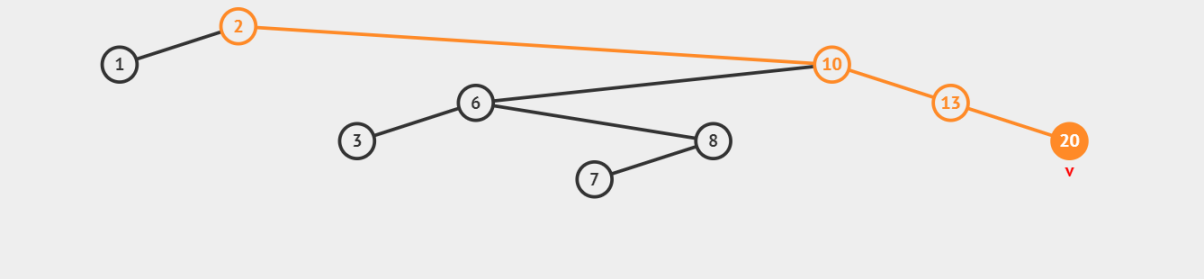
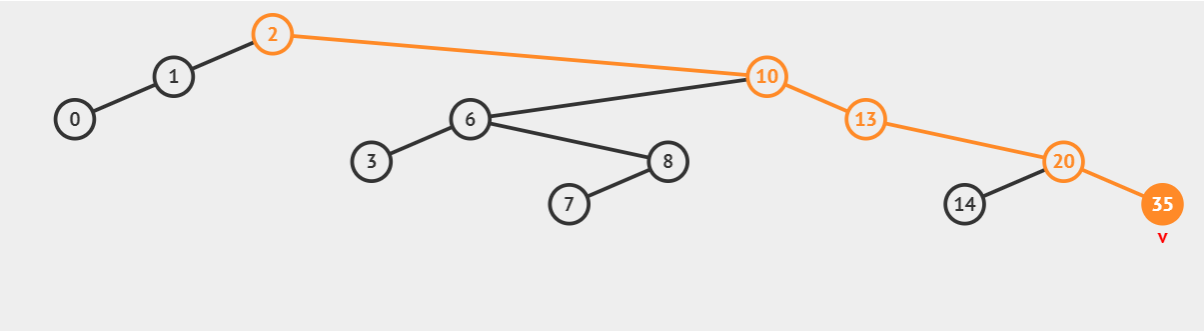
Bài 2: Given a list of integer numbers: 2, 1, 10, 6, 3, 8, 7, 13, 20.

