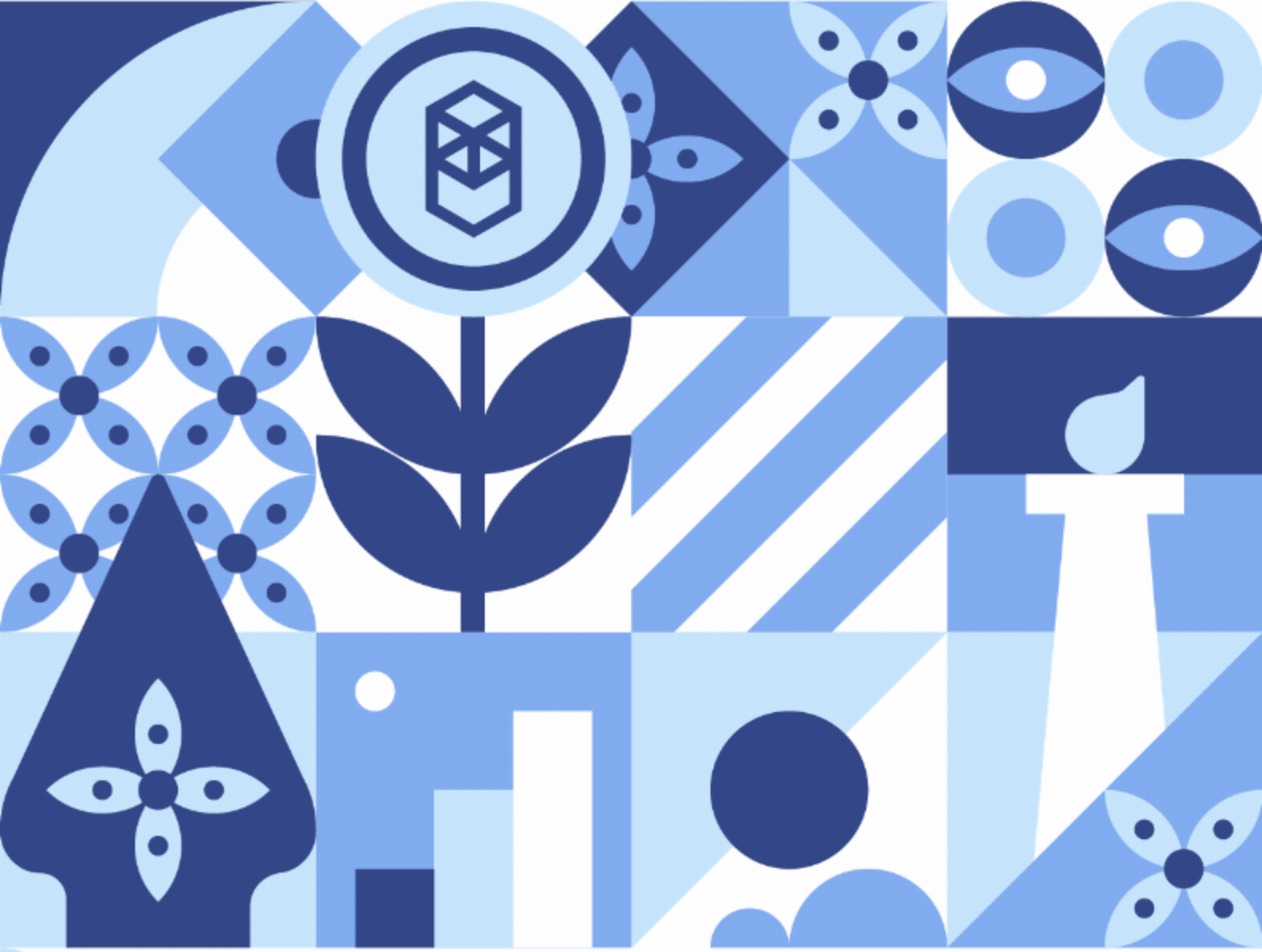

Hundred Finance

Smart Contract Audit Report

SYSFIXED

31 Oct 2021

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AUDITED DETAILS

Audited Project

Project name	Token ticker	Blockchain
Hundred Finance	HND	Fantom

Addresses

Contract address	0x10010078a54396f62c96df8532dc2b4847d47ed3
Contract deployer address	0x8FcBA7279af1d5d12C77e7062cAf1E09A0623f97

Project Website

https://hundred.finance/

Codebase

https://ftmscan.com/address/0x10010078a54396f62c96df8532dc2b4847d47ed3#code

SUMMARY

Hundred Finance is a decentralized application (dApp) that enables the lending and borrowing of cryptocurrencies. A multi-chain protocol, it integrates with Chainlink oracles to ensure market health and stability while specializing in providing markets for long-tail assets.

Contract Summary

Documentation Quality

Hundred Finance 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 Hundred Finance with the discovery of several low issues.

Test Coverage

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

Audit Findings Summary

- SWC-101 | It is recommended to use vetted safe math libraries for arithmetic operations consistently on lines 138, 138, 195, 200, 227, 235, 384, 385, 403, 404, 450, 469, 479, 480, 518, 519, 542, 551, 552, 572 and 573.
- 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 143.

