dkey

Smart Contract Audit Report

SYSFIXED

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AUDITED DETAILS

Audited Project

Project name	Token ticker	Blockchain
dkey	DKEY	Binance Smart Chain

Addresses

Contract address	0xf3ed4770e6efe9168c3f2f50a6d9d0f97a550df1
Contract deployer address	0x8Eb6b84801436a0cDc813429B6E0218d52B6Fb04

Project Website

https://dkey.io/

Codebase

https://bscscan.com/address/0xf3ed4770e6efe9168c3f2f50a6d9d0f97a550df1#code

SUMMARY

DKEY stands for Decentralized Key and Bank, the ecosystem it offers users. DKEY Bank provides financial services that utilize blockchain-based technology for the speed and security of every transaction. The ecosystem is built around user experiences and focuses on delivering an intuitive user-interface that is friendly and effective at the same time.

Contract Summary

Documentation Quality

dkey 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 dkey with the discovery of several low issues.

Test Coverage

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

Audit Findings Summary

- SWC-100 SWC-108 | Explicitly define visibility for all state variables on lines 69 and 70.
- SWC-103 | Pragma statements can be allowed to float when a contract is intended on lines 5.
- SWC-107 | It is recommended to use a reentrancy lock, reentrancy weaknesses detected on lines 165.
- SWC-111 | It is recommended to use alternatives to the deprecated constructions on lines 36, 37, 38, 89, 97 and 152.

CONCLUSION

We have audited the dkey Project released on March 2021 to discover issues and identify potential security vulnerabilities in dkey 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 issues found in the dkey 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 that a floating pragma is set, a state variable visibility is not set, a call to a user-supplied address is executed, and the use of the "constant" state mutability modifier is deprecated. The current pragma Solidity directive is ""^0.4.24"". Specifying a fixed compiler version is recommended 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. A call to a user-supplied address is executed, and an external message call to an address specified by the caller is executed. Note that the callee account might contain arbitrary code and could reenter any function within this contract. Reentering the contract in an intermediate state may lead to unexpected behavior. Ensure no state modifications are executed after this call, and reentrancy guards are in place. Using "constant" as a state mutability modifier in function "balanceOf" is disallowed as of Solidity version 0.5.0. Use "view" instead.

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.	ISSUE FOUND
Integer Overflow and Underflow	SWC-101	If unchecked math is used, all math operations should be safe from overflows and underflows.	PASS
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.	ISSUE FOUND
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.	ISSUE FOUND
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	Wednesday Mar 31 2021 21:10:23 GMT+0000 (Coordinated Universal Time)
Finished	Thursday Apr 01 2021 19:38:21 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	DKEYtoken.sol

Detected Issues

ID	Title	Severity	Status
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
SWC-107	A CALL TO A USER-SUPPLIED ADDRESS IS EXECUTED.	low	acknowledged
SWC-108	STATE VARIABLE VISIBILITY IS NOT SET.	low	acknowledged
SWC-108	STATE VARIABLE VISIBILITY IS NOT SET.	low	acknowledged
SWC-111	USE OF THE "CONSTANT" STATE MUTABILITY MODIFIER IS DEPRECATED.	low	acknowledged
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SWC-103 | A FLOATING PRAGMA IS SET.

LINE 5

low SEVERITY

The current pragma Solidity directive is ""^0.4.24"". 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

- DKEYtoken.sol

Locations

```
4
5   pragma solidity ^0.4.24;
6
7   contract SafeMath {
8
9
```

SWC-107 | A CALL TO A USER-SUPPLIED ADDRESS IS EXECUTED.

LINE 165

low SEVERITY

An external message call to an address specified by the caller is executed. Note that the callee account might contain arbitrary code and could re-enter any function within this contract. Reentering the contract in an intermediate state may lead to unexpected behaviour. Make sure that no state modifications are executed after this call and/or reentrancy guards are in place.

Source File

- DKEYtoken.sol

Locations

```
164   emit Approval(msg.sender, spender, tokens);
165   ApproveAndCallFallBack(spender).receiveApproval(msg.sender, tokens, this, data);
166   return true;
167   }
168
169
```

SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 69

low SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "balances" is internal. Other possible visibility settings are public and private.

