Tsuen Wan Government Secondary School

Olympiad in Informatics Team

荃灣官立中學 電腦奧林匹克校隊

2025/26 TEAM SELECTION TEST 校隊選拔試

SCHEDULE 日程

Date 日期	23 / 24 / 27 March 2026	2026 年 3 月 23 / 24 / 27 日
Duration 限時	2 hours 30 minutes	2 小時 30 分鐘

REMINDERS 提示

- All problems are divided into subtasks. All test cases in a subtask must be passed to get points.
- You should answer in C++20. You may also attempt in other secondary languages provided on TWGSS Online Judge, including Python 3. It is not guaranteed that the problems are solvable using those secondary languages.
- Unless otherwise specified, your output will be automatically fixed as follows:
  - Trailing spaces in each line will be removed.
  - An end-of-line character will be added to the end of the output if not present.
- 64-bit integers may be required in some problems, use `long long` in C++ if needed.
- All stories are hypothetically written. In case of coincidences, they are coincidences.

- 所有題目均細分為多個子任務，你需通過該子任務中的所有測試數據才能得到分數。
- 你應使用 C++20 作答；你亦可使用 TWGSS Online Judge 提供之次等編程語言（包括 Python 3），惟並不保證所有題目均可使用次等編程語言解決。
- 除非特別注明，否則輸出將自動被修正如下：
  - 每行最尾的連續空格會被刪除。
  - 在最後補上換行符（如沒有）。
- 有些題目可能需要使用 64 位元整數，在 C++ 中為 `long long`。
- 所有故事純屬虛構；如有雷同，實屬巧合。

PROBLEMS 題目

	Problem *題目*	*Limit* *限制*		*Score* *分數*	
		Time *執行時間*	*Memory* *記憶體*	*Subtasks* *子任務*	*Total* *總分*
TS2601	Instant Summon 即時新聞	1s	256MB	2 | 4 | 4	10
TS2602	Crab Me Crab 蟹人聽聞	1s	256MB	4 | 3 | 4 | 4	15
TS2603	Water Bird 一走鳥之	1s	256MB	4 | 3 | 4 | 4	15
TS2604	pH Value 中和酸鹼	1s	256MB	2 | 5 | 6 | 7	20
TS2605	Zodiac Animals 十二生肖	1s	256MB	8 | 18 | 14	40
TS261	Five O Five 五五歸家	1s	256MB	5 | 7 | 13 | 12 | 8 | 5	50
TS262	ConteStats 數據慢遊	1s	256MB	6 | 6 | 36 | 12	60
TS263	Work Past Password 密密碼碼	1s	256MB	5 | 13 | 11 | 4 | 15 | 17	65
TS264	CapitaliStatement 小題大作	1s	256MB	8 | 19 | 11 | 26 | 7 | 4	75
TS265	Window Installer 鏗窗有力	1s	256MB	4 | 6 | 9 | 9 | 47	75
TS266	Love Leafer 敬葉樂葉	1s	256MB	4 | 6 | 15 | 11 | 14 | 17 | 8	75
TS267	Judge Addict 評測癮者	1s	256MB	8 | 12 | 13 | 23 | 19 | 25	100
TS268	Mark Six 六合獎券	1s	256MB	12 | 10 | 24 | 21 | 27 | 23 | 18 | 15	150
TS269	Candy World 糖果世界	1s	256MB	5 | 10 | 15 | 18 | 13 | 32 | 32 | 32 | 65 | 13 | 15	250

Full Score 滿分 1000

TS2601 Instant Summon 即時新聞

Score 分數	Limit 限制	
10	1s	256MB

The problem setters for this Team Selection Test are all working hard (including me)! However, there is always a problem proposer who is not here. Hence, I have to use some magic to get him here ~~to do forced labour~~ immediately. I use the spell "roses are red, violets are blue, *[person's name]*, I summon you" to accomplish this goal.

Now, as Hoki is always late, I have to use this magic many times. To save my time typing out the spell and to propose more tasks in the meantime, I want to have a program to perform my magic for me.

You are given a string S, the name of an object or a person. If $S =$ `rose`, you can complete the spell by outputting `red`; if $S =$ `violet`, you can do so by outputting `blue`. Otherwise, if S is neither `rose` nor `violet`, you should output `summon you` to complete the spell.

校隊選拔試臨近，出題者們（包括我本人）都在物羅緊鼓地創作題目。可是，我們每次開會總是有人缺席，為此我會對他們使出魔法，通過此咒語：「玫瑰是紅色的，紫羅蘭是藍色的，*[人名]* 是不能休息的！」以立刻召喚缺席者出現。

由於 Hoki 總是遲到，我經常需使用此魔法。我靈機一動，或許能開發出一個程式以生成此咒語，便能節省每次的打字時間，創作更多題目了！

給定一個字符串 S，代表物件或人的名稱。若 $S =$ `rose`，你需輸出 `red` 以完成咒語；若 $S =$ `violet`，則需輸出 `blue`；否則，若 S 非 `rose` 或 `violet`，則需輸出 `summon you`。

INPUT 輸入

The first line consists of a string S, representing the name of the object or person.

第一行包含一個字符串 S，代表物件或人的名稱。

OUTPUT 輸出

If $S =$ `rose`, output `red`.

若 $S =$ `rose`，輸出 `red`。

If $S =$ `violet`, output `blue`.

若 $S =$ `violet`，輸出 `blue`。

Otherwise, output `summon you`.

否則，輸出 `summon you`。

SAMPLE TESTS 樣例

	Input 輸入	Output 輸出
1	rose	red
2	violet	blue
3	hoki	summon you
4	jack	summon you

CONSTRAINTS 約束條件

S consists of lowercase English letters (a - z) only　　S 由小寫英文字母 (a - z) 組成

SUBTASKS 子任務

	Points 佔分	Constraints 約束條件
1	2	$S =$ rose
2	4	$S =$ rose or violet　　$S =$ rose 或 violet
3	4	No additional constraints　　無額外約束

TS2602 Crab Me Crab 蟹人聽聞

Score 分數: 15 | Limit 限制: 1s | 256MB

After a *long long* time of relentlessly doing schoolwork, it is finally Chinese New Year (yay)! To celebrate, I decide to go to the beach and catch some crabs for dinner.

After searching the beach for a while, I find two crabs, crab A and crab B. I decide to stand at an optimal position in order to catch them. With my sharp eyes, I quickly mapped the area onto a number line, so that crabs A and B are located at position A and B respectively on the same line. That also means I can only stand at integer positions ($0, 1, 2, \ldots$, but not $0.3, 6.1, 3.14, \ldots$).

I quickly figure out that if I stand too close to one of them, the other one might escape! With that, I have to stand at the position which minimises the maximum distance between me and any one of the crabs.

Unfortunately, I am very bad at Maths! How bad, you may ask? ~~Worse than someone who only got Level 4 in M2!~~ Hence, your unwavering (or not?) help to calculate my optimal standing position is needed so that I won't disappoint my whole family waiting for the meal (as if I didn't already disappoint them enough with my grades)!

