

# CSN-261 ASSIGNMENT-3

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CSE 2nd year B.Tech.

Sub Batch-O2

Problem 2

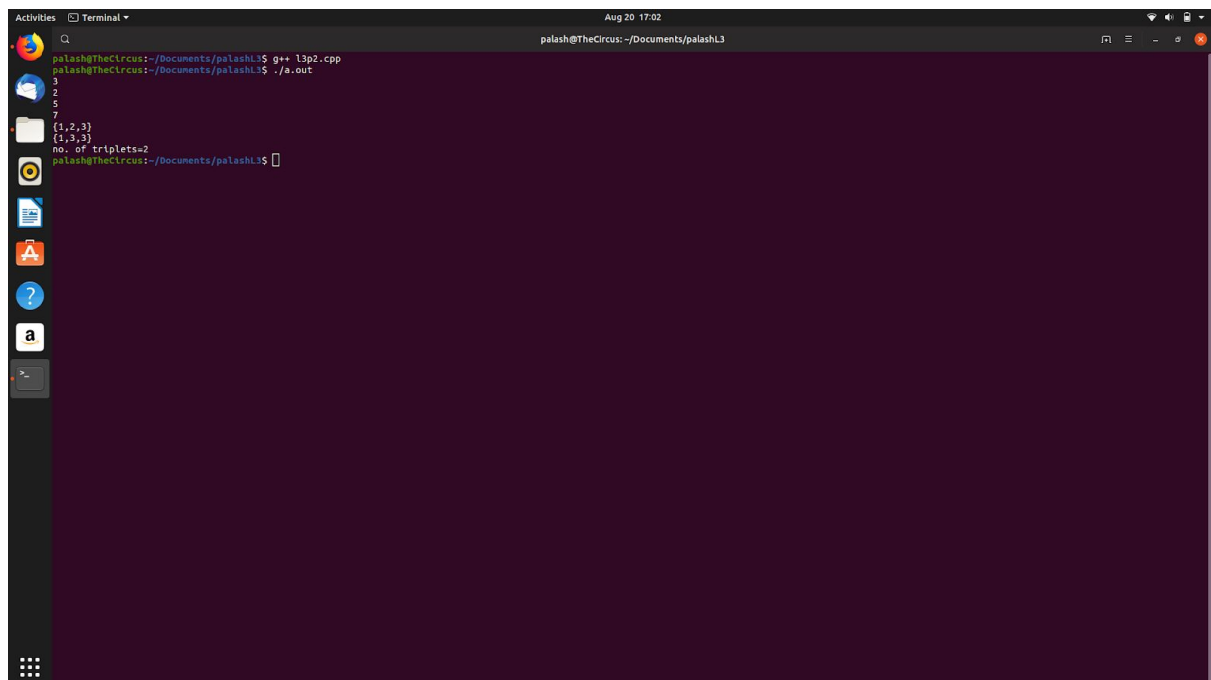
Data structure and algorithm used

1)linked list

2)dynamic programming

3) $a^a=0$

Snapshot



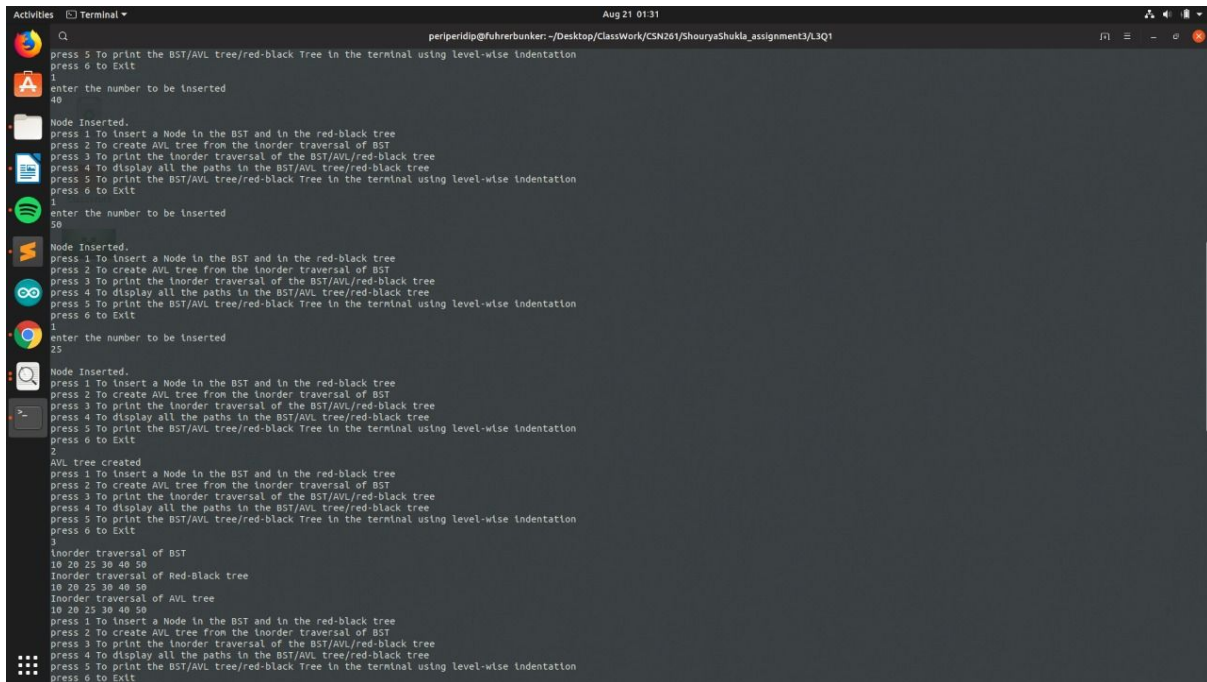
```
palash@TheCircus:~/Documents/palashL3$ g++ l3p2.cpp
palash@TheCircus:~/Documents/palashL3$ ./a.out
3
2
5
7
{1,2,3}
{1,3,3}
no. of triplets=2
palash@TheCircus:~/Documents/palashL3$
```

The image shows a terminal window with a dark purple background. The prompt is 'palash@TheCircus:~/Documents/palashL3\$'. The user has compiled a C++ file 'l3p2.cpp' and executed the resulting binary 'a.out'. The output of the program is displayed on the terminal: '3', '2', '5', '7', followed by two sets of curly braces containing the numbers {1,2,3} and {1,3,3}, and finally 'no. of triplets=2'. The terminal window has a title bar with 'Activities', 'Terminal', and the date 'Aug 20 17:02'. On the left side, there is a vertical dock with various application icons.

