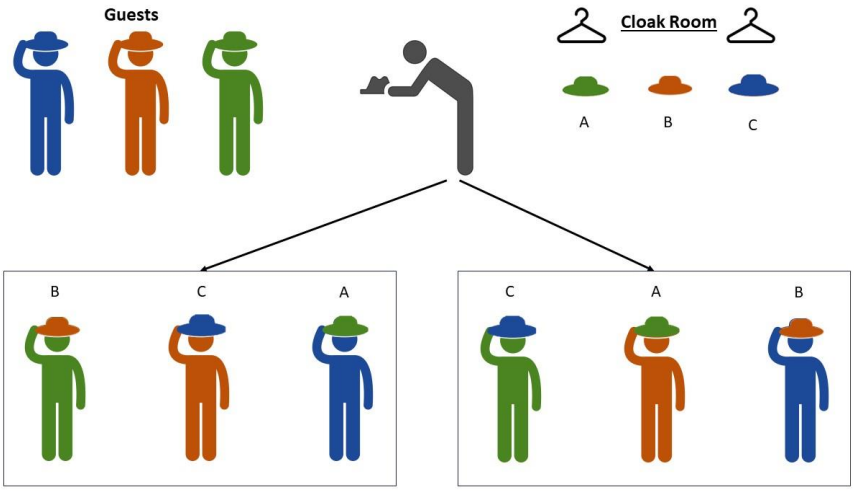
24 Mixing Hats

12 points

Introduction

At a fancy party, guests arrive and check their hats in the cloak room. Starting with a single capital letter "A" and following alphabetical order, the cloak room attendant gives a ticket with that letter to the guest and attaches a label with the same letter to the hat. Once the party starts, the attendant wants to have some fun, so he starts exchanging the hat labels. By the time guests are ready to leave, none of them has their original hat back.

In case of having three guests at the party, when the hats arrive to the cloak room, the hats will receive labels A, B and C. To make it funnier, the attendant makes sure that no guest has their original hat. So he has 2 different options when mixing things up, he can mix them in a B, C, A manner or a C, A, B manner. If he did it in any other way, like C, B, A, guest B would have his original hat, which the attendant wants to avoid.



Can you write a program to calculate all the possible combinations of labels that ensures that nobody gets their hat back?

Input

The input is the number of guests attending the party: a number between 2 and 7, both included.

Output

The output is the list of possible hat labels combinations ordered alphabetically.

Example

Input

3

Output

BCA

CAB