經過長時間的校園生活，我終於能脫離苦海，享受農曆新年假期了！因此，我決定到海邊捉一些螃蟹，為晚餐「加餸」以慶祝一番。

在海灘稍作搜索，不一會兒便發現了兩隻螃蟹：螃蟹 A 和螃蟹 B，我意識到必須要站在最佳位置才能要捉住他們。憑着我敏銳的觀察力，我把整個範圍簡化成一條數線，使螃蟹 A 及螃蟹 B 分別位於同一條線上的位置 A 及 B；可這也代表着我也只能站在整數位置上（即 $0, 1, 2, \ldots$，而非 $0.3, 6.1, 3.14, \ldots$）。

很快地，我意識到若與某一隻螃蟹站得太近，另一隻螃蟹便有機會逃走。因此，最佳的站立位置必須最小化我與任何一隻螃蟹的最大距離。

不幸地，我令人擔憂的的數學能力~~（甚至比某人於 M2 取得 Level 4 更差！）~~未能支撐我作此計算。為了避免我的家人坐在餐桌前等待我的螃蟹，使他們（繼看見我的考試成績後）一再失望，我必須尋求你的協助以計算我的最佳站立位置。

INPUT 輸入

The first line consists of two integers A and B, representing the position of crab A and crab B respectively.

第一行包含兩個整數 A 及 B，分別代表螃蟹 A 與螃蟹 B 的位置。

OUTPUT 輸出

Output an integer, the optimal position for me to stand at.

If there are multiple optimal positions, you may output any one of them.

輸出一個整數，我的最佳站立位置。

若存在多個最佳位置，你可輸出任意其一。

SAMPLE TESTS 樣例

	Input 輸入	Output 輸出
1	1 7	4

By standing at position 4, distance from crab A $= |1-4| = 3$ and distance from crab B $= |7-4| = 3$. We can prove that 3 is the shortest maximum distance between me and any one of the crabs.
若我站在位置 4，與螃蟹 A 的距離 $= |1-4| = 3$；與螃蟹B的距離 $= |7-4| = 3$。我們可證明此距離 3 為我與任一螃蟹之間最短的最大距離。

2	8 0	4

This sample satisfies the constraints of Subtask 1.
此樣例滿足子任務 1 的約束。

3	6 4	5

This sample satisfies the constraints of Subtask 2.
此樣例滿足子任務 2 的約束。

4	19 61	40

5	306 247	276

276 and 277 are both acceptable answers for $A = 306$, $B = 247$.
當 $A = 306$ 及 $B = 247$ 時，答案可為 276 或 277。

CONSTRAINTS 約束條件

$0 \le A, B \le 2 \times 10^9$

$|A - B| \ge 2$

SUBTASKS 子任務

	Points 佔分	Constraints 約束條件
1	4	$0 \le A \le 1000$ $B = 0$
2	3	$0 \le A, B \le 1000$ A, B are even　A, B 為雙數
3	4	$0 \le A, B \le 1000$
4	4	No additional constraints　無額外約束

TS2603 Water Bird 一走鳥之

Score 分數	*Limit 限制*	
15	1s	256MB

♫ *A bird fell into the water, fell into the water, fell into the water; A bird fell into the water and was washed away~* ♫ Turns out that every four birds fell into the water, one will be washed away!

To verify this theory, I decide to go hiking with my friends. After some walking, I finally found a tree with birds on it near a lake! After watching the birds fall for a while, I discovered some discrepancy between the song's theory and the reality.

Turns out, for every F birds fell into the water, the last one out of them will be washed away and the other $F-1$ birds will survive. If there are not sufficient birds fell into the water to form a group of F birds, then all of the remaining ones will survive (how lucky)!

There is a total of N birds on the tree and they will eventually fall into the water. Please help me to write a program to find out the number of birds that will survive (not getting washed away) at the end, so I can ~~steal all credits and~~ show off to my friends!

♫ *有隻雀仔跌落水，跌落水，跌落水；有隻雀仔跌落水，被水沖去～* ♫ 童年時琅琅上口的兒歌竟蘊含驚人發現：原來每四隻落水的雀鳥，便有一隻會被水沖走！

為了驗證這規律，我特地與朋友遠足，在湖邊找到一棵站滿雀鳥的樹。一隻、兩隻……觀察了一會兒，我便發現了真實情況與兒歌中的規律存在相異之處。

實際上，對於每 F 隻落水的雀鳥，其中的最後一隻會被水沖走，而其餘的 $F-1$ 隻則能倖存。若最後的一組雀鳥不足 F 隻，則該組所有雀鳥均能倖存。

已知樹上共有 N 隻將會落水的雀鳥，請替我編寫程式以計算最後倖存（沒有被水沖走）的雀鳥數量，好讓我能在朋友面前炫耀一番我~~親自指導~~的傑作！

INPUT 輸入

The first line consists of two integers N and F, representing the number of birds and the frequency of birds getting washed away respectively.

第一行包含兩個整數 N 及 F，分別代表雀鳥的數量及被水沖走的頻率。

OUTPUT 輸出

Output an integer, the number of birds that will survive at the end.

輸出一個整數，最後倖存的雀鳥數量。

SAMPLE TESTS 樣例

	Input 輸入	Output 輸出
1	14 4	11

The 4^{th}, 8^{th} and 12^{th} bird will be washed away, leaving $14 - 3 = 11$ birds surviving.
第 4、第 8 及第 12 隻雀鳥會被水沖走，餘下倖存的雀鳥數量為 $14 - 3 = 11$。

2	5 5	4

This sample satisfies the constraints of Subtask 1.
此樣例滿足子任務 1 的約束。

3	9 2	5

This sample satisfies the constraints of Subtask 3.
此樣例滿足子任務 3 的約束。

4	13 4	10
5	2048 1	0

CONSTRAINTS 約束條件

$1 \leq N, F \leq 10^9$

SUBTASKS 子任務

	Points 佔分	Constraints 約束條件
1	4	$N = F$
2	3	N is even N 為雙數 $F = 2$
3	4	$F = 2$
4	4	No additional constraints 無額外約束

TS2604 pH Value 中和酸鹼

Score 分數: 20 | Limit 限制: 1s | 256MB

During today's Science lesson, I was learning about acids and bases. I just got a brand new tool called a pH meter for measuring the pH value of a solution (it is very fun to play with)! However, ~~as a student of the tutor who only got Level 4 in Chemistry~~, I am not smart enough to know whether the solution with the measured pH value is suitable for the next experiment! If I carry out the experiment with a strongly acidic or basic solution, the setup might explode! Hence, after knowing the pH value of the solution, I need to know if it is suitable for the next experiment.

As classified in my weirdly written Chemistry book, solution with pH value lower than 6.5 is `acidic`, solution with pH value between 6.5 and 7.4 (inclusive) is `neutral`, and solution with pH value higher than 7.4 is `basic`. As my best (or worst?) lab partner, you have to determine the type of the solution with pH value N for me, otherwise the setup may go BOOOOOOOOMMMM!!!!

在今天的科學課中，我學會了酸和鹼的概念，更學會了使用 pH 計以測量溶液的 pH 值！可是，~~我的導師在化學科中只取得 Level 4，作為他的學生，~~我的知識不足以支撐我以測量出的 pH 值判斷溶液是否適合進行實驗！若我一不小心使用了過強的酸性或鹼性溶液，實驗時更有可能出現爆炸！因此，在得知其 pH 值後，我必須判斷該溶液是否適合實驗。

根據我手上有些許奇怪的化學書所載：pH 值低於 6.5 的溶液為酸性（`acidic`）；pH 值介乎 6.5 至 7.4 之間（含）的溶液為中性（`neutral`）；而 pH 值高於 7.4 的溶液則為鹼性（`basic`）。作為我最好（？）的實驗夥伴，請助我分辨 pH 值為 N 的溶液之類型，否則…… BOOOOOOOOMMMM!!!!