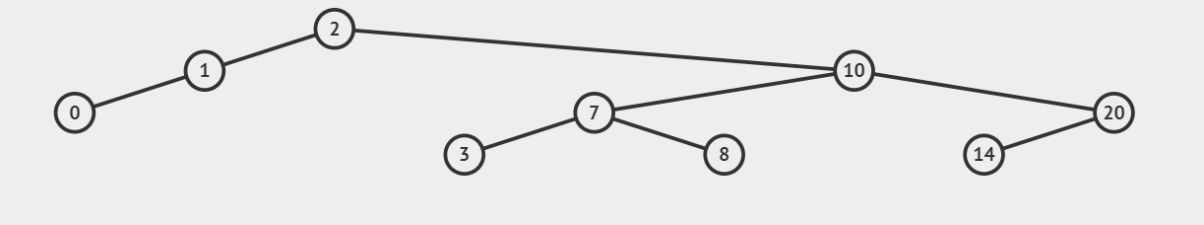
1. Draw the binary search tree



2. Draw the binary search tree after inserting values: 14, 0, 35

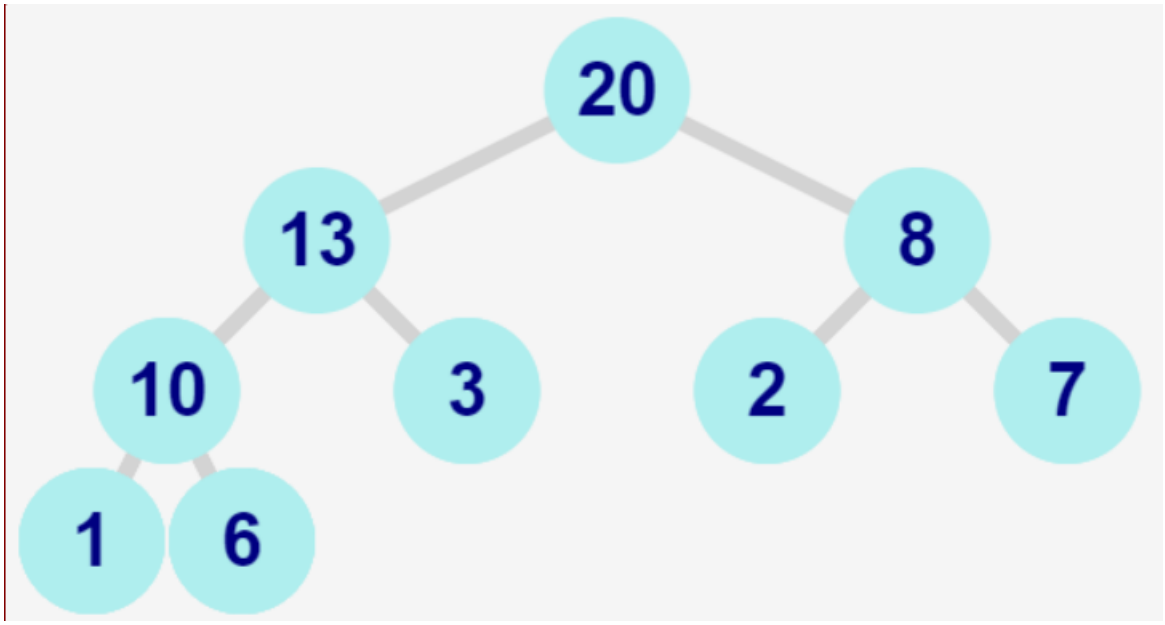


1. Draw the binary search tree after deleting: 6, 13, 35

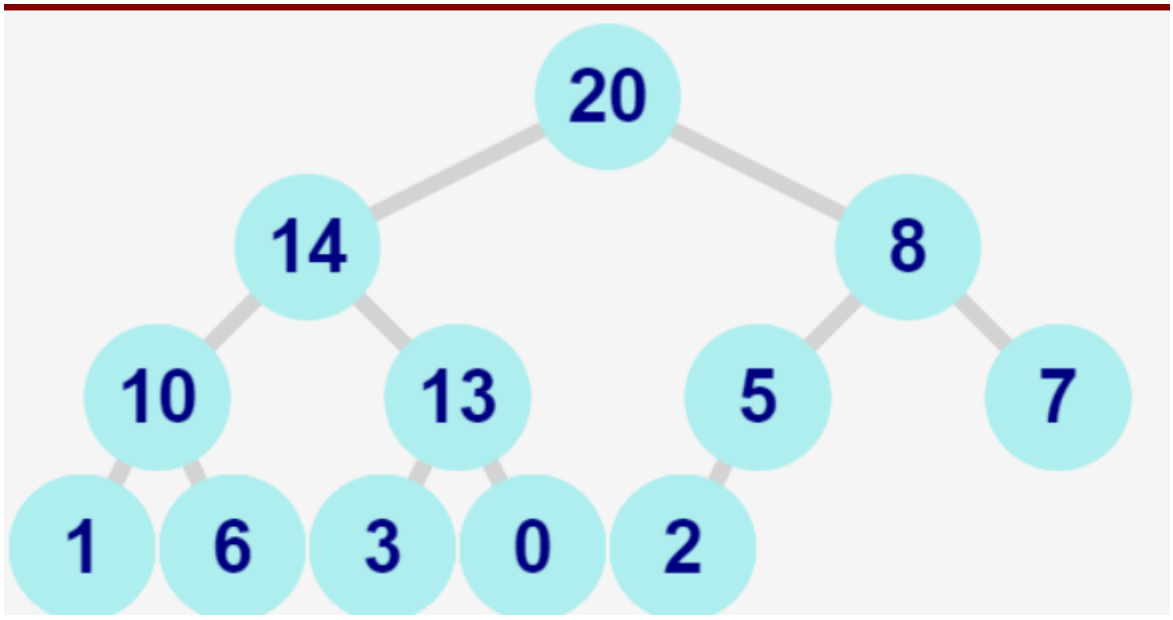


Bài 3: . Given a list of integer numbers: 2, 1, 10, 6, 3, 8, 7, 13, 20.

