Analysis of the problem

1. The program needs the user to input a 7-digit phone number without a dash. A precompiled dictionary of 7 letter, uppercase words is included.
2. The precompiled dictionary will be included. The dictionary was obtained from <http://app.aspell.net/create> . It is assumed we will not be including words that contain the letter q, or z.
3. The output required for the assignment is the saving of words to a text file.

The algorithm

There are two things happening here. The first thing that is done is the phone number that is entered like a large integer, is stripped into its individual components, and placed into an array with one digit per element. The algorithm looks like this:

for (i = 7; i > 0; i--) {

temp = (int)(number / (pow(10, i-1)));

phoneNumber[n] = temp;

number = (int)(number - (temp \* (pow(10, i - 1))));

n++;

}

Then when checking the array against the dictionary, every possible combination of the array is checked similarly to the way a binary number (or any number for that matter) increments. A series of 7 nested for loops is used with the dictionary file being closed and reopened every time the array is incremented to check the entire file over and over again. It looks like this:

for (a = 0; a < 3; a++)

{

for (b = 0; b < 3; b++)

{

for (c = 0; c < 3; c++)

{

for (d = 0; d < 3; d++)

{

for (e = 0; e < 3; e++)

{

for (f = 0; f < 3; f++)

{

for (g = 0; g < 3; g++)

{

fRead = fopen("dictionary.txt", "r");

while (!feof(fRead))

{

fgets(temp, 8, fRead);

if (letters[number[0]][a] == temp[0] &&

letters[number[1]][b] == temp[1] &&

letters[number[2]][c] == temp[2] &&

letters[number[3]][d] == temp[3] &&

letters[number[4]][e] == temp[4] &&

letters[number[5]][f] == temp[5] &&

letters[number[6]][g] == temp[6])

{

fprintf\_s(fWrite, temp, "\n");

puts(temp);

z++;

}

}

fclose(fRead);

}

}

}

}

}

}

}

User Documentation.

To run the submitted project, you will first need to extract the contents of the submitted archive by right-clicking on the file, select extract all, and then select the extract button. Then you will need to open your copy of visual studio, go to file, open, and then select project/solution. Locate the folder that you just extracted, open the mod4\_2 folder and open mod4\_2.sln file. Once open go to the solution explorer, click on the triangle to the left of source files, and select mod4\_2.c. Once you see the code on the screen, hold the ctrl button down on the keyboard and press F5. This will launch the application. Follow the on-screen prompts. When finished, you can open the saved text file by navigating into the additional mod4\_2 folder and double clicking on the savedWords.txt file.