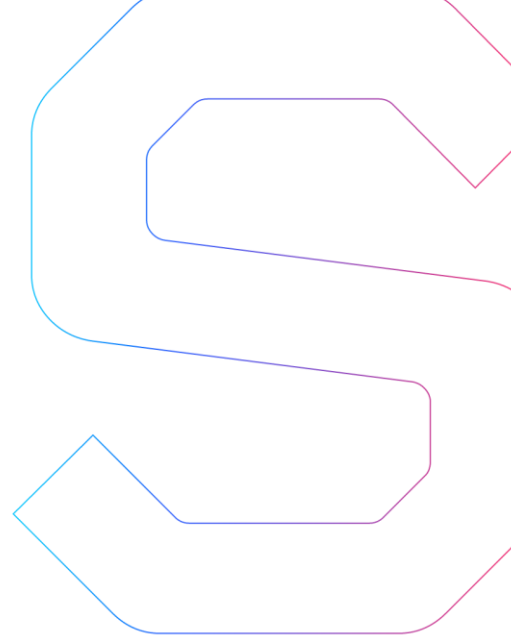


# SmartDec



## MinerOne Smart Contracts Security Analysis

This report is public.

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# Abstract

In this report we consider the security of the [MinerOne](#) project. Our task is to find and describe security issues in the smart contracts of the platform.

## Procedure

In our audit, we consider the following crucial features of the smart contract code:

1. Whether the code is secure.
2. Whether the code corresponds to the documentation (including whitepaper).
3. Whether the code meets best practices in efficient use of gas, code readability, etc.

We perform our audit according to the **shortened procedure**:

- automated analysis
  - we scan project's smart contracts with our own Solidity static code analyzer [SmartCheck](#)
  - we scan project's smart contracts with several publicly available automated Solidity analysis tools such as [Remix](#), [Oyente](#) and [Securify](#) (beta version since full version was unavailable at the moment this report was made)
  - we manually verify (reject or confirm) all the issues found by tools
- manual audit
  - we manually analyze smart contracts for security vulnerabilities
  - we check smart contracts logic and compare it with the one described in the whitepaper
- report
  - we reflect all the gathered information in the report

## Disclaimer

The audit does not give any warranties on the security of the code. One audit can not be considered enough. We always recommend proceeding to several independent audits and a public bug bounty program to ensure the security of the smart contracts. Besides, security audit is not an investment advice.

# Checked vulnerabilities

We have scanned MinerOne smart contracts for commonly known and more specific vulnerabilities. Here are some of the commonly known vulnerabilities that we considered (the full list includes them but is not limited to them):

- [Reentrancy](#)
- [Timestamp Dependence](#)
- [Gas Limit and Loops](#)
- [DoS with \(Unexpected\) Throw](#)
- [DOS with \(Unexpected\) revert](#)
- [DoS with Block Gas Limit](#)
- [Transaction-Ordering Dependence](#)
- [Use of tx.origin](#)
- [Exception disorder](#)
- [Gasless send](#)
- [Balance equality](#)
- [Byte array](#)
- [Transfer forwards all gas](#)
- [ERC20 API violation](#)
- [Malicious libraries](#)
- [Compiler version not fixed](#)
- [Redundant fallback function](#)
- [Send instead of transfer](#)
- [Style guide violation](#)
- [Unchecked external call](#)
- [Unchecked math](#)
- [Unsafe type inference](#)
- [Implicit visibility level](#)
- [Address hardcoded](#)
- [Using delete for arrays](#)
- [Integer overflow/underflow](#)
- [Locked money](#)
- [Private modifier](#)
- [Revert/require functions](#)
- [Using var](#)
- [Visibility](#)
- [Using blockhash](#)
- [Using SHA3](#)
- [Using suicide](#)
- [Using throw](#)
- [Using inline assembly](#)

# About the project

## Project Description

In our analysis we consider MinerOne [whitepaper](#) (minerone\_whitepaper.pdf, sha1sum: 2c772af9ba7ab82d7ba2fa3475e0ad35701be54) and smart contracts code (minerone.zip, sha1sum: 2f50d0ce61001b16fde7d49033ca1c7f65ec37ad).

