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MADE IN GERMANY

# Gold Rush Token Audit

**Security Assessment**

13.July, 2022

**For**



[SolidProof.io](https://solidproof.io)



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Version	Date	Description
1.0	13. July,2022	<ul style="list-style-type: none"><li>• Layout project</li><li>• Automated- /Manual-Security Testing</li><li>• Summary</li></ul>

## Network

Binance Smart Chain (BEP20)

## Website

<https://grush.finance/>

## Telegram

<https://t.me/grushfinancechannel>

## Twitter

<https://twitter.com/Grushgame>

## Gitbook

<https://grush.gitbook.io/global/>

## Medium

<https://grushfinance.medium.com/>

## Discord

<https://discord.com/invite/grushfinance>

## Description

GRUSH Finance is an NFT Game-Fi project aimed at giving players both gaming and passive income.

## Project Engagement

During the 11th of July 2022, GoldRush Team engaged Solidproof.io to audit smart contracts that they created. The engagement was technical in nature and focused on identifying security flaws in the design and implementation of the contracts. They provided Solidproof.io with access to their code repository and whitepaper.

## Logo



## Contract Link

v1.0

- <https://bscscan.com/address/0x2Cd6f07Bf8A32B43Fc1d8C06fd910fd59eC7b9B7#code>

# Vulnerability & Risk Level

Risk represents the probability that a certain source-threat will exploit vulnerability, and the impact of that event on the organization or system. Risk Level is computed based on CVSS version 3.0.

Level	Value	Vulnerability	Risk (Required Action)
<b>Critical</b>	9 - 10	A vulnerability that can disrupt the contract functioning in a number of scenarios, or creates a risk that the contract may be broken.	Immediate action to reduce risk level.
<b>High</b>	7 – 8.9	A vulnerability that affects the desired outcome when using a contract, or provides the opportunity to use a contract in an unintended way.	Implementation of corrective actions as soon as possible.
<b>Medium</b>	4 – 6.9	A vulnerability that could affect the desired outcome of executing the contract in a specific scenario.	Implementation of corrective actions in a certain period.
<b>Low</b>	2 – 3.9	A vulnerability that does not have a significant impact on possible scenarios for the use of the contract and is probably subjective.	Implementation of certain corrective actions or accepting the risk.
<b>Informational</b>	0 – 1.9	A vulnerability that have informational character but is not effecting any of the code.	An observation that does not determine a level of risk

# **Auditing Strategy and Techniques Applied**

Throughout the review process, care was taken to evaluate the repository for security-related issues, code quality, and adherence to specification and best practices. To do so, reviewed line-by-line by our team of expert pentesters and smart contract developers, documenting any issues as there were discovered.

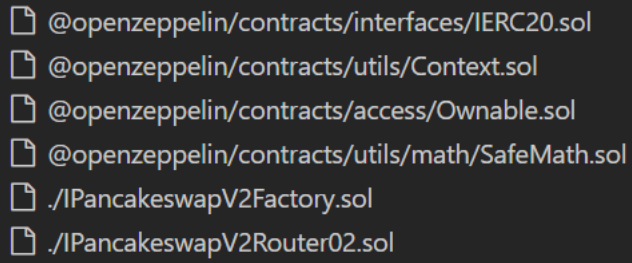
## **Methodology**

The auditing process follows a routine series of steps:

1. Code review that includes the following:
  - i) Review of the specifications, sources, and instructions provided to SolidProof to make sure we understand the size, scope, and functionality of the smart contract.
  - ii) Manual review of code, which is the process of reading source code line-by-line in an attempt to identify potential vulnerabilities.
  - iii) Comparison to specification, which is the process of checking whether the code does what the specifications, sources, and instructions provided to SolidProof describe.
2. Testing and automated analysis that includes the following:
  - i) Test coverage analysis, which is the process of determining whether the test cases are actually covering the code and how much code is exercised when we run those test cases.
  - ii) Symbolic execution, which is analysing a program to determine what inputs causes each part of a program to execute.
3. Best practices review, which is a review of the smart contracts to improve efficiency, effectiveness, clarify, maintainability, security, and control based on the established industry and academic practices, recommendations, and research.
4. Specific, itemized, actionable recommendations to help you take steps to secure your smart contracts.

