Problem 1. Ten Half 十點半

(Time Limit: 2 seconds)

問題描述：

"Ten Half" is a simple poker game similar to BlackJack. A is one point, 2 is two points, ..., 10 is ten points, and each of J, Q, K is a half point. If your total point of cards is over 10.5, you lose the game.

"十點半" 是一款類似於二十一點的簡單撲克遊戲。 A 是 1 分，2 是 2 分，...，10 是 10 分，J，Q，K 分別是 0.5 分。 如果您的總積分超過 10.5，您就輸了這場遊戲。

輸入說明:

The first line is an integer n (0<n<=10) that indicates the number of test cases. Other lines contain the cards you have in each test case. There is at least one card in each test case.

第一行是整數 n（0 <n <= 10），表示測試例子的數量。 其他行的每一行分別包含一個測試例子，代表您已拿到的撲克牌。 每個測試例子中至少有一張撲克牌。

輸出說明:

Output the probability of losing the game (A%), where A is a rounded integer scaled from 0 to 100 after you draw the next card. If the initial cards in the test case have already exceeded 10.5 points, output -1. Add a newline character at the end of each output.

輸出你再抽下一張牌後，輸掉遊戲的百分比機率(A%)，其中 A 為四捨五入至 0 到 100 的整數。如果測試例子中原本的牌已經超過 10.5 點，則輸出 -1。在每個輸出的末端請加上換行字元。

範例:

Sample Input:	Sample Output:
2 A 3 5 4 6 J K	69 -1

Problem 2. Longest Common Substring 最長共同子串列

(Time Limit: 2 seconds)

Problem Description

Design a program to find the longest common substring of two strings. A substring is a consecutive segment of a string. For instance, "agggcte" is a substring of "ggtttagggctehhdh" but "gthh" is not. For two strings A and B, a string C is a common substring of A and B if C is a substring of both A and B. Two strings may have many common substrings, and you need to find the longest one. For example,

(設計一支可以找出兩個字串中最長相同子字串的程式。所謂子字串是一個字串中任一長度的連續的字元組合。例如："agggcte"是"ggtttagggctehhdh"的子字串，但 "gthh" 不是。對兩個字串 A 與 B 而言，如果 C 字串同時為 A 與 B 的子字串，則 C 為 A 與 B 的共同字串。兩個字串可能有很多的共同子字串，你要把其中最長的子字串找出來。

A ="gggtttagggctehhdh"
B ="ttwhwttthhsagggcte"
The longest common substring is "agggcte". (最長子字串為"agggcte")

Input Format

The input contains five test cases and each case has two lines, each for one string. A string consists of alphanumeric characters and the length is at most 200.

輸入包含 5 組測試資料，每組測試資料有二列字串。一個字串由英文字母與數字組成，字串最長為 200。

Output Format

Output the length of the longest common substring of each case in one line. Please add a "newline" in the end of the output.

輸出每組測試資料之最長相同子字串的長度，輸出下一組測試資料結果前應換行。

Problem 3. Season Determination 季節判定

(Time Limit: 2 seconds)

問題描述:

Try writing a program to enter the month and then determine the season to which it belongs. (March to May is spring, June to August is summer, September to November is autumn, and December to February is winter.)

試撰寫一程式,可輸入月份,然後判斷其所屬的季節(3~5 月為春季,6~8 月為夏季,9~11 月為秋季,12~2 月為冬季)。

輸入說明:

Input a positive integer n (0 < n < 10) to the first row, which means the number of testing data is n.

Each testing data is the input month.

第一列輸入一個正整數 n (0 < n < 10),代表有 n 筆測資。

每筆測資為輸入月份。

輸出說明:

The output is the season of the input month, where Spring is from March to May, Summer is from June to August, Autumn is from September to November, and Winter is from December to February. Please note that there must be a newline character at the end of the output.

