node 1: 21
Enter the data of node 2: 94
Enter the data of node 3: 214
Enter the data of node 4: 24
Enter the data of node 5: 45
Enter the data of node 6: 694
Enter the data of node 7: 321
Enter the data of node 8: 356
Data in the list 1
Data = 21 1
Data = 94 1
Data = 214 1
Data = 24 1
Data = 45 1
Data = 694 1
Data = 321 1
Data = 356 1
Press 1 to reverse the order of singly linked list 1
Data in the list

Data = 356
Data = 321
Data = 694
Data = 45
Data = 24
Data = 214
Data = 94
Data = 21