

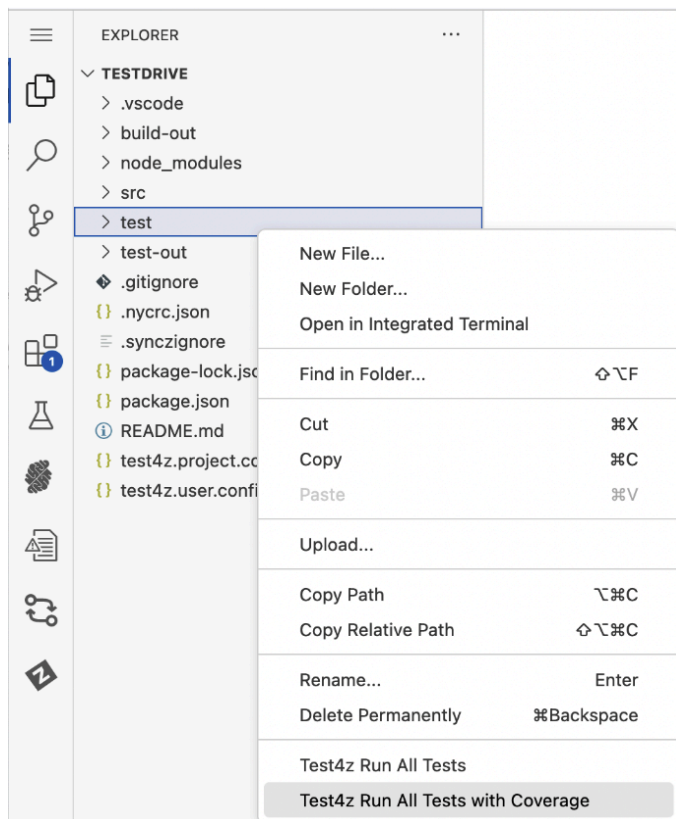
Testing Experience

This scenario is a test drive of how testing experience looks like when you use the Test4z framework to unit test your application. The application under test is DOGGOS, which should look familiar if you went through one of our Developer Experience workshops before. We are going to go through some common tasks developers meet in their daily life. Also we are going to see how Test4z extends the VSCode functionality so dealing with unit tests is easier.

Run tests and generate Test Coverage Report

Let's start with the positive scenario when tests are there, they are passing, and the only thing a developer has to worry about is reporting the level of code coverage.

Right click on the "test" folder and select "Test4z Run All Tests with Coverage".
Reference screenshot:



This will run tests and generate the report. Take your time and look through the data presented in the report.

```
● developer@ws-753461708474258-0:~/test4z/testdrive$ t4z test test/ZTTDOGWS.cbl --cov
Test4z CLI version: 1.0.1870-develop
Executing Endeavor Team Build on 10.1.2.55 to build and run tests...

PASS test/ZTTDOGWS.cbl
  ✓ ZTTDOGWS simple totals test (149 ms)

Tests Suites: 1 passed, 1 total
Tests: 1 passed, 1 total
Time: 0 s

Running tests completed successfully. For more details see files 'test-out/ZLMSG.txt' and 'test-out/SYSOUT'
Generating coverage report...

> report
> nyc report
```

File	% Stmts	% Branch	% Funcs	% Lines	Uncovered Line #s
All files	84.78	75.47	100	84.26	
ZTPDOGOS.cbl	84.78	75.47	100	84.26	...175-176,186,195,198,201,206-207,214-215

A code coverage report has been created at 'coverage/index.html'.

Code Coverage

All files

84.78% Statements 78/92 75.47% Branches 40/53 100% Functions 8/8 84.26% Lines 75/89

Press *n* or *j* to go to the next uncovered block, *b*, *p* or *k* for the previous block.

