

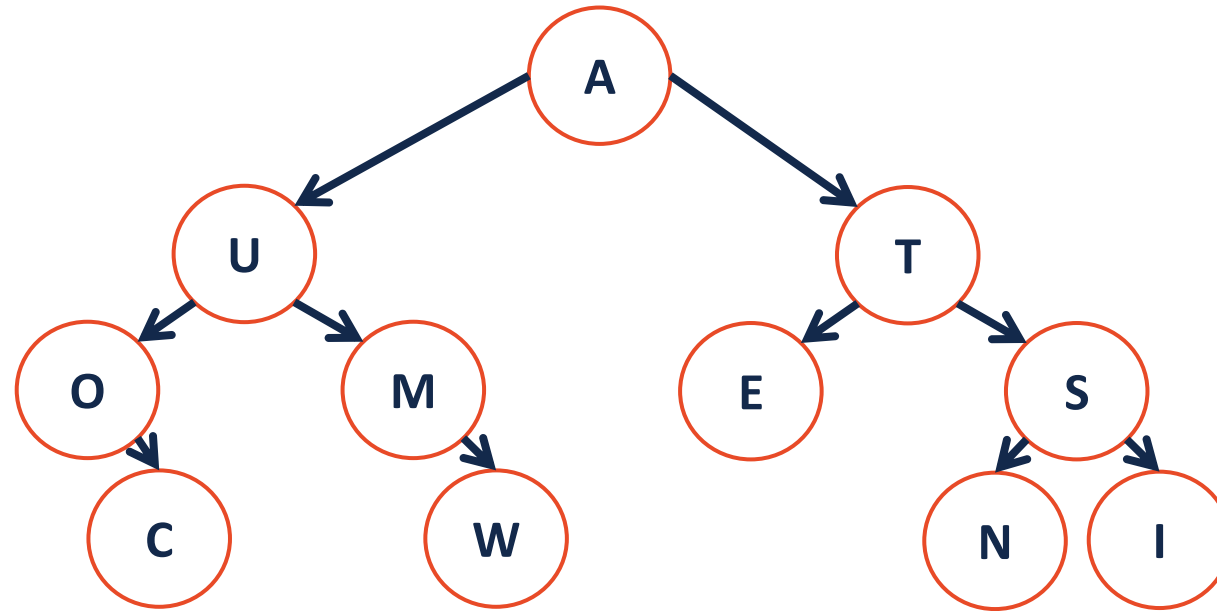


CS 225

Data Structures

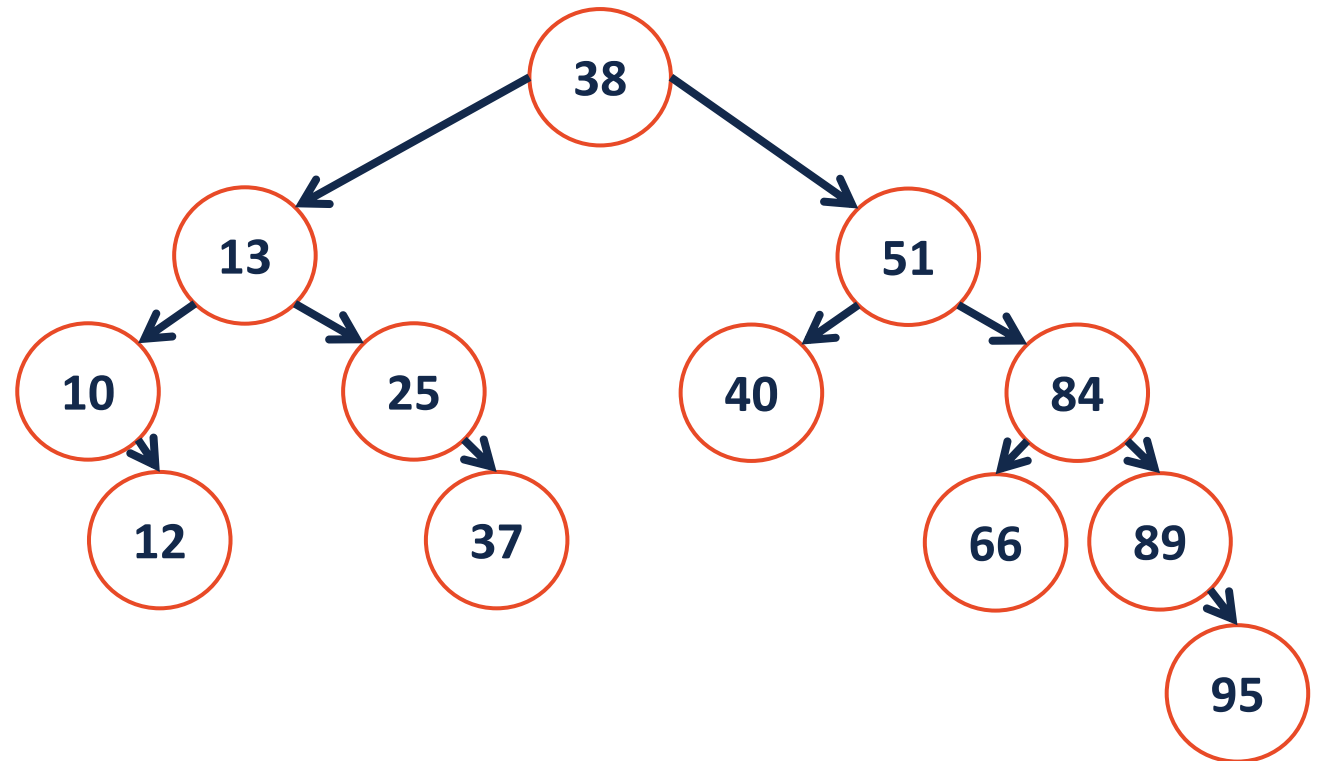
Oct. 9 – BST Operations

Binary Tree as a Search Structure



Binary _____ Tree (BST)

A **BST** is a binary tree **T** such that:



Binary Search Tree (BST)

Best case?

