



# Simpl Smart Contract Audit Report

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# AUDITED DETAILS

## Audited Project

Project name	Token ticker	Blockchain
Simpl	IMPL	Ethereum

## Addresses

Contract address	0xe853383514939E94EFEF6040a0AC7fdDC3328D4D
Contract deployer address	0x08a151E17EBcD1c191aa78BcCf2427e402d03C9a

## Project Website

<a href="https://t.me/simplcoin">https://t.me/simplcoin</a>
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## Codebase

<a href="https://etherscan.io/address/0xe853383514939E94EFEF6040a0AC7fdDC3328D4D#code">https://etherscan.io/address/0xe853383514939E94EFEF6040a0AC7fdDC3328D4D#code</a>
---

# SUMMARY

\$IMPL Coin is an ERC20 token on the Ethereum blockchain. Its motto is simplicity. They strive for speed privacy and simplicity. It shows in the contract.

## Contract Summary

### Documentation Quality

Simpl provides a very good documentation with standard of solidity base code.

- The technical description is provided clearly and structured and also dont have any high risk issue.

### Code Quality

The Overall quality of the basecode is standard.

- Standard solidity basecode and rules are already followed by Simpl with the discovery of several low issues.

### Test Coverage

Test coverage of the project is 100% ( Through Codebase )

## Audit Findings Summary

- SWC-100 SWC-108 | Explicitly define visibility for all state variables on lines 673, 674, 675 and 701.
- SWC-101 | It is recommended to use vetted safe math libraries for arithmetic operations consistently on lines 415, 438, 471, 474, 496, 499, 525, 527, 577, 673, 673, 690, 690, 758, 758, 810, 810, 811 and 811.
- SWC-103 | Pragma statements can be allowed to float when a contract is intended on lines 10, 37, 122, 207, 237 and 626.
- SWC-110 SWC-123 | It is recommended to use of revert(), assert(), and require() in Solidity, and the new REVERT opcode in the EVM on lines 782 and 783.

# CONCLUSION

We have audited the Simpl project released on January 2023 to discover issues and identify potential security vulnerabilities in Simpl Project. This process is used to find technical issues and security loopholes which might be found in the smart contract.

The security audit report provides a satisfactory result with some low-risk issues.

The issues found in the Simpl smart contract code do not pose a considerable risk. The writing of the contract is close to the standard of writing contracts in general. The low-risk issues found are some arithmetic operation issues, a floating pragma is set, a state variable visibility is not set, and out of bounds array access which the index access expression can cause an exception in case of the use of an invalid array index value. We recommend setting the visibility of state variables explicitly. The default visibility for "feesToTransfer" is internal. Other possible visibility settings are public and private.

# AUDIT RESULT

Article	Category	Description	Result
Default Visibility	SWC-100 SWC-108	Functions and state variables visibility should be set explicitly. Visibility levels should be specified consciously.	ISSUE FOUND
Integer Overflow and Underflow	SWC-101	If unchecked math is used, all math operations should be safe from overflows and underflows.	ISSUE FOUND
Outdated Compiler Version	SWC-102	It is recommended to use a recent version of the Solidity compiler.	PASS
Floating Pragma	SWC-103	Contracts should be deployed with the same compiler version and flags that they have been tested thoroughly.	ISSUE FOUND
Unchecked Call Return Value	SWC-104	The return value of a message call should be checked.	PASS
Unprotected Ether Withdrawal	SWC-105	Due to missing or insufficient access controls, malicious parties can withdraw from the contract.	PASS
SELFDESTRUCT Instruction	SWC-106	The contract should not be self-destructible while it has funds belonging to users.	PASS
Reentrancy	SWC-107	Check effect interaction pattern should be followed if the code performs recursive call.	PASS
Uninitialized Storage Pointer	SWC-109	Uninitialized local storage variables can point to unexpected storage locations in the contract.	PASS
Assert Violation	SWC-110 SWC-123	Properly functioning code should never reach a failing assert statement.	ISSUE FOUND
Deprecated Solidity Functions	SWC-111	Deprecated built-in functions should never be used.	PASS
Delegate call to Untrusted Callee	SWC-112	Delegatecalls should only be allowed to trusted addresses.	PASS