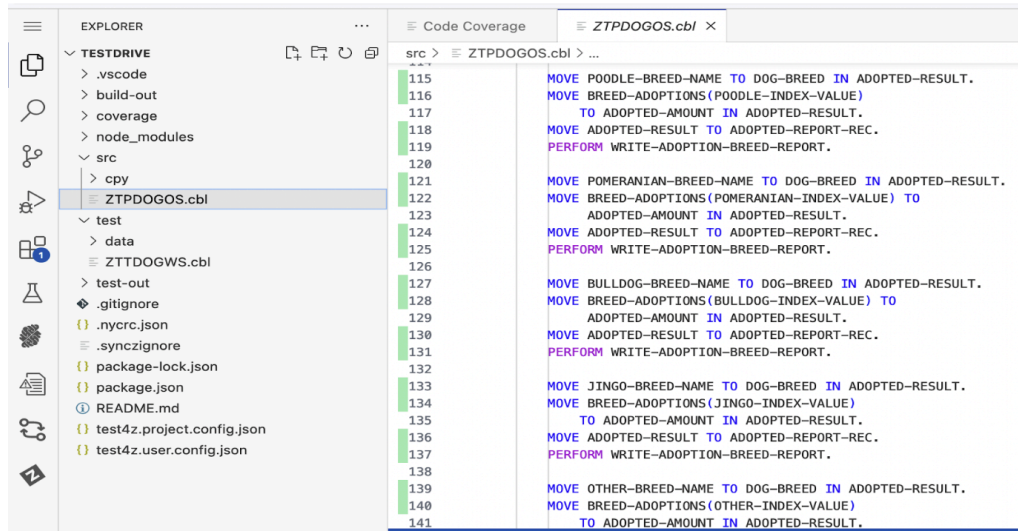
Filter:

File	Statements	Branches	Functions	Lines
ZTPDOGOS.cbl	84.78% 78/92	75.47% 40/53	100% 8/8	84.26% 75/89

From the Explorer tab, Open the src folder.

Open the source code file "ZTPDOGOS.cbl".

VSCode Coverage Gutters in the source code file are observed. When test results are available, Test4z is going to present the test coverage info as you navigate through the code.

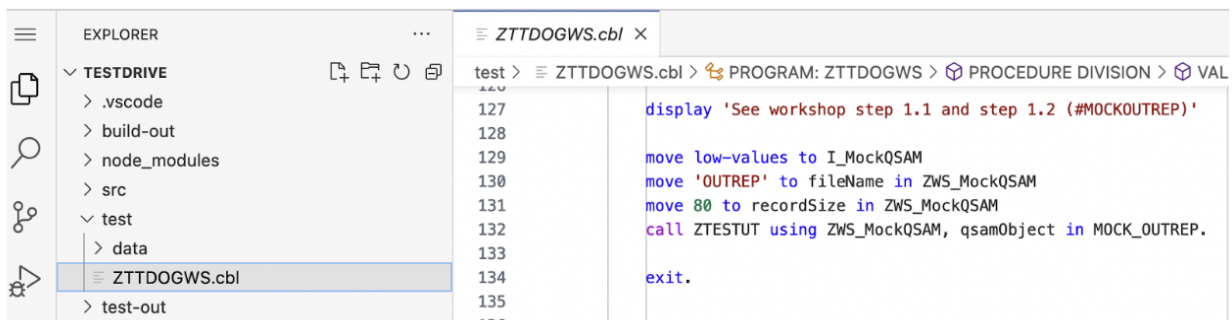


The screenshot shows the Visual Studio Code interface. The Explorer pane on the left displays the project structure under 'TESTDRIVE', with 'ZTPDOGOS.cbl' selected under the 'src' folder. The main editor pane shows the code for 'ZTPDOGOS.cbl' with line numbers 115 to 141. The code contains several 'MOVE' and 'PERFORM' statements for dog breeds: POODLE, POMERANIAN, BULLDOG, JINGO, and OTHER. Each breed section includes a 'MOVE' statement for the breed name, a 'MOVE' statement for the breed index value to the 'ADOPTED-RESULT' field, and a 'PERFORM' statement for 'WRITE-ADOPTION-BREED-REPORT'.

Failing the test

We have seen what happens when things go well and tests are passing, but what if they fail? What kind of information developer is going to see in that case? Let's see.

Open the ZTTDOGWS.cbl file under "test" folder



The screenshot shows the Visual Studio Code interface. The Explorer pane on the left displays the project structure under 'TESTDRIVE', with 'ZTTDOGWS.cbl' selected under the 'test' folder. The main editor pane shows the code for 'ZTTDOGWS.cbl' with line numbers 127 to 135. The code includes a 'display' statement for a message, a 'move' statement for 'low-values' to 'I_MockQSAM', a 'move' statement for 'OUTREP' to 'fileName' in 'ZWS_MockQSAM', a 'move' statement for '80' to 'recordSize' in 'ZWS_MockQSAM', a 'call' statement for 'ZTESTUT' using 'ZWS_MockQSAM' and 'qsamObject' in 'MOCK_OUTREP', and an 'exit.' statement.

