

IT206 Endsem Examination (5 November 2019)

- Note:** 1. There are two problems in this exam.
2. Ensure the the user input / output follows the exact pattern as in the Sample run.
3. The program's output in the sample run is shown in red.

Program 1 [25 marks]: Write a program to store the marks and then compute the results of students in a class examination. Assume that there are three subjects (each graded out of 100). A student passes the exam on scoring at least 40 in each of the three subjects. The total score (out of 300) determines the merit class as follows:

Total (out of 300)	Class
≥ 270	Distinction
≥ 230 and < 270	First
≥ 180 and < 230	Second
≥ 120 and < 180	Third

First read and store all the input data in a suitable singly linked list and then traverse the list to compute the results.

(Note: Python programmers can not use the in-built list data structure for this problem. Create a new class for this singly linked list.)

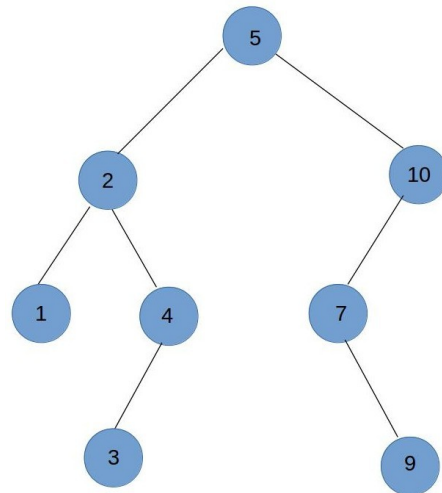
Sample Run:

Enter the number of students: 3
Enter the marks of student 1 : 72 68 75
Enter the marks of student 2 : 45 38 52
Enter the marks of student 3 : 95 85 92

The results are as follows:

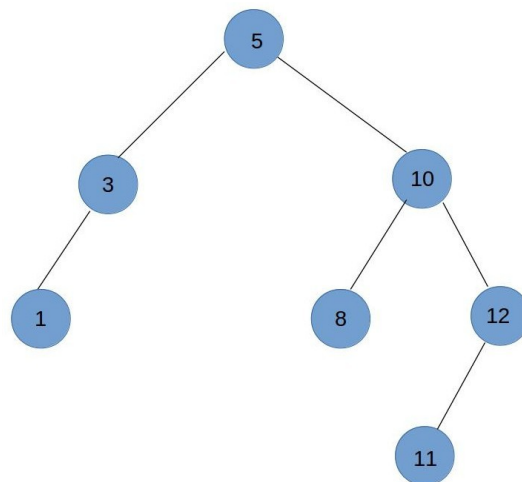
student 1: PASS, Second class
student 2: FAIL
student 3: PASS, Distinction

Program 2 [25 marks]: Write a program to do insertions in a BST and print the Reverse Level-Order traversal of the resulting tree. For e.g., for the BST shown below, the reverse level-order traversal will print: 3 9 1 4 7 2 10 5.



Build your tree using a sequence of BST insert operations. For e.g. the BST above can be built by the sequence of inserts: 5 2 1 4 3 10 7 9. Read in the sequence of keys to be inserted from the user and insert the elements into the tree one by one in that order itself.

A sample run of the program (for the different BST shown below) is given.



Sample Run:

Enter the number of keys to be inserted: 7

Enter the keys to be inserted in order:

5

3

1

10

8

12

11.

The reverse order traversal of the BST is: 11 1 8 12 3 10 5