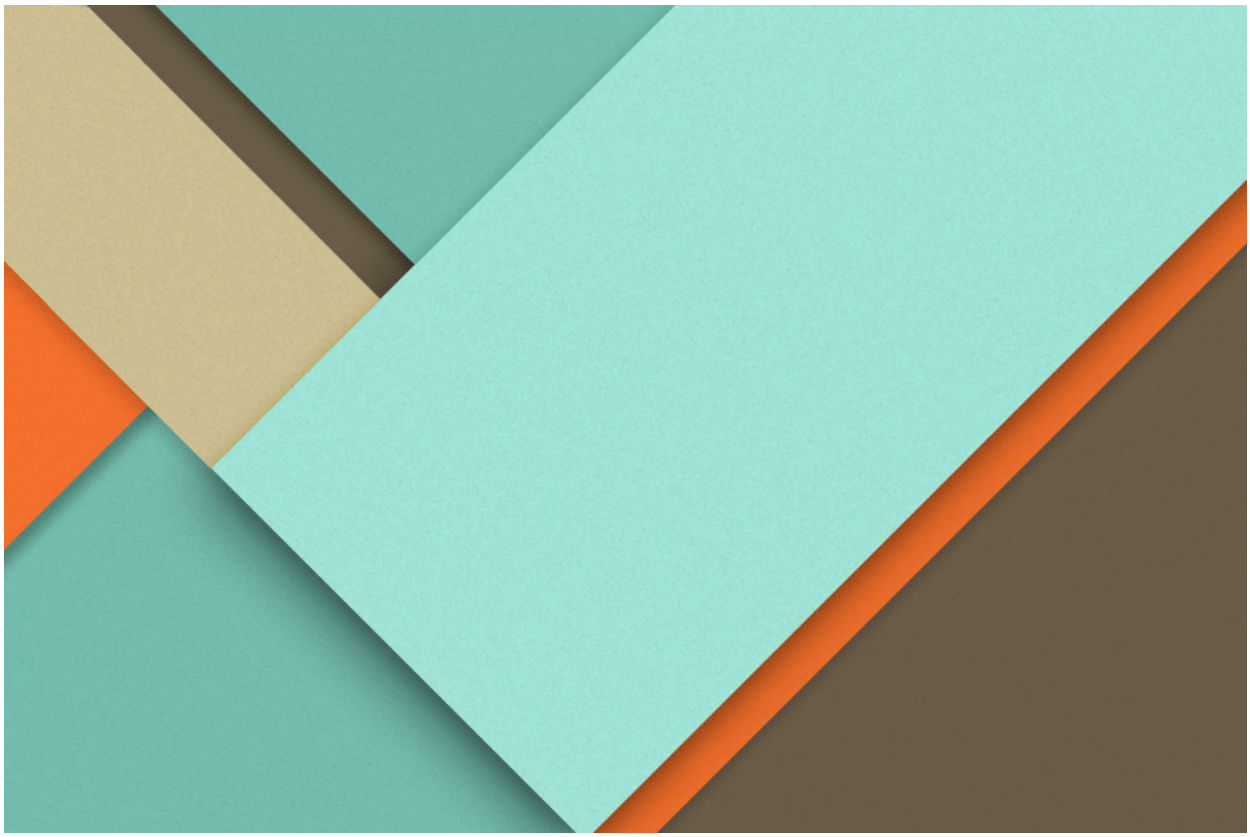

Samsung Appathon 2017

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Team : T.A.D

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Aim

Developing a library , which can match words based on similar phonetics.

Language used: C/C++

Overview

1. Similar to English language, Every Hindi word is a group(or collection) of one or more Hindi Letters(alphabets) .
2. Each Hindi letter is a combination of two entities namely **व्यंजन (consonants)** and **मात्रा(vowels) . For example:** the word **मीरा** can be considered as an array with 4 elements म , ी ,र , ा respectively**.**
3. All the entities in the Devanagiri script including **व्यंजन (consonants)** and **मात्रा(vowels)** have their own unique numerical equivalent value in UNICODE .

