BAHRIA UNIVERSITY (KARACHI CAMPUS)

CSC 221 - Data Structures & Algorithms – Assignment 2	
CLO-3	Deadline: 18th December, 22
Class: BSE-3A/B	Total Marks 5

Suppose you are asked to store a binary tree in a file considering each node in the binary tree contains a character string. To create the file in preorder file format, do a preorder traversal of the tree, when a node is visited put the character string in the file followed by a newline and when a null is visited put a dot, ".", followed by a newline. For example, the below tree is stored as the file "m n o . . . p q . . r . ." where spaces indicate newlines.

```
        m
       / \
      n   p
     /   / \
    o   q   r
```
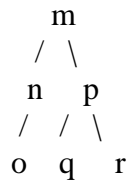
- Design an algorithm which gives the preorder file format of a binary tree given a pointer to the root of a binary tree. Consider the binary tree has nodes with fields "data", "left_child", and "right_child".

- Design an algorithm which takes a preorder file format of a binary tree and produces the binary tree. Use recursive approach.