

OJ簡介 & IO語法

今天比較多碎碎念+理論的部分，應該只有今天而已

如何問問題

上一節的通靈課相信大家已經了解通靈的痛苦了



如果要問一個問題，有些步驟讓你比較好收到回覆
[參考網頁](#)

1. 使用一個好的平台 (如discord)

```
#include <bits/stdc++.h>
#include <ext/pb_ds/assoc_container.hpp>
#include <ext/pb_ds/tree_policy.hpp>
#pragma GCC optimize("O3,unroll-loops")
#pragma GCC target("avx2,bmi,bmi2,lzcnt,popcnt")
#pragma comment(linker, "/STACK:1024000000,1024000000")
#define fastio ios::sync_with_stdio(0), cin.tie(0), cout.tie(0)
#define int long long
#if !LOCAL
#define endl "\n"
#endif
const int MAX_SIZE = 1e5+5;
const int INF = 1e18;
const int MOD = 1e9+7;
using namespace std;
using namespace __gnu_pbds;
typedef tree<int,null_type,less<int>,rb_tree_tag,tree_order_statistics_node_update> order_set;

// declare
int n, tmp;

void solve(){

}

signed main(void){
    fastio;

    int t=1;
    cin >> t;
    while (t--){
        solve();
    }
    return 0;
}
```

下午 9:14



```
#include <bits/stdc++.h>
#include <ext/pb_ds/assoc_container.hpp>
#include <ext/pb_ds/tree_policy.hpp>
#pragma GCC optimize("O3,unroll-loops")
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// declare
int n, tmp;

void solve(){

}

signed main(void){
    fastio;

    int t=1;
    cin >> t;
    while (t--){
        solve();
    }
    return 0;
}
```



你也可以其他的平台來放code，不過最好有顏色

2. 說明你的需求

窩不會這題



我期待他會輸出三行
不過他們都擠在同一行
窩該怎麼改



3. 給你問題的網址

我這題WA了，有提示嗎？



[網址]
我這題WA了，有提示嗎？



OJ

OJ(Online Judge) aka線上評測平台
主要的功能在於檢查使用者的程式是否正確

常用OJ

- **Codeforces**: 有常規線上賽以及優質題目，社內習題都是用這個平台
- **ZeroJudge**: 中文的OJ，有很多基礎題目
- **CSES**: 很多酷酷的模板題

Codeforces 介紹



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群組
(我們的習題會在這邊)

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ICPC 2022 Online Challenge powered by HUAWEI

By ICPCNews, 4 weeks ago, 

Hello, Codeforces!

We are happy to invite you to an exciting online event: **ICPC 2022 Online Challenge powered by HUAWEI**, which will start on **September 15, 2022, 00:00 UTC (UTC+0)**.

In this Challenge, you will have a unique chance:

- to compete for **2 weeks online** during the challenge
- to solve **1 or 2 problems** prepared by different business domains of HUAWEI
- to win amazing prizes from HUAWEI!

As a special prize, HUAWEI together with ICPC Foundation will provide the travel trip to the 46th Annual ICPC World Finals in a guest role to the 2 winners (1 winner for each problem)!

Everyone is welcome to participate. It is an individual competition. ICPC 2022 Online Challenge powered by HUAWEI (open to the public): September 15 — September 30, 2022, 00:00 UTC (UTC+0)

This time HUAWEI has prepared 2 challenging tasks for you from different business domains – **Data Communication** and **Cloud**.

You are free to choose which problem you would like to solve, and you are also welcome to solve both problems, but please remember the total runtime of both rounds, which start simultaneously, is 15 days only. We hope you'll enjoy this complex yet very exciting Challenge!

Each problem will have its own scoreboard and its own prize fund, so this is a unique chance for you to win double prizes for two solved problems!