## Project Architecture

For the audit, we have been provided with the following set of files:

- MinerOneToken.sol — inherits the [MintableToken](#) contract from the [OpenZeppelin](#) library version 1.6.0
- MinerOneTokenDeskProxy.sol
- MinerOneCrowdsale.sol — inherits the [Ownable](#) contract from the [OpenZeppelin](#) library version 1.6.0
- MinerOneCrowdsaleFlat.sol — flat file combined of MinerOneToken.sol and MinerOneCrowdsale.sol

Total size of the contracts is 698 lines of code.

Provided file set is a truffle project and an npm package.

The project compiles successfully with the truffle compile command (see the [compilation output](#) in [Appendix](#)).

## Automated Analysis

We used several publicly available automated Solidity analysis tools. Here are the combined results of their analysis.

Tool	Vulnerability	False positives	True positives
Remix	Fallback function of contract requires too much gas		2
	Gas requirement of function high	64	2
	Is constant but potentially should not be	1	

	Potential Violation of Checks-Effects-Interaction pattern	4	
	Potentially should be constant but is not	2	
	Use assert(x)/require(x)	1	
	use of "now"		1
	Variables have very similar names		8
<b>Total Remix</b>		<b>72</b>	<b>13</b>
<b>Securify*</b>	Transactions May Affect Ether Receiver	5	
	Transactions May Affects Ether Amount		6
<b>Total Securify*</b>		<b>5</b>	<b>6</b>
<b>SmartCheck</b>	Address Hardcoded		4
	Dos With Revert	1	
	Erc20 Transfer Should Throw	2	
	Gas Limit And Loops	1	2
	Private Modifier		2
	Reentrancy External Call	19	
	Revert Require		1
	Unchecked Math	1	
<b>Total SmartCheck</b>		<b>24</b>	<b>9</b>
<b>Solhint</b>	Avoid to make time-based decisions in your business logic		1
<b>Total Solhint</b>			<b>1</b>

Securify\* — beta version, full version is unavailable.

Cases when these issues lead to actual bugs or vulnerabilities are described in the next section.

## Manual Analysis

The contracts were manually analyzed in a shortened procedure, their logic was checked and compared with the one described in the whitepaper. Besides, the results of automated analysis were manually verified. All confirmed issues are described below.

### Critical issues

Critical issues seriously endanger smart contracts security. We highly recommend fixing them.

**The audit showed no critical issues.**

### Medium severity issues

Medium issues can influence smart contracts operation in current implementation. We highly recommend addressing them.

### Discrepancies with the whitepaper

Our audit brought out the following discrepancies with the whitepaper:

1. Crowdsale start time in the code and in the whitepaper differ.  
According to the whitepaper, page 29:

```
"The Crowdsale will begin at 12:00 GMT on Thursday, February 15, 2018."
```

MinerOneCrowdsale.sol, line 26:

```
uint256 public constant START_TIME = 1518652800; // 2018/02/15 00:00 UTC +0
```

2. According to the whitepaper, page 29:

```
"The minimum amount required to participate is 0.01 ETH."
```

However, minimum amount is 100 tokens, see MinerOneCrowdsale.sol, line 31:

```
uint256 public constant MIN_TOKEN_AMOUNT = 100e18;
```

3. There is no distribution of pre-ICO tokens in the contract. However, according to the whitepaper:

```
"A pre-ICO was held in late 2017 to raise initial funds, during which time 330,000 MIO Tokens were assigned at a preferred rate of 50% off."
```

4. According to the whitepaper:

```
"Date of crowdsale end: +90 days or date Hard Cap is reached, if sooner"
```

However, the owner can set end time at any moment with `setIcoEndTime` function.

5. According to the whitepaper:

```
"If the Crowdsale campaign does not reach its Soft Cap, all funds will be returned automatically to contributors via Ethereum-based smart contracts, excluding pre-ICO contributors."
```

However, there is no automatic refund in the contract: users have to call `claimRefund` or `refund` function.

