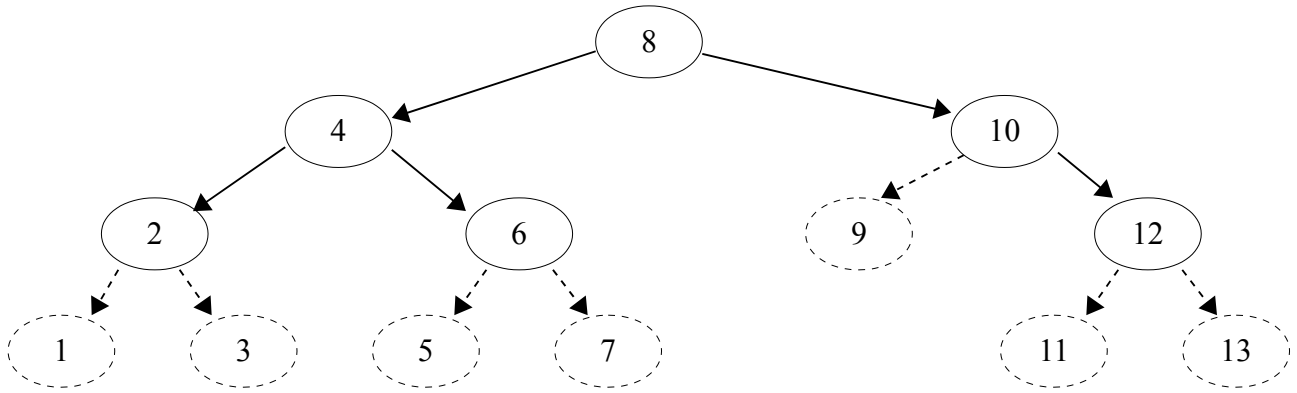
1. Using the tree below, classify the nodes into the follow groups.
   Note: Solid circles represent nodes in the tree



a) Empty node(s)

b) NonEmpty node(s)

c) Root node(s)

d) Children node(s) of node number 4

e) Children node(s) of node number 8

f) Parent node(s) of node number 12

g) Internal node(s)

h) Leaf node(s)

2. Draw the binary search tree that results from inserting the following values into an empty tree:

[25, 92, 15, 45, 11, 36, 8, 73, 95, 4]

3. Using the mkNonEmpty() function from lecture, show the binary search tree that results from the following code:

```
A = mkNonEmpty(    mkNonEmpty( mkEmpty(), 1, mkEmpty() ),        \
                   3,                                            \
                   mkNonEmpty( mkEmpty(), 4, mkEmpty() ) )

B = mkNonEmpty(    mkNonEmpty( mkEmpty(), 6, mkEmpty() ),        \
                   7,                                            \
                   mkNonEmpty( mkEmpty(), 9, mkEmpty() ) )

Tree = mkNonEmpty( A, 5, B )
```

4. Using the Tree variable from problem 3, write python functions that accept a root node as a parameter and do the following:

Perform an in-order traversal

```
>>> print( inorder( Tree ) )
1 3 4 5 6 7 9
```

Perform a pre-order traversal

```
>>> print( preorder( Tree ) )
5 3 1 4 7 6 9
```

Perform a post-order traversal

```
>>> print( postorder( Tree ) )
1 4 3 6 9 7 5
```

5) Given the following pre-fix equation, draw the resulting tree,

* / + 8 2 + 3 1 2