Colours A, B, C, D

Consider a table with 2 rows and 2N columns (a total of 4N cells). Each cell of the first row is coloured by one of the colours A, B, C, D such that there are no two adjacent cells of the same colour. You have to colour the second row using colours A, B, C, D such that:

- There are exactly N cells of each colour (A, B, C and D) in the table.
- There are no two adjacent cells of the same colour. (Adjacent cells share a vertical or a horizontal side.)

It is guaranteed that the solution, not necessarily unique, will always exist.

Input

[a natural number N ≤ 50000]

[a string of 2N letters from the set {A, B, C, D}, representing the first row of the table]

Output

[a string of 2N letters from the set {A, B, C, D}, representing the second row of the table]

Example

Input:
1
CB

Output:
AD

Input:
2
ABAD

Output:
BCDC