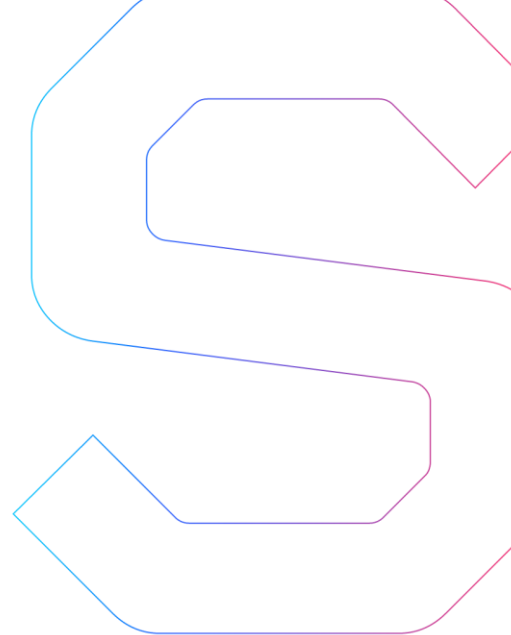


# SmartDec



## Increment Smart Contracts Security Analysis

This report is public.

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# Abstract

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

## Disclaimer

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

## Summary

In this report we have considered the security of Incremint smart contracts. We performed our audit according to the [procedure](#) described below.

The initial audit showed no critical issues and high code quality. However, several medium and low severity issues were found. Most of them were fixed in [The latest version of the code](#).

## General recommendations

The project has high code quality and does not contain issues that can affect operation of the code, except [Possible front-running attack on Voting contract](#). However, the Incremint team is aware about this issue and will detect and mitigate possible attacks by developing an off-chain solution.

We still recommend updating the whitepaper to avoid any [Discrepancies](#), removing [Misleading comments](#) throughout the code, and adding a [Consistency check](#).

However, mentioned above are minor issues. They do not influence code operation.

The text below is for technical use; it details the statements made in Summary and General recommendations.

# 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 following 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 [Solhint](#)
  - 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
  - we check ERC20 compliance
- report
  - we report all the issues found to the developer during the audit process
  - we check the issues fixed by the developer
  - we reflect all the gathered information in the report

# Checked vulnerabilities

We have scanned Increment 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](#)

# Project overview

## Project description

In our analysis we consider Increment [whitepaper](#) (“Increment.pdf”, sha1sum 5b87fe32b944690b2fc8dd3a02b6fa3f82f69ea3) and [smart contracts code](#) (version on commit 6f611ee).

## The latest version of the code

We have performed the check of the fixed vulnerabilities in the latest version of the code (version on commit 93b7a1c).

## Project architecture

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

- **IErc20.sol**
- **Lockable.sol**
- **MultiSigWallet.sol**
- **Owned.sol**
- **RefundBurnable.sol**
- **RefundFixedSupply.sol**
- **Tranches.sol** – inherits VotingConstants, Owned, and Lockable contracts
- **VotingConstants.sol**
- **Voting.sol** – inherits VotingConstants, Owned, Lockable, and Nowable contracts

And the set of files used for testing:

- **Erc20Mock.sol**
- **Nowable.sol**
- **VotingMock.sol**

The project contains 677 lines of Solidity code. The files are an npm package. The project also contains tests.

## Code logic

- **IErc20.sol** - interface for ERC20 token.
- **Lockable.sol** – implementation of anti re-entrancy guard.
- **MultiSigWallet.sol** – standard multisig wallet.
- **Owned.sol** – implements “owner” role logic.

- **RefundBurnable.sol** - sends ETH to msg.sender proportionally to sender's tokens share and burns the sent tokens
- **RefundFixedSupply.sol** - sends ETH to msg.sender proportionally to sender's tokens share and transfers tokens to 0 address
- **Tranches.sol** - holds information about the voting results and tranches approval and transfer or refund.
- **Voting.sol** – implements vote logic.
- **VotingConstants.sol** – set of constants used in Voting contract for vote's results.

# Automated analysis

We used several publicly available automated Solidity analysis tools.

Here are the combined results of SmartCheck, Solhint, and Remix. Oyente has found no issues (Oyente does not support current compiler version, so we changed compiler version in the code to 0.4.17 in order to perform analysis).

All the issues found by tools were manually checked (rejected or confirmed).

**False positives** are constructions that were discovered by the tools as vulnerabilities but do not consist a security threat.

**True positives** are constructions that were discovered by the tools as vulnerabilities and can actually be exploited by attackers or lead to incorrect contracts operation.