Go to line number 192. Locate a code block which looks like the one on the screenshot. Change the value from 9 to 900. Save the file. Reference screenshot

```
194      display 'See workshop step 3.3 (#VALIDATEOUTREP)'  
195  
196      if OUTREP_SPY_WRITE_COUNT not = 900 then  
197          perform failOutrepWriteCount  
198      end-if
```

From the command line, run the “t4z” command. As you can see, tests can be executed not only from UI, but also via command line, handy when you want to integrate them with something like Jenkins pipeline.

Reference screenshot:



The screenshot shows a terminal window with a tab labeled 'TERMINAL'. The prompt is 'developer@ws-753461708474258-0:~/test4z/testdrive\$' and the command 't4z' has been entered. The terminal interface includes tabs for 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL', and 'EXPLORER FOR ENDEVOR'.

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  EXPLORER FOR ENDEVOR  
○ developer@ws-753461708474258-0:~/test4z/testdrive$ t4z
```

```

developer@ws-753461708474258-0:~/test4z/testdrive$ t4z
Test4z CLI version: 1.0.1870-develop
Executing Endeavor Team Build on 10.1.2.55 to build and run tests...

FAIL test/ZTTDOGWS.cbl
x ZTTDOGWS simple totals test (309 ms)
Invalid OUTREP count from ZTTDOGWS
SYSOUT:
See workshop step 1.3 (#LOADRECORDED)
See workshop step 1.4 (#MOCKADOPTS)
See workshop step 1.1 and step 1.2 (#MOCKOUTREP)
See workshop step 2.1 and step 2.2 (#REGISTERSPY)
THIS PROGRAM WILL TOTAL ADOPTED ZTPDOGOS BY BREED
TODAY IS : 20240514
See workshop step 3.1 (#SPYCALLBACK)
See workshop step 3.1 (#SPYCALLBACK)
See workshop step 3.2 (#SPYWRITE)
BREED SHIBA WAS ADOPTED 008 TIMES
See workshop step 3.1 (#SPYCALLBACK)
See workshop step 3.2 (#SPYWRITE)
BREED SCHNAUZER WAS ADOPTED 000 TIMES
See workshop step 3.1 (#SPYCALLBACK)
See workshop step 3.2 (#SPYWRITE)
BREED CORGI WAS ADOPTED 007 TIMES
See workshop step 3.1 (#SPYCALLBACK)
See workshop step 3.2 (#SPYWRITE)
BREED CHI WAS ADOPTED 001 TIMES
See workshop step 3.1 (#SPYCALLBACK)
See workshop step 3.2 (#SPYWRITE)
BREED POODLE WAS ADOPTED 000 TIMES
See workshop step 3.1 (#SPYCALLBACK)
See workshop step 3.2 (#SPYWRITE)
BREED POMERANIAN WAS ADOPTED 000 TIMES
See workshop step 3.1 (#SPYCALLBACK)
See workshop step 3.2 (#SPYWRITE)
BREED BULLDOG WAS ADOPTED 000 TIMES
See workshop step 3.1 (#SPYCALLBACK)
See workshop step 3.2 (#SPYWRITE)
BREED JINGO WAS ADOPTED 006 TIMES
See workshop step 3.1 (#SPYCALLBACK)
See workshop step 3.2 (#SPYWRITE)
BREED OTHER WAS ADOPTED 000 TIMES
See workshop step 3.1 (#SPYCALLBACK)
See workshop step 3.3 (#SPYCLOSE)
See workshop step 3.3 (#VALIDATEOUTREP)
OUTREP record count is 009

Tests Suites: 1 failed, 1 total
Tests: 1 failed, 1 total
Time: 0 s

ERROR Tests have failed. For more details see files 'test-out/ZLMSG.txt' and 'test-out/SYSOUT.txt'.

```

You will observe that the test run fails. The reason is that the expected Record count is 9 whereas we edited the value to be 900.

Add statements to Test File

Now let's see how Test4z extends VSCode intellisense to enhance the test editing experience.

Open the ZTTDOGWS.cbl file under "test" folder

Go to line 51 (Be under the PROCEDURE DIVISION section). Reference Screenshot:

≡ ZTTDOGWS.cbl ×