6. There is no large purchase bonus and token desk bonus information in the whitepaper.

However, there is a bonus calculation in `MinerOneCrowdsale.sol`, lines 225-226:

```
bonus = bonus.add(tokens >= LARGE_PURCHASE ?  
LARGE_PURCHASE_BONUS : 0);  
bonus = bonus.add(msg.sender == tokenDeskProxy ?  
TOKEN_DESK_BONUS : 0);
```

7. According to the whitepaper:

```
"Upon commencement of mining operations, 77 percent of monthly net output (total output minus electricity, facility, and maintenance costs, including maintenance staff) will be converted to Ether (ETH) and automatically distributed to MIO Token Holders via Ethereum-based "smart contracts"."
```

However, the contracts do not distribute net output automatically: someone has to send ETH to the token contract manually.

We highly recommend fixing the whitepaper or/and the code, so that they will fully correspond to each other.

## Overpowered contract owner

The contract owner has the following entitlements:

1. Only owner can finalize crowdsale, including initiating refund process, minting token to the team, RnD and bounty, finishing minting.
2. Owner can mint tokens while crowdsale is in process, not sending ETH to the contract (for free) — `mintTokens` function. This way the owner can imitate soft cap. Owner cannot mint more than hard cap using this function.



3. Owner can change important crowdsale parameters at any moment using following functions: `setTokenMinter`, `setTokenDeskProxy`, `setIcoEndTime`.

We highly recommend limiting owner's possibilities, since such actions may be undesirable for investors.

## Private modifier

Contrary to a popular misconception, the `private` modifier does not make a variable invisible. We recommend taking into account that private variables will be visible:

- MinerOneCrowdsale.sol, line 48

```
address private tokenMinter;
```

- MinerOneCrowdsale.sol, line 49

```
address private tokenDeskProxy;
```

## Low severity issues

Low severity issues can influence smart contracts operation in future versions of code. We recommend to take them into account.

### ERC20 approve issue

There is [ERC20 approve issue](#) (MinerOneCrowdsaleFlat.sol, line 199). We recommend instructing users not to use `approve` directly and to use `increaseApproval/decreaseApproval` functions instead.

Another option is to change the approved amount to 0, wait for the transaction to be mined, and then to change the approved amount to the desired value — [link](#).

Changing the approved amount from a nonzero value to another nonzero value allows a double spending with a front-running attack.

### Ineffective use of gas

There is a calculation of remainder in MinerOneToken.sol, line 65:

```
account.remainder = numerator % totalSupply_;
```

The remainder is usually about some weis. However, gas usage for this calculation may cost more than the remainder itself.

We recommend to consider omitting the remainder.

### Gas Limit And Loops

The contract includes traversing through an array of variable length. If there are too many items in the array, the execution will fail due to an out-of-gas exception. The issue was found in the following lines:

- MinerOneCrowdsale.sol, line 101
- MinerOneToken.sol, line 120

We recommend paying attention to the sizes of arrays in transactions.

## Revert vs require

MinerOneCrowdsale.sol, line 132:

```
if (tokens < MIN_TOKEN_AMOUNT) revert();
```

We recommend using `require(condition);` instead of `if (condition) {revert();}` to reduce gas spending and for better code readability.

## Fallback function requires too much gas

The following fallback functions are large:

- MinerOneCrowdsale.sol, line 89
- MinerOneToken.sol, line 76

If the fallback function requires more than 2300 gas, the contract cannot receive ETH by some of standard ways. We recommend to avoid creating big fallback functions. If it is impossible, we recommend instructing users to explicitly call the function with more gas.

## Address Hardcoded

The following lines contain specified wallets' addresses, which are used for tokens and ETH:

- MinerOneCrowdsale.sol, line 11
- MinerOneCrowdsale.sol, line 13
- MinerOneCrowdsale.sol, line 15
- MinerOneCrowdsale.sol, line 17

These addresses might be used for some malicious activity. Thus, we highly recommend to check these addresses after the deployment.

## Misspelling

There is a typo in the code in MinerOneCrowdsale.sol, line 206  
`_tokekDeskProxy` should be changed to `_tokenDeskProxy`.

