考試規定

1. 使用Dev-C++ 考試，我們會以Dev-C++ 作為批改標準。
2. 請將每題撰寫不同檔案中，並以「學號_題號.c」的方式命名。
3. 題目共有四題，得分根據隱藏測資通過比例給分。
4. 交卷時將四題一起上傳到網大的作業繳交區，無須壓縮。
5. 每題都會有一個填空用之.c檔及範例輸入檔，程式將此檔案做為輸入，並將結果輸出到標準輸出（命令視窗）。
6. 第四題必須使用指標的方式進行解題，使用陣列的方式不予計分

1. Rotate String (25%)

Given two strings **s** and **goal**, return true if and only if **s** can become **goal** after some number of shifts on **s**.
A shift on **s** consists of moving the leftmost character of s to the rightmost position.

For example, if **s** = "abcde", then it will be "bcdea" after one shift.

Example Input:
abcde
cdeab
abcde
abced

Example Output:
true
false

2. Integer to Roman (25%)

Roman numerals are represented by seven different symbols: I, V, X, L, C, D and M.

Symbol	Value
I	1
V	5
X	10
L	50
C	100
D	500
M	1000

For example, 2 is written as II in Roman numeral, just two ones added together. 12 is written as XII, which is simply X + II. The number 27 is written as XXVII, which is XX + V + II.

Roman numerals are usually written largest to smallest from left to right. However, the numeral for four is not IIII. Instead, the number four is written as IV. Because the one is before the five we subtract it making four. The same principle applies to the number nine, which is written as IX. There are six instances where subtraction is used:

I can be placed before V (5) and X (10) to make 4 and 9.
X can be placed before L (50) and C (100) to make 40 and 90.
C can be placed before D (500) and M (1000) to make 400 and 900.

Example Input:
3
58
1994

Example Output:
III
LVIII
MCMXCIV

3. Valid Palindrome (25%)

A phrase is a palindrome if, after converting all uppercase letters into lowercase letters and removing all non-alphanumeric characters, it reads the same forward and backward. Alphanumeric characters include letters and numbers.

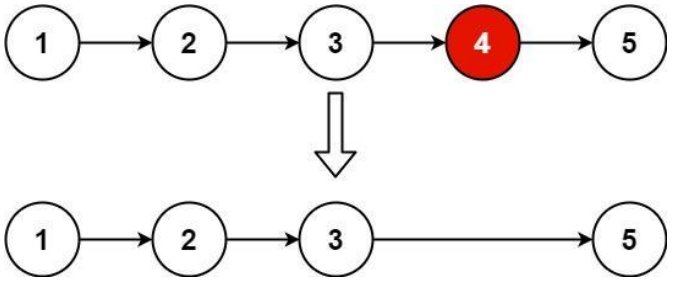
Given a string **s**, return true if it is a palindrome, or false otherwise.

Example Input:
race a car
A man, a plan, a canal: Panama
Example Output:
false
true

4. Remove Nth Node From End of List (25%)

Given the head of a linked list, remove the nth node from the end of the list and return its head.(don't use array)

Example Input:



head = [1,2,3,4,5], n = 2

head = [1], n = 1
head = [1,2], n = 1
Example Output:
[1,2,3,5]
[]
[1]