



CFG NINJA AUDITS

Security Assessment

Bionic Token

September 18, 2023

Audit Status: Fail

Audit Edition: Standard





POWERED BY
BLADE POOL

Risk Analysis


















Classifications of Manual Risk Results

Classification	Description
 Critical	Danger or Potential Problems.
 High	Be Careful or Fail test.
 Low	Pass, Not-Detected or Safe Item.
 Informational	Function Detected

Manual Code Review Risk Results

Contract Privilege	Description
 Buy Tax	20%
 Sale Tax	20%
 Cannot Sale	Pass
 Cannot Sale	Pass
 Max Tax	20%
 Modify Tax	Yes
 Fee Check	Pass
 Is Honeygot?	Not Detected
 Trading Cooldown	Detected
 Can Pause Trade?	Detected, owner need to enable trade.



Contract Priviledge	Description
 Pause Transfer?	Detected
 Max Tx?	Fail
 Is Anti Whale?	Detected
 Is Anti Bot?	Detected
 Is Blacklist?	Detected
 Blacklist Check	Fail
 is Whitelist?	Detected
 Can Mint?	Pass
 Is Proxy?	Not Detected
 Can Take Ownership?	Not Detected
 Hidden Owner?	Not Detected
 Owner	0x502e1A4eCA726C185D8bdbBa120Dc8Ac189e9d01
 Self Destruct?	Not Detected
 External Call?	Not Detected
 Other?	Detected
 Holders	1
 Auditor Confidence	High Risk

The following quick summary it's added to the project overview; however, there are more details about the audit and its results. Please read every detail.



Project Overview

Token Summary

Parameter	Result
Address	0x94DC32F6F4268a4B99cdEE7989c4E6818De317cF
Name	Bionic
Token Tracker	Bionic (BIONIC)
Decimals	18
Supply	10,000,000
Platform	Ethereum
compiler	v0.8.21+commit.d9974bed
Contract Name	Bionic
Optimization	Yes with 200 runs
LicenseType	MIT
Language	Solidity
Codebase	https://etherscan.io/address/0x94DC32F6F4268a4B99cdEE7989c4E6818De317cF#code
Payment Tx	Corporate



