#include <bits/stdc++.h>

using namespace std;

#define d 256

void search(char pat[], char txt[], int q)

{

int M = strlen(pat);

int N = strlen(txt);

int i, j;

int p = 0; // hash value for pattern

int t = 0; // hash value for txt

int h = 1;

for (i = 0; i < M - 1; i++)

h = (h \* d) % q;

for (i = 0; i < M; i++) {

p = (d \* p + pat[i]) % q;

t = (d \* t + txt[i]) % q;

}

for (i = 0; i <= N - M; i++) {

if (p == t) {

for (j = 0; j < M; j++) {

if (txt[i + j] != pat[j]) {

break;

}

}

if (j == M)

cout << "Pattern found at index " << i

<< endl;

}

if (i < N - M) {

t = (d \* (t - txt[i] \* h) + txt[i + M]) % q;

if (t < 0)

t = (t + q);

}

}

}

int main()

{

char txt[] = "GEEKS FOR GEEKS";

char pat[] = "GEEK";

int q = INT\_MAX;

// Function Call

search(pat, txt, q);

return 0;

}