INPUT 輸入

The input consists of a number N with 1 decimal place, representing the pH value of the solution.

第一行包含一個一位小數 N，代表溶液的 pH 值。

OUTPUT 輸出

Output a string, the type of the solution, which is either `acidic`, `neutral` or `basic`.

輸出一個字符串，溶液的性質，須為 `acidic`、`neutral` 或 `basic` 中其一。

SAMPLE TESTS 樣例

	Input 輸入	Output 輸出
1	3.0	acidic
2	6.8	neutral
3	7.4	neutral
4	9.9	basic
5	12.7	basic

CONSTRAINTS 約束條件

$0.0 \leq N \leq 14.0$

SUBTASKS 子任務

	Points 佔分	Constraints 約束條件
1	2	$N = 7.0$
2	5	$0.0 \leq N \leq 7.0$
3	6	$N = x.0$, where $0 \leq x \leq 14$　　$N = x.0$，其中 $0 \leq x \leq 14$
4	7	No additional constraints　　無額外約束

TS2605 Zodiac Animals 十二生肖

Score 分數	Limit 限制	
40	1s	256MB

During Chinese New Year, I was celebrating with my family. However, I mistakenly said 2026 is the Year of the Snake instead of Horse! To avoid this embarrassing situation in the future, I decided to write a converter that maps a given year to its corresponding Chinese zodiac animal.

The twelve zodiac animals, in order, are: `Rat`, `Ox`, `Tiger`, `Rabbit`, `Dragon`, `Snake`, `Horse`, `Goat`, `Monkey`, `Rooster`, `Dog`, `Pig`. The year 2020 is the Year of the Rat. Each subsequent year corresponds to the next zodiac animal in order (e.g. 2021 is the Year of the Ox, 2022 is the Year of the Tiger, etc.) After 12 years, the cycle repeats itself (e.g. $2032, 2044, \ldots$ are Year of the Rat).

Now, given a year Y, please help me complete the converter by outputting the corresponding zodiac animal.

農曆新年拜年期間，我一時口誤，在家人面前竟把 2026 年說成蛇年，本想懸崖勒馬連（年）忙更正，可惜為時已晚，場面早已尷尬至極！為避免此情況再次發生，我決定製作一個轉換器，把年份自動轉換為其對應生肖。

十二生肖按順序分別為：鼠 (`Rat`)、牛 (`Ox`)、虎 (`Tiger`)、兔 (`Rabbit`)、龍 (`Dragon`)、蛇 (`Snake`)、馬 (`Horse`)、羊 (`Goat`)、猴 (`Monkey`)、雞 (`Rooster`)、狗 (`Dog`)、豬 (`Pig`)。2020 年為鼠年，每年將使用下一生肖（如 2021 年為牛年、2022 年為虎年，如此類推），每 12 年循環一次（如 $2032, 2044, \ldots$ 年均為鼠年）。

給定一個目標年份 Y，請幫助我完成此轉換器，使其輸出該年對應之生肖。

INPUT 輸入

The first line consists of an integer Y, representing the year.

第一行包含一個整數 Y，代表目標年份。

OUTPUT 輸出

Output a string, the zodiac animal of the year Y.

輸出一個字符串，Y 年的生肖。

SAMPLE TESTS 樣例

	Input 輸入	Output 輸出
1	2020	Rat
2	2021	Ox
3	2026	Horse
4	2048	Dragon

CONSTRAINTS 約束條件

$2020 \leq Y \leq 9999$

SUBTASKS 子任務

	Points 佔分	Constraints 約束條件
1	8	$2025 \leq Y \leq 2026$
2	18	$2020 \leq Y \leq 2031$
3	14	No additional constraints 無額外約束

TS261 Five O Five 五五歸家

Score 分數	Limit 限制	
50	1s	256MB

"It is now 5:05 p.m., time to leave the school…" I have heard this announcement countless times during the long and boring OI trainings. However, the time when this message is actually announced is not always exactly 5:05 p.m. It may even be off by more than half an hour!

Now, given the real announcement time at H:M p.m., I want to find out the time difference (in minutes) between it and 5:05 p.m., so that I can keep track of the ridiculously inaccurate announcement times. However, I am already very tired preparing to teach the C++ Foundation Course, so I don't want to waste any energy doing the calculation. Hence, I will dump the task on you (extremely fair), an excellent coder in this course! (Or are you?)

「鐘聲響起歸家的信號，現在已是下午 5:05……」在冗長和無聊的 OI 訓練中聽到這個宣佈已是習以為常、見怪不怪。可是，它的宣佈時間卻並非每次能準確地落在下午 5:05，有時其偏差甚至高達半小時！

給定實際宣佈時間為下午 H:M，我想得知其與下午 5:05 間相差多少分鐘，以便我記下每次離譜的宣佈時間。可是 C++ 基礎課程的教學工作早已使我身心俱疲，無力再作此計算。因此唯一公平（？）的方法便是把此任務交託你，運用你在課程所學~~回報導師（我）~~！

INPUT 輸入

The first line consists of two integers H and M, representing the hour and minute of the real announcement time (in p.m.) respectively.

第一行包含兩個整數 H 及 M，表示實際宣佈時間為下午 H:M。

OUTPUT 輸出

Output an integer, the time difference (in minutes) between the real announcement time and 5:05 p.m.

輸出一個整數，實際宣佈時間與下午 5:05 間之時間差（以分鐘計）。

SAMPLE TESTS 樣例

	Input 輸入	Output 輸出
1	5 5	0
2	5 41	36
3	5 0	5
4	3 30	95
5	7 28	143
6	8 10	185
7	12 55	250

CONSTRAINTS 約束條件

$1 \le H \le 12$

$0 \le M \le 59$

SUBTASKS 子任務

	Points 佔分	Constraints 約束條件
1	5	$H = 5$ $6 \le M \le 59$
2	7	$H = 5$
3	13	$1 \le H \le 4$
4	12	$6 \le H \le 11$
5	8	$M = 5$
6	5	No additional constraints 無額外約束

TS262 ConteStats 數據慢遊

Score 分數: 60 | Limit 限制: 1s | 256MB

The results are finally out for the latest mini contest! To make them more interesting ~~and to let people know how bad they are compared to other team members~~, I decide to calculate some statistics. Since most team members are bad at Maths (including me), only some simple, easy-to-understand statistics are needed.

There are N participants in the mini contest. The i^{th} participant has obtained the score S_i. I would like to know the minimum, maximum and the mean (average) score among all participants. As the mean score may not be an integer, I only need its value rounded down to the nearest integer.

However, as I will hold more mini contests in the future (well that's a lie) and I am lazy, I decide to ask you to write a program for me that can automatically calculate these statistics.

又一次比賽結束了，我把參賽者們的成績匯集以作統計~~，好讓他們知道自己的表現是多麼的糟糕~~。幸好，大部分隊員數學能力有待改善，我只需一些簡單易明的數據便能嚇唬他們（實際上我也不明白一些較複雜的數據）。

比賽中共有 N 名參賽者，其中第 i 名參加者取得 S_i 的分數。我想得知在眾多參賽者中最低及最高的分數，及所有參賽者的平均分。由於平均分不一定為整數，我只需其向下取整至最接近整數後之數值。

可是，由於我要準備舉辦更多比賽（？），加上我十分懶惰（！），我需要你的幫忙以替我計算上述數據。

INPUT 輸入

The first line consists of an integer N, representing the number of participants.

