Cyberscope

Audit Report

Figures

March 2022

Commit	5e46e15ed65b1d878db66bb219584f1675c51902
Github	https://github.com/atrhacker/FiguresContract
Audited by	© cyberscope

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Contract Review

Github	https://github.com/atrhacker/FiguresContract
Commit	5e46e15ed65b1d878db66bb219584f1675c51902
Source	@chainlink/contracts/src/v0.8/interfaces/LinkTokenInterface.sol, @chainlink/contracts/src/v0.8/VRFConsumerBase.sol, @chainlink/contracts/src/v0.8/VRFRequestIDBase.sol, @openzeppelin/contracts/access/Ownable.sol, @openzeppelin/contracts/security/ReentrancyGuard.sol, @openzeppelin/contracts/token/ERC20/IERC20.sol, @openzeppelin/contracts/utils/Address.sol, @openzeppelin/contracts/utils/Context.sol, @openzeppelin/contracts/utils/math/SafeMath.sol, contracts/Figures.sol, contracts/IUni.sol
Domain	https://figures.exchange/

Audit Updates

Initial Audit	20th March 2022
Corrected	

Lottery Feature

The contact implements a lottery feature. All the users that buy or sell the token are getting a ticket. Every 7 days and 5 minutes 3 winners are shared the awarded amount. The awarded amount is USDT that has accumulated from the fees.

First Winner	Second Winner	Third Winner
80%	15%	5%

Notes about the lottery feature:

- The lottery duration is 7 days and 5 minutes.
- There are 3 winners that share the awarded amount proportionally to their position.
- The ticker randomization is using the Chainlink VRF mechanism that guarantees a decent distribution https://docs.chain.link/docs/chainlink-vrf/
- The winners can claim their rewards until 7 days and 5 minutes after their declaration. Then the contract owner transfers the left-over awards to the marketing wallet.
- The wallets that hold less than 10 tokens are excluded from the winners even if they won.
- Each address can have up to 15 tickets.
- If the participants of the current round are less than 3, then the lottery process is extended for another 7 days and 5 minutes.

Recommendation:

The winners even if they were chosen, they may not be eligible to win. This will happen if they hold less than 10 tokens. The duplicate winners will also be excluded. The lottery could proceed to the next winner in the queue, like a fourth randomly picked, rather than moving the corresponding funds to the marketing wallet.

Contract Analysis

🔴 Critical 🟠 Medium ⚪ Minor 🔵 Pass

Severity	Code	Description
🔵	ST	Contract Owner is not able to stop or pause transactions
🔵	OCTD	Contract Owner is not able to transfer tokens from specific address
🔵	OTUT	Owner Transfer User's Tokens
🔵	ELFM	Contract Owner is not able to increase fees more than a reasonable percent (25%)
🔵	ULTW	Contract Owner is not able to increase the amount of liquidity taken by dev wallet more than a reasonable percent
🔵	MT	Contract Owner is not able to mint new tokens
🔵	BT	Contract Owner is not able to burn tokens from specific wallet
🔵	BC	Contract Owner is not able to blacklist wallets from selling

Contract Diagnostics

🔴 Critical 🟠 Medium ⚪ Minor

Severity	Code	Description
⚪	FSA	Fixed Swap Address
🟠	MC	Missing Check
⚪	L01	Public Function could be Declared External
⚪	L02	State Variables could be Declared Constant
⚪	L04	Conformance to Solidity Naming Conventions
⚪	L05	Unused State Variable
⚪	L09	Dead Code Elimination
⚪	L11	Unnecessary Boolean equality

FSA - Fixed Swap Address

Criticality	minor
Location	contract.sol#L192

Description

The swap address is assigned once in the constructor and it can not be changed. The decentralized swaps sometimes create a new swap version or abandon the current. A contract that cannot change the swap address may not be able to catch-up the upgrade.

```
uniswapV2Router =
IUniswapV2Router02(0x7a250d5630B4cF539739dF2C5dAcb4c659F2488D);
```

Recommendation

It could be better to allow the swap address mutation in case of future swap updates.

MC - Missing Check

Criticality	medium
Location	contract.sol#L343

Description

The _transferFromPrizePot function is an essential part of the lottery feature. The lottery algorithm uses this functionality in order to move the funds to the winners. The transfer() function does not guarantee that the amount has been moved. Hence, if the transfer fails, the lottery functionality will not be interrupted and it will assume that the user has received the corresponding amount.

```
function  _transferFromPrizePot(uint256 _amountToSend, address to) private {
  _usdtToken.transfer(to, _amountToSend);
}
```

Recommendation

The contract could embed a safe transfer technique that will guarantee that the function will revert in case of a failure.

