**Question 1)**

You are working on a project and need to cut films into scenes. to help streamline the creation of the final films, the team needs to

develop an automated way of breaking up individual shots (short sequence from a particular camera angle) in a film into scenes (a sequence of shots). there is already an algorithm that breaks the film up into shots and

labels them with a letter. Identical shots are labelled with the same letter. write a function to split the film into as many short scenes as

possible without confusing viewers by having the same shot appear in different scenes. This will partition the sequence of shot labels into

scenes so that no shot label appears in more than one scene and each scene is as short as possible. the output should be the length of each scene.

**Input**

the input to the function/method consists of a list of characters representing the sequence of shots.

**Output**

Return a list of integers representing the length of each scene, in the order in which it appears in the given sequence of shots.

**example 1:**

inputList = [a,b,a,b,c,b,a,c,a,d,e,f,e,g,d,e,h,i,j,h,k,l,i,j]

output:

[9,7,8]

**example 2:**

inputList=[a,b,c]

output:

[1,1,1]

**example 3:**

inputList =[a,b,c,a]

output:

[4]

**Example 4:**

inputList = [a,b,c,d,a,e,f,g,h,i,j,e]

output:

[5 7]

**Example 5:**

inputList = [z,w,c,b,z,c,h,f,i,h,i]

output:

[6 5]

**Question 2)**

Imagine a relation between 2 numbers in such :

the sum of factors including 1 (but not the number itself) of one number

is equal to the other number and vice versa.

for example, (220,284) have such a relation. the factors of 220 are

1,2,4,5,10,11,20,22,44,55, and 110 whose sum equals 284. the factors of 284

are 1,2,4,71,142 whose sum equals 220.

Write a function **checkRelation** which you call from main() and checks

whether a pair of numbers entered has this relation or has not. Display

the factors of each number to confirm your answer.

**question 3)**

use random to produce two positive one-digit integers. the program should

then prompt the user with a question, such as:

how much is 6(first random one-digit integer) times 7(second random one-digit integer)?

the user then inputs the answer. the program checks the user's answer. if

it's correct, display the message "very good" and ask another multiplication

question. if the answer is wrong, display the message "No. try again" and

let the user try THE SAME QUESTION repeatedly until the user gets it

right ! a separate method should be used to generate each new question.

this method should be called once when the app begins execution and each time

the user answers the question correctly.