

# Homework Assignment #10: Programming Project #2

## Due Date/Time

2:10PM Monday, January 18, 2016. Late submission will be penalized by 20% for each working day overdue.

## Task Description

Develop a C++ application, called `myDictionary`, that reads a text file named `knownWords.txt` to set up an initial collection of English words (or Chinese phrases, if you prefer) and then waits to accept and process the user's queries or updates (one by one from the command line).

Each line of the file `knownWords.txt` starts with a word, followed by a blank space and a string that give definitions of the word, or a single dash (-), indicating continuation of the definitions for the word in the previous line. Below is a small sample `knownWords.txt` with just two words.

```
curiosity 1. a desire to know about something; 2. something that is
- unusual.
curious 1. interested; 2. unusual or difficult to understand.
```

After setting up the initial collection of words, `myDictionary` enters a loop waiting for the user to type a command such as the following:

- `find curiosity`  
Look up the definitions of "curiosity".
- `new webpage "1. ... 2. ... 3. ..."`  
Add a new word "webpage" with the definitions enclosed in the pair of double quotes to the collection of words.
- `delete Webpage`  
Delete "Webpage" (and its definitions) from the collection.
- `count`  
Count the number of words in the collection.
- `quit`  
Exit the application

Be careful with illegal inputs. When the input is illegal, your program should be able to report an error and resume the state of waiting for the next input.

## Submission Guidelines

- Submission should be in BOTH printed and electronic forms.
- DO NOT plagiarize (i.e., do not use material without crediting the source). You may discuss with others, but copying code is strictly forbidden.
- *You may be requested to demonstrate your program.*
- Printed-form submission:
  - Code listing and test cases must NOT be on the same printed page.
  - Please use A4 paper and *double-sided* printing.
  - Simply staple on the upper left corner; NO plastic or cardboard covers and NO binders, either.
  - Drop your homework by the due time in Yih-Kuen Tsay’s mail box on the first floor of Management College Building II.
- Electronic-form submission:
  - If you use a Makefile, make sure that it outputs “myDictionary”. Otherwise, make sure that the whole application can be compiled by the command “g++ myDictionary.cpp”.
  - Pack everything, except large test files, in a .zip file, named with the pattern “b037050xx-ds-hw10.zip”.
  - Email the .zip file to r04725015@ntu.edu.tw, with the subject “[DS] hw10”.

## Grading

This assignment constitutes 5% of your grade (of this course). Your work will be graded according to its completeness, correctness, and presentation. You should provide evidences (such as tests) showing that your program is correct. You should also organize and document (by adding comments to) your program in such a way that other programmers, for example your classmates, can understand it. Below is a more specific grading policy:

Criteria	Score
incomplete or doesn't compile	$\leq 20$
complete, compiles, but with major errors	$\leq 40$
size of collection is fixed	$\leq 60$
use search trees	$\leq 80$
use balanced search trees	$\leq 100$
tested to hold $\geq 10,000$ words	+5
handle range queries	+5
find all words with the same prefix	+5
find the word with a particular rank	+5

Notes:

- If you test your application with a `knownWords.txt` containing 10,000 words or more, be sure to provide an evidence, but do not include the large `knownWords.txt` in the submissions.
- A range query may be posed as “`find word1 word2`”. The output should be a list of words between `word1` and `word2`.
- To find all words with the same prefix, the user types a command like “`find pre*`”, which would get all words starting with “pre”.
- To find the word with a particular rank, the user types a command like “`find 1000`”, which would get the 1000-th word (according to lexicographic order) in the collection.