

# Generate Parentheses

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

For example, given  $n = 3$ , a solution set is:

"((()))", "(()())", "()(())", "()()()", "()()()"

**Solutions:**

```
class Solution:
```

```
    # @param an integer
```

```
    # @return a list of string
```

```
    def helper(self, l, r, item, res):
```

```
        if r < l:
```

```
            return
```

```
        if l == 0 and r == 0:
```

```
            res.append(item)
```

```
        if l > 0:
```

```
            self.helper(l - 1, r, item + '(', res)
```

```
        if r > 0:
```

```
            self.helper(l, r - 1, item + ')', res)
```

```
    def generateParenthesis(self, n):
```

```
        if n == 0:
```

```
            return []
```

```
        res = []
```

```
        self.helper(n, n, "", res)
```

```
        return res
```

```
Solution().generateParenthesis(3)
```