## Problem 1

-> Tress are used as data structures

## Snapshots



```
periperidip@fuhrebunker: ~/Desktop/classWork/CSN201/ShouryaShukla_assignment3/L3Q1
press 5 To print the BST/AVL tree/red-black Tree in the terminal using level-wise indentation
press 6 to Exit
1
enter the number to be inserted
40
Node Inserted.
press 1 To Insert a Node in the BST and in the red-black tree
press 2 To create AVL tree from the inorder traversal of BST
press 3 To print the inorder traversal of the BST/AVL/red-black tree
press 4 To display all the paths in the BST/AVL tree/red-black tree
press 5 To print the BST/AVL tree/red-black Tree in the terminal using level-wise indentation
press 6 to Exit
1
enter the number to be inserted
50
Node Inserted.
press 1 To Insert a Node in the BST and in the red-black tree
press 2 To create AVL tree from the inorder traversal of BST
press 3 To print the inorder traversal of the BST/AVL/red-black tree
press 4 To display all the paths in the BST/AVL tree/red-black tree
press 5 To print the BST/AVL tree/red-black Tree in the terminal using level-wise indentation
press 6 to Exit
1
enter the number to be inserted
25
Node Inserted.
press 1 To Insert a Node in the BST and in the red-black tree
press 2 To create AVL tree from the inorder traversal of BST
press 3 To print the inorder traversal of the BST/AVL/red-black tree
press 4 To display all the paths in the BST/AVL tree/red-black tree
press 5 To print the BST/AVL tree/red-black Tree in the terminal using level-wise indentation
press 6 to Exit
2
AVL tree created
press 1 To Insert a Node in the BST and in the red-black tree
press 2 To create AVL tree from the inorder traversal of BST
press 3 To print the inorder traversal of the BST/AVL/red-black tree
press 4 To display all the paths in the BST/AVL tree/red-black tree
press 5 To print the BST/AVL tree/red-black Tree in the terminal using level-wise indentation
press 6 to Exit
3
Inorder traversal of BST
10 20 25 30 40 50
Inorder traversal of Red-Black tree
10 20 25 30 40 50
Inorder traversal of AVL tree
10 20 25 30 40 50
press 1 To Insert a Node in the BST and in the red-black tree
press 2 To create AVL tree from the inorder traversal of BST
press 3 To print the inorder traversal of the BST/AVL/red-black tree
press 4 To display all the paths in the BST/AVL tree/red-black tree
press 5 To print the BST/AVL tree/red-black Tree in the terminal using level-wise indentation
press 6 to Exit
```

```
Activities Terminal Aug 21 01:31
peripridip@fuhrerbunker: ~/Desktop/ClassWork/CSN261/ShouryaShukla_assignment3/L3Q1

press 2 to create AVL tree from the inorder traversal of BST
press 3 to print the inorder traversal of the BST/AVL/red-black tree
press 4 to display all the paths in the BST/AVL tree/red-black tree
press 5 to print the BST/AVL tree/red-black Tree in the terminal using level-wise indentation
press 6 to Exit
3
Inorder traversal of BST
10 20 25 30 40 50
Inorder traversal of Red-Black tree
10 20 25 30 40 50
Inorder traversal of AVL tree
10 20 25 30 40 50
press 1 to Insert a Node in the BST and in the red-black tree
press 2 to create AVL tree from the inorder traversal of BST
press 3 to print the inorder traversal of the BST/AVL/red-black tree
press 4 to display all the paths in the BST/AVL tree/red-black tree
press 5 to print the BST/AVL tree/red-black Tree in the terminal using level-wise indentation
press 6 to Exit
4
The paths of BST
10->20->30->25
20->30->25
30->25
25
10->20->30->40->50
20->30->40->50
30->40->50
40->50
50
The paths of Red Black Tree
20->10
10
20->40->30->25
40->30->25
30->25
25
20->40->50
40->50
50
The paths of AVL tree
30->20->10
20->10
10
30->20->25
20->25
25
30->40->50
40->50
50
```

```
Activities Terminal Aug 21 01:31
peripridip@fuhrerbunker: ~/Desktop/ClassWork/CSN261/ShouryaShukla_assignment3/L3Q1

40->50
50
The paths of Red Black Tree
20->10
10
20->40->30->25
40->30->25
30->25
25
20->40->50
40->50
50
The paths of AVL tree
30->20->10
20->10
10
30->20->25
20->25
25
30->40->50
40->50
50
press 1 to Insert a Node in the BST and in the red-black tree
press 2 to create AVL tree from the inorder traversal of BST
press 3 to print the inorder traversal of the BST/AVL/red-black tree
press 4 to display all the paths in the BST/AVL tree/red-black tree
press 5 to print the BST/AVL tree/red-black Tree in the terminal using level-wise indentation
press 6 to Exit
5
BST
10[4]
  20[3]
    30[2]
      25
      40[1]
    50
Red-Black tree
20[2][Black]
  10[Black]
  40[1][Red]
    30[1][Black]
    25[Red]
    50[Black]
30[0]
  20[0]
    10
    25
  40[1]
    50
```