Problem No 1: Optimal graph partitioning for fast routing

ICPC Challenge

Powered by



→ Pay attention

Before contest
[Codeforces Round #821 \(Div. 2\)](#)
2 days

→ **temmieowo**

Rating: **1428**
Contribution: 0



temmieowo

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→ **Top rated**

#	User	Rating
1	tourist	3851
2	jiangly	3634
3	Um_nik	3539
4	slime	3498
5	ksun48	3493
6	djq_cpp	3486
7	maroonrk	3471
8	Radewoosh	3442
9	Petr	3426
10	xtqqwq	3382

註冊帳號



0. 點擊Register

Fill in the form to register in Codeforces.
You can skip this step and login with your [Gmail](#).

1. 填資料

你的ID名稱

gmail

密碼

確認密碼

Register in Codeforces

Handle

This means your username (nickname) on Codeforces. Be careful you will be able to change it only once in the first 7 days after registration.

Email

Password

Password should contain at least five characters

Confirm Password

Register

If you have already registered before, but have not received a confirmation email, please click [the link](#).


[Use Gmail](#)

2. 到gmail收驗證信

[Codeforces](#) (c) Copyright 2010-2022 Mike Mirzayanov
The only programming contests Web 2.0 platform
Server time: Sep/18/2022 10:48:00^{UTC+8} (k2).
Desktop version, switch to [mobile version](#).
[Privacy Policy](#)

進入群組

0. 把codeforces ID填在表單之內, 或是私訊幹部



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temmie-test's groups

Group name	Role	Invitation	Member since	Invited on	
資研社習題	Participant	Accept Reject	Not confirmed	Sep/17/2022 01:17UTC+8	☆

[All groups](#)


→ Pay attention

Before contest
Codeforces Round #821 (Div. 2)
3 days

→ temmie-test

★ Contribution: 0

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temmie-test

→ Top rated

#	User	Rating
1	tourist	3851
2	jiangly	3634
3	Um_nik	3539
4	slime	3498
5	ksun48	3493
6	djq_cpp	3486
7	maroonrk	3471
8	Radewoosh	3442
9	Petr	3426

<https://codeforces.com/contests/1733>

1. 點擊通知

You have [invitation to group](#)