Worst case?

Binary Search Tree (BST)

Insertion of sorted elements?

Running time?

Exam Information

Current Live Exam: Exam 5

- Theory Exam
- Topics: Stacks, Queues, and Lists

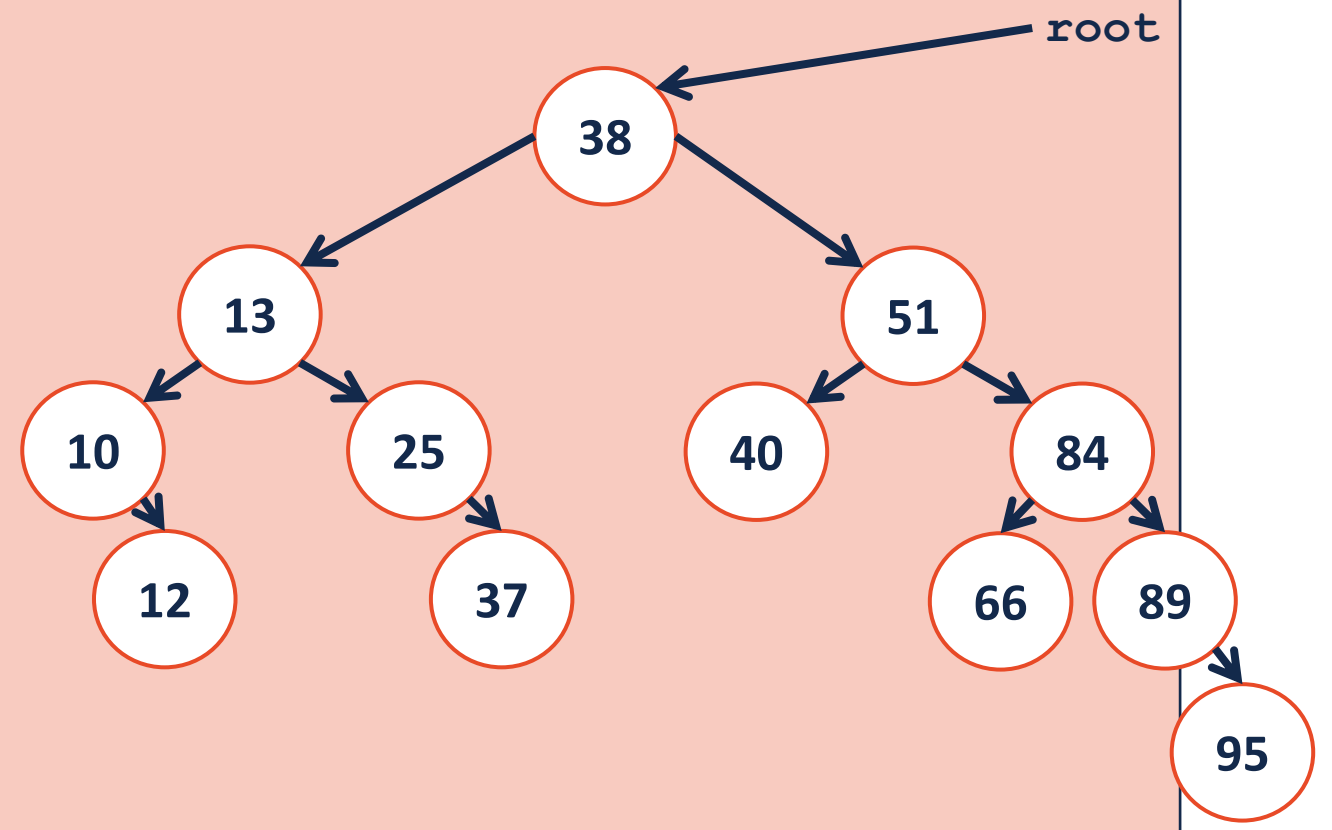
Next Week: Exam 6

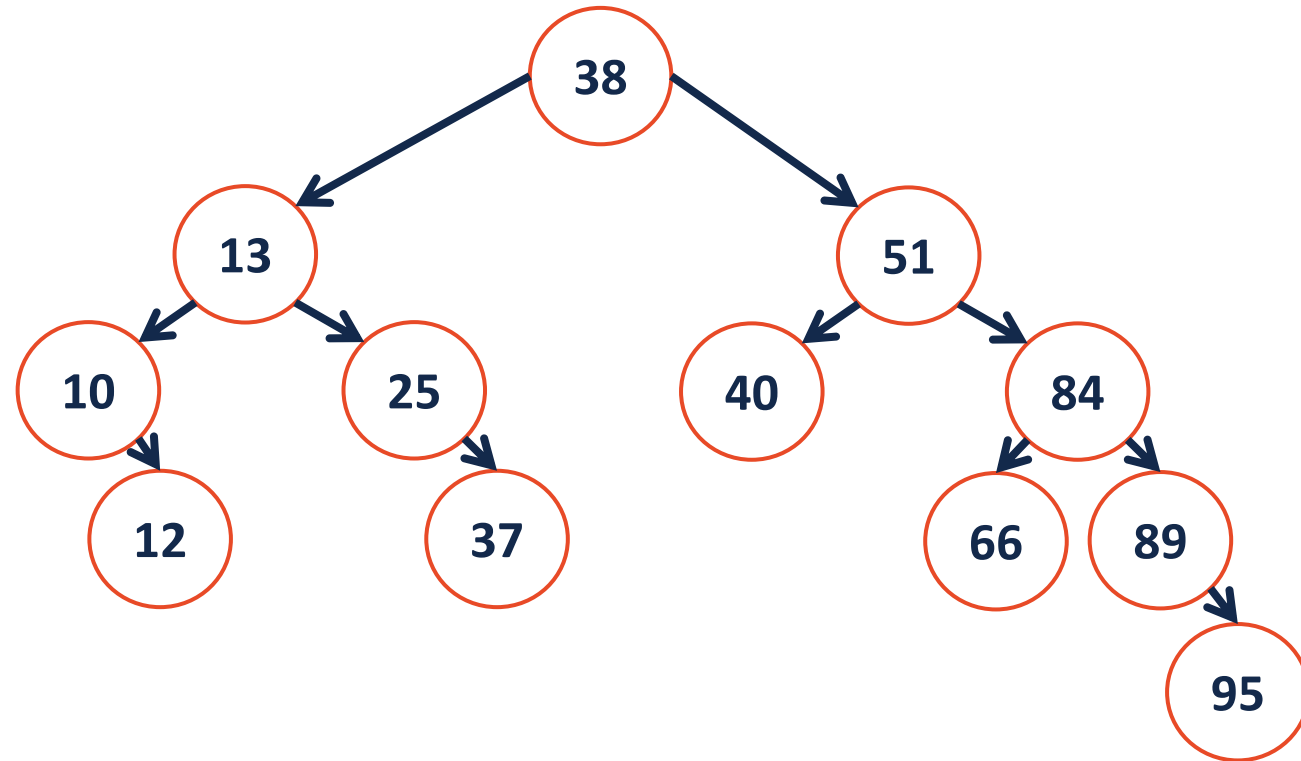
- Programming Exam
- Topics: MP3-like

BST.h

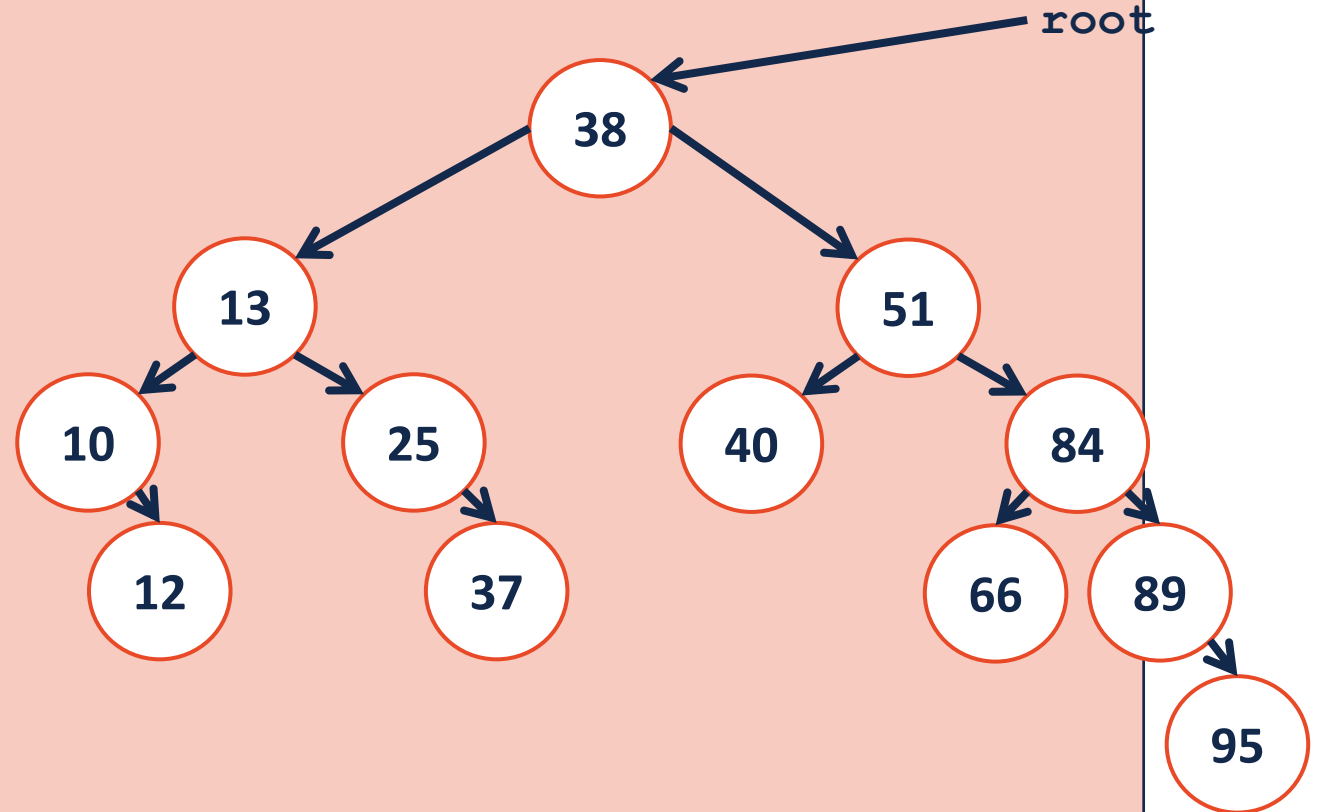
```
1 #ifndef DICTIONARY_H
2 #define DICTIONARY_H
3
4 template <class K, class V>
5 class BST {
6     public:
7         BST();
8         void insert(const K key, V value);
9         V remove(const K & key);
10        V find(const K & key) const;
11        TreeIterator traverse() const;
12    private:
13
14
15
16
17
18
19
20 };
21
22 #endif
```