輸出該月份的季節,3~5 月為春季(Spring),6~8 月為夏季(Summer),9~11 月為秋季 (Autumn),12~2 月為冬季(Winter)。最後必須有換行字元。

範例:

Sample Input:	Sample Output:
2 3 10	Spring Autumn

Problem 4. String encoding 字串編碼

(Time Limit: 2 seconds)

問題描述：

When you use MS Excel, you will find that each column is labeled alphabet-ically (i.e., A, B, · · · , Z, AA, AB,· · ·). We can map the label of each column into an integer. For example, A → 1, B → 2, C → 3, D → 4, · · · , Z → 26,AA → 27, AB → 28, AC → 29, · · · , ZZ → 702, AAA → 703, AAB → 704,AAC → 705, · · ·

Figure out how the mapping procedure works, and write a function to implement it. For example, when the input is "AA", your function should output 27.

當您使用 MS Excel 時，您將發現每列都按字母順序標記（即 A，B，…，Z，AA，AB，…）。我們可以將每列的標籤映射為整數。 例如，A→1，B→2，C→3，D→4，…，Z→26，AA→27，AB→28，AC→29，…，ZZ→702，AAA→703 ，AAB→704，AAC→705，…

找出映射過程的方法，並編寫一個實現它的函數。例如，當輸入為"AA"時，您的函數應輸出 27。

輸入說明:

Input consists of several lines of text. Each line upper case letters (i.e., A, B, AA, ABB,· · ·).

輸入包含好幾行文字。每行為大寫字母的組合（即 A，B，AA，ABB，…）。

輸出說明:

The output contains one line for each input text. Each line contains a mapping number.

每行輸入文字輸出一行。每行包含一個映射數字。

範例:

Sample Input:	Sample Output:
A	1
AA	27
AB	28
ABE	733

Problem 5. Covering a Hole 覆蓋孔洞

(Time Limit: 3 seconds)

問題描述：

Tom works in a company that produces covers for all kinds of holes, such as holes on streets and wells. He encounters a problem as follows: given a hole H which is a polygon with interior angles of only 90 or 270 degrees, determine the smallest rectangular cover that can completely cover H. In this problem, H is given in a coordinate system such that each of its edges is either vertical or horizontal. When covering a hole, each edge of the cover should also be either vertical or horizontal in the same coordinate system.

Consider the example in Figure 1. It is easy to see that the smallest rectangular cover that can completely cover H is a rectangle of size 4 × 8.
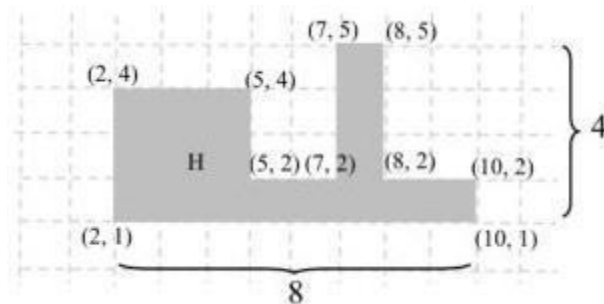

Figure 1: a rectangular hole H.

In this problem, you are asked to find the area of the smallest rectangular cover that can completely cover H. For example, in Figure 1, the output is 32.

Technical Specification

1. The number of the vertices of H, denoted by n, is a positive integer between 4 and 100.
2. The x-coordinates and y-coordinates of vertices are integers between 0 and 1000.

湯姆在一家公司工作，該公司生產各種孔洞的蓋子，例如街道和水井的孔洞。 他遇到以下問題：給定一個孔洞 H（該孔洞是一個僅具有 90 度或 270 度內角的多邊形），請找出可以完全蓋住 H 的最小矩形蓋子。在此問題中，H 的坐標是由每個邊緣均為垂直或水平的坐標系統表示。覆蓋孔洞時，蓋子的每個邊緣在同一坐標系統中也應為垂直或水平。

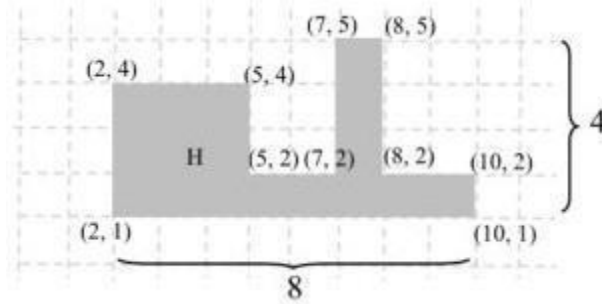考慮圖 1 中的示例。很容易看出，可以完全覆蓋 H 的最小矩形蓋子是大小為 4 × 8 的矩形。

