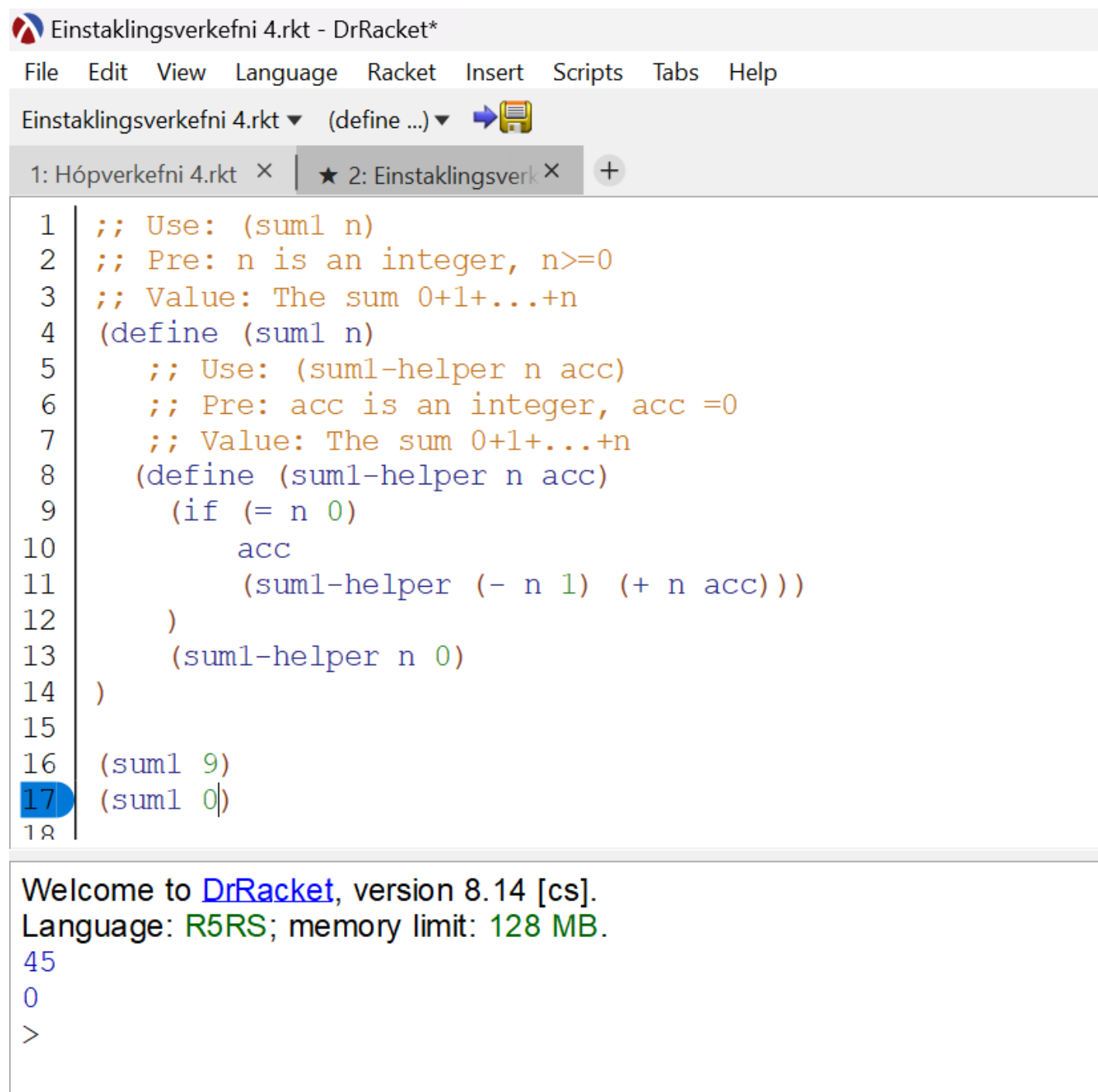


Einstaklingsverkefni 4 TÖL304G

1.



```
Einstaklingsverkefni 4.rkt - DrRacket*
File Edit View Language Racket Insert Scripts Tabs Help
Einstaklingsverkefni 4.rkt (define ...)
1: Hópverkefni 4.rkt × ★ 2: Einstaklingsverk × +

1 ;; Use: (sum1 n)
2 ;; Pre: n is an integer, n>=0
3 ;; Value: The sum 0+1+...+n
4 (define (sum1 n)
5   ;; Use: (sum1-helper n acc)
6   ;; Pre: acc is an integer, acc =0
7   ;; Value: The sum 0+1+...+n
8   (define (sum1-helper n acc)
9     (if (= n 0)
10        acc
11        (sum1-helper (- n 1) (+ n acc))))
12   )
13   (sum1-helper n 0)
14 )
15
16 (sum1 9)
17 (sum1 0)
18

Welcome to DrRacket, version 8.14 [cs].
Language: R5RS; memory limit: 128 MB.
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>
```

```
;; Use: (sum1 n)
;; Pre: n is an integer, n>=0
;; Value: The sum 0+1+...+n
(define (sum1 n)
  ;; Use: (sum1-helper n acc)
  ;; Pre: acc is an integer, acc =0
  ;; Value: The sum 0+1+...+n
  (define (sum1-helper n acc)
    (if (= n 0)
        acc
        (sum1-helper (- n 1) (+ n acc))))
  )
  (sum1-helper n 0)
)
(sum1 9)
(sum1 0)
```

