

Homework 4, week 7

Chapter 4 Functions and program structure

1. Extend the following `atof` function to handle scientific notation of the form

123.45e-6

where a floating-point number may be represented by a number followed by `e` or `E` and an optional signed exponent.

```
#include <ctype.h>
/* atof: convert string s to double */
double atof_(char s[])
{
    double val, power; int i, k, sign;
    for (i = 0; isspace(s[i]); i++) /* skip white spaces */
        ;
    sign = (s[i] == '-') ? -1: 1;
    if (s[i] == '+' || s[i] == '-') i++;
    for (val = 0.0; isdigit(s[i]); i++)
        val = 10.0 * val + (s[i] - '0');
    if (s[i] == '.')
        i++;
    for (power = 1.0; isdigit(s[i]); i++) {
        val = 10.0 * val + (s[i] - '0');
        power *= 10.0;
    }
    return sign * val/power;
}

int main()
{
    char s[]="1.2e-4";
    char t[]="7.6e+5";
    printf("Input:%s\tOutput:%g\n",s,atof_(s));
    printf("Input:%s\tOutput:%g\n",t,atof_(t));
    return 0;
}
```

2. Write a recursive version of the function `reverse(s)`, which reverses the string `s` in place. You can add some arguments for your function if necessary.

```
#include <stdio.h>
#include <string.h>
char *reverse_(char s[])
{
    //add your code;
}

int main(){
    char s[]="this is an example";
    printf("Input:%s\n",s);
    printf("Reverse:%s\n",reverse_(s));
    return 0;
}
```

For all problems, please report your source code together with a couple of examples showing how you have tested the accuracy of your programs.

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 18th, 2019.

-----cut-----here-----

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