

# The Friend of Their Friend

Fall 2023 Programming Fundamentals Labwork 4

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**Time Limit: 1s**

**Memory Limit: 256MB**

There's a very peculiar cult in Sophotopia, one of the rules of the cult is that a member must at most only befriend two other members of the cult. You are tasked to find out whether there is a link between 2 members of the cult. A link between 2 members means that there is a sequence of cult members that can connect member A to member B by friendship.

Example:

- Benjamin befriends Ethan
- Ethan befriends Emily
- Emily befriends Xavier

There is a link between Benjamin and Xavier, as there exists a sequence of cult members that connects Benjamin to Xavier.

Below are given the rules of the problem:

- You are first given a number `n`, denoting the number of cult members in the cult.
- The next `n` lines are the names of the cult members. The names comprise of only one word each. Each of the name will be unique.
- The first name will befriend only one other member, which is the member that shows in the line immediately after their name.
- The last name will also befriend only one other member, which is the member that shows in the line immediately before their name.
- All other members befriends 2 other members, which are the member that shows in the line immediately before, and the member that shows in the line immediately after their name.
- The last line will contain 2 strings `str1` and `str2`. You are tasked to print the sequence of connections that links from `str1` to `str2`. It is guaranteed that a link exists between `str1` and `str2`.
- `str1` is always sequentially before or equal to `str2`, meaning that `str1` will always come before or is the same as `str2` in the input section.

Constraints:

$$0 \leq n \leq 2^{64} - 1$$
$$1 \leq \text{strlen}(\text{str1}), \text{strlen}(\text{str2}) < 2048$$

**Aside from storing the names as a 1D char array in a struct, you are forbidden to use ANY ARRAYS. Any submissions that disobeys this rule will be NULLIFIED.**

\*hint: use the struct implementation of linked lists. You can use the `malloc()` function available on `stdlib.h` to allocate memory for non-locally scoped data.

<b>Input</b>	4 Zoe Ava Thompson Jackson Zoe Thompson
<b>Output</b>	Zoe->Ava->Thompson
<b>Input</b>	7 Budi Andi Hassan Bagas Fatimah Ayu Yusuf Hassan Ayu
<b>Output</b>	Hassan->Bagas->Fatimah->Ayu
<b>Input</b>	1 Ilham Ilham Ilham
<b>Output</b>	Ilham