# Conclusion

In this report we have considered the security of MinerOne smart contracts. We performed our audit according to the [procedure](#) described above. The audit showed medium code quality and no critical issues. However, several medium and low severity issues were found. We highly recommend addressing them.

This analysis was performed by SmartDec.

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# Appendix

## Compilation output

```
$ truffle compile
Compiling .\contracts\Migrations.sol...
Compiling .\contracts\MinerOneCrowdsale.sol...
Compiling .\contracts\MinerOneCrowdsaleFlat.sol...
Compiling .\contracts\MinerOneToken.sol...
Compiling .\contracts\MinerOneTokenDeskProxy.sol...
Compiling zeppelin-
solidity/contracts/crowdsale/RefundVault.sol...
Compiling zeppelin-solidity/contracts/math/SafeMath.sol...
Compiling zeppelin-solidity/contracts/ownership/Ownable.sol...
Compiling zeppelin-
solidity/contracts/token/ERC20/MintableToken.sol...
Compiling zeppelin-solidity\contracts\math\SafeMath.sol...
Compiling zeppelin-solidity\contracts\ownership\Ownable.sol...
Compiling zeppelin-
solidity\contracts\token\ERC20\MintableToken.sol...
Compiling zeppelin-solidity\contracts\token\ERC20\ERC20.sol...
Compiling zeppelin-
solidity\contracts\token\ERC20\ERC20Basic.sol...
Compiling zeppelin-
solidity\contracts\token\ERC20\StandardToken.sol...
Writing artifacts to .\build\contracts
```

## Solhint output

```
$ solhint contracts/*.sol
contracts\Migrations.sol
  1:17  warning  Compiler version must be
fixed                                     compiler-fixed
  3:1   error    Definition must be surrounded with two blank
line indent two-lines-top-level-separator
  4:3   error    Expected indentation of 4 spaces but found
2 indent
  5:3   error    Expected indentation of 4 spaces but found
2 indent
```

```

5:15 error Variable name must be in
mixedCase var-name-mixedcase
7:3 error Expected indentation of 4 spaces but found
2 indent
8:5 error Expected indentation of 8 spaces but found
4 indent
9:3 error Expected indentation of 4 spaces but found
2 indent
11:3 error Expected indentation of 4 spaces but found
2 indent
12:5 error Expected indentation of 8 spaces but found
4 indent
13:3 error Expected indentation of 4 spaces but found
2 indent
15:3 error Expected indentation of 4 spaces but found
2 indent
16:5 error Expected indentation of 8 spaces but found
4 indent
17:3 error Expected indentation of 4 spaces but found
2 indent
19:3 error Expected indentation of 4 spaces but found
2 indent
19:28 error Function param name must be in
mixedCase func-param-name-mixedcase
20:5 error Expected indentation of 8 spaces but found
4 indent
21:5 error Expected indentation of 8 spaces but found
4 indent
22:3 error Expected indentation of 4 spaces but found
2 indent

```

contracts/MinerOneCrowdsale.sol

```

176:2 error Line length must be no more than 120 but
current length is 121 max-line-length
217:16 warning Avoid to make time-based decisions in your
business logic not-rely-on-time

```

contracts/MinerOneCrowdsaleFlat.sol

```

13:3 error Expected indentation of 4 spaces but found
2 indent
14:5 error Expected indentation of 8 spaces but found
4 indent
15:7 error Expected indentation of 12 spaces but found
6 indent
16:5 error Expected indentation of 8 spaces but found
4 indent

