

Homework 3, week 6

Chapter 3: Control Flow

1. Write a function `escape(s,t)` that converts characters like newline and tab into visible escape sequences like `\n` and `\t` as it copies the string `t` to `s`. Use a switch. Write a function for the other direction as well, converting escape sequences into the real characters. Please report you code and your test examples to show that your code works. You can use the code we showed in the class as your reference.

```
#include <stdio.h>
main() { /*count digits, white space, and others */
    int c, i, nwhite, nother, ndigit[10];
    nwhite = nother = 0;
    for (i = 0; i < 10; i ++) {
        ndigit[i] = 0;
    }
    while (( c = getchar ()) != '\n') {
        switch(c) {
            case '0': case '1': case '2': case '3': case '4':
            case '5': case '6': case '7': case '8': case '9':
                ndigit[c-'0'] ++;
                break;
            case ' ': case '\n': case '\t':
                nwhite ++;
                break ;
            default:
                nother ++;
                break;
        }
    }
    printf("digits = ");
    for (i = 0; i < 10; i ++) {
        printf ("%d:%d,", i, ndigit[i]);
    }
    printf(" , white space   = %d, other = %d\n", nwhite, nother);
    return 0;
}
```

2. Write a function `expand(s1, s2)` that expands shorthand notations like a-z in the string `s1`

into the equivalent complete string abcdefghijklmnopqrstuvwxyz in s2. Allow for letters of either case and digits, and be prepared to handle cases like a-b-c and a-z0-9 and -a-z. A leading or trailing - is taken literally (without doing anything). Report your source code and some test examples to show the correctness of your code. You can use the following code for your reference.

```
#include <string.h>
#include <stdio.h>

/* reverse: reverse string s1 and save it in s2 */

void reverse(char s1[], char s2[]) {
    int c, i, j;
    for ( i = 0; i < strlen(s1); i++)
        s2[i] = s1[i];
    for ( i = 0, j = strlen(s2) - 1; i < j; i++, j--)
        c = s2[i], s2[i]=s2[j], s2[j]=c;
}

int main(){
    int c, i = 0;
    char s1[100], s2[100];
    printf("Please input a string: \t");
    while ( (c = getchar()) != '\n') {
        s1[i] = c;
        i++; }
    s1[i] = '\0';
    printf (" the reverse of %s", s1);
    reverse(s1, s2);
    printf(" is %s\n", s2);
}
```

Turning in your homework

Please hand in a hard copy and an electric copy of your homework report, which includes the source code, how you compile it, how you test your program and the result of the test run of you program. Please check the course website to decide how to submit your electric copy. The homework report should be handed in before the class start on April 11th, 2019.

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独立作业承诺：（请选择一个，并签名）

1. 本人，_____，保证本次作业由自己独立完成。

签名

时间 年 月 日

或者

2. 本人，_____，保证本次作为和_____同学讨论后，由自己独立完成。
讨论内容包括_____

签名 _____，

时间 年 月 日