

# Programming Assignment Tutorial

[CSED331] Algorithm course

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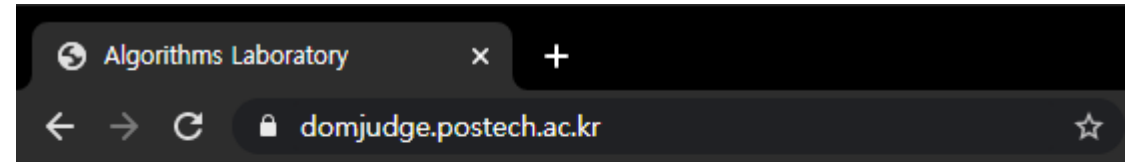
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# Programming Assignment

- You will take 7-8 programming assignments.
- Problems are originated on the lectures.
- Language: any of C/C++/python, no others.
- You will have 1 or 2 week(s) per assignment.
- We also have programming mid-term and final exam.
  - You can use all the materials on domjudge site at exam.

# Introduction of Domjudge

- Domjudge system
  - <https://domjudge.postech.ac.kr/>
  - Submit your code at here.
  - Real-time evaluation.
- Click "Domjudge"



## Sitemap

[Domjudge](#)

[Intro](#)

[Contest Instruction](#)

### Languages Installation

- [python 2.7.13](#)
- [python 3.6.1](#)

