**ASSIGNMENT 6 – Hashing**

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| Topics |
| * Hash Table * Open Addressing |
| Readings |
| * CLRS, chapter 11.1 – 11.4 * Lectures 6a-6c (Blackboard) |
| Instructions | |
| 1. Select a **partner** and inform instructor who you will work with  2. Do the problems and answer the questions listed in the next section   * Keep in mind Guidelines on plagiarism.   3. Follow instructions for submitting your work.  PROBLEMS AND QUESTIONS | |
| Problems and Questions |
| Part A Exercise (10 pts) |
| Simulate open addressing.  Assume keys are: “code”, “word”, and “race”, and hash values are computed as sums of ASCII values.  Using double hashing with    compute locations of the given keys with Hash\_Insert. |

A close up of text on a whiteboard

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| Part B Implementing Hash Table (45 pts) |
| 1. Create a class Entry <K, V> 2. Create a class HDictionary <K, V> with the private field: array of Entry <K, V> 3. The constructor HDictionary (int size) should make sure the size is a prime number 4. Create insertion and searching methods following algorithm Hash-Insert and Hash-Search. Use double hashing as in slide 11 of the Lec6cOpenAddressing |

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| Part C Testing (45 pts) |
| Here you use the file movies.txt containing the list of movie theaters with their phone numbers. Let the theater name be a Name (user-defined class). The phone number is a String.   1. Create a class TelephoneDirectory with one private field   HDictionary <Name, String> dictionary;   1. Define the method hashCode() in the class Name, overriding the method from the Object class. You will need it for using hash table methods. 2. Read the file to determine the number of lines and allocate the hash table with an appropriate size (e.g. 1.5 longer). 3. Read the file again and fill the table using Hash-Insert 4. Using Hash-Search, find phone numbers for some existing and non-existing movie theaters |

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| Bonus (10 pts) |

Implement Hash-Delete and modify Hash-Insert to handle the special value DELETE.

For testing: delete a theater from the table and perform the search (must be unsuccessful)

2. **Summary questions:**

a. What concepts did you have trouble with? What still confuses you?

b. Suggestions for improving this assignment in the future?

Help instructor help you

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| Submitting your work |

1. Make sure that your name(s) are in all your files.
2. If you have more than one file for your solution, make a .zip file for your project
3. In Blackboard, attach your solution file to the submission for this assignment.

GUIDELINES ON

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| Guidelines on Plagiarism in Computer Science |

Outlined in the Syllabus