The second line consists of N integers, the i^{th} integer S_i represents the score of the i^{th} participant.

第一行包含一個整數 N，代表參賽者的人數。

第二行包含 N 個整數，第 i 個整數 S_i 代表第 i 名參賽者的分數。

OUTPUT 輸出

On the first line, output two integers separated by a space, the minimum score, followed by the maximum score among all participants.

On the second line, output an integer, the mean score of all participants rounded down to the nearest integer.

在第一行，按序輸出兩個整數，所有參賽者中之最低及最高分數，以一空格分隔二者。

在第二行，輸出一個整數，所有參賽者之平均分，向下取整至最接近整數。

SCORING 評分

For each test case, you score 100% if your output is correct in both lines. You score 50% if your output is correct for only one line. Otherwise, you score 0.

Note that your output format still has to be correct to get partial scoring. In other words, you must output two integers on the first line and one integer on the second line. No score will be given for an incorrect output format, even if the values are correct.

Your score for a subtask is the lowest score you get among all of its test cases.

對於每組測試數據，若輸出中的兩行均為正確，你將取得 100% 的分數；若只有其中一行為正確，你將取得 50% 的分數；否則你將取得 0 分。

注意：你的輸出格式需為正確以取得任何分數，即必須在第一行輸出兩個整數、第二行輸出一個整數。否則，即使輸出之數值為正確，你也不會取得任何分數。

你在一個子任務中的分數為該子任務中所有測試數據的分數之最低者。

SAMPLE TESTS 樣例

	Input 輸入	Output 輸出
1	6 3 1 4 1 5 9	1 9 3

Participants' scores are $\{3, 1, 4, 1, 5, 9\}$.
The minimum and maximum score among them are 1 and 9 respectively.
The mean score is $\frac{3+1+4+1+5+9}{6} \approx 3.833$, it is rounded down 3.
各參賽者之分數為 $\{3, 1, 4, 1, 5, 9\}$.
當中之最低及最高分數分別為 1 及 9。
平均分為 $\frac{3+1+4+1+5+9}{6} \approx 3.833$，向下取整後即為 3。

2	6 3 1 4 1 5 9	1 9 2

Only the maximum and minimum scores are correct, this output will score 50%.
僅有最低及最高分數為正確，此輸出將取得 50% 分數。

3	6 3 1 4 1 5 9	1 7 3

Only the mean score is correct, this output will score 50%.
僅有平均分為正確，此輸出將取得 50% 分數。

4	6 3 1 4 1 5 9	3

The output format is incorrect, this output will score 0.
輸出格式錯誤，此輸出將取得 0 分。

5	6 3 1 4 1 5 9	1 9

The output format is incorrect, this output will score 0.
輸出格式錯誤，此輸出將取得 0 分。

6	7 1 2 3 4 5 6 7	1 7 4

7	4 127 0 0 1	0 127 32

CONSTRAINTS 約束條件

$1 \leq N \leq 2 \times 10^5$

$0 \leq S_i \leq 10^9$

SUBTASKS 子任務

	Points 佔分	Constraints 約束條件
1	6	$S_1 = S_2 = \cdots = S_N$
2	6	$S_i = i$
3	36	$0 \leq S_i \leq 10^4$
4	12	No additional constraints 無額外約束

TS263 Work Past Password 密密碼碼

Score 分數	Limit 限制	
65	1s	256MB

I will have a vacation during the upcoming holiday! I have a suitcase with a peculiar lock, it uses letters instead of digits! Learning from other's mistakes of forgetting passwords, I decide to create a memorable password using a pattern. Is it secure? No! But is it easy to memorise! I can even save my money by not needing to hire you as a *Password Tester*!

經過漫長的等待，終於能在下個假期去旅行了！我的行李箱上有個設計奇特的鎖，有別於一般以數字組成的密碼，這個鎖的密碼竟是以字母組成！我決定創作一個有規律的密碼，這樣我便不會重蹈某人的錯誤、忘記密碼了。這個密碼看起來一點也不安全，實際上也十分危險；但我至少能避免找你幫忙開鎖，便能節省一筆花費。

The pattern starts with the lowercase English letter S, advancing one letter at a time in alphabetical order, until ending at the letter E. For instance, if $S =$ `c` and $E =$ `f`, the pattern will be `cdef`. The password involves repetitions of the pattern, until its length reaches N letters. The excess part beyond length N will be discarded, so the last repetition may be an incomplete copy of the pattern. Continuing the example, if $N = 11$, the password will be `cdefcdefcde`.

規律以小寫英文字母 S 為開首，每次根據字母順序使用下一字母，直至以字母 E 結束。例如，當 $S =$ `c` 及 $E =$ `f`，規律為 `cdef`。密碼將重複若干次此規律，直至其長度為 N 個字母。超過 N 個字母的部分將會被截去，換言之該規律最後一次重複未必完整。延續上述例子，若 $N = 11$，密碼將為 `cdefcdefcde`。

Now, as I am busy packing my stuff, I need you to help me to generate the password using this pattern. If you successfully do that for me, I will buy a souvenir for you during my trip (if I remember)!

由於我現在正*匆匆忙忙*、*連滾帶爬*地收拾我的行李，我需要你幫忙以此規律生成密碼，這樣我便能*從從容容*、*遊刃有餘*地享受我的旅行了！

INPUT 輸入

The first line consists of two characters S, E and an integer N, representing the pattern's starting letter, ending letter and the password length respectively.

第一行包含兩個字符 S、E 及一個整數 N，分別代表規律之開首字母、完結字母及密碼的長度。

OUTPUT 輸出

Output a string of length N, the password.

輸出一個長度為 N 的字符串，生成出的密碼。

SAMPLE TESTS 樣例

	Input 輸入	Output 輸出
1	`c f 11`	`cdefcdefcde`
2	`a b 3`	`aba`

This sample satisfies the constraints of Subtasks 1, 3 and 4.
此樣例滿足子任務 1、3 及 4 的約束。

	Input 輸入	Output 輸出
3	`i o 6`	`ijklmn`

This sample satisfies the constraints of Subtask 2.
此樣例滿足子任務 2 的約束。

	Input 輸入	Output 輸出
4	`h i 8`	`hihihihi`

This sample satisfies the constraints of Subtask 4.
此樣例滿足子任務 4 的約束。

CONSTRAINTS 約束條件

S, E are lowercase English letters (`a` - `z`)

S, E 為小寫英文字母 (`a` - `z`)

S is before E in the alphabetical order

S 比 E 的字母順序靠前

$1 \leq N \leq 5000$

$1 \leq N \leq 5000$

SUBTASKS 子任務

	Points 佔分	Constraints 約束條件
1	5	$S =$ `a` $N = 3$
2	13	The pattern will not repeat in the password 規律不會在密碼中多次重複
3	11	$S =$ `a` $E =$ `b`
4	4	S is immediately followed by E in the alphabetical order S 在字母順序中的下一字母為 E
5	15	$S =$ `a` $E =$ `z`
6	17	No additional constraints 無額外約束

TS264 CapitaliStatement 小題大作

Score 分數	Limit 限制	
75	1s	256MB

After hours and hours of ~~forced labour~~ hard work, I am almost done writing stories and problem statements (finally)! However, as my problem proposing skills were taught by Hoki, my statements naturally come with a lot of grammatical mistakes! One obvious example is the capitalisation of words. Now, I have to correct those mistakes or I will receive a lot of backlash from the Team Selection Test participants!

