

Project 8: Soundex

due at midnight on Thu Nov 10 (60 points)

The [Soundex algorithm](#) is used in historical research to match up names with different spellings that are (likely to be) the same original source. For any name, the Soundex is one initial letter followed by three digits. For example, the soundex of “Robert” is R163 and the soundex of “Rupert” is also R163. That way, the names can be filed together under the same heading, or search queries can match alternate spellings.

Here is the algorithm, in pseudo-code:

1. Save the first letter.
2. Remove all occurrences of ‘h’ and ‘w’ except first letter.
3. Replace all consonants (include the first letter) with digits as follows:
 - b, f, p, v → 1
 - c, g, j, k, q, s, x, z → 2
 - d, t → 3
 - l → 4
 - m, n → 5
 - r → 6
4. Replace all adjacent duplicate digits with one digit. (55 becomes just 5.)
5. Remove all occurrences of a, e, i, o, u, y, except first letter.
6. If first symbol is a digit replace it with letter saved in step 1.
7. If you have too few letters in your word that you can’t assign three numbers, append with zeros until there are three numbers. If you have more than three numbers, just retain the first three.

You should implement this using C++ string operations, so you are actually **modifying** the string to build the soundex, and **not** just outputting the soundex. Below are a bunch of sample runs you can use as test cases:

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Enter a name: Robert
Soundex: R163
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Enter a name: Rupert
Soundex: R163
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Enter a name: Rubin

Soundex: R150

Enter a name: Ruben

Soundex: R150

Enter a name: Reuvain

Soundex: R150

Enter a name: Wulff

Soundex: W410

Enter a name: Wolf

Soundex: W410

Enter a name: Wolfe

Soundex: W410

Enter a name: Checkov

Soundex: C210

Enter a name: Chekhoff

Soundex: C210

Enter a name: Muscowitz

Soundex: M232

Enter a name: Mouskowits

Soundex: M232

Enter a name: Nahasapeemapetalan

Soundex: N215

Enter a name: Nehisi

Soundex: N200

During development of my solution, I added some extra cout statements to print the result after each step in the algorithm:

Enter a name: Rholff

Step 2: Rolff // Removed h/w

Step 3: 6o411 // Consonants to digits

Step 4: 6o41 // Remove duplicate digits

Step 5: 641 // Remove vowels

Step 6: R41 // Put back first letter

Soundex: R410 // Pad with zero

Name your program p08soundex.cpp and submit it to [this dropbox for project 8](#).