#include<bits/stdc++.h>

using namespace std;

#define size 100

struct stac{

int top;

int a[size];

}W;

int evaluation(string s)

{ int data;

int result=0;

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

{

int x=(int)s[i];

if((x>=65&&x<=91)||(x>=97&&x<=123))

{

cout<<endl<<"ENTER A CONSTANT VALUE FOR VARIABLE: "<<s[i]<<" ";

cin>>data;

++W.top;

W.a[W.top]=data;

}

else if(x==94||s[i]==42||s[i]==47||s[i]==45||s[i]==43)

{

int op2=W.a[W.top];

W.top--;

int op1=W.a[W.top];

W.top--;

if(s[i]=='\*')

result=op1\*op2;

else if(s[i]=='+')

result=op1+op2;

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

result=op1-op2;

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

result=op1/op2;

else if(s[i]=='^')

result=op1^op2;

W.top++;

W.a[W.top]=result;

}

}

return(result);

}

int prec(char c)

{

if(c == '^')

return 3;

else if(c == '\*' || c == '/')

return 2;

else if(c == '+' || c == '-')

return 1;

else

return -1;

}

string convert(string s)

{

std::stack<char> st;

st.push('N');

int l = s.length();

string final;

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

{

if((s[i] >= 'a' && s[i] <= 'z')||(s[i] >= 'A' && s[i] <= 'Z'))

final+=s[i];

else if(s[i] == '(')

st.push('(');

else if(s[i] == ')')

{

while(st.top() != 'N' && st.top() != '(')

{

char c = st.top();

st.pop();

final += c;

}

if(st.top() == '(')

{

char c = st.top();

st.pop();

}

}

else{

while(st.top() != 'N' && prec(s[i]) <= prec(st.top()))

{

char c = st.top();

st.pop();

final += c;

}

st.push(s[i]);

}

}

while(st.top() != 'N')

{

char c = st.top();

st.pop();

final =final+ c;

}

cout<<"CONVERTED FORM IS: " << final << endl;

return(final);

}

int main()

{ cout<<endl<<"Enter An Expression In Form Of Variables :"<<endl;

string s,s1;

cin>>s;

s1=convert(s);

int result=evaluation(s1);

cout<<endl<<"Evaluated Result: "<<result<<endl;

return 0;

}