2. 點擊加入

評測

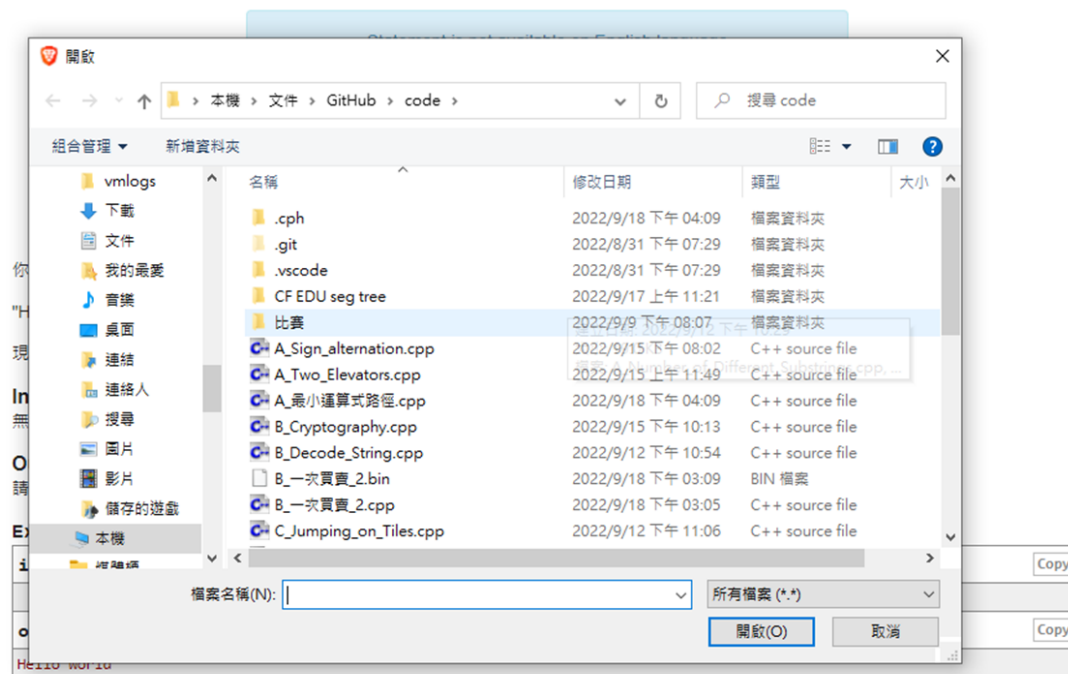
一個OJ最重要的功能



temmie-test | Logout

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PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS STANDINGS CUSTOM INVOCATION



Last submissions		
Submission	Time	Verdict
172377943	Sep/16/2022 20:20	Accepted

0. 選擇語言
1. 選擇檔案
2. 送出

以下是常見的判定結果

AC (Accepted)：程式通過，超電

WA (Wrong answer)：程式不通過

TLE (Time limit exceeded)：程式超時，通常是演算法寫爛或是卡到常數

RE (Runtime error)：運行時錯誤，通常是陣列開太小，用到不該用的地方

CE (Compilation error)：編譯錯誤，通常是選錯語言

why codeforces?

1. 穩定
2. 方便統計解題人數和解法
3. 方便出題

不使用codeforces的案例

一個平台決定學習的效率
以下是我遇過的糟糕案例

會出錯題目的校內賽

【輸入範例】

1234567892

39

0

【輸出範例】

2

3

輸入

25531969

輸出

4




得使用糟糕的語法才能送出的OJ

4-3 浮點數 (20.00) web.cpp 提交答案

≡ 題目 ▶ 執行 判分 C++ tomorrow_night_bright


```
1 #include <bits/stdc++.h>
2 #define fastio ios::sync_with_stdio(0), cin.tie(0), cout.tie(0)
3 #define int long long
4 const int MAX_SIZE = 1e5+5;
5 const int INF = 1e18;
6 const int MOD = 1e9+7;
7 using namespace std;
8
9 // declare
10 double n;
11
12 signed main(void){
13     fastio;
14
15     cin >> n;
16     cout << setprecision(6) << fixed << n << "\n";
17
18     return 0;
19 }
20
```

1



Float

1



double

好了 我們現在知道有一個好的OJ有多重要了
趕快去註冊帳戶吧 (`ω´) ✧

以下是已經註冊的社員

CONTESTS MEMBERS STATUS ADM.

Group members					
Member	Membership type	Confirmation	Member since	Invited on	Invited by
alisa06360	Participant	Not confirmed	Not confirmed	Sep/16/2022 20:56UTC+8	temmieowo
lloveAyaka	Participant	Not confirmed	Not confirmed	Sep/17/2022 19:54UTC+8	temmieowo
mctea01	Participant	Accepted	Sep/17/2022 14:07UTC+8	Sep/16/2022 20:56UTC+8	temmieowo
molagon94	Participant	Not confirmed	Not confirmed	Sep/16/2022 20:43UTC+8	temmieowo
poa8170	Participant	Not confirmed	Not confirmed	Sep/16/2022 20:56UTC+8	temmieowo
Starlight4415	Participant	Not confirmed	Not confirmed	Sep/19/2022 17:49UTC+8	temmieowo
steven03157	Participant	Accepted	Sep/16/2022 23:59UTC+8	Sep/16/2022 23:58UTC+8	temmieowo
temmie-test	Participant	Accepted	Sep/17/2022 01:20UTC+8	Sep/17/2022 01:17UTC+8	temmieowo
temmieowo	Creator	Accepted	Sep/15/2022 11:19UTC+8	Sep/15/2022 11:19UTC+8	temmieowo
Tonyliao	Participant	Not confirmed	Not confirmed	Sep/18/2022 20:39UTC+8	temmieowo
winerbee	Participant	Not confirmed	Not confirmed	Sep/16/2022 20:56UTC+8	temmieowo
Xigua_duck	Participant	Not confirmed	Not confirmed	Sep/16/2022 20:56UTC+8	temmieowo

