

CS5010 - Problem Set 06 - Test Results

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October 31, 2013

This test suite tests your implementation of Problem Set 05

1 File: outlines.rkt

Tests your implementation of outlines

1.1 Test-Group: Problem statement example (2 Points)

1.1.1 Test (equality)

This is the example that was given in the problem statement.

Input:

```
(nested-to-flat
'(("The first section"
  ("A subsection with no subsections")
  ("Another subsection"
   ("This is a subsection of 1.2")
   ("This is another subsection of 1.2")))
  ("The last subsection of 1"))
  ("Another section" ("More stuff") ("Still more stuff"))))
```

Expected Output:

```
'(((1) "The first section")
((1 1) "A subsection with no subsections")
((1 2) "Another subsection")
((1 2 1) "This is a subsection of 1.2")
((1 2 2) "This is another subsection of 1.2")
((1 3) "The last subsection of 1")
((2) "Another section")
((2 1) "More stuff")
((2 2) "Still more stuff"))
```

Expected Output Value:

```

(((1) "The first section")
((1 1) "A subsection with no subsections")
((1 2) "Another subsection")
((1 2 1) "This is a subsection of 1.2")
((1 2 2) "This is another subsection of 1.2")
((1 3) "The last subsection of 1")
((2) "Another section")
((2 1) "More stuff")
((2 2) "Still more stuff"))

```

Correct

1.2 Test-Group: Some more examples (3 Points)

1.2.1 Test (equality)

Input:

```
(nested-to-flat '("Only one section here"))
```

Expected Output:

```
'(((1) "Only one section here"))
```

Expected Output Value:

```
(((1) "Only one section here"))
```

Correct

1.2.2 Test (equality, 1 partial points)

Input:

```
(nested-to-flat '("First Section") ("Second Section"))
```

Expected Output:

```
'(((1) "First Section") ((2) "Second Section"))
```

Expected Output Value:

```
(((1) "First Section") ((2) "Second Section"))
```

Correct

1.2.3 Test (equality, 1 partial points)

Input:

```
(nested-to-flat
'(("One"
  ("One Point One"
    ("One Point One Point One"
      ("One Point One Point One Point One"
        ("One Point One Point One Point One Point One"))))))))
```

Expected Output:

```
'(((1) "One")
((1 1) "One Point One")
((1 1 1) "One Point One Point One")
((1 1 1 1) "One Point One Point One Point One")
((1 1 1 1 1) "One Point One Point One Point One Point One"))
```

Expected Output Value:

```
((1) "One")
((1 1) "One Point One")
((1 1 1) "One Point One Point One")
((1 1 1 1) "One Point One Point One Point One")
((1 1 1 1 1) "One Point One Point One Point One Point One"))
```

Correct

1.2.4 Test (equality, 1 partial points)

Input:

```
(nested-to-flat
'(("One"
  ("One Point One"
    ("One Point One Point One"
      ("One Point One Point One Point One"
        ("One Point One Point One Point One Point One"))))))
("Two"))
```

Expected Output:

```
'(((1) "One")
((1 1) "One Point One")
((1 1 1) "One Point One Point One")
((1 1 1 1) "One Point One Point One Point One")
((1 1 1 1 1) "One Point One Point One Point One Point One")
((2) "Two"))
```

Expected Output Value:

```
((1) "One")
((1 1) "One Point One")
((1 1 1) "One Point One Point One")
((1 1 1 1) "One Point One Point One Point One")
((1 1 1 1 1) "One Point One Point One Point One Point One")
((2) "Two"))
```

Correct

1.3 Test-Group: Test for flat-rep? (2 Points)

1.3.1 Test (equality, 0.25 partial points)

Simple Flat rep

Input:

```
(flat-rep? '((1) "One"))
```

Expected Output:

```
#t
```

Expected Output Value:

```
#t
```

Correct

1.3.2 Test (equality)

Nat is an invalid flat rep

Input:

```
(flat-rep? 1)
```

Expected Output:

```
#f
```

Expected Output Value:

```
#f
```

Correct

1.3.3 Test (equality)

String is an invalid flat rep

Input:

```
(flat-rep? "One")
```

Expected Output:

```
#f
```

Expected Output Value:

```
#f
```

Correct

1.3.4 Test (equality, 0.25 partial points)

Problem set example

Input:

```
(flat-rep?
'(((1) "The first section")
  ((1 1) "A subsection with no subsections")
  ((1 2) "Another subsection")
  ((1 2 1) "This is a subsection of 1.2")
  ((1 2 2) "This is another subsection of 1.2")
  ((1 3) "The last subsection of 1")
  ((2) "Another section")
  ((2 1) "More stuff")
  ((2 2) "Still more stuff")))
```

