# [复原IP地址](https://leetcode-cn.com/explore/interview/card/bytedance/242/string/1044/)

**头条重点**

## 题目

给定一个只包含数字的字符串，复原它并返回所有可能的 IP 地址格式。

示例:

输入: "25525511135"
输出: ["255.255.11.135", "255.255.111.35"]

## 解题思路

1. 利用回溯法，遍历所有可能的 IP

public static List<String> restoreIpAddresses(String s) {
 if (s.length() > 12 || s.length() < 4) {
 return Collections.emptyList();
 }

 List<String> res = new ArrayList<>();
 ArrayList<String> ip = new ArrayList<>();
 for (int i = 0; i < 4; i++) {
 ip.add("");
 }
 p(res, s.toCharArray(), 0, ip, 0);

 return res;
}

private static void p(List<String> res, char[] chars, int startIndex, List<String> ip, int segmentIndex) {
 StringBuilder builder = new StringBuilder();
 for (int i = startIndex; i < chars.length; i++) {
 builder.append(chars[i]);
 String ipStr = builder.toString();
 int parseInt = Integer.parseInt(ipStr);
 if (parseInt > 255) {
 return;
 }
 if (ipStr.length() > 1 && ipStr.startsWith("0")) {
 return;
 }

 ip.set(segmentIndex, ipStr);
 if (segmentIndex == 3 && i == chars.length - 1) {
 res.add(String.join(".", ip));
 }

 if (segmentIndex < 3) {
 p(res, chars, i + 1, ip, segmentIndex + 1);
 }
 }