休息時間 (5~8min)

請大家先去Codeforces註冊帳戶
並把ID傳給幹部 or 更新調查表單

程式設計

為何要學程式設計？

~~因為教學不知道要教甚麼~~
因為程式設計是資訊領域的基礎

學了程式設計後你會：

學了程式以後會變成如何

- (0) 編號從0開始而不是從1開始
- (1) 知道為何萬聖節=聖誕節 (Oct 31=Dec 25)
- (2) 認為警告 (warning) 是可以忽略的
- (3) 樹葉在下，樹根在上
- (4) $3/2=1$
- (5) 誤認一公斤是1024公克 ($1\text{Kg}=1024\text{g}$)
- (6) 學了一堆語言但是不大會說話
- (7) 學語言第一句是Hello world
- (8) 句子結尾是分號而不是句號
- (9) 認為 $a = a + 1$ 和 $2!=1$ 都是對的
- (10) 會從 1, 2, 4, 8, 16, ... 一直背到1024
- 以上純屬玩笑

資訊社目前以C++為教學語言

why C++?

8:30PM

Google

How to learn C++



8:45PM

Google

How to learn python



~~因為教學想要操死學弟~~

因為其他語言也會有跟C++相似的特性

python的過於方便會讓學習其他語言變得很困難 ;-;

再來是最為人詬病的是python很慢，一樣的簡單題目python約慢3~5倍

Lang	Verdict	Time	Memory
Python 3	Accepted	46 ms	0 KB
GNU C++20 (64)	Accepted	15 ms	0 KB

最後就是C++有相對多的資源可以使用，在學習上
比較不容易卡關

休息時間 (2~3min)

有問題可以舉手提問，或是在discord #ticket詢問

編輯器

認識完程式設計後我們就需要有個平台來寫程式
我們在社課中通常會使用的codeblock

codeblock 教學

休息時間 (8~10min)

有問題可以舉手提問，或是在discord #ticket詢問

語法 - 基本架構×輸出

基本架構

題目

```
#include <iostream>
using namespace std;

int main(){
    cout << "Hello World";
    return 0;
}
```

輸出結果

```
1 #include <iostream>
2 using namespace std;
3
4 int main(){
5     cout << "Hello World";
6     return 0;
7 }
```

文章目錄 本站概要

1. Hello World!
2. 標頭檔
3. 命名空間
4. main 函式
5. cout
6. 組合
7. 變量
8. 練習題
9. AC code

終端機 偵錯主控台 問題

```
PS C:\Users\Temmie\Documents\GitHub\code>
PS C:\Users\Temmie\Documents\GitHub\code>
Hello World
PS C:\Users\Temmie\Documents\GitHub\code>
```

學完後，就可以說：我會C++喔

```
1 #include<iostream>
2 using namespace std;
3
4 int main(){
5     cout<<"Hello World!\n";
6 }
```

程式應該會輸出：

```
g++ -O2 -o main main.cpp
./main.exe
```

下面，我們就一個一個來看，每一行在做

接下來我們一行一行分析這份code在做什麼

標頭檔

```
#include <iostream>
```

#include 代表要使用 iostream 這個檔案

命名空間

```
using namespace std;
```

這行代表要使用std這個命名空間

不過為何需要命名空間呢？

簡單來說就是會有**撞名**的可能性

main函數

```
int main() {  
  
}
```

main函數代表著一個程式的起點，一個程式就從這裡的大括號開始的

cout

```
cout << "Hello World";
```

使用cout後面加上<<就可以輸出東西。

以Hello World來說 必須要用雙引號包起來，因為它是字串(這個以後再補充)。

好耶好耶好耶
你會寫第一個程式了，趕快實做看看

跳脫字元

聰明的你或許已經在看題單裡的第二題了
並且把"Hello World"貼上
接著吃了以下的錯誤

The image shows a code editor window with a C++ program. The code is as follows:

```
1 #include <bits/stdc++.h>
2 using namespace std;
3
4 int main(){
5
6     cout << ""Hello World"";
7
8     return 0;
9 }
10
```