Expected Output:

```
#t
```

Expected Output Value:

```
#t
```

Correct

1.3.5 Test (equality, 0.5 partial points)

The section numbers are out of order

Input:

```
(flat-rep?
'(((1) "The first section")
  ((1 1) "A subsection with no subsections")
  ((2 1) "Another subsection")
  ((1 2 1) "This is a subsection of 1.2")
  ((1 2 2) "This is another subsection of 1.2")
  ((1 3) "The last subsection of 1")
  ((2) "Another section")
  ((2 1) "More stuff")
  ((2 2) "Still more stuff")))
```

Expected Output:

```
#f
```

Expected Output Value:

```
#f
```

Wrong Output:

```
#t
```

1.3.6 Test (equality, 0.5 partial points)

Section Numbers starting from 2

Input:

```
(flat-rep?
'(((2) "Another section")
  ((2 1) "More stuff")
  ((2 2) "Still more stuff")))
```

Expected Output:

```
#f
```

Expected Output Value:

```
#f
```

Wrong Output:

```
#t
```

1.3.7 Test (equality)

Empty is not a valid flat outline

Input:

```
(flat-rep? empty)
```

Expected Output:

```
#f
```

Expected Output Value:

```
#f
```

Correct

1.3.8 Test (equality)

Number list is empty

Input:

```
(flat-rep? '((( "One"))))
```

Expected Output:

```
#f
```

Expected Output Value:

```
#f
```

Correct

2 File: pretty.rkt

Tests your implementation of pretty print for expr

Common Definitions

```
(define check-not-enough-room (lambda (x) (exn:fail? x)))
```

```
(define get-width  
  (lambda (l) (foldr max 0 (map (lambda (i) (string-length i)) l))))
```

2.1 Test-Group: Simple special cases (2 Points)

Common Definitions

```
(define SIMPLE-SUM (make-sum-exp (list 1337 42)))

(define SSUM-ONE-LINE-LIST (list "(+ 1337 42)"))

(define SSUM-ONE-LINE-WIDTH (string-length "(+ 1337 42)"))

(define SSUM-TWO-LINE-WIDTH (string-length "(+ 1337)"))

(define SSUM-TWO-LINE-LIST (list "(+ 1337" " 42)"))

(define SIMPLE-MULT (make-mult-exp (list 74656 1701)))

(define SMULT-ONE-LINE-LIST (list "(* 74656 1701)"))

(define SMULT-TWO-LINE-LIST (list "(* 74656" " 1701)"))

(define SMULT-ONE-LINE-WIDTH (string-length "(* 74656 1701)"))

(define SMULT-TWO-LINE-WIDTH (string-length "(* 74656)"))
```

2.1.1 Test (equality, 0.5 partial points)

Test for a single number rendering

Input:

```
(expr-to-strings 5 1)
```

Expected Output:

```
(list "5")
```

Expected Output Value:

```
("5")
```

Correct

2.1.2 Test (and, 0.5 partial points)

Simple sum

Test (equality)

Simple sum exp should come in a single list

Input:

```
(expr-to-strings SIMPLE-SUM SSUM-ONE-LINE-WIDTH)
```

Expected Output:

```
SSUM-ONE-LINE-LIST
```

Expected Output Value:

```
("(+ 1337 42)")
```

Correct

Test (error)

Simple sum exp cannot fit in given width

Input:

```
(expr-to-strings SIMPLE-SUM (- SSUM-TWO-LINE-WIDTH 1))
```

Expected Error should match:

```
check-not-enough-room
```

Correct

2.1.3 Test (and, 0.5 partial points)

Simple mult

Test (equality)

Simple mult exp in one line

Input:

```
(expr-to-strings SIMPLE-MULT SMULT-ONE-LINE-WIDTH)
```

Expected Output:

```
SMULT-ONE-LINE-LIST
```

Expected Output Value:

```
("(* 74656 1701)")
```

Correct

Test (error)