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

Tool	Vulnerability	False positives	True positives
Remix	Fallback function of contract requires too much gas	1	
	Gas requirement of function high	27	
	Is constant but potentially should not be.	4	
	Potential Violation of Checks-Effects-Interaction	7	
	Potential Violation of Checks-Effects-Interaction pattern	1	
	use of "assert(x)"	1	
	use of "call"	1	
	use of "now"	1	
	Variables have very similar names	32	
Total Remix		75	0



SmartCheck	Address Hardcoded	2	
	Constant Functions		1
	Dos With Revert	12	
	No Payable Fallback	6	
	Pragmas Version		10
	Private Modifier		2
	Reentrancy External Call	25	1
	Unchecked Math	25	5
	Visibility	1	13
<b>Total SmartCheck</b>		<b>71</b>	<b>32</b>
Solhint	Avoid to make time-based decisions in your business logic	1	
	Avoid to use “.call.value()”	1	
	Code contains empty block	2	
	Compiler version must be fixed		11
	Event and function names must be different	1	
	Explicitly mark visibility of state		14
	Fallback function must be simple	1	
	Possible reentrancy vulnerabilities.	2	
<b>Total Solhint</b>		<b>8</b>	<b>25</b>
<b>Total Overall</b>		<b>154</b>	<b>57</b>

# Manual analysis

The contracts were completely manually analyzed, their logic was checked and compared with the one described in the documentation. Besides, the results of the 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 has shown no critical issues.**

## Medium severity issues

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

### Possible front-running attack on Voting contract

One can create an arbitrary number of votes using same tokens. Thus, `seal()` function will require several transactions. Therefore, attacker will be able to transfer tokens from one of his accounts to another between `seal()` function calls. In this way the attacker can increase his overall weight. Though the attack is pretty complex, it still might be profitable for the attacker if some crucial decisions are made in accordance with the voting results. We highly recommend addressing this vulnerability.

*The Incremint team understands the issue and will detect and mitigate possible attacks using off-chain instruments.*

### Discrepancy with the whitepaper

Section 15 of the whitepaper describes the Incremint architecture. However, it does not document Tranches smart contract and its role. The figure in Page 20 is incorrect, it is Tranches smart contract, not Voting smart contract that co-signs Multisig contract. We recommend updating the whitepaper in order to reflect the actual state of the technical solution.

*This discrepancy was fixed in the latest version of the documentation.*

## Low severity issues

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

### Unchecked math

Solidity is prone to an integer over- and underflow. Overflow leads to unexpected effects and can lead to loss of funds if exploited by malicious account. The values in the following cases are not checked:

- RefundBurnable.sol, line 33
- RefundFixedSupply.sol, line 44

Although there is a chance of overflow in mentioned cases, any reasonable ERC-20 token will not cause any problem (see additional info in the Readme file).

### Misleading comments

The source code uses “fiat” word in contexts where crypto-currency is normally assumed.

For example, Tranches.sol, line 76:

```
/**
 * Accept incoming transfers as fiat money for current tranche.
 */
function () public payable {
    // ...
    // Record incoming fiat transfer.
    tranches[index].fiat += msg.value;
}
```

However, payments in the Ethereum blockchain are made in ETH, which is not a fiat currency.

The whitepaper mentions both crypto- and fiat currencies, so this issue should be clarified.

### No consistency check

Tranche percentage (`percent` parameter of `add()` function) is not checked for consistency in Tranches.sol, line 201. Due to a human mistake it is possible that the sum of all `percent` will exceed 100. We recommend adding input validation.

### Pragmas version

Solidity source files indicate the versions of the compiler they can be compiled with.

Example:

```
pragma solidity ^0.4.18; // bad: compiles w 0.4.18 and above
pragma solidity 0.4.18; // good: compiles w 0.4.18 only
```

We recommend following the latter example, as future compiler versions may handle certain language constructions in a way the developer did not foresee. Besides, we recommend using the latest compiler version – 0.4.23 at the moment (0.4.18 is used in the contracts).

*The issue has been fixed and is not present in the latest version of the code.*

## Implicit visibility level

There are variables and functions with implicit visibility level in the code:

- Erc20Mock.sol, line 10
- RefundFixedSupply.sol, line 17
- Tranches.sol, line 44

We recommend specifying visibility levels (`public`, `private`, `external`, `internal`) explicitly and correctly in order to improve code readability.

*All the issues have been fixed and are not present in the latest version of the code.*

## Source code structure

The directory with the contracts contains both the production contracts and the contracts that are used for testing only. We recommend separating the production and testing code.

*The issue has been fixed and is not present in the latest version of the code.*

This analysis was performed by SmartDec.

