

Debug and test circuits

Common errors

The most common error you may get while trying to create a proof is:

constraint is not satisfied: $[(.. * ..) != (.. * ..) + (.. * ..) + (.. * ..)]$ The error means the solver couldn't satisfy at least one of the constraints with the provided witness.

note In some cases, you may encounter a couldn't solve computational constraint error, which means the solver couldn't perform an operation needed to verify a constraint. For example, a division by 0. tip You can run the program with `tags=debug` to display a more verbose stack trace. Test Engine For a faster development workflow, it is possible (and recommended) to execute a circuit without running a zk-SNARK prover.

`err := test . IsSolved (circuit , witness , field)` Under the hood it executes the instructions in the circuit, in plain Go, without generating a constraint system and calling a solver.

Print values

The easiest way to debug a circuit is to use `api.Println()`, which behaves like `fmt.Println`, except it outputs the values when they are solved. For example:

`api . Println ("A.X" , pubKey . A . X)` note With solving errors and `api.Println`, gnark outputs a stack trace which contain the exact line number to refer to in the circuit definition.

Test

You can implement tests as Go unit tests, in a `_test.go` file. For example:

```
// assert object wrapping testing.T assert := test . NewAssert ( t )

// declare the circuit var cubicCircuit Circuit

assert . ProverFailed ( & cubicCircuit ,

& Circuit { PrelImage :

42 , Hash :

42 , } )

assert . ProverSucceeded ( & cubicCircuit ,

& Circuit { PrelImage :

35 , Hash :

"16130099170765464552823636852555369511329944820189892919423002775646948828469" , } , test . WithCurves (

ecc . BN254 ) ) See the test package documentation for more details.
```

In particular, the default behavior of the assert helper is to test the circuit across all supported curves and backends, ensure correct serialization, and cross-test the constraint system solver against abig.Int test execution engine. [Edit this page](#) Last updated on Mar 2, 2023 by aybehrouz [Previous Compile circuits Next Create and verify proofs](#) * [Common errors](#) * * [Print values](#) * [Test](#)