Hundred Finance

Smart Contract Audit Report

SYSFIXED

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AUDITED DETAILS

Audited Project

Project name	Token ticker	Blockchain
Hundred Finance	HND	Arbitrum

Addresses

Contract address	0x10010078a54396f62c96df8532dc2b4847d47ed3
Contract deployer address	0x8FcBA7279af1d5d12C77e7062cAf1E09A0623f97

Project Website

https://hundred.finance/

Codebase

https://arbiscan.io/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 serving 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 142, 142, 199, 204, 231, 239, 388, 389, 407, 408, 454, 473, 483, 484, 522, 523, 546, 555, 556, 576 and 577.
- 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 147.

CONCLUSION

We have audited the Hundred Finance project released in September 2022 to discover issues and identify potential security vulnerabilities in the Hundred Finance 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 Hundred Finance 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 arithmetic operation issues and public state variables with array type causing reachable exceptions by default.

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	Monday Sep 20 2021 17:51:34 GMT+0000 (Coordinated Universal Time)
Finished	Tuesday Sep 21 2021 09:07:46 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 142

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
141   // configurable delay for timelock functions
142   uint public delay = 2*24*3600;
143
144
145   // set of minters, can be this bridge or other bridges
146
```

SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED

LINE 142

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
141   // configurable delay for timelock functions
142   uint public delay = 2*24*3600;
143
144
145   // set of minters, can be this bridge or other bridges
146
```

SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 199

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
198   pendingMinter = _auth;
199   delayMinter = block.timestamp + delay;
200   }
201
202   function setVault(address _vault) external onlyVault {
203
```

SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 204

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
203   pendingVault = _vault;
204   delayVault = block.timestamp + delay;
205   }
206
207   function applyVault() external onlyVault {
208
```

SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 231

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
230   pendingVault = newVault;
231   delayVault = block.timestamp + delay;
232   emit LogChangeVault(vault, pendingVault, delayVault);
233   return true;
234   }
235
```

SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 239

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
238   pendingVault = newVault;
239   delayVault = block.timestamp + delay;
240   emit LogChangeMPCOwner(vault, pendingVault, delayVault);
241   return true;
242   }
243
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 388

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
387
388   _totalSupply += amount;
389   balanceOf[account] += amount;
390   emit Transfer(address(0), account, amount);
391   }
392
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 389

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
388   _totalSupply += amount;
389   balanceOf[account] += amount;
390   emit Transfer(address(0), account, amount);
391   }
392
393
```

SWC-101 | ARITHMETIC OPERATION "-=" DISCOVERED

LINE 407

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
406
407   balanceOf[account] -= amount;
408   _totalSupply -= amount;
409   emit Transfer(account, address(0), amount);
410   }
411
```

SWC-101 | ARITHMETIC OPERATION "-=" DISCOVERED

LINE 408

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
407   balanceOf[account] -= amount;
408   _totalSupply -= amount;
409   emit Transfer(account, address(0), amount);
410   }
411
412
```

SWC-101 | ARITHMETIC OPERATION "++" DISCOVERED

LINE 454

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
453   value,
454   nonces[target]++,
455   deadline));
456
457   require(verifyEIP712(target, hashStruct, v, r, s) || verifyPersonalSign(target,
hashStruct, v, r, s));
458
```

SWC-101 | ARITHMETIC OPERATION "++" DISCOVERED

LINE 473

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
472   value,
473   nonces[target]++,
474   deadline));
475
476   require(verifyEIP712(target, hashStruct, v, r, s) || verifyPersonalSign(target,
hashStruct, v, r, s));
477
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 483

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
482
483   balanceOf[target] = balance - value;
484   balanceOf[to] += value;
485   emit Transfer(target, to, value);
486
487
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 484

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
483   balanceOf[target] = balance - value;
484   balanceOf[to] += value;
485   emit Transfer(target, to, value);
486
487   return true;
488
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 522

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
521
522   balanceOf[msg.sender] = balance - value;
523   balanceOf[to] += value;
524   emit Transfer(msg.sender, to, value);
525
526
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 523

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
522   balanceOf[msg.sender] = balance - value;
523   balanceOf[to] += value;
524   emit Transfer(msg.sender, to, value);
525
526   return true;
527
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 546

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
545   require(allowed >= value, "AnyswapV3ERC20: request exceeds allowance");
546   uint256 reduced = allowed - value;
547   allowance[from][msg.sender] = reduced;
548   emit Approval(from, msg.sender, reduced);
549   }
550
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 555

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
554
555   balanceOf[from] = balance - value;
556   balanceOf[to] += value;
557   emit Transfer(from, to, value);
558
559
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 556

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
555   balanceOf[from] = balance - value;
556   balanceOf[to] += value;
557   emit Transfer(from, to, value);
558
559   return true;
560
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 576

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
575
576   balanceOf[msg.sender] = balance - value;
577   balanceOf[to] += value;
578   emit Transfer(msg.sender, to, value);
579
580
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 577

low SEVERITY

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

Source File

- Hundred.sol

Locations

```
576   balanceOf[msg.sender] = balance - value;
577   balanceOf[to] += value;
578   emit Transfer(msg.sender, to, value);
579
580   return ITransferReceiver(to).onTokenTransfer(msg.sender, value, data);
581
```

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

LINE 147

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

```
146   mapping(address => bool) public isMinter;
147   address[] public minters;
148
149   // primary controller of the token contract
150   address public vault;
151
```

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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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