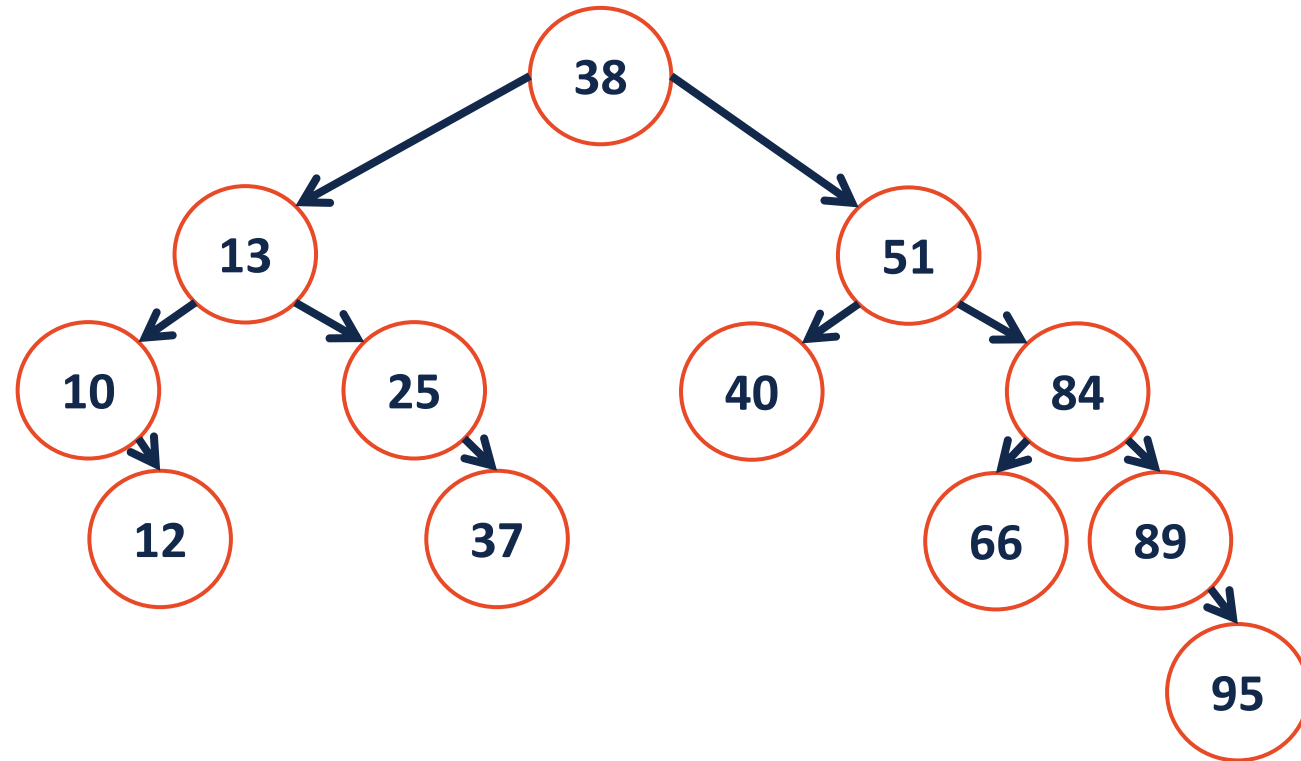
```
1  template<class K, class V>
2  _____ _find(TreeNode *& root, const K & key) const {
3
4
5
6
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19
20
21
22
23
24
25
26 }
```