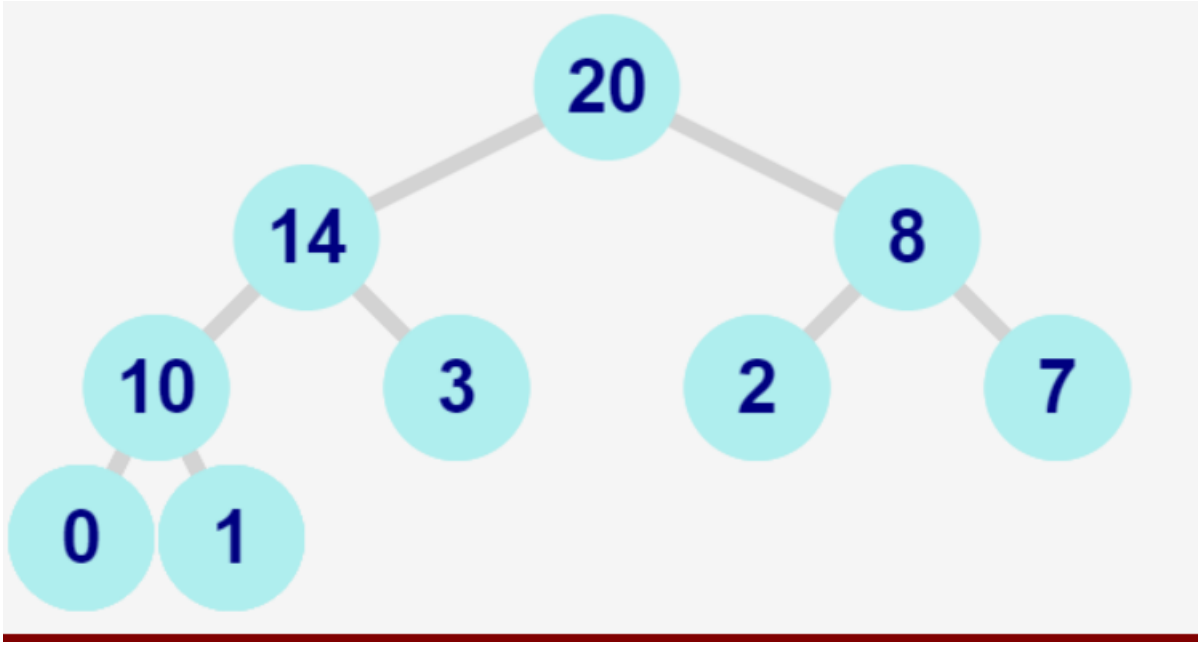
1. Draw the heap tree



2. Draw the heap tree after inserting values: 14, 0, 35

