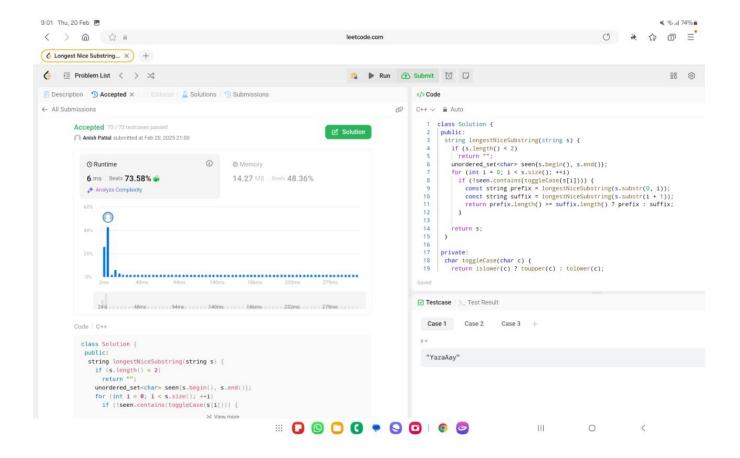
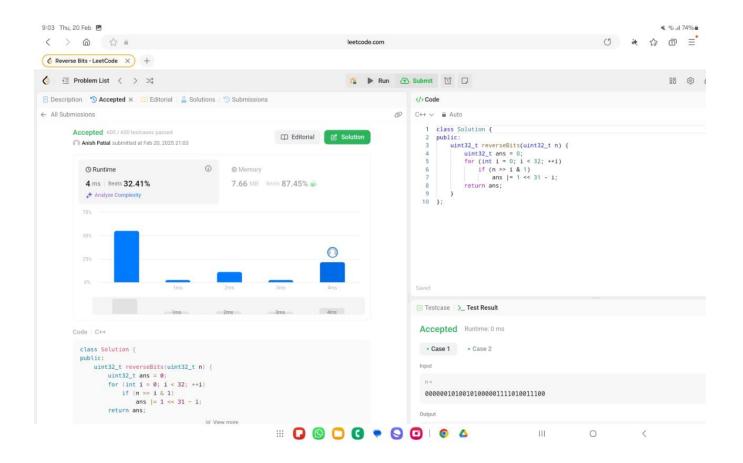
1 Longest Nice Substring

```
class Solution {
public:
string longestNiceSubstring(string s) {
  if (s.length() < 2)
   return "";
  unordered_set<char> seen{s.begin(), s.end()};
  for (int i = 0; i < s.size(); ++i)
   if (!seen.contains(toggleCase(s[i]))) {
    const string prefix = longestNiceSubstring(s.substr(0, i));
    const string suffix = longestNiceSubstring(s.substr(i + 1));
    return prefix.length() >= suffix.length() ? prefix : suffix;
   }
  return s;
}
private:
char toggleCase(char c) {
  return islower(c) ? toupper(c) : tolower(c);
}
};
```



2. Reverse bits

```
class Solution {
  public:
    uint32_t reverseBits(uint32_t n) {
     uint32_t ans = 0;
     for (int i = 0; i < 32; ++i)
        if (n >> i & 1)
        ans |= 1 << 31 - i;
     return ans;
  }
};</pre>
```

