

Project 4
CSC 311: Data Structures, Fall 2017
Department of Computer Science
California State University, Dominguez Hills
(Due: December 5, 2017, 11:59 PM PDT)

A. Objectives

1. Implement and use Binary Search Tree class and methods (20 points)
2. Write additional method to traverse a tree using inorder traversal (20 points)
3. Implement the project correctly. (50 points)

10 points will be awarded for use of meaningful identifiers, consistent indentation, explanatory comments in your code and properly formatted output.

B. Description

In this project, we will simulate the ranking system for a computer game. Computer games saves scores of players and ranks the top players according to the scores. The program will have options for the user to play a game; the game is played by randomly generating a score (0-100). If the score of the game is in the top 25 scores, the leader board is updated. The leader board is implemented using a Binary Search Tree. The partial leader board with top 10 scores is always shown to the user at the end of each game. The game saves the information for the top 25 scores, although just displays the top 10 list to the users. The game also provides an option to search for the scores of a particular user in the top 25 scores. There is also an option to delete a particular score from the leaderboard.

To perform the above tasks, the program must provide the following options:

1. Play a game (Randomly simulate the score)
2. Display the current leaderboard (Top 10 scores only)
3. Search for a particular score on the leaderboard; if present, provide the rank for it
4. Delete a particular score from the leaderboard
5. Quit the program

The program should be menu-driven; so until the user selects option 5 i.e., Quit, the program should keep executing. When the user is done, they can exit the program by choosing option 5. Ties between scores need not be handled; if a score is already present, it is not inserted again.

C. Constraints

1. Using data structures from Java Collections is not allowed; implement your own data structures. If students find code somewhere else that they want to include in the program, they need to cite the reference as well.
2. The project is due by December 5, 2017, 11:59 PM PDT, using Blackboard.
3. This is not a group project. Copying code from others or using an unfair means is strictly not allowed and plagiarism charges will be imposed on students who do not follow this.
4. Include a print screen of the execution of the program as a separate pdf.
5. Upload all files using a single zip file; don't use other compressed format such as rar.