



# Elephant Money Stable Smart Contract Audit Report

# TABLE OF CONTENTS

## [Audited Details](#)

- Audited Project
- Blockchain
- Addresses
- Project Website
- Codebase

## [Summary](#)

- Contract Summary
- Audit Findings Summary
- Vulnerabilities Summary

## [Conclusion](#)

## [Audit Results](#)

## [Smart Contract Analysis](#)

- Detected Vulnerabilities

## [Disclaimer](#)

## [About Us](#)

# AUDITED DETAILS

## Audited Project

Project name	Token ticker	Blockchain
Elephant Money Stable	TRUNK	Binance Smart Chain

## Addresses

Contract address	0xdd325c38b12903b727d16961e61333f4871a70e0
Contract deployer address	0x16E76819aC1f0dfBECc48dFE93B198830e0C85EB

## Project Website

<a href="https://elephant.money/">https://elephant.money/</a>
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## Codebase

<a href="https://bscscan.com/address/0xdd325c38b12903b727d16961e61333f4871a70e0#code">https://bscscan.com/address/0xdd325c38b12903b727d16961e61333f4871a70e0#code</a>
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# SUMMARY

Elephant Money Stable is simply the first global decentralized community bank. It is a permissionless system for economic inclusion and helps its community accumulate wealth through active and passive cash flows.

## Contract Summary

### Documentation Quality

Elephant Money Stable provides a very good documentation with standard of solidity base code.

- The technical description is provided clearly and structured and also don't have any high risk issue.

### Code Quality

The Overall quality of the basecode is standard.

- Standard solidity basecode and rules are already followed by Elephant Money Stable 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 252 and 254.
- SWC-101 | It is recommended to use vetted safe math libraries for arithmetic operations consistently on lines 98, 150, 178, 202, 203, 214, 222, 229, 467, 467, 516, 519, 520, 534, 537, 538, 540, 554, 557, 558 and 560.
- SWC-103 | Pragma statements can be allowed to float when a contract is intended on lines 5.
- 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 151 and 179.

## CONCLUSION

We have audited the Elephant Money Stable project released on September 2021 to discover issues and identify potential security vulnerabilities in Elephant Money Stable 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 satisfactory results with low-risk issues.

The Elephant Money Stable, smart contract code issues 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. Specifying a fixed compiler version is recommended 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. It is best practice to set the visibility of state variables explicitly. The default visibility for "totalSupply\_" 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	Tuesday Sep 21 2021 04:10:50 GMT+0000 (Coordinated Universal Time)
Finished	Wednesday Sep 22 2021 15:17:13 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	ElephantDollar.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-101	ARITHMETIC OPERATION "+=" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "+=" DISCOVERED	low	acknowledged
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
SWC-108	STATE VARIABLE VISIBILITY IS NOT SET.	low	acknowledged
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 98

## low SEVERITY

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

## Source File

- ElephantDollar.sol

## Locations

```
97  _owner = address(0);
98  _lockTime = now + time;
99  emit OwnershipTransferred(_owner, address(0));
100 }
101
102
```

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

LINE 150

## low SEVERITY

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

## Source File

- ElephantDollar.sol

## Locations

```
149     function addAddressesToWhitelist(address[] calldata  addrs) onlyOwner public
returns(bool success) {
150     for (uint256 i = 0; i < addrs.length; i++) {
151         if (addAddressToWhitelist(addrs[i])) {
152             success = true;
153         }
154     }
```

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

LINE 178

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
177 function removeAddressesFromWhitelist(address[] calldata addrs) onlyOwner public
    returns(bool success) {
178     for (uint256 i = 0; i < addrs.length; i++) {
179         if (removeAddressFromWhitelist(addrs[i])) {
180             success = true;
181         }
182     }
```

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

LINE 202

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
201     }  
202     c = a * b;  
203     assert(c / a == b);  
204     return c;  
205     }  
206
```