### Languages Documents

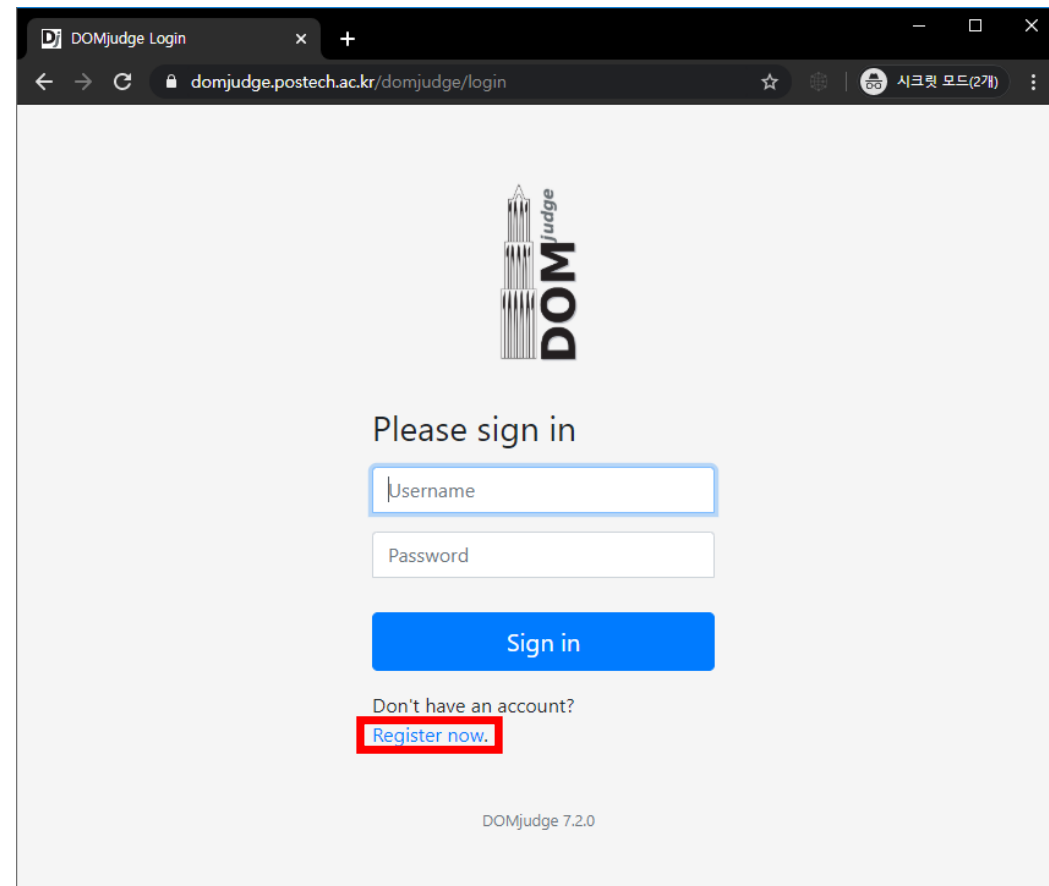
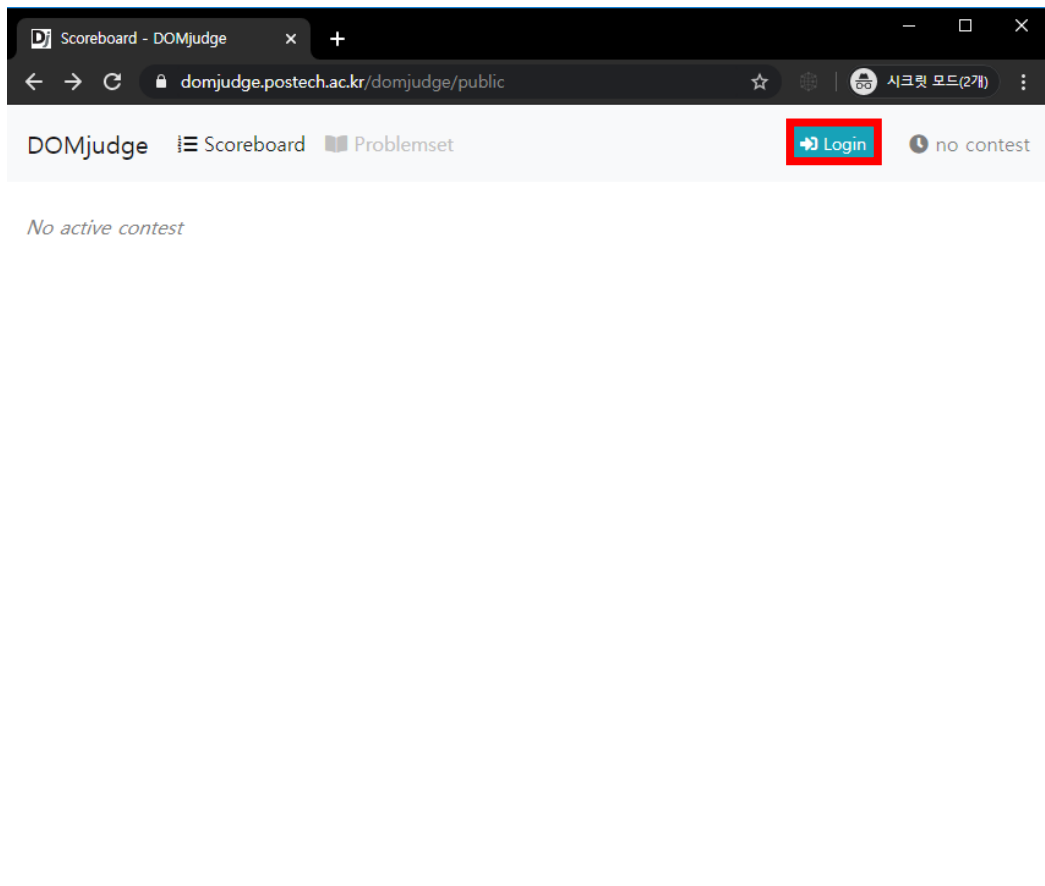
- [STL doc](#)
- [python 2.7.13](#)
- [python 3.6.1](#)

### Editors

- [Sublime text 3](#)
- [Notepad++ 7.3.3](#)
- [PyCharm CE 2019.1.3](#)