   (For reference: http://jrgraphix.net/r/Unicode/0900-097F)
4. Comparing **व्यंजन (consonants)** of the corresponding letters of the two given words using their numerical Equivalent value (or UNICODE).
5. Comparing **मात्रा(vowels)** of the corresponding letters of the two given words using their numerical Equivalent value (or UNICODE)**.**

Principle

1.Similar sounding (or having similar phonetics) **व्यंजन (consonants)** in hindi like **श ,ष and स** can be put under **same group**.

2.In the same way , similar sounding (or having similar phonetics) **मात्रा(vowels)** in hindi like **उ and ऊ** can be put under **same group**.

3. Considering the above two points, two corresponding letters (of two given words) will have the similar phonetics (or sound) **only if** one of the following is true::

a) Both have same **व्यंजन (consonant) AND** same **मात्रा(vowel).**

(Example: वा and वा)

b) Both have same **व्यंजन (consonant)** **AND** **मात्रा(vowel)** belongs to the same group.

(Example : **कि** and **की**)

c)Both have same **मात्रा(vowel)** **AND** **व्यंजन (consonant)** belongs to the same Group.

(Example : **तो** and **थो** have same **मात्रा(vowel)** **AND** **व्यंजन (consonant)** **त** and **थ** belongs to the same Group.)

4. If all the corresponding letters(or alphabets) of the given two words have the same phonetics (or similar sounds) **then** the given two words will have the same phonetic(**i.e Result should be 1**) .

Possible Groups

1. मात्रा(vowels)

a) ु and ू

b) ि and ी

c) े and ै

Etc.

2.व्यंजन (consonant)

a) श ,ष and स

b).र ,ड़, ढ़

c)द and ड

d) न and ण

Etc.

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Algorithm

Step 1:

Storing the **numeric equivalent code or UNICODE** of the given words in two different arrays.

For example: the word **मीरा** can be stored as an array of 4 elements

arr1[ ]={ 'म ', 'ी' ,'र' ,'ा' } similarly the other word.

Step 2:

Comparing the elements (The Numeric Equivalent value or the UNICODE of Consonants or the Vowel) of the array two at a time (i.e the consonants and the next element i.e vowel) using **for loop** in each iteration.

for(int i=0;i<n;i+2)

(where n is the length of the array)

Step 3:

if (arr1[i]==arr2[i])

Case 1: TRUE (i.e the consonant is same)

Then we have to check for the corresponding vowel i.e arr[i+1].

if(arr1[i+1]==arr2[i+1])

a)TRUE(i.e the vowels are also same)

Then according to Principle 3(a) the result will be 1.

b)FALSE(i.e the vowels are not same)

But they can belong to the same group

Therefore we have to check one by one whether the two vowels belong to the same group or not by using a series of 'If' conditions.

(e.g by using conditions like

if(arr1[i+1]=='ാ'&&arr2[i+1]=='ാ')

and similarly for other vowel groups)

If they are in the same group , then according to Principle 3(b) the result will be 1,otherwise result will be 0

CASE 2: FALSE(i.e the consonants are not same)

Then check if they belong to the same group by using a series of ' if ' conditions

(in similar way as mentioned above for vowels

E.g using conditions like *if(arr1[i]=='ാ'&&arr2[i]=='ൊ') and similarly checking for other consonant groups)*

a)TRUE (i.e consonants belong to the same group)

Then check if the vowels are same

if(arr1[i+1]==arr2[i+1])

Then according to principle 3(c) result will be 1 otherwise result will be 0.

b)FALSE

The result will be 0.

STEP 4:

The loop continues (to the next iteration) Only If the result obtained at the end of each iteration is 1 .

Otherwise the loop breaks.

STEP 5: RESULT

If the loop has executed all the iterations(result 1 is obtained after each iteration) then the final output is printed as 1 (i.e The words match or they have the similar phonetics) .

Otherwise the output is printed as 0 i.e the words Do not have same phonetics.