IMOV

Smart Contract Audit Report

SYSFIXED

22 Jul 2022

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AUDITED DETAILS

Audited Project

Project name	Token ticker	Blockchain
IMOV	IMOV	Binance Smart Chain

Addresses

Contract address	0x7b8779e01d117ec7e220f8299a6f93672e8eae23
Contract deployer address	0xfC724429159A416332e7746AA8aC40a8491c0194

Project Website

https://imov.app/

Codebase

https://bscscan.com/address/0x7b8779e01d117ec7e220f8299a6f93672e8eae23#code

SUMMARY

IMOV is a Web3 lifestyle app with inbuilt Game-Fi and Social-Fi elements, and the first inclusive fitness app for people of all abilities. Users equip themselves with NFTs in the form of Sneakers. By walking, jogging, or running outdoors, users will earn game currency, which can either be used in-game, or cashed out for profit.

Contract Summary

Documentation Quality

IMOV 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 IMOV 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 134, 144, 152, 171, 173, 185, 186, 200, 202, 462, 462, 462, 464, 464, 617, 617, 618, 641 and 649.
- 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 631 and 632.

CONCLUSION

We have audited the IMOV project released on July 2021 to discover issues and identify potential security vulnerabilities in IMOV 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. This smart contract doesn't have any issues.

We didn't find any issues in our audit results for IMOV smart contracts. This result is very satisfying.

Judging from the code base of this smart contract, this smart contract follows the official Solidity style guide.

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	Thursday Jul 21 2022 14:10:40 GMT+0000 (Coordinated Universal Time)
Finished	Friday Jul 22 2022 07:46:03 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	IMOV.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-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 134

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
133   unchecked {
134   _approve(sender, _msgSender(), currentAllowance - amount);
135   }
136   }
137
138
```

SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 144

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
143   function increaseAllowance(address spender, uint256 addedValue) public virtual
returns (bool) {
144   _approve(_msgSender(), spender, _allowances[_msgSender()][spender] + addedValue);
145   return true;
146   }
147
148
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 152

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
151   unchecked {
152   _approve(_msgSender(), spender, currentAllowance - subtractedValue);
153   }
154
155   return true;
156
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 171

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
170   unchecked {
171   _balances[sender] = senderBalance - amount;
172   }
173   _balances[recipient] += amount;
174
175
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 173

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
172   }
173   _balances[recipient] += amount;
174
175   emit Transfer(sender, recipient, amount);
176
177
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 185

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
184
185   _totalSupply += amount;
186   _balances[account] += amount;
187   emit Transfer(address(0), account, amount);
188
189
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 186

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
185   _totalSupply += amount;
186   _balances[account] += amount;
187   emit Transfer(address(0), account, amount);
188
189   _afterTokenTransfer(address(0), account, amount);
190
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 200

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
199   unchecked {
200   _balances[account] = accountBalance - amount;
201   }
202   _totalSupply -= amount;
203
204
```

SWC-101 | ARITHMETIC OPERATION "-=" DISCOVERED

LINE 202

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
201   }
202   _totalSupply -= amount;
203
204   emit Transfer(account, address(0), amount);
205
206
```

SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 462

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
461   operator = msg.sender;
462   swapTokensAtAmount = 100_000_000 * (10 ** 18) / 5000;
463   marketingWallet = newOwner;
464   _mint(owner(), 100_000_000 * (10 ** 18));
465   sellFee = 20;
466
```

SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED

LINE 462

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
461   operator = msg.sender;
462   swapTokensAtAmount = 100_000_000 * (10 ** 18) / 5000;
463   marketingWallet = newOwner;
464   _mint(owner(), 100_000_000 * (10 ** 18));
465   sellFee = 20;
466
```

SWC-101 | ARITHMETIC OPERATION "**" DISCOVERED

LINE 462

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
461   operator = msg.sender;
462   swapTokensAtAmount = 100_000_000 * (10 ** 18) / 5000;
463   marketingWallet = newOwner;
464   _mint(owner(), 100_000_000 * (10 ** 18));
465   sellFee = 20;
466
```

SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED

LINE 464

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
463   marketingWallet = newOwner;
464   _mint(owner(), 100_000_000 * (10 ** 18));
465   sellFee = 20;
466
467   IUniswapV2Router02 _uniswapV2Router =
IUniswapV2Router02(0x10ED43C718714eb63d5aA57B78B54704E256024E);
468
```

SWC-101 | ARITHMETIC OPERATION "**" DISCOVERED

LINE 464

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
463   marketingWallet = newOwner;
464   _mint(owner(), 100_000_000 * (10 ** 18));
465   sellFee = 20;
466
467   IUniswapV2Router02 _uniswapV2Router =
IUniswapV2Router02(0x10ED43C718714eb63d5aA57B78B54704E256024E);
468
```

SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 617

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
616   if(takeFee && to == uniswapV2Pair && sellFee > 0) {
617   uint256 fees = (amount * sellFee) / 100;
618   amount = amount - fees;
619   super._transfer(from, address(this), fees);
620   }
621
```

SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED

LINE 617

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
616   if(takeFee && to == uniswapV2Pair && sellFee > 0) {
617   uint256 fees = (amount * sellFee) / 100;
618   amount = amount - fees;
619   super._transfer(from, address(this), fees);
620   }
621
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 618

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
617   uint256 fees = (amount * sellFee) / 100;
618   amount = amount - fees;
619   super._transfer(from, address(this), fees);
620   }
621
622
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 641

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
640
641   uint256 newBalance = address(this).balance - initialBalance;
642
643   sendBNB(payable(marketingWallet), newBalance);
644
645
```

SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 649

low SEVERITY

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

Source File

- IMOV.sol

Locations

```
648   function setSwapTokensAtAmount(uint256 newAmount) external onlyOwner{
649   require(newAmount > totalSupply() / 100000, "SwapTokensAtAmount must be greater
than 0.001% of total supply");
650   swapTokensAtAmount = newAmount;
651   }
652   }
653
```

SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 631

low SEVERITY

The index access expression can cause an exception in case of use of invalid array index value.

Source File

- IMOV.sol

Locations

```
630   address[] memory path = new address[](2);
631   path[0] = address(this);
632   path[1] = uniswapV2Router.WETH();
633
634   uniswapV2Router.swapExactTokensForETHSupportingFeeOnTransferTokens(
635
```

SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 632

low SEVERITY

The index access expression can cause an exception in case of use of invalid array index value.

Source File

- IMOV.sol

Locations

```
631   path[0] = address(this);
632   path[1] = uniswapV2Router.WETH();
633
634   uniswapV2Router.swapExactTokensForETHSupportingFeeOnTransferTokens(
635   tokenAmount,
636
```

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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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