

**Problem 3 (20 points).** Soundex is an algorithm for coding names. It was developed in the USA in 1918–1922 by Robert C. Russell and Margaret King Odell in order to facilitate searching for similar-sounding surnames. In the middle of the 20th century, Soundex was extensively used in the USA to analyze results of 1890–1920 censuses.

Below is a sample card with data from the 1910 census. You can see the Soundex code for *Wilson*, which is W425.

LOUISIANA				
HEAD OF FAMILY			E.D.	SHEET
W425 Wilson, Alice			118	17
COLOR	AGE	BIRTHPLACE		
B	42			
COUNTY	St. Landry		CITY	
OTHER MEMBERS OF FAMILY				
NAME	RELATIONSHIP	AGE	BIRTHPLACE	
Eugene	W	46		
Regina	D	15		
Walter	S	13		
Louisa	D	12		
Camila	D	7		
Conell	S	7		
Hudson	S	4		

FORM 10-636 (4-20-61)  
1910 CENSUS INDEX - FAMILY

U.S. DEPARTMENT OF COMMERCE  
BUREAU OF THE CENSUS

Source: <https://familysearch.org/learn/wiki/en/Soundex>

Here is a list of surnames, with the corresponding Soundex codes in arbitrary order. Some characters are missing:

Allaway, Anderson, Ashcombe, Buckingham,	S312, T□6□, □5□3, C42□, T520,
Chapman, Colquhoun, Evans, Fairwright,	L□42, A536, C155, □623, S356,
Kingscott, Lewis, Littlejohns, Stanmore,	□252, □152, □330, A251, A400,
Stubbs, Tocher, Tonks, Whytehead	L2□0

- Describe how a Soundex code is produced, step by step.
- Match the surnames with the corresponding Soundex codes and restore the omitted characters.
- Generate Soundex codes for the following surnames:

*Ferguson, Fitzgerald, Hamnett, Keefe, Maxwell, Razey, Shaw, Upfield.*

—Alexander Piperski