Simple mult exp does not fit in given width

Input:

```
(expr-to-strings SIMPLE-MULT (- SMULT-TWO-LINE-WIDTH 1))
```

Expected Error should match:

```
check-not-enough-room
```

Correct

2.2 Test-Group: Nested expressions (2 Points)

Common Definitions

```
(define EXPR
  (make-mult-exp
    (list
      (make-sum-exp (list 1000 2000 3000))
      (make-sum-exp (list 50 60)))))

(define EXPR-ONE-LINE-LIST (list "(* (+ 1000 2000 3000) (+ 50 60))"))

(define EXPR-TWO-LINE-LIST
  (list "(* (+ 1000 2000 3000)" " (+ 50 60))"))

(define EXPR-FOUR-LINE-LIST
  (list "(* (+ 1000" "      2000" "      3000)" " (+ 50 60))"))

(define EXPR-FIVE-LINE-LIST
  (list
    "(* (+ 1000"
    "      2000"
    "      3000)"
    " (+ 50"
    "      60))"))
```

2.2.1 Test (equality, 0.25 partial points)

When given enough space, EXPR should be rendered on one line

Input:

```
(expr-to-strings EXPR (get-width EXPR-ONE-LINE-LIST))
```

Expected Output:

```
EXPR-ONE-LINE-LIST
```

Expected Output Value:

```
("(* (+ 1000 2000 3000) (+ 50 60))")
```

Correct

2.2.2 Test (equality, 0.5 partial points)

When given slightly not enough space to render EXPR on one line, it should be rendered in two lines

Input:

```
(expr-to-strings EXPR (- (get-width EXPR-ONE-LINE-LIST) 1))
```

Expected Output:

```
EXPR-TWO-LINE-LIST
```

Expected Output Value:

```
("(* (+ 1000 2000 3000)" " (+ 50 60))")
```

Correct

2.2.3 Test (equality, 0.5 partial points)

When rendered with the minimal possible width, the image of EXPR should have 5 lines

Input:

```
(expr-to-strings EXPR (get-width EXPR-FIVE-LINE-LIST))
```

Expected Output:

```
EXPR-FIVE-LINE-LIST
```

Expected Output Value:

```
("(* (+ 1000" " 2000" " 3000)" " (+ 50" " 60))")
```

Correct

2.2.4 Test (error, 0.25 partial points)

When called with less than the minimal possible width, expr-to-strings should throw an error

Input:

```
(expr-to-strings EXPR (- (get-width EXPR-FIVE-LINE-LIST) 1))
```

Expected Error should match:

```
check-not-enough-room
```

Correct

2.3 Test-Group: Complex expressions (3 Points)

Common Definitions

```

(define EXPR
  (make-sum-exp
    (list
      (make-mult-exp (list 1))
      63450680
      (make-sum-exp (list 5 3))
      4
      (make-mult-exp (list 1234567890 67450))
      (make-sum-exp
        (list
          40
          (make-sum-exp
            (list
              (make-mult-exp (list 45830 5834))
              (make-mult-exp (list 56 6543))))))
      1337)))

(define EXPR-ONE-LINE-LIST
  (list
    "(+ (* 1) 63450680 (+ 5 3) 4 (* 1234567890 67450) (+ 40 (+ (* 45830
5834) (* 56 6543))) 1337)"))

(define EXPR-MAX-LINE-LIST
  (list
    "(+ (* 1)"
    "  63450680"
    "  (+ 5 3)"
    "  4"
    "  (* 1234567890"
    "    67450)"
    "  (+ 40"
    "    (+ (* 45830"
    "        5834)"
    "        (* 56"
    "          6543)))"
    "  1337)"))

(define EXPR-SEVEN-LINE-LIST
  (list
    "(+ (* 1)"
    "  63450680"
    "  (+ 5 3)"
    "  4"
    "  (* 1234567890"
    "    67450)"
    "  (+ 40"
    "    (+ (* 45830"
    "        5834)"
    "        (* 56"
    "          6543)))"
    "  1337)"))

```

```

"  (+ 5 3)"
"  4"
"  (* 1234567890 67450)"
"  (+ 40 (+ (* 45830 5834) (* 56 6543)))"
"  1337)"

```

```

(define EXPR-EIGHT-LINE-LIST
(list
" (+ (* 1)"
" 63450680"
" (+ 5 3)"
" 4"
" (* 1234567890 67450)"
" (+ 40"
"   (+ (* 45830 5834) (* 56 6543)))"
" 1337)"))

