89. Gray Code ★

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Total Accepted: **69912** Total Submissions: **183474** Difficulty: **Medium**

The gray code is a binary numeral system where two successive values differ in only one bit.

Given a non-negative integer *n* representing the total number of bits in the code, print the sequence of gray code. A gray code sequence must begin with 0.

For example, given *n* = 2, return `[0,1,3,2]`. Its gray code sequence is:

```
00 - 0
01 - 1
11 - 3
10 - 2
```

Note:

For a given *n*, a gray code sequence is not uniquely defined.

For example, `[0,2,3,1]` is also a valid gray code sequence according to the above definition.

For now, the judge is able to judge based on one instance of gray code sequence. Sorry about that.

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C++ </>

```
1  class Solution {
2  public:
3      vector<int> grayCode(int n) {
4          static vector<vector<int>> dict{ {0,1} };
5          if (n <= 0) return vector<int>({0});
6
7          while (!(dict.size() >= n)) {
8              dict.push_back(vector<int>());
9              dict.back().insert(dict.back().begin(), (dict.end() - 2)->begin(), (
10             dict.back().insert(dict.back().begin(), (dict.end() - 2)->begin(), (
11             reverse(dict.back().begin()+ dict.back().size()/2, dict.back().end()
12             int bit = 1 << (dict.size()-1);
```

```
13              for (int i = dict.back().size() / 2, n = dict.back().size(); i < n; -
14                  dict.back()[i] |= bit;
15          }
16
17          return dict[n-1];
18      }
19  };
```

Notes

Custom Testcase

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