
```
% CPE 3103 - FUNDAMENTALS OF MIXED SIGNALS AND SENSORS
% Group 1    MW 10:30 AM - 1:30 PM LBCEAC2 TC
% Sarcol, Joshua S    BS-CpE 3    2025/09/03
% Laboratory Exercise 1.b (Fibonacci on the floor)
```

```
function x = Fibonacci(a, b)
    % inputs must be positive integers
    arguments
        a (1,1) double {mustBeInteger, mustBePositive}
        b (1,1) double {mustBeInteger, mustBePositive}
    end

    % a must be less than or equal to b
    if a > b
        error("The first argument [" + a + "] is larger than the " + ...
            " second argument [" + b + "]")
    end

    x = [1 1]; % assume f1 = 1 and f2 = 1

    % generate all fibonacci numbers up to fn <= b
    while x(end) <= b
        x = [x, x(end-1) + x(end)]; % append the next number in x
    end

    % logical indexing to select numbers in between a and b
    x = x((x >= a) & (x <= b));
end
```

```
Fibonacci(1, 10)
```

```
ans =
```

```
1      1      2      3      5      8
```

```
Fibonacci(10, 100)
```

```
ans =
```

```
13      21      34      55      89
```

```
Fibonacci(100, 10000)
```

```
ans =
```

```
Columns 1 through 6
```

```
144      233      377      610      987      1597
```

```
Columns 7 through 9
```

```
2584      4181      6765
```

```
Fibonacci(-5, 12)
```

```
Error using Fibonacci (line 9)  
Invalid argument at position 1. Value must be positive.
```

```
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