# Whiley Valid Test Results

Total number of tests: 593 tests.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Date | Failed | Passed | Skipped | Executed | Execution Time |
| 25/05/18  No optimisation | 76 errors, 25 failures | 422 | 70 | 523 | None |
| 26/06/18  No optimisation | 75 errors, 88 failures (only 16 failures, others due to precondition) | 360 (432) | 70 | 523 | 43.404s  44.723s  43.662s  44.068s  43.709s  = 43.913s |
| 26/06/18  With Optimisation | 97 errors, 78 failures (only 17 failures, others due to precondition) | 348 (409) | 70 | 523 | 42.457s  42.6s  43.003s  43.092s  42.911s  = 42.813s |
| 03/07/18  No optimisation | 17 errors, 102 failures (only 21 failures, others due to preconditions) | 404 (485) | 70 | 523 | 81.295s |
| 03/07/18  With Optimisation | 39 errors, 101 failures (only 31 failures)  RecursiveType\_Valid\_27 (156.165 s) | 383 (450) | 70 | 523 | 208.615s |
| 15/07/18  No optimisation | 10 errors 104 failures (only 23 failures)  Record\_valid\_5 (25 s) | 409 (490) | 70 | 523 | 97.292s |
| 15/07/18  With optimisation | 10 errors 104 failures (only 23 failures)  Record\_valid\_5 (20 s) | 409 (490) | 70 | 523 | 73.432s |
| 21/07/18  No optimisation | 13 errors 23 failures | 487 | 70 | 523 | 63.965s |
| 21/07/18  With optimisation | 13 errors 23 failures | 487 | 70 | 523 | 63.949s |
| 01/09/18  No opt, No memo | 1 error, 11 failures  ByteValid 1,2,3,4,7 method calls push time up | 498 | 69 | 524 | 606.339s |
| Memo only | 5 errors, 21 failures | 498 | 69 | 524 | 159.089s |
| Opt only | 19 errors 320 failures  ListAssign\_Valid\_3  21 minutes!  RecursiveType\_Valid\_27  Takes 63 minutes! |  | 69 | 524 | 5400.923s |
| Opt and memo | 45 errors, 290 failures |  | 70 | 523 | 279.169 s |

## Needs tweaking of limits but passed

81 tests, due to precondition failing on some or all inputs

|  |  |  |
| --- | --- | --- |
| Access\_Valid\_1 | Ensures\_Valid\_1 | While\_Valid\_12 |
| Access\_Valid\_2 | Ensures\_Valid\_4 | While\_Valid\_22 |
| Array\_Valid\_1 | Function\_Valid\_16 | While\_Valid\_23 |
| Array\_Valid\_3 | FunctionRef\_Valid\_4 | While\_Valid\_28 |
| Array\_Valid\_4 | Import\_Valid\_2 | While\_Valid\_30 |
| Array\_Valid\_5 | IntDiv\_Valid\_1 | While\_Valid\_33 |
| Array\_Valid\_6 | IntDiv\_Valid\_5 | While\_Valid\_38 |
| Array\_Valid\_7 | Lambda\_Valid\_7 | While\_Valid\_43 |
| Array\_Valid\_8 | ListAccess\_Valid\_1 | While\_Valid\_45 |
| Array\_Valid\_9 | ListAccess\_Valid\_3 | While\_Valid\_47 |
| BoolAssign\_Valid\_3 | ListAssign\_Valid\_3 | While\_Valid\_49 |
| BoolAssign\_Valid\_5 | ListAssign\_Valid\_4 | While\_Valid\_50 |
| BoolRequires\_Valid\_1 | ListAssign\_Valid\_5 | While\_Valid\_52 |
| ConstrainedInt\_Valid\_6 | ListAssign\_Valid\_11 | While\_Valid\_55 |
| ConstrainedInt\_Valid\_10 | ListAssign\_Valid\_12 | While\_Valid\_56 |
| ConstrainedInt\_Valid\_21 | ListGenerator\_Valid\_1 | While\_Valid\_59 |
| ConstrainedList\_Valid\_1 | ListGenerator\_Valid\_3 | While\_Valid\_60 |
| ConstrainedList\_Valid\_2 | Property\_Valid\_7 | While\_Valid\_61 |
| ConstrainedList\_Valid\_7 | Quantifiers\_Valid\_1 | While\_Valid\_62 |
| ConstrainedList\_Valid\_8 | RecordAssign\_Valid\_9 | While\_Valid\_63 |
| ConstrainedList\_Valid\_9 | RecordAssign\_Valid\_14 | While\_Valid\_64 |
| ConstrainedList\_Valid\_16 | Remainder\_Valid\_1 | While\_Valid\_65 |
| ConstrainedList\_Valid\_17 | Requires\_Valid\_1 | While\_Valid\_66 |
| ConstrainedList\_Valid\_20 | Switch\_Valid\_3 | While\_Valid\_67 |
| ConstrainedList\_Valid\_23 | Switch\_Valid\_7 | While\_Valid\_68 |
| ConstrainedList\_Valid\_25 | Update\_Valid\_2 |  |
| ConstrainedList\_Valid\_28 | VarDecl\_Valid\_2 |  |
| DoWhile\_Valid\_5 |  |  |
| DoWhile\_Valid\_6 |  |  |