Main Contract Assessed Contract Name

Name	Contract	Live
Bionic	0x94DC32F6F4268a4B99cdEE7989c4E6818De317cF	Yes

TestNet Contract Assessed Contract Name

Name	Contract	Live
Bionic	0x4050499f1E7fE0137b81d753937ffFe365d8cFB1	Yes

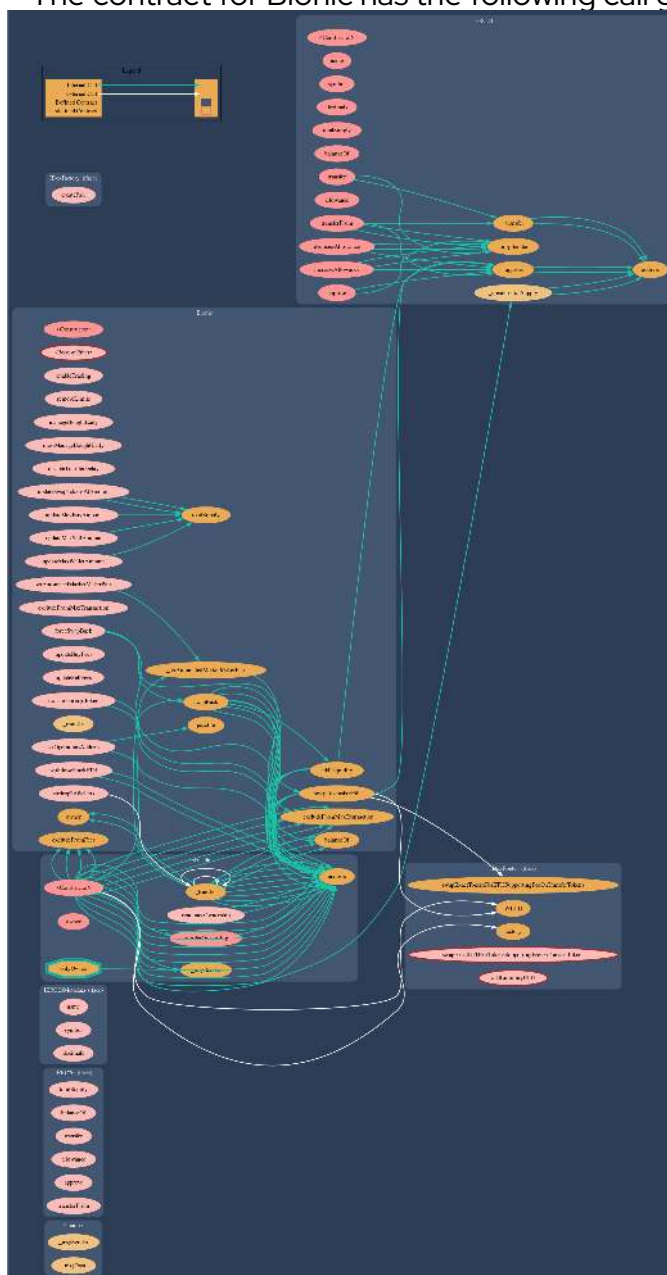
Solidity Code Provided

SolID	File Sha-1	FileName
Bionic	475ac3b4bba595086ccfbbf75a95806f02f24544	bionic.sol
Bionic		
Bionic		
Bionic		
Bionic		
Bionic		



Call Graph

The contract for Bionic has the following call graph structure.



Smart Contract Vulnerability Checks

The Smart Contract Weakness Classification Registry (SWC Registry) is an implementation of the weakness classification scheme proposed in EIP-1470. It is loosely aligned to the terminologies and structure used in the Common Weakness Enumeration (CWE) while overlaying a wide range of weakness variants that are specific to smart contracts.

ID	Severity	Name	File	location
SWC-100	Pass	Function Default Visibility	bionic.sol	L: 0 C: 0
SWC-101	Pass	Integer Overflow and Underflow.	bionic.sol	L: 0 C: 0
SWC-102	Pass	Outdated Compiler Version file.	bionic.sol	L: 0 C: 0
SWC-103	Fail	A floating pragma is set.	bionic.sol	L: 14 C: 0
SWC-104	Pass	Unchecked Call Return Value.	bionic.sol	L: 0 C: 0
SWC-105	Pass	Unprotected Ether Withdrawal.	bionic.sol	L: 0 C: 0
SWC-106	Pass	Unprotected SELFDESTRUCT Instruction	bionic.sol	L: 0 C: 0
SWC-107	Pass	Read of persistent state following external call.	bionic.sol	L: 0 C: 0
SWC-108	Low	State variable visibility is not set..	bionic.sol	L: 324 C: 12
SWC-109	Pass	Uninitialized Storage Pointer.	bionic.sol	L: 0 C: 0
SWC-110	Pass	Assert Violation.	bionic.sol	L: 0 C: 0



ID	Severity	Name	File	location
SWC-111	Pass	Use of Deprecated Solidity Functions.	bionic.sol	L: 0 C: 0
SWC-112	Pass	Delegate Call to Untrusted Callee.	bionic.sol	L: 0 C: 0
SWC-113	Pass	Multiple calls are executed in the same transaction.	bionic.sol	L: 0 C: 0
SWC-114	Pass	Transaction Order Dependence.	bionic.sol	L: 0 C: 0
SWC-115	Low	Authorization through tx.origin.	bionic.sol	L: 569 C: 61
SWC-116	Pass	A control flow decision is made based on The block.timestamp environment variable.	bionic.sol	L: 0 C: 0
SWC-117	Pass	Signature Malleability.	bionic.sol	L: 0 C: 0
SWC-118	Pass	Incorrect Constructor Name.	bionic.sol	L: 0 C: 0
SWC-119	Pass	Shadowing State Variables.	bionic.sol	L: 0 C: 0
SWC-120	Low	Potential use of block.number as source of randomness.	bionic.sol	L: 443 C: 29
SWC-121	Pass	Missing Protection against Signature Replay Attacks.	bionic.sol	L: 0 C: 0
SWC-122	Pass	Lack of Proper Signature Verification.	bionic.sol	L: 0 C: 0
SWC-123	Pass	Requirement Violation.	bionic.sol	L: 0 C: 0
SWC-124	Pass	Write to Arbitrary Storage Location.	bionic.sol	L: 0 C: 0
SWC-125	Pass	Incorrect Inheritance Order.	bionic.sol	L: 0 C: 0



