```
hw09-CHECKED-output-trace
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   dshin@acacia:checked$ checked -t /home/pl/hw09/tests/const-negative
2 Welcome to MzScheme v372 [3m], Copyright (c) 2004-2007 PLT Scheme Inc.
4 % negative constant. (value=-27)
5
6
10 || tenv=[x=int,v=int,i=int]
11 |- type=int
12 int
13 -27
14 >
15
  dshin@acacia:checked$ checked -t /home/pl/hw09/tests/const-positive
  Welcome to MzScheme v372 [3m], Copyright (c) 2004-2007 PLT Scheme Inc.
  18 % positive constant. (value=12)
19
20
21
  | tenv=[x=int,v=int,i=int]
  |- type=int
25
  int
26
27
  12
28
  dshin@acacia:checked$ checked -t /home/pl/hw09/tests/diff-nested-left
30 Welcome to MzScheme v372 [3m], Copyright (c) 2004-2007 PLT Scheme Inc.
32 % nested diff. (-11)
33
  -(-(44,33),22)
34
35
  8 -----
36
  |+ \exp = -(-(44,33),22)
  || tenv=[x=int,v=int,i=int]
  | + \exp = -(44,33)
39
40 | | | tenv=[x=int,v=int,i=int]
41 | | | + \exp = 44
42 | | | | tenv=[x=int,v=int,i=int]
43 | | | - type=int
44 |||+ exp=33
45 | | | | tenv=[x=int, v=int, i=int]
46
  |||- type=int
  ||- type=int
48 | | + exp=22
49 | | | tenv=[x=int,v=int,i=int]
50 ||- type=int
51 |- type=int
52 int
53 -11
54
  dshin@acacia:checked$ checked -t /home/pl/hw09/tests/diff-nested-right
  Welcome to MzScheme v372 [3m], Copyright (c) 2004-2007 PLT Scheme Inc.
  % nested diff. (44)
58
59
  -(55, -(22, 11))
60
  |+ \exp(-(55, -(22, 11)))|
  || tenv=[x=int,v=int,i=int]
65 ||+ exp=55
  ||| tenv=[x=int,v=int,i=int]
```

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hw09-CHECKED-output-trace
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   ||- type=int
  | + \exp = -(22, 11)
69 | | | tenv=[x=int,v=int,i=int]
70 | | | + exp = 2.2
71 | | | | tenv=[x=int,v=int,i=int]
72 | | | - type=int
73 |||+ exp=11
74 | | | | tenv=[x=int,v=int,i=int]
75 | | | - type=int
76 ||- type=int
77 |- type=int
78 int
79
  44
80
81 dshin@acacia:checked$ checked -t /home/pl/hw09/tests/if-false-1
  Welcome to MzScheme v372 [3m], Copyright (c) 2004-2007 PLT Scheme Inc.
  > & _____
  % if conditional. (value=4)
  if zero?(1) then 3 else 4
   % ______
   |+ exp=if zero?(1) then 3 else 4
  || tenv=[x=int,v=int,i=int]
91 | | + exp=zero?(1)
92 | | | tenv=[x=int,v=int,i=int]
93 |||+ exp=1
94 | | | | tenv=[x=int,v=int,i=int]
95 |||- type=int
96 ||- type=bool
97 | 1 + exp = 3
98 | | | tenv=[x=int, v=int, i=int]
99 ||- type=int
100 | | + exp=4
101 ||| tenv=[x=int,v=int,i=int]
102 ||- type=int
103 |- type=int
104 int
105 4
106 >
dshin@acacia:checked$ checked -t /home/pl/hw09/tests/if-false-type-error
  Welcome to MzScheme v372 [3m], Copyright (c) 2004-2007 PLT Scheme Inc.