## Used Code from other Frameworks/Smart Contracts (direct imports)

### Imported packages:



- 📄 @openzeppelin/contracts/interfaces/IERC20.sol
- 📄 @openzeppelin/contracts/Utils/Context.sol
- 📄 @openzeppelin/contracts/access/Ownable.sol
- 📄 @openzeppelin/contracts/Utils/math/SafeMath.sol
- 📄 ./IPancakeswapV2Factory.sol
- 📄 ./IPancakeswapV2Router02.sol



## Tested Contract Files

This audit covered the following files listed below with a SHA-1 Hash.

A file with a different Hash has been modified, intentionally or otherwise, after the security review. A different Hash could be (but not necessarily) an indication of a changed condition or potential vulnerability that was not within the scope of this review.

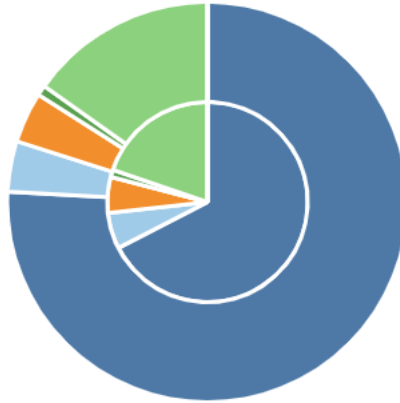
v1.0

File Name	SHA-1 Hash
contracts/goldrushtoken.sol	e2e833324258be732b2263c055a9b5b04513b7f2

# Metrics

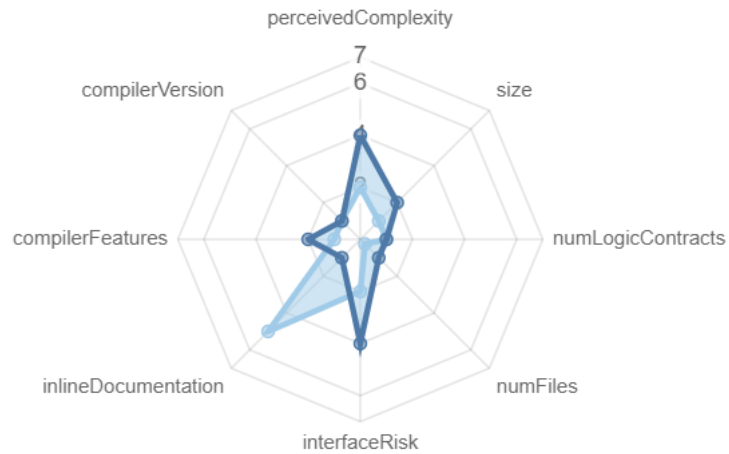
## Source Lines

v1.0



## Risk Level

v1.0



## Capabilities

### Components

Version	Contracts	Libraries	Interfaces	Abstract
1.0	1	0	3	0

### Exposed Functions

This section lists functions that are explicitly declared public or payable. Please note that getter methods for public stateVars are not included.

Version	Public	Payable
1.0	51	51

Version	External	Internal	Private	Pure	View
1.0	50	36	6	9	10

### State Variables

Version	Total	Public
1.0	6	8

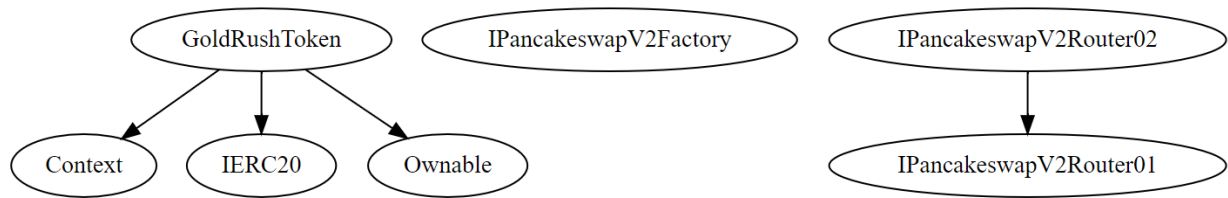
### Capabilities

Version	Solidity Versions observed	Experimental Features	Can Receive Funds	Uses Assembly	Has Destroyable Contracts
1.0	0.8.0	No	Yes	No	No

Version	Transfers ETH	Low-Level Calls	DelegateCall	Uses Hash Functions	EC Recover	New/Create/Create2
1.0		No	No	No	No	No

# Inheritance Graph

v1.0



# CallGraph

## Scope of Work/Verify Claims

The above token Team provided us with the files that needs to be tested (Github, Bscscan, Etherscan, files, etc.). The scope of the audit is the main contract (usual the same name as team appended with .sol).

