

CS 250: Data Structures & Algorithms (3+1): BSCS5 Fall 2016

Assignment 2: Hash Tables	
CLO2: Apply Data Structures and Algorithms to solve complex engineering problems	
Maximum Marks: 20	Instructor: Shaml Bin Mansoor
Announcement Date: 2nd Jan 2017	Due Date : 8th Jan 2017 11:00 pm on LMS

Instructions:

- Please submit only your Cpp files on LMS. Only two files are required. One for task 1 and other for Task 2.
- There will be no deadline extension (so please submit code on time)
- No email or late submissions will be accepted

Tasks:

In class, we are looking at Hash Tables. One natural use of a Hash Table is to hold the words in a spelling dictionary. This makes looking up the words very efficient. In this assignment, you will implement and use such a dictionary. You can write the program for this assignment in either Java or C++. No matter which language you use, you are responsible for following the rules of good programming style.

Part 1 (10 marks)

For the first part of the assignment, you should write a class that implements an Open Hash Table of strings. That is, the table is stored as an array of simple linked lists of strings (or, more precisely, an array of pointers to such lists). You might need to look up the implementation of simple linked list operations in your Java or C++ textbook. Your class should be an implementation of the ADT Set of Strings. The class must include:

1. A function add(s) that adds the strings to the table, if it is not already there.
2. A function remove(s) that removes the string s from the table, if it's there.
3. A function contains(s) that returns a boolean value that checks whether the string s is in the table.
4. A function size() that returns the number of strings in the table.
5. A hash function to compute the hash code of a string. This function can be private.
6. A constructor that accepts the size of the table as a parameter

Part 2 (10 marks)

The second part of the assignment is to write a main program that uses your hash table class. You will be using a dictionary text file from the given github(<https://github.com/dwyl/english-words/blob/master/words.txt>) repository to create your hash table. Since the text file contains 479k words, you can just choose the first 100 words of each alphabet for implementing this dictionary. You will have to read these words from the text file and store it in your hash table.

You will then create a program that tells whether a given word is part of the dictionary or not. For example, your program should wait for the user input, if I enter the word "accommodate", your program should tell me if the word is found in the dictionary. If it is not found, it should print out word not found.