A **valid IP address** consists of exactly four integers separated by single dots. Each integer is between 0 and 255 (**inclusive**) and cannot have leading zeros.

* For example, "0.1.2.201" and "192.168.1.1" are **valid** IP addresses, but "0.011.255.245", "192.168.1.312" and "192.168@1.1" are **invalid** IP addresses.

Given a string s containing only digits, return *all possible valid IP addresses that can be formed by inserting dots into* s. You are **not** allowed to reorder or remove any digits in s. You may return the valid IP addresses in **any** order.

**Example 1:**

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

**Example 2:**

Input: s = "0000"  
Output: ["0.0.0.0"]

**Example 3:**

Input: s = "101023"  
Output: ["1.0.10.23","1.0.102.3","10.1.0.23","10.10.2.3","101.0.2.3"]

**Constraints:**

* 1 <= s.length <= 20
* s consists of digits only.