```
Josephs-Air-2:scheme JosephHayes$
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15 -v
=====================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
=====================================================================


~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

---------------------------------------------------------------------
Problem 15 > Suite 1 > Case 1

scm> (define x 1)
x
scm> (let ((x 5))
....     (+ x 3))
4

# Error: expected
#      8
# but got
#      4

Run only this test case with "python3 ok -q 15 --suite 1 --case 1"
---------------------------------------------------------------------
Problem 15 > Suite 1 > Case 2

scm> (let ((a 1) (b a)) b)
# Error: unknown identifier: a
-- OK! --


---------------------------------------------------------------------
Problem 15 > Suite 1 > Case 3

scm> (let ((x 5))
....     (let ((x 2)
....           (y x))
....          (+ y (* x 2))))
# Error: unknown identifier: x

# Error: expected
#      9
# but got
#      Traceback (most recent call last):
#        ...
#      SchemeError: unknown identifier: x

Run only this test case with "python3 ok -q 15 --suite 1 --case 3"
---------------------------------------------------------------------
Problem 15 > Suite 1 > Case 4

scm> (define (square x) (* x x))
square
scm> (define (f x y)
....     (let ((a (+ 1 (* x y)))
....           (b (- 1 y)))
....          (+ (* x (square a))
....             (* y b)
....             (* a b))))
f
scm> (f 3 4)
# Error: unknown identifier: a

# Error: expected
#      456
# but got
#      Traceback (most recent call last):
#        ...
#      SchemeError: unknown identifier: a

Run only this test case with "python3 ok -q 15 --suite 1 --case 4"
---------------------------------------------------------------------
Problem 15 > Suite 2 > Case 1
```

```
scm> (define x 3)
x
scm> (define y 4)
y
scm> (let ((x (+ y 2))
....        (y (+ x 2)))
....     (cons x y))
(3 . 4)

# Error: expected
#     (6 . 5)
# but got
#     (3 . 4)

Run only this test case with "python3 ok -q 15 --suite 2 --case 1"
----------------------------------------------------------------------
Test summary
    Passed: 1
    Failed: 4
[ook.......] 20.0% passed

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15 -v
======================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
======================================================================

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

----------------------------------------------------------------------
Problem 15 > Suite 1 > Case 1

scm> (define x 1)
x
scm> (let ((x 5))
....     (+ x 3))
# Error: int is not callable: 5

# Error: expected
#     8
# but got
#     Traceback (most recent call last):
#       ...
#     SchemeError: int is not callable: 5

Run only this test case with "python3 ok -q 15 --suite 1 --case 1"
----------------------------------------------------------------------
Problem 15 > Suite 1 > Case 2

scm> (let ((a 1) (b a)) b)
# Error: int is not callable: 1
-- OK! --

----------------------------------------------------------------------
Problem 15 > Suite 1 > Case 3

scm> (let ((x 5))
....     (let ((x 2)
....           (y x))
....         (+ y (* x 2))))
# Error: int is not callable: 5

# Error: expected
#     9
# but got
#     Traceback (most recent call last):
#       ...
```

```
#       SchemeError: int is not callable: 5

Run only this test case with "python3 ok -q 15 --suite 1 --case 3"
---------------------------------------------------------------------
Problem 15 > Suite 1 > Case 4

scm> (define (square x) (* x x))
square
scm> (define (f x y)
....     (let ((a (+ 1 (* x y)))
....            (b (- 1 y)))
....         (+ (* x (square a))
....            (* y b)
....            (* a b))))
f
scm> (f 3 4)
# Error: int is not callable: 13

# Error: expected
#       456
# but got
#       Traceback (most recent call last):
#         ...
#       SchemeError: int is not callable: 13

Run only this test case with "python3 ok -q 15 --suite 1 --case 4"
---------------------------------------------------------------------
Problem 15 > Suite 2 > Case 1

scm> (define x 3)
x
scm> (define y 4)
y
scm> (let ((x (+ y 2))
....        (y (+ x 2)))
....     (cons x y))
# Error: int is not callable: 6

# Error: expected
#       (6 . 5)
# but got
#       Traceback (most recent call last):
#         ...
#       SchemeError: int is not callable: 6

Run only this test case with "python3 ok -q 15 --suite 2 --case 1"
---------------------------------------------------------------------
Test summary
    Passed: 1
    Failed: 4
[ook........] 20.0% passed

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
=====================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
=====================================================================

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

---------------------------------------------------------------------
Problem 15 > Suite 1 > Case 1

scm> (define x 1)
x
scm> (let ((x 5))
....     (+ x 3))
# Error: int is not callable: 5
```

```
# Error: expected
#       8
# but got
#       Traceback (most recent call last):
#         ...
#       SchemeError: int is not callable: 5

Run only this test case with "python3 ok -q 15 --suite 1 --case 1"
---------------------------------------------------------------------
Test summary
    0 test cases passed before encountering first failed test case

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
=====================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
=====================================================================

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

---------------------------------------------------------------------
Problem 15 > Suite 1 > Case 1

scm> (define x 1)
x
scm> (let ((x 5))
....     (+ x 3))
4

# Error: expected
#       8
# but got
#       4

Run only this test case with "python3 ok -q 15 --suite 1 --case 1"
---------------------------------------------------------------------
Test summary
    0 test cases passed before encountering first failed test case

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
=====================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
=====================================================================

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

---------------------------------------------------------------------
Problem 15 > Suite 1 > Case 1

scm> (define x 1)
x
scm> (let ((x 5))
....     (+ x 3))
4

# Error: expected
#       8
# but got
#       4
```