經過長時間的努力，我終於接近完成創作所有題目了！可是，由於我的出題技巧師承 Hoki，題目中的文法錯漏百出，其中字母的大小寫尤是重災區！由此，我急需修正這些錯誤，否則會引起群情激憤！

In my original statement, each word is made up of English letters (`A-Z`, `a-z`). Each sentence consists of one or more words, each word is separated by a space ( ). At the end of each sentence is a punctuation, which is either `.`, `?` or `!`. There are one or more sentences in my problem statement, and each sentence is separated by a space ( ).

在原來的題目描述中，每個單詞由英文字母 (`A-Z`, `a-z`) 組成；每句句子由一或多個單詞組成，單詞之間以單一空格 ( ) 分隔，句尾為一標點，即 `.`、`?` 或 `!` 中之其一；題目描述以一或多句句子造成，句子之間以單一空格 ( ) 分隔。

However, the capitalisation of words is messed up in my original statement. To fix it, I need to edit the statement such that the first letter of the first word in each sentence should be uppercase (`A-Z`), while all other letters in the sentence should be lowercase (`a-z`).

可是，在原來的題目描述中，字母的大小寫錯得一塌糊塗！因此我需修正題目描述，使當中所有句子首個單詞的首個字母需為大寫 (`A-Z`)，以其餘字母為小寫 (`a-z`)。

Since you will be the one complaining about the wrong capitalisation, you are going to be the one to fix the problem statement for me!

既然你會投訴我錯誤的大小寫，就請你替我修正題目描述吧！

INPUT 輸入

The first line consists of a string S, representing the original problem statement.

第一行包含一個字符串 S，代表原來的題目描述。

OUTPUT 輸出

Output a string, the edited problem statement with correct capitalisation.

輸出一個字符串，編輯大小寫後的題目描述。

SAMPLE TESTS 樣例

	Input 輸入	Output 輸出
1	`aaAaA.`	`Aaaaa.`

This sample satisfies the constraints of Subtask 1.
此樣例滿足子任務 1 的約束。

2	`ruok?`	`Ruok?`

This sample satisfies the constraints of Subtask 2.
此樣例滿足子任務 2 的約束。

3	`TSTsoFun!`	`Tstsofun!`

This sample satisfies the constraints of Subtask 3.
此樣例滿足子任務 3 的約束。

4	`aaAaA AAaAa. A A? A!`	`Aaaaa aaaaa. A a? A!`

This sample satisfies the constraints of Subtask 4.
此樣例滿足子任務 4 的約束。

5	`give you up? let you down!`	`Give you up? Let you down!`

This sample satisfies the constraints of Subtask 5.
此樣例滿足子任務 5 的約束。

6	`at SCHOOL. aT home? ANd alWAYs!`	`At school. At home? And always!`

CONSTRAINTS 約束條件

S consists of English letters (`A-Z`, `a-z`), `.`, `?`, `!` and spaces ( ) only

S 由英文字母 (`A-Z`, `a-z`)、`.`、`!`、`?` 及空格 ( ) 組成

$1 \leq \text{length of } S \leq 5000$

$1 \leq S$ 的長度 ≤ 5000

SUBTASKS 子任務

	Points 佔分	Constraints 約束條件
1	8	S consists of `A`, `a` and `.` only　S 由 `A`、`a` 及 `.` 組成
2	19	S consists of lowercase English letters (`a-z`), `.`, `!` and `?` only　S 由小寫英文字母 (`a-z`)、`.`、`!` 及 `?` 組成 i.e. does not contain uppercase English letters (`A-Z`) and spaces ( )　即不包含大寫英文字母 (`A-Z`) 及空格 ( )
3	11	S consists of English letters (`A-Z`, `a-z`), `.`, `!` and `?` only　S 由英文字母 (`A-Z`, `a-z`)、`.`、`!` 及 `?` 組成 i.e. does not contain spaces ( )　即不包含空格 ( )
4	26	S consists of `A`, `a`, `.`, `!`, `?` and spaces ( ) only　S 由 `A`、`a`、`.`、`!`、`?` 及空格 ( ) 組成
5	7	S consists of lowercase English letters (`a-z`), `.`, `!`, `?` and spaces ( ) only　S 由小寫英文字母 (`a-z`)、`.`、`!`、`?` 及空格 ( ) 組成 i.e. does not contain uppercase English letters (`A-Z`)　即不包含大寫英文字母 (`A-Z`)
6	4	No additional constraints　無額外約束

TS265 Window Installer 鏗窗有力

Score 分數: 75 | Limit 限制: 1s | 256MB

After having my lunch, it is time for the PE lesson (sadly). In this lesson, we are playing basketball. As a noob in the game, I tried to shoot the ball. After seeing the ball fly in the air for a few seconds, something bad happens! The ball flew straight past the hoop and crashed into a nearby window! As the window shatters into pieces, I realised that I have to replace it or pay a huge amount of money to repair it! As I am poor, I have no choice but to recreate the window with the original size and style as the original one!

The original window is of size $N \times N$. In other words, it is N characters high and N characters wide. The "frame" (i.e. the outermost layer) of the window consists of the character `#`. The centre character of the window is the character `+`. From the centre, the `|` character is extended vertically to the top and bottom frame, while the `-` character is extended horizontally to the left and right frame. All other characters of the window are filled with the space ( ) character. The Sample Tests shows examples of this window style.

As I have to practise more to improve my basketball skills ~~to break more windows~~, I have no time to recreate the window myself! Therefore, it's your job to do so for me!

吃過午餐後便是（可悲）的體育課了！作為籃球新手，我拼盡全力嘗試投籃，結果不出意外，意外還是發生了。籃球徑直砸向隔壁的窗戶，碎片散落一地！貧窮的我顯然不能負擔起巨額賠款，只能嘗試重建一扇與原來大小及設計相同的窗戶。

原來的窗戶大小為 $N \times N$，即長和闊均為 N 個字符。「窗框」（即窗戶最外層）以字符 `#` 造成；窗戶之中心為字符 `+`；字符 `|` 由窗戶中心垂直延伸至上下窗框；字符 `-` 則由窗戶中心水平延伸至左右窗框；窗戶中的其餘字符則為空格 ( ) 以填補位置。此窗戶設計之實際樣式請見樣例。

我急需增進我的籃球技巧~~以打破更多窗戶~~，因此請你幫助我重建窗戶，好讓我有更多時間進行訓練。

INPUT 輸入

The first line consists of an integer N, representing the size of the window.

第一行包含一個整數 N，代表窗戶的大小。

OUTPUT 輸出

Output N lines, each with N characters, the recreated window.

輸出 N 行，每行應包含 N 個字符，重建後的窗戶。

SAMPLE TESTS 樣例

	Input 輸入	Output 輸出
1	3	### #+# ###
2	5	##### # | # #-+-# # | # #####
3	9	######### # | # # | # # | # #---+---# # | # # | # # | # #########
4	17	################# # | # # | # # | # # | # # | # # | # # | # #-------+-------# # | # # | # # | # # | # # | # # | # # | # # | # #################

CONSTRAINTS 約束條件

$3 \leq N \leq 99$

N is odd

$3 \leq N \leq 99$

N 為單數

SUBTASKS 子任務

	Points 佔分	Constraints 約束條件
1	4	$N = 3$
2	6	$N = 5$
3	9	$N = 7$
4	9	$3 \leq N \leq 9$
5	47	No additional constraints 無額外約束

TS266 Love Leafer 敬葉樂葉

Score 分數: 75 | Limit 限制: 1s | 256MB

I leaf loves! Therefore, I decide to find out the number of leaves in a given grid.