ID	Severity	Name	File	location
SWC-126	Pass	Insufficient Gas Griefing.	bionic.sol	L: 0 C: 0
SWC-127	Pass	Arbitrary Jump with Function Type Variable.	bionic.sol	L: 0 C: 0
SWC-128	Pass	DoS With Block Gas Limit.	bionic.sol	L: 0 C: 0
SWC-129	Pass	Typographical Error.	bionic.sol	L: 0 C: 0
SWC-130	Pass	Right-To-Left-Override control character (U+202E).	bionic.sol	L: 0 C: 0
SWC-131	Pass	Presence of unused variables.	bionic.sol	L: 0 C: 0
SWC-132	Pass	Unexpected Ether balance.	bionic.sol	L: 0 C: 0
SWC-133	Pass	Hash Collisions with Multiple Variable Length Arguments.	bionic.sol	L: 0 C: 0
SWC-134	Pass	Message call with hardcoded gas amount.	bionic.sol	L: 0 C: 0
SWC-135	Pass	Code With No Effects (Irrelevant/Dead Code).	bionic.sol	L: 0 C: 0
SWC-136	Pass	Unencrypted Private Data On-Chain.	bionic.sol	L: 0 C: 0

We scan the contract for additional security issues using MYTHX and industry-standard security scanning tools.



Smart Contract Vulnerability Details

SWC-103 - Floating Pragma.

CWE-664: Improper Control of a Resource Through its Lifetime.

References:

Description:

Contracts should be deployed with the same compiler version and flags that they have been tested with thoroughly. Locking the pragma helps to ensure that contracts do not accidentally get deployed using, for example, an outdated compiler version that might introduce bugs that affect the contract system negatively.

Remediation:

Lock the pragma version and also consider known bugs (<https://github.com/ethereum/solidity/releases>) for the compiler version that is chosen.

Pragma statements can be allowed to float when a contract is intended for consumption by other developers, as in the case with contracts in a library or EthPM package. Otherwise, the developer would need to manually update the pragma in order to compile locally.

References:

Ethereum Smart Contract Best Practices - Lock pragmas to specific compiler version.



Smart Contract Vulnerability Details

SWC-108 - State Variable Default Visibility

CWE-710: Improper Adherence to Coding Standards

Description:

Labeling the visibility explicitly makes it easier to catch incorrect assumptions about who can access the variable.

Remediation:

Variables can be specified as being public, internal or private. Explicitly define visibility for all state variables.

References:

Ethereum Smart Contract Best Practices - Explicitly mark visibility in functions and state variables



Smart Contract Vulnerability Details

SWC-115 - Authorization through tx.origin

CWE-477: Use of Obsolete Function

Description:

tx.origin is a global variable in Solidity which returns the address of the account that sent the transaction. Using the variable for authorization could make a contract vulnerable if an authorized account calls into a malicious contract. A call could be made to the vulnerable contract that passes the authorization check since tx.origin returns the original sender of the transaction which in this case is the authorized account.

Remediation:

tx.origin should not be used for authorization. Use msg.sender instead.

References:

Solidity Documentation - tx.origin

Ethereum Smart Contract Best Practices - Avoid using tx.origin

SigmaPrime - Visibility.



