#include<iostream>

using namespace std;

inline int IntRead(){

char ch=getchar();

int s=0,w=1;

while(ch<'0' || ch>'9'){

if(ch=='-') w=-1;

ch=getchar();

}

while(ch>='0' && ch<='9'){

s=s\*10+ch-'0',

ch=getchar();

}

return s\*w;

}

inline string StringRead(){

string str;

char s=getchar();

while(s==' ' || s=='\n' || s=='\r'){

s=getchar();

}

while(s!=' ' && s!='\n' && s!='\r'){

str+=s;

s=getchar();

}

return str;

}

inline double DoubleRead(){

long long s=0,w=1,k=0,n=0,m=0;

char ch=getchar();

while(ch<'0' || ch>'9'){

if(ch=='-') w=-1;

ch=getchar();

}

while((ch>='0' && ch<='9') || ch=='.'){

if(ch=='.') n=1;

else if(n==0) s=s\*10+ch-'0';

else k=k\*10+ch-'0',m++;

ch=getchar();

}

return(pow(0.1,m)\*k+s)\*w;

}

inline void IntWrite(int s){

int k=0,len=0;

if(s==0) putchar('0');

while(s){

k=k\*10+s%10;

s/=10,len++;

}

for(int i=0;i<len;i++){

putchar(k%10+'0');

k/=10;

}

}

inline void StringWrite(std::string str){

int i=0;

while(str[i]!='\0'){

putchar(str[i]),i++;

}

}

inline void DoubleWrite(double a){

int mi=0,s[100];

if (a==0) putchar('0');

while(a!=(long long int)a){

a\*=10,mi++;

}

long long int k=a,len=0;

while(k!=0){

s[len]=k%10,len++,k/=10;

}

for(len-=1;len>=0;len--){

if(len==mi-1) putchar('.');

putchar(s[len]+'0');

}

}