Изчислителни процеси

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Съдържание

Видове процеси:

- Итеративен
- Линеен
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Опашкова рекурсия (tail recursion)

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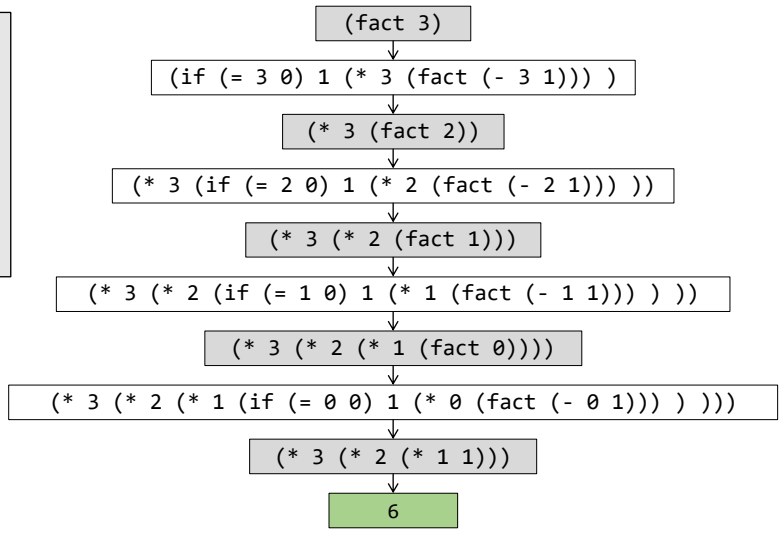
Изчисляване на факториел (линейно)

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

(fact 3)
```



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Итеративно изчисление

```
int fact(int n)
{
   int current = n;
   int result = 1;

   while(current > 0)
   {
      current = current - 1;
      result = result * current;
   }

   return result;
}
```

```
(define (fact n)
  (define (helper current result)
    (if (> current 0)
        (helper (- current 1)
                (* result current) )
        result
    )
  )
  (helper n 1)
)
```

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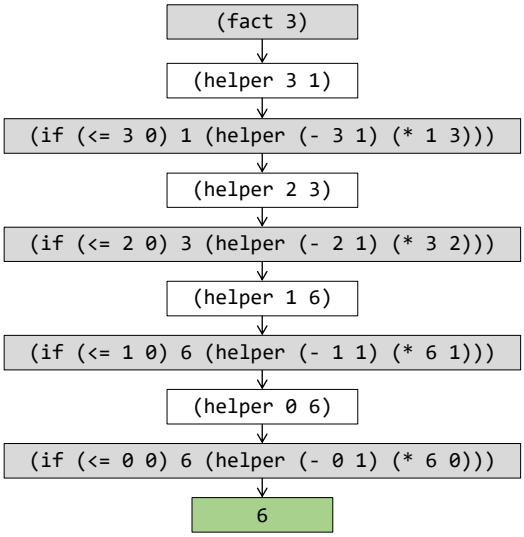
Опашкова рекурсия (tail recursion)




```
(define (fact n)
  (define (helper current result)
    (if (> current 0)
        (helper (- current 1)
                (* result current) )
        result
    )
  )
  (helper n 1)
)
```

Tail Call

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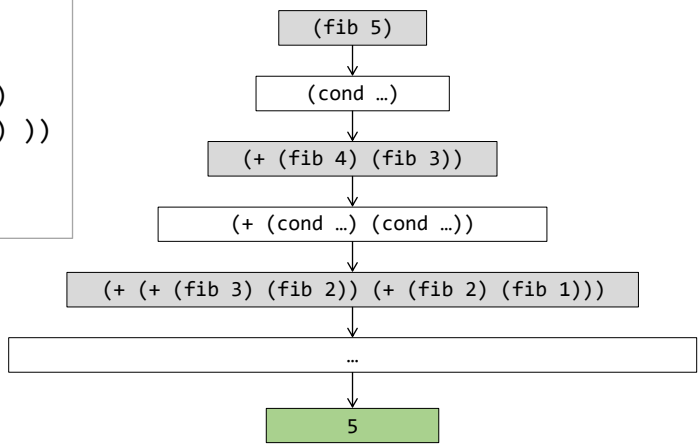
Числа на Фибоначи

```
(define (fib n)
  (cond ((= n 1) 1)
        ((= n 2) 1)
        (else (+ (fib (- n 1))
                 (fib (- n 2)) ))
  )
)
```



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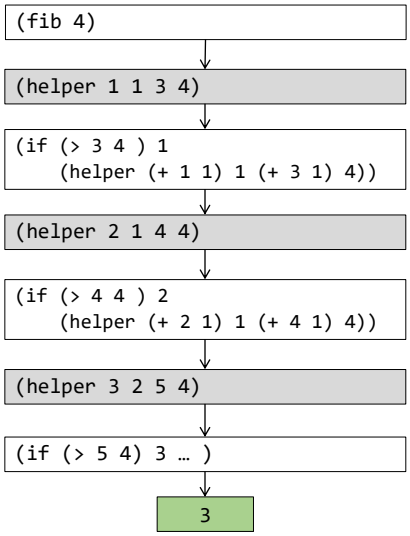
Числа на Фибоначи – Опашкова рекурсия

```
(define (fib n)
  (define (helper n-1 n-2 current limit)
    (if (> current limit)
         n-1
        (helper (+ n-1 n-2)
                n-1
                (+ current 1)
                limit )
    )
  )
  (helper 1 1 3 n)
)
```



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