

CS7B Lab 1 – Word Ladders or “Doublets”

The object of a game perhaps first articulated by Lewis Carroll in his “Lewis Carroll Picture Book” of 1899 is to transform one word into another by changing one letter at a time, each word in the sequence being a word in the official lexicon (in our case, the file, FourLetterWords.txt.)

Choose both the starting word and the target word at random from the file and then enforce the rules on the player. That is, only allow words in the official lexicon that differ from the current word by one letter.

The output should include a linked list of the strings in the word ladder.

Here’s a shell to get you started:

```
// Doublets 0.02
// Hagopian

#include <iostream>
#include <fstream>
#include <ctime>
#include <cstdlib>

using namespace std;

class Wordladder {
    // the Wordladder class should have a constructor that takes the first
    // and last words in a linked linked list of strings and method for
    // inserting legitimate words in it.
}

void getRandomWord(char*);
void gameLoop(char*, char*, bool&); //Where most of the action occurs
bool isWord(char*); // Check that the word is in the list.

int main()
{
    char* startWord, endWord, currentWord;
    srand(unsigned(time(0)));

    ifstream readFile("FourLetterWords.txt");
    getRandomWord(startWord);
    cout << "\nYour start word is " << startWord << endl;
    strncpy(currentWord, startWord);
    getRandomWord(endWord);
    cout << "\nand your end word is " << endWord << endl;
    bool gameover = false;
    while(!gameover)
        gameLoop(currentWord, endWord, gameover);
    cout << "\nHooray! You won!";
}

void getRandomWord(char* word)
{
    // define this function
```

```

}

int wordDifference(char* w1, char* w2)
{
// Returns the number of letter positions where w1 differs from w2
}

void gameLoop(char* currentWord, char* endWord, bool& gameOver)
{
    char* temp;
    cout << "\nYour current word, " << currentWord << " is "
         << wordDifference(currentWord, endWord)
         << " from " << endWord << endl;
    do
    {
        cout << "\nEnter a new word that differs from "
             << currentWord << " by one letter: ";
        // and so on
    }

bool isWord(char* word)
{
//Check that the word is in the list
}

```

Here's some typical play. Note that the game could be improved by (1) counting the number of moves and (2) adding an AI opponent.

```

Your start word is AWEE

and your end word is KEEN

Your current word, AWEE is 3 from KEEN

Enter a new word that differs from AWEE by one letter: awed

AWED differs from KEEN in 3 letters.
Enter a new word that differs from AWED by one letter: ahed

AHED differs from KEEN in 3 letters.
Enter a new word that differs from AHED by one letter: ahad

AHAD is not an English word, try again.
Enter a new word that differs from AHED by one letter: shed

SHED differs from KEEN in 3 letters.
Enter a new word that differs from SHED by one letter: seed

SEED differs from KEEN in 2 letters.

```

Enter a new word that differs from SEED by one letter: seen

SEEN differs from KEEN in 1 letters.

Enter a new word that differs from SEEN by one letter: keen

KEEN differs from KEEN in 0 letters.

Hooray! You won! Press any key to continue . . .



FIRST COMPETITION (continued).

| | | | |
|-----------------|----------------|-----------------|-----------------|
| <i>June 21.</i> | CARESS | <i>July 12.</i> | ROUGE |
| FISH | carest | LION | rough |
| fist | parest | limn | sough |
| gist | PARENT | limb | south |
| girt | | LAMB | sooth |
| gird | <i>July 5.</i> | TIGER | booth |
| BIRD | GRUB | tiler | boats |
| SHOES | grab | tiles | brats |
| shops | gray | tides | brass |
| chops | bray | rides | crass |
| crops | brat | rises | cross |
| cross | boat | ROSES | crest |
| cross | bolt | QUILT | chest |
| crest | bole | guilt | cheat |
| CRUST | mole | guile | cheap |
| | mote | guide | cheep |
| | MOTH | glide | CHEEK |
| KETTLE | WITCH | slide | |
| settle | winch | slice | <i>July 26.</i> |
| settee | wench | spice | WHY |
| setter | wench | spine | who |
| better | tench | spins | woo |
| betted | tenth | shins | wot |
| belted | tents | shies | NOT |
| bolted | tints | shier | |
| bolter | tilts | SHEET | |
| bolder | tills | | MANY |
| HOLDER | fills | <i>July 19.</i> | mane |
| | falls | LOAF | wane |
| <i>June 28.</i> | fails | leaf | wale |
| REST | fairs | deaf | wile |
| lest | FAIRY | dear | will |
| lost | | deer | wall |
| loft | WINTER | dyer | wail |
| soft | winner | dyes | FAIL |
| SOFA | wanner | eyes | |
| RIVER | wander | eves | CHOKER |
| rover | warder | even | choked |
| cover | harder | OVEN | cooked |
| coves | harper | BREAD | looked |
| cores | hamper | break | loosed |
| corns | dampier | bleak | noosed |
| coins | damped | bleat | noised |
| chins | dammed | blest | poised |
| shins | dimmed | blast | prised |
| shine | dimmer | boast | prized |
| shone | SUMMER | TOAST | PRIZES |
| SHORE | | | |