Smart Contract Vulnerability Details

SWC-120 - Weak Sources of Randomness from Chain Attributes

CWE-330: Use of Insufficiently Random Values

Description:

Solidity allows for ambiguous naming of state variables when inheritance is used. Contract A with a variable x could inherit contract B that also has a state variable x defined. This would result in two separate versions of x, one of them being accessed from contract A and the other one from contract B. In more complex contract systems this condition could go unnoticed and subsequently lead to security issues.

Shadowing state variables can also occur within a single contract when there are multiple definitions on the contract and function level.

Remediation:

Using commitment scheme, e.g. RANDAO. Using external sources of randomness via oracles, e.g. Oraclize. Note that this approach requires trusting in oracle, thus it may be reasonable to use multiple oracles. Using Bitcoin block hashes, as they are more expensive to mine.

References:

How can I securely generate a random number in my smart contract?)

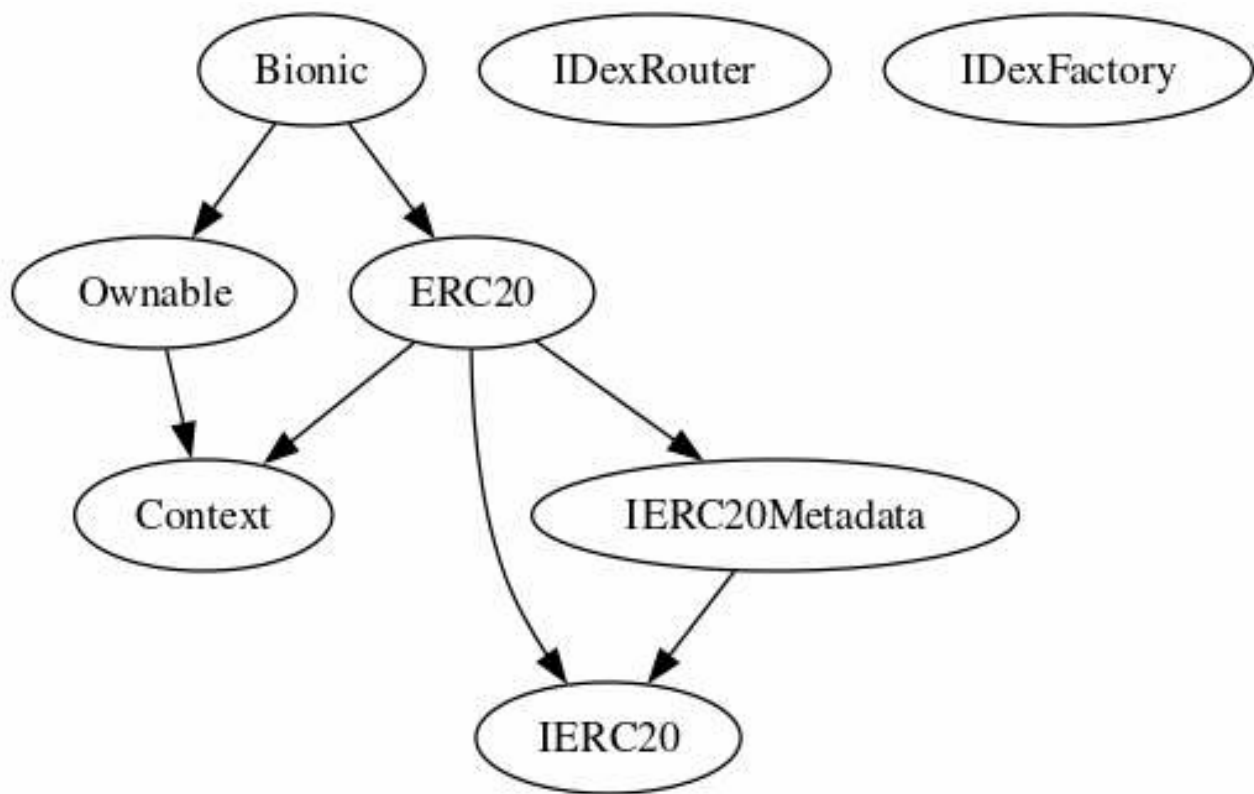
When can BLOCKHASH be safely used for a random number? When would it be unsafe?

