

Computer Programming (EE1005)

Homework #10

(Due: Jun. 3)

11.12: *Telephone Number Word Generator*. Standard telephone keypads contain the digits 0 through 9. The numbers 2 through 9 each have three letters associated with them, as is indicated by the following table:

Digit	Letter	Digit	Letter
2	A B C	6	M N O
3	D E F	7	P R S
4	G H I	8	T U V
5	J K L	9	W X Y

Many people find it difficult to memorize phone numbers, so they use the correspondence between digits and letters to develop seven-letter words that correspond to their phone numbers. For example, a person whose telephone number is 686-2377 might use the correspondence indicated in the above table to develop the seven-letter word “NUMBERS.”

Businesses frequently attempt to get telephone numbers that are easy for their clients to remember. If a business can advertise a simple word for its customers to dial, then no doubt the business will receive a few more calls. Each seven-letter word corresponds to exactly one seven-digit telephone number. The restaurant wishing to increase its take-home business could surely do so with the number 825-3688 (i.e., “TAKEOUT”).

Each seven-digit phone number corresponds to many separate seven-letter words. Unfortunately, most of these represent unrecognizable juxtapositions of letters. It is possible, however, that the owner of a barber shop would be pleased to know that the shop’s telephone number, 424-7288, corresponds to “HAIRCUT.” The owner of a liquor store would, no doubt, be delighted to find that the store’s telephone number, 233-7226, corresponds to “BEERCAN.” A veterinarian with the phone number 738-2273 would be pleased to know that the number corresponds to the letters “PETCARE.”

Write a C program that, given a seven-digit number, writes to a file every possible seven-letter word corresponding to that number. There are 2187 (3^7) such words. Avoid phone numbers with the digits 0 and 1.