

Cody Problem 24. Function Iterator

Given a handle fh to a function which takes a scalar input and returns a scalar output and an integer n >= 1, return a handle fh2 to a function which applies the given function n times.

Examples:

```
% >> addOne = @(x)x+1;
% >> addTen = iterate_fcn(addOne, 10);
% >> addTen(3)
% ans =
%      13
%
% >> squarer = @(a) a^2;
% >> fh2 = iterate_fcn(squarer, 3);
% >> fh2(3)
% ans =
%      6561
%
% % Golden Ratio
% >> fh = @(y)sqrt(y+1);
% >> fh2 = iterate_fcn(fh,30);
% >> fh2(1)
% ans =
%      1.6180
```

Scratch Pad

```
noOp = @(x)x;

fh2 = iterate_fcn(noOp, 50);

addOne = @(x)x+1;

addTen = iterate_fcn(addOne, 10);
```

Solution

```
function fh2 = iterate_fcn(fh, n)
    function y = repeated_function(x)
        for i = 1:n
            x = fh(x);
        end
        y = x;
    end

    fh2 = @repeated_function;
end
```