```cpp
#include <iostream>

class TreeNode {
public:
    int key;
    TreeNode* left;
    TreeNode* right;

    TreeNode(int value) : key(value), left(nullptr), right(nullptr) {}
};

class BinaryTree {
private:
    TreeNode* root;

    TreeNode* insert(TreeNode* root, int key) {
        if (root == nullptr) {
            return new TreeNode(key);
        }

        if (key < root->key) {
            root->left = insert(root->left, key);
        } else if (key > root->key) {
            root->right = insert(root->right, key);
        }

        return root;
    }

    TreeNode* deleteNode(TreeNode* root, int key) {
        if (root == nullptr) {
            return root;
        }

        if (key < root->key) {
            root->left = deleteNode(root->left, key);
        } else if (key > root->key) {
            root->right = deleteNode(root->right, key);
        } else {
            if (root->left == nullptr) {
                TreeNode* temp = root->right;
                delete root;
                return temp;
            } else if (root->right == nullptr) {
                TreeNode* temp = root->left;
                delete root;
                return temp;
            }

```

```
50              root->key = minValueNode(root->right);
51              root->right = deleteNode(root->right, root->key);
52          }
53
54          return root;
55      }
56
57      int minValueNode(TreeNode* node) {
58          TreeNode* current = node;
59          while (current->left != nullptr) {
60              current = current->left;
61          }
62          return current->key;
63      }
64
65      TreeNode* search(TreeNode* root, int key) {
66          if (root == nullptr || root->key == key) {
67              return root;
68          }
69
70          if (key < root->key) {
71              return search(root->left, key);
72          } else {
73              return search(root->right, key);
74          }
75      }
76
77  public:
78      BinaryTree() : root(nullptr) {}
79
80      void insert(int key) {
81          root = insert(root, key);
82      }
83
84      void deleteNode(int key) {
85          root = deleteNode(root, key);
86      }
87
88      bool search(int key) {
89          return search(root, key) != nullptr;
90      }
91  };
92
93  int main() {
94      BinaryTree bt;
95
96      int keys[] = {50, 30, 70, 20, 40, 60, 80};
97
98      for (int key : keys) {
```

```
 99          bt.insert(key);
100      }
101
102      std::cout << "Searching for 30: " << (bt.search(30) ? "Found" : "Not
           Found") << std::endl;
103
104      bt.deleteNode(70);
105
106      std::cout << "Searching for 70: " << (bt.search(20) ? "Found" : "Not
           Found") << std::endl;
107
108      return 0;
109  }
110
```