The grid consists of N rows and M columns. The block at (i, j) (i^{th} row, j^{th} column) has type $T_{i,j}$. If $T_{i,j} =$ `#`, it is a tree block. If $T_{i,j} =$ `.`, the block is empty. A tree block is a leaf if and only if there is only one other tree block among its four adjacent blocks (up, down, left, right). Note that the grid does not "wrap around" (i.e. the topmost and bottommost rows are not connected, nor are the leftmost and rightmost columns).

I decide to count the number of leaves in the grid. Can you help me? (You can't say no!)

我樹葉愛！因此，我決定找出網格內葉子的數量。

網格由 N 行及 M 列組成，位置 (i, j)（第 i 行、第 j 列）的方格之種類為 $T_{i,j}$。若 $T_{i,j} =$ `#`，則其為樹方格；若 $T_{i,j} =$ `.`，則其為空方格。對於每個樹方格，若與其相鄰之四格（上、下、左、右）中剛好有一格為樹方格，則其為一片葉子。注意：網格中最高及最低一行、最左及最右一列均不相連。

我希望計算網格中葉子的數量，你可以幫助我嗎？（不能反對）

INPUT 輸入

The first line consists of two integers N and M, representing the number of rows and columns of the grid respectively.

The i^{th} line of the next N lines consists of a string of length M, the j^{th} character $T_{i,j}$ represents the type of the block at (i, j).

第一行包含兩個整數 N 及 M，分別代表網格的行數和列數。

接下來的 N 行中，第 i 行包含一個長度為 M 的字符串，第 j 個字符 $T_{i,j}$ 代表位置 (i, j) 的方格種類。

OUTPUT 輸出

Output an integer, the number of leaves in the grid.

輸出一個整數，網格中樹葉的數量。

SAMPLE TESTS 樣例

	Input 輸入	Output 輸出
1	1 4 .##.	2

This sample satisfies the constraints of Subtask 3.
There are in total 2 leaves at locations $(1, 2)$ and $(1, 3)$.
此樣例滿足子任務 3 的約束。
共有 2 片葉子於位置 $(1, 2)$ 及 $(1, 3)$。

2	3 3 .#. ### .#.	4

There are in total 4 leaves at locations $(1, 2)$, $(2, 1)$, $(2, 3)$ and $(3, 2)$.
共有 4 片葉子於位置 $(1, 2)$、$(2, 1)$、$(2, 3)$ 及 $(3, 2)$。

3	5 5 .#.#. ##### .#.#. ###.. .#...	8

There are in total 8 leaves at locations $(1, 2)$, $(1, 4)$, $(2, 1)$, $(2, 5)$, $(3, 4)$, $(4, 1)$, $(4, 3)$ and $(5, 2)$.
共有 8 片葉子於位置 $(1, 2)$、$(1, 4)$、$(2, 1)$、$(2, 5)$、$(3, 4)$、$(4, 1)$、$(4, 3)$ 及 $(5, 2)$。

4	5 6 .#.#.# ###### .#.#.# ###.## .#...#	10

There are in total 10 leaves at locations $(1, 2)$, $(1, 4)$, $(1, 6)$, $(2, 1)$, $(3, 4)$, $(4, 1)$, $(4, 3)$, $(4, 5)$, $(5, 2)$ and $(5, 6)$.
共有 10 片葉子於位置 $(1, 2)$、$(1, 4)$、$(1, 6)$、$(2, 1)$、$(3, 4)$、$(4, 1)$、$(4, 3)$、$(4, 5)$、$(5, 2)$ 及 $(5, 6)$。

CONSTRAINTS 約束條件

$1 \le N, M \le 100$

$T_{i,j} =$ `#` or `.`

$1 \le N, M \le 100$

$T_{i,j} =$ `#` 或 `.`

SUBTASKS 子任務

	Points 佔分	Constraints 約束條件
1	4	$N = 1$ $M = 2$
2	6	$N = M = 2$
3	15	$N = 1$
4	11	Each `#` has exactly 1 adjacent `#`　每個 `#` 有剛好 1 個相鄰 `#`
5	14	There are exactly 2 `#` among $T_{i,j}$　在所有 $T_{i,j}$ 中共存在 2 個 `#`
6	17	$T_{1,j} = T_{N,j} = T_{i,1} = T_{i,M} =$ `.`
7	8	No additional constraints　無額外約束

TS267 Judge Addict 評測癮者

Score 分數: 100 | Limit 限制: 1s | 256MB

"Why do I get logged out again! It is so frustrating!" I heard this complaint a lot during every OI training. I guess it would be completely reasonable to assume that using the Judge will affect a person's mental health. Therefore, I decided to do some research. Using some social engineering skills, I hacked into the Judge's database and found some login records that can help me with the research.

There are N login records from the database. In the i^{th} record, the user with ID U_i has logged in to the Judge. I would like to know the list of users who have logged in at least once across all records, together with the number of times they have logged in for each of them.

"Ahh, why do I get logged out again?" My mental health is rapidly deteriorating from using the Judge. Therefore, I need you to help me process the records to generate such a list of users and their login count, so that I can do some research on my own mental health!

*「為何我又被登出了？這真麻煩！」*這樣的投訴聲在 OI 訓練中此起彼落、從不消停，因此我決定研究使用評測系統會對人們的心理健康造成何等影響。通過我的社交工程技巧，我很快便破解了系統的資料庫，並取得了一些登入紀錄以助進行研究。

資料庫中共有 N 條登入紀錄，在第 i 條紀錄中，編號為 U_i 的用戶登入了系統。我希望得知所有至少登入一次的用戶及各人的登入次數。

*「啊！為何我又被登出了？」*我的心理健康正被評測系統逐漸摧殘！由此，我需要你幫助我處理所有紀錄，並輸出上述列表，以助我研究自己的精神狀態。

INPUT 輸入

The first line consists of an integer N, representing the number of login records.

The second line consists of N integers, the i^{th} integer U_i represents the user ID of the i^{th} login record.

第一行包含一個整數N，代表登入紀錄的數量。

第二行包含 N 個整數，第 i 個整數 U_i 代表第 i 條登入紀錄中的用戶編號。

OUTPUT 輸出

For each user who has logged in at least once, output the user's ID followed by the number of times they have logged in, separated by a space. Output each result on a new line, ordered in ascending order of their user ID.