The Run smart contract.



Inheritance

The contract for Bionic has the following inheritance structure.



Smart Contract Advance Checks



ID	Severity	Name	Result	Status
BIONIC-01	Low	Potential Sandwich Attacks.	Pass	Not Detected
BIONIC-02	Informational	Function Visibility Optimization	Fail	Detected
BIONIC-03	Low	Lack of Input Validation.	Fail	Detected
BIONIC-04	High	Centralized Risk In addLiquidity.	Pass	Not Detected
BIONIC-05	Low	Missing Event Emission.	Fail	Detected
BIONIC-06	Low	Conformance with Solidity Naming Conventions.	Pass	Not Detected
BIONIC-07	Low	State Variables could be Declared Constant.	Pass	Not Detected
BIONIC-08	Low	Dead Code Elimination.	Pass	Not Detected
BIONIC-09	High	Third Party Dependencies.	Pass	Not Detected
BIONIC-10	High	Initial Token Distribution.	Pass	Not Detected
BIONIC-11	Medium	airdropToWallets is part of the contract.	Fail	Detected
BIONIC-12	High	Centralization Risks In The X Role	Pass	Not Detected
BIONIC-13	Informational	Extra Gas Cost For User..	Pass	Not Detected
BIONIC-14	Medium	Unnecessary Use Of SafeMath	Pass	Not Detected
BIONIC-15	Medium	Symbol Length Limitation due to Solidity Naming Standards.	Pass	Not Detected



ID	Severity	Name	Result	Status
BIONIC-16	Medium	Taxes can be up to 100%	Pass	Not Detected
BIONIC-17	Logical Issue	Highly Permissive Role Access,	Pass	Not Detected
BIONIC-18	Critical	Stop Transactions by using Enable Trade.	Fail	Detected



BIONIC-02 | Function Visibility Optimization.

Category	Severity	Location	Status
Gas Optimization	 Informational	bionic.sol: L: 546 C: 14,L: 324 C: 12	 Detected

Description

The following functions are declared as public and are not invoked in any of the contracts contained within the projects scope:

Function Name	Parameters	Visibility
excludeFromFees		public
operationsAddress		internal

The functions that are never called internally within the contract should have external visibility

Remediation



We advise that the function's visibility specifiers are set to external, and the array-based arguments change their data location from memory to calldata, optimizing the gas cost of the function.

References:

external vs public best practices.



BIONIC-03 | Lack of Input Validation.

Category	Severity	Location	Status
Volatile Code	 Low	bionic.sol: L: 546 C: 14	 Detected

Description

The given input is missing the check for the non-zero address.

The given input is missing the check for the .

Remediation



We advise the client to add the check for the passed-in values to prevent unexpected errors as below:

```
...  
require(receiver != address(0), "Receiver is the zero address");  
...  
...  
require(value X limitation, "Your not able to do this function");  
...
```

We also recommend customer to review the following function that is missing a required validation. .



BIONIC-05 | Missing Event Emission.

Category	Severity	Location	Status
Volatile Code	 Low	bionic.sol: L: 716 C: 14	 Detected

Description



Detected missing events for critical arithmetic parameters. There are functions that have no event emitted, so it is difficult to track off-chain changes. The linked code does not create an event for the transfer.

Remediation

Emit an event for critical parameter changes. It is recommended emitting events for the sensitive functions that are controlled by centralization roles.



BIONIC-11 | airdropToWallets is part of the contract..

Category	Severity	Location	Status
Optimizati on	 Medium	bionic.sol: L: 499 C: 14	 Detected

Description

airdropToWallets we recommend to have a separate contract for airdrops.



Remediation

we highly recommend removing the function.

Project Action



BIONIC-18 | Stop Transactions by using Enable Trade.

Category	Severity	Location	Status
Logical Issue	 Critical	bionic.sol: L: 439 C: 0	 Detected

Description

Enable Trade is present on the following contract and when combined with Exclude from fees it can be considered a whitelist process, this will allow anyone to trade before others and can represent an issue for the holders.