  110 % if conditional where false exp is not evaluated. (value=type-error)
111
if zero?(0) then 3 else foo
114 % ------
115 | + exp=if zero?(0) then 3 else foo
116 || tenv=[x=int,v=int,i=int]
| + \exp = zero?(0)
118 ||| tenv=[x=int,v=int,i=int]
119 |||+ exp=0
120 | | | | tenv=[x=int, v=int, i=int]
121 | | | - type=int
122 ||- type=bool
123 | | + exp=3
124 | | | tenv=[x=int, v=int, i=int]
125 ||- type=int
126 | | + exp=foo
127 | | | tenv=[x=int, v=int, i=int]
128 apply-tenv: foo is undefined
/home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/tenv.scm:13
   :23: (eopl:error (quote apply-tenv) "~a is undefined" search-sym)
/home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:1
   5:4: (let-values (((val) (type-of-1 exp tenv))) (trace-check-exit val) val)
```

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   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:
   1:19: (let-values (((ty1) (type-of exp1 tenv)) ((ty2) (type-of exp2 tenv)) ((ty3
   ) (type-of exp3 tenv))) (check-equal-type! tyl (bool-type) expl) (check-equal-ty
   pe! ty2 ty3 exp) ty2)
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:1
   5:4: (let-values (((val) (type-of-1 exp tenv))) (trace-check-exit val) val)
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/run.scm:7:3
   0: (type->string (check string))
/home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/run.scm:7:1
   5: (format "~a~n" (type->string (check string)))
/home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/run.scm:7:6
   : (display (format "~a~n" (type->string (check string))))
/home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/run.scm:5:4
   : (let-values (((string) (readfile file))) (display string) (display (format "~a
   ~n" ((....) ....))) (set! trace-flag #f) (display (format (....) ....)) (newline
   ))
137
138
    === context ===
139
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:1
140
/home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:2
   0:2: type-of-1
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:1
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/run.scm:4:2
   : runfile
1//
145
   dshin@acacia:checked$ checked -t /home/pl/hw09/tests/let
146
147 Welcome to MzScheme v372 [3m], Copyright (c) 2004-2007 PLT Scheme Inc.
   149 % let. (value=3)
151
   1et x=3
152
   in x
153
   8 -----
154
155
   |+ exp=let x=3 in x
   | tenv=[x=int,v=int,i=int]
156
   | | + exp=3
157
   | | | tenv=[x=int,v=int,i=int]
   ||- type=int
159
   ||+ exp=x
160
   ||| tenv=[x=int, x=int, v=int, i=int]
161
162
   ||- type=int
163
   |- type=int
164
   int
   3
165
166 >
dshin@acacia:checked$ checked -t /home/pl/hw09/tests/letrec-1
   Welcome to MzScheme v372 [3m], Copyright (c) 2004-2007 PLT Scheme Inc.
169
170 % letrecs. (value=32)
171
172 letrec int f(x:int)
    = -(x, 1)
173
174 in (f 33)
175
|+ exp=letrec int f(x:int)=-(x,1) in (f 33)
   || tenv=[x=int,v=int,i=int]
  | | + \exp = -(x, 1)
180 || tenv=[x=int, f=(int->int), x=int, v=int, i=int]
181 | | | + exp=x
182 | | | | tenv=[x=int, f=(int->int), x=int, v=int, i=int]
```

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   |||- type=int
184 | | | + \exp = 1
185 | | | | tenv=[x=int, f=(int->int), x=int, v=int, i=int]
186 | | | - type=int
187
  ||- type=int
188 | | + \exp = (f 33)
  | | | tenv=[f=(int->int), x=int, v=int, i=int]
190 | | | + exp=f
191 | | | | tenv=[f=(int->int), x=int, v=int, i=int]
192 | | | - type=(int->int)
193 |||+ exp=33
194 | | | | tenv=[f=(int->int), x=int, v=int, i=int]
195 |||- type=int
196 | | - type=int
197 |- type=int
198 int
199
   32
200
201 dshin@acacia:checked$ checked -t /home/pl/hw09/tests/proc-1
202 Welcome to MzScheme v372 [3m], Copyright (c) 2004-2007 PLT Scheme Inc.
   > % =======
   % proc. (value=int->int)
   proc(x:int) - (x,1)
207
208
   |+ \exp=\operatorname{proc}(x:\operatorname{int}) - (x, 1)
   | tenv=[x=int,v=int,i=int]
211 | | + \exp = -(x, 1)
212 | | | tenv=[x=int, x=int, v=int, i=int]
213 | | | + exp=x
214 | | | | tenv=[x=int, x=int, v=int, i=int]
215 | | | - type=int
216 |||+ exp=1
217 | | | | tenv=[x=int, x=int, v=int, i=int]
218 | | | - type=int
219 | | - type=int
220
   |- type=(int->int)
221 (int->int)
  proc(x:int) - (x, 1) [x=10, v=5, i=1]
222
223
  dshin@acacia:checked$ checked -t /home/pl/hw09/tests/proc-4
   Welcome to MzScheme v372 [3m], Copyright (c) 2004-2007 PLT Scheme Inc.