2.

```

18
19 ;; Use: (sum2 i n)
20 ;; Pre: i and n are integers, i <= n+1
21 ;; Value: The sum i+(i+1)+...+n, the sum of the
22 ;; integers k such that i <= k <= n.
23 (define (sum2 i n)
24   ;; Use: (sum2-helper i n acc)
25   ;; Pre: i and n are integers, i <= n+1, acc is the accumulated sum
26   ;; Value: The accumulated sum of integers k such that i <= k <= n.
27   (define (sum2-helper i n acc)
28     (if(< n i)
29       acc
30       (sum2-helper (+ i 1) n (+ i acc))
31     )
32   )
33   (sum2-helper i n 0)
34 )
35
36 (sum2 3 6)
37 (sum2 11 10)
38

```

Welcome to [DrRacket](#), version 8.14 [cs].
Language: **R5RS**; memory limit: **128 MB**.

```

18
0
>

```

```

;; Use: (sum2 i n)
;; Pre: i and n are integers, i <= n+1
;; Value: The sum i+(i+1)+...+n, the sum of the
;; integers k such that i <= k <= n.
(define (sum2 i n)
  ;; Use: (sum2-helper i n acc)
  ;; Pre: i and n are integers, i <= n+1, acc is the accumulated sum
  ;; Value: The accumulated sum of integers k such that i <= k <= n.
  (define (sum2-helper i n acc)
    (if(< n i)
      acc
      (sum2-helper (+ i 1) n (+ i acc))
    )
  )
  (sum2-helper i n 0)
)

(sum2 3 6)
(sum2 11 10)

```

3.

Einstaklingsverkefni 4.rkt - DrRacket*

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Einstaklingsverkefni 4.rkt (define ...) ➡

1: Hópverkefni 4.rkt × | ★ 2: Einstaklingsverkefni 4.rkt × +

```
39 ;; Use: ((sum3 i) n)
40 ;; Pre: i and n are integers, i <= n+1
41 ;; Value: The sum i+(i+1)+...+n
42 (define ((sum3 i)n)
43   ;; Use: (sum3-helper i n acc)
44   ;; Pre: i and n are integers, i <= n+1, acc is the accumulated sum
45   ;; Value: The accumulated sum of integers k such that i <= k <= n.
46   (define(sum3-helper i n acc)
47     (if(< n i)
48       acc
49       (sum3-helper (+ i 1) n (+ i acc))
50     )
51   )
52   (sum3-helper i n 0)
53 )
54
55 ((sum3 3) 10)
56 ((sum3 11) 10)
```

Welcome to [DrRacket](#), version 8.14 [cs].
Language: **R5RS**; memory limit: **128 MB**.
52
0
>

```
;; Use: ((sum3 i) n)
;; Pre: i and n are integers, i <= n+1
;; Value: The sum i+(i+1)+...+n
(define ((sum3 i)n)
  ;; Use: (sum3-helper i n acc)
  ;; Pre: i and n are integers, i <= n+1, acc is the accumulated sum
  ;; Value: The accumulated sum of integers k such that i <= k <= n.
  (define(sum3-helper i n acc)
    (if(< n i)
      acc
      (sum3-helper (+ i 1) n (+ i acc))
    )
  )
  (sum3-helper i n 0)
)

((sum3 3) 10)
((sum3 11) 10)
```

4.

Einstaklingsverkefni 4.rkt - DrRacket*

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Einstaklingsverkefni 4.rkt (define ...) ➡

1: Hópverkefni 4.rkt × ★ 2: Einstaklingsverk × +

```
58 ;; Use: (reviota n)
59 ;; Pre: n is an integer, n>=0
60 ;; Value: The list of all integers i, such that
61 ;; 0 < i <= n, in descending order,
62 ;; i.e. the list (n..2 1)
63 (define (reviota n)
64   ;; Use: (hjalp r)
65   ;; Pre: r is an integer, r >= 0.
66   ;; Value: The list of integers from r down to 1, i.e. (r...2 1)
67   (define (hjalp r)
68     (if (= r 0)
69         '()
70         (cons r (hjalp (- r 1)))))
71   )
72   )
73   (hjalp n)
74 )
75
76 (reviota 5)
77 (reviota 0)
```

Welcome to [DrRacket](#), version 8.14 [cs].
Language: **R5RS**; memory limit: 128 MB.
(5 4 3 2 1)
()
>

```
;; Use: (reviota n)
;; Pre: n is an integer, n>=0
;; Value: The list of all integers i, such that
;; 0 < i <= n, in descending order,
;; i.e. the list (n..2 1)
(define (reviota n)
  ;; Use: (hjalp r)
  ;; Pre: r is an integer, r >= 0.
  ;; Value: The list of integers from r down to 1, i.e. (r...2 1)
  (define (hjalp r)
    (if (= r 0)
        '()
        (cons r (hjalp (- r 1)))))
  )
  )
  (hjalp n)
)

(reviota 5)
(reviota 0)
```