Iteration

Office Hours: You Should Go!

You are not alone!

http://cs61a.org/office-hours.html

Iteration Example: Fibonacci Numbers

The Fibonacci Sequence

```python
def fib(n):
    """Compute the nth Fibonacci number."
    >>> fib(0)
    0
    >>> fib(8)
    21
    """
    k, kth, difference = 0, 0, 1
    while k < n:
        kth, difference = kth + difference, kth + old_diff
        k = k + 1
    return kth
```

Return

Return Statements

A return statement completes the evaluation of a call expression and provides its value for user-defined function f: switch to a new environment; execute f’s body

```python
def end(n, d):
    """Print the final digits of N in reverse order until D is found."
    >>> end(1023, 5)
    1
    >>> end(1024, 5)
    4
    >>> end(1025, 5)
    5
    >>> end(1026, 5)
    6
    >>> end(1027, 5)
    7
    >>> end(1028, 5)
    8
    >>> end(1029, 5)
    9
    >>> end(1030, 5)
    0
    >>> end(1031, 5)
    1
    >>> end(1032, 5)
    2
    >>> end(1033, 5)
    3
    >>> end(1034, 5)
    4
    >>> end(1035, 5)
    5
    >>> end(1036, 5)
    6
    >>> end(1037, 5)
    7
    >>> end(1038, 5)
    8
    >>> end(1039, 5)
    9
    >>> end(1040, 5)
    ""
    old_diff = difference
    difference = kth
    kth = kth + old_diff
```

Self-Reference
Returning a Function Using Its Own Name

```python
def print_all(k):
    print(k)
    return next_sum

print_all(1)(3)(5)
```

Function Example: Sounds

WAV Files

The Waveform Audio File Format encodes a sampled sound wave

A triangle wave is the simple wave form with the most pleasing sound

(Demo)