黑客派

CTCI 系列 --1.5 字符串压缩（C 语言）

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原文链接：https://hacpai.com/article/1479177298001

来源网站：黑客派

<blockquote>
题目：Implement a method to perform basic string compression using the counts of rep
ated characters. For example,the string aabccccccaaa would become a2b1c5a3.If the "compres
ed" string would not become smaller than the original string,your method should return the o
iginal string.
</blockquote>

<blockquote>
实现一个方法，使用统计重复字符的方式完成基础字符串压缩。举个例子，字符串 aabccccccaaa
将被压缩为 a2b1c5a3。如果压缩后的字符串不比原始字符串小，你的方法需要返回原始字符串。</
></blockquote>
<h2 id="解题思路">解题思路</h2>

获取字符串字符个数，申请字符个数*2 的空间作为压缩字符串存储空间
遍历字符串，先取字符串第一个字符，往后比较是否与第一个字符一致，若一致则字符统计计数
1；若不一致则跳到下一步
将目前比较的字符以及统计计数拼接到压缩字符串中，将比较字符替换为当前位置字符，统计计
置 1，跳转到下一步；若遍历到字符串末尾则到下一步
比较压缩后字符串与原始字符串的长度，若压缩后比压缩前短，则返回压缩后的字符串；否则返
原始字符串

<h2 id="代码实现">代码实现</h2>
<pre><code class="language-c highlight-chroma">#include</s
an> <stdio.h>
#include <string
h>
#include <stdlib
h>

void test<span clas
="highlight-p">(char <span class="highlight-o
>*buf,<spa
 class="highlight-kt">char **<span class="highl
ght-n">prnt)
{
    int res_len <span
lass="highlight-o">= 0<span class="highlight-
">, ori_len =
0;
    char *<span clas
="highlight-n">res = <span class="highlight-nb
>NULL;
    int i<span class=
highlight-p">;
    char tmp_c <span

```
class="highlight-o">=</span> <span class="highlight-mi">0</span><span class="highlight
p">;</span>
    <span class="highlight-kt">int</span> <span class="highlight-n">tmp_count</span><s
an class="highlight-o">=</span><span class="highlight-mi">0</span><span class="highli
ht-p">;</span>
    <span class="highlight-kt">char</span> <span class="highlight-n">tmpbuf</span><spa
 class="highlight-p">[</span><span class="highlight-mi">10</span><span class="highligh
-p">];</span>


<span class="highlight-p">}</span>

<span class="highlight-kt">int</span> <span class="highlight-nf">main</span><span clas
="highlight-p">(</span><span class="highlight-kt">            void</span><span class="high
ight-p">)</span>
<span class="highlight-p">{</span>
<span class="highlight-kt">char</span> <span class="highlight-n">buf</span><span clas
="highlight-p">[</span><span class="highlight-mi">            100</span><span class="high
ight-p">];</span>
<span class="highlight-kt">char</span> <span class="highlight-o">*</span><span class="
ighlight-n">res</span> <span class="highlight-o">=</span> <span class="highlight-nb">
ULL</span><span class="highlight-p">            ;</span>


<span class="highlight-p">}</span>
</code></pre>

<h2 id="运行结果">运行结果</h2>
<p><img src="https://static.hacpai.com/images/img-loading.svg" alt="运行结果" data-src="h
tps://ohjmh3hga.qnssl.com/image/blog/pic_ctci1_5.jpg-origin"></p>
```