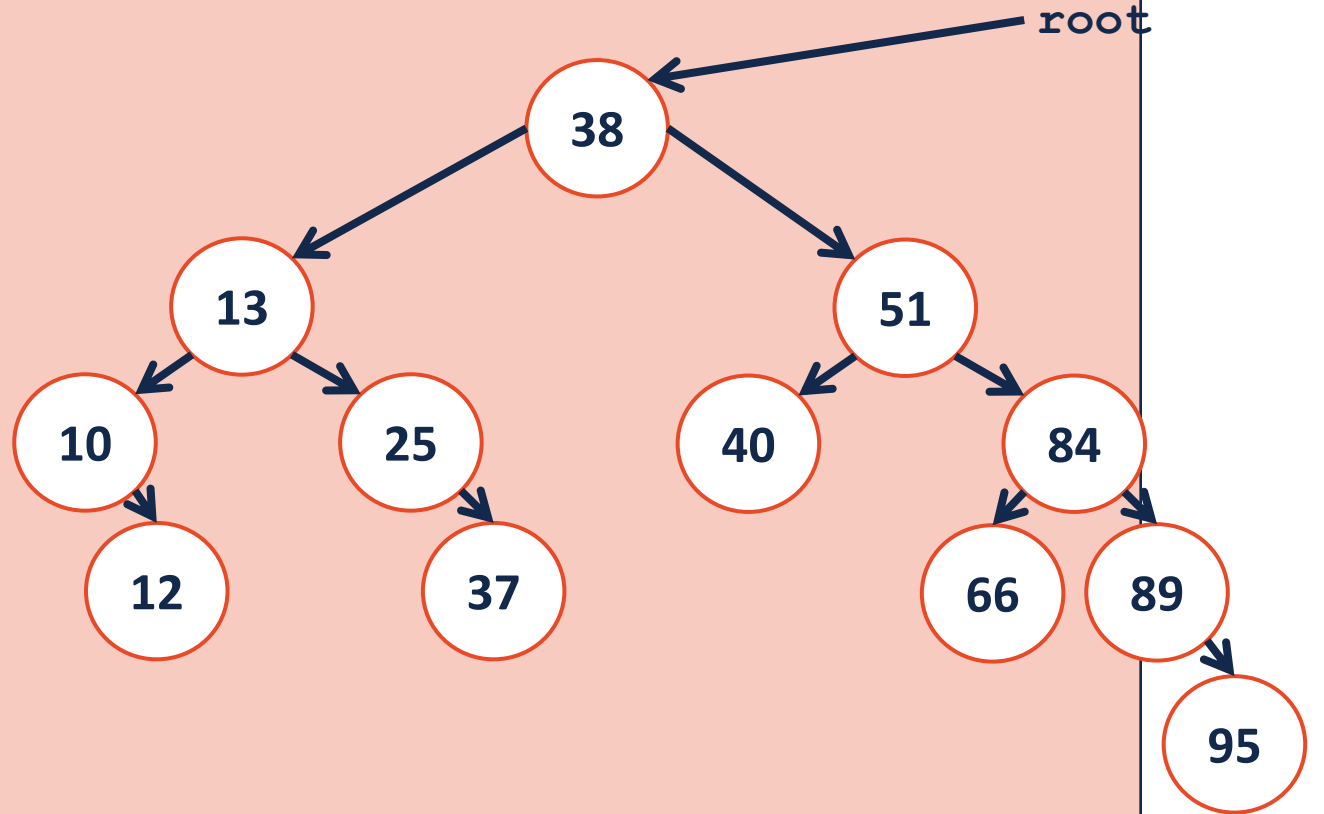


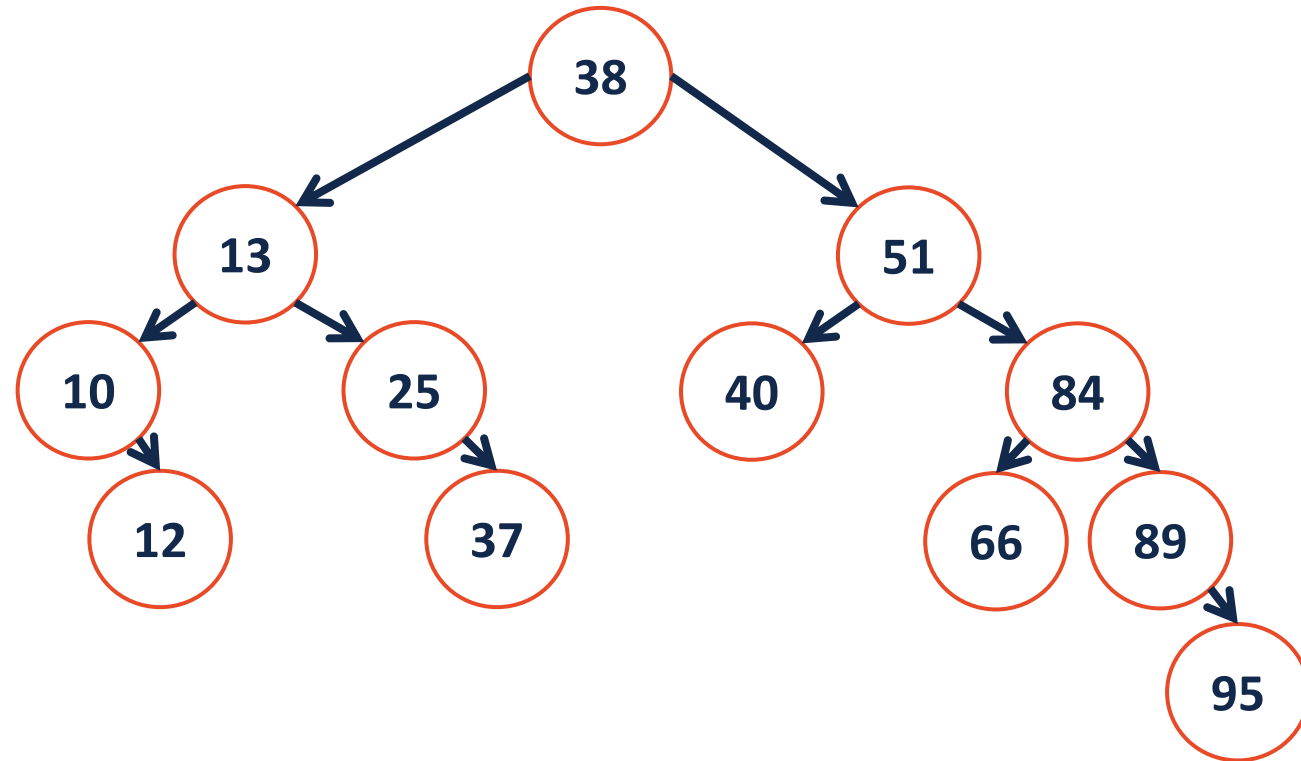
```
1  template<class K, class V>
2  _____ _insert(TreeNode *& root, K key, V value) {
3
4
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22
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25
26 }
```



