

BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY

Department of Computer Science and Engineering

July 2021 CSE 204 Offline Assignment on
Binary Search Tree

In this assignment, you will have to implement the **Binary Search Tree** data structure. You will read the input from a text file. Each line of the input file will specify one of the following operations: **Insert (I)**, **Delete (D)**, or **Find (F)**, followed by an integer specifying the key the operation will work on, or, **Traversal (T)**, followed by the type of traversal: **In-order (In)**, **Pre-order (Pre)**, or **Post-order (Post)**. After insertion or deletion, you will have to print the tree in nested parenthesis format. For example, the sample binary search tree in Figure 1 will be written as **8(3(1)(6(4)(7)))(10()(14(13))())**. For Find operation, print only **True** or **False** based on the query and state of the tree. Print the keys in the expected order for the traversal operations.

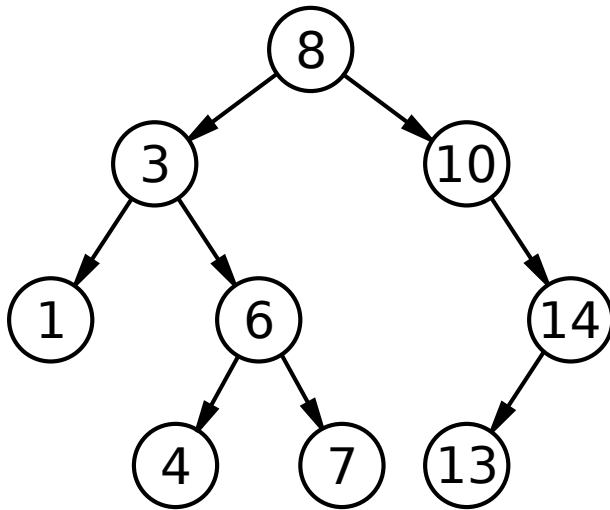


Figure 1: A sample Binary Search Tree.

Input	Output
F 1	False
I 8	8
I 10	8()(10)
I 3	8(3)(10)
I 1	8(3(1)))(10)
I 14	8(3(1)))(10()(14))
I 6	8(3(1(6)))(10()(14))
I 4	8(3(1(6(4)))(10()(14))
I 13	8(3(1(6(4)))(10()(14(13))())
I 7	8(3(1(6(4)(7)))(10()(14(13))())
T In	1 3 4 6 7 8 10 13 14
T Pre	8 3 1 6 4 7 10 14 13
T Post	1 4 7 6 3 13 14 10 8
D 8	7(3(1(6(4)))(10()(14(13))())
D 7	6(3(1(4)))(10()(14(13))())
D 10	6(3(1(4))(14(13))())
D 10	Invalid Operation
F 4	True

Table 1: A sample input and corresponding output

While you are encouraged to talk to your peers, ask help from teachers, and search relevant resources from the Internet, under no circumstances should you copy code from any source. If found out, you will receive full 100% negative marks.

Submission Deadline: 10 PM, Dec 17, 2021.