```
test > ≡ ZTTDOGWS.cbl > PROGRAM: ZTTDOGWS > PROCEDURE DIVISION
42      * Reference to ZTPDOGOS accumulator retrieved via ZWS_GetVariable.
43      1 ZTPDOGOS-ACCUMULATOR.
44      5 BREED-ADOPTIONS PIC 9(3) OCCURS 9 TIMES.
45
46      * Reference to ZTPDOGOS record from ZWS_SpyQSAM callback.
47      * (ADOPTED-REPORT-REC)
48      COPY ZTPDGARR.
49
50      PROCEDURE DIVISION.
51
52
53
```

Move the cursor to column 12.

Type "t4z me".

Note: It will start filling out the intellisense.

Select "t4z Message write".

Reference Screenshots:

```
50      PROCEDURE DIVISION.
51
52      t4z me
53      ☐ t4z Message write      t4z message write
54      ***** ☐ t4z MockESDS file      t4z mock ESDS file
55      * Register ☐ t4z MockESDS file data      t4z mock ESDS file with file data
56      ***** ☐ t4z MockESDS file recorded da...      t4z mock ESDS file with re...
57      move l ☐ t4z LLMockESDS file low-level      t4z low-level mock file ES...
58      set te ☐ t4z PrepareModule      t4z prepare module
59      move ' ☐ t4z MockKSDS file      t4z mock KSDS file
60      call Z ☐ t4z MockKSDS file data      t4z mock KSDS file with file data
61      ☐ t4z MockKSDS file with recorded d...      t4z mock KSDS file wi...
62      * Note: Tes ☐ t4z MockQSAM file      t4z mock QSAM file
63      * is prepar ☐ t4z MockQSAM file data      t4z mock QSAM file with file data
64      ☐ t4z MockQSAM file with recorded d...      t4z mock QSAM file wi...
```

This will fill in the code for the user.

```
49  
50      PROCEDURE DIVISION.  
51  
52          move low-values to I_Message in ZWS_Message  
53          move 'Your message' to messageText in ZWS_Message  
54          call ZTESTUT using ZWS_Message  
55  
--
```

Replace “Your Message” with “Hello Test4z” and save the file.

```
--  
50      PROCEDURE DIVISION.  
51  
52          move low-values to I_Message in ZWS_Message  
53          move 'Hello Test4z' to messageText in ZWS_Message  
54          call ZTESTUT using ZWS_Message  
55  
--
```

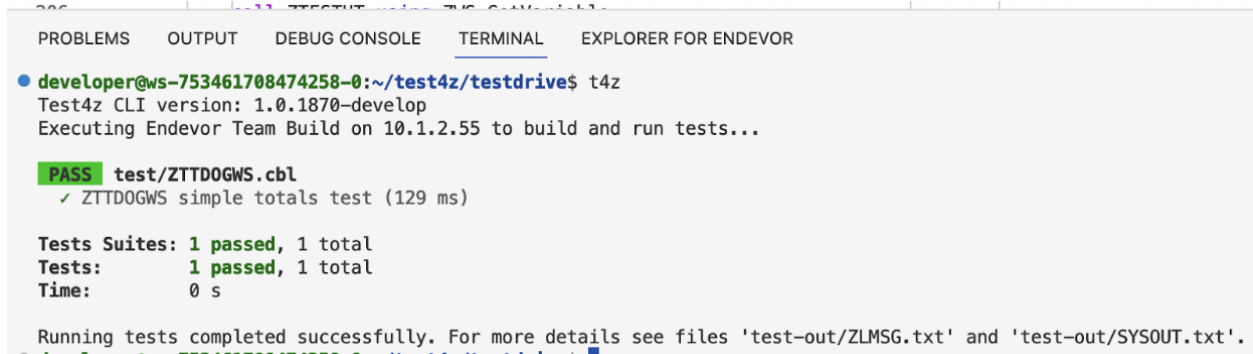
Let's fix the test so it is not failing again.

Go to line number 192.

Locate a code block which looks like the one on the screenshot. Change the value back from 900 to 9. Save the file. Reference screenshot:

```
194      display 'See workshop step 3.3 (#VALIDATEOUTREP)'  
195  
196      if OUTREP_SPY_WRITE_COUNT not = 9 then  
197          perform failOutrepWriteCount  
198      end-if
```

From the command line, Run “t4z”. Reference screenshot of command line output.