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# Appendix

## Solhint output

```
Erc20Mock.sol
  1:17 warning Compiler version must be fixed compiler-fixed
  6:1 error Definition must be surrounded with two blank line
indent two-lines-top-level-separator
  8:3 error Expected indentation of 4 spaces but found 2 indent
 10:3 error Expected indentation of 4 spaces but found 2 indent
 10:3 warning Explicitly mark visibility of state state-visibility
 16:3 error Expected indentation of 4 spaces but found 2 indent
 17:5 error Expected indentation of 8 spaces but found 4 indent
 18:3 error Expected indentation of 4 spaces but found 2 indent
 25:3 error Expected indentation of 4 spaces but found 2 indent
 26:5 error Expected indentation of 8 spaces but found 4 indent
 27:3 error Expected indentation of 4 spaces but found 2 indent
 34:3 error Expected indentation of 4 spaces but found 2 indent
 35:5 error Expected indentation of 8 spaces but found 4 indent
 36:3 error Expected indentation of 4 spaces but found 2 indent
 42:3 error Expected indentation of 4 spaces but found 2 indent
 43:5 error Expected indentation of 8 spaces but found 4 indent
 44:5 error Expected indentation of 8 spaces but found 4 indent
 45:5 error Expected indentation of 8 spaces but found 4 indent
 46:5 error Expected indentation of 8 spaces but found 4 indent
 47:3 error Expected indentation of 4 spaces but found 2 indent

IErc20.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
  6:3 error Expected indentation of 4 spaces but found 2 indent
  7:3 error Expected indentation of 4 spaces but found 2 indent
  8:3 error Expected indentation of 4 spaces but found 2 indent
  8:3 error Function order is incorrect, external function can not go
after external constant function func-order
  9:3 error Expected indentation of 4 spaces but found 2 indent
  9:3 error Function order is incorrect, external function can not go
after external constant function func-order
 10:3 error Function order is incorrect, external function can not go
after external constant function func-order
 10:3 error Expected indentation of 4 spaces but found 2 indent
 11:3 error Expected indentation of 4 spaces but found 2 indent
 13:3 warning Event and function names must be different no-simple-
event-func-name
 13:3 error Expected indentation of 4 spaces but found 2 indent
 14:3 error Expected indentation of 4 spaces but found 2 indent
 17:3 error Expected indentation of 4 spaces but found 2 indent
 17:3 error Function order is incorrect, external function can not go
after external constant function func-order
```

```

Lockable.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
  5:3 error Expected indentation of 4 spaces but found 2 indent
 12:3 error Expected indentation of 4 spaces but found 2 indent
 13:5 error Expected indentation of 8 spaces but found 4 indent
 14:5 error Expected indentation of 8 spaces but found 4 indent
 15:5 error Expected indentation of 8 spaces but found 4 indent
 16:3 error Expected indentation of 4 spaces but found 2 indent
 21:3 error Expected indentation of 4 spaces but found 2 indent
 22:5 error Expected indentation of 8 spaces but found 4 indent
 23:5 error Expected indentation of 8 spaces but found 4 indent
 24:3 error Expected indentation of 4 spaces but found 2 indent
 29:3 error Expected indentation of 4 spaces but found 2 indent
 30:5 error Expected indentation of 8 spaces but found 4 indent
 31:5 error Expected indentation of 8 spaces but found 4 indent
 32:3 error Expected indentation of 4 spaces but found 2 indent

MultiSigWallet.sol
  1:17 warning Compiler version must be fixed compiler-fixed
  5:1 error Definition must be surrounded with two blank line indent
two-lines-top-level-separator
 108:5 error Function order is incorrect, constructor function can not
go after fallback function func-order
 112:25 error Expression indentation is incorrect. Required space after
< expression-indent
 142:25 error Expression indentation is incorrect. Required space after
< expression-indent
 162:25 error Expression indentation is incorrect. Required space after
< expression-indent
 233:17 error Avoid to use ".call.value()()" avoid-call-value
 251:25 error Expression indentation is incorrect. Required space after
< expression-indent
 289:5 error Function order is incorrect, public function can not go
after internal function func-order
 294:25 error Expression indentation is incorrect. Required space after
< expression-indent
 303:5 error Function order is incorrect, public function can not go
after internal function func-order
 308:25 error Expression indentation is incorrect. Required space after
< expression-indent
 309:16 error Statement indentation is incorrect. Required no spaces
after (statement-indent
 316:5 error Function order is incorrect, public function can not go
after internal function func-order
 327:5 error Function order is incorrect, public function can not go
after internal function func-order
 335:15 error Expression indentation is incorrect. Required space after
= expression-indent
 335:20 error Expression indentation is incorrect. Required space after
< expression-indent
 341:15 error Expression indentation is incorrect. Required space after
= expression-indent
 341:20 error Expression indentation is incorrect. Required space after
< expression-indent

```

```

351:5 error Function order is incorrect, public function can not go
after internal function func-order
359:15 error Expression indentation is incorrect. Required space after
= expression-indent
359:20 error Expression indentation is incorrect. Required space after
< expression-indent
360:16 error Statement indentation is incorrect. Required no spaces
after (statement-indent
362:13 error Open bracket must be on same line. It must be indented by
other constructions by space bracket-align
367:15 error Expression indentation is incorrect. Required space after
= expression-indent
367:23 error Expression indentation is incorrect. Required space after
< expression-indent