```

4	17:5	error	Expected indentation of 8 spaces but found indent
4	18:5	error	Expected indentation of 8 spaces but found indent
4	19:5	error	Expected indentation of 8 spaces but found indent
2	20:3	error	Expected indentation of 4 spaces but found indent
2	25:3	error	Expected indentation of 4 spaces but found indent
4	27:5	error	Expected indentation of 8 spaces but found indent
4	29:5	error	Expected indentation of 8 spaces but found indent
2	30:3	error	Expected indentation of 4 spaces but found indent
2	35:3	error	Expected indentation of 4 spaces but found indent
4	36:5	error	Expected indentation of 8 spaces but found indent
4	37:5	error	Expected indentation of 8 spaces but found indent
2	38:3	error	Expected indentation of 4 spaces but found indent
2	43:3	error	Expected indentation of 4 spaces but found indent
4	44:5	error	Expected indentation of 8 spaces but found indent
4	45:5	error	Expected indentation of 8 spaces but found indent
4	46:5	error	Expected indentation of 8 spaces but found indent
2	47:3	error	Expected indentation of 4 spaces but found indent
	56:1	error	Definition must be surrounded with two blank line indent two-lines-top-level-separator
2	57:3	error	Expected indentation of 4 spaces but found indent
2	60:3	error	Expected indentation of 4 spaces but found indent
	67:3	error	Definitions inside contract / library must be separated by one line separate-by-one-line-in-contract
2	67:3	error	Expected indentation of 4 spaces but found indent

4	68:5	error	Expected indentation of 8 spaces but found indent
2	69:3	error	Expected indentation of 4 spaces but found indent
2	74:3	error	Expected indentation of 4 spaces but found indent
4	75:5	error	Expected indentation of 8 spaces but found indent
4	76:5	error	Expected indentation of 8 spaces but found indent
2	77:3	error	Expected indentation of 4 spaces but found indent
2	83:3	error	Expected indentation of 4 spaces but found indent
4	84:5	error	Expected indentation of 8 spaces but found indent
4	85:5	error	Expected indentation of 8 spaces but found indent
4	86:5	error	Expected indentation of 8 spaces but found indent
2	87:3	error	Expected indentation of 4 spaces but found indent
	95:1	error	Definition must be surrounded with two blank line indent two-lines-top-level- separator
2	96:3	error	Expected indentation of 4 spaces but found indent
2	97:3	error	Expected indentation of 4 spaces but found indent
2	98:3	error	Expected indentation of 4 spaces but found indent
2	99:3	error	Expected indentation of 4 spaces but found indent
	99:3	warning	Event and function names must be different no-simple- event-func-name
	106:1	error	Definition must be surrounded with two blank line indent two-lines-top-level- separator
2	107:3	error	Expected indentation of 4 spaces but found indent
2	108:3	error	Expected indentation of 4 spaces but found indent
2	109:3	error	Expected indentation of 4 spaces but found indent
2	110:3	error	Expected indentation of 4 spaces but found indent

```

117:1 error Definition must be surrounded with two
blank line indent two-lines-top-level-
separator
118:3 error Expected indentation of 4 spaces but found
2 indent
120:3 error Expected indentation of 4 spaces but found
2 indent
120:3 warning Explicitly mark visibility of state-
state visibility
122:3 error Expected indentation of 4 spaces but found
2 indent
122:3 warning Explicitly mark visibility of state-
state visibility
127:3 error Expected indentation of 4 spaces but found
2 indent
128:5 error Expected indentation of 8 spaces but found
4 indent
129:3 error Expected indentation of 4 spaces but found
2 indent
136:3 warning Event and function names must be
different no-simple-
event-func-name
136:3 error Expected indentation of 4 spaces but found
2 indent
137:5 error Expected indentation of 8 spaces but found
4 indent
138:5 error Expected indentation of 8 spaces but found
4 indent
141:5 error Expected indentation of 8 spaces but found
4 indent
142:5 error Expected indentation of 8 spaces but found
4 indent
143:5 error Expected indentation of 8 spaces but found
4 indent
144:5 error Expected indentation of 8 spaces but found
4 indent
145:3 error Expected indentation of 4 spaces but found
2 indent
152:3 error Expected indentation of 4 spaces but found
2 indent
153:5 error Expected indentation of 8 spaces but found
4 indent
154:3 error Expected indentation of 4 spaces but found
2 indent

