stack-using-linked-list.c

```
//write a program to implement stack using linked list.

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

typedef struct Stack{
   int data;
   struct Stack *next;
}stack;

int len(stack *st){
   int count = 0;
   while(st){
      st = st->next;
      count++;
   }
   return count;
}

int isEmpty(stack *st){
   return (st == NULL);
}

void push(stack **st, int data){
   stack *new_node = (stack*)malloc(sizeof(stack));
   new_node->data = data;
   new_node->next = *st;
   *st = new_node;
}

int pop(stack **st){
   stack *temp = *st;
   *st = (*st)->next;
   int data = temp->data;
   free(temp);
   return data;
}

void display(stack *st){
   while(st){
      printf("%d ",st->data);
      st = st->next;
   }
   printf("\n");
}

void main(){
   stack *st1 = NULL;
   if(isEmpty(st1)){
      printf("The stack is empty.\n");
   }else{
      printf("The stack is not empty.\n");
   }
   printf("the length of the stack is %d\n",len(st1));
   push(&st1,10);
```

```
    printf("the length of the stack is %d\n",len(st1));
    push(&st1,102);
    push(&st1,15);
    push(&st1,13);
    push(&st1,12);
    display(st1);
    printf("the length of the stack is %d\n",len(st1));
    pop(&st1);
    pop(&st1);
    pop(&st1);
    display(st1);
}
```

OUTPUT

```
PS S:\WorkSpace\CollegeWork\DataStructure\Temp> gcc .\stack-using-linked-list.c
PS S:\WorkSpace\CollegeWork\DataStructure\Temp> ./a
The stack is empty.
the length of the stack is 0
the length of the stack is 1
12 13 15 102 10
the length of the stack is 5
102 10
PS S:\WorkSpace\CollegeWork\DataStructure\Temp>
```