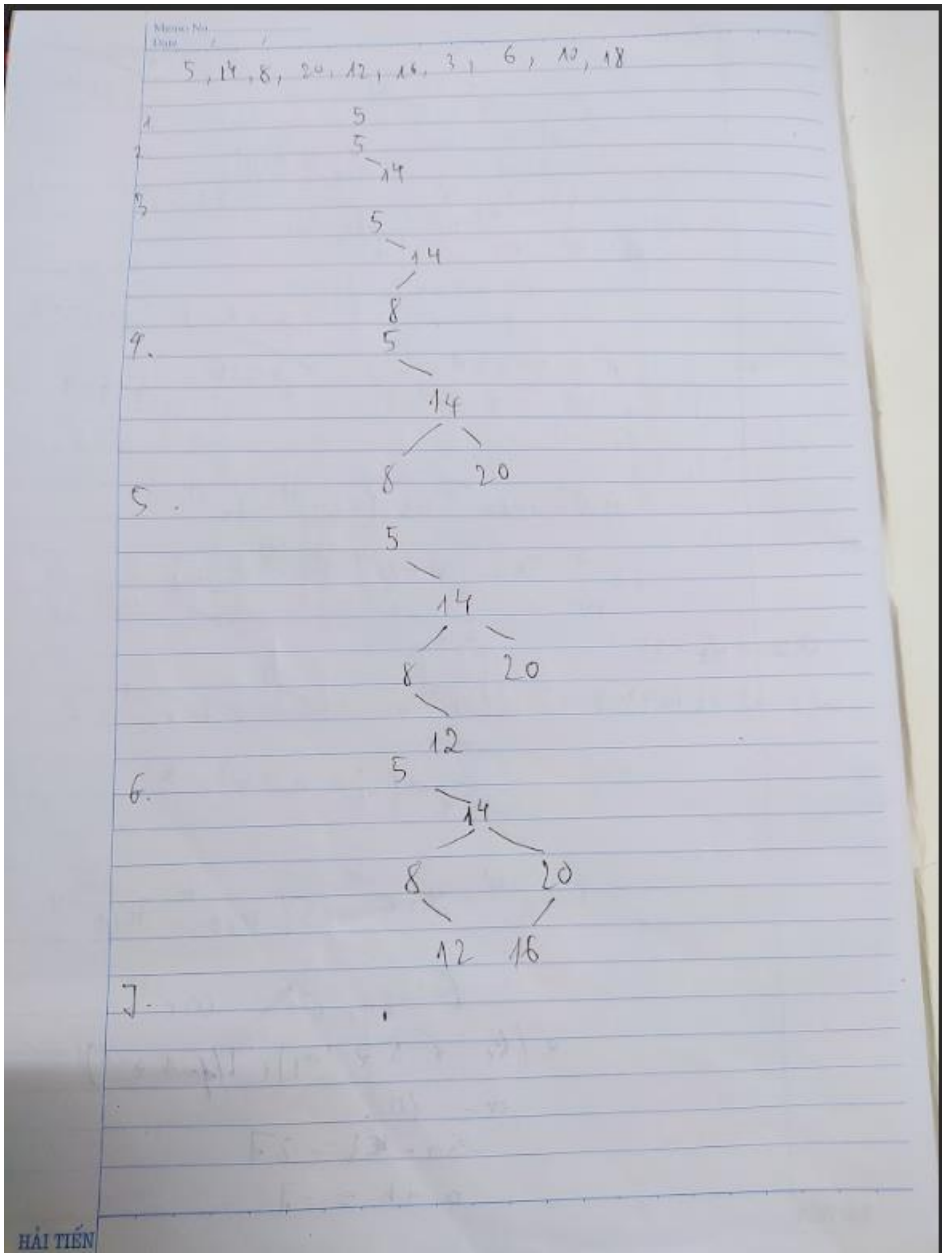


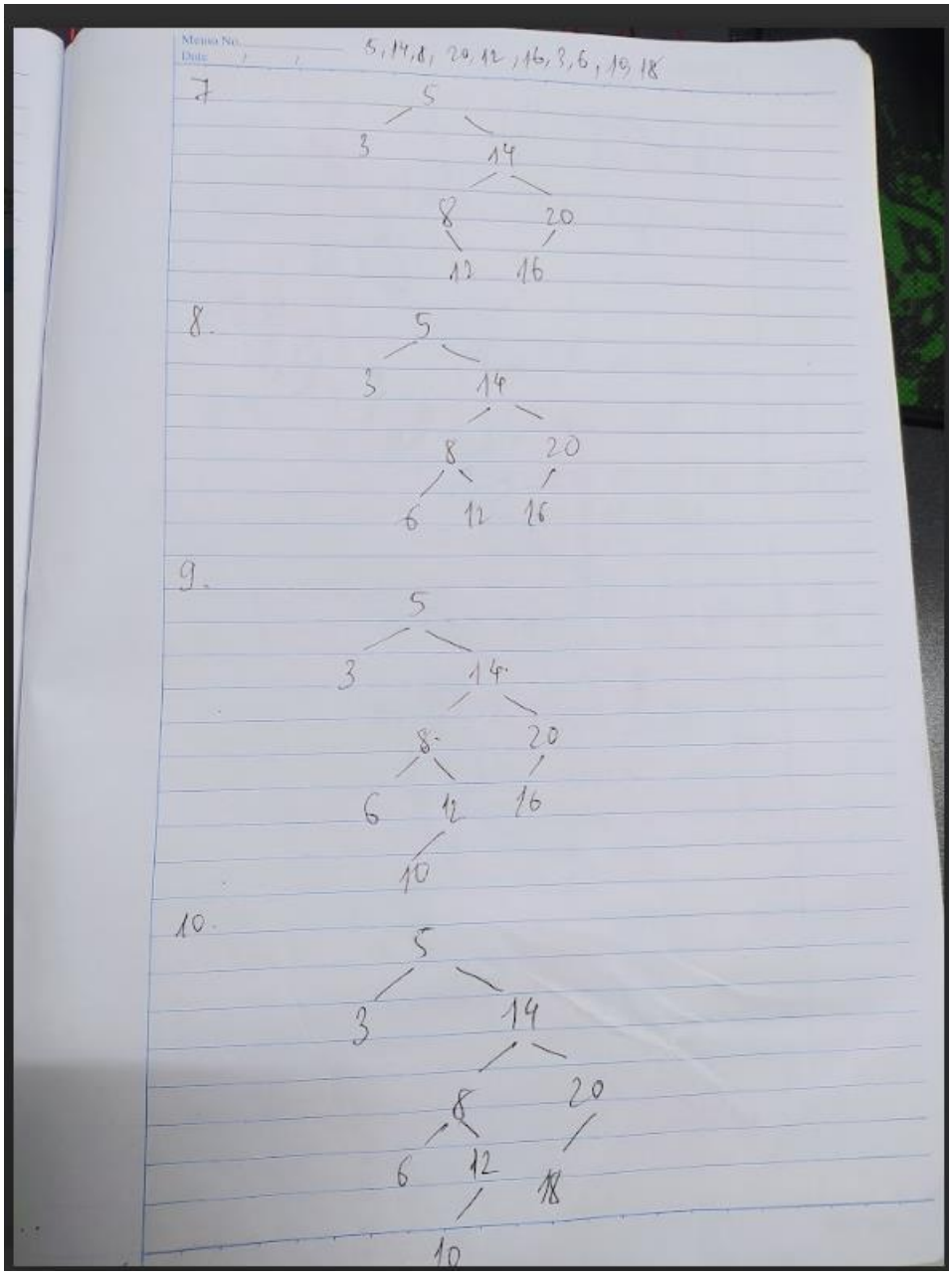
3. Draw the heap tree after deleting: 6, 13, 35

4. 

