# January 2023 CSE 106
# Online Assignment on BST
# Duplicate keys

Time: 30 minutes

Subsections A1 & A2

In our offline, we didn't consider duplicate keys. But Alas! The world is not so ideal. In this online, you have to accommodate duplicate keys in your BST.

You need to modify your BST implementation a little bit to accommodate the change. Please see the sample output for a better understanding.

### Input

No change.

### Output

Please output in a file. Changes in output:

- Find now returns the number of occurrences.
- During printing you need to print the count as well ( in brackets) if it is greater than 1.

Exact match with the output is expected for a faster evaluation.

## Mark distribution

**Task 1 (30%)** Insertion works properly.

**Task 2 (40%)** Deletion works properly.

**Task 3 (20%)** Search works properly.

**Task 4 (10%)** Printing works properly.

### Sample I/O

**Input**

```
F 1
I 8
I 10
I 3
I 1
I 1
D 1
D 1
I 1
I 1
I 8
I 8
F 8
D 8
```

```
D 8
D 8
I 14
I 6
I 4
I 13
I 7
T In
T Pre
T Post
D 8
D 7
I 10
D 10
D 10
F 4
```

**Output**

```
not found
(8)
(8(,10))
(8(3,10))
(8(3(1,),10))
(8(3(1[2],),10))
(8(3(1,),10))
(8(3,10))
(8(3(1,),10))
(8(3(1[2],),10))
(8[2](3(1[2],),10))
(8[3](3(1[2],),10))
found 3
(8[2](3(1[2],),10))
(8(3(1[2],),10))
(10(3(1[2],),))
(10(3(1[2],),14))
(10(3(1[2],6),14))
(10(3(1[2],6(4,)),14))
(10(3(1[2],6(4,)),14(13,)))
(10(3(1[2],6(4,7)),14(13,)))
1[2] 3 4 6 7 10 13 14
10 3 1[2] 6 4 7 14 13
1[2] 4 7 6 3 13 14 10
(10(3(1[2],6(4,7)),14(13,)))
(10(3(1[2],6(4,)),14(13,)))
(10[2](3(1[2],6(4,)),14(13,)))
(10(3(1[2],6(4,)),14(13,)))
(13(3(1[2],6(4,)),14))
found 1
```

## Hints

- Add an extra attribute **count** in your node structure. Update it appropriately during insertion and deletion.

## Submission Guideline

1. Create a directory with your 7 digit student id as its name
2. Put the source files only into the directory created in step 1
3. Zip the directory (compress in .zip format; .rar, .7z or any other format is not acceptable)

4. Upload the .zip file on moodle.

For example, if your student id is 215xxx, create a directory named 2105xxx. Put only your source files (.c, .cpp, .java, .h, etc.) into 215xxx. Compress 215xxx into 215xxx.zip and upload the 215xxx.zip on moodle.