```

#### Nowable.sol

```

1:17 warning Compiler version must be fixed compiler-fixed
6:1 error Definition must be surrounded with two blank line
indent two-lines-top-level-separator
8:3 error Expected indentation of 4 spaces but found 2 indent
10:3 error Expected indentation of 4 spaces but found 2 indent
11:5 error Expected indentation of 8 spaces but found 4 indent
11:36 warning Avoid to make time-based decisions in your business
logic not-rely-on-time
12:3 error Expected indentation of 4 spaces but found 2 indent
14:3 error Expected indentation of 4 spaces but found 2 indent
15:5 error Expected indentation of 8 spaces but found 4 indent
16:3 error Expected indentation of 4 spaces but found 2 indent

```

#### Owned.sol

```

1:17 warning Compiler version must be fixed compiler-fixed
4:1 error Definition must be surrounded with two blank line indent
two-lines-top-level-separator
6:3 error Expected indentation of 4 spaces but found 2 indent
8:3 error Expected indentation of 4 spaces but found 2 indent
9:5 error Expected indentation of 8 spaces but found 4 indent
10:5 error Expected indentation of 8 spaces but found 4 indent
11:3 error Expected indentation of 4 spaces but found 2 indent

```

#### RefundBurnable.sol

```

1:17 warning Compiler version must be fixed compiler-fixed
3:8 error Use double quotes for string literals quotes
5:1 error Definition must be surrounded with two blank line indent
two-lines-top-level-separator
7:3 error Expected indentation of 4 spaces but found 2 indent
9:3 error Expected indentation of 4 spaces but found 2 indent
10:5 error Expected indentation of 8 spaces but found 4 indent
11:3 error Expected indentation of 4 spaces but found 2 indent
16:3 error Expected indentation of 4 spaces but found 2 indent
16:30 warning Code contains empty block no-empty-blocks
21:3 error Expected indentation of 4 spaces but found 2 indent
24:5 error Expected indentation of 8 spaces but found 4 indent
27:5 error Expected indentation of 8 spaces but found 4 indent
30:5 error Expected indentation of 8 spaces but found 4 indent
33:5 error Expected indentation of 8 spaces but found 4 indent
36:5 error Expected indentation of 8 spaces but found 4 indent
39:5 error Expected indentation of 8 spaces but found 4 indent

```

```

41:3    error    Expected indentation of 4 spaces but found 2 indent

RefundFixedSupply.sol
  1:17  warning  Compiler version must be fixed compiler-fixed
  3:8   error    Use double quotes for string literals quotes
 13:1   error    Definition must be surrounded with two blank line indent
two-lines-top-level-separator
 15:3   error    Expected indentation of 4 spaces but found 2 indent
 17:3   error    Expected indentation of 4 spaces but found 2 indent
 17:3   warning  Explicitly mark visibility of state state-visibility
 19:3   error    Expected indentation of 4 spaces but found 2 indent
 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
 27:30  warning  Code contains empty block no-empty-blocks
 27:3   error    Expected indentation of 4 spaces but found 2 indent
 29:3   error    Expected indentation of 4 spaces but found 2 indent
 32:5   error    Expected indentation of 8 spaces but found 4 indent
 35:5   error    Expected indentation of 8 spaces but found 4 indent
 38:5   error    Expected indentation of 8 spaces but found 4 indent
 41:5   error    Expected indentation of 8 spaces but found 4 indent
 44:5   error    Expected indentation of 8 spaces but found 4 indent
 47:5   error    Expected indentation of 8 spaces but found 4 indent
 48:5   error    Expected indentation of 8 spaces but found 4 indent
 51:5   error    Expected indentation of 8 spaces but found 4 indent
 53:3   error    Expected indentation of 4 spaces but found 2 indent

Tranches.sol
  1:17  warning  Compiler version must be fixed compiler-fixed
  3:8   error    Use double quotes for string literals quotes
  4:8   error    Use double quotes for string literals quotes
  5:8   error    Use double quotes for string literals quotes
  6:8   error    Use double quotes for string literals quotes
  8:1   error    Definition must be surrounded with two blank line indent
two-lines-top-level-separator
  9:3   error    Expected indentation of 4 spaces but found 2 indent
 10:3   error    Expected indentation of 4 spaces but found 2 indent
 18:1   error    Definition must be surrounded with two blank line
indent two-lines-top-level-separator
 20:3   error    Expected indentation of 4 spaces but found 2 indent
 22:3   error    Expected indentation of 4 spaces but found 2 indent
 23:5   error    Expected indentation of 8 spaces but found 4 indent
 24:5   error    Expected indentation of 8 spaces but found 4 indent
 25:5   error    Expected indentation of 8 spaces but found 4 indent
 26:5   error    Expected indentation of 8 spaces but found 4 indent
 27:5   error    Expected indentation of 8 spaces but found 4 indent
 28:3   error    Expected indentation of 4 spaces but found 2 indent
 32:3   error    Expected indentation of 4 spaces but found 2 indent
 34:3   error    Expected indentation of 4 spaces but found 2 indent
 36:3   error    Expected indentation of 4 spaces but found 2 indent
 42:3   error    Expected indentation of 4 spaces but found 2 indent
 44:3   warning  Explicitly mark visibility of state state-visibility
 44:3   error    Expected indentation of 4 spaces but found 2 indent
 49:3   error    Expected indentation of 4 spaces but found 2 indent
 52:3   error    Expected indentation of 4 spaces but found 2 indent
 55:3   error    Expected indentation of 4 spaces but found 2 indent
 57:3   error    Expected indentation of 4 spaces but found 2 indent