Run only this test case with "python3 ok -q 15 --suite 1 --case 1"

Test summary
    0 test cases passed before encountering first failed test case

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
===
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
===

~~~~~~
Running tests

Problem 15 > Suite 1 > Case 1

scm> (define x 1)
x
scm> (let ((x 5))
....   (+ x 3))
4

Error: expected
8
but got
4

Run only this test case with "python3 ok -q 15 --suite 1 --case 1"

Test summary
    0 test cases passed before encountering first failed test case

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
===
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
===

~~~~~~
Running tests

Problem 15 > Suite 1 > Case 1

scm> (define x 1)
x
scm> (let ((x 5))
....   (+ x 3))
4

Error: expected
8
but got
4

Run only this test case with "python3 ok -q 15 --suite 1 --case 1"

Test summary
    0 test cases passed before encountering first failed test case

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

```
Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
=================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
=================================================================


~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

-----------------------------------------------------------------
Test summary
    5 test cases passed! No cases failed.

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
=================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
=================================================================


~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

-----------------------------------------------------------------
Problem 15 > Suite 1 > Case 1

scm> (define x 1)
x
scm> (let ((x 5))
....     (+ x 3))
4

# Error: expected
#     8
# but got
#     4

Run only this test case with "python3 ok -q 15 --suite 1 --case 1"
-----------------------------------------------------------------
Test summary
    0 test cases passed before encountering first failed test case

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
=================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
=================================================================


~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

-----------------------------------------------------------------
Problem 15 > Suite 1 > Case 1

scm> (define x 1)
x
scm> (let ((x 5))
....     (+ x 3))
Traceback (most recent call last):
k (most recent call last):
  File "ok/client/sources/ok_test/scheme.py", line 58, in evaluate
    (exp, self._frame))
  File "ok/client/utils/timer.py", line 33, in timed
```

```
    raise submission.error
  File "ok/client/utils/timer.py", line 49, in run
    self.result = self.fn(*self.args, **self.kargs)
  File "/Users/JosephHayes/Desktop/61A/Projects/scheme/scheme.py", line 33, in scheme_eval
    return SPECIAL_FORMS[first](rest, env)
  File "/Users/JosephHayes/Desktop/61A/Projects/scheme/scheme.py", line 379, in do_let_form
    let_env = make_let_frame(expressions.first, env)
  File "/Users/JosephHayes/Desktop/61A/Projects/scheme/scheme.py", line 409, in make_let_frame
    return make_let_frame(bindings.second, env) #recursively iterate
AttributeError: 'nil' object has no attribute 'second'

# Error: expected
#     8
# but got
#     Traceback (most recent call last):
#       ...
#     AttributeError: 'nil' object has no attribute 'second'

Run only this test case with "python3 ok -q 15 --suite 1 --case 1"
---------------------------------------------------------------------
Test summary
    0 test cases passed before encountering first failed test case

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
=====================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
=====================================================================

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

---------------------------------------------------------------------
Problem 15 > Suite 1 > Case 1

scm> (define x 1)
x
scm> (let ((x 5))
....     (+ x 3))
4

# Error: expected
#     8
# but got
#     4

Run only this test case with "python3 ok -q 15 --suite 1 --case 1"
---------------------------------------------------------------------
Test summary
    0 test cases passed before encountering first failed test case

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
=====================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
=====================================================================

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

---------------------------------------------------------------------
Problem 15 > Suite 1 > Case 1

scm> (define x 1)
```

```
x
scm> (let ((x 5))
....      (+ x 3))
Traceback (most recent call last):
k (most recent call last):
  File "ok/client/sources/ok_test/scheme.py", line 58, in evaluate
    (exp, self._frame))
  File "ok/client/utils/timer.py", line 33, in timed
    raise submission.error
  File "ok/client/utils/timer.py", line 49, in run
    self.result = self.fn(*self.args, **self.kargs)
  File "/Users/JosephHayes/Desktop/61A/Projects/scheme/scheme.py", line 33, in scheme_eval
    return SPECIAL_FORMS[first](rest, env)
  File "/Users/JosephHayes/Desktop/61A/Projects/scheme/scheme.py", line 379, in do_let_form
    let_env = make_let_frame(expressions.first, env)
  File "/Users/JosephHayes/Desktop/61A/Projects/scheme/scheme.py", line 409, in make_let_frame
    return make_let_frame(bindings, env) #recursively iterate
  File "/Users/JosephHayes/Desktop/61A/Projects/scheme/scheme.py", line 399, in make_let_frame
    check_form(bindings.first, 2, 2)
AttributeError: 'nil' object has no attribute 'first'

# Error: expected
#      8
# but got
#      Traceback (most recent call last):
#      ...
#      AttributeError: 'nil' object has no attribute 'first'

Run only this test case with "python3 ok -q 15 --suite 1 --case 1"
---------------------------------------------------------------------
Test summary
    0 test cases passed before encountering first failed test case

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
=====================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
=====================================================================

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

---------------------------------------------------------------------
Problem 15 > Suite 1 > Case 1

scm> (define x 1)
x
scm> (let ((x 5))
....      (+ x 3))
4

# Error: expected
#      8
# but got
#      4

Run only this test case with "python3 ok -q 15 --suite 1 --case 1"
---------------------------------------------------------------------
Test summary
    0 test cases passed before encountering first failed test case

