1. Restore IP Addresses

Medium

Given a string containing only digits, restore it by returning all possible valid IP address combinations.

**Example:**

Input: "25525511135"  
Output: ["255.255.11.135", "255.255.111.35"]

**Solution**

动态规划。类似于斐波那契数列

class Solution {  
public:  
 vector<string> restoreIpAddresses(string s) {  
 vector<string>tmp;  
 vector<string>ans;  
 dfs(s, tmp, ans, 0);  
 return ans;  
 }  
 void dfs(string &s, vector<string>&tmp, vector<string>&ans, int index){  
 if(index >= s.size() && tmp.size() == 4){  
 string str = tmp[0];  
 for(int i = 1; i < tmp.size(); ++i)str = str + "." + tmp[i];  
 ans.push\_back(str);  
 return;  
 }  
 if(index >= s.size())return;  
 if(tmp.size() >= 4)return;  
 tmp.push\_back(s.substr(index, 1));  
 dfs(s, tmp, ans, index + 1);  
 tmp.pop\_back();  
 if(index + 1 < s.size() && s.substr(index, 2) <= "99" && s.substr(index, 2) >= "10"){  
 tmp.push\_back(s.substr(index, 2));  
 dfs(s, tmp, ans, index + 2);  
 tmp.pop\_back();  
 }  
 if(index + 2 < s.size() && s.substr(index, 3) <= "255" && s.substr(index, 3) >= "100"){  
 tmp.push\_back(s.substr(index, 3));  
 dfs(s, tmp, ans, index + 3);  
 tmp.pop\_back();  
 }  
 }  
};