1. Decode Ways

Medium

A message containing letters from A-Z is being encoded to numbers using the following mapping:

'A' -> 1  
'B' -> 2  
...  
'Z' -> 26

Given a **non-empty** string containing only digits, determine the total number of ways to decode it.

**Example 1:**

Input: "12"  
Output: 2  
Explanation: It could be decoded as "AB" (1 2) or "L" (12).

**Example 2:**

Input: "226"  
Output: 3  
Explanation: It could be decoded as "BZ" (2 26), "VF" (22 6), or "BBF" (2 2 6).

**Solution**

动态规划。类似于斐波那契数列，但是需要控制能否跨步

class Solution {  
public:  
 int numDecodings(string s) {  
 if (s.empty() || s[0] == '0') return 0;  
 vector<int> dp(s.size() + 1, 0);  
 dp[0] = 1;  
 for (int i = 1; i < dp.size(); ++i) {  
 dp[i] = (s[i - 1] == '0') ? 0 : dp[i - 1];  
 if (i > 1 && (s[i - 2] == '1' || (s[i - 2] == '2' && s[i - 1] <= '6'))) {  
 dp[i] += dp[i - 2];  
 }  
 }  
 return dp.back();  
 }  
};