Ex4:

1. Insert elements from S1 to a binary search tree one by one and draw the binary search tree after each step.


5, 14, 8, 20, 12, 16, 3, 6, 10, 18
1
5
2
5
14
3
5
14
8
4.
5
14
8
20
5.
5
14
8
20
12
6.
5
14
8
20
12
16
7.
HẢI TIẾN



2. Write out the procedure to find and remove the maximum element from binary search tree in detail.

1. Start at the root node.

2. If (root node == null) return.

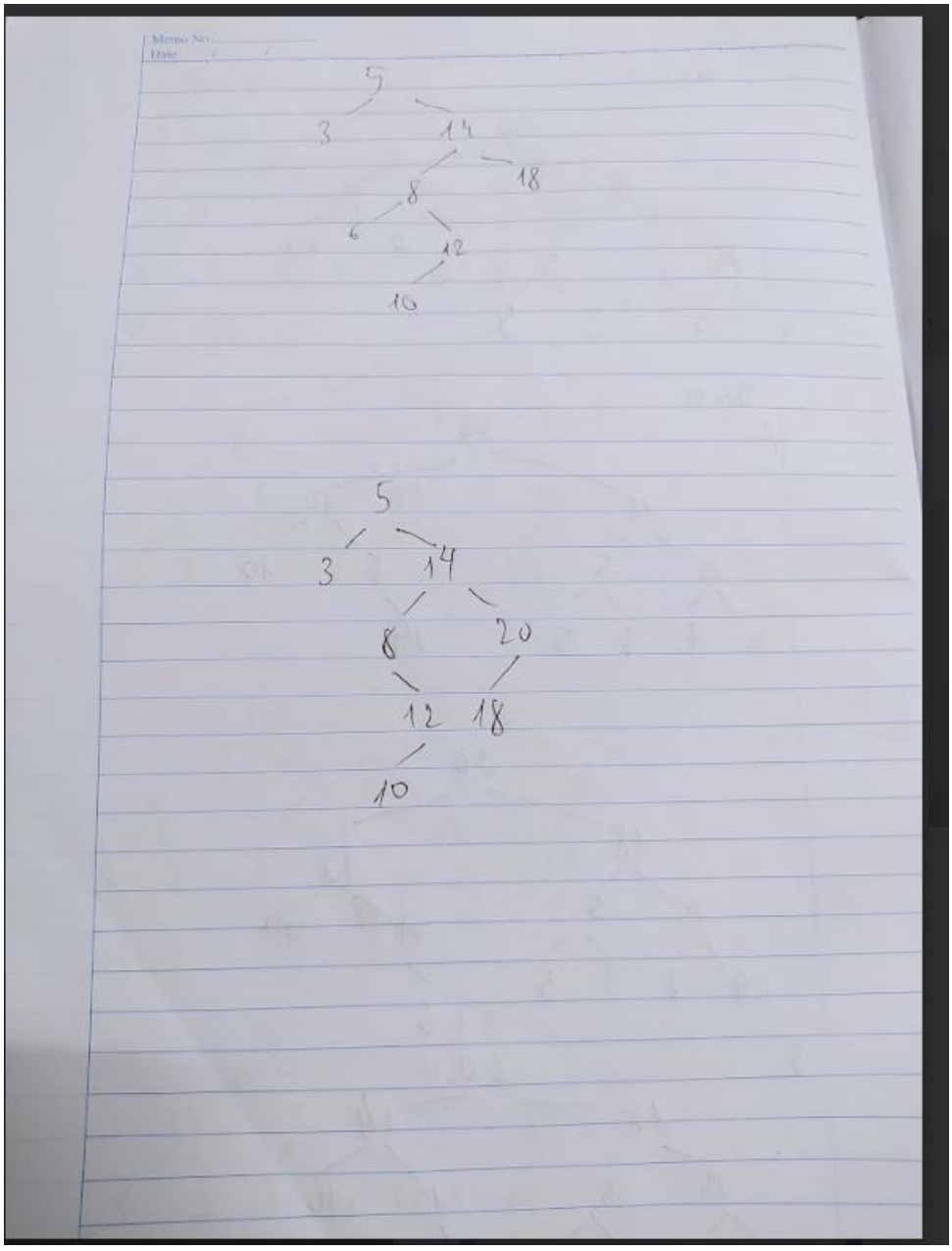
3. Otherwise, initialize two pointers: `currentNode` and `parentNode`. Set both pointers to the root node.