```



```

164:2 error Line length must be no more than 120 but
current length is 121 max-line-length
168:3 error Expected indentation of 4 spaces but found
2 indent
177:3 error Expected indentation of 4 spaces but found
2 indent
177:3 error Definitions inside contract / library must
be separated by one line separate-by-one-line-in-
contract
178:5 error Expected indentation of 8 spaces but found
4 indent
179:5 error Expected indentation of 8 spaces but found
4 indent
180:5 error Expected indentation of 8 spaces but found
4 indent
182:5 error Expected indentation of 8 spaces but found
4 indent
183:5 error Expected indentation of 8 spaces but found
4 indent
184:5 error Expected indentation of 8 spaces but found
4 indent
185:5 error Expected indentation of 8 spaces but found
4 indent
186:5 error Expected indentation of 8 spaces but found
4 indent
187:3 error Expected indentation of 4 spaces but found
2 indent
199:3 error Expected indentation of 4 spaces but found
2 indent
200:5 error Expected indentation of 8 spaces but found
4 indent
201:5 error Expected indentation of 8 spaces but found
4 indent
202:5 error Expected indentation of 8 spaces but found
4 indent
203:3 error Expected indentation of 4 spaces but found
2 indent
211:3 error Expected indentation of 4 spaces but found
2 indent
212:5 error Expected indentation of 8 spaces but found
4 indent
213:3 error Expected indentation of 4 spaces but found
2 indent
225:3 error Expected indentation of 4 spaces but found
2 indent
226:5 error Expected indentation of 8 spaces but found
4 indent

```

227:5	error	Expected indentation of 8 spaces but found indent
4		
228:5	error	Expected indentation of 8 spaces but found indent
4		
229:3	error	Expected indentation of 4 spaces but found indent
2		
241:3	error	Expected indentation of 4 spaces but found indent
2		
242:5	error	Expected indentation of 8 spaces but found indent
4		
243:5	error	Expected indentation of 8 spaces but found indent
4		
244:7	error	Expected indentation of 12 spaces but found indent
6		
245:5	error	Expected indentation of 8 spaces but found indent
4		
246:7	error	Expected indentation of 12 spaces but found indent
6		
247:5	error	Expected indentation of 8 spaces but found indent
4		
248:5	error	Expected indentation of 8 spaces but found indent
4		
249:5	error	Expected indentation of 8 spaces but found indent
4		
250:3	error	Expected indentation of 4 spaces but found indent
2		
261:1	error	Definition must be surrounded with two blank line indent two-lines-top-level- separator
262:3	error	Expected indentation of 4 spaces but found indent
2		
263:3	error	Expected indentation of 4 spaces but found indent
2		
265:3	error	Expected indentation of 4 spaces but found indent
2		
268:3	error	Definitions inside contract / library must be separated by one line separate-by-one-line-in- contract
268:3	error	Expected indentation of 4 spaces but found indent
2		
269:5	error	Expected indentation of 8 spaces but found indent
4		
270:5	error	Expected indentation of 8 spaces but found indent
4		
271:3	error	Expected indentation of 4 spaces but found indent
2		

279:3	error	Expected indentation of 4 spaces but found indent
2		
279:47	error	Visibility modifier must be first in list visibility-modifier-
of modifiers		order
279:3	warning	Event and function names must be no-simple-
different		event-func-name
280:5	error	Expected indentation of 8 spaces but found indent
4		
281:5	error	Expected indentation of 8 spaces but found indent
4		
282:5	error	Expected indentation of 8 spaces but found indent
4		
283:5	error	Expected indentation of 8 spaces but found indent
4		
284:5	error	Expected indentation of 8 spaces but found indent
4		
285:3	error	Expected indentation of 4 spaces but found indent
2		
291:28	error	Visibility modifier must be first in list visibility-modifier-
of modifiers		order
291:3	error	Expected indentation of 4 spaces but found indent
2		
292:5	error	Expected indentation of 8 spaces but found indent
4		
293:5	error	Expected indentation of 8 spaces but found indent
4		
294:5	error	Expected indentation of 8 spaces but found indent
4		
295:3	error	Expected indentation of 4 spaces but found indent
2		
304:1	error	Definition must be surrounded with two two-lines-top-level-
blank line indent		separator
305:3	error	Expected indentation of 4 spaces but found indent
2		
307:3	error	Expected indentation of 4 spaces but found indent
2		
309:3	error	Expected indentation of 4 spaces but found indent
2		
310:3	error	Expected indentation of 4 spaces but found indent
2		
311:3	error	Expected indentation of 4 spaces but found indent
2		

