Problem D
Substring Permutation

Given two strings S and P, there are several ways to find whether P appears as a substring of S. The simplest one would be directly checking whether P is equal to any substring of S. As there can be $O(|S|)$ substring of S of length $|P|$, this approach has $O(|S| \times |P|)$ time complexity. There is also a more sophisticated way by using *knuth-morris-pratt* (KMP) algorithm to solve this problem in $O(|S| + |P|)$.

In this problem, you are challenged to a similar problem.

Given two strings S and P. Let $\Pi(S)$ be the set containing all strings which are permutations of S, and $\Pi(P)$ be the set containing all strings which are permutations of P. Determine whether there exists a string $p \in \Pi(P)$ and a string $s \in \Pi(S)$, such that p appears as a substring of s.

For example, let S = `guru` and P = `rug`. Then, $\Pi(S)$ = {`gruu`, `guru`, `guur`, `rguu`, `rugu`, `ruug`, `ugru`,`ugur`, `urgu`, `urug`, `uugr`, `uurg`}, and $\Pi(P)$ = {`gru`, `gur`, `rgu`, `rug`, `ugr`, `urg`}. Observe that the string `rug` in $\Pi(P)$ appears as a substring of the string `rugu` in $\Pi(S)$, i.e. `[rug]u`. In this example, you can also find another $\langle p, s \rangle$ which satisfies the requirement, e.g., $\langle$`gru`, `gruu`$\rangle$, $\langle$`gru`, `ugru`$\rangle$, $\langle$`urg`, `uurg`$\rangle$, $\langle$`gur`, `guru`$\rangle$, etc.

Input

Input contains two lines. The first line contains a string S ($1 \leq |S| \leq 100000$). The second line contains a string P ($1 \leq |P| \leq |S| \leq 100000$). Both S and P contains only lowercase alphabetical character (`a-z`).

Output

Output in a line "`YES`" (without quotes) if there exists a string $p \in \Pi(P)$ and a string $s \in \Pi(S)$, such that p appears as a substring of s; otherwise, output "`NO`" (without quotes).

Sample Input #1

```
guru
rug
```

Sample Output #1

```
YES
```

Sample Input #2

```
icpc
inc
```

Sample Output #2

```
NO
```

Sample Input #3

```
yesorno
sore
```

Sample Output #3

```
YES
```

Sample Input #4

```
indonesia
icpcasia
```

Sample Output #4

```
NO
```