4. Traverse through the right child nodes of the BST until reaching a leaf node. While traversing, update `currentNode` with each move to the right child and `parentNode` with the previous value of `currentNode`.

5. Once a leaf node is reached, it contains the maximum element in the BST.

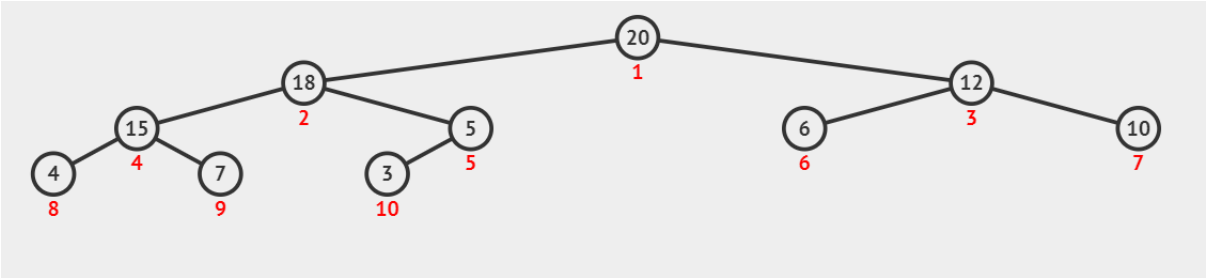
6. Check if the maximum element has a left child. If it does, reattach the left child to the parent node of the maximum element. Otherwise, update the right child of the parent node to null.

