300103 Data Structures and Algorithms

Practical 6
(Weeks 7, 8 & 9)

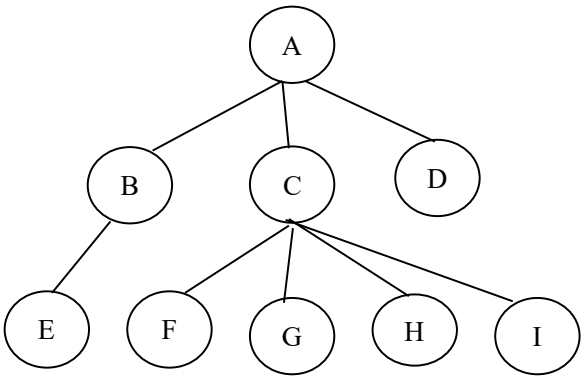
This practical will not be marked by your tutor. However, you are welcome to show your answer to your tutor for feedback.

Task 6.1
Assume that there are eight students with IDs: 197354883, 933185971, 132489992, 134152075, 216500325, 106500325, 216510325, and 197354884. Suppose the hash table, HT, is of the size 19, indexed 0, 1, 2, . . ., 18. Show how these students' IDs, in the order given, are inserted in HT using the hashing function f(k) = k%19. Use linear probing to resolve collision.

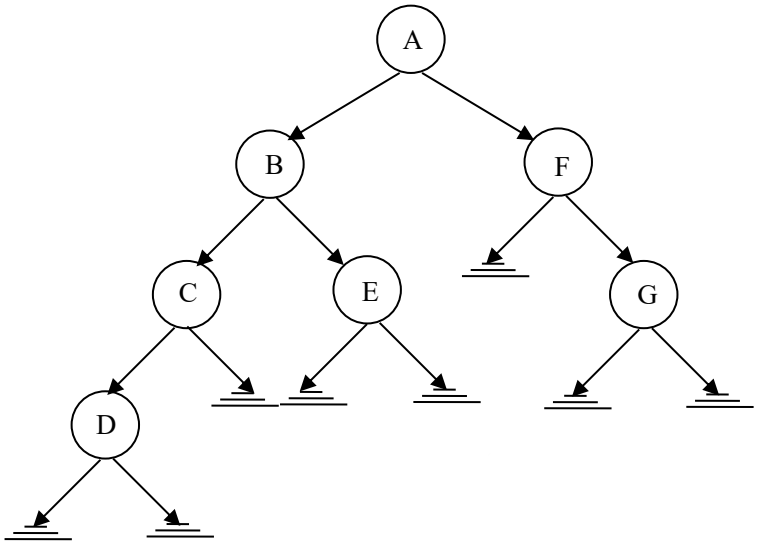
Task 6.2
Write a program that reads words from a text file and store the occurrence frequency of each word in a Map (in C++) or Hashtable (in Java). Display the content of the map/hashtable.

Hint: use word as key and the frequency as data.

Task 6.3
Convert the following general tree into a binary tree:



Task 6.4
Base on the following Figure,
a. List the nodes of this binary tree in an inorder sequence.
b. List the nodes of this binary tree in a preorder sequence.
c. List the nodes of this binary tree in a postorder sequence.


A
B
F
C
E
G
D