Mystery Blocks
What do each of the blocks below do?

1. Reports whether the input list contains a number
2. Reports num to the power of num2
3. Reports the number of times the input letter appears in the input word

More Practice
a. Write a block that reports the index of the first occurrence of a letter in a word. You may assume the letter appears at least once in the word.

```scheme
position of (letter) in (word):
if (letter) = letter 1 of (word):
    report 1
else:
    report 1 + position of (letter) in (all but first of (word))
```

b. Write a block that counts the instances of an item in a list.

```scheme
count (item) in (lst):
if empty? (lst):
    report 0
else:
    report 1 + count (item) in (all but first of (lst))
```
c. Write a block that finds the maximum item in a list of numbers. You may find the following block useful:

```
maximum item in (lst):
  if length of (lst) = 1:
    report item 1 of (lst)
  else:
    report max of (item 1 of (lst)) and (maximum item of (all but first of (lst)))
```

d. Write a book that takes in two lists, and reports a version of the second list without any of the items in the first list. You may find the append block, shown below, useful.

```
don’t keep these: (lst1) from: (lst2):
```

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**Fractal**

Write out the code to create the following fractal. The sprite starts in the bottom left corner, facing right.

**Level 1**

```
```

**Level 2:**

```
```

**Level 3:**

```
```

**Level 4:**

```
```
Fibonacci
The Fibonacci sequence is defined as follows: 1, 1, 2, 3, 5, etc., where each number is the sum of the two previous numbers in the sequence.

(a) Fill in the code below to find the nth Fibonacci number:

Fibonacci(n)
if \( n < 1 \)\n\[ \text{report} \ 1 \]
else
\[ \text{report} \ 1 + \text{Fibonacci}(n-2) \]

(b) Now, fill out the tree below to visualize the execution of Fibonacci(4)

(c) What is the runtime of Fibonacci? Exponential