

Alcazar Smart Contract Audit Report



25 Oct 2022



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

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AUDITED DETAILS

Audited Project

Project name	Token ticker	Blockchain	
Alcazar	ALCAZAR	Ethereum	

Addresses

Contract address	0x10f44a834097469ac340592d28c479c442e99bfe
Contract deployer address	0x2FF9d7be466f674c8640466A55fFdd02b3a00864

Project Website

https://alcazar.world/

Codebase

https://etherscan.io/address/0x10f44a834097469ac340592d28c479c442e99bfe#code



SUMMARY

Alcazar is building a next generation dApp with the purpose of making it possible for Alcazar to raffle away many high quality luxurious items in between holders. The raffles consist of items such as high-end luxury watches, vehicles, tickets to different events and high amounts of other tokens.

Contract Summary

Documentation Quality

Alcazar 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 Alcazar 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 978, 982 and 990.
- SWC-101 | It is recommended to use vetted safe math libraries for arithmetic operations consistently on lines 250, 282, 305, 306, 341, 377, 947, 948, 948, 951, 951, 952, 952, 1013, 1014, 1017, 1147, 1154, 1162 and 1236.
- 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 1237, 1238, 1356, 1357, 1386 and 1387.
- SWC-120 | It is recommended to use external sources of randomness via oracles on lines 1118.



CONCLUSION

We have audited the Alcazar project released on October 2022 to discover issues and identify potential security vulnerabilities in Alcazar 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 Alcazar 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 some arithmetic operation issues, State variable visibility is not set, Potential use of "block.number" as a source of randomness, and out-of-bounds array access which the index access expression can cause an exception in case of the use of an invalid array index value.



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.	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.	issue Found
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.	
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.	
Unencrypted Private Data	SWC-136	It is a common misconception that private type variables cannot be read.	PASS



SMART CONTRACT ANALYSIS

Started	Monday Oct 24 2022 04:10:16 GMT+0000 (Coordinated Universal Time)
Finished	Tuesday Oct 25 2022 12:34:50 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	Alcazar.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-101	ARITHMETIC OPERATION "++" DISCOVERED	low	acknowledged
SWC-108	STATE VARIABLE VISIBILITY IS NOT SET.	low	acknowledged
SWC-108	STATE VARIABLE VISIBILITY IS NOT SET.	low	acknowledged
SWC-108	STATE VARIABLE VISIBILITY IS NOT SET.	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged
SWC-120	POTENTIAL USE OF "BLOCK.NUMBER" AS SOURCE OF RANDOMNESS.	low	acknowledged





LINE 250

Iow SEVERITY

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

Source File

- Alcazar.sol

```
249 function add(uint256 a, uint256 b) internal pure returns (uint256) {
250 uint256 c = a + b;
251 require(c >= a, "SafeMath: addition overflow");
252
253 return c;
254
```



LINE 282

Iow SEVERITY

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

Source File

- Alcazar.sol

```
281 require(b <= a, errorMessage);
282 uint256 c = a - b;
283
284 return c;
285 }
286</pre>
```



LINE 305

Iow SEVERITY

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

Source File

- Alcazar.sol

```
304
305 uint256 c = a * b;
306 require(c / a == b, "SafeMath: multiplication overflow");
307
308 return c;
309
```



LINE 306

Iow SEVERITY

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

Source File

- Alcazar.sol

```
305 uint256 c = a * b;
306 require(c / a == b, "SafeMath: multiplication overflow");
307
308 return c;
309 }
310
```



LINE 341

Iow SEVERITY

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

Source File

- Alcazar.sol

```
340 require(b > 0, errorMessage);
341 uint256 c = a / b;
342 // assert(a == b * c + a % b); // There is no case in which this doesn't hold
343
344 return c;
345
```



LINE 377

Iow SEVERITY

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

Source File

- Alcazar.sol

```
376 require(b != 0, errorMessage);
377 return a % b;
378 }
379 }
380
381
```



LINE 947

Iow SEVERITY

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

Source File

- Alcazar.sol

```
946 // Supply
947 uint256 private _totalSupply = 1 * 1e9 * 1e18;
948 uint256 private minimumTokensBeforeSwap = _totalSupply * 25 / 100000;
949
950 // Restrictions
951
```