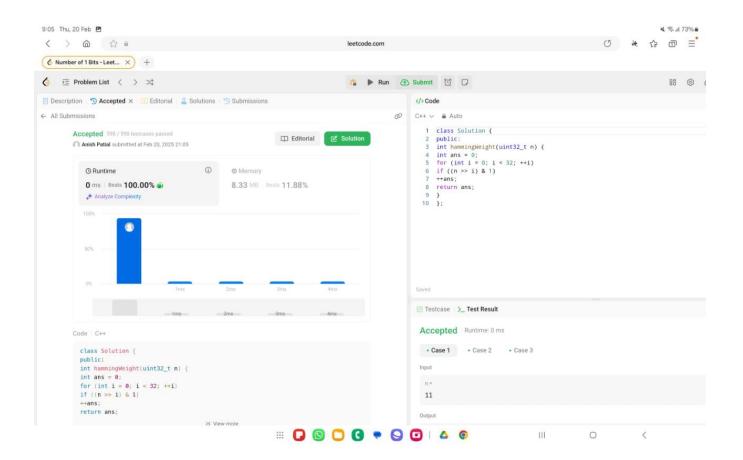


3 Number of 1 bit

```
cclass Solution {
  public:
  int hammingWeight(uint32_t n) {
    int ans = 0;

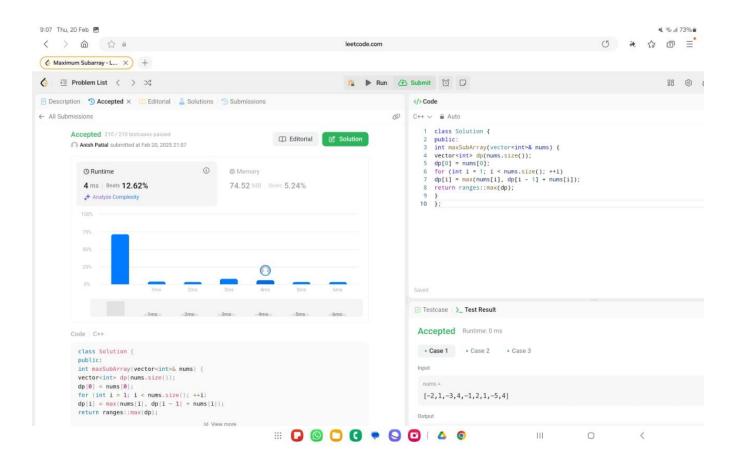
  for (int i = 0; i < 32; ++i)
    if ((n >> i) & 1)
        ++ans;

  return ans;
  }
};
```



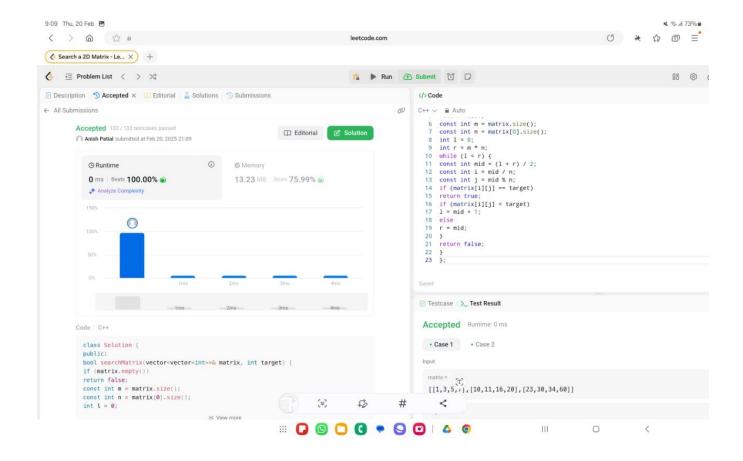
4. maximum Subarray

```
class Solution {
  public:
  int maxSubArray(vector<int>& nums) {
    vector<int> dp(nums.size());
    dp[0] = nums[0];
  for (int i = 1; i < nums.size(); ++i)
    dp[i] = max(nums[i], dp[i - 1] + nums[i]);
  return ranges::max(dp);
  }
};</pre>
```



5. Search a 2D Matrix

```
class Solution {
public:
 bool searchMatrix(vector<vector<int>>& matrix, int target) {
  if (matrix.empty())
   return false;
  const int m = matrix.size();
  const int n = matrix[0].size();
  int I = 0;
  int r = m * n;
  while (l < r) {
   const int mid = (I + r) / 2;
   const int i = mid / n;
   const int j = mid % n;
   if (matrix[i][j] == target)
    return true;
   if (matrix[i][j] < target)</pre>
    I = mid + 1;
   else
    r = mid;
  }
  return false;
 }
};
```



6. Super 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;
}
};
```