Source File

- DKEYtoken.sol

Locations

```
68
69   mapping(address => uint) balances;
70   mapping(address => mapping(address => uint)) allowed;
71
72   // ----------------------------------------------------------------------
73
```

SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 70

low SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "allowed" is internal. Other possible visibility settings are public and private.

Source File

- DKEYtoken.sol

Locations

```
69   mapping(address => uint) balances;
70   mapping(address => mapping(address => uint)) allowed;
71
72   // ------------------------------------------------------------------------
73   // Constructor
74
```

SWC-111 | USE OF THE "CONSTANT" STATE MUTABILITY MODIFIER IS DEPRECATED.

LINE 36

low SEVERITY

Using "constant" as a state mutability modifier in function "totalSupply" is disallowed as of Solidity version 0.5.0. Use "view" instead.

Source File

- DKEYtoken.sol

Locations

```
35   contract ERC20Interface {
36   function totalSupply() public constant returns (uint256);
37   function balanceOf(address tokenOwner) public constant returns (uint256 balance);
38   function allowance(address tokenOwner, address spender) public constant returns
(uint256 remaining);
39   function transfer(address to, uint tokens) public returns (bool success);
40
```

SWC-111 | USE OF THE "CONSTANT" STATE MUTABILITY MODIFIER IS DEPRECATED.

LINE 37

low SEVERITY

Using "constant" as a state mutability modifier in function "balanceOf" is disallowed as of Solidity version 0.5.0. Use "view" instead.

Source File

- DKEYtoken.sol

Locations

```
36   function totalSupply() public constant returns (uint256);
37   function balanceOf(address tokenOwner) public constant returns (uint256 balance);
38   function allowance(address tokenOwner, address spender) public constant returns
(uint256 remaining);
39   function transfer(address to, uint tokens) public returns (bool success);
40   function approve(address spender, uint tokens) public returns (bool success);
41
```

SWC-111 | USE OF THE "CONSTANT" STATE MUTABILITY MODIFIER IS DEPRECATED.

LINE 38

low SEVERITY

Using "constant" as a state mutability modifier in function "allowance" is disallowed as of Solidity version 0.5.0. Use "view" instead.

Source File

- DKEYtoken.sol

Locations

```
37   function balanceOf(address tokenOwner) public constant returns (uint256 balance);
38   function allowance(address tokenOwner, address spender) public constant returns
(uint256 remaining);
39   function transfer(address to, uint tokens) public returns (bool success);
40   function approve(address spender, uint tokens) public returns (bool success);
41   function transferFrom(address from, address to, uint tokens) public returns (bool
success);
42
```

SWC-111 | USE OF THE "CONSTANT" STATE MUTABILITY MODIFIER IS DEPRECATED.

LINE 89

low SEVERITY

Using "constant" as a state mutability modifier in function "totalSupply" is disallowed as of Solidity version 0.5.0. Use "view" instead.

Source File

- DKEYtoken.sol

Locations

```
88   // ------------------------------------------------------------------------
89   function totalSupply() public constant returns (uint) {
90   return safeSub(_totalSupply,balances[address(0)]);
91   }
92
93
```

SWC-111 | USE OF THE "CONSTANT" STATE MUTABILITY MODIFIER IS DEPRECATED.

LINE 97

low SEVERITY

Using "constant" as a state mutability modifier in function "balanceOf" is disallowed as of Solidity version 0.5.0. Use "view" instead.

Source File

- DKEYtoken.sol

Locations

```
96   // ------------------------------------------------------------------------
97   function balanceOf(address tokenOwner) public constant returns (uint256 balance) {
98   return balances[tokenOwner];
99   }
100
101
```

SWC-111 | USE OF THE "CONSTANT" STATE MUTABILITY MODIFIER IS DEPRECATED.

LINE 152

low SEVERITY

Using "constant" as a state mutability modifier in function "allowance" is disallowed as of Solidity version 0.5.0. Use "view" instead.

Source File

- DKEYtoken.sol

Locations

```
151   // ------------------------------------------------------------------------
152   function allowance(address tokenOwner, address spender) public constant returns
(uint remaining) {
153   return allowed[tokenOwner][spender];
154   }
155
156
```

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