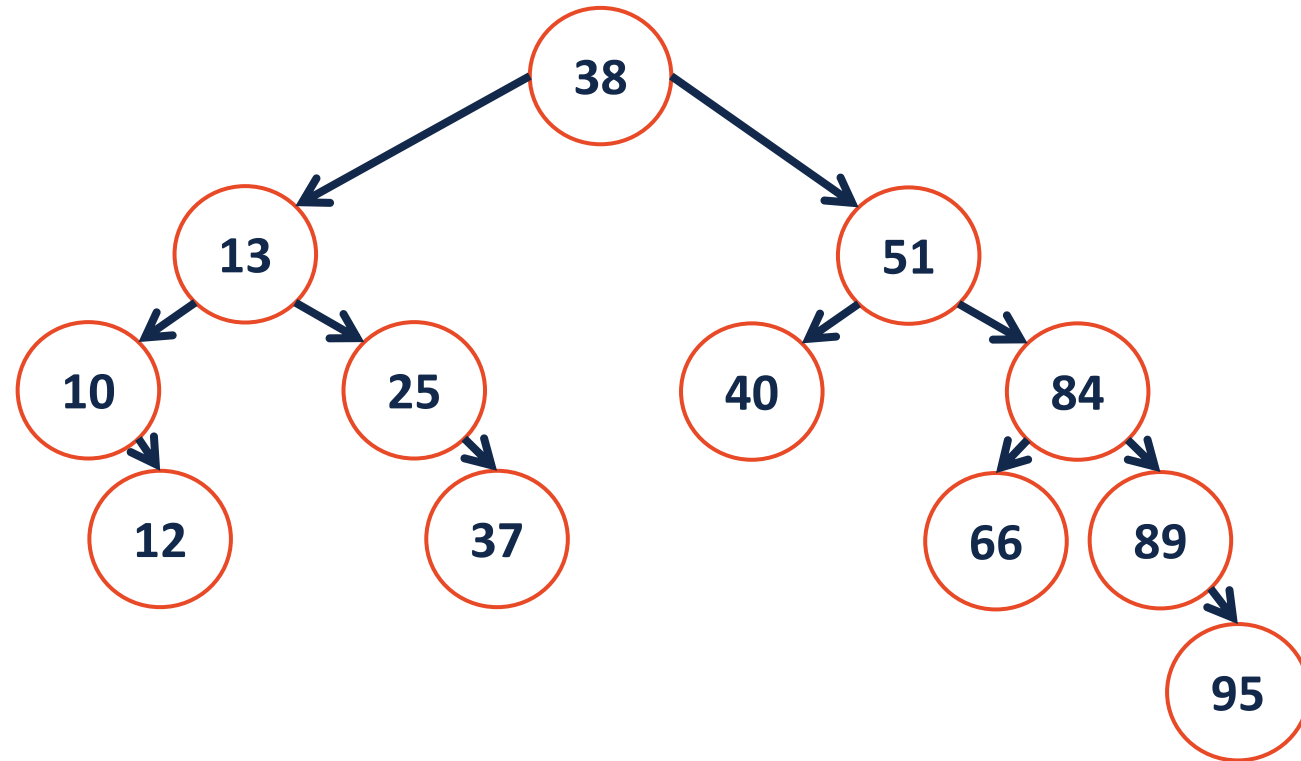


```
1  template<class K, class V>
2  _____ _remove(TreeNode *& root, const K & key) {
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26 }
```

