| S.No: 15 | Exp. Name: ***Write the code to reverse elements of a single linked list*** | Date:2023-05-13 |
|---|---|---|

**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;
```


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```
      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 |