```



```

61:3 error Indentation is incorrect indent
62:5 error Expected indentation of 8 spaces but found 4 indent
63:7 error Expected indentation of 12 spaces but found 6 indent
64:5 error Expected indentation of 8 spaces but found 4 indent
67:7 error Expected indentation of 12 spaces but found 6 indent
68:7 error Expected indentation of 12 spaces but found 6 indent
69:7 error Expected indentation of 12 spaces but found 6 indent
70:7 error Expected indentation of 12 spaces but found 6 indent
71:5 error Expected indentation of 8 spaces but found 4 indent
72:5 error Expected indentation of 8 spaces but found 4 indent
73:5 error Expected indentation of 8 spaces but found 4 indent
74:3 error Expected indentation of 4 spaces but found 2 indent
79:3 error Expected indentation of 4 spaces but found 2 indent
79:3 warning Fallback function must be simpleno-complex-fallback
82:5 error Expected indentation of 8 spaces but found 4 indent
85:5 error Expected indentation of 8 spaces but found 4 indent
86:3 error Expected indentation of 4 spaces but found 2 indent
88:3 error Expected indentation of 4 spaces but found 2 indent
91:5 error Expected indentation of 8 spaces but found 4 indent
92:3 error Expected indentation of 4 spaces but found 2 indent
94:3 error Expected indentation of 4 spaces but found 2 indent
95:5 error Expected indentation of 8 spaces but found 4 indent
96:5 error Expected indentation of 8 spaces but found 4 indent
97:3 error Expected indentation of 4 spaces but found 2 indent
100:3 error Expected indentation of 4 spaces but found 2 indent
100:3 error Function order is incorrect, public function can not go
after private function func-order
101:5 error Expected indentation of 8 spaces but found 4 indent
102:7 error Expected indentation of 12 spaces but found 6 indent
103:5 error Expected indentation of 8 spaces but found 4 indent
104:7 error Expected indentation of 12 spaces but found 6 indent
105:5 error Expected indentation of 8 spaces but found 4 indent
106:3 error Expected indentation of 4 spaces but found 2 indent
108:3 error Expected indentation of 4 spaces but found 2 indent
110:5 error Expected indentation of 8 spaces but found 4 indent
113:5 error Expected indentation of 8 spaces but found 4 indent
115:5 error Expected indentation of 8 spaces but found 4 indent
118:5 error Expected indentation of 8 spaces but found 4 indent
121:5 error Expected indentation of 8 spaces but found 4 indent
124:5 error Expected indentation of 8 spaces but found 4 indent
127:7 error Expected indentation of 12 spaces but found 6 indent
130:7 error Expected indentation of 12 spaces but found 6 indent
133:7 error Expected indentation of 12 spaces but found 6 indent
136:9 error Expected indentation of 16 spaces but found 8 indent
139:9 error Expected indentation of 16 spaces but found 8 indent
140:7 error Expected indentation of 12 spaces but found 6 indent
142:7 error Expected indentation of 12 spaces but found 6 indent
144:7 error Expected indentation of 12 spaces but found 6 indent
145:5 error Expected indentation of 8 spaces but found 4 indent
148:5 error Expected indentation of 8 spaces but found 4 indent
152:5 error Expected indentation of 8 spaces but found 4 indent
154:3 error Expected indentation of 4 spaces but found 2 indent
157:3 error Expected indentation of 4 spaces but found 2 indent
161:5 error Expected indentation of 8 spaces but found 4 indent
163:5 error Expected indentation of 8 spaces but found 4 indent
166:5 error Expected indentation of 8 spaces but found 4 indent
169:7 error Expected indentation of 12 spaces but found 6 indent