```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  EXPLORER FOR ENDEVOR

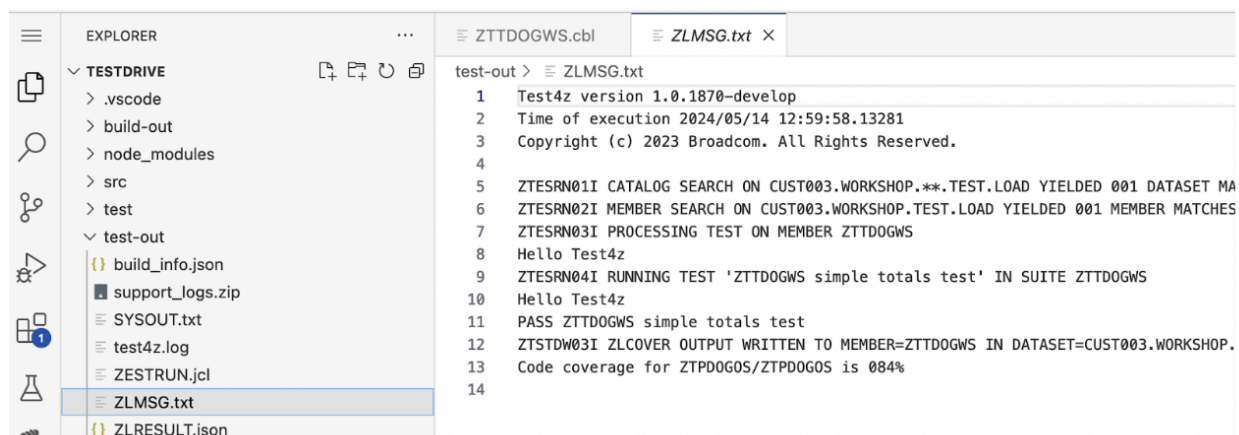
● developer@ws-753461708474258-0:~/test4z/testdrive$ t4z
Test4z CLI version: 1.0.1870-develop
Executing Endeavor Team Build on 10.1.2.55 to build and run tests...

PASS test/ZTTDOGWS.cbl
✓ ZTTDOGWS simple totals test (129 ms)

Tests Suites: 1 passed, 1 total
Tests:        1 passed, 1 total
Time:         0 s

Running tests completed successfully. For more details see files 'test-out/ZLMSG.txt' and 'test-out/SYSOUT.txt'.
```

Select “ZLMSG.txt” file from the “test-out” folder. This file contains the statements that are added to the test files. You will see the “Hello Test4z” statement that was added.



```
EXPLORER
TESTDRIVE
> .vscode
> build-out
> node_modules
> src
> test
  test-out
    build_info.json
    support_logs.zip
    SYSOUT.txt
    test4z.log
    ZESTRUN.jcl
    ZLMSG.txt
    ZLRESULT.json

test-out > ZLMSG.txt
1  Test4z version 1.0.1870-develop
2  Time of execution 2024/05/14 12:59:58.13281
3  Copyright (c) 2023 Broadcom. All Rights Reserved.
4
5  ZTESRN01I CATALOG SEARCH ON CUST003.WORKSHOP.**.TEST.LOAD YIELDED 001 DATASET MA
6  ZTESRN02I MEMBER SEARCH ON CUST003.WORKSHOP.TEST.LOAD YIELDED 001 MEMBER MATCHES
7  ZTESRN03I PROCESSING TEST ON MEMBER ZTTDOGWS
8  Hello Test4z
9  ZTESRN04I RUNNING TEST 'ZTTDOGWS simple totals test' IN SUITE ZTTDOGWS
10 Hello Test4z
11 PASS ZTTDOGWS simple totals test
12 ZTSTDW03I ZLCOVER OUTPUT WRITTEN TO MEMBER=ZTTDOGWS IN DATASET=CUST003.WORKSHOP.
13 Code coverage for ZTPDOGOS/ZTPDOGOS is 084%
14
```

Conclusion

This demo scenario shows how to generate a test coverage report, edit, fail a test case and add statements to a test file.