LINE 947

Iow SEVERITY

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

Source File

- Alcazar.sol

```
946 // Supply
947 uint256 private _totalSupply = 1 * 1e9 * 1e18;
948 uint256 private minimumTokensBeforeSwap = _totalSupply * 25 / 100000;
949
950 // Restrictions
951
```



LINE 948

Iow SEVERITY

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

Source File

- Alcazar.sol

```
947 uint256 private _totalSupply = 1 * le9 * le18;
948 uint256 private minimumTokensBeforeSwap = _totalSupply * 25 / 100000;
949
950 // Restrictions
951 uint256 public _maxTxAmount = (_totalSupply * 8) / 1000;
952
```



LINE 948

Iow SEVERITY

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

Source File

- Alcazar.sol

```
947 uint256 private _totalSupply = 1 * le9 * le18;
948 uint256 private minimumTokensBeforeSwap = _totalSupply * 25 / 100000;
949
950 // Restrictions
951 uint256 public _maxTxAmount = (_totalSupply * 8) / 1000;
952
```



LINE 951

Iow SEVERITY

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

Source File

- Alcazar.sol

```
950 // Restrictions
951 uint256 public _maxTxAmount = (_totalSupply * 8) / 1000;
952 uint256 public _walletMax = (_totalSupply * 8) / 1000;
953 bool public checkWalletLimit = true;
954
955
```



LINE 951

Iow SEVERITY

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

Source File

- Alcazar.sol

```
950 // Restrictions
951 uint256 public _maxTxAmount = (_totalSupply * 8) / 1000;
952 uint256 public _walletMax = (_totalSupply * 8) / 1000;
953 bool public checkWalletLimit = true;
954
955
```



LINE 952

Iow SEVERITY

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

Source File

- Alcazar.sol

```
951 uint256 public _maxTxAmount = (_totalSupply * 8) / 1000;
952 uint256 public _walletMax = (_totalSupply * 8) / 1000;
953 bool public checkWalletLimit = true;
954
955 // wallets
956
```



LINE 952

Iow SEVERITY

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

Source File

- Alcazar.sol

```
951 uint256 public _maxTxAmount = (_totalSupply * 8) / 1000;
952 uint256 public _walletMax = (_totalSupply * 8) / 1000;
953 bool public checkWalletLimit = true;
954
955 // wallets
956
```



LINE 1013

Iow SEVERITY

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

Source File

- Alcazar.sol

```
1012 // load total fees
1013 totalFeesBuy = operationsFeeBuy + liquidityFeeBuy;
1014 totalFeesSell = operationsFeeSell + liquidityFeeSell;
1015
1016 // load total distribution
1017
```



LINE 1014

Iow SEVERITY

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

Source File

- Alcazar.sol

```
1013 totalFeesBuy = operationsFeeBuy + liquidityFeeBuy;
1014 totalFeesSell = operationsFeeSell + liquidityFeeSell;
1015
1016 // load total distribution
1017 _totalDistributionShares = _liquiditySharePercentage + _operationsSharePercentage;
1018
```



LINE 1017

Iow SEVERITY

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

Source File

- Alcazar.sol

```
1016 // load total distribution
1017 _totalDistributionShares = _liquiditySharePercentage + _operationsSharePercentage;
1018
1019 // create router ------
1020 IUniswapV2Router02 _uniswapV2Router;
1021
```



LINE 1147

Iow SEVERITY

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

Source File

- Alcazar.sol

```
1146 liquidityFeeBuy = _liquidityFee;
1147 totalFeesBuy = operationsFeeBuy + liquidityFeeBuy;
1148 require(totalFeesBuy <= maxTotalFeeBuy, "Must keep fees at maxTotalFeeBuy or
less");
1149 }
1150
1151
```



LINE 1154

Iow SEVERITY

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

Source File

- Alcazar.sol

```
1153 liquidityFeeSell = _liquidityFee;
1154 totalFeeSSell = operationsFeeSell + liquidityFeeSell;
1155 require(totalFeeSSell <= maxTotalFeeSell, "Must keep fees at maxTotalFeeSell or
less");
1156 }
1157 
1158
```