對於所有至少登入一次的用戶，輸出其用戶編號，接著輸出其登入次數，以一空格分隔二者。每位用戶應另開新行輸出，並以用戶編號由小至大排列其輸出順序。

SAMPLE TESTS 樣例

	Input 輸入	Output 輸出
1	9 1 1 2 2 2 2 1 2 2	1 3 2 6

This sample satisfies the constraints of Subtask 3.
此樣例滿足子任務 3 的約束。

2	5 1 3 7 4 3	1 1 3 2 4 1 7 1
3	6 122 62 122 62 81 122	62 2 81 1 122 3
4	7 122 122 122 122 122 122 122	122 7

CONSTRAINTS 約束條件

$1 \leq N, U_i \leq 2 \times 10^5$

SUBTASKS 子任務

	Points 佔分	Constraints 約束條件
1	8	$N = 2$
2	12	$N = 3$
3	13	$1 \leq U_i \leq 2$ There are exactly 2 users who have logged in at least once 共有剛好 2 名用戶至少登入一次
4	23	$1 \leq U_i \leq 100$ There are exactly 100 users who have logged in at least once 共有剛好 100 名用戶至少登入一次
5	19	$1 \leq U_i \leq 100$
6	25	No additional constraints 無額外約束

TS268 Mark Six 六合獎券

Score 分數	Limit 限制	
150	1s	256MB

"You won the lottery!"
"Wait, what???"

Suddenly, I woke up from my dream. I then realised, oh no! I need to go to school today!

"Did you buy tickets for the upcoming Mark Six?"
"I did, let's hope that we will win! Then I can quit my job!"

After hearing my parents' conversation and having such a weird dream, I think I need to get prepared for this seemingly possible situation.

In Mark Six, seven numbers will be drawn. The first 6 numbers are the Drawn Numbers $D_1, D_2, \ldots, D_6$, while the last number is the Extra Number E. Our bet consists of 6 numbers $B_1, B_2, \ldots, B_6$, prizes will be distributed according to how the bet numbers match the numbers drawn (order does not matter):

Prize	Criteria
1^{st} Prize	6 Drawn Numbers
2^{nd} Prize	5 Drawn Numbers plus the Extra Number
3^{rd} Prize	5 Drawn Numbers
4^{th} Prize	4 Drawn Numbers plus the Extra Number
5^{th} Prize	4 Drawn Numbers
6^{th} Prize	3 Drawn Numbers plus the Extra Number
7^{th} Prize	3 Drawn Numbers

A bet matches the criteria of the i^{th} Prize will win $\$P_i$. If the bet does not match the criteria of any prize, the bet will win $\$0$.

「中咗！中咗六合彩！」
「吓？！？」

我從睡夢中猛然醒來，驚覺原來今天需要上學！

「你有買今期的六合彩嗎？」
「當然，若我們中了獎便不用上班了！」

聽到了我父母的對話，再加上剛剛奇怪的夢境，我隱隱覺得某些好事將會發生……我必須做好準備，以迎接這歷史性的時刻！

每期六合彩會攪出七個號碼：首 6 個為攪出號碼 $D_1, D_2, \ldots, D_6$；而最後一個則為特別號碼 E。我們投注的 6 個號碼為 $B_1, B_2, \ldots, B_6$，獎項將依照投注號碼如何選中攪出的號碼釐定（號碼順序不會影響結果）：

獎項	條件
1 獎	6 個攪出號碼
2 獎	5 個攪出號碼及特別號碼
3 獎	5 個攪出號碼
4 獎	4 個攪出號碼及特別號碼
5 獎	4 個攪出號碼
6 獎	3 個攪出號碼及特別號碼
7 獎	3 個攪出號碼

若投注符合 i 獎的條件，其將得獎金 $\$P_i$；否則，若其未能符合任何獎項的條件，獎金將為 $\$0$。

Now, in case my family somehow wins the lottery, I want to be able to calculate how much we win from the bet (and do it as a Maths exercise to resume my school life). However, as I will be rich after winning the lottery, I decide to hire you to calculate that for me. I promise I will pay you ~~if I really win the lottery~~, trust me.

假如我們中了獎，我希望計算投注所得之獎金，以作為我返回校園生活前的數學練習。然而，經過仔細一想，中獎後富有的我已不屑於作過多無聊計算，因此我決定僱用你為我計算所得獎金。放心，你一定會取得應有的工資以作報酬~~（前提是我真的中了獎）~~。

INPUT 輸入

The first line consists of six integers, the i^{th} integer D_i represents the i^{th} Drawn Number.

The second line consists of an integer E, representing the Extra Number.

The third line consists of seven integers, the i^{th} integer P_i represents the prize money of the i^{th} prize.

The fourth line consists of six integers, the i^{th} integer B_i represents the i^{th} number of the bet.

第一行包含六個整數，第 i 個整數 D_i 代表第 i 個攪出號碼。

第二行包含一個整數 E，代表特別號碼。

第三行包含七個整數，第 i 個整數 P_i 代表 i 獎的獎金。

第四行包含六個整數，第 i 個整數 B_i 代表第 i 個投注號碼。

OUTPUT 輸出

Output an integer, the amount the bet wins.

輸出一個整數，投注所得之獎金。

SAMPLE TESTS 樣例

	Input 輸入	*Output 輸出*
1	1 2 3 4 5 6 7 100 0 0 0 0 0 0 1 2 3 4 5 6	100

This sample satisfies the constraints of Subtasks 1, 2, 4 and 5.
此樣例滿足子任務 1、2、4 及 5 的約束。

2	20 26 3 23 24 27 1 64 32 16 8 4 2 1 20 26 3 23 24 28	16

This sample satisfies the constraints of Subtask 2.
此樣例滿足子任務 2 的約束。

3

1 2 3 4 5 6 7 12 11 10 9 8 7 6 2 11 3 9 5 7	7

This sample satisfies the constraints of Subtasks 3 and 4.
此樣例滿足子任務 3 及 4 的約束。

4

1 2 3 4 5 6 7 64 32 16 8 4 2 1 6 4 2 1 3 5	64

This sample satisfies the constraints of Subtask 4.
此樣例滿足子任務 4 的約束。

5

34 18 35 37 49 2 33 42187500 1134250 63650 9600 640 320 40 49 33 34 35 36 37	9600

6

34 18 35 37 49 2 33 42187500 1134250 63650 9600 640 320 40 3 33 4 34 5 35	0

7

1 2 3 4 5 6 7 0 0 0 0 0 0 0 1 2 3 4 5 6	0

CONSTRAINTS 約束條件

$1 \le D_i, E, B_i \le 49$

$D_i \neq D_j \neq E$ for $i \neq j$

$B_i \neq B_j$ for $i \neq j$

$0 \le P_7 \le P_6 \le \cdots \le P_1 \le 10^9$

$1 \le D_i, E, B_i \le 49$

對於 $i \neq j$，$D_i \neq D_j \neq E$

對於 $i \neq j$，$B_i \neq B_j$

$0 \le P_7 \le P_6 \le \cdots \le P_1 \le 10^9$

SUBTASKS 子任務

	Points 佔分	Constraints 約束條件
1	12	$D_i = i$ $E = 7$ $P_2 = P_3 = \cdots = P_7 = 0$
2	10	$B_i = D_i$ for $1 \le i \le 5$　對於 $1 \le i \le 5$，$B_i = D_i$
3	24	$D_i = i$ $E = 7$ $P_i = 13 - i$
4	21	$D_i = i$ $E = 7$
5	27	$P_2 = P_3 = \cdots = P_7 = 0$
6	23	$B_i \neq E$ $P_i = 13 - i$
7	18	$P_i = 13 - i$
8	15	No additional constraints　無額外約束

TS269 Candy World 糖果世界

Score 分數: 250 | Limit 限制: 1s | 256MB

Struggling teaching in the Foundation Course, I decide to get some candies to make my life less bitter. Therefore, I am going to the "Candy World" for several days to eat as many candies as I want. As I am a good tutor that cares about my students so much, I decide to bring some candies for them from there.