## Assertion Failure

|  |  |
| --- | --- |
| Reason | Test |
| Assumption failure (3 tests)  IGNORED as assume error | * ListGenerator\_Valid\_2 * MessageSend\_Valid\_1 * ProcessAccess\_Valid\_2 |
| Fail to compile (4 tests)  Due to intersection type  IGNORED | * ConstrainedIntersection\_Valid\_1 (for the *is* clause, expected type byte found bool) * Intersection\_Valid\_1, 2 (intersections don’t work) * NegationType\_Valid\_3 (intersections don’t work) |
| Precondition failure (81 tests) | * See Table above |
| Upper limit > lower limit (for the negative and positive tests) (11 tests) | * Complex\_Valid\_1, 10, 11, 5 * TypeEquals\_Valid\_33, 45 * UnionType\_Valid\_5, 9, 11, 20 * Method\_Valid\_1 |
| Failed postcondition (2 tests due to assumptions)  IGNORED as assume error | * Assume\_Valid\_1   + Failing on negative values, due to assumption on value on line 8 causes output type invariant to fail so not quickcheck’s fault! * While\_Valid\_58\_result   + Failing on negative values, due to assumption on value on line 2 which causes assertion failure on line 8 so not quickcheck’s fault! |

## Error

|  |  |
| --- | --- |
| Reason | Test |
| StackOverflow | * Lifetime\_Lamda\_Valid\_4 (due to recursive method references) |

# Whiley Invalid Test Results

Total number of tests: 355 tests

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Date | Failed | Passed | Skipped | Total Executed | Execution Time |
| 25/05/18 | 4 errors, 18 failures | 316 | 17 | 338 | None |
| 27/06/18 (no optimisation) | 4 errors | 331 | 17 | 338 | 9.459s  9.06s  9.354s  9.497s  9.045s  = 9.283 s |
| 27/06/18 (With optimisation) | 18 errors | 320 | 17 | 338 | 8.764s  8.671s  8.607s  8.779s  8.623s  = 8.689s |
| 05/07/18 (no optimisation) | 3 errors (6 if ignoring preconditions) | 335 | 17 | 338 | 11.264s |
| 05/07/18 (With optimisation) | 15 errors (18 errors if ignoring precondition) | 323 | 17 | 338 | 9.943s |
| 15/07/18 (no optimisation) | 3 errors (6 if ignoring preconditions) | 335 | 17 | 338 | 10.665s |
| 15/07/18 (With optimisation) | 3 errors (6 if ignoring preconditions) | 335 | 17 | 338 | 11.154s |
| 21/07/18 (no optimisation) | 10 errors | 328 | 17 | 338 | 12.940s |
| 21/07/18 (With optimisation) | 10 errors | 328 | 17 | 338 | 11.091s |
| 05/08/18  No opt, no memo | 11 errors | 327 | 17 | 338 | 12.903s |
| 05/08/18  Memo only | 11 errors | 327 | 17 | 338 | 11.279s |
| 05/08/18  Opt only | 17 errors | 321 | 17 | 338 | 12.325s |
| 05/08/18  Opt and Memo | 12 errors | 326 | 17 | 338 | 11.413s |
| /09/18  No opt, no memo | 11 errors |  |  |  | 12.075s |
| /09/18  Memo only | 11 errors |  |  |  | 10.795s |
| /09/18  Opt only | 11 errors |  |  |  | 12.841s |
| /09/18  Opt and Memo | 14 errors |  |  |  | 10.482s |