DoS (Denial of Service)	SWC-113 SWC-128	Execution of the code should never be blocked by a specific contract state unless required.	PASS
Race Conditions	SWC-114	Race Conditions and Transactions Order Dependency should not be possible.	PASS
Authorization through tx.origin	SWC-115	tx.origin should not be used for authorization.	PASS
Block values as a proxy for time	SWC-116	Block numbers should not be used for time calculations.	PASS
Signature Unique ID	SWC-117 SWC-121 SWC-122	Signed messages should always have a unique id. A transaction hash should not be used as a unique id.	PASS
Incorrect Constructor Name	SWC-118	Constructors are special functions that are called only once during the contract creation.	PASS
Shadowing State Variable	SWC-119	State variables should not be shadowed.	PASS
Weak Sources of Randomness	SWC-120	Random values should never be generated from Chain Attributes or be predictable.	PASS
Write to Arbitrary Storage Location	SWC-124	The contract is responsible for ensuring that only authorized user or contract accounts may write to sensitive storage locations.	PASS
Incorrect Inheritance Order	SWC-125	When inheriting multiple contracts, especially if they have identical functions, a developer should carefully specify inheritance in the correct order. The rule of thumb is to inherit contracts from more /general/ to more /specific/.	PASS
Insufficient Gas Griefing	SWC-126	Insufficient gas grieving attacks can be performed on contracts which accept data and use it in a sub-call on another contract.	PASS
Arbitrary Jump Function	SWC-127	As Solidity doesnt support pointer arithmetics, it is impossible to change such variable to an arbitrary value.	PASS

Typographical Error	SWC-129	A typographical error can occur for example when the intent of a defined operation is to sum a number to a variable.	PASS
Override control character	SWC-130	Malicious actors can use the Right-To-Left-Override unicode character to force RTL text rendering and confuse users as to the real intent of a contract.	PASS
Unused variables	SWC-131 SWC-135	Unused variables are allowed in Solidity and they do not pose a direct security issue.	PASS
Unexpected Ether balance	SWC-132	Contracts can behave erroneously when they strictly assume a specific Ether balance.	PASS
Hash Collisions Variable	SWC-133	Using abi.encodePacked() with multiple variable length arguments can, in certain situations, lead to a hash collision.	PASS
Hardcoded gas amount	SWC-134	The transfer() and send() functions forward a fixed amount of 2300 gas.	PASS
Unencrypted Private Data	SWC-136	It is a common misconception that private type variables cannot be read.	PASS



# SMART CONTRACT ANALYSIS

Started	Sunday Jan 22 2023 18:18:38 GMT+0000 (Coordinated Universal Time)
Finished	Monday Jan 23 2023 06:09:24 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	Simpl.sol

## Detected Issues

ID	Title	Severity	Status
SWC-101	ARITHMETIC OPERATION "+" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "+=" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "+=" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "+=" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-=" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "**" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "**" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "/" DISCOVERED	low	acknowledged

SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "/" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "/" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
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SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
SWC-108	STATE VARIABLE VISIBILITY IS NOT SET.	low	acknowledged
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SWC-108	STATE VARIABLE VISIBILITY IS NOT SET.	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged

## SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 415

### low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

### Source File

- Simpl.sol

### Locations

```
414     address owner = _msgSender();
415     _approve(owner, spender, allowance(owner, spender) + addedValue);
416     return true;
417 }
418
419
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 438

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- Simpl.sol

## Locations

```
437     unchecked {  
438         _approve(owner, spender, currentAllowance - subtractedValue);  
439     }  
440  
441     return true;  
442
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 471

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- Simpl.sol

## Locations

```
470     unchecked {
471         _balances[from] = fromBalance - amount;
472         // Overflow not possible: the sum of all balances is capped by totalSupply, and the
sum is preserved by
473         // decrementing then incrementing.
474         _balances[to] += amount;
475     }
```

## SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 474

### low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

### Source File

- Simpl.sol

### Locations

```
473 // decrementing then incrementing.  
474 _balances[to] += amount;  
475 }  
476  
477 emit Transfer(from, to, amount);  
478
```

# SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 496

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- Simpl.sol

## Locations

```
495
496  _totalSupply += amount;
497  unchecked {
498    // Overflow not possible: balance + amount is at most totalSupply + amount, which
    is checked above.
499    _balances[account] += amount;
500
```

# SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 499

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- Simpl.sol

## Locations

```
498 // Overflow not possible: balance + amount is at most totalSupply + amount, which
    is checked above.
499 _balances[account] += amount;
500 }
501 emit Transfer(address(0), account, amount);
502
503
```



# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 525

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- Simpl.sol

## Locations

```
524     unchecked {  
525         _balances[account] = accountBalance - amount;  
526         // Overflow not possible: amount <= accountBalance <= totalSupply.  
527         _totalSupply -= amount;  
528     }  
529
```

# SWC-101 | ARITHMETIC OPERATION "-=" DISCOVERED

LINE 527

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- Simpl.sol

## Locations

```
526 // Overflow not possible: amount <= accountBalance <= totalSupply.  
527 _totalSupply -= amount;  
528 }  
529  
530 emit Transfer(account, address(0), amount);  
531
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 577

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- Simpl.sol

## Locations

```
576     unchecked {  
577         _approve(owner, spender, currentAllowance - amount);  
578     }  
579 }  
580 }  
581
```

# SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 673

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- Simpl.sol

## Locations

```
672 // basic characteristics
673 uint256 supply = 1000000 * 10 ** decimals();
674 string tokenName = "Simpl";
675 string tokenSymbol = "IMPL";
676
677
```

# SWC-101 | ARITHMETIC OPERATION "\*\*" DISCOVERED

LINE 673

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- Simpl.sol

## Locations

```
672 // basic characteristics
673 uint256 supply = 1000000 * 10 ** decimals();
674 string tokenName = "Simpl";
675 string tokenSymbol = "IMPL";
676
677
```

# SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 690

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- Simpl.sol

## Locations

```
689  uint256 private swapThreshold = 100;
690  uint256 private _swapThreshold = swapThreshold * 10 ** decimals();
691
692  // address where the Uniswap v2 Router02 is deployed
693  address public UniswapV2Router02Address =
address(0x7a250d5630B4cF539739dF2C5dAcb4c659F2488D);
694
```

# SWC-101 | ARITHMETIC OPERATION "\*\*" DISCOVERED

LINE 690

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- Simpl.sol

## Locations

```
689  uint256 private swapThreshold = 100;
690  uint256 private _swapThreshold = swapThreshold * 10 ** decimals();
691
692  // address where the Uniswap v2 Router02 is deployed
693  address public UniswapV2Router02Address =
address(0x7a250d5630B4cF539739dF2C5dAcb4c659F2488D);
694
```

# SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 758

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- Simpl.sol

## Locations

```
757     if (from == uniswapV2Pair && _buyTax > 0) {  
758         feesToTransfer = (amount * _buyTax) / 100;  
759     }  
760 }  
761  
762
```



# SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 758

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- Simpl.sol

## Locations

```
757     if (from == uniswapV2Pair && _buyTax > 0) {  
758         feesToTransfer = (amount * _buyTax) / 100;  
759     }  
760 }  
761  
762
```

# SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 810

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- Simpl.sol

## Locations

```
809
810  uint256 ethForDev = (ethBalance * _developmentShare) / 100;
811  uint256 ethForMarketing = (ethBalance * _marketingShare) / 100;
812
813  (success,) = address(_developmentAddress).call{value: ethForDev}("");
814
```

# SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 810

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- Simpl.sol

## Locations

```
809
810  uint256 ethForDev = (ethBalance * _developmentShare) / 100;
811  uint256 ethForMarketing = (ethBalance * _marketingShare) / 100;
812
813  (success,) = address(_developmentAddress).call{value: ethForDev}("");
814
```

# SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 811

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- Simpl.sol

## Locations

```
810  uint256 ethForDev = (ethBalance * _developmentShare) / 100;
811  uint256 ethForMarketing = (ethBalance * _marketingShare) / 100;
812
813  (success,) = address(_developmentAddress).call{value: ethForDev}("");
814  (success,) = address(_marketingAddress).call{value: ethForMarketing}("");
815
```

# SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 811

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- Simpl.sol

## Locations

```
810  uint256 ethForDev = (ethBalance * _developmentShare) / 100;
811  uint256 ethForMarketing = (ethBalance * _marketingShare) / 100;
812
813  (success,) = address(_developmentAddress).call{value: ethForDev}("");
814  (success,) = address(_marketingAddress).call{value: ethForMarketing}("");
815
```

## SWC-103 | A FLOATING PRAGMA IS SET.

LINE 10

### low SEVERITY

The current pragma Solidity directive is `""^0.8.0""`. It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

### Source File

- Simpl.sol

### Locations

