1. Count Primes

Count the number of prime numbers less than a non-negative number, \***n\***.

**Example:**

Input: 10  
Output: 4  
Explanation: There are 4 prime numbers less than 10, they are 2, 3, 5, 7.

**解法1** 埃氏筛法

class Solution {  
public:  
 int countPrimes(int n) {  
 if(n < 2)return 0;  
 vector<bool>isPrime(n, true);  
 isPrime[0] = false;  
 isPrime[1] = false;  
 int ans = 0;  
 for(int i = 2; i < n; ++i){  
 if(isPrime[i]){  
 ans++;  
 int k = 2;  
 while(k \* i < n){  
 isPrime[k\*i] = false;  
 k++;  
 }  
 }  
 }  
 return ans;  
 }  
};

**解法2** 欧拉筛法（线性筛）

class Solution {  
public:  
 int countPrimes(int n) {  
 if(n < 3)return 0;  
 vector<bool>isPrime(n, true);  
 vector<int>Prime(n);  
 isPrime[0] = false;  
 isPrime[1] = false;  
 int cnt = 0;  
 for(int i = 2; i <= n -1 ; ++i){  
 if(isPrime[i]){  
 Prime[cnt++] = i;  
 }  
 for(int j = 0; j < cnt && i \* Prime[j] < n; ++j){  
 isPrime[Prime[j]\*i] = false;  
 }  
 }  
 return cnt;  
 }  
};