Some tests could be passing due to the loop limits used.

|  |  |
| --- | --- |
| Reason | Test |
| ArrayIndexOutOfBounds is good? (4 tests) | * ArrayUpdate\_Invalid\_1 * While\_Invalid\_10, 17 * Array\_Invalid\_10 * Array\_Invalid\_24 (opt only) |
| NegativeArraySizeException (4 tests) | * DoWhile\_Invalid\_6, 7, 8 * While\_Invalid\_19 * While\_Invalid\_18, 20, 21, 22,23 (opt only) |
| DivisionByZero is good? (3 tests) | * Remainder\_Invalid\_1 * VarDecl\_Invalid\_2 * IntDiv\_Invalid\_1 |
| Runtime Exception | * UnionType\_Invalid\_9 (opt only) |

# Whiley Benchmark Tests

Total number of tests: 36 tests

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Date | Failed | Passed | Skipped | Executed | Execution Time |
| 2/07/18 | 5 errors 31 failures | 0 | 0 | 36 | None |
| 15/07/18  (No optimisation) | 9 errors, 15 failures (9 failures, others due to precondition) (004\_matrix takes 13 s) | 9 (15) | 1 | 33 | 41.18s  40.794s  40.812s  41.345s  39.091s  = 40.64s |
| 15/07/18  (With optimisation) | 9 errors, 15 failures (9 failures, others due to precondition) (004\_matrix takes 255 s) | 9 (15) | 2  (skip bipmatch as it takes too long) | 32 | 327.53s |
| 21/07/18  (No optimisation) | 7 errors, 2 failures  (40s on 029\_bipmatch) | 23 | 2 | 32 | 83.956s |
| 21/07/18  (With optimisation) | 8 errors, 2 failures  (212s on 004\_matrix) | 22 | 3  (skip bipmatch as it takes too long) | 31 | 296.26 s |
| /09/18  No opt, no memo | 10 errors, 4 failures |  | 6 | 27 | 302.656s (no methods)  396.637s (with skipped tests) |
| /09/18  Memo only | 10 errors, 4 failures | 14 | 1 | 32 | 634.411s (all)  81.427 s (with skipped tests) |
| /09/18  Opt only | 6 errors, 11 failures |  |  |  | 261.056s (with skipped tests) |
| /09/18  Opt and memo |  |  |  |  |  |

## Assertion Failure

|  |  |
| --- | --- |
| Reason | Test |
| Precondition tests (fixed now) | * 001\_average\main (negative limits) * 004\_matrix\main (positive limits) * 006\_queens\main (positive limits) * 012\_cyclic\main (positive limits) * 014\_lights\main (negative limits) * 017\_math\main (positive limits) * 026\_reverse\main (negative limits) * 022\_cars\main (positive limits) * 023\_microwave\main (positive limits) * 028\_flag\main (positive limits) |
| Due to precondition (1 test) | * 025\_tries\main (positive limits) |
| Due to upper > lower (4 tests) | * 015\_cashtill\main * 104\_tictactoe\board * 104\_tictactoe\game * 104\_tictactoe\main |

## Error

|  |  |
| --- | --- |
| Reason | Test |
| Null operand  Due to main method not handling an empty string as an input  I.e. [“”] is length 1  6 tests | * 001\_average (due to filesystem::open) * 003\_gcd (due to filesystem::open) * 004\_matrix (due to filesystem::open) * 007\_regex (due to filesystem::open) * 009\_lz77 (due to filesystem::open) * 010\_sort (due to filesystem::open) |
| RuntimeException  Cannot find library | * 011\_codejam\main (parser::skipWhiteSpace) |
| NullPointerException | * 013\_btree\main (Can’t find elts input/output definition in typesystem). * 102\_conway\main (due to filesystem::open) * 008\_scc\main (due to filesystem::open) |
| Optimisation failures | * 107\_minesweeper (precondition fails on subsequent methods due to no postcondition on previous methods) * 032\_arrlist – assume in main (no postcondition in length) * 024\_bit – due to array::append(bits,true) does not have postcondition |