Knight War Spirits

Smart Contract Audit Report

SYSFIXED

25 Sep 2021

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AUDITED DETAILS

Audited Project

Project name	Token ticker	Blockchain
Knight War Spirits	KWS	Binance Smart Chain

Addresses

Contract address	0x5d0e95c15ca50f13fb86938433269d03112409fe
Contract deployer address	0x4D563863eB7088776FAbd9c764230dA03b2974F4

Project Website

https://knightwar.io/

Codebase

https://bscscan.com/address/0x5d0e95c15ca50f13fb86938433269d03112409fe#code

SUMMARY

Knight War: The Holy Trio is an upcoming semi-decentralized, Play-to-earn game in the Idle Defense Genre. The game is planned to launch on multi-blockchains with a focus on Binance Smart Chain first and later on Polygon to leverage the high speed, the cheap transaction fee as well as their large users base. Knight War The Holy Trio belongs to the ARPG genre with very interesting automatic combat mechanics. With the concept of the war between the Alliance and the Demons, players will have a chance to experience a diverse system of well-designed characters and weapons. Our team has developed a game with a twist in NFT where the core is the weapon system instead of the character. The game does not aim to be too intensive. We want it to be simple and fun where anyone could relax, entertain, and still earn real income!

Contract Summary

Documentation Quality

Knight War Spirits 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 Knight War Spirits 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 594, 640, 594 and 640.
- SWC-103 | Pragma statements can be allowed to float when a contract is intended on lines 8, 93, 110, 301, 386, 576 and 610.

CONCLUSION

We have audited the Knight War Spirits project released on September 2021 to discover issues and identify potential security vulnerabilities in Knight War Spirits 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 Knight War Spirits 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. 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.

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.	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.	PASS
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	Friday Sep 24 2021 10:14:03 GMT+0000 (Coordinated Universal Time)
Finished	Saturday Sep 25 2021 22:02:47 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	TransparentUpgradeableProxy.sol

Detected Issues

ID	Title	Severity	Status
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	COMPILER-REWRITABLE "<UINT> - 1" DISCOVERED	low	acknowledged
SWC-101	COMPILER-REWRITABLE "<UINT> - 1" DISCOVERED	low	acknowledged
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
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SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 594

low SEVERITY

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

Source File

- TransparentUpgradeableProxy.sol

Locations

```
593   constructor(address _logic, bytes memory _data) payable {
594   assert(_IMPLEMENTATION_SLOT ==
bytes32(uint256(keccak256("eip1967.proxy.implementation")) - 1));
595   _upgradeToAndCall(_logic, _data, false);
596   }
597
598
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 640

low SEVERITY

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

Source File

- TransparentUpgradeableProxy.sol

Locations

```
639   constructor(address _logic, address admin_, bytes memory _data) payable
ERC1967Proxy(_logic, _data) {
640   assert(_ADMIN_SLOT == bytes32(uint256(keccak256("eip1967.proxy.admin")) - 1));
641   _changeAdmin(admin_);
642   }
643
644
```

SWC-101 | COMPILER-REWRITABLE "<UINT> - 1" DISCOVERED

LINE 594

low SEVERITY

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

Source File

- TransparentUpgradeableProxy.sol

Locations

```
593   constructor(address _logic, bytes memory _data) payable {
594   assert(_IMPLEMENTATION_SLOT ==
bytes32(uint256(keccak256("eip1967.proxy.implementation")) - 1));
595   _upgradeToAndCall(_logic, _data, false);
596   }
597
598
```

SWC-101 | COMPILER-REWRITABLE "<UINT> - 1" DISCOVERED

LINE 640

low SEVERITY

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

Source File

- TransparentUpgradeableProxy.sol

Locations

```
639   constructor(address _logic, address admin_, bytes memory _data) payable
ERC1967Proxy(_logic, _data) {
640   assert(_ADMIN_SLOT == bytes32(uint256(keccak256("eip1967.proxy.admin")) - 1));
641   _changeAdmin(admin_);
642   }
643
644
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 8

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

- TransparentUpgradeableProxy.sol

Locations

```
7
8   pragma solidity ^0.8.0;
9
10   /**
11   * @dev This abstract contract provides a fallback function that delegates all calls
to another contract using the EVM
12
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 93

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

- TransparentUpgradeableProxy.sol

Locations

```
92
93   pragma solidity ^0.8.0;
94
95   /**
96   * @dev This is the interface that {BeaconProxy} expects of its beacon.
97
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 110

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

- TransparentUpgradeableProxy.sol

Locations

```
109
110   pragma solidity ^0.8.0;
111
112   /**
113   * @dev Collection of functions related to the address type
114
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 301

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

- TransparentUpgradeableProxy.sol

Locations

```
300
301   pragma solidity ^0.8.0;
302
303   /**
304   * @dev Library for reading and writing primitive types to specific storage slots.
305
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 386

low SEVERITY

The current pragma Solidity directive is ""^0.8.2"". 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

- TransparentUpgradeableProxy.sol

Locations

```
385
386   pragma solidity ^0.8.2;
387
388
389
390
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 576

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

- TransparentUpgradeableProxy.sol

Locations

```
575
576   pragma solidity ^0.8.0;
577
578
579
580
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 610

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

- TransparentUpgradeableProxy.sol

Locations

```
609
610   pragma solidity ^0.8.0;
611
612
613   /**
614
```

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