017. Letter Combinations of a Phone Number

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- **BackTracking**

Description

Given a digit string, return all possible letter combinations that the number could represent.

A mapping of digit to letters (just like on the telephone buttons) is given below.


```
Input:Digit string "23"
Output: ["ad", "ae", "af", "bd", "be", "bf", "cd", "ce", "cf"].
```

Note:

Although the above answer is in lexicographical order, your answer could be in any order you want.

BackTracking

```cpp
1  class Solution {
2  public:
3      vector<string> letterCombinations(string digits) {
4          vector<string> result;
5          if(digits.empty()) return vector<string>();
6          static const vector<string> v = {"", "", "abc", "def", "ghi", "jkl", "mno",
7                                           "pqrs", "tuv", "wxyz"};
8
9          result.push_back("");    // add a seed for the initial case
10         for(int i = 0 ; i < digits.size(); ++i) {
11             int num = digits[i]-'0';
12             if(num < 0 || num > 9) break;
13
14             const string& candidate = v[num];
15             if(candidate.empty()) continue;
16
17             vector<string> tmp;
18             for(int j = 0 ; j < candidate.size() ; ++j) {
19                 for(int k = 0 ; k < result.size() ; ++k) {
20                     tmp.push_back(result[k] + candidate[j]);
21                 }
22             }
23             result.swap(tmp);
24         }
25         return result;
26     }
27 };
```