圖 1：矩型孔洞 H

在此問題中，你被要求找出可以完全覆蓋 H 的最小矩形蓋子。例如，在圖 1 中，輸出為 32。

特別定義：
1. H 的頂點數（用 n 表示）是 4 到 100 之間的正整數。
2. 頂點的 x 坐標和 y 坐標是 0 到 1000 之間的整數。

輸入說明:

The first line is an integer t, 1 ≤ t ≤ 10, indicating the number of test cases.
Each test case starts with one line containing the number n, 4 ≤ n ≤ 100, of vertices of the hole H. Then, n lines follow, each of which includes two integers x and y, 0 ≤ x, y ≤ 1000, which are the coordinates of the vertices of the hole's polygon. In the order, they would be visited on a trip around the polygon.

第一行是整數 t，其中 1 ≤ t ≤ 10，表示測試案例的數量。每個測試案例開始的第一行為整數 n（4 ≤ n ≤ 100），代表孔洞 H 的頂點數量。接著是 n 行數值，每行包含兩個整數 x 和 y，其中 0 ≤ x, y ≤ 1000，表示孔洞多邊形的頂點坐標，依照在多邊形周圍繞一圈的順序讀取它們。

輸出說明:

For each test case, output the area of the smallest rectangular cover that can completely cover H in one line.

對於每個測試案例，輸出一行可以完全覆蓋 H 的最小矩形蓋子的面積。

範例:

Sample Input:	Sample Output:
2	32

10	9
10 1	
10 2	
8 2	
8 5	
7 5	
7 2	
5 2	
5 4	
2 4	
2 1	
4	
2 1	
5 1	
5 4	
2 4	

Problem 6. Complaint Value of a Queue 排隊抱怨值

(Time Limit: 3 seconds)

問題描述：

People need to spend time lining up when entering some popular performance venue. Assume each one in the line of entering a performance venue is assigned a sequential number. One with a smaller sequential number is supposed to have a higher priority to enter the place. For example, if someone's number is 1, then he should be the first to enter. However, some people with the lower priority might cut in the line, and it makes the law-abiding people complain.

Suppose everyone in the line queue has a complaint value 0 initially. For a person in the queue, if the people in line ahead of him all have greater priority than him, the final complaint value is 0. Else if k people in line ahead of him with priorities lower than him, his compliant value increases by k. The compliant value of a queue is the sum of the values of all individuals.

Please calculate the complaint value of the given line queue.

參加熱門的演唱會或週年慶的百貨公司等一些熱門活動，因人數眾多，常常需要要排隊進場。假設在進場的排隊隊伍中，每個人都有一個順序號碼，而號碼較小的消費者擁有較高的優先權進場。比方說，如果有人拿到的的順序號碼是 1，那麼他應該可以第一個進場。然而，當隊伍有人插隊時，低優先權的人會排在高優先權的前面，這會激起守法的排隊者的抱怨。

假設隊伍中每個人都有一個起始值為 0 的抱怨值。若排在他前面的人，其優先權都比他大，則抱怨值保持為 0；而當他前面有 k 個優先權比他低的人插隊進來時，則他的抱怨值增加 k。一個排隊隊伍的抱怨值設為所有排隊人員的抱怨值總和。

請計算排隊隊伍的抱怨值。

輸入說明:

1. An integer N means the number of people in a line queue, 0 < N < 100.
2. N sequential numbers Si, i = 1,..,N and 0 < Si < 10000.

1.整數 N（排隊人數）。（0 < N <100）
2.隊伍中每個人的順序號碼 Si，i = 1,...,N 且 0 < Si < 10000。

輸出說明:

Output the compliant value of the line queue with the format "Complaint =X."

輸出排隊隊伍的抱怨值，其格式為"Complaint=X"。

範例:

Sample Input:	Sample Output:
8 1 20 54 50 100 200 50	Complaint=6