LINE 1162

Iow SEVERITY

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

Source File

- Alcazar.sol

```
1161 __operationsSharePercentage = newOperationsShare;
1162 __totalDistributionShares = _liquiditySharePercentage + _operationsSharePercentage;
1163 require(_totalDistributionShares == 100, "Distribution needs to total to 100");
1164 }
1165
1166
```



LINE 1236

Iow SEVERITY

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

Source File

- Alcazar.sol

```
1235 require(airdropWallets.length == amount.length, "airdropToWallets:: Arrays must be
the same length");
1236 for(uint256 i = 0; i < airdropWallets.length; i++){
1237 address wallet = airdropWallets[i];
1238 uint256 airdropAmount = amount[i];
1239 emit Transfer(msg.sender, wallet, airdropAmount);
1240</pre>
```



SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 978

Iow 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

- Alcazar.sol

```
977 // max amounts
978 mapping (address => uint256) _balances;
979 mapping (address => mapping (address => uint256)) private _allowances;
980 mapping (address => bool) public isExcludedFromFee;
981 mapping (address => bool) public isWalletLimitExempt;
982
```



SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 982

Iow SEVERITY

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

Source File

- Alcazar.sol

```
981 mapping (address => bool) public isWalletLimitExempt;
982 mapping (address => bool) isTxLimitExempt;
983
984 // Router Information
985 mapping (address => bool) public isMarketPair;
986
```



SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 990

Iow SEVERITY

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

Source File

- Alcazar.sol

Locations

989 // toggle swap back (fees) 990 bool inSwapAndLiquify; 991 uint256 public tokensForLiquidity; 992 uint256 public tokensForOperations; 993 994



LINE 1237

Iow SEVERITY

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

Source File

- Alcazar.sol

```
1236 for(uint256 i = 0; i < airdropWallets.length; i++){
1237 address wallet = airdropWallets[i];
1238 uint256 airdropAmount = amount[i];
1239 emit Transfer(msg.sender, wallet, airdropAmount);
1240 }
1241</pre>
```



LINE 1238

Iow SEVERITY

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

Source File

- Alcazar.sol

```
1237 address wallet = airdropWallets[i];
1238 uint256 airdropAmount = amount[i];
1239 emit Transfer(msg.sender, wallet, airdropAmount);
1240 }
1241 }
1242
```



LINE 1356

Iow SEVERITY

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

Source File

- Alcazar.sol

```
1355 address[] memory path = new address[](2);
1356 path[0] = address(this);
1357 path[1] = uniswapV2Router.WETH();
1358 _approve(address(this), address(uniswapV2Router), tokenAmount);
1359 uniswapV2Router.swapExactTokensForETHSupportingFeeOnTransferTokens(
1360
```



LINE 1357

Iow SEVERITY

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

Source File

- Alcazar.sol

Locations

1356 path[0] = address(this); 1357 path[1] = uniswapV2Router.WETH(); 1358 _approve(address(this), address(uniswapV2Router), tokenAmount); 1359 uniswapV2Router.swapExactTokensForETHSupportingFeeOnTransferTokens(1360 tokenAmount, 1361



LINE 1386

Iow SEVERITY

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

Source File

- Alcazar.sol

```
1385 address[] memory path = new address[](2);
1386 path[0] = uniswapV2Router.WETH();
1387 path[1] = address(this);
1388
1389 // make the swap
1390
```



LINE 1387

Iow SEVERITY

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

Source File

- Alcazar.sol

```
1386 path[0] = uniswapV2Router.WETH();
1387 path[1] = address(this);
1388
1389 // make the swap
1390 uniswapV2Router.swapExactETHForTokensSupportingFeeOnTransferTokens{value:
ETHAmountInWei}(
1391
```



SWC-120 | POTENTIAL USE OF "BLOCK.NUMBER" AS SOURCE OF RANDOMNESS.

LINE 1118

Iow SEVERITY

The environment variable "block.number" looks like it might be used as a source of randomness. Note that the values of variables like coinbase, gaslimit, block number and timestamp are predictable and can be manipulated by a malicious miner. Also keep in mind that attackers know hashes of earlier blocks. Don't use any of those environment variables as sources of randomness and be aware that use of these variables introduces a certain level of trust into miners.

Source File

- Alcazar.sol

```
1117 function getBlock()public view returns (uint256) {
1118 return block.number;
1119 }
1120
1121 // @dev Owner functions start ------
1122
```





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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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