Find Minimum and Maximum Element in BST [GFG](https://practice.geeksforgeeks.org/problems/max-and-min-element-in-binary-tree/1)

Given a Binary Tree, find maximum and minimum elements in it.

Example:

10

/ \

7 17

/ / \

5 15 19

/ /

1. 13

Output: The Minimum Element: 1(Leftmost) and Maximum Element: 19 (Rightmost)

**Minimum Element:**

**Approach 1: Function to find the minimum value in the BST using a recursive approach**

* A recursive function **minValueRecursive** is used to find the minimum value in the BST.
* It recursively explores the left subtree until it reaches the leftmost node, which contains the minimum value.
* **Time Complexity: O(H), where H is the height of the tree.**
* **Space Complexity: O(H) due to the function call stack.**

**Approach 2: Function to find the minimum value in the BST using an iterative approach**

* An iterative function **minValueIterative** is used to find the minimum value in the BST.
* It iteratively traverses the leftmost path of the BST to reach the node with the minimum value.
* **Time Complexity: O(H), where H is the height of the tree.**
* **Space Complexity: O(1) as it doesn't use additional space.**

**Maximum Element:**

**Approach 1: Recursive function to find the maximum value in the BST**

* A recursive function **maxValueRecursive** is used to find the maximum value in the BST.
* It recursively explores the right subtree until it reaches the rightmost node, which contains the maximum value.
* **Time Complexity: O(H), where H is the height of the tree.**
* **Space Complexity: O(H) due to the function call stack.**

**Approach 2: Iterative function to find the maximum value in the BST**

* An iterative function **maxValueIterative** is used to find the maximum value in the BST.
* It iteratively traverses the rightmost path of the BST to reach the node with the maximum value.
* **Time Complexity: O(H), where H is the height of the tree.**
* **Space Complexity: O(1) as it doesn't use additional space.**

**Conclusion:**

The iterative approaches for finding minimum and maximum values have a space complexity of O(1), making them more memory-efficient.