

Test oracles:

Function/inverse pairs:

This is the way that the actual testing is done. The idea is that for your code to work properly, if you test two functions where one undoes the work of the other the input/output should be the same. The fuzz provides a predetermined shape or error and writes it to a file, then we run the file through our code to see if its output is the same as the input.

Nullspace transformations

One of the main functions of the program is to be able to parse the input correctly. The fuzz script is able to generate a valid shape test case with randomly inserted white spaces (including space, tabs, etc). So a test case with tabs separating the values will be treated the same as a input file separated by just spaces. The program also calls a null transform function and takes each value within a parsed vector and performs meaningless math operations like $1+x-1$ or $1*x$.

Test/result pair output

When producing a random test case, the function that was called to produce a specific shape or error file includes both the expected answer as well as the actual file contents. When writing to a file, it creates a test file that's to be run in a test folder and a result file of the same test number in a separate results folder. This way the output of the program can be compared with its expected output to check the results.