   % proc. (value=(int->bool)->bool)
227
228
229
   proc(f:(int->bool)) (f 3)
230
231 % -----
232 | + exp=proc(f:(int->bool))(f 3)
233 || tenv=[x=int,v=int,i=int]
| + \exp(f 3)
235 | | | tenv=[f=(int->bool), x=int, v=int, i=int]
236 |||+ exp=f
237 | | | | tenv=[f=(int->bool), x=int, v=int, i=int]
238 | | | - type=(int->bool)
239 | | | + exp=3
   |||| tenv=[f=(int->bool),x=int,v=int,i=int]
   |||- type=int
241
  ||- type=bool
242
   |- type=((int->bool)->bool)
243
244 ((int->bool)->bool)
245 proc(f:(int->bool))(f 3)[x=10,v=5,i=1]
247 dshin@acacia:checked$ checked -t /home/pl/hw09/tests/proc-6
248 Welcome to MzScheme v372 [3m], Copyright (c) 2004-2007 PLT Scheme Inc.
```

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   > % ======
250 % proc. (value=(int->(int->(int->bool))->(int->bool))))
251
252
   proc (x:int) proc (f:(int->(int->bool))) (f x)
253
254
255
   |+ exp=proc(x:int)proc(f:(int->(int->bool)))(f x)
256
   | tenv=[x=int,v=int,i=int]
  ||+ exp=proc(f:(int->(int->bool)))(f x)
258 | | | tenv=[x=int, x=int, v=int, i=int]
259 | | | + \exp(f x)
260 | | | | tenv=[f=(int->(int->bool)), x=int, x=int, v=int, i=int]
262 | | | | | tenv=[f=(int->(int->bool)), x=int, x=int, v=int, i=int]
   | | | | - type=(int->(int->bool))
263
264
   ||||+ exp=x
   |||| tenv=[f=(int->(int->bool)),x=int,x=int,v=int,i=int]
265
266
   ||||- type=int
  |||- type=(int->bool)
267
  | | - type=((int->(int->bool))->(int->bool))
268
   |- type=(int->((int->(int->bool))->(int->bool)))
   (int->((int->(int->bool))->(int->bool)))
  proc(x:int)proc(f:(int->(int->bool)))(f x)[x=10,v=5,i=1]
272
   dshin@acacia:checked$ checked -t /home/pl/hw09/tests/proc-apply-1
273
   Welcome to MzScheme v372 [3m], Copyright (c) 2004-2007 PLT Scheme Inc.
274
   275
   % proc application. (value=29)
276
277
   (proc(x:int) - (x, 1) 30)
278
279
   %
   |+ \exp = (\operatorname{proc}(x:\operatorname{int}) - (x, 1) \ 30)
282 || tenv=[x=int,v=int,i=int]
  | + \exp=\operatorname{proc}(x:int) - (x,1)
283
284
   ||| tenv=[x=int,v=int,i=int]
   | | | + exp = -(x, 1)
285
286
   |||| tenv=[x=int, x=int, v=int, i=int]
287
   ||||+ exp=x
  | | | | | tenv=[x=int, x=int, v=int, i=int]
288
  ||||- type=int
289
290 ||||+ exp=1
291 | | | | | tenv=[x=int, x=int, v=int, i=int]
292 ||||- type=int
  |||- type=int
293
294
   ||- type=(int->int)
295
   | | + exp = 30
   ||| tenv=[x=int,v=int,i=int]
296
297 ||- type=int
298 |- type=int
299 int
  29
300
301
302 dshin@acacia:checked$ checked -t /home/pl/hw09/tests/proc-currying-1
  Welcome to MzScheme v372 [3m], Copyright (c) 2004-2007 PLT Scheme Inc.
   % multiple arguments with proc that returns proc. (value=-1)
305
   % (This is called Currying.)
