#include <stdio.h>

#include <string.h>

#define Max(a, b) ((a)>(b)?(a):(b))

char s[30];

int n, l, m;

char a[500010];

struct node

{

int d;

char ch;

bool end;

node \*next[26];

} \*head;

void add(node \*p, int k)

{

if (s[k] == 0)

{

p->end = 1;

return;

}

if (p->next[s[k]-'a'] == NULL)

{

int i;

p->next[s[k]-'a'] = new node;

p->next[s[k]-'a']->ch = s[k];

p->next[s[k]-'a']->d = 0;

p->next[s[k]-'a']->end = 0;

for (i = 0; i < 26; i++)

p->next[s[k]-'a']->next[i] = NULL;

}

add(p->next[s[k]-'a'], k+1);

p->d = Max(p->d, l-k);

}

void go(node \*p)

{

if (p->ch != '#')

a[l++] = p->ch;

if (p->end)

{

a[l++] = 'P';

m++;

}

int k=-1, i;

for (i = 0; i < 26; i++)

if (p->next[i] != NULL && (k == -1 || p->next[i]->d > p->next[k]->d))

k = i;

if (k == -1)

{

if (m < n)

a[l++] = '-';

return;

}

for (i = 0; i < 26; i++)

if (i != k && p->next[i] != NULL)

go(p->next[i]);

go(p->next[k]);

if (m < n)

a[l++] = '-';

}

int main()

{

int i;

scanf("%d", &n);

s[0] = '#';

head = new node;

head->d = 0;

head->ch = s[0];

for (i = 0; i < 26; i++)

head->next[i] = NULL;

head->end = 0;

for (i = 0; i < n; i++)

{

scanf("%s", s+1);

l = strlen(s);

add(head, 1);

}

l = m = 0;

go(head);

printf("%d\n", l);

for (i = 0; i < l; i++)

printf("%c\n", a[i]);

return 0;

}