```

```

(define EXPR-NINE-LINE-LIST
(list
" (+ (* 1)"
" 63450680"
" (+ 5 3)"
" 4"
" (* 1234567890 67450)"
" (+ 40"
"   (+ (* 45830 5834)"
"      (* 56 6543)))"
" 1337)"))

```

```

(define EXPR-ELEVEN-LINE-LIST
(list
" (+ (* 1)"
" 63450680"
" (+ 5 3)"
" 4"
" (* 1234567890"
"   67450)"
" (+ 40"
"   (+ (* 45830"
"      5834)"
"      (* 56 6543)))"
" 1337)"))

```

2.3.1 Test (equality, 0.25 partial points)

The width of EXPR on one line should be equal to the width of the image of it's string representation on one line

Input:

```
(expr-to-strings EXPR (get-width EXPR-ONE-LINE-LIST))
```

Expected Output:

```
EXPR-ONE-LINE-LIST
```

Expected Output Value:

```
("(+ (* 1) 63450680 (+ 5 3) 4 (* 1234567890 67450) (+ 40 (+ (* 45830 5834) (* 56 6543))) 1337")
```

Correct

2.3.2 Test (equality, 0.25 partial points)

Rendering the image of EXPR with a limit slightly smaller than the maximum width should yield seven lines

Input:

```
(expr-to-strings EXPR (- (get-width EXPR-ONE-LINE-LIST) 1))
```

Expected Output:

```
EXPR-SEVEN-LINE-LIST
```

Expected Output Value:

```
("(+ (* 1)"
" 63450680"
" (+ 5 3)"
" 4"
" (* 1234567890 67450)"
" (+ 40 (+ (* 45830 5834) (* 56 6543)))"
" 1337")
```

Correct

2.3.3 Test (equality, 0.5 partial points)

An image of EXPR created with bounds that are only slightly too narrow to render it on 7 lines should have 8 lines.

Input:

```
(expr-to-strings EXPR (- (get-width EXPR-SEVEN-LINE-LIST) 1))
```

Expected Output:

```
EXPR-EIGHT-LINE-LIST
```

Expected Output Value:

```
("(+ (* 1)"
" 63450680"
" (+ 5 3)"
" 4"
" (* 1234567890 67450)"
" (+ 40"
" (+ (* 45830 5834) (* 56 6543)))"
" 1337)")
```

Correct

2.3.4 Test (equality, 0.5 partial points)

An image of EXPR created with bounds that are only slightly too narrow to render it on 8 lines should have 9 lines.

Input:

```
(expr-to-strings EXPR (- (get-width EXPR-EIGHT-LINE-LIST) 1))
```

Expected Output:

```
EXPR-NINE-LINE-LIST
```

Expected Output Value:

```
("(+ (* 1)"
" 63450680"
" (+ 5 3)"
" 4"
" (* 1234567890 67450)"
" (+ 40"
" (+ (* 45830 5834)"
" (* 56 6543)))"
" 1337)")
```

Correct

2.3.5 Test (equality, 0.5 partial points)

An image of EXPR created with bounds that are only slightly too narrow to render it on 9 lines should have 11 lines.

Input:

```
(expr-to-strings EXPR (- (get-width EXPR-NINE-LINE-LIST) 1))
```

Expected Output:

```
EXPR-ELEVEN-LINE-LIST
```

Expected Output Value:

```
("(+ (* 1)"
" 63450680"
" (+ 5 3)"
" 4"
" (* 1234567890"
" 67450)"
" (+ 40"
" (+ (* 45830"
" 5834)"
" (* 56 6543)))"
" 1337)")
```

Correct

2.3.6 Test (equality, 0.25 partial points)

Rendering EXPR with the minimal possible width should result in an image with 12 lines

Input:

```
(expr-to-strings EXPR (- (get-width EXPR-ELEVEN-LINE-LIST) 1))
```

Expected Output:

```
EXPR-MAX-LINE-LIST
```

Expected Output Value:

```
("(+ (* 1)"
" 63450680"
" (+ 5 3)"
" 4"
" (* 1234567890"
" 67450)"
" (+ 40"
```



```

"      (+ (* 45830"
"          5834)"
"      (* 56"
"          6543)))"
" 1337)")

```

Correct

2.3.7 Test (error, 0.25 partial points)

Trying to render `EXPR` with less than the minimal possible width should result in an error