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
=====================================================================
Assignment: Project 4: Scheme Interpreter
```

```
OK, version v1.13.11
==================================================================

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

------------------------------------------------------------------
Problem 15 > Suite 1 > Case 1

scm> (define x 1)
x
scm> (let ((x 5))
....     (+ x 3))
4

# Error: expected
#      8
# but got
#      4

Run only this test case with "python3 ok -q 15 --suite 1 --case 1"
------------------------------------------------------------------
Test summary
    0 test cases passed before encountering first failed test case

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
==================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
==================================================================

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

------------------------------------------------------------------
Problem 15 > Suite 1 > Case 1

scm> (define x 1)
x
scm> (let ((x 5))
....     (+ x 3))
4

# Error: expected
#      8
# but got
#      4

Run only this test case with "python3 ok -q 15 --suite 1 --case 1"
------------------------------------------------------------------
Test summary
    0 test cases passed before encountering first failed test case

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
==================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
==================================================================

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

------------------------------------------------------------------
Problem 15 > Suite 1 > Case 1
```

```
scm> (define x 1)
x
scm> (let ((x 5))
....      (+ x 3))
Traceback (most recent call last):
k (most recent call last):
  File "ok/client/sources/ok_test/scheme.py", line 58, in evaluate
    (exp, self._frame))
  File "ok/client/utils/timer.py", line 33, in timed
    raise submission.error
  File "ok/client/utils/timer.py", line 49, in run
    self.result = self.fn(*self.args, **self.kargs)
  File "/Users/JosephHayes/Desktop/61A/Projects/scheme/scheme.py", line 33, in scheme_eval
    return SPECIAL_FORMS[first](rest, env)
  File "/Users/JosephHayes/Desktop/61A/Projects/scheme/scheme.py", line 379, in do_let_form
    let_env = make_let_frame(expressions.first, env)
  File "/Users/JosephHayes/Desktop/61A/Projects/scheme/scheme.py", line 404, in make_let_frame
    symbols = Pair(formal, symbols)
UnboundLocalError: local variable 'symbols' referenced before assignment

# Error: expected
#      8
# but got
#      Traceback (most recent call last):
#        ...
#      UnboundLocalError: local variable 'symbols' referenced before assignment

Run only this test case with "python3 ok -q 15 --suite 1 --case 1"
---------------------------------------------------------------------
Test summary
    0 test cases passed before encountering first failed test case

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
=====================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
=====================================================================

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

---------------------------------------------------------------------
Test summary
    5 test cases passed! No cases failed.

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
=====================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
=====================================================================

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

---------------------------------------------------------------------
Test summary
    5 test cases passed! No cases failed.

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
```

```
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
=====================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
=====================================================================

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

---------------------------------------------------------------------
Test summary
    5 test cases passed! No cases failed.

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
=====================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
=====================================================================

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

---------------------------------------------------------------------
Test summary
    5 test cases passed! No cases failed.

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 15
=====================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
=====================================================================

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests

---------------------------------------------------------------------
Test summary
    5 test cases passed! No cases failed.

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok --submit
=====================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
=====================================================================

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Running tests


There are still locked tests! Use the -u option to unlock them
---------------------------------------------------------------------
Test summary
    Locked: 1
    97 test cases passed! No cases failed.

Submit... 100% complete
Submission successful for user: joseph.hayes@berkeley.edu
URL: https://okpy.org/cal/cs61a/su18/proj04/submissions/2vvkoN
```

```
Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$ python3 ok -q 16 -u
=====================================================================
Assignment: Project 4: Scheme Interpreter
OK, version v1.13.11
=====================================================================

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Unlocking tests

At each "? ", type what you would expect the output to be.
Type exit() to quit

---------------------------------------------------------------------
Problem 16 > Suite 1 > Case 1
(cases remaining: 2)


scm> (define y 1)
? y
-- OK! --

scm> (define f (mu (x) (+ x y)))
? f
-- OK! --

scm> (define g (lambda (x y) (f (+ x x))))
? g
-- OK! --

scm> (g 3 7)
? 13
-- OK! --


---------------------------------------------------------------------
Problem 16 > Suite 2 > Case 1
(cases remaining: 1)

-- Already unlocked --

---------------------------------------------------------------------
OK! All cases for Problem 16 unlocked.

Backup... 100% complete
Backup successful for user: joseph.hayes@berkeley.edu

Checking for software updates...
OK is up to date
Josephs-Air-2:scheme JosephHayes$
```