



IMOV

# Smart Contract Audit Report

# TABLE OF CONTENTS

## Audited Details

- Audited Project
- Blockchain
- Addresses
- Project Website
- Codebase

## Summary

- Contract Summary
- Audit Findings Summary
- Vulnerabilities Summary

## Conclusion

## Audit Results

## Smart Contract Analysis

- Detected Vulnerabilities

## Disclaimer

## About Us

# 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 <code>abi.encodePacked()</code> with multiple variable length arguments can, in certain situations, lead to a hash collision.	PASS
Hardcoded gas amount	SWC-134	The <code>transfer()</code> and <code>send()</code> 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-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
```

# DISCLAIMER

This report is subject to the terms and conditions (including without limitation, description of services, confidentiality, disclaimer and limitation of liability) set forth in the Services Agreement, or the scope of services, and terms and conditions provided to you (“Customer” or the “Company”) in connection with the Agreement. This report provided in connection with the Services set forth in the Agreement shall be used by the Company only to the extent permitted under the terms and conditions set forth in the Agreement. This report may not be transmitted, disclosed, referred to, or relied upon by any person for any purposes, nor may copies be delivered to any other person other than the Company, without Sysfixed’s prior written consent in each instance.

This report is not, nor should be considered, an “endorsement” or “disapproval” of any particular project or team. This report is not, nor should be considered, an indication of the economics or value of any “product” or “asset” created by any team or project that contracts Sysfixed to perform a security assessment. This report does not provide any warranty or guarantee regarding the absolute bug-free nature of the technology analyzed, nor do they provide any indication of the technologies proprietors, business, business model, or legal compliance.

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.

This report should not be used in any way to make decisions around investment or involvement with any particular project. This report in no way provides investment advice, nor should be leveraged as investment advice of any sort. This report represents an extensive assessing process intending to help our customers increase the quality of their code while reducing the high level of risk presented by cryptographic tokens and blockchain technology.

This report is provided for information purposes only and on a non-reliance basis and does not constitute investment advice. No one shall have any right to rely on the report or its contents, and Sysfixed and its affiliates (including holding companies, shareholders, subsidiaries, employees, directors, officers, and other representatives) (Sysfixed) owe no duty of care.



## ABOUT US

Sysfixed is a blockchain security certification organization established in 2021 with the objective to provide smart contract security services and verify their correctness in blockchain-based protocols. Sysfixed automatically scans for security vulnerabilities in Ethereum and other EVM-based blockchain smart contracts. Sysfixed a comprehensive range of analysis techniques—including static analysis, dynamic analysis, and symbolic execution—can accurately detect security vulnerabilities to provide an in-depth analysis report. With a vibrant ecosystem of world-class integration partners that amplify developer productivity, Sysfixed can be utilized in all phases of your project's lifecycle. Our team of security experts is dedicated to the research and improvement of our tools and techniques used to fortify your code.