
Binary Search Trees

Description In this lab your goal is to implement standard operations on **binary search trees**, including insert and delete. See section 12.3 in the textbook. A sample class structure, with empty methods, is given in the support code. You can either use the given class structure or create your own. In this assignment the keys are integers. You will use Grade04 to test your code. Your execution file name must be “BST.exe”. Refer to the previous lab assignments for instructions on how to use the grading tool.

The input contains one of the following commands on a line:

- i key: Insert key into the BST. For example, “i 2” means “Insert key 2 into the BST”.
- d key: Delete key from the BST. For example, “d 2” means “Delete key 2 from the BST”. Do nothing if the BST does not contain the key.
- pre: Output all keys in preorder.
- post: Output all keys in postorder.
- in: Output all keys in inorder.
- e: Finish your program.

Examples of input and output

Input

```
i 3
i 1
i 5
i 7
in
d 7
in
d 7
pre
d 1
post
e
```

Output

```
1
3
5
7
-
1
3
```

5
-
3
1
5
-
1
5
-

Submission Submit the source code (only `BST.cpp` file) through the assignments page of CatCourses by the deadline. Use your UCMNetID as the file name. Be careful since CatCourse strictly enforces the assignment deadline. You do not have to touch the other files. All you have to implement is limited to `BST.cpp`. You may be asked to compile, run, and explain the code to the TA to prove that you understand what you wrote.

Grading We provide 10 test cases for you to try your implementation. Each of them is valued at 1 point if executed correctly. We will use 10 additional test cases to check that your implementation is general enough. These are not provided to you and are also valued at 1 point each.

Important Note We will use plagiarism software to detect cheating. Offenders will be subjected to the UCM Academic Honesty Policy which states: *if any violation of the UCM Academic Honesty Policy is suspected in a course, the instructor of record must fill out the Faculty Report for Academic Misconduct.*