2	313:3	error	Expected indentation of 4 spaces but found indent
2	314:3	error	Expected indentation of 4 spaces but found indent
2	315:3	error	Expected indentation of 4 spaces but found indent
2	317:3	error	Expected indentation of 4 spaces but found indent
4	318:5	error	Expected indentation of 8 spaces but found indent
4	319:5	error	Expected indentation of 8 spaces but found indent
4	320:5	error	Expected indentation of 8 spaces but found indent
2	321:3	error	Expected indentation of 4 spaces but found indent
	323:38	error	Visibility modifier must be first in list visibility-modifier- order
2	323:3	error	Expected indentation of 4 spaces but found indent
4	324:5	error	Expected indentation of 8 spaces but found indent
4	325:5	error	Expected indentation of 8 spaces but found indent
2	326:3	error	Expected indentation of 4 spaces but found indent
	328:20	error	Visibility modifier must be first in list visibility-modifier- order
2	328:3	error	Expected indentation of 4 spaces but found indent
4	329:5	error	Expected indentation of 8 spaces but found indent
4	330:5	error	Expected indentation of 8 spaces but found indent
4	331:5	error	Expected indentation of 8 spaces but found indent
4	332:5	error	Expected indentation of 8 spaces but found indent
2	333:3	error	Expected indentation of 4 spaces but found indent
2	335:3	error	Expected indentation of 4 spaces but found indent
	335:28	error	Visibility modifier must be first in list visibility-modifier- order

```

336:5 error Expected indentation of 8 spaces but found
4 indent
337:5 error Expected indentation of 8 spaces but found
4 indent
338:5 error Expected indentation of 8 spaces but found
4 indent
339:3 error Expected indentation of 4 spaces but found
2 indent
341:3 error Expected indentation of 4 spaces but found
2 indent
342:5 error Expected indentation of 8 spaces but found
4 indent
343:5 error Expected indentation of 8 spaces but found
4 indent
344:5 error Expected indentation of 8 spaces but found
4 indent
345:5 error Expected indentation of 8 spaces but found
4 indent
346:5 error Expected indentation of 8 spaces but found
4 indent
347:3 error Expected indentation of 4 spaces but found
2 indent
448:5 warning Event and function names must be
different no-simple-
event-func-name
462:5 error Function order is incorrect, external
function can not go after public function func-order
660:2 error Line length must be no more than 120 but
current length is 121 max-line-length
701:16 warning Avoid to make time-based decisions in your
business logic not-rely-on-time

contracts/MinerOneToken.sol
117:5 error Function order is incorrect, external function
can not go after public function func-order

contracts/MinerOneTokenDeskProxy.sol
13:2 error Line length must be no more than 120 but
current length is 132 max-line-length

X 195 problems (186 errors, 9 warnings)

```

## Solium output

```
$ solium --dir contracts
contracts/Migrations.sol
  4:2      error Only use indent of 4 spaces.      indentation
  5:2      error Only use indent of 4 spaces.      indentation
  7:2      error Only use indent of 4 spaces.      indentation
  9:0      error Only use indent of 4 spaces.      indentation
 11:2     error Only use indent of 4 spaces.      indentation
 13:0     error Only use indent of 4 spaces.      indentation
 15:2     error Only use indent of 4 spaces.      indentation
 17:0     error Only use indent of 4 spaces.      indentation
 19:2     error Only use indent of 4 spaces.      indentation
 22:0     error Only use indent of 4 spaces.      indentation

contracts/MinerOneCrowdsale.sol
 217:15   warning   Avoid using 'now' (alias to
'block.timestamp').   security/no-block-members

contracts/MinerOneCrowdsaleFlat.sol
 13:2     error     Only use indent of 4
spaces.      indentation
 15:6     error     Only use indent of 8
spaces.      indentation
 20:0     error     Only use indent of 4
spaces.      indentation
 25:2     error     Only use indent of 4
spaces.      indentation
 30:0     error     Only use indent of 4
spaces.      indentation
 35:2     error     Only use indent of 4
spaces.      indentation
 38:0     error     Only use indent of 4
spaces.      indentation
 43:2     error     Only use indent of 4
spaces.      indentation
 47:0     error     Only use indent of 4
spaces.      indentation
 57:2     error     Only use indent of 4
spaces.      indentation
 60:2     error     Only use indent of 4
spaces.      indentation
 67:2     error     Only use indent of 4
spaces.      indentation
 69:0     error     Only use indent of 4
spaces.      indentation
```