L01 - Public Function could be Declared External

Criticality	minor
Location	contracts/Figures.sol#L604,608,612,616,624,629,633,638,644,649 and 8 more

Description

Public functions that are never called by the contract should be declared external to save gas.

```
getRaffleMeta
getNumberOfTicketSoldCurrentRaffle
getClaimableAmountForAccount
getTicketsDetailsForAddress
getAddressOwnerOfTicket
getNumbersOfTicketsForAddress
currentRaffleId
isExcludedFromFee
decreaseAllowance
...
```

Recommendation

Use the external attribute for functions never called from the contract

L02 - State Variables could be Declared Constant

Criticality	minor
Location	contracts/Figures.sol#L42,22,43,40,46,57,41,39,56,53

Description

Constant state variables should be declared constant to save gas.

```
_taxFeeOnUnclaimedAmount
_taxFeeOnPot
_tTotal
_symbol
_raffleFeeOnPot
_percentageOfLP
_name
_maxTicketsPerRaffle
_lastRandomResult
...
```

Recommendation

Add the constant attribute to state variables that never change.

L04 - Conformance to Solidity Naming Conventions

Criticality	minor
Location	contracts/Figures.sol#L540,21,43

Description

Solidity defines a naming convention that should be followed. Rule exceptions:

- Allow constant variable name/symbol/decimals to be lowercase.
- Allow _ at the beginning of the mixed_case match for private variables and unused parameters.

```
_maxTicketsPerRaffle
_latestRequestIdChainLink
_marketingAddress
```

Recommendation

Follow the Solidity naming convention.
https://docs.soliditylang.org/en/v0.4.25/style-guide.html#naming-conventions

L05 - Unused State Variable

Criticality	minor
Location	contracts/Figures.sol#L22

Description

There are segments that contain unused state variables.

```
_lastRandomResult
```

Recommendation

Remove unused state variables.

L09 - Dead Code Elimination

Criticality	minor
Location	contracts/Figures.sol#L512

Description

Functions that are not used in the contract, and make the code's size bigger.

```
_transferERC20Standard
```

Recommendation

Remove unused functions.

L11 - Unnecessary Boolean equality

Criticality	minor
Location	contracts/Figures.sol#L307,568,583

Description

The comparison to boolean constants is redundant. Boolean constants can be used directly and do not need to be compared to true or false.

```
require(bool,string)(_raffleMeta[raffleId].winnerInformation[msg.sender].prizeClaimedAlready == false,Prize already claimed)
require(bool,string)(_raffleMeta[raffleId].winnerInformation[addressWinner].redistributed == false,Prize already redistributed)
require(bool,string)(_raffleMeta[raffleId].winnerInformation[addressWinner].prizeClaimedAlready == false,Prize already claimed)
alreadyWon == true
```

Recommendation

Remove the equality to the boolean constant.

Contract Functions

Contract	Type	Bases		
	Function Name	**Visibility**	**Mutability**	**Modifiers**
LinkTokenInterface	Interface			
	allowance	External		-
	approve	External	✓	-
	balanceOf	External		-
	decimals	External		-
	decreaseApproval	External	✓	-
	increaseApproval	External	✓	-
	name	External		-
	symbol	External		-
	totalSupply	External		-
	transfer	External	✓	-
	transferAndCall	External	✓	-
	transferFrom	External	✓	-
VRFConsumerBase	Implementation	VRFRequestIDBase		
	fulfillRandomness	Internal	✓	
	requestRandomness	Internal	✓	
	<Constructor>	Public	✓	-
	rawFulfillRandomness	External	✓	-
VRFRequestIDBase	Implementation			
	makeVRFInputSeed	Internal		
	makeRequestId	Internal		
Ownable	Implementation	Context		
	<Constructor>	Public	✓	-
	owner	Public		-

	renounceOwnership	Public	✓	onlyOwner
	transferOwnership	Public	✓	onlyOwner
	_transferOwnership	Internal	✓	
ReentrancyGuard	Implementation			
	<Constructor>	Public	✓	-
IERC20	Interface			
	totalSupply	External		-
	balanceOf	External		-
	transfer	External	✓	-
	allowance	External		-
	approve	External	✓	-
	transferFrom	External	✓	-
Address	Library			
	isContract	Internal		
	sendValue	Internal	✓	
	functionCall	Internal	✓	
	functionCall	Internal	✓	
	functionCallWithValue	Internal	✓	
	functionCallWithValue	Internal	✓	
	functionStaticCall	Internal		
	functionStaticCall	Internal		
	functionDelegateCall	Internal	✓	
	functionDelegateCall	Internal	✓	
	verifyCallResult	Internal		
Context	Implementation			
	_msgSender	Internal		
	_msgData	Internal		
SafeMath	Library			
	tryAdd	Internal		
	trySub	Internal		