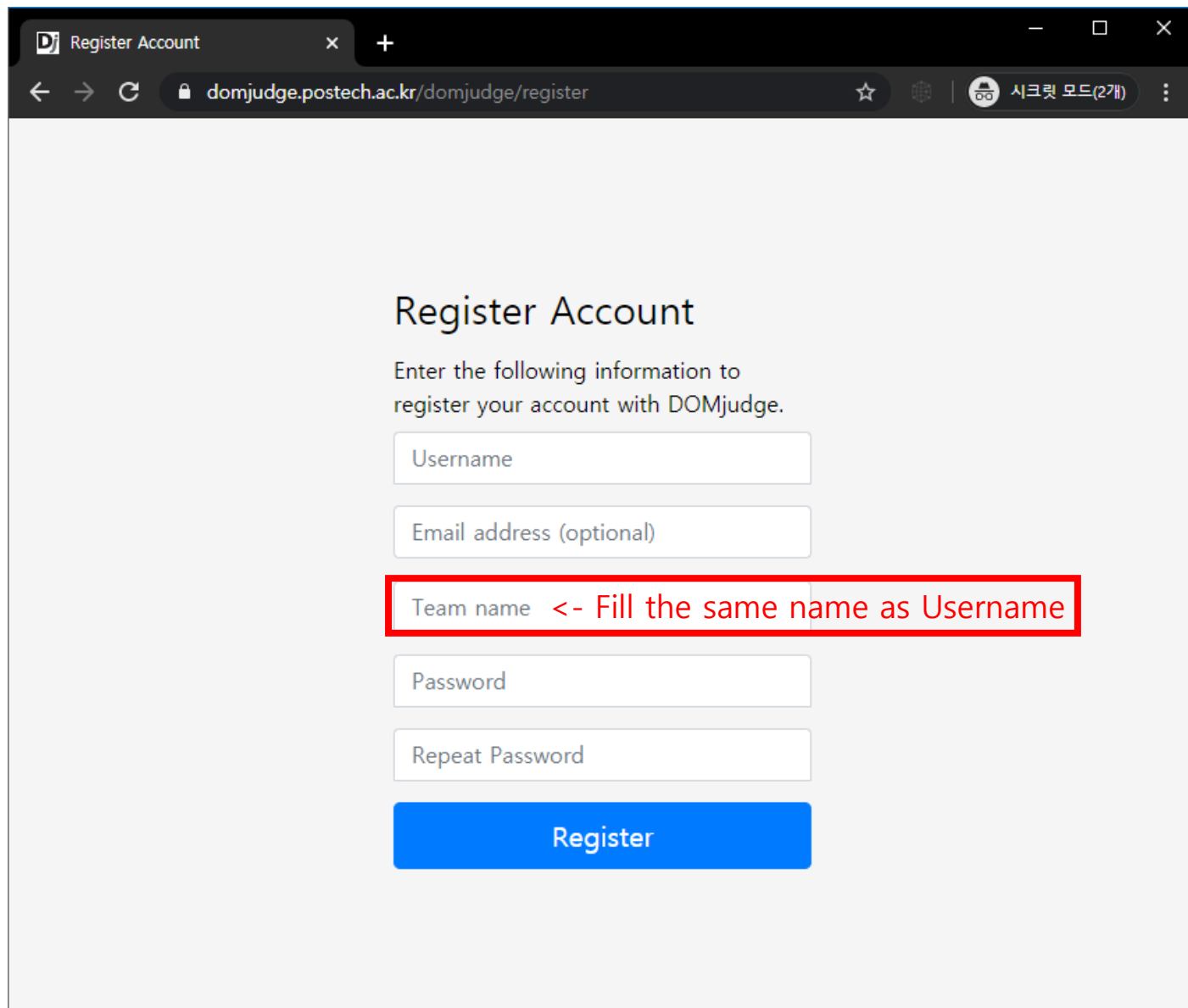
# Registration

- Click "Login" and "Register now"



# Registration

- Make your Own ID
- After making your ID, please let us know which ID is yours by answering Google sheet below.
- <https://goo.gl/forms/Ty4vm2QoLop34NU12>



The screenshot shows a web browser window with the title "Register Account" and the URL "domjudge.postech.ac.kr/domjudge/register". The page content includes the heading "Register Account" and the instruction "Enter the following information to register your account with DOMjudge." Below this are five input fields: "Username", "Email address (optional)", "Team name", "Password", and "Repeat Password". A red rectangular box highlights the "Team name" field, with the text "<- Fill the same name as Username" written in red next to it. At the bottom of the form is a blue "Register" button.

