CSCI 2270 – Data Structures and Algorithms
Instructor: Hoenigman
Assignment 5
Due Friday, February 27 by 3pm

Binary Search Trees

An online movie service needs help keeping track of their stock. You should help them by developing a program that stores the movies in a Binary Search Tree (BST) ordered by movie title. For each of the movies in the store's inventory, the following information is kept:

- IMDB ranking
- Title
- Year released
- Quantity in stock

Your program will have a menu similar to assignments 3 and 4 from which the user could select options. In this assignment, your menu needs to include options for finding a movie, renting a movie, printing the inventory, and quitting the program.

Your program needs to incorporate the following functionality.

1. **Insert all the movies in the tree**.
   When the user starts the program they will pass it the name of the text file that contains all movie information. Your program needs to handle that command line argument, open the file, and read all movie data in the file. From this data, build the BST ordered by movie title. All other information about the movie should also be included in the node in the tree. *Note: the data should be added to the tree in the order it is read in.*
2. **Find a movie.**
   When the user selects this option from the menu, they should be prompted for the name of the movie. You program should then search the tree and display all information for that movie. If the movie is not found in the tree, your program should display, "Movie not found."
3. **Rent a movie.**
   When the user selects this option from the menu, they should be prompted for the name of the movie. If the movie is found in the tree, your program should update the Quantity in stock property of the movie and display the new information about the movie. If the movie is not found, your program should display, "Movie not found."
4. **Print the entire inventory.**
   When the user selects this option from the menu, your program should display all movie titles and the quantity available in sorted order by title. See the lecture notes on in-order tree traversal for more information.

5. **Quit the program.**
   When the user selects this option, your program should exit.

Implementation details

Your BST should be implemented in a class. You are provided with a MovieTree.h file on Moodle and you need to implement the corresponding MovieTree.cpp file and Assignment5.cpp file. To submit your work, zip all files together and submit them to COG. If you do not get your assignment working on COG, you will have the option of a grading interview.