import java.io.\*;

class CRC

{

public static void main(String args[]) throws IOException

{

BufferedReader br = new BufferedReader(new InputStreamReader(System.in));

System.out.println("Enter Generator:");

String gen = br.readLine();

System.out.println("Enter Data:");

String data = br.readLine();

String code = data;

while(code.length() < (data.length() + gen.length() - 1))

code = code + "0";

code = data + div(code,gen);

System.out.println("The transmitted Code Word is: " + code);

System.out.println("Please enter the received Code Word: ");

String rec = br.readLine();

if(Integer.parseInt(div(rec,gen)) == 0)

System.out.println("The received code word contains no errors.");

else

System.out.println("The received code word contains errors.");

}

static String div(String num1,String num2)

{

int pointer = num2.length();

String result = num1.substring(0, pointer);

String remainder = "";

for(int i = 0; i < num2.length(); i++)

{

if(result.charAt(i) == num2.charAt(i))

remainder += "0";

else

remainder += "1";

}

while(pointer < num1.length())

{

if(remainder.charAt(0) == '0')

{

remainder = remainder.substring(1, remainder.length());

remainder = remainder + String.valueOf(num1.charAt(pointer));

pointer++;

}

result = remainder;

remainder = "";

for(int i = 0; i < num2.length(); i++)

{

if(result.charAt(i) == num2.charAt(i))

remainder += "0";

else

remainder += "1";

}

}

return remainder.substring(1,remainder.length());

}

}