1. Two sum

class Solution {

public:

vector<int> twoSum(vector<int>& nums, int target) {

unordered\_map<int, int> m;

for (int i = 0;; ++i) {

int x = nums[i];

int y = target - x;

if (m.count(y)) {

return {m[y], i};

}

m[x] = i;

}

}

};

2.Add two numbers

class Solution {

public:

ListNode\* addTwoNumbers(ListNode\* l1, ListNode\* l2) {

ListNode\* dummy = new ListNode();

int carry = 0;

ListNode\* cur = dummy;

while (l1 || l2 || carry) {

int s = (l1 ? l1->val : 0) + (l2 ? l2->val : 0) + carry;

carry = s / 10;

cur->next = new ListNode(s % 10);

cur = cur->next;

l1 = l1 ? l1->next : nullptr;

l2 = l2 ? l2->next : nullptr;

}

return dummy->next;

}

};

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cur->next = new ListNode(s % 10);

cur = cur->next;

l1 = l1 ? l1->next : nullptr;

l2 = l2 ? l2->next : nullptr;

}

return dummy->next;

}

};

3.[Longest Substring Without Repeating Characters](https://leetcode.com/problems/longest-substring-without-repeating-characters)

class Solution {

public:

int lengthOfLongestSubstring(string s) {

bool ss[128]{};

int ans = 0;

for (int i = 0, j = 0; j < s.size(); ++j) {

while (ss[s[j]]) {

ss[s[i++]] = false;

}

ss[s[j]] = true;

ans = max(ans, j - i + 1);

}

return ans;

}

};

4. Median of Two Sorted Arrays

class Solution {

public:

double findMedianSortedArrays(vector<int>& nums1, vector<int>& nums2) {

int m = nums1.size(), n = nums2.size();

function<int(int, int, int)> f = [&](int i, int j, int k) {

if (i >= m) {

return nums2[j + k - 1];

}

if (j >= n) {

return nums1[i + k - 1];

}

if (k == 1) {

return min(nums1[i], nums2[j]);

}

int p = k / 2;

int x = i + p - 1 < m ? nums1[i + p - 1] : 1 << 30;

int y = j + p - 1 < n ? nums2[j + p - 1] : 1 << 30;

return x < y ? f(i + p, j, k - p) : f(i, j + p, k - p);

};

int a = f(0, 0, (m + n + 1) / 2);

int b = f(0, 0, (m + n + 2) / 2);

return (a + b) / 2.0;

}

};

5. Longest Palindromic Substring

class Solution {

public:

string longestPalindrome(string s) {

int n = s.size();

vector<vector<bool>> f(n, vector<bool>(n, true));

int k = 0, mx = 1;

for (int i = n - 2; ~i; --i) {

for (int j = i + 1; j < n; ++j) {

f[i][j] = false;

if (s[i] == s[j]) {

f[i][j] = f[i + 1][j - 1];

if (f[i][j] && mx < j - i + 1) {

mx = j - i + 1;

k = i;

}

}

}

}

return s.substr(k, mx);

}

};

6. Zigzag Conversion

class Solution {

public:

string convert(string s, int numRows) {

if (numRows == 1) {

return s;

}

vector<string> g(numRows);

int i = 0, k = -1;

for (char c : s) {

g[i] += c;

if (i == 0 || i == numRows - 1) {

k = -k;

}

i += k;

}

string ans;

for (auto& t : g) {

ans += t;

}

return ans;

}

};

7. Reverse Integer

class Solution {

public:

int reverse(int x) {

int ans = 0;

for (; x; x /= 10) {

if (ans < INT\_MIN / 10 || ans > INT\_MAX / 10) {

return 0;

}

ans = ans \* 10 + x % 10;

}

return ans;

}

};

8. String to Integer

class Solution {

public:

int myAtoi(string s) {

trim(s);

if (s.empty())

return 0;

const int sign = s[0] == '-' ? -1 : 1;

if (s[0] == '+' || s[0] == '-')

s = s.substr(1);

long num = 0;

for (const char c : s) {

if (!isdigit(c))

break;

num = num \* 10 + (c - '0');

if (sign \* num < INT\_MIN)

return INT\_MIN;

if (sign \* num > INT\_MAX)

return INT\_MAX;

}

return sign \* num;

}

private:

void trim(string& s) {

s.erase(0, s.find\_first\_not\_of(' '));

s.erase(s.find\_last\_not\_of(' ') + 1);

}

};

9. Palindrome Number

class Solution {

public:

bool isPalindrome(int x) {

if (x < 0 || (x && x % 10 == 0)) {

return false;

}

int y = 0;

for (; y < x; x /= 10) {

y = y \* 10 + x % 10;

}

return x == y || x == y / 10;

}

};

10. Regular Expression Matching

class Solution {

public:

bool isMatch(string s, string p) {

int m = s.size(), n = p.size();

int f[m + 1][n + 1];

memset(f, 0, sizeof f);

function<bool(int, int)> dfs = [&](int i, int j) -> bool {

if (j >= n) {

return i == m;

}

if (f[i][j]) {

return f[i][j] == 1;

}

int res = -1;

if (j + 1 < n && p[j + 1] == '\*') {

if (dfs(i, j + 2) or (i < m and (s[i] == p[j] or p[j] == '.') and dfs(i + 1, j))) {

res = 1;

}

} else if (i < m and (s[i] == p[j] or p[j] == '.') and dfs(i + 1, j + 1)) {

res = 1;

}

f[i][j] = res;

return res == 1;

};

return dfs(0, 0);

}

};