

C++ Programming

Char Arrays Practice

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Practice: Conc Strings

- Read two strings S and T. Print a new string that contains the following:
 - First letter of the string S followed by the First letter of the string T.
 - Second letter of the string S followed by the Second letter of the string T.
 - and so on...
- Don't create new strings. Don't change input content
- Input \Rightarrow Output
 - abc defghi \Rightarrow adbecfghi
 - AM CICPC \Rightarrow ACMICPC
- Stop video and code

Practice: Conc Strings

```
4 int main() {  
5     string first, second;  
6  
7     cin >> first >> second;  
8  
9     int mx_sz = first.size();  
10  
11     if (mx_sz < second.size())  
12         mx_sz = second.size();  
13  
14     for (int i = 0; i < mx_sz; ++i) {  
15         if (i < first.size())  
16             cout << first[i];  
17  
18         if (i < second.size())  
19             cout << second[i];  
20     }  
21  
22     cout << "\n";  
23     return 0;  
24 }  
25
```

Practice: Letters Frequency

- Read a string of lower/upper letters. Ignore upper letters and compute the frequency of lower letters. Print ones that exists as below.
- Input: bAAaazzz
- Output
 - a 3
 - b 1
 - z 2
- Stop the video and code it

Practice: Letters Frequency

```
4 int main() {
5     string str;
6
7     cin >> str;
8
9     int frequency[150] = {0};    // initialize to zeros
10
11     for (int i = 0; i < str.size(); ++i)
12         frequency[str[i]]++;    // Use char as frequency
13
14     for (int i = 'a'; i <= 'z'; ++i) {
15         if (frequency[i])
16             cout << (char) i << " " << frequency[i] << "\n";
17     }
18
19     return 0;
20 }
21
```

- We can use array of 26 and do operations.
- Here is easier code:
- We know both 'z' and 'Z' are small values. Array of 150 is more than we need. Use bigger array
- Iterate only 'a' to 'z'

Practice: Special String Mapping

- Read a string and do the following conversions for its letters
 - If it is an upper letter, don't change
 - If it is lower letter, use this map of 26 letters:
 - `abcdefghijklmnopqrstuvwxyz`
 - `YZIMNESTODUAPWXHQFBRJKCGVL`
 - E.g. `a` \Rightarrow `Y` and `z` \Rightarrow `L`
 - If it is digit, use this map of 10 letters:
 - `0123456789`
 - `!@#$$%^&*()`
- Input \Rightarrow Output
 - `acMNmn39` \Rightarrow `YIMNPW$)`
 - `vwXYZ0123` \Rightarrow `KCXYZ!@#$`

Practice: Special String Mapping

```
3
4 int main() {
5     string from = "abcdefghijklmnopqrstuvwxyz0123456789";
6     string to   = "YZIMNESTODUAPWXHQFBRJKCGVL!@#$%^&*()";
7
8     char letter_map[150] = {0};
9
10    for (int i = 0; i < from.size(); ++i)
11        letter_map[from[i]] = to[i];
12
13    string str;
14    cin >> str;
15
16    for (int i = 0; i < str.size(); ++i) {
17        if('A' <= str[i] && str[i] <= 'Z')
18            continue;
19
20        str[i] = letter_map[str[i]];
21    }
22    cout << str;
23
24    return 0;
25 }
26
```

“Acquire knowledge and impart it to the people.”

“Seek knowledge from the Cradle to the Grave.”