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Lecture Sequence due Dec 15, 2022 07:30 +08 Completed

Exercise 3

3/3 points (graded)

For these questions, you'll be asked to give the big-O upper bound runtime for some Python functions. In your answer, please omit the "O()" portion of the answer and simply write a mathematical expression.

Use +, -, / signs to indicate addition, subtraction, and division. Explicitly indicate multiplication with a * (ie say "6*n" rather than "6n"). Indicate exponentiation with a caret (^) (ie "n^4" for n^4). Indicate base-2 logarithms with the word log2 followed by parenthesis (ie "log2(n)").

What this all means is if an answer is, for example, $O\left(n^4\right)$, please simply write "n^4" in the box.

1. What is the big-O upper bound runtime for the function <code>look_for_things</code>, where *n* is defined as the number of elements in <code>myList</code>?

```
NUMBER = 3
def look_for_things(myList):
    """Looks at all elements"""
    for n in myList:
        if n == NUMBER:
            return True
    return False
n
```

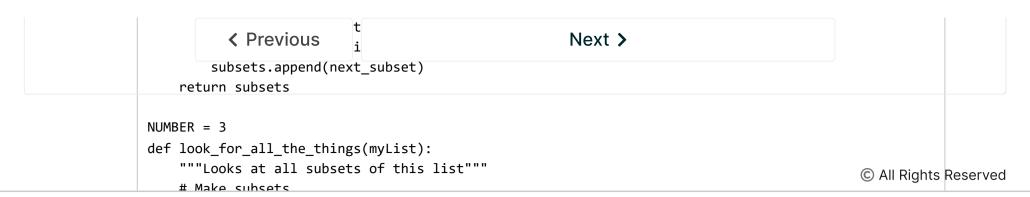
2. What is the big-O upper bound runtime for the function $[look_for_other_things]$, where n is defined as the number of elements in [myList]?

```
NUMBER = 3
def look_for_other_things(myList):
    """Looks at all pairs of elements"""
    for n in myList:
        for m in myList:
        if n - m == NUMBER or m - n == NUMBER:
            return True
    return False
```

```
n^2
```

3. What is the big-O upper bound runtime for the function $[look_for_all_the_things]$, where n is defined as the number of elements in [myList]?

You do not need to account for the runtime of <code>get_all_subsets</code>; the code is provided so you can see how many subsets it generates, as that **will** be a factor in your answer.





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