

# Factorial, fibonacci, first and second procedures

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This file contains four procedure definitions: factorial and fibonacci are well known classic recursive functions but first and second aren't useful at all, they just select one of the two arguments.

Part of the test for the cactus program.

**factorial** :  $number \rightarrow number$

Return the factorial of the number  $n$ , where  $n! = n * (n - 1) * \dots * 1$ .

```
(define (factorial n)
  (if (= n 0)
      1
      (* n (factorial (- n 1)))))
```

**fibonacci** :  $number \rightarrow number$

Return the  $n^{th}$  number of the fibonacci sequence.

```
(define (fibonacci n)
  (if (or (= n 0)
          (= n 1))
      1
      (+ (fibonacci (- n 1)) (fibonacci (- n 2)))))
```

**first** :  $number \times number \rightarrow number$

Return the first argument.

```
(define (first a b) a)
```

**second** :  $number \times number \rightarrow number$

Return the second argument.

```
(define (second a b) b)
```