74:2 spaces.	error	Only use indent of 4 indentation
77:0 spaces.	error	Only use indent of 4 indentation
83:2 spaces.	error	Only use indent of 4 indentation
87:0 spaces.	error	Only use indent of 4 indentation
96:2 spaces.	error	Only use indent of 4 indentation
97:2 spaces.	error	Only use indent of 4 indentation
98:2 spaces.	error	Only use indent of 4 indentation
99:2 spaces.	error	Only use indent of 4 indentation
107:2 spaces.	error	Only use indent of 4 indentation
108:2 spaces.	error	Only use indent of 4 indentation
109:2 spaces.	error	Only use indent of 4 indentation
110:2 spaces.	error	Only use indent of 4 indentation
118:2 spaces.	error	Only use indent of 4 indentation
120:2 spaces.	error	Only use indent of 4 indentation
122:2 spaces.	error	Only use indent of 4 indentation
127:2 spaces.	error	Only use indent of 4 indentation
129:0 spaces.	error	Only use indent of 4 indentation
136:2 spaces.	error	Only use indent of 4 indentation
145:0 spaces.	error	Only use indent of 4 indentation
152:2 spaces.	error	Only use indent of 4 indentation
154:0 spaces.	error	Only use indent of 4 indentation
168:2 spaces.	error	Only use indent of 4 indentation
177:2 spaces.	error	Only use indent of 4 indentation

187:0 spaces.	error	Only use indent of 4 indentation
199:2 spaces.	error	Only use indent of 4 indentation
203:0 spaces.	error	Only use indent of 4 indentation
211:2 spaces.	error	Only use indent of 4 indentation
213:0 spaces.	error	Only use indent of 4 indentation
225:2 spaces.	error	Only use indent of 4 indentation
229:0 spaces.	error	Only use indent of 4 indentation
241:2 spaces.	error	Only use indent of 4 indentation
244:6 spaces.	error	Only use indent of 8 indentation
246:6 spaces.	error	Only use indent of 8 indentation
250:0 spaces.	error	Only use indent of 4 indentation
262:2 spaces.	error	Only use indent of 4 indentation
263:2 spaces.	error	Only use indent of 4 indentation
265:2 spaces.	error	Only use indent of 4 indentation
268:2 spaces.	error	Only use indent of 4 indentation
271:0 spaces.	error	Only use indent of 4 indentation
279:2 spaces.	error	Only use indent of 4 indentation
285:0 spaces.	error	Only use indent of 4 indentation
291:2 spaces.	error	Only use indent of 4 indentation
295:0 spaces.	error	Only use indent of 4 indentation
305:2 spaces.	error	Only use indent of 4 indentation
307:2 spaces.	error	Only use indent of 4 indentation
309:2 spaces.	error	Only use indent of 4 indentation



310:2	error	Only use indent of 4 spaces.
311:2	error	Only use indent of 4 spaces.
313:2	error	Only use indent of 4 spaces.
314:2	error	Only use indent of 4 spaces.
315:2	error	Only use indent of 4 spaces.
317:2	error	Only use indent of 4 spaces.
321:0	error	Only use indent of 4 spaces.
323:2	error	Only use indent of 4 spaces.
326:0	error	Only use indent of 4 spaces.
328:2	error	Only use indent of 4 spaces.
333:0	error	Only use indent of 4 spaces.
335:2	error	Only use indent of 4 spaces.
339:0	error	Only use indent of 4 spaces.
341:2	error	Only use indent of 4 spaces.
347:0	error	Only use indent of 4 spaces.
701:15	warning	Avoid using 'now' (alias to 'block.timestamp'). security/no-block-members

✘ 84 errors, 2 warnings found.