PROBLEM STATEMENT:

TASK 1(A) –
Decomposing binary strings

Sri Harsha is a very curious fellow. He started to wonder about binary numbers and how you can represent them as strings. But, due to his exceptional nature, this was not enough for him. He wondered if a binary string could be decomposed into the average of two different binary strings of equal length as the original string.

If there are multiple answers, you need to print the strings that make the difference of 2 numbers minimum.

Example: 1101 (13) can be expressed as the average of 1011 (11) and 1111 (15), or 1100 (12) and 1110 (14), So the answer will be 1110 and 1100.

Note: length of both strings should be same and don't use leading zeros until required.

Input Format

The first line is the length of the string.
The second line is the string.

Constraints

Length of the string<=100000
The string is composed of zeroes or ones.

Output Format

If it is not possible to print two strings pertaining to the conditions prescribed the print –1 on one line.
Otherwise, output 2 space-separated strings with the first string being the lesser string and a string here may start with one or more '0's.

The strings should obey the conditions prescribed above.

Sample Input 0

4
1101
Sample Output 0
1100 1110

TASK 1(B) - Symmetry ?

Degree of symmetry is defined as the numbers of times you can divide (if can divide) a string such that both the remaining half are equal to each other.

Examples:
A: The degree of symmetry is 0 as it cannot be divided.
ABAB : The degree of symmetry is 1. It can be divided only once into AB - AB which can't be divided further into equal strings.
AAAA: The degree of symmetry is 2.It can be divided into AA - AA, each AA can be further divided into A-A which cannot be divided any further.

Input Format

The First line contains an integer n denoting the length of string
The Second line contains a String of length n.

Constraints

1 <= Length of the String <= 1000000.
The Length of the String is always a Power of 2. (Note: 1 is a power of 2 (2^0))
The String consists of lowercase Alphabets Only.

Output Format

Print an Integer denoting the Degree of Symmetry.

Sample Input 0
1
a
Sample Output 0
0

Sample Input 1

4
aaaa
Sample Output 1
2

Sample Input 2
16
abcdefghhgfedcba
Sample Output 2
0

Sample Input 3
16
abababababababab
Sample Output 3
3

TASK 1(C) – Determine the final amount

The SPIDER ALGO TEAM members have a strange connection with pizzas and the success of the workshop on that day. We consider a duration of workshop be n days each numbered from 1 to n. You are given following information about each day:

Whether they have a successful workshop on day i or not.

whether they eat pizza on day i or not.

The team members become happy and hence the workshop turns out to be successful when the head of the team make eat pizza on the same day.The initial money which the spider Algo team has is Rs r. For every successful workshop their money increases by Rs x.For every unsuccessful workshop their total decrease by Rs y. You have to determine the total money at the end of n days.

Input Format

The first line contains a positive integer n, r, x, y – the number of days under consideration, his initial amount, increase after each Successful workshop , and the decrease in their total after each unsuccessful workshop respectively . The second line contains the sequence of integers c_1 , c_2 , ..., c_n separated by space, where: c_i equals 1 if a contest takes place on the i- th day; 0 otherwise. The third line contains the sequence of integers s_1 , s_2 , ..., s_n separated by space, where: s_i equals 1 if the team eats pizza on the i- th day; 0 otherwise.

Constraints

1 ≤ n ≤ 1000000

1 ≤ r ≤ 3000
1 ≤ x, y ≤ 100
0 ≤ c[i] ≤ 1
0 ≤ s[i] ≤ 1

Output Format

Print a single line containing the string "promoted"(without quotes) if the money the team earns is greater than their initial amount. · Print a single line containing the string "demoted"(without quotes) if the money is lesser than their initial amount. · Print "no change" otherwise.

Sample Input 0
5 426 75 22
0 1 0 0 0
0 1 0 0 1
Sample Output 0
promoted

Sample Input 1
4 1500 20 5
1 0 0 1
1 1 0 1
Sample Output 1
promoted

TASK 1(D) – Complete the task

Priya likes to play with numbers. One day Priya decides to assign a task to her mentee Tanya. You have to help Tanya to complete this task. Task is as follows - Priya gives sanya an integer N which is always a odd number. Priya wants Tanya to make a pattern which consists of N rows and N columns .Priya being Priya asked her to make pattern which will consist of ' '(space) and *(character) only. For making Tanya understand the type of pattern she wants Priya gave her a sample input and output.Your task is to Help tanya print the pattern.

Input Format

The first line of input contains an integer 'T' representing the number of test cases.

Then each test case contains a single integer 'N' denoting the size of the pattern.

Constraints

1 <= T <= 5
3 <= N <= 500

Where 'T' is the number of test cases, 'N' is the size of the pattern. 'N' will be odd for all test cases.

Output Format

For each test case, print the pattern.

Sample Input 0
4
5
3
7
9
Sample Output 0
```
*****
** **
*   *
** **
*****
***
* *
***
*******
*** ***
**   **
*     *
**   **
*** ***
*******
*********
**** ****
***   ***
**     **
*       *
**     **
***   ***
**** ****
```

GUIDELINES:

The best practice anyone could do is solving question. We have complied few questions. We want you to explore each topic and solve these questions while doing so. If you are stuck or have any doubts you can always ping your mentor. Happy Coding :)

EVALUATION METRICS:

- Plagiarism of any sort will result in elimination
- These tasks will be followed by personal interviews and if candidates fail to explain their concept and code, they will be eliminated
- Novel approaches will be rewarded
- Time Complexity and Space complexity for each solution will be considered for evaluation.

SUBMISSION:

Submit your codes on hackerrank, you can find link here :contest