The editor has a line number column on the left, a green vertical line at line 6, and a red square on line 6. Below the code editor is a 'Logs & others' panel with several tabs: 'Code::Blocks', 'Search results', 'Cccc', 'Build log', 'Build messages', and 'CppCheck/Vera++'. The 'Build log' tab is active, showing the following message:

File	Line	Message
C:\Users\Temn...		=== Build file: "no target" in "no project" (compiler: unknown) ===
C:\Users\Temn...		In function 'int main()':
C:\Users\Temn...	6	error: unable to find string literal operator 'operator""Hello' with 'const char [1]',...
		=== Build failed: 1 error(s), 0 warning(s) (0 minute(s), 1 second(s)) ===

這個問題的原因很簡單
畢竟雙引號的中間都會是文字，但是現在程式誤以
為文字是在左右兩側

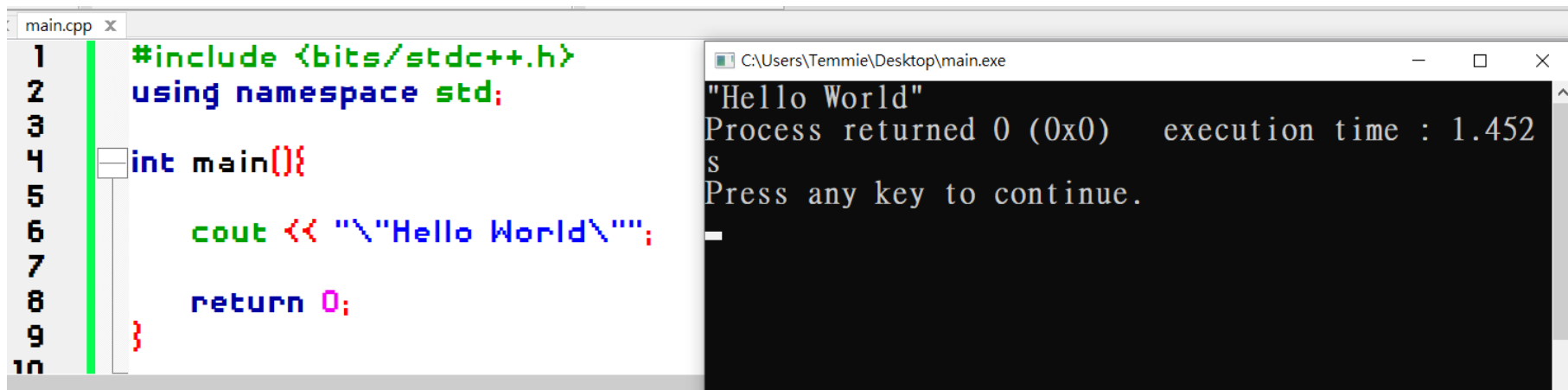
喔？那這輩子都不可能用C++打出
"Hello World"囉？

其實透過**跳脫字元**就可以了

簡單來說就是透過加上一個\
(右enter上方)來告訴程
式

下一個字元是文字，而不是程式的內容

修改過後的程式碼
可以發現編輯器已經知道裡面都是文字了
因此自動轉成藍色



The image shows a screenshot of a C++ development environment. On the left, a code editor window titled 'main.cpp' displays the following code:

```
1 #include <bits/stdc++.h>
2 using namespace std;
3
4 int main(){
5
6     cout << "\"Hello World\"";
7
8     return 0;
9 }
10
```

On the right, a console window titled 'C:\Users\Temmie\Desktop\main.exe' shows the output of the program:

```
"Hello World"
Process returned 0 (0x0)   execution time : 1.452
s
Press any key to continue.
-
```

以下是常見的跳脫字元

輸出	程式
"	\"
'	\'
\	\\
換行	\n