#include<bits/stdc++.h>

using namespace std;

int prefernces(char ch){

if(ch=='+' || ch=='-'){

return 1;

}

else if(ch=='\*' || ch=='/'){

return 2;

}

else{

return 0;

}

}

int operation(int v1, int v2, char op){

if(op=='+'){

return v1+v2;

}

else if(op=='-'){

return v1-v2;

}

else if(op=='\*'){

return v1\*v2;

}

else{

return v1/v2;

}

}

void solve(string s){

stack<int> value;

stack<string> infix;

stack<string> prefix;

for(int i=0;i<s.size();i++){

char ch = s[i];

if(isdigit(ch)){

string str;

value.push(ch-'0');

infix.push(str+ch);

prefix.push(str+ch);

}

else if(ch=='+' || ch=='-' || ch=='\*' || ch=='/'){

char op = ch;

int v2 = value.top();

value.pop();

int v1 = value.top();

value.pop();

int res = operation(v1,v2,op);

value.push(res);

string inf2 = infix.top();

infix.pop();

string inf1 = infix.top();

infix.pop();

string inf = '(' + inf1 + op + inf2 + ')' ;

infix.push(inf);

string pre2 = prefix.top();

prefix.pop();

string pre1 = prefix.top();

prefix.pop();

string pre = op+pre1+pre2;

prefix.push(pre);

}

}

cout<<value.top()<<endl;

cout<<infix.top()<<endl;

cout<<prefix.top()<<endl;

}

int main(){

string s;

getline(cin,s);

solve(s);

}