```

```

172:7 error Expected indentation of 12 spaces but found 6 indent
174:7 warning Possible reentrancy vulnerabilities. Avoid state changes
after transferreentrancy
174:7 error Expected indentation of 12 spaces but found 6 indent
175:5 error Expected indentation of 8 spaces but found 4 indent
178:7 error Expected indentation of 12 spaces but found 6 indent
181:7 error Expected indentation of 12 spaces but found 6 indent
183:7 warning Possible reentrancy vulnerabilities. Avoid state changes
after transferreentrancy
183:7 error Expected indentation of 12 spaces but found 6 indent
184:5 error Expected indentation of 8 spaces but found 4 indent
185:3 error Expected indentation of 4 spaces but found 2 indent
187:3 error Function order is incorrect, public function can not go
after private function func-order
187:3 error Expected indentation of 4 spaces but found 2 indent
188:5 error Expected indentation of 8 spaces but found 4 indent
189:3 error Expected indentation of 4 spaces but found 2 indent
191:3 error Function order is incorrect, public function can not go
after private function func-order
191:3 error Expected indentation of 4 spaces but found 2 indent
192:5 error Expected indentation of 8 spaces but found 4 indent
193:3 error Expected indentation of 4 spaces but found 2 indent
201:3 error Expected indentation of 4 spaces but found 2 indent
201:3 error Function order is incorrect, public function can not go
after private function func-order
204:5 error Expected indentation of 8 spaces but found 4 indent
207:5 error Expected indentation of 8 spaces but found 4 indent
209:5 error Expected indentation of 8 spaces but found 4 indent
210:7 error Indentation is incorrect indent
211:9 error Expected indentation of 10 spaces but found 8 indent
216:7 error Indentation is incorrect indent
218:3 error Expected indentation of 4 spaces but found 2 indent
227:3 error Expected indentation of 4 spaces but found 2 indent
227:3 error Function order is incorrect, public function can not go
after private function func-order
228:5 error Expected indentation of 8 spaces but found 4 indent
231:5 error Expected indentation of 8 spaces but found 4 indent
234:5 error Expected indentation of 8 spaces but found 4 indent
236:5 error Expected indentation of 8 spaces but found 4 indent
237:7 error Expected indentation of 12 spaces but found 6 indent
238:7 error Indentation is incorrect indent
239:7 error Indentation is incorrect indent
240:7 error Indentation is incorrect indent
241:7 error Indentation is incorrect indent
242:5 error Expected indentation of 8 spaces but found 4 indent
243:3 error Expected indentation of 4 spaces but found 2 indent
248:3 error Function order is incorrect, public function can not go
after private function func-order
248:3 error Expected indentation of 4 spaces but found 2 indent
251:5 error Expected indentation of 8 spaces but found 4 indent
253:5 error Expected indentation of 8 spaces but found 4 indent
256:5 error Expected indentation of 8 spaces but found 4 indent
260:5 error Expected indentation of 8 spaces but found 4 indent
264:5 error Expected indentation of 8 spaces but found 4 indent
265:3 error Expected indentation of 4 spaces but found 2 indent
267:3 error Expected indentation of 4 spaces but found 2 indent

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267:3 error Function order is incorrect, public function can not go
after private function func-order
270:5 error Expected indentation of 8 spaces but found 4 indent
273:5 error Expected indentation of 8 spaces but found 4 indent
275:5 error Expected indentation of 8 spaces but found 4 indent
276:3 error Expected indentation of 4 spaces but found 2 indent

