

UNOFFICIAL QUIZ *for* PRACTICE

QUIZ 10

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This quiz will not count towards your grade. It exists to simply gauge your understanding. You will have 5 minutes to complete this quiz. In that timespan, your goal is to complete the first question and at least attempt the second.

01. ITERATORS AND GENERATORS

Complete the following implementations of `map_fib_kth`, both as an iterator and as a generator. Both will give every `k`th element of the fibonacci sequence, but with the function `f` applied to each one. Both should pass the following doctest:

```
>>> fib = map_fib_kth(3, lambda x: x**2) # or MapFibKth(3, lambda x:x**2)
>>> next(fib) # starts with 0, yields 0**2
0
>>> next(fib) # skips 1 1, yields 2**2
4
>>> next(fib) # skips 3 5, yields 8**2
64
```

```
def map_fib_kth(k, f):
```

```
    _____
    while _____:
        _____
        for _ in _____:
            curr, prev = _____
```

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```
class MapFibKth: # assume __init__ initializes all variables you need
    def __next__(self):
        prev = _____
        for _ in _____:
            _____
        return _____
```

02. EXSTREAM

Consider a Python implementation of Streams. In this version, the stream has a linked list-esque representation. The Stream class accepts two arguments: (1) the value at the head of the linked list and (2) a function that computes the next Stream “node”.

```
def map_fib_kth_stream(k, f, prev=0, curr=1):
    """
    >>> s = map_fib_kth_stream(3, lambda x: x**2)
    >>> s.first
    0
    >>> s.rest.first
    4
    >>> s.rest.rest.first
    64
    """
    def compute_next(): # stuck? fill out what you know about fib first
        _____
        for _ in _____:
            _____
        return map_fib_kth_stream(k, f, _____, _____)
    return Stream(_____, compute_next)
```