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

LINE 203

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
202   c = a * b;  
203   assert(c / a == b);  
204   return c;  
205   }  
206  
207
```

# SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 214

## low SEVERITY

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

## Source File

- ElephantDollar.sol

## Locations

```
213 // assert(a == b * c + a % b); // There is no case in which this doesn't hold
214 return a / b;
215 }
216
217 /**
218
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 222

## low SEVERITY

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

## Source File

- ElephantDollar.sol

## Locations

```
221  assert(b <= a);  
222  return a - b;  
223  }  
224  
225  /**  
226
```

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

LINE 229

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
228     function add(uint256 a, uint256 b) internal pure returns (uint256 c) {  
229         c = a + b;  
230         assert(c >= a);  
231         return c;  
232     }  
233
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 467

## low SEVERITY

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

## Source File

- ElephantDollar.sol

## Locations

```
466 uint8 public constant decimals = 18;
467 uint256 public constant MAX_INT = 2**256 - 1;
468 uint256 public constant targetSupply = MAX_INT;
469 uint256 public totalTx;
470 uint256 public participants;
471
```

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

LINE 467

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
466 uint8 public constant decimals = 18;
467 uint256 public constant MAX_INT = 2**256 - 1;
468 uint256 public constant targetSupply = MAX_INT;
469 uint256 public totalTx;
470 uint256 public participants;
471
```

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

LINE 516

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
515     if (stats[_to].txs == 0) {  
516         participants += 1;  
517     }  
518  
519     stats[_to].txs += 1;  
520
```

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

LINE 519

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
518
519     stats[_to].txs += 1;
520     totalTxs += 1;
521
522     return true;
523
```

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

LINE 520

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
519 stats[_to].txs += 1;
520 totalTxs += 1;
521
522 return true;
523
524
```

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

LINE 534

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
533     if (stats[_to].txs == 0) {  
534         participants += 1;  
535     }  
536  
537     stats[_to].txs += 1;  
538
```

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

LINE 537

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
536
537     stats[_to].txs += 1;
538     stats[_from].txs += 1;
539
540     totalTxs += 1;
541
```

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

LINE 538

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
537 stats[_to].txs += 1;
538 stats[_from].txs += 1;
539
540 totalTxs += 1;
541
542
```

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

LINE 540

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
539
540     totalTxs += 1;
541
542     return true;
543
544
```

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

LINE 554

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
553     if (stats[_to].txs == 0) {  
554         participants += 1;  
555     }  
556  
557     stats[_to].txs += 1;  
558
```

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

LINE 557

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
556
557     stats[_to].txs += 1;
558     stats[msg.sender].txs += 1;
559
560     totalTxs += 1;
561
```

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

LINE 558

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
557 stats[_to].txs += 1;
558 stats[msg.sender].txs += 1;
559
560 totalTxs += 1;
561
562
```

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

LINE 560

## low SEVERITY

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

## Source File

- ElephantDollar.sol

## Locations

```
559
560     totalTxs += 1;
561
562     return true;
563 }
564
```

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

LINE 5

### low SEVERITY

The current pragma Solidity directive is `""^0.6.8""`. 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

- ElephantDollar.sol

### Locations

```
4
5  pragma solidity ^0.6.8;
6
7  /*
8   SPDX-License-Identifier: MIT
9  */
```

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

LINE 252

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
251
252 mapping(address => uint256) balances;
253
254 uint256 totalSupply_;
255
256
```

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

LINE 254

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
253
254     uint256 totalSupply_;
255
256     /**
257      * @dev total number of tokens in existence
258
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 151

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
150   for (uint256 i = 0; i < addrs.length; i++) {  
151     if (addAddressToWhitelist(addrs[i])) {  
152       success = true;  
153     }  
154   }  
155
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 179

### low SEVERITY

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

### Source File

- ElephantDollar.sol

### Locations

```
178   for (uint256 i = 0; i < addrs.length; i++) {  
179     if (removeAddressFromWhitelist(addrs[i])) {  
180       success = true;  
181     }  
182   }  
183
```

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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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