```

Voting.sol

```

1:17 warning Compiler version must be fixed compiler-fixed
3:8 error Use double quotes for string literals quotes
4:8 error Use double quotes for string literals quotes
5:8 error Use double quotes for string literals quotes
6:8 error Use double quotes for string literals quotes
11:1 error Definition must be surrounded with two blank line
indent two-lines-top-level-separator
12:3 error Expected indentation of 4 spaces but found 2 indent
20:1 error Definition must be surrounded with two blank line
indent two-lines-top-level-separator
25:3 error Expected indentation of 4 spaces but found 2 indent
30:3 error Expected indentation of 4 spaces but found 2 indent
35:3 error Expected indentation of 4 spaces but found 2 indent
40:3 error Expected indentation of 4 spaces but found 2 indent
45:3 error Expected indentation of 4 spaces but found 2 indent
51:3 error Expected indentation of 4 spaces but found 2 indent
56:3 error Expected indentation of 4 spaces but found 2 indent
61:3 error Expected indentation of 4 spaces but found 2 indent
66:3 error Expected indentation of 4 spaces but found 2 indent
71:3 error Expected indentation of 4 spaces but found 2 indent
76:3 error Expected indentation of 4 spaces but found 2 indent
81:3 error Expected indentation of 4 spaces but found 2 indent
86:3 error Expected indentation of 4 spaces but found 2 indent
93:3 error Expected indentation of 4 spaces but found 2 indent
100:3 error Expected indentation of 4 spaces but found 2 indent
101:5 error Expected indentation of 8 spaces but found 4 indent
102:5 error Expected indentation of 8 spaces but found 4 indent
103:5 error Expected indentation of 8 spaces but found 4 indent
104:5 error Expected indentation of 8 spaces but found 4 indent
105:3 error Expected indentation of 4 spaces but found 2 indent
115:3 error Expected indentation of 4 spaces but found 2 indent
123:3 error Indentation is incorrect indent
124:5 error Expected indentation of 8 spaces but found 4 indent
125:5 error Expected indentation of 8 spaces but found 4 indent
126:5 error Expected indentation of 8 spaces but found 4 indent
127:5 error Expected indentation of 8 spaces but found 4 indent
128:5 error Expected indentation of 8 spaces but found 4 indent
129:5 error Expected indentation of 8 spaces but found 4 indent
130:5 error Expected indentation of 8 spaces but found 4 indent
131:5 error Expected indentation of 8 spaces but found 4 indent
132:5 error Expected indentation of 8 spaces but found 4 indent
133:3 error Expected indentation of 4 spaces but found 2 indent
135:3 error Expected indentation of 4 spaces but found 2 indent
136:5 error Expected indentation of 8 spaces but found 4 indent
137:3 error Expected indentation of 4 spaces but found 2 indent
139:3 error Expected indentation of 4 spaces but found 2 indent
140:5 error Expected indentation of 8 spaces but found 4 indent
141:3 error Expected indentation of 4 spaces but found 2 indent
143:3 error Expected indentation of 4 spaces but found 2 indent

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144:5 error Expected indentation of 8 spaces but found 4 indent
145:3 error Expected indentation of 4 spaces but found 2 indent
155:3 error Expected indentation of 4 spaces but found 2 indent
158:5 error Expected indentation of 8 spaces but found 4 indent
161:5 error Expected indentation of 8 spaces but found 4 indent
164:5 error Expected indentation of 8 spaces but found 4 indent
167:5 error Expected indentation of 8 spaces but found 4 indent
170:5 error Expected indentation of 8 spaces but found 4 indent
173:5 error Expected indentation of 8 spaces but found 4 indent
174:5 error Expected indentation of 8 spaces but found 4 indent
177:5 error Expected indentation of 8 spaces but found 4 indent
180:5 error Expected indentation of 8 spaces but found 4 indent
182:3 error Expected indentation of 4 spaces but found 2 indent
184:3 error Expected indentation of 4 spaces but found 2 indent
184:3 error Function order is incorrect, public function can not go
after private function func-order
185:5 error Expected indentation of 8 spaces but found 4 indent
186:3 error Expected indentation of 4 spaces but found 2 indent
188:3 error Function order is incorrect, public function can not go
after private function func-order
188:3 error Expected indentation of 4 spaces but found 2 indent
189:5 error Expected indentation of 8 spaces but found 4 indent
190:3 error Expected indentation of 4 spaces but found 2 indent
192:3 error Function order is incorrect, public function can not go
after private function func-order
192:3 error Expected indentation of 4 spaces but found 2 indent
193:5 error Expected indentation of 8 spaces but found 4 indent
194:3 error Expected indentation of 4 spaces but found 2 indent
199:3 error Expected indentation of 4 spaces but found 2 indent
199:3 error Function order is incorrect, public function can not go
after private function func-order
200:5 error Expected indentation of 8 spaces but found 4 indent
201:3 error Expected indentation of 4 spaces but found 2 indent
203:3 error Expected indentation of 4 spaces but found 2 indent
203:3 error Function order is incorrect, public function can not go
after private function func-order
204:5 error Expected indentation of 8 spaces but found 4 indent
205:3 error Expected indentation of 4 spaces but found 2 indent
210:3 error Expected indentation of 4 spaces but found 2 indent
210:3 error Function order is incorrect, public function can not go
after private function func-order
213:5 error Expected indentation of 8 spaces but found 4 indent
215:5 error Expected indentation of 8 spaces but found 4 indent
216:5 error Expected indentation of 8 spaces but found 4 indent
218:5 error Expected indentation of 8 spaces but found 4 indent
221:7 error Expected indentation of 12 spaces but found 6 indent
222:9 error Expected indentation of 16 spaces but found 8 indent
223:9 error Expected indentation of 16 spaces but found 8 indent
224:9 error Expected indentation of 16 spaces but found 8 indent
225:7 error Expected indentation of 12 spaces but found 6 indent
227:7 error Expected indentation of 12 spaces but found 6 indent
229:7 error Expected indentation of 12 spaces but found 6 indent
230:7 error Expected indentation of 12 spaces but found 6 indent
231:5 error Expected indentation of 8 spaces but found 4 indent
233:5 error Expected indentation of 8 spaces but found 4 indent
234:3 error Expected indentation of 4 spaces but found 2 indent
239:3 error Expected indentation of 4 spaces but found 2 indent

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239:3 error Function order is incorrect, public function can not go
after private function func-order
242:5 error Expected indentation of 8 spaces but found 4 indent
244:5 error Expected indentation of 8 spaces but found 4 indent
247:5 error Expected indentation of 8 spaces but found 4 indent
248:7 error Expected indentation of 12 spaces but found 6 indent
249:5 error Expected indentation of 8 spaces but found 4 indent
252:5 error Expected indentation of 8 spaces but found 4 indent
255:5 error Expected indentation of 8 spaces but found 4 indent
258:5 error Expected indentation of 8 spaces but found 4 indent
261:5 error Expected indentation of 8 spaces but found 4 indent
262:5 error Expected indentation of 8 spaces but found 4 indent
263:5 error Expected indentation of 8 spaces but found 4 indent
264:5 error Expected indentation of 8 spaces but found 4 indent
267:5 error Expected indentation of 8 spaces but found 4 indent
268:7 error Expected indentation of 12 spaces but found 6 indent
269:5 error Expected indentation of 8 spaces but found 4 indent
272:5 error Expected indentation of 8 spaces but found 4 indent
275:5 error Expected indentation of 8 spaces but found 4 indent
276:3 error Expected indentation of 4 spaces but found 2 indent
281:3 error Function has cyclomatic complexity 8 but allowed no more
than 7 code-complexity
281:3 error Function order is incorrect, public function can not go
after private function func-order
281:3 error Expected indentation of 4 spaces but found 2 indent
284:5 error Expected indentation of 8 spaces but found 4 indent
285:5 error Expected indentation of 8 spaces but found 4 indent
286:5 error Expected indentation of 8 spaces but found 4 indent
288:5 error Expected indentation of 8 spaces but found 4 indent
289:7 error Expected indentation of 12 spaces but found 6 indent
290:5 error Expected indentation of 8 spaces but found 4 indent
292:5 error Expected indentation of 8 spaces but found 4 indent
293:7 error Expected indentation of 12 spaces but found 6 indent
294:5 error Expected indentation of 8 spaces but found 4 indent
296:5 error Expected indentation of 8 spaces but found 4 indent
297:7 error Expected indentation of 12 spaces but found 6 indent
298:7 error Expected indentation of 12 spaces but found 6 indent
299:7 error Expected indentation of 12 spaces but found 6 indent
300:7 error Expected indentation of 12 spaces but found 6 indent
301:5 error Expected indentation of 8 spaces but found 4 indent
302:7 error Expected indentation of 12 spaces but found 6 indent
303:7 error Expected indentation of 12 spaces but found 6 indent
304:7 error Expected indentation of 12 spaces but found 6 indent
305:7 error Expected indentation of 12 spaces but found 6 indent
306:5 error Expected indentation of 8 spaces but found 4 indent
309:5 error Expected indentation of 8 spaces but found 4 indent
310:7 error Expected indentation of 12 spaces but found 6 indent
311:5 error Expected indentation of 8 spaces but found 4 indent
314:5 error Expected indentation of 8 spaces but found 4 indent
315:7 error Expected indentation of 12 spaces but found 6 indent
316:5 error Expected indentation of 8 spaces but found 4 indent
318:5 error Expected indentation of 8 spaces but found 4 indent
319:5 error Expected indentation of 8 spaces but found 4 indent
320:5 error Expected indentation of 8 spaces but found 4 indent
323:5 error Expected indentation of 8 spaces but found 4 indent
324:7 error Expected indentation of 12 spaces but found 6 indent
325:5 error Expected indentation of 8 spaces but found 4 indent

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327:5 error Expected indentation of 8 spaces but found 4 indent
328:7 error Expected indentation of 12 spaces but found 6 indent
329:5 error Expected indentation of 8 spaces but found 4 indent
330:3 error Expected indentation of 4 spaces but found 2 indent
```