7. Return the maximum element as it has been successfully removed from the BST.

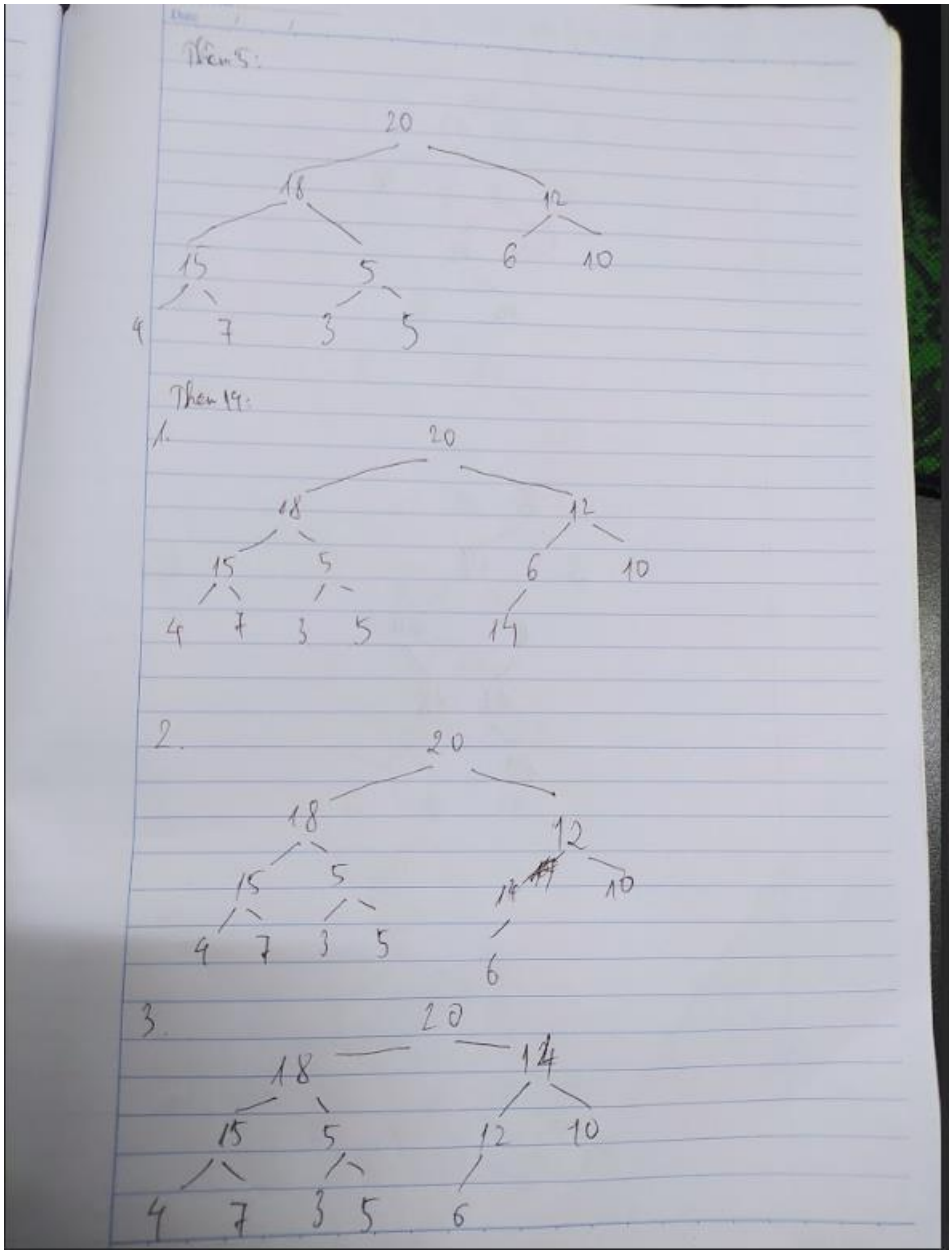


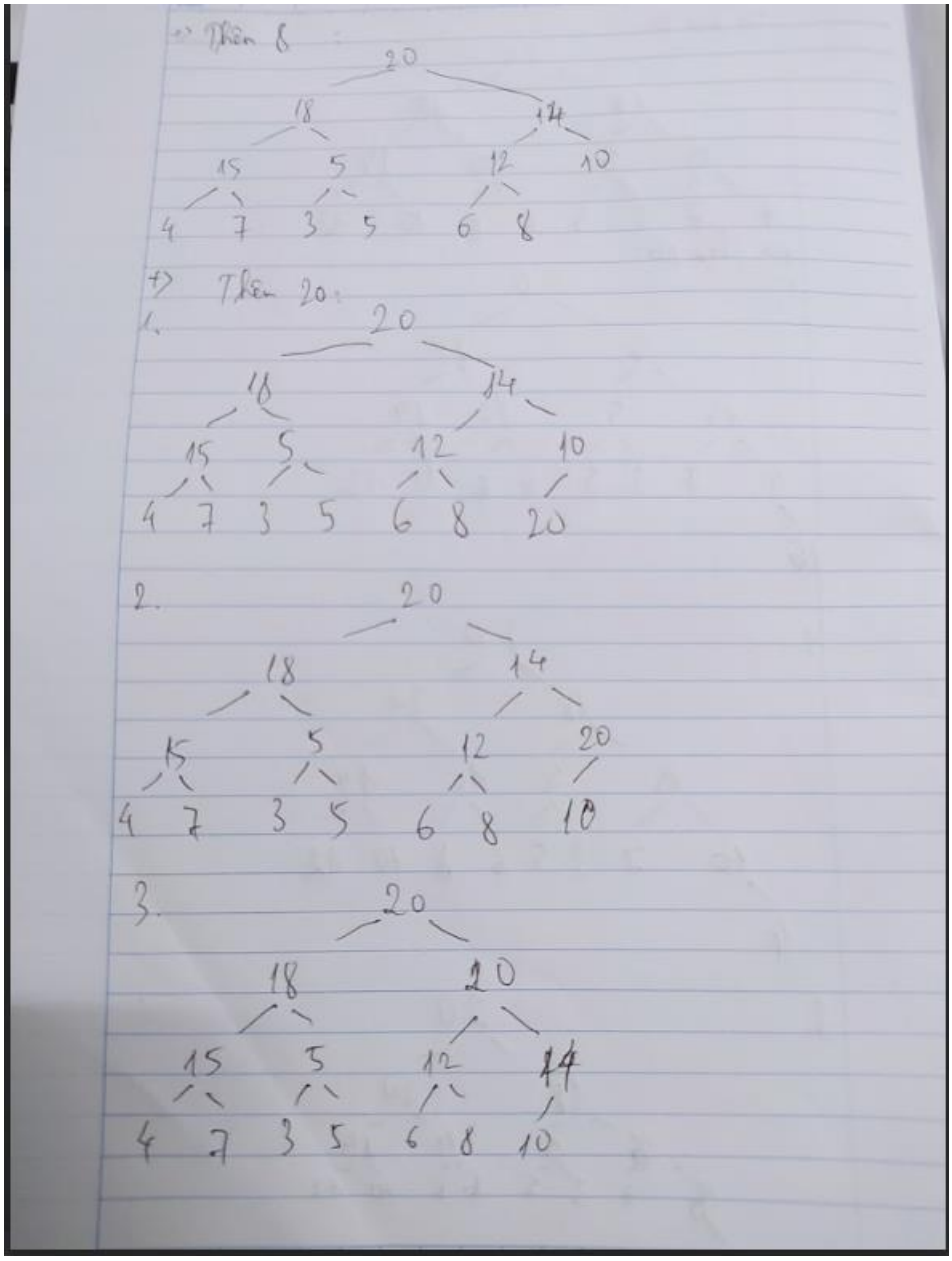
Ex5: Draw the heap (tree) from S2 = {5, 10, 6, 4, 7, 12, 15, 18, 20, 3}

