**ASSIGNMENT 8 – AVL Tree**

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| Topics |
| * Balance Trees * AVL Trees |
| Readings |
| * CLRS, Chapter 12 * Lectures 8a-8c |
| 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 Hands-on (20 pts) |
| Having the following array on numbers: { 51, 62, 43, 31, 35, 48, 70, 75},  build an AVL tree by inserting numbers one by one.  Then delete the entry 51 from the tree.  Show all steps, including rotations. |
| Part B Implementation of AVL Tree (80 pts) |
| Implement an AVL Tree.  Follow the instructions in the attached file Instructions.docx  As a demo program, create an AVLTree <String> and fill it with the names of capitals of United States (or European or Asian countries). Use the attached sample files.  Output the tree height in two ways to verify consistency of the tree creation.  Output also inorder traversal (to check the binary search tree properties) and levelorder traversal (to see the root and children). |

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| Bonus ( 10 pts) |
| Implement deletion and test it. Don’t forget: after deletion, rotation may be needed. |

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