306
307
   ((proc(x:int) proc(y:int) - (x,y) 5) 6)
308
309
   % -----
   |+ exp=((proc(x:int)proc(y:int)-(x,y) 5) 6)
312 || tenv=[x=int,v=int,i=int]
313 | | + exp= (proc(x:int)proc(y:int) - (x,y) 5)
  ||| tenv=[x=int,v=int,i=int]
```

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   |\cdot| + exp=proc(x:int)proc(y:int)-(x,y)
316 | | | | tenv=[x=int,v=int,i=int]
317 | | | | + exp=proc(v:int) - (x, v)
318 | | | | | tenv=[x=int, x=int, v=int, i=int]
319 | | | | | + \exp = -(x, y)
   | | | | | tenv=[v=int, x=int, x=int, v=int, i=int]
   |||||+ exp=x
322 | | | | | | tenv=[v=int, x=int, x=int, v=int, i=int]
323 |||||- type=int
324 | | | | | + exp=y
325 | | | | | | tenv=[v=int, x=int, x=int, v=int, i=int]
326 | | | | | | - type=int
327 ||||- type=int
328 | | | | - type=(int->int)
329 | | | - type=(int->(int->int))
330 | | | + exp = 5
331 | | | | tenv=[x=int, v=int, i=int]
332 | | | - type=int
333 | | - type=(int->int)
| 1 + exp = 6 
335 | | | tenv=[x=int,v=int,i=int]
336 ||- type=int
337 |- type=int
338 int
339
   -1
340
   dshin@acacia:checked$ checked -t /home/pl/hw09/tests/proc-type-error-1
   Welcome to MzScheme v372 [3m], Copyright (c) 2004-2007 PLT Scheme Inc.
   % proc. (value=type-error)
345
   (proc(x:(int->int)) - (x,1) 30)
349
   |+ \exp(\operatorname{proc}(x:(\operatorname{int->int})) - (x,1)| 30)
350 || tenv=[x=int,v=int,i=int]
351 | | + exp=proc(x:(int->int)) - (x,1)
   ||| tenv=[x=int,v=int,i=int]
353 | | | + \exp = -(x, 1)
354 | | | | tenv=[x=(int->int), x=int, v=int, i=int]
355 | | | | + exp=x
356 | | | | | tenv=[x=(int->int), x=int, v=int, i=int]
357 ||||- type=(int->int)
358 | | | | + exp=1
359 | | | | | tenv=[x=(int->int), x=int, v=int, i=int]
360 ||||- type=int
361 type-error: exp=x, expected type=(int->int), current type=int
362 /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:8
   5:4: (eopl:error (quote type-error) "exp=~a, expected type=~a, current type=~a"
    (exp->string exp) (type->string ty1) (type->string ty2))
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:2
   9:21: (let-values (((ty1) (type-of exp1 tenv)) ((ty2) (type-of exp2 tenv))) (che
   ck-equal-type! ty1 (int-type) exp1) (check-equal-type! ty2 (int-type) exp2) (int
   -type))
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:1
   5:4: (let-values (((val) (type-of-1 exp tenv))) (trace-check-exit val) val)
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:5
   1:21: (let-values (((result-type) (type-of body (extend-tenv var ....)))) (proc-
   type var-type result-type))
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:1
   5:4: (let-values (((val) (type-of-1 exp tenv))) (trace-check-exit val) val)
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:5
   6:21: (let-values (((rator-type) (type-of rator tenv)) ((rand-type) (type-of ran
   d tenv))) (let-values (((v) rator-type)) (if (not (....)) (error ....) (....))))
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:1
   5:4: (let-values (((val) (type-of-1 exp tenv))) (trace-check-exit val) val)
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   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/run.scm:7:3
   0: (type->string (check string))
370 /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/run.scm:7:1
   5: (format "~a~n" (type->string (check string)))
/home/dshin/2010-ea0011-pl/eop13-programs/eop13-interpreters/checked/run.scm:7:6
    : (display (format "~a~n" (type->string (check string))))
/home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/run.scm:5:4
   : (let-values (((string) (readfile file))) (display string) (display (format "~a
   ~n" ((....) ....))) (set! trace-flag #f) (display (format (....) ....)) (newline
   ))