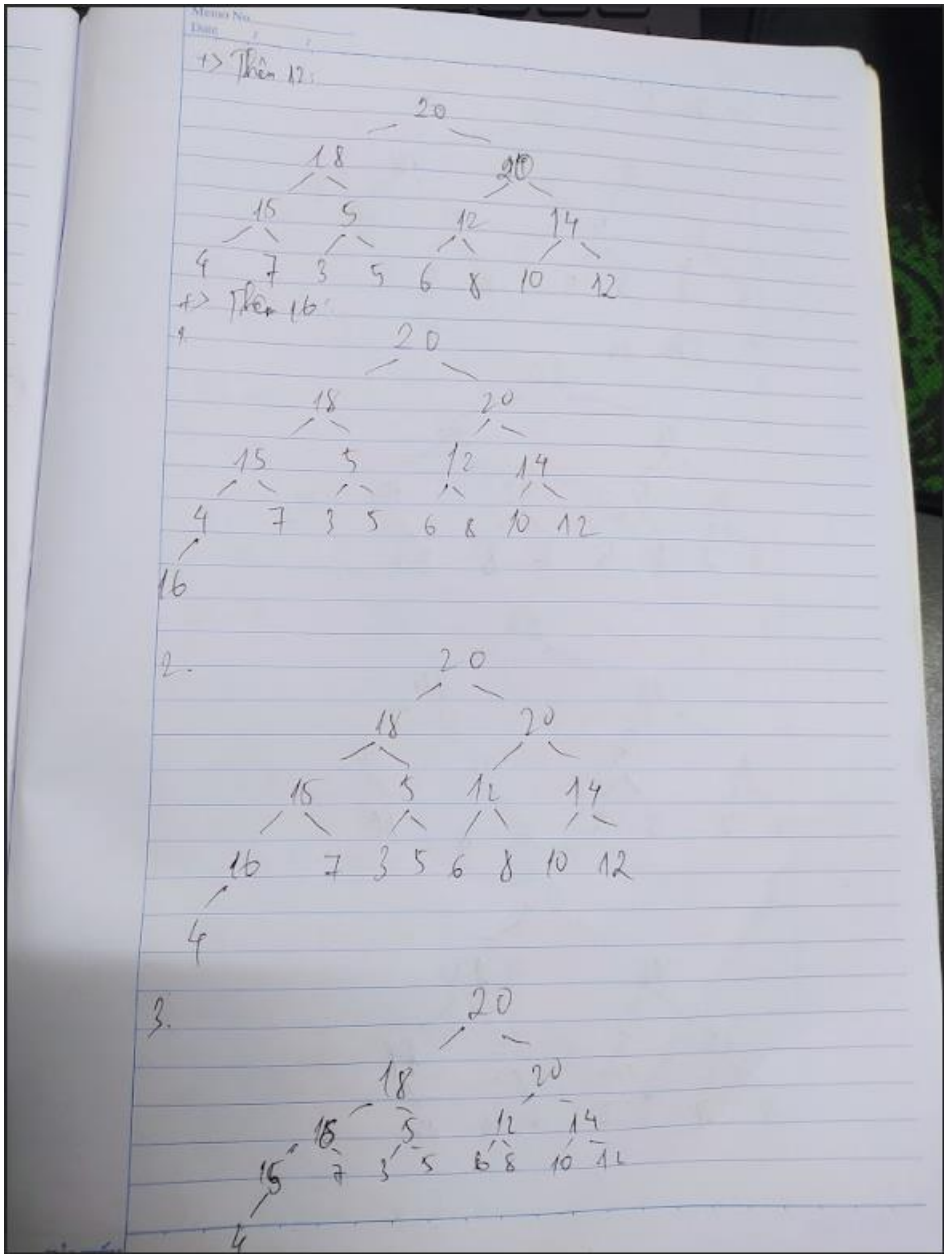
1. Draw the heap (tree) from S2



2. Insert elements from S1 to this heap one by one and draw the heap after each step.




Then 8
20
18
14
15
5
12
10
4
7
3
5
6
8
Then 20:
1.
20
18
14
15
5
12
10
4
7
3
5
6
8
20
2.
20
18
14
15
5
12
20
4
7
3
5
6
8
10
3.
20
18
20
15
5
12
14
4
7
3
5
6
8
10



3. Write out the procedure to find and remove the maximum element from binary search tree in detail.

   ➔ If the tree is max-heap else heapify and remove the root node

   ➔ Remove the root node and replace by the end node