We will verify the following claims:

1. Is contract an upgradeable
2. Correct implementation of Token standard
3. Deployer cannot mint any new tokens
4. Deployer cannot burn or lock user funds
5. Deployer cannot pause the contract
6. Overall checkup (Smart Contract Security)



Is contract an upgradeable

Name	
Is contract an upgradeable?	No



## Correct implementation of Token standard

ERC20				
Function	Description	Exist	Tested	Verified
TotalSupply	Provides information about the total token supply			
BalanceOf	Provides account balance of the owner's account			
Transfer	Executes transfers of a specified number of tokens to a specified address			
TransferFrom	Executes transfers of a specified number of tokens from a specified address			
Approve	Allow a spender to withdraw a set number of tokens from a specified account			
Allowance	Returns a set number of tokens from a spender to the owner			
SupportsInterface	Query if a contract implements an interface			



## Write functions of contract v1.0

1. approve

2. decreaseAllowance

3. excludeFromFee

4. includeInFee

5. increaseAllowance

6. renounceOwnership

7. setFees

8. setMaxTxAmount

9. setNumTokensToSwap

10. setSwapAndLiquifyEnabled

11. transfer

12. transferFrom

13. transferOwnership

## Deployer cannot mint any new tokens

Name	Exist	Tested	Status
Deployer cannot mint			
Max / Total Supply	1.000.000.000		



## Deployer cannot burn or lock user funds

Name	Exist	Tested	Status
Deployer cannot lock			
Deployer cannot burn			



Deployer cannot pause the contract

Name	Exist	Tested	Status
Deployer cannot pause			



## Overall checkup (Smart Contract Security)

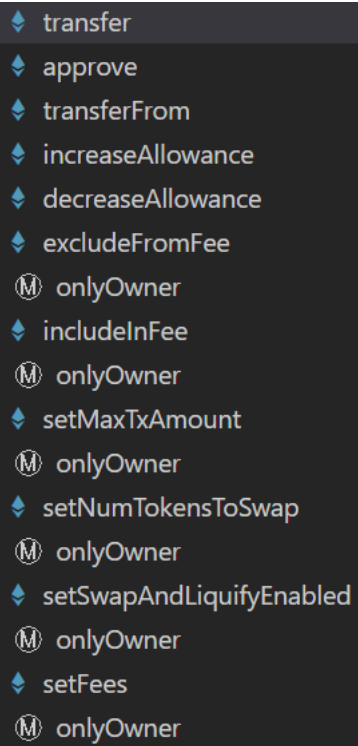
Tested	Verified

### Legend

Attribute	Symbol
Verified / Checked	
Partly Verified	
Unverified / Not checked	
Not available	

# Modifiers and public functions

v1.0



- transfer
- approve
- transferFrom
- increaseAllowance
- decreaseAllowance
- excludeFromFee
- onlyOwner
- includeInFee
- onlyOwner
- setMaxTxAmount
- onlyOwner
- setNumTokensToSwap
- onlyOwner
- setSwapAndLiquifyEnabled
- onlyOwner
- setFees
- onlyOwner

## Comments:

Please keep in mind that the owner can include or exclude anyone's account from the fee deduction functionality.

# Source Units in Scope

v1.0

Logic Contracts	nLines	nSLOC	Comment Lines	Complex. Score	Capabilities
contracts/goldrushtoken.sol	297	293	221	17	183
<b>Totals</b>	<b>297</b>	<b>293</b>	<b>221</b>	<b>17</b>	<b>183</b>

## Legend

Attribute	Description
Lines	total lines of the source unit
nLines	normalized lines of the source unit (e.g. normalizes functions spanning multiple lines)
nSLOC	normalized source lines of code (only source-code lines; no comments, no blank lines)
Comment Lines	lines containing single or block comments
Complexity Score	a custom complexity score derived from code statements that are known to introduce code complexity (branches, loops, calls, external interfaces, ...)