VotingConstants.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
5:3 warning Explicitly mark visibility of state state-visibility
5:3 error Expected indentation of 4 spaces but found 2 indent
6:3 warning Explicitly mark visibility of state state-visibility
6:3 error Expected indentation of 4 spaces but found 2 indent
7:3 warning Explicitly mark visibility of state state-visibility
7:3 error Expected indentation of 4 spaces but found 2 indent
8:3 warning Explicitly mark visibility of state state-visibility
8:3 error Expected indentation of 4 spaces but found 2 indent
9:3 warning Explicitly mark visibility of state state-visibility
9:3 error Expected indentation of 4 spaces but found 2 indent
10:3 warning Explicitly mark visibility of state state-visibility
10:3 error Expected indentation of 4 spaces but found 2 indent
11:3 error Expected indentation of 4 spaces but found 2 indent
11:3 warning Explicitly mark visibility of state state-visibility
12:3 error Expected indentation of 4 spaces but found 2 indent
12:3 warning Explicitly mark visibility of state state-visibility
13:3 error Expected indentation of 4 spaces but found 2 indent
13:3 warning Explicitly mark visibility of state state-visibility
15:3 error Expected indentation of 4 spaces but found 2 indent
15:3 warning Explicitly mark visibility of state state-visibility
16:3 warning Explicitly mark visibility of state state-visibility
16:3 error Expected indentation of 4 spaces but found 2 indent
```

✘ 451 problems (419 errors, 32 warnings)