Remediation

We recommend the project owner to carefully review this function and avoid problems when performing both actions.

Project Action








Technical Findings Summary

Classification of Risk

Severity	Description
 Critical	Risks are those that impact the safe functioning of a platform and must be addressed before launch. Users should not invest in any project with outstanding critical risks.
 High	Risks can include centralization issues and logical errors. Under specific circumstances, these major risks can lead to loss of funds and/or control of the project.
 Medium	Risks may not pose a direct risk to users' funds, but they can affect the overall functioning of a platform
 Low	Risks can be any of the above but on a smaller scale. They generally do not compromise the overall integrity of the Project, but they may be less efficient than other solutions.
 Informational	Errors are often recommended to improve the code's style or certain operations to fall within industry best practices. They usually do not affect the overall functioning of the code.

Findings

Severity	Found	Pending	Resolved
 Critical	1	0	0
 High	0	0	0
 Medium	1	0	0
 Low	2	0	0
 Informational	1	0	0
Total	5	0	0



Social Media Checks

Social Media	URL	Result
Twitter	https://x.com/BionicProtocol	Pass
Other	https://bionicprotocol.medium.com/	Pass
Website	https://www.bionicprotocol.com	Pass
Telegram	https://t.me/BionicProtocolCommunity	Pass

We recommend to have 3 or more social media sources including a completed working websites.

Social Media Information Notes:

Auditor Notes: undefined

Project Owner Notes:



Assessment Results

Score Results

Review	Score
Overall Score	53/100
Auditor Score	50/100
Review by Section	Score
Manual Scan Score	12/33
SWC Scan Score	29 /37
Advance Check Score	12 /30

The Following Score System Has been Added to this page to help understand the value of the audit, the maximum score is 100, however to attain that value the project must pass and provide all the data needed for the assessment. Our Passing Score has been changed to 80 Points, if a project does not attain 80% is an automatic failure. Read our notes and final assessment below.

Audit Fail



Assessment Results

Important Notes:

- Several items were found.
- The contract has a blacklist function called `manageBoughtEarly`.
- The owner needs to enable trade.

Auditor Score =50
Audit Fail



Appendix

Finding Categories

Centralization / Privilege

Centralization / Privilege findings refer to either feature logic or implementation of components that act against the nature of decentralization, such as explicit ownership or specialized access roles in combination with a mechanism to relocate funds.

Gas Optimization

Gas Optimization findings do not affect the functionality of the code but generate different, more optimal EVM opcodes resulting in a reduction on the total gas cost of a transaction.

Logical Issue

Logical Issue findings detail a fault in the logic of the linked code, such as an incorrect notion on how block.timestamp works.

Control Flow

Control Flow findings concern the access control imposed on functions, such as owner-only functions being invoke-able by anyone under certain circumstances.

Volatile Code

Volatile Code findings refer to segments of code that behave unexpectedly on certain edge cases that may result in a vulnerability.

Coding Style

Coding Style findings usually do not affect the generated byte-code but rather comment on how to make the codebase more legible and, as a result, easily maintainable.

Inconsistency

Inconsistency findings refer to functions that should seemingly behave similarly yet contain different code, such as a constructor assignment imposing different requirements on the input variables than a setter function.



Coding Best Practices

ERC 20 Coding Standards are a set of rules that each developer should follow to ensure the code meets a set of criteria and is readable by all the developers.



Disclaimer

CFGNINJA has conducted an independent security assessment to verify the integrity of and highlight any vulnerabilities or errors, intentional or unintentional, that may be present in the reviewed code for the scope of this assessment. This report does not constitute agreement, acceptance, or advocacy for the Project, and users relying on this report should not consider this as having any merit for financial advice in any shape, form, or nature. The contracts audited do not account for any economic developments that the Project in question may pursue, and the veracity of the findings thus presented in this report relate solely to the proficiency, competence, aptitude, and discretion of our independent auditors, who make no guarantees nor assurance that the contracts are entirely free of exploits, bugs, vulnerabilities or deprecation of technologies.

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