CONCLUSION

We have audited the Hundred Finance project released in October 2021 to discover issues and identify potential security vulnerabilities in NamaFile 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 Hundred Finance 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.

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.	PASS
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.	PASS
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 griefing 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	Saturday Oct 30 2021 01:55:51 GMT+0000 (Coordinated Universal Time)
Finished	Sunday Oct 31 2021 15:48:11 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	Hundred.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-110	PUBLIC STATE VARIABLE WITH ARRAY TYPE CAUSING REACHABLE EXCEPTION BY DEFAULT.	low	acknowledged

SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED

LINE 138

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
137   // configurable delay for timelock functions
138   uint public delay = 2*24*3600;
139
140
141   // set of minters, can be this bridge or other bridges
142
```

SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED

LINE 138

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
137   // configurable delay for timelock functions
138   uint public delay = 2*24*3600;
139
140
141   // set of minters, can be this bridge or other bridges
142
```

SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 195

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
194   pendingMinter = _auth;
195   delayMinter = block.timestamp + delay;
196   }
197
198   function setVault(address _vault) external onlyVault {
199
```

SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 200

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
199   pendingVault = _vault;
200   delayVault = block.timestamp + delay;
201   }
202
203   function applyVault() external onlyVault {
204
```

SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 227

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
226   pendingVault = newVault;
227   delayVault = block.timestamp + delay;
228   emit LogChangeVault(vault, pendingVault, delayVault);
229   return true;
230   }
231
```

SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 235

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
234   pendingVault = newVault;
235   delayVault = block.timestamp + delay;
236   emit LogChangeMPCOwner(vault, pendingVault, delayVault);
237   return true;
238   }
239
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 384

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
383
384   _totalSupply += amount;
385   balanceOf[account] += amount;
386   emit Transfer(address(0), account, amount);
387   }
388
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 385

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
384   _totalSupply += amount;
385   balanceOf[account] += amount;
386   emit Transfer(address(0), account, amount);
387   }
388
389
```

SWC-101 | ARITHMETIC OPERATION "-=" DISCOVERED

LINE 403

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
402
403   balanceOf[account] -= amount;
404   _totalSupply -= amount;
405   emit Transfer(account, address(0), amount);
406   }
407
```

SWC-101 | ARITHMETIC OPERATION "-=" DISCOVERED

LINE 404

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
403   balanceOf[account] -= amount;
404   _totalSupply -= amount;
405   emit Transfer(account, address(0), amount);
406   }
407
408
```

SWC-101 | ARITHMETIC OPERATION "++" DISCOVERED

LINE 450

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
449   value,
450   nonces[target]++,
451   deadline));
452
453   require(verifyEIP712(target, hashStruct, v, r, s) || verifyPersonalSign(target,
hashStruct, v, r, s));
454
```

SWC-101 | ARITHMETIC OPERATION "++" DISCOVERED

LINE 469

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
468   value,
469   nonces[target]++,
470   deadline));
471
472   require(verifyEIP712(target, hashStruct, v, r, s) || verifyPersonalSign(target,
hashStruct, v, r, s));
473
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 479

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
478
479   balanceOf[target] = balance - value;
480   balanceOf[to] += value;
481   emit Transfer(target, to, value);
482
483
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 480

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
479   balanceOf[target] = balance - value;
480   balanceOf[to] += value;
481   emit Transfer(target, to, value);
482
483   return true;
484
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 518

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
517
518   balanceOf[msg.sender] = balance - value;
519   balanceOf[to] += value;
520   emit Transfer(msg.sender, to, value);
521
522
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 519

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
518   balanceOf[msg.sender] = balance - value;
519   balanceOf[to] += value;
520   emit Transfer(msg.sender, to, value);
521
522   return true;
523
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 542

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
541   require(allowed >= value, "AnyswapV3ERC20: request exceeds allowance");
542   uint256 reduced = allowed - value;
543   allowance[from][msg.sender] = reduced;
544   emit Approval(from, msg.sender, reduced);
545   }
546
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 551

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
550
551   balanceOf[from] = balance - value;
552   balanceOf[to] += value;
553   emit Transfer(from, to, value);
554
555
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 552

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
551   balanceOf[from] = balance - value;
552   balanceOf[to] += value;
553   emit Transfer(from, to, value);
554
555   return true;
556
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 572

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
571
572   balanceOf[msg.sender] = balance - value;
573   balanceOf[to] += value;
574   emit Transfer(msg.sender, to, value);
575
576
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 573

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
572   balanceOf[msg.sender] = balance - value;
573   balanceOf[to] += value;
574   emit Transfer(msg.sender, to, value);
575
576   return ITransferReceiver(to).onTokenTransfer(msg.sender, value, data);
577
```

SWC-110 | PUBLIC STATE VARIABLE WITH ARRAY TYPE CAUSING REACHABLE EXCEPTION BY DEFAULT.

LINE 143

low SEVERITY

The public state variable "minters" in "AnyswapV5ERC20" contract has type "address[]" and can cause an exception in case of use of invalid array index value.

Source File

- Hundred.sol

Locations

```
142   mapping(address => bool) public isMinter;
143   address[] public minters;
144
145   // primary controller of the token contract
146   address public vault;
147
```

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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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