

Homework#3 (Due : May 31th)

- Deadline : May 31th, 11:59pm
- Where to submit : eClass 과제방 (<http://eclass.cau.ac.kr>)
- How to submit :
 - Create a folder. The name of the folder should be “studentID#.hw3”.
(ex) 20111499.hw3
 - We have four problems in hw3. Make four C source files. The name of the source files should be the format “studentID#.hw3.#.c”
 - ex) 20111499.hw4.1.c , 20111499.hw4.2.c , 20111499.hw4.3.c
20111499.hw4.4.c
 - In each source file .c, your code must have comments that include your name and student_id#
 - put the four source files into the folder we created.
 - Compress the folder into a zip file using WinZip (Don't use ALzip). The name of the zip file should be “student#.hw3.zip”. (ex) 20111499.hw3.zip
 - Upload the zip file into eClass website.
 - If you don't follow above instructions, you may get penalty in your score.
 - You must do programming yourself.

Prob1. [Parlindrome] A parlindrome is a word or a sequence of words that has the property of reading the same in either direction. Examples of the parlindrome are "level", "radar", "hannah", and etc. Write a program that checks whether a given string is parlindrome or not. The program should get a string from a keyboard, then print whether the input string is parlindrome or not. If it is a parlindrome, print "parlindrome". If not, print "NOT parlindrome".

(example)

> prob1.exe

level

parlindrome

> prob1.exe

alice

NOT parlindrome

Prob2. [KIN] Korean Gymnastic Association is trying to modify the scoring system in order to improve its fairness. In the previous system, each of 5 judges gives a score from 1 to 10. The sum of the scores except the maximum and the minimum score becomes the final total score.

To improve the previous system, we first remove the maximum and minimum scores out of the 5 scores. Then, if the difference between the maximum and the minimum scores out of the remaining 3 scores is 4 or more, the scores need to be re-evaluated.

Write a program that takes 5 scores as an input and print the total score. If the score needs to be re-evaluated, print KIN (Keep In Negotiation).

```
Input Example :  
10 8 5 7 9  
  
Output Example:  
24
```

```
Input Example :  
10 3 5 9 10  
  
Output Example:  
KIN
```

Prob3.[Standard Deviation] Write a program that gets an arbitrary number of positive float values until -1 is received from a keyboard (standard input) and print the mean and the standard deviation of the positive float values. Please use following formula for computing the standard deviation :

$$\text{standard deviation } s_N = \sqrt{\frac{1}{N} \sum_{i=1}^N (x_i - \bar{x})^2} , \bar{x} : \text{mean}$$

```
#include <stdio.h>

int main()
{
    float float_val;
    // declare variables here

    while (1) {
        scanf("%f",&float_val);

        // put your code here

    }

    // put your code here

    return 0;
}
```

Output :

```
> a.exe
1.5
2.3
4.7
-1
mean = 2.833333 , standard dev = 1.359738
```

Prob4.[Random Number] Write a program that simulates the rolling of two dice. The program should use `rand()` to roll the first die, and should use `rand()` again to roll the second die. The sum of the two values should then be calculated. [Note: Since each die can show an integer value from 1 to 6, then the sum of the two values will vary from 2 to 12, with 7 being the most frequent sum and 2 and 12 the least frequent sums.] Your program should roll the two dice 36,000 times and print the number of cases among 36,000 and probability for each sum value. The result of your program should look similar to the following output example (exact number may be different).

Output Example

```
2 : 1026 (0.028500)
3 : 2023 (0.056194)
4 : 2988 (0.083000)
5 : 4086 (0.113500)
6 : 5018 (0.139389)
7 : 5978 (0.166056)
8 : 4928 (0.136889)
9 : 3992 (0.110889)
10 : 3096 (0.086000)
11 : 1907 (0.052972)
12 : 958 (0.026611)
```