

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.

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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		slide	
settle	WITCH	slice	<i>July 26.</i>
settee	winch	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			