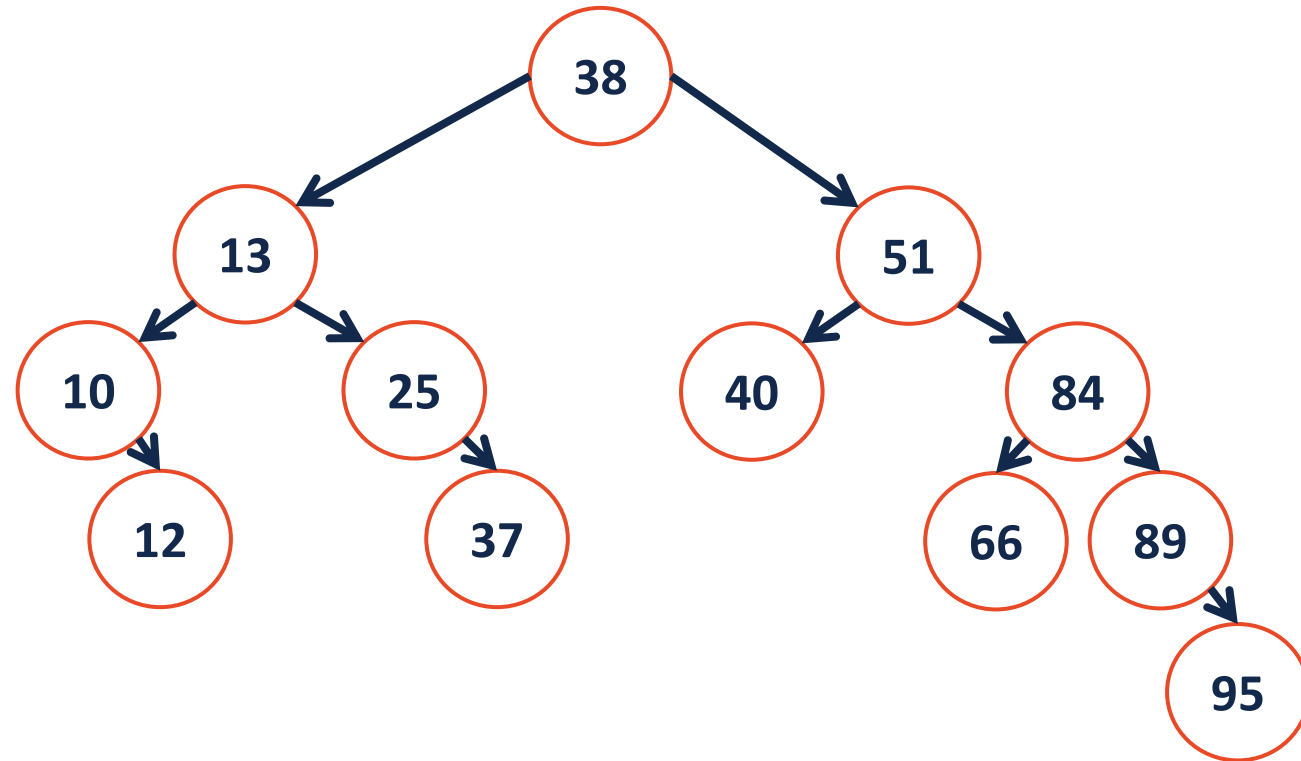




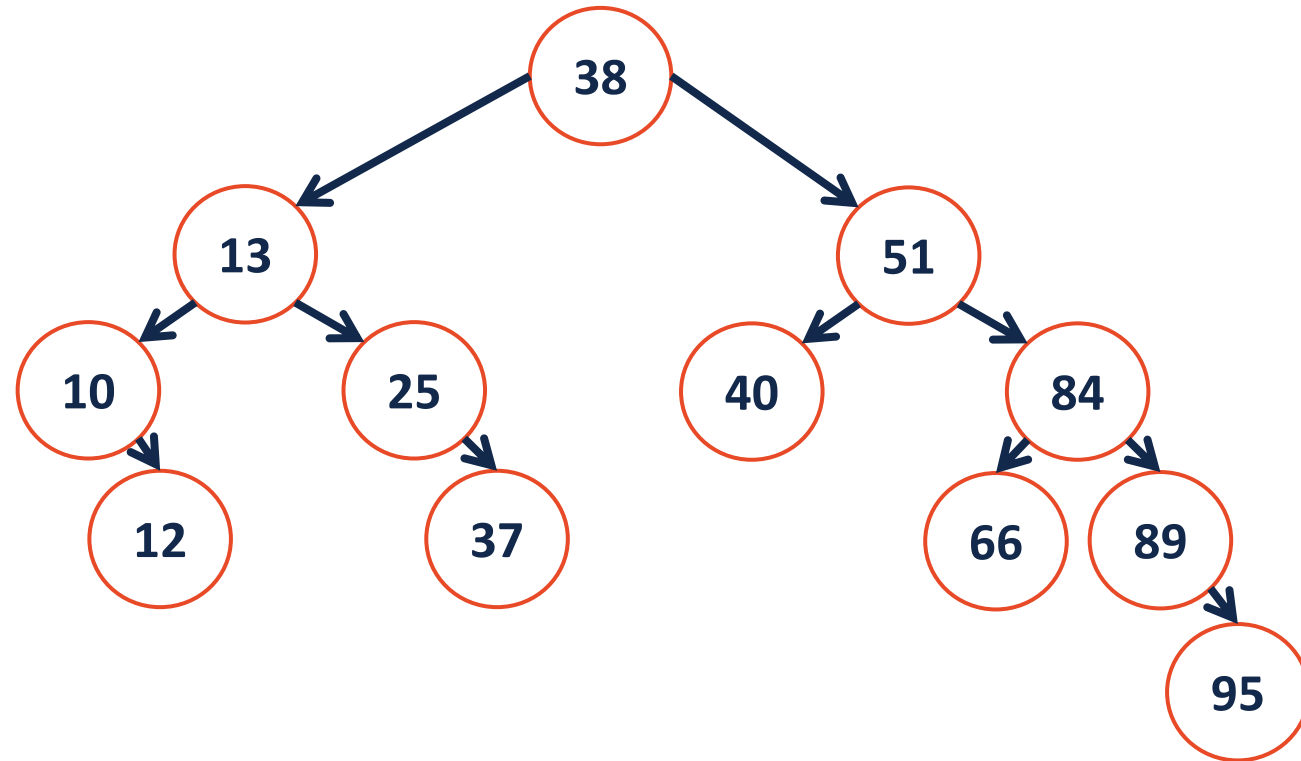
`remove(40);`



remove (25) ;

