



Generate Parentheses

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01

Question

22. Generate Parentheses

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Given n pairs of parentheses, write a function to *generate all combinations of well-formed parentheses*.

Example 1:

Input: $n = 3$

Output: ["((()))", "(()())", "(())()", "()(())", "()()()"]

Example 2:

Input: $n = 1$

Output: ["()"]



02

How it works

Conditions

1

Insert '(' or ')'

2

)' count cannot be
more than '(' count

3

$n \times 2$ placements

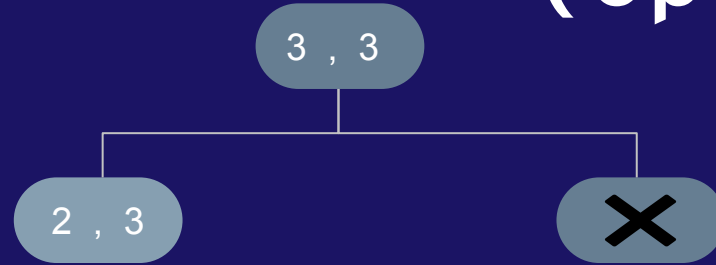


03

Tree Representation

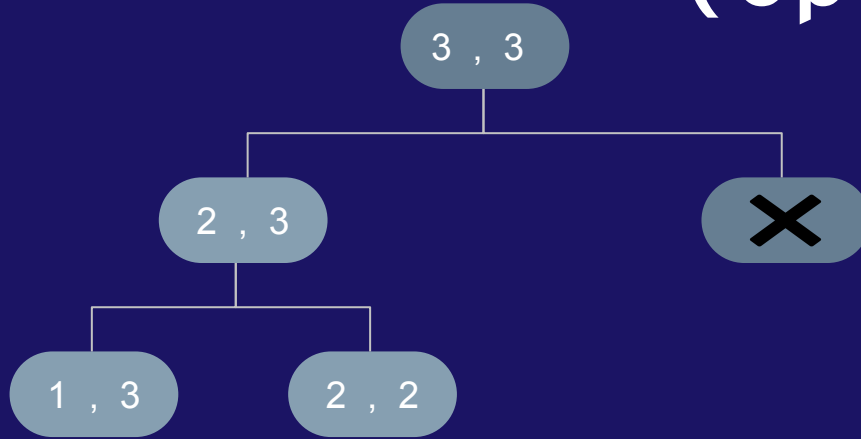
N=3

(Open, Close)



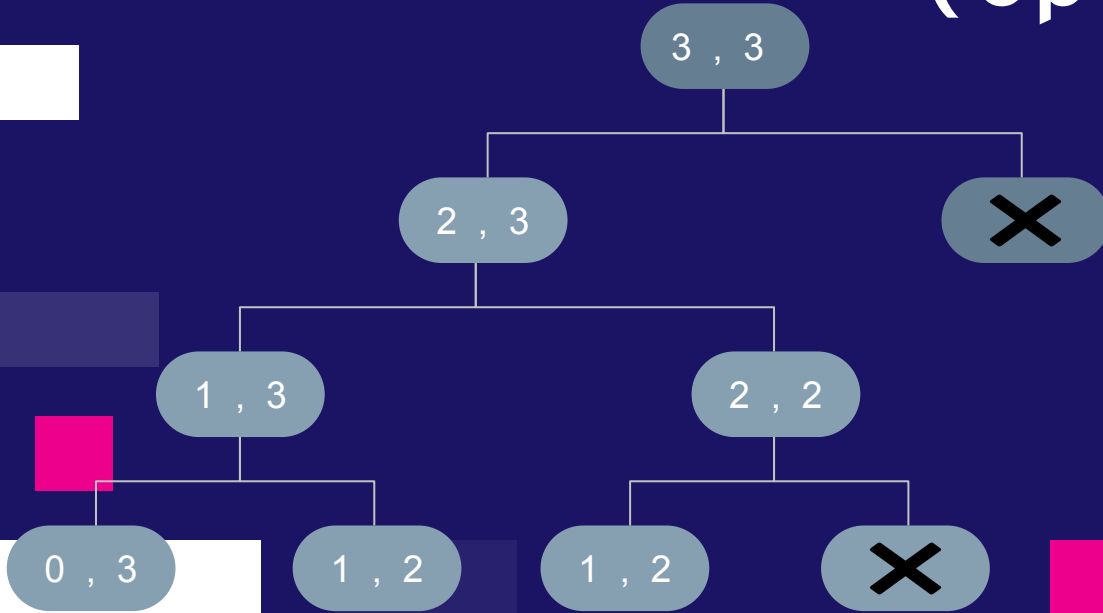
N=3

(Open, Close)



N=3

(Open, Close)





Code

```
class Solution:
    def generateParenthesis(self, n):
        arr = []

        def gParentheses(str1 = "", open1=0, close=0):
            if len(str1) == 2*n:
                arr.append(str1)
                return

            if open1 < n:
                gParentheses(str1+"(", open1+1, close)

            if close < open1:
                gParentheses(str1+")", open1, close+1)

        gParentheses()
        return arr
```

Time Submitted	Status	Runtime	Memory	Language
03/10/2021 20:23	Accepted	12 ms	14 MB	python



Thank You