Largest Number in C++

```
#include <iostream>
#include <vector>
#include <algorithm>

using namespace std;

// Custom comparator function for sorting strings in descending order
bool compare(string a, string b) {
    string ab = a + b;
    string ba = b + a;
    return ab > ba; // Compare in descending order
}

string largestNumber(vector<int>& nums) {
    // Convert integers to strings
    vector<string> arr(nums.size());
    for (int i = 0; i < nums.size(); ++i) {
        arr[i] = to_string(nums[i]);
    }

    // Sort using custom comparator
    sort(arr.begin(), arr.end(), compare);

    // Construct the result string
    if (arr[0] == "0") { // Special case to handle if all nums are zeroes
        return "0";
    }

    string result;
    for (const string& s : arr) {
        result += s;
    }

    return result;
}

int main() {
    vector<int> nums = {3, 7, 34, 5, 9};
    cout << largestNumber(nums) << endl;

    return 0;
}
```

Input:

vector<int> nums = {3, 7, 34, 5, 9};

🔁 Step 1: Convert Integers to Strings

Index	Integer	String
0	3	"3"
1	7	"7"
2	34	"34"
3	5	"5"
4	9	"9"

📊 Step 2: Custom Sorting (Using compare(a, b) ⇒ a + b > b + a)

Sorted Comparisons

Pair	a + b	b + a	Result
"9", "5"	"95"	"59"	"9" > "5"
"9", "34"	"934"	"349"	"9" > "34"
"5", "3"	"53"	"35"	"5" > "3"
"7", "3"	"73"	"37"	"7" > "3"
"34", "3"	"343"	"334"	"34" > "3"

➡ After sorting with custom comparator:

Index	String
0	"9"
1	"7"
2	"5"
3	"34"
4	"3"

🧩 Step 3: Concatenate Sorted Strings

result = "9" + "7" + "5" + "34" + "3" = "975343"

	✅ **Final Output:** 975343
975343	