#include <iostream>

using namespace std;

struct sign {

char ch;

sign\* next;

};

void signAdd(sign\*\* head, char ch) {

sign\* temp = new sign;

temp->ch = ch;

temp->next = \*head;

\*head = temp;

}

char signGet(sign\*\* head){

{

char ch = (\*head)->ch;

sign\* temp = \*head;

\*head = (\*head)->next;

delete temp;

return ch;

}

}

void makePOLIZ(char in[100], char out[100]) {

sign\* head = NULL;

int i = 0, j = 0;

while (in[i]) {

while (in[i] && in[i] != '+' && in[i] != '-' && in[i] != '\*' && in[i] != '/') {

out[j] = in[i];

i++;

j++;

}

out[j] = ' ';

j++;

while (head && ((head->ch == '\*' or head->ch == '/') or (head->ch == '+' or head->ch == '-') && (in[i] == '+' or in[i] == '-'))) {

out[j] = signGet(&head);

j++;

}

if (in[i] != '\0')

signAdd(&head, in[i]);

i++;

}

while (head) {

out[j] = signGet(&head);

j++;

}

}

struct number {

int num;

number\* next;

};

void numAdd(number\*\* head, int num) {

number\* temp = new number;

temp->num = num;

temp->next = \*head;

\*head = temp;

}

int numGet(number\*\* head){

int num= (\*head)->num;

number\* temp = \*head;

\*head = (\*head)->next;

delete temp;

return num;

}

int readNum(char in[100], int\* i) {

int num = 0;

while (in[\*i] > 47 && in[\*i] < 58) {

num = num \* 10 + (in[\*i] - 48);

(\*i)++;

}

return num;

}

int countPOLIZ(char in[100]) {

cout << "In count: " << in << endl;

number\* head = NULL;

for (int i = 0; in[i]; i++) {

if (in[i] != ' ') {

if (in[i] > 47 && in[i] < 58)

numAdd(&head, readNum(in, &i));

else {

int result;

int b = numGet(&head);

int a = numGet(&head);

if (in[i] == '+')

result = a + b;

else if (in[i] == '-')

result = a - b;

else if (in[i] == '\*')

result = a \* b;

else if (in[i] == '/')

result = a / b;

numAdd(&head, result);

}

}

}

return numGet(&head);

}

int main() {

char in[100] = "50 + 20 \* 4 / 2 - 50";

char out[100] = "";

cout << "input: " << endl;

for (int i = 0; in[i]; i++)

cout << in[i];

cout << endl;

makePOLIZ(in, out);

cout << "OUTput: " << out << endl;

for (int i = 0; out[i]; i++)

cout << out[i];

cout << endl;

cout << "result: " << countPOLIZ(out);

return 0;

}