Register Account

Enter the following information to register your account with DOMjudge.

Username

Email address (optional)

Team name <- Fill the same name as Username

Password

Repeat Password

Register

# Domjudge Home

- After logging in

① Links to main page

② Select assignments you will solve. Now you will face first contest "assn1".

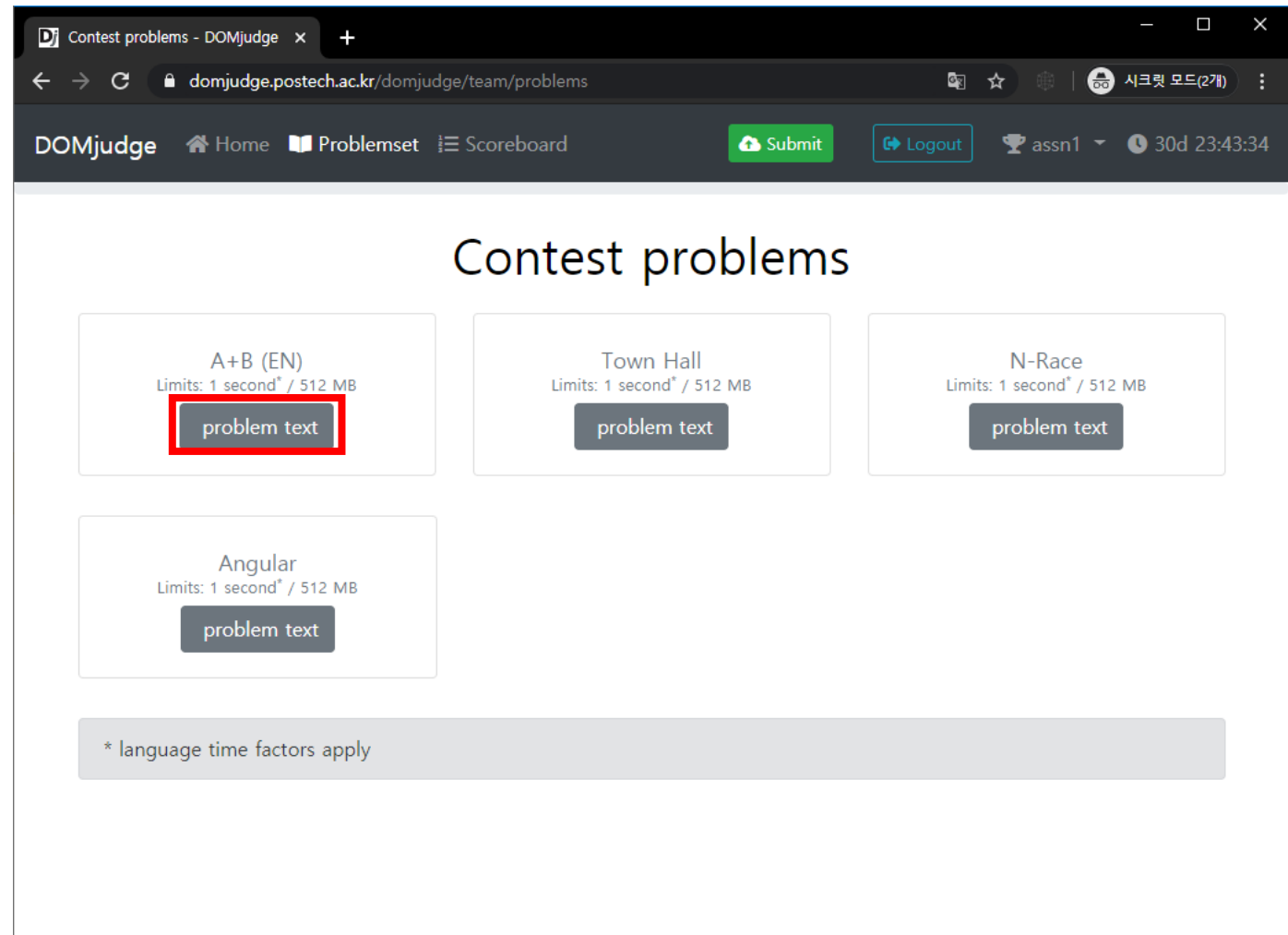
The screenshot shows the Domjudge website interface. The browser address bar displays "domjudge.postech.ac.kr/domjudge/team". The navigation bar includes "DOMjudge", "Home", "Problemset", and "Scoreboard". There are buttons for "Submit", "Logout", and a dropdown menu for "assn1". A table shows the team's performance:

