Lab1

- Handed out Monday, March 17, 2014
- Due Sunday 23:59 March 30, 2014
- No Extension ! start early !
- Upload via *ftp* only !

In this lab, you should implement a tiny dictionary, which offers functions 'add', 'delete', 'update' and 'search'. You will get a better understanding of struct, reference and pointer in C++ when completing this lab.

Release

This lab is release on https://github.com/orgs/OOP-ss12. We do encourage you to register an account of github and fork this repository, but you can just use the linking `download zip` to get the source code. The source file contains:

- lab1.cpp
- dict.h
- dict.cpp
- Makefile

Logics

You should complete four methods in file '*dict.cpp*' to implement the tiny dictionary.

Reference and Pointer

Before starting your lab, you may want to know what the difference between refernce and pointer is. Consider and run the following code.

```
#include <iostream>
using namespace std;

int main(int argc, char const *argv[])
{
    int a = 1;
    int *ap = &a;
    int &ar = a;

    cout << &a << endl;
    cout << &ap << endl;
    cout << &ar << endl;
    return 0;
}
```

Qusetion1. What will be print out of the program? Why it has such output?

Question2. Reference and pointer have the same performance in most condition, but they are different actually. Please list the differences. *(hint: Google is a good teacher)*

Code your dictionary

We have already give you some code in three files, where there is a class *Dict*. But you only need to code functions in file *dict.cpp* with comment "Your code here". **DON'T modify any given interface so that we test your code correctly, otherwise you may get 0 score.** We will test your code with a large amount of data (5000 words perhaps), please check robustness of your code.

We define a structure in this program:

```
typedef struct word
{
    string key; /* key with which the specified value is to be associated */
    string value; /* value to be associated with the specified key */
} word;
```

The methods you should implement are:

bool add(const word &w);
In this function you should insert a word in your dictionary. If the dictionary previously contained a mapping for the key, the old, the old one should be replaced.

string search(const string &key);
Returns the value to which the specified key is mapped,or "" if this map contains no mapping for the key.

string remove(const string &key); *Removes the mapping for the specified key from this map if present.*

string update(const word &w);
Update an already existed word in your dictionary (NOTE: Do not insert the word to your dictionary if there was no such key)

Qustion3. Describe how you implement the four methods in dict.cpp.

Handin

Package all file you get from github together with an *answer.txt* included all answers of questions into **studentid.zip** , and upload it to *ftp*.

Note:

- Never use **.rar** to upload your lab for TA cannot unpack it.

- Be sure all your files are encoding in **UTF-8**, otherwise we may get messy code.