# Audit Results

## AUDIT PASSED

### Critical issues

No critical issues

### High issues

No high issues

### Medium issues

No medium issues

### Low issues

Issue	File	Type	Line	Description
#1	Main	A floating pragma is set	2	The current pragma Solidity directive is „^0.8.0“.
#2	Main	Missing Zero Address Validation (missing-zero-check)	57	Check that the address is not zero in the constructor
#3	Main	Local variables shadowing	100, 125	The owner variable shadows the “owner” variable from the “ownable” contract Rename the local variables that shadow another component



## Informational issues

Issue	File	Type	Line	Description
#1	Main	Unused return values	240	The function ignores the return value. Ensure that all the return values of the function calls are used and handle both success and failure cases if needed by the business logic
#2	Main	Missing zero check for amount	153	There should be a zero check so that the Tokens to swap won't be zero as it may cause unnecessary function calls in case where swapping will take place for zero tokens
#3	Main	NatSpec documentation missing	-	If you started to comment your code, also comment all other functions, variables etc.

## Commented Code exist

There is one instance of code being commented out in the following files that should be removed:

File	Line	Comment
Main	58	<pre>IPancakeswapV2Router02 _pancakeswapV2Router = IPancakeswapV2Router02(0x9Ac64Cc6e4415144C455BD8E4837Fea5560 3e5c3)</pre>

## Recommendation

Remove the commented code, or address them properly.

## Audit Comments

We recommend you to use the special form of comments (NatSpec Format, Follow link for more information <https://docs.soliditylang.org/en/v0.5.10/natspec-format.html>) for your contracts to provide rich documentation for functions, return variables and more. This helps investors to make clear what that variables, functions etc. do.

13.July, 2022:

- Read the whole report and modifiers section for more information.

## SWC Attacks

ID	Title	Relationships	Status
<a href="#">SWC-1136</a>	Unencrypted Private Data On-Chain	<a href="#">CWE-767: Access to Critical Private Variable via Public Method</a>	PASSED
<a href="#">SWC-1135</a>	Code With No Effects	<a href="#">CWE-1164: Irrelevant Code</a>	PASSED
<a href="#">SWC-1134</a>	Message call with hardcoded gas amount	<a href="#">CWE-655: Improper Initialization</a>	PASSED
<a href="#">SWC-1133</a>	Hash Collisions With Multiple Variable Length Arguments	<a href="#">CWE-294: Authentication Bypass by Capture-replay</a>	PASSED
<a href="#">SWC-1132</a>	Unexpected Ether balance	<a href="#">CWE-667: Improper Locking</a>	PASSED
<a href="#">SWC-1131</a>	Presence of unused variables	<a href="#">CWE-1164: Irrelevant Code</a>	PASSED

131			
SWC : 130	Right-To-Left-Override control character (U+202E)	<a href="#">CWE-451: User Interface (UI) Misrepresentation of Critical Information</a>	PASSED
SWC : 129	Typographical Error	<a href="#">CWE-480: Use of Incorrect Operator</a>	PASSED
SWC : 128	DoS With Block Gas Limit	<a href="#">CWE-400: Uncontrolled Resource Consumption</a>	PASSED
SWC : 127	Arbitrary Jump with Function Type Variable	<a href="#">CWE-695: Use of Low-Level Functionality</a>	PASSED
SWC : 125	Incorrect Inheritance Order	<a href="#">CWE-696: Incorrect Behavior Order</a>	PASSED
SWC :	Write to Arbitrary	<a href="#">CWE-123: Write-what-where Condition</a>	PASSED

<u>1</u> <u>2</u> <u>4</u>	Storage Location		PASSED
<u>S</u> <u>W</u> <u>C</u> : <u>1</u> <u>2</u> <u>3</u>	Requirement Violation	<a href="#">CWE-573: Improper Following of Specification by Caller</a>	
<u>S</u> <u>W</u> <u>C</u> : <u>1</u> <u>2</u> <u>2</u>	Lack of Proper Signature Verification	<a href="#">CWE-345: Insufficient Verification of Data Authenticity</a>	
<u>S</u> <u>W</u> <u>C</u> : <u>1</u> <u>2</u> <u>1</u>	Missing Protection against Signature Replay Attacks	<a href="#">CWE-347: Improper Verification of Cryptographic Signature</a>	
<u>S</u> <u>W</u> <u>C</u> : <u>1</u> <u>2</u> <u>0</u>	Weak Sources of Randomness from Chain Attributes	<a href="#">CWE-330: Use of Insufficiently Random Values</a>	
<u>S</u> <u>W</u> <u>C</u> : <u>1</u> <u>1</u> <u>9</u>	Shadowing State Variables	<a href="#">CWE-710: Improper Adherence to Coding Standards</a>	NOT PASSED