RANK	TEAM	SCORE	1. A+B	2. TOWNHALL	3. N-RACE	4. ANGULAR
1	juny	0	0			

Below the table, there are sections for "Submissions" (No submissions), "Clarifications" (No clarifications), and "Clarification Requests" (No clarification request). A "request clarification" button is visible.

# Problem Text

- "Problemset" button will lead you to this page.
- You can access each problem text here.



The screenshot shows a web browser window with the URL `domjudge.postech.ac.kr/domjudge/team/problems`. The page title is "Contest problems". The navigation bar includes "DOMjudge", "Home", "Problemset", and "Scoreboard". There are buttons for "Submit" and "Logout". The user is logged in as "시크릿 모드(2개)" and the session duration is "30d 23:43:34".

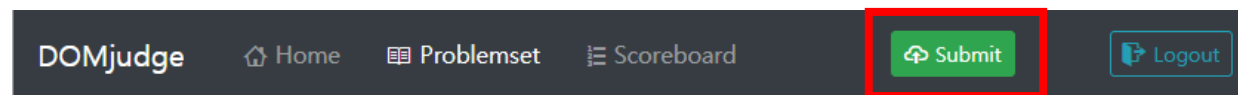
The main content area is titled "Contest problems" and displays four problem cards:

- A+B (EN)**: Limits: 1 second\* / 512 MB. A button labeled "problem text" is highlighted with a red box.
- Town Hall**: Limits: 1 second\* / 512 MB. A button labeled "problem text".
- N-Race**: Limits: 1 second\* / 512 MB. A button labeled "problem text".
- Angular**: Limits: 1 second\* / 512 MB. A button labeled "problem text".

A footer note states: "\* language time factors apply".

# How to Submit Your Program

- Submit button will show you the submission form.
  - ① Select source file
  - ② Select problem
  - ③ Select language (important!)



## Submit

Source files:

① 파일 선택 선택된 파일 없음

Problem:

② Select a problem

Language:

③ Select a language

Submit



# Submission Results

- You can check your submission results from home

The screenshot shows the DOMjudge interface. At the top, there is a navigation bar with 'DOMjudge', 'Home', 'Problemset', 'Scoreboard', 'Submit', and 'Logout'. Below the navigation bar, there is a scoreboard table with columns for RANK, TEAM, SCORE, and two columns for problem counts. The team 'sloth' is highlighted in green, with a score of 1467, 12 tries, and 1 try. Below the scoreboard, there is a 'Submissions' table with columns for time, problem, lang, and result. The table is highlighted with a red border. To the right of the submissions table, there are buttons for 'Clarification' and 'request clarification', and text indicating 'No clarifications.' and 'No clarification requests.'

RANK	TEAM	SCORE	1	2
1	sloth	1 1467	1467 12 tries	1 try

Submissions			
time	problem	lang	result
15:06	1	py3	TIMELIMIT
15:04	1	py3	CORRECT
15:04	1	py3	RUN-ERROR
15:03	1	py3	RUN-ERROR
15:02	2	py3	RUN-ERROR
15:00	1	py3	RUN-ERROR
14:59	1	CPP	WRONG-ANSWER
14:58	1	CPP	COMPILER-ERROR
14:57	1	CPP	WRONG-ANSWER

