

Quiz 1

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1. Are these primitive expressions or call expressions?

- primitive / call 3
- primitive / call `add(2, 3)`
- primitive / call `print(5)`
- primitive / call `3 + 4`

2. When do we make a new frame in an environment diagram?

3. **hard!** Implement the function `nearest_two`, which takes a positive number `x` as input and returns the power of two ($\dots, \frac{1}{8}, \frac{1}{4}, \frac{1}{2}, 1, 2, 4, 8, \dots$) that is nearest to `x`.

```
def nearest_two(x):
    """Return the power of two that is nearest to x.
    >>> nearest_two(8)
    8.0
    >>> nearest_two(11.5) # closer to 8 than 16
    8.0
    >>> nearest_two(0.75) # tie between 0.5 and 1
    1.0
    """
    power_of_two = 1.0
```

```
    return power_of_two
```

4. **hard!** Draw the environment diagram.

```
def swap(x, y):  
    x, y = y, x  
    return print('Swapped!', x, y)
```

```
x, y = 60, 1  
a = swap(x, y)  
swap(a, y)
```