<a href="#">S</a> <a href="#">W</a> <a href="#">C</a> : <a href="#">1</a> <a href="#">1</a> <a href="#">8</a>	Incorrect Constructor Name	<a href="#">CWE-665: Improper Initialization</a>	PASSED
<a href="#">S</a> <a href="#">W</a> <a href="#">C</a> : <a href="#">1</a> <a href="#">1</a> <a href="#">7</a>	Signature Malleability	<a href="#">CWE-347: Improper Verification of Cryptographic Signature</a>	PASSED
<a href="#">S</a> <a href="#">W</a> <a href="#">C</a> : <a href="#">1</a> <a href="#">1</a> <a href="#">6</a>	Timestamp Dependence	<a href="#">CWE-829: Inclusion of Functionality from Untrusted Control Sphere</a>	PASSED
<a href="#">S</a> <a href="#">W</a> <a href="#">C</a> : <a href="#">1</a> <a href="#">1</a> <a href="#">5</a>	Authorization through tx.origin	<a href="#">CWE-477: Use of Obsolete Function</a>	PASSED
<a href="#">S</a> <a href="#">W</a> <a href="#">C</a> : <a href="#">1</a> <a href="#">1</a> <a href="#">4</a>	Transaction Order Dependence	<a href="#">CWE-362: Concurrent Execution using Shared Resource with Improper Synchronization ('Race Condition')</a>	PASSED
<a href="#">S</a> <a href="#">W</a> <a href="#">C</a> : <a href="#">1</a> <a href="#">1</a> <a href="#">3</a>	DoS with Failed Call	<a href="#">CWE-703: Improper Check or Handling of Exceptional Conditions</a>	PASSED

<a href="#">S</a> <a href="#">W</a> <a href="#">C</a> : 1 1 2	Delegatecall to Untrusted Callee	<a href="#">CWE-829: Inclusion of Functionality from Untrusted Control Sphere</a>	PASSED
<a href="#">S</a> <a href="#">W</a> <a href="#">C</a> : 1 1 1	Use of Deprecated Solidity Functions	<a href="#">CWE-477: Use of Obsolete Function</a>	PASSED
<a href="#">S</a> <a href="#">W</a> <a href="#">C</a> : 1 1 0	Assert Violation	<a href="#">CWE-670: Always-Incorrect Control Flow Implementation</a>	PASSED
<a href="#">S</a> <a href="#">W</a> <a href="#">C</a> : 1 0 9	Uninitialized Storage Pointer	<a href="#">CWE-824: Access of Uninitialized Pointer</a>	PASSED
<a href="#">S</a> <a href="#">W</a> <a href="#">C</a> : 1 0 8	State Variable Default Visibility	<a href="#">CWE-710: Improper Adherence to Coding Standards</a>	PASSED
<a href="#">S</a> <a href="#">W</a> <a href="#">C</a> : 1 0 7	Reentrancy	<a href="#">CWE-841: Improper Enforcement of Behavioral Workflow</a>	PASSED

<a href="#">S</a> <a href="#">W</a> <a href="#">C</a> : : 1 0 6	Unprotected SELFDESTR UCT Instruction	<a href="#">CWE-284: Improper Access Control</a>	PASSED
<a href="#">S</a> <a href="#">W</a> <a href="#">C</a> : : 1 0 5	Unprotected Ether Withdrawal	<a href="#">CWE-284: Improper Access Control</a>	PASSED
<a href="#">S</a> <a href="#">W</a> <a href="#">C</a> : : 1 0 4	Unchecked Call Return Value	<a href="#">CWE-252: Unchecked Return Value</a>	NOT PASSED
<a href="#">S</a> <a href="#">W</a> <a href="#">C</a> : : 1 0 3	Floating Pragma	<a href="#">CWE-664: Improper Control of a Resource Through its Lifetime</a>	NOT PASSED
<a href="#">S</a> <a href="#">W</a> <a href="#">C</a> : : 1 0 2	Outdated Compiler Version	<a href="#">CWE-937: Using Components with Known Vulnerabilities</a>	PASSED
<a href="#">S</a> <a href="#">W</a> <a href="#">C</a> : : 1 0 1	Integer Overflow and Underflow	<a href="#">CWE-682: Incorrect Calculation</a>	PASSED

<div> <div> <div>S</div> <div>W</div> <div>C</div> <div>.</div> <div>1</div> <div>0</div> <div>0</div> <div>0</div> </div> </div>	<div>Function Default Visibility</div>	<div> <div>CWE-710: Improper Adherence to Coding Standards</div> </div>	<div>PASSED</div>
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