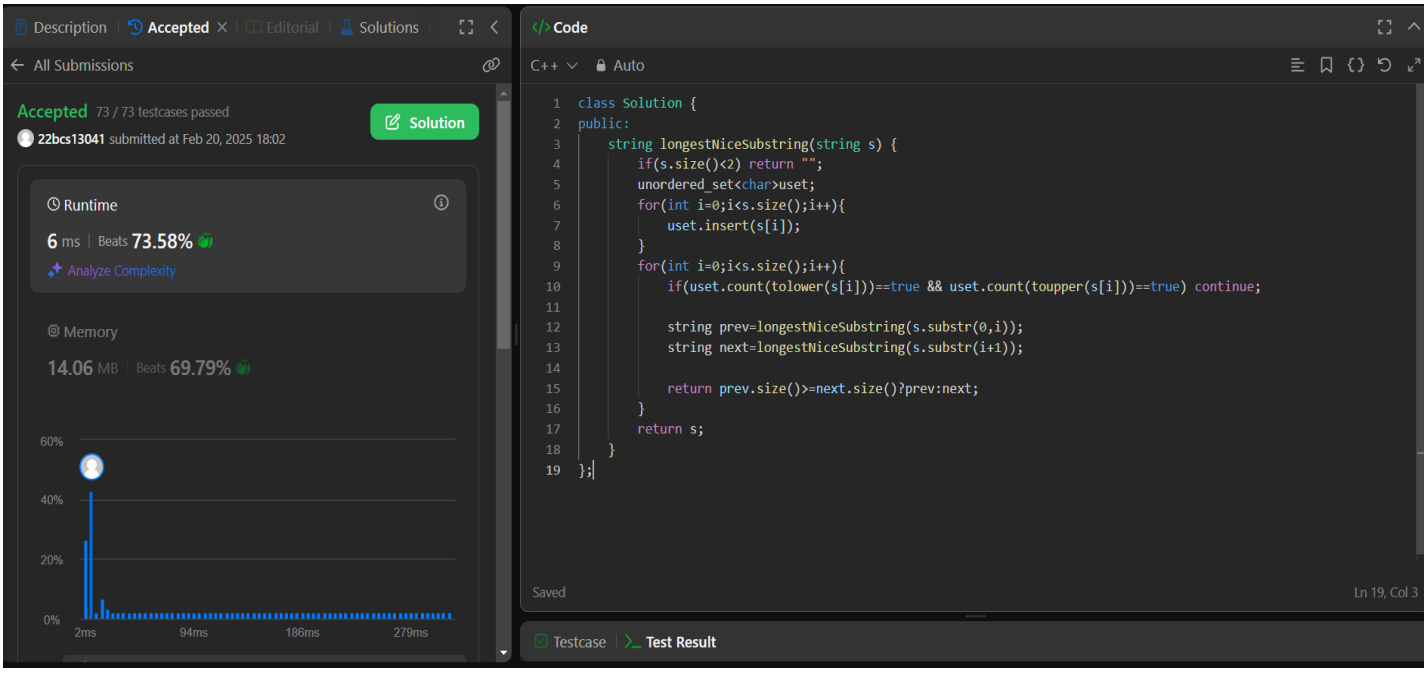
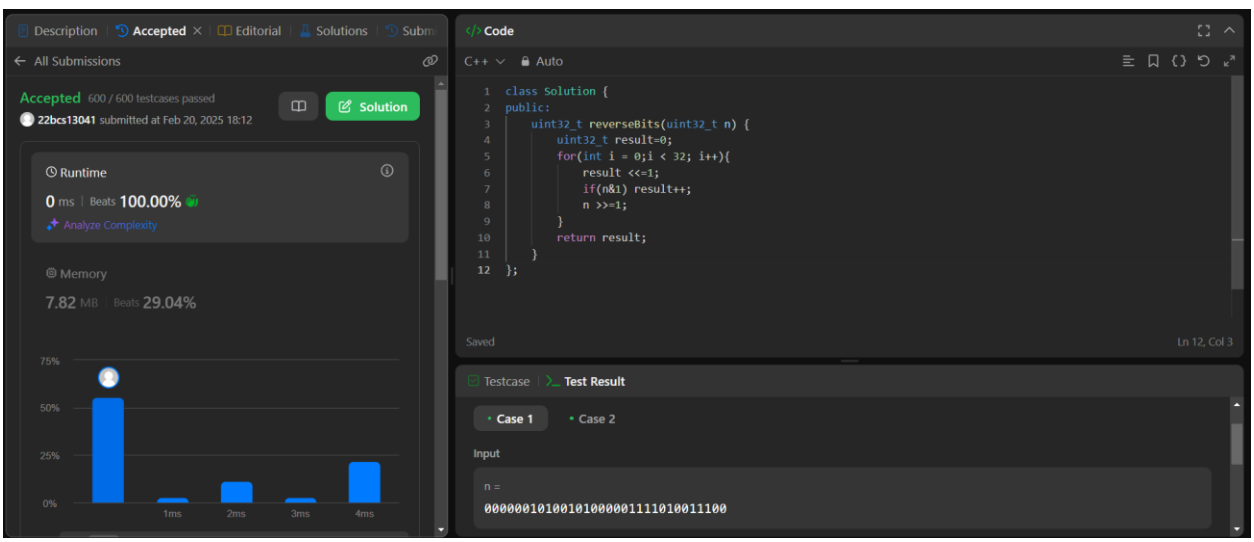
1 Longest Nice Substring

```
class Solution {
public:
    string longestNiceSubstring(string s) {
        if(s.size()<2) return "";
        unordered_set<char>uset;
        for(int i=0;i<s.size();i++){
            uset.insert(s[i]);
        }
        for(int i=0;i<s.size();i++){
            if(uset.count(tolower(s[i]))==true && uset.count(toupper(s[i]))==true) continue;

            string prev=longestNiceSubstring(s.substr(0,i));
            string next=longestNiceSubstring(s.substr(i+1));

            return prev.size()>=next.size()?prev:next;
        }
        return s;
    }
};
```



