1. List the members of your group below:

2. Depict the binary search tree resulting from the insertion of the following keys, in the order listed, into an empty binary search tree. Label the external nodes $e_1, e_2, e_3, \ldots$ in preorder.

$$8, 5, 21, 3, 9, 7, 1, 2, 11, 14$$

3. Determine the *internal path length* and the *external path length* of the tree of Question 2. How are they related?

4. List the nodes of the tree of Question 2 that are probed when it is searched for each of the following keys. Include probes of external nodes as well as internal nodes.

$$8, 11, 32, 9, 99, 14$$

5. Depict the tree resulting from the deletion of each of the following keys from the tree of Question 2.

$$14, 7, 8, 1$$

6. Annotate each node of the tree of Question 2 with the difference between the heights of its left and right subtrees (left minus right). Mark with $*$ the nodes that are *AVL imbalanced*.

7. Repeat Question 2 for an *AVL tree*, showing all intermediate steps. In particular, depict the state of the tree immediately following each insertion, before and after any necessary balancing operations. Identify the type of each balancing operation used and the root of the subtree to which it is applied.

[additional space for answering the earlier question]