# Submission Results

- There will be these results:
  - PENDING: The system is evaluating your program. Wait and press F5 to check your result. If it takes too long, ask us.
  - COMPILER-ERROR: There was an error during compilation of your code. You can see the error message.
  - RUN-ERROR: There was an error during running your program. You should check whether there was index out of range, stack overflow, wrong input format, etc.
  - NO-OUTPUT: There was no output from your program.
  - WRONG-ANSWER: Output of your program doesn't match with the answer.
  - TIMELIMIT: Your program failed to be terminated in timelimit. Write more efficient program.
  - TOO-LATE: Your submission was posted after the end of deadline.
  - CORRECT: Correct answer!

# Read Problem Carefully!

- Otherwise, you can solve WRONG problem.
- Or, you solve the problem in wrong way.
  - Problem statement guides time complexity you should achieve.
- Also, you should keep the input/output statement.

# Time Complexity in Problem Solving

- The maximum size of input gives you the hint of optimal time complexity.
- Table shows the scale of computation corresponding to time complexity and size of input.

	$O(n^3)$	$O(n^2)$	$O(n \lg n)$ (approx.)
100	1,000,000x	10,000x	1,650x
1000	100,000,000x	1,000,000x	16,500x
10000	1e+12x	100,000,000x	165,000x
100000	1e+15x	10,000,000,000x	1,650,000x

3GHz = 3,000,000,000 instructions / second

In 1 second?

Loose

Very tight

Impossible

# Notice about Plagiarism

## - Copy Checking

- DO NOT COPY code from your friend, senior or internet!
- We will use automatic copy checker program to detect plagiarism. We can ask you some explanation if your implementation has high similarity with any other implementation.
- Note that cheating is great violation according to POSTECH regulation!
- WE DON'T CARE WHO IS SOURCE AND WHO IS RECEIVER.
- We are the master copy checker :P

# Let's Practice!

- Click problem 1 in "assn1" contest.
- It defines the goal of program, input/output style and time limit.
- You should satisfy all described statements.
- Luckily, we provide you a solution for this tutorial problem.

## A+B

### Description

Write a program that takes two integers  $A$  and  $B$  from the standard input (stdin) and print an integer  $A + B$  to the standard output (stdout).

### Input Statement

- First line contains  $T$  which indicates the number of test cases.
- Each following  $T$  lines contains a test case consisting of two integers  $A$  and  $B$  ( $-2^{31} \leq A, B < 2^{31}$ ).

### Output Statement

The program should print  $A + B$  for each input. Each output should be separated by empty line.

### Input Example

```
4
1 2
3 4
5 6
7 8
```

### Output Example

```
3
7
11
15
```

**Time Limit: 1 second**

# Let's Practice!

- Copy the solution and paste it to your local file and save
- Then, submit the file to Domjudge system!
- *(Note that we used "long long" type in C/C++ for this problem. Do not make a mistake using small data type that doesn't cover the given input range)*

## Solution

c

```
#include <stdio.h>

int main(){
    int t;
    long long a, b;
    int i;
    scanf("%d", &t);
    for (i = 0; i < t; i++) {
        scanf("%lld%lld", &a, &b);
        printf("%lld\n", a+b);
    }
}
```

C++

```
#include <iostream>

int main(){
    int t;
    cin >> t;
    for (int i = 0; i < t; i++) {
        long long a, b;
        cin >> a >> b;
        cout << a + b << endl;
    }
}
```

- Recommend to use scanf rather than cin/cout. (Performance issue)



# Clarification

- You will encounter numerous problems during the assignment.
- You can leave question to TAs at the system.
- You can ask any topic related to the programming assignments.
- But, do not ask us about any specific test case!



# Clarification

- How?

RANK	TEAM	SCORE	1 	2 
1	DOMjudge	2 323	117 4 tries	126 2 tries

<b>result</b>	<i>No clarifications.</i>
CORRECT	
WRONG-ANSWER	<i>No clarification requests.</i>
CORRECT	<b>request clarification</b>

## Send Clarification Request

Send to:

Jury

Subject:

General issue

Message:

Send