```
9
10  pragma solidity ^0.8.0;
11
12  /**
13   * @dev Provides information about the current execution context, including the
14
```

## SWC-103 | A FLOATING PRAGMA IS SET.

LINE 37

### low SEVERITY

The current pragma Solidity directive is `""^0.8.0""`. It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

### Source File

- Simpl.sol

### Locations

```
36
37  pragma solidity ^0.8.0;
38
39
40  /**
41
```

## SWC-103 | A FLOATING PRAGMA IS SET.

LINE 122

### low SEVERITY

The current pragma Solidity directive is ""^0.8.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

### Source File

- Simpl.sol

### Locations

```
121
122  pragma solidity ^0.8.0;
123
124  /**
125   * @dev Interface of the ERC20 standard as defined in the EIP.
126
```



## SWC-103 | A FLOATING PRAGMA IS SET.

LINE 207

### low SEVERITY

The current pragma Solidity directive is `""^0.8.0""`. It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

### Source File

- Simpl.sol

### Locations

```
206
207  pragma solidity ^0.8.0;
208
209
210  /**
211
```

## SWC-103 | A FLOATING PRAGMA IS SET.

LINE 237

### low SEVERITY

The current pragma Solidity directive is `""^0.8.0""`. It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

### Source File

- Simpl.sol

### Locations

```
236
237  pragma solidity ^0.8.0;
238
239
240
241
```

## SWC-103 | A FLOATING PRAGMA IS SET.

LINE 626

### low SEVERITY

The current pragma Solidity directive is `""^0.8.17"`. It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

### Source File

- Simpl.sol

### Locations

```
625
626  pragma solidity ^0.8.17;
627
628
629
630
```

## SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 673

### low SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "supply" is internal. Other possible visibility settings are public and private.

### Source File

- Simpl.sol

### Locations

```
672 // basic characteristics
673 uint256 supply = 1000000 * 10 ** decimals();
674 string tokenName = "Simpl";
675 string tokenSymbol = "IMPL";
676
677
```

## SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 674

### low SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "tokenName" is internal. Other possible visibility settings are public and private.

### Source File

- Simpl.sol

### Locations

```
673     uint256 supply = 1000000 * 10 ** decimals();
674     string tokenName = "Simpl";
675     string tokenSymbol = "IMPL";
676
677     // buy tax in percentage points (i.e., 5 = 5%)
678
```

## SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 675

### low SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "tokenSymbol" is internal. Other possible visibility settings are public and private.

### Source File

- Simpl.sol

### Locations

```
674 string tokenName = "Simpl";
675 string tokenSymbol = "IMPL";
676
677 // buy tax in percentage points (i.e., 5 = 5%)
678 uint256 private _buyTax = 5;
679
```

## SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 701

### low SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "feesToTransfer" is internal. Other possible visibility settings are public and private.

### Source File

- Simpl.sol

### Locations

```
700 //uint256 amountToTransfer;
701 uint256 feesToTransfer;
702
703 constructor() ERC20(tokenName, tokenSymbol) {
704 // create reference to Uniswap v2 router
705
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 782

### low SEVERITY

The index access expression can cause an exception in case of use of invalid array index value.

### Source File

- Simpl.sol

### Locations

```
781  address[] memory path = new address[](2);
782  path[0] = address(this);
783  path[1] = uniswapV2Router.WETH();
784
785  _approve(address(this), address(uniswapV2Router), tokenAmount);
786
```



## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 783

### low SEVERITY

The index access expression can cause an exception in case of use of invalid array index value.

### Source File

- Simpl.sol

### Locations

```
782  path[0] = address(this);  
783  path[1] = uniswapV2Router.WETH();  
784  
785  _approve(address(this), address(uniswapV2Router), tokenAmount);  
786  
787
```

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This is a limited report on our findings based on our analysis, in accordance with good industry practice as of the date of this report, in relation to cybersecurity vulnerabilities and issues in the framework and algorithms based on smart contracts, the details of which are set out in this report. In order to get a full view of our analysis, it is crucial for you to read the full report. While we have done our best in conducting our analysis and producing this report, it is important to note that you should not rely on this report and cannot claim against us on the basis of what it says or doesn't say, or how we produced it, and it is important for you to conduct your own independent investigations before making any decisions. We go into more detail on this in the below disclaimer below – please make sure to read it in full.

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