

Exercises 4

(1) The following assignments are just for your reference.

- 1 Please outline the differences among the following definitions: empty string, space string, string variable, string constant, main string, sub-string.
- 2 Known string $s = \text{'(xyz)+*'}$, string $t = \text{'(x+z)*y'}$, please change s into t by the basic string operations.
- 3 For a given string '1234+-*/15678' , write an algorithm to remove the sub-string '+-*/' .
- 4 Write an algorithm to rearrange all the characters in a string by backward sequence, for example, how to rearrange 'ABCDEF' into 'FEDCBA' .
- 5 Assume the strings uses the sequence storage structures, please write an algorithm to realize the operations of $\text{insert}(s, s1, i)$ and $\text{delete}(s, i, j)$. If the sequence storage structures of the strings are replaced by the link store structures (each node stores a character), please write an algorithm again to repeat the operations of $\text{insert}(s, s1, i)$ and $\text{delete}(s, i, j)$.
- 6 If string x and string y adopt the sequence storage structures, please write an algorithm to compare whether the strings x and y are equal.

(2) The following assignments must be submitted by you.

- 1 写一个算法 $\text{void StrRelace(char *T, char *P, char *S)}$, 将 T 中第一次出现的与 P 相等的子串替换为 S , 串 S 和 P 的长度不一定相等, 并分析该算法的时间复杂度。
- 2 设某大学的学生学号含义如下: xx (年级) xx (系) xx (专业班) xx (学生号)。又知, 该校在使用计算机进行学籍及学习成绩管理时, 某个系某个专业的学生学籍档案全部存放在一起, 某个班的学生学习成绩也放在一起, 学籍档案文件名的第一个字符为“D”, 学习成绩文件名的第一个字符为“F”, 试用对学生学号的串运算来形成这两个文件的文件名 (也即学籍档案文件名和学习成绩文件名)。