Exercise #5

- You don't need to turn in your homework, but you should practice all problems because they may appear in the next exam. 作業自己練習就好，不用繳交，之後考試可能會出現類似題目
- 想多找些題目練習程式的，可以到底下網站看看，有些考試題目會從裡面出
  If you want to find more questions to practice your program skill, you can look at the leetcode website and some exam questions will come out from leetcode.
  https://leetcode.com/problemset/all/

☐ **Problem 1**.

- Given the strings s1 and s2, not necessarily of the same length, create a new string consisting of alternating characters of s1 and s2
- that is, the first character of s1 followed by the first character of s2, followed by the second character of s1, followed by the second character of s2, and so on.
- Once the end of either string is reached, the remainder of the longer string is added to the end of the new string.
- For example, if s1 contained "abc" and s2 contained "uvwxyz", then the new string should contain "aubvcwxyz". Associate the new string with the variable s3.

☐ **Problem 2**.

- Input an IP address string, determine whether it is a valid YZU IP. A valid YZU IP address must be in the form of 140.138.xxx.xxx, where xxx is a number from 0-255. For example,
- Invalid YZU IP: 140.138.21　　192.111.54.251　　140.138.100.300
- Valid YZU IP: 140.138.41.110　140.138.100.175
- Hint: compare the first 7 characters

☐ **Problem 3.**

- Input an email address string, determine whether it is a valid YZU email. A valid YZU email address must be in the form of username@xxx.yzu.edu.tw. username and xxx are combinations of any character. For example,
- Invalid YZU email address:　s91110@yzu.edu.tw
  abc@yzu.edu.com
- Valid YZU email address: s91110@mail.yzu.edu.tw
  catdog@iii.yzu.edu.tw
- Hint: compare the last 10 characters
  - ☐ 輸入 email address 判斷是否為有效的 yzu email，後面十個

字元是否為‘yzu.edu.tw’

- **Problem 4.**
  - Input a string s, print all of the three-character permutations of s. Also print the total number of permutations.
  - Note: assume the maximum length of the string s is 10
  - Example:
    - input a string: abcde
    - abc abd abe acb acd ace adb adc ade aeb
      aec aed bac bad bae bca bcd bce bda bdc
      bde bea bec bed cab cad cae cba cbd cbe
      cda cdb cde cea ceb ced dab dac dae dba
      dbc dbe dca dcb dce dea deb dec eab eac
      ead eba ebc ebd eca ecb ecd eda edb edc
    - The total number of permutations is 60
- **Problem 5.**
  - Write a function, given a string S, return the "reversed" string where all characters that are not a letter stay in the same place, and all letters reverse their positions.
  - Note:
    - S.length <= 100
    - 33 <= S[i].ASCIIcode <= 122
    - S doesn't contain \ or “

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Example 1:
    Input: "ab-cd"
    Output: "dc-ba"
Example 2:
    Input: "a-bC-dEf-ghIj"
    Output: "j-Ih-gfE-dCba"
Example 3:
    Input: "Test1ng-Leet=code-Q!"
    Output: "Qedo1ct-eeLg=ntse-T!"
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- **Problem 6.**
  - Given a string, you need to reverse the order of characters in each word within a sentence while still preserving whitespace and initial word order.
    - Ex. Today is hot ➔ yadoT si toh
  - **Note:** In the string, each word is separated by single space and there will not be any extra space in the string.