**SOLUTION**

class Solution {

public:

vector<int> countBits(int num) {

vector<int> bit\_counts(num+1,0);

for(int i=1;i<=num;i++)

bit\_counts[i]=bit\_counts[i>>1]+i%2;

return bit\_counts;

}

};

**TIME COMPLEXITY= O(N)**

**SPACE COMPLEXITY= O(N)**