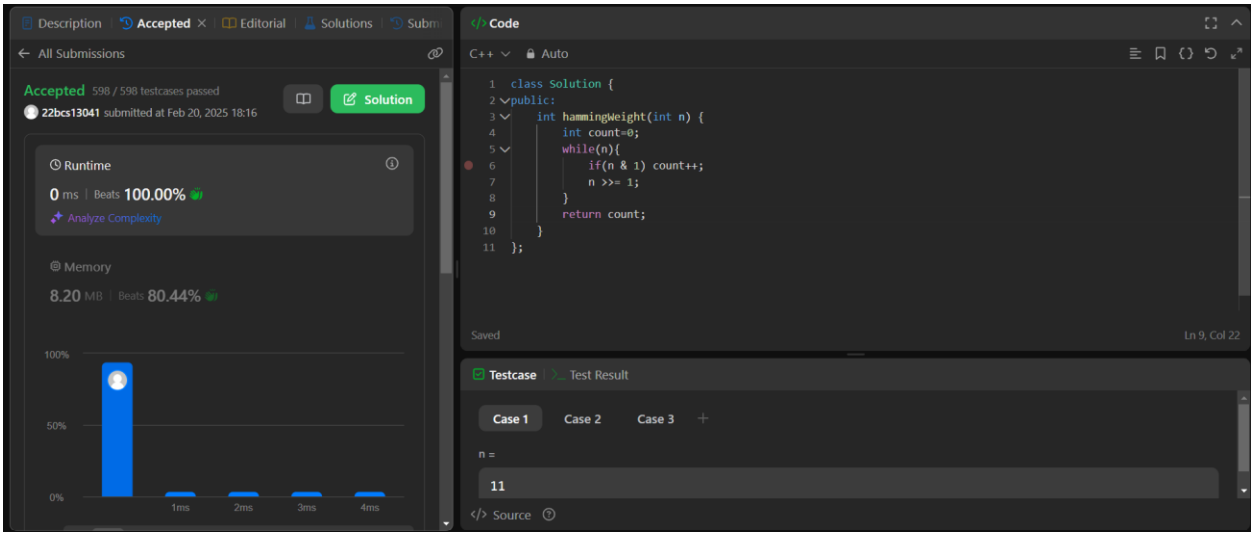
2. Reverse bits

```
class Solution {
public:
    uint32_t reverseBits(uint32_t n) {
        uint32_t result=0;
        for(int i = 0;i < 32; i++){
            result <<=1;
            if(n&1) result++;
            n >>=1;
        }
        return result;
    }
};
```



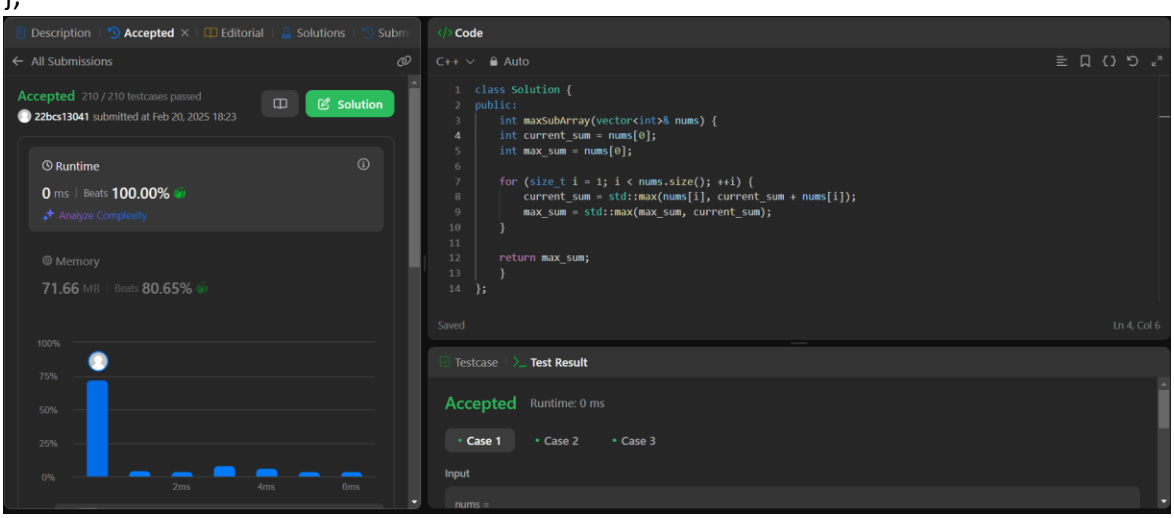
3 Number of 1 bit

```
class Solution {
public:
    int hammingWeight(int n) {
        int count=0;
        while(n){
            if(n & 1) count++;
            n >>= 1;
        }
        return count;
    }
};
```