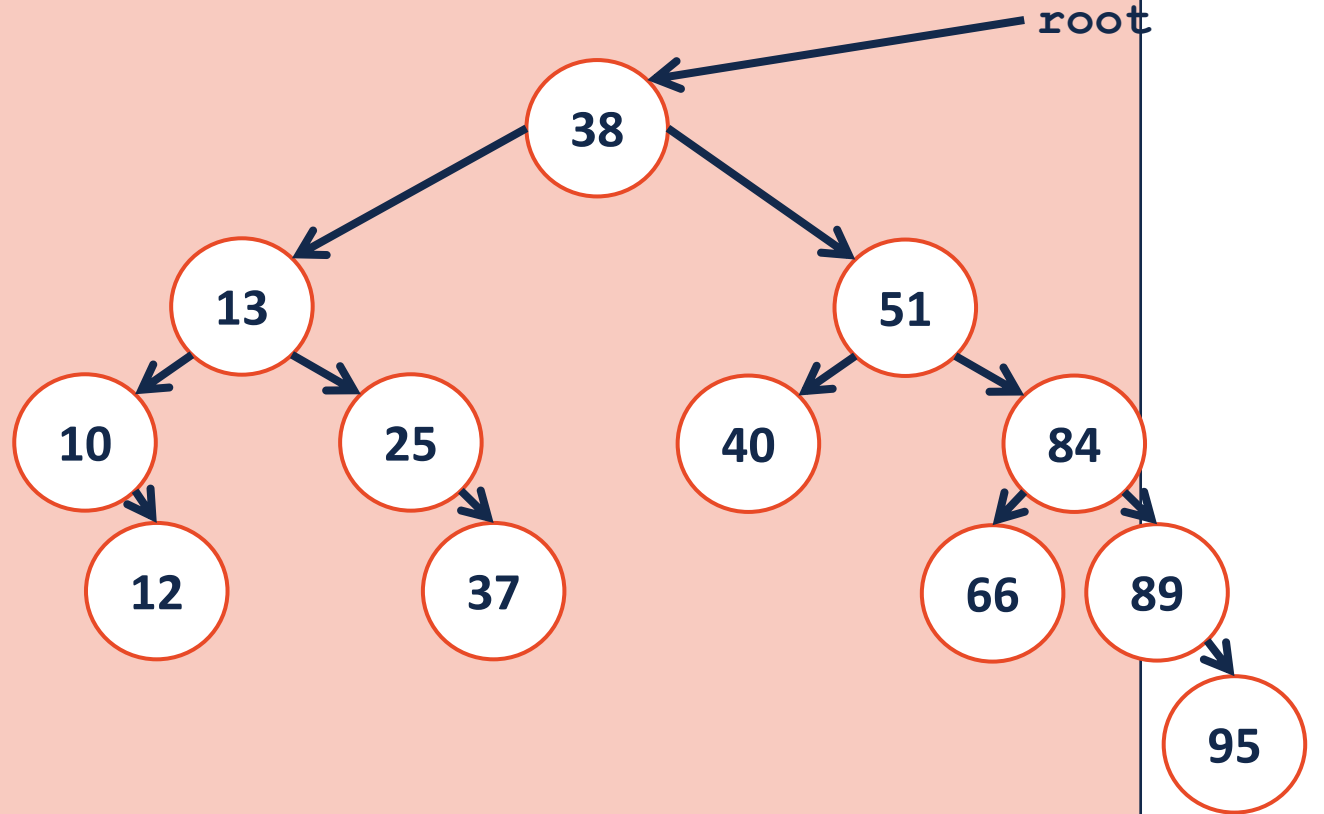


`remove(10);`

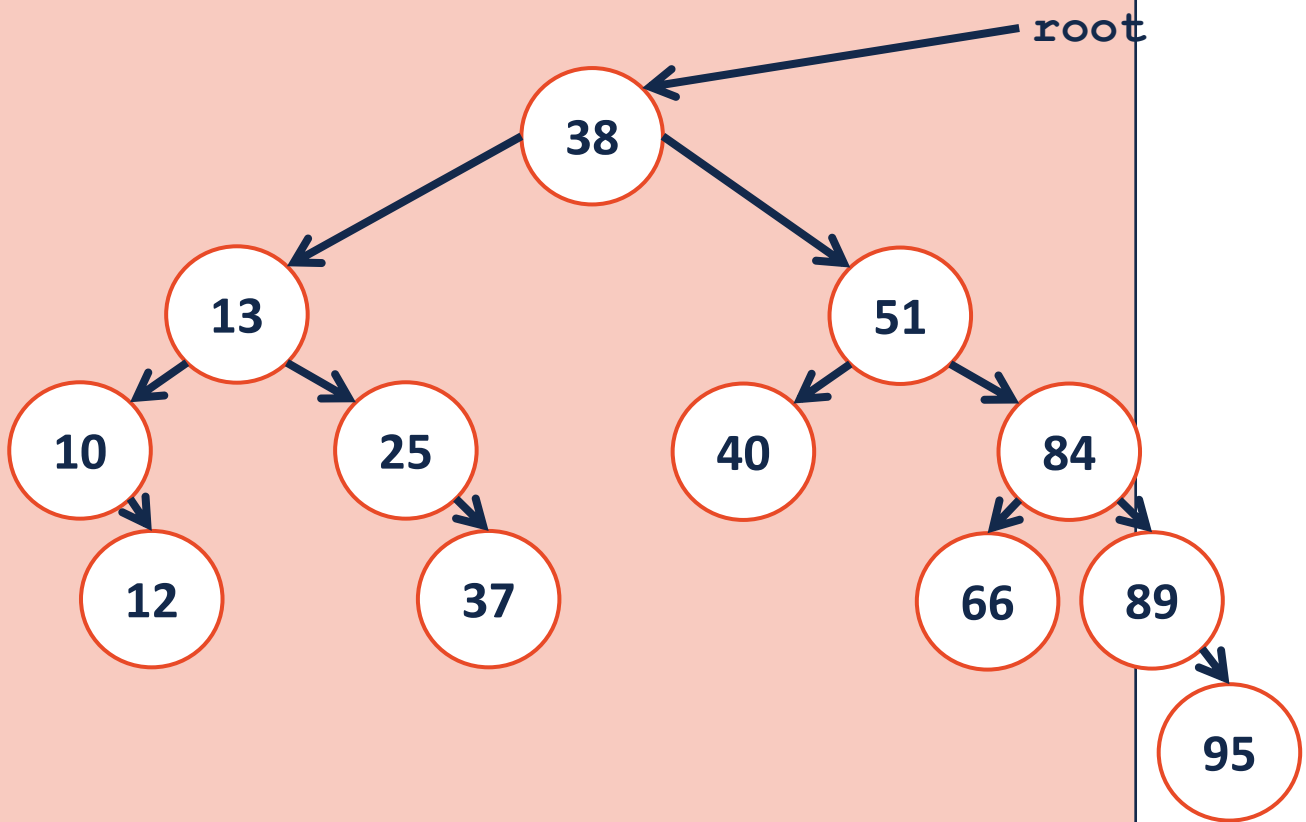


`remove (13) ;`


```
1  template<class K, class V>
2  _____ _remove(TreeNode *& root, const K & key) {
3
4
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25
26 }
```



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CS 225 – Things To Be Doing

Exam 5 (Theory, lists/stacks/queues) is live now!

More Info: <https://courses.engr.illinois.edu/cs225/fa2017/exams/>

MP3: Available now!

Due Tonight: Monday, Oct. 9 at 11:59pm

Lab: lab_trie

Coming this Wednesday!

POTD

Every Monday-Friday – *Worth +1 Extra Credit /problem (up to +40 total)*