Check Max Heap in C++

```
#include <iostream>
#include <vector>
using namespace std;

class Solution {
public:
    static bool checkMaxHeap(vector<int>& arr) {
        for (int i = 0; i < arr.size(); i++) {
            int pIndex = i;
            int lIndex = 2 * i + 1;
            int rIndex = 2 * i + 2;

            if (lIndex < arr.size() && arr[pIndex] <
arr[lIndex]) {
                return false;
            }

            if (rIndex < arr.size() && arr[pIndex] <
arr[rIndex]) {
                return false;
            }
        }
        return true;
    }
};

int main() {
    // Example input
    vector<int> arr = {42, 20, 18, 6, 14, 11, 9, 4};

    // Call the static method checkMaxHeap from
Solution class
    bool result = Solution::checkMaxHeap(arr);

    // Print the result
    cout << boolalpha << result << endl;

    return 0;
}
```

Dry Run for Input: {42, 20, 18, 6, 14, 11, 9, 4}

Index (i)	Parent (arr[i])	Left Child Index (2i+1)	Left Value	Right Child Index (2i+2)	Right Value	Valid?
0	42	1	20	2	18	✅
1	20	3	6	4	14	✅
2	18	5	11	6	9	✅
3	6	7	4	8 (invalid)	—	✅
4 to 7	Leaf nodes	No children	—	—	—	✅

All parent nodes are greater than their children → ✅
Valid Max Heap

🖨 **Output:**

```
true
```

```
true
```