Exercise 1.43. If f is a numerical function and n is a positive integer, then we can form the nth repeated application of f, which is defined to be the function whose value at x is $f(f(...(f(x))...))$. For example, if f is the function $x \mapsto x + 1$, then the nth repeated application of f is the function $x \mapsto x + n$. If f is the operation of squaring a number, then the nth repeated application of f is the function that raises its argument to the 2^nth power. Write a procedure that takes as inputs a procedure that computes f and a positive integer n and returns the procedure that computes the nth repeated application of f.

Solution

```
(define (square x)
  (* x x)
)

(define (repeated f n)
    (if (= n 1)
        f
        (lambda (x) ((repeated f (- n 1)) (f x)))
    )
)

((repeated square 2) 5)
```