There are N days between the end of the Foundation Course and the Selection Test. If I stay at the Candy World on the i^{th} day, I will get exactly C_i candies for my students. However, as the entrance fee is expensive, I will enter and leave Candy World only once. In other words, I can only stay there for a continuous period of days. Therefore, if I enter on the x^{th} day and stay for t days, where $1 \le x \le x+t-1 \le N$, I will get $C_x + C_{x+1} + C_{x+2} + \cdots + C_{x+t-2} + C_{x+t-1}$ candies for my students in total.

However, I know that my students will be angry if some of them get different number of candies. Therefore, I must ~~pretend to~~ be unbiased. The candies I get from Candy World have to be equally distributed to all of my K students. In other words, the total number of candies I get during my stay in Candy World must be divisible by K.

Now, I would like to know if it is possible to enter Candy World on a certain day and stay there for some specific number of days, so that I can be unbiased in distributing candies to my students. In other words, I would like to find a combination of x and t such that $C_x + C_{x+1} + C_{x+2} + \cdots + C_{x+t-2} + C_{x+t-1}$ is divisible by K, or determine that no solution exists. Note that the number of candies must be greater than 0 (for obvious reason).

Okay, you know that I must have an unreasonable reason to make you solve the problem for me. But guess what? I have run out of ideas! Hmm… I should ask other problem proposers to help me. Oh no! One of them is not online, let me get him here: *"roses are red, violets are blue…"*

苦苦堅持兩個月，終於迎來 C++ 基礎課程的的尾聲！被教學摧殘的我決定吃些糖果，期望苦盡甘來。由此，我決定到「糖果世界」逗留數天，便能於其中盡情地享用美味的糖果。當然，作為關心學生的良好導師，我自然會帶回一些糖果分給他們。

在基礎課程和選拔試中有 N 天的空檔，若我在其中的第 i 天留在糖果世界，我將能為學生帶回 C_i 顆糖果。可是糖果世界的入場費昂貴，我只能於這段期間進出一次。換言之，我只能於其中逗留一段連續的日子。因此，若我在第 x 天進入糖果世界並逗留 t 天 ($1 \le x \le x+t-1 \le N$) ，我將為學生帶回共 $C_x + C_{x+1} + C_{x+2} + \cdots + C_{x+t-2} + C_{x+t-1}$ 顆糖果。

然而，我意識到若我分給每位同學的糖果數量有所不同，定必會令他們生氣。為了彰顯~~表面上的~~公平，我在糖果世界中取得的糖果必須能平均分予我的 K 名學生，即我取得的糖果總數必須能被 K 整除。

因此，我希望得知我是否能在某一天進入糖果世界並逗留某特定日數，使我能平均地給同學們分配糖果。換言之，我希望找出一組 x 和 t 的組合，使能 $C_x + C_{x+1} + C_{x+2} + \cdots + C_{x+t-2} + C_{x+t-1}$ 被 K 整除；或判定不存在這樣一個組合。

到了現在，你應猜到我將會拋出一些不合理的理由使你協助我解決此問題。但很可惜你猜錯了，我已想不到更多理由了，看來我需要找其他出題者幫忙……啊！他們不在線上，讓我再次使出魔法：「玫瑰是紅色的，紫羅蘭是藍色的……」

INPUT 輸入

The first line consists of two integers N and K, representing the number of days and the number of students respectively.

The second line consists of N integers, the i^{th} integer C_i represents the number of candies I will get if I stay at Candy World on the i^{th} day.

第一行包含兩個整數 N 及 K，分別代表天數及學生人數。

第二行包含 N 個整數，第 i 個整數 C_i 代表若我在第 i 天留在糖果世界所獲得的糖果數量。

OUTPUT 輸出

If it is impossible to be unbiased in distributing candies to my students, output `-1`.

Otherwise, output two integers x and t, separated by a space, the entry day to Candy World and the number of days staying there, so that the total number of candies can be equally distributed to all K students.

If there are multiple possible pairs of solutions, you may output any one of them.

若不存在一個能使我平均分配糖果給同學的解，輸出 `-1`。

否則，輸出兩個整數 x 及 t，以一空格分隔二者，進入糖果世界的日子及逗留的天數，使糖果總數可平均分予 K 名同學。

若存在多組解，你可輸出任意其一。

SAMPLE TESTS 樣例

	Input 輸入	Output 輸出
1	4 3 4 2 7 6	1 2

This sample satisfies the constraints of Subtask 4.
With $x = 1$ and $t = 2$, total number of candies $= C_1 + C_2 = 4 + 2 = 6$, which is divisible by $K = 3$.
`2 2`, `2 3` and `4 1` are also acceptable answers.
此樣例滿足子任務 4 的約束。
當 $x = 1$ 及 $t = 2$，糖果總數 $= C_1 + C_2 = 4 + 2 = 6$，其能被 $K = 3$ 整除。
答案亦可為 `2 2`、`2 3` 及 `4 1`。

2	7 5 1 2 1 2 1 2 1	2 3

This sample satisfies the constraints of Subtask 5.
With $x = 2$ and $t = 3$, total number of candies $= C_2 + C_3 + C_4 = 2 + 1 + 2 = 5$, which is divisible by $K = 5$.
`1 7` and `4 3` are also acceptable answers.
此樣例滿足子任務 5 的約束。
當 $x = 2$ 及 $t = 3$，糖果總數 $= C_2 + C_3 + C_4 = 2 + 1 + 2 = 5$，其能被 $K = 5$ 整除。
答案亦可為 `1 7` 及 `4 3`。

3	6 7 8 3 10 21 3 4	4 1

With $x = 4$ and $t = 1$, total number of candies $= C_4 = 21$, which is divisible by $K = 7$.
`1 3`, `1 4`, `1 6`, `4 3` and `5 2` are also acceptable answers.
當 $x = 4$ 及 $t = 1$，糖果總數 $= C_4 = 21$，其能被 $K = 7$ 整除。
答案亦可為 `1 3`、`1 4`、`1 6`、`4 3` 及 `5 2`。

4	7 15 9 3 9 4 3 7 21	-1

We can prove that there is no combination of x and t such that the total number of candies is divisible by $K = 15$.
我們可證明沒有一組 x 和 t 的組合，使糖果總數能被 $K = 15$ 整除。

5	11 13 17 19 23 29 31 37 41 43 47 53 59	6 5

`1 6`, `3 2`, `6 2` and `8 3` are also acceptable answers.
答案亦可為 `1 6`、`3 2`、`6 2` 及 `8 3`。

CONSTRAINTS 約束條件

$1 \le N \le 2 \times 10^5$

$1 \le K, C_i \le 10^9$

SUBTASKS 子任務

	Points 佔分	Constraints 約束條件
1	5	$N = 1$
2	10	$N = 2$
3	15	$K = 2$
4	18	$K = 3$
5	13	$C_i = 1$ if i is odd　對於單數 i，$C_i = 1$ $C_i = 2$ if i is even　對於雙數 i，$C_i = 2$
6	32	$1 \le N, K, C_i \le 100$ There exists a solution where $x = 1$　存在一個 $x = 1$ 的答案
7	32	$1 \le N, K, C_i \le 100$
8	32	$1 \le N, K, C_i \le 5000$
9	65	$K \le N$
10	13	$1 \le K \le 2 \times 10^5$
11	15	No additional constraints　無額外約束