#include <iostream>

using namespace std;

int word\_cnt = 1;

struct stack

{

char data;

stack \*next;

stack \*prev;

stack \*head = NULL;

stack \*tail = NULL;

void push(char x)

{

stack \*current = new stack;

current->data = x;

current->next = NULL;

current->prev = NULL;

if (head == NULL)

{

head = current;

tail = current;

}

else

{

current->next = head;

head->prev = current;

head = current;

}

}

void print()

{

stack \*temp = tail;

while (temp != NULL)

{

cout << temp->data;

temp = temp->prev;

}

cout << endl;

}

int len()

{

stack \*temp = head; // suze of the stack

int cnt = 0;

while (temp != NULL)

{

cnt++;

temp = temp->next;

}

return cnt;

}

};

void generate\_words(stack list, string vocab)

{

if (vocab.length() == list.len())

{

cout << word\_cnt << ". ";

list.print();

word\_cnt++;

return;

}

for (int i = 0; i < vocab.length(); i++)

{

stack new\_stack = list;

new\_stack.push(vocab[i]);

generate\_words(new\_stack, vocab);

}

}

int main()

{

stack list;

string vocab;

cout << "Enter the vocabulary: " << endl;

cin >> vocab;

generate\_words(list, vocab);

return 0;

}