Input:

```
(expr-to-strings EXPR (- (get-width EXPR-MAX-LINE-LIST) 1))
```

Expected Error should match:

```
check-not-enough-room
```

Correct

2.4 Test-Group: The Two Column Bug (1 Points)

Common Definitions

```

(define EXPR
  (make-sum-exp
    (list
      (make-mult-exp (build-list 20 add1))
      (make-mult-exp (build-list 20 add1)))))

(define EXPR-ONE-LINE-LIST
  (list
    "(+ (* 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20) (* 1
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20)))"))

(define EXPR-TWO-LINE-LIST
  (list
    "(+ (* 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20)"
    "  (* 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20)))"))

(define EXPR-MAX-LINE-LIST
  (list
    "(+ (* 1"
    "    2"

```

```

"      3"
"      4"
"      5"
"      6"
"      7"
"      8"
"      9"
"     10"
"     11"
"     12"
"     13"
"     14"
"     15"
"     16"
"     17"
"     18"
"     19"
"    20)"
"  (* 1"
"    2"
"    3"
"    4"
"    5"
"    6"
"    7"
"    8"
"    9"
"   10"
"   11"
"   12"
"   13"
"   14"
"   15"
"   16"
"   17"
"   18"
"   19"
"  20))"))

```

```

(define EXPR-21-LINE-LIST
(list
" (+ (* 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20)"
"   (* 1"
"     2"
"     3"
"     4"

```

```
"      5"
"      6"
"      7"
"      8"
"      9"
"     10"
"     11"
"     12"
"     13"
"     14"
"     15"
"     16"
"     17"
"     18"
"     19"
"    20))"))
```

2.4.1 Test (equality)

Enough room to render on one line

Input:

```
(expr-to-strings EXPR (get-width EXPR-ONE-LINE-LIST))
```

Expected Output:

```
EXPR-ONE-LINE-LIST
```

Expected Output Value:

```
("(+ (* 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20) (* 1
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20)))")
```

Correct

2.4.2 Test (equality)

An image of EXPR created with bounds that are only slightly too narrow to render it on 1 line should have 2 lines.

Input:

```
(expr-to-strings EXPR (- (get-width EXPR-ONE-LINE-LIST) 1))
```

Expected Output:

```
EXPR-TWO-LINE-LIST
```

Expected Output Value:

```
("(+ (* 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20)"
"  (* 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20)))")
```

Correct

2.4.3 Test (equality)

An image of EXPR created with bounds that are only slightly too narrow to render it on 2 lines should have 21 lines.

Input:

```
(expr-to-strings EXPR (- (get-width EXPR-TWO-LINE-LIST) 1))
```

Expected Output:

```
EXPR-21-LINE-LIST
```

Expected Output Value:

```
("(+ (* 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20))"
"  (* 1"
"    2"
"    3"
"    4"
"    5"
"    6"
"    7"
"    8"
"    9"
"   10"
"   11"
"   12"
"   13"
"   14"
"   15"
"   16"
"   17"
"   18"
"   19"
"  20))")
```

Correct

2.4.4 Test (equality)

An image of EXPR created with bounds that are only slightly too narrow to render it on 21 lines should have 40 lines.

Input:

```
(expr-to-strings EXPR (- (get-width EXPR-21-LINE-LIST) 1))
```

Expected Output:

```
EXPR-MAX-LINE-LIST
```

Expected Output Value:

```
( "(+ (* 1"
"      2"
"      3"
"      4"
"      5"
"      6"
"      7"
"      8"
"      9"
"     10"
"     11"
"     12"
"     13"
"     14"
"     15"
"     16"
"     17"
"     18"
"     19"
"    20)"
"  (* 1"
"    2"
"    3"
"    4"
"    5"
"    6"
"    7"
"    8"
"    9"
"   10"
"   11"
"   12"
"   13"
"   14"
"   15"
"   16"
"   17"
"   18"
"   19"
"  20))")
```

Correct

2.4.5 Test (error)

Trying to render EXPR in less than minimal possible width will result in error
Input:

```
(expr-to-strings EXPR (- (get-width EXPR-MAX-LINE-LIST) 1))
```

Expected Error should match:

```
check-not-enough-room
```

Correct

3 Results

Successes: 32

Wrong Outputs: 2

Errors: 0

Achieved Points: 13.5

Total Points (rounded): 14.0/15