#include <iostream>

using namespace std;

#define MAX 1000

class Queue {

char arr[MAX];

int frontIdx, rearIdx;

public:

Queue() {

frontIdx = 0;

rearIdx = -1;

}

void push(char x) {

if (rearIdx < MAX - 1) {

arr[++rearIdx] = x;

}

}

void pop() {

if (!empty()) {

frontIdx++;

}

}

char front() {

if (!empty())

return arr[frontIdx];

return '\0';

}

bool empty() {

return frontIdx > rearIdx;

}

};

class FirstNonRepeating {

public:

void findFirstNonRepeating(char str[]) {

Queue q;

int freq[256] = {0};

for (int i = 0; str[i] != '\0'; i++) {

char ch = str[i];

if (ch == ' ') continue;

freq[(int)ch]++;

q.push(ch);

while (!q.empty() && freq[(int)q.front()] > 1) {

q.pop();

}

if (q.empty()) cout << "-1 ";

else cout << q.front() << " ";

}

cout << endl;

}

};

int main() {

char input[] = "a a b c";

FirstNonRepeating obj;

obj.findFirstNonRepeating(input);

return 0;

}