373
    === context ===
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:2
376
   0:2: tvpe-of-1
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:1
   3:2: type-of
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:2
   0:2: type-of-1
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:1
   3:2: type-of
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:2
   0:2: type-of-1
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:1
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/run.scm:4:2
    : runfile
383
384
   dshin@acacia:checked$ checked -t /home/pl/hw09/tests/proc-type-error-3
385
386 Welcome to MzScheme v372 [3m], Copyright (c) 2004-2007 PLT Scheme Inc.
   % proc. (value=type-error)
389
390
   proc (x:int) proc(f:(int->(int->bool))) (f zero?(x))
391
     392
393
   |+ exp=proc(x:int)proc(f:(int->(int->bool)))(f zero?(x))
394
   || tenv=[x=int,v=int,i=int]
   ||+ exp=proc(f:(int->(int->bool)))(f zero?(x))
395
   | | | tenv=[x=int, x=int, v=int, i=int]
   |\cdot| + \exp(f \operatorname{zero}(x))
   |||| tenv=[f=(int->(int->bool)), x=int, x=int, v=int, i=int]
300
   ||||| tenv=[f=(int->(int->bool)), x=int, x=int, v=int, i=int]
400
401
   | | | | - type=(int->(int->bool))
402
   | | | | + exp=zero?(x)
   |||| tenv=[f=(int->(int->bool)), x=int, x=int, v=int, i=int]
403
404
   ||||+ exp=x
   ||||| tenv=[f=(int->(int->bool)), x=int, x=int, v=int, i=int]
405
406 ||||- type=int
407 | | | | - type=bool
408 type-error: exp=zero?(x), expected type=int, current type=bool
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:8
   5:4: (eopl:error (quote type-error) "exp=~a, expected type=~a, current type=~a"
    (exp->string exp) (type->string ty1) (type->string ty2))
   [unknown source]: (let-values (((arg-type) (proc-type-accessor v 0)) ((result-ty
   pe) (proc-type-accessor v 1))) (check-equal-type! arg-type rand-type rand) resul
    t-type)
411 /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:1
   5:4: (let-values (((val) (type-of-1 exp tenv))) (trace-check-exit val) val)
412 /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:5
   1:21: (let-values (((result-type) (type-of body (extend-tenv var ....)))) (proc-
   type var-type result-type))
413 /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:1
   5:4: (let-values (((val) (type-of-1 exp tenv))) (trace-check-exit val) val)
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                                                                         Page 8/8
414 /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:5
   1:21: (let-values (((result-type) (type-of body (extend-tenv var ....)))) (proc-
   type var-type result-type))
/home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:1
   5:4: (let-values (((val) (type-of-1 exp tenv))) (trace-check-exit val) val)
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/run.scm:7:3
   0: (type->string (check string))
417 /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/run.scm:7:1
   5: (format "~a~n" (type->string (check string)))
418 /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/run.scm:7:6
   : (display (format "~a~n" (type->string (check string))))
/home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/run.scm:5:4
   : (let-values (((string) (readfile file))) (display string) (display (format "~a
   ~n" ((....) ....))) (set! trace-flag #f) (display (format (....) ....)) (newline
   ))
420
    === context ===
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:2
   0:2: type-of-1
  /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:1
   3:2: type-of
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:2
   0:2: type-of-1
  /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:1
   /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:2
   0:2: type-of-1
428 /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/check.scm:1
   3:2: type-of
429 /home/dshin/2010-ea0011-pl/eopl3-programs/eopl3-interpreters/checked/run.scm:4:2
   : runfile
430
431 >
432
  dshin@acacia:checked$ checked -t /home/pl/hw09/tests/variable
  Welcome to MzScheme v372 [3m], Copyright (c) 2004-2007 PLT Scheme Inc.
  > & ______
  % variable, where env=[i=1, v=5, x=10]. (value=10)
436
437 X
438
   || tenv=[x=int,v=int,i=int]
   |- type=int
442
443
  int
444
   10
445
446 dshin@acacia:checked$ checked -t /home/pl/hw09/tests/zero-true
447 Welcome to MzScheme v372 [3m], Copyright (c) 2004-2007 PLT Scheme Inc.
449 % zero? (value=#t)
451 Zero? (0)
454
   |+ exp=zero?(0)
   || tenv=[x=int,v=int,i=int]
456
  | | + \exp = 0
457 | | | tenv=[x=int,v=int,i=int]
458 ||- type=int
   |- type=bool
460 bool
461 #t
462 >
463 dshin@acacia:checked$
```