

# Open Sesame

May 2025

C++ — 2 SEC — 512 MB

The Fountain of Youth is hidden somewhere in the expansive gardens of the Guild of Sorcerers. It is guarded 24/7 by two stern-looking guards... and a lot of magic. Access is only granted upon relaying the secret password. But potential entrants must be careful — getting even one letter wrong would be a painful and rather magical mistake.

Neither guard knows the full password, instead they both know a substring of the password. They also know that the full password is one of the shortest superstrings of both substrings.

A superstring of two strings is a word that contains both strings as (possibly overlapping) substrings. For example, `BANDANA` is a superstring of `BAND` and `ANNA`. However, it does not have the shortest possible length. `BANNAD` is a superstring of `BAND` and `ANNA` of the shortest length.

**INPUT** You will be given two integers on a single line, **n** and **m**. You will then be given two strings of length **n** and **m** respectively, on separate lines.

$1 \leq n, m \leq 3,000$

**OUTPUT** Output a superstring of the two strings of shortest length. If there are multiple possible answers, output any one.

**SAMPLE** For example, suppose the two substrings were `OPEN` and `SESAME`. A possible full password could thus be `SOEPSAMEN`.

## INPUT

4 4  
BAND  
ANNA

3 5  
CFG  
ABDEH

6 6  
TOMATO  
POTATO

## OUTPUT

BANNAD

ABCDEFGH

PTOTMATO