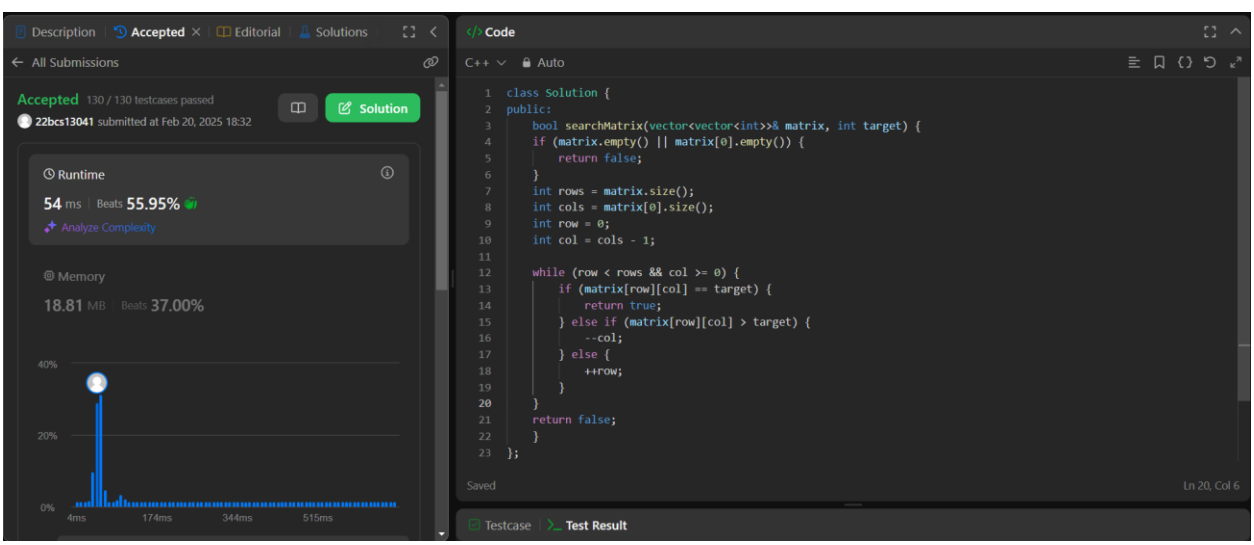
4. maximum Subarray

```
class Solution {
public:
   int maxSubArray(vector<int>& nums) {
   int current_sum = nums[0];
   int max_sum = nums[0];

   for (size_t i = 1; i < nums.size(); ++i) {
      current_sum = std::max(nums[i], current_sum + nums[i]);
      max_sum = std::max(max_sum, current_sum);
   }

   return max_sum;
   }
};
```



5. Search a 2D Matrix

```
class Solution {
public:
    bool searchMatrix(vector<vector<int>>& matrix, int target) {
    if (matrix.empty() || matrix[0].empty()) {
        return false;
    }
    int rows = matrix.size();
    int cols = matrix[0].size();
    int row = 0;
    int col = cols - 1;

    while (row < rows && col >= 0) {
        if (matrix[row][col] == target) {
            return true;
        } else if (matrix[row][col] > target) {
            --col;
        } else {
            ++row;
        }
    }
    return false;
    }
};
```



6. Search Pow

```
class Solution {
public:
   int modPow(int a, int b, int mod) {
   int result = 1;
   a %= mod;
   while (b > 0) {
      if (b % 2 == 1) {
         result = (result * a) % mod;
      }
      a = (a * a) % mod;
      b /= 2;
   }
   return result;
   }
   int superPow(int a, vector<int>& b) {
   const int mod = 1337;
   int result = 1;
   for (int digit : b) {
      result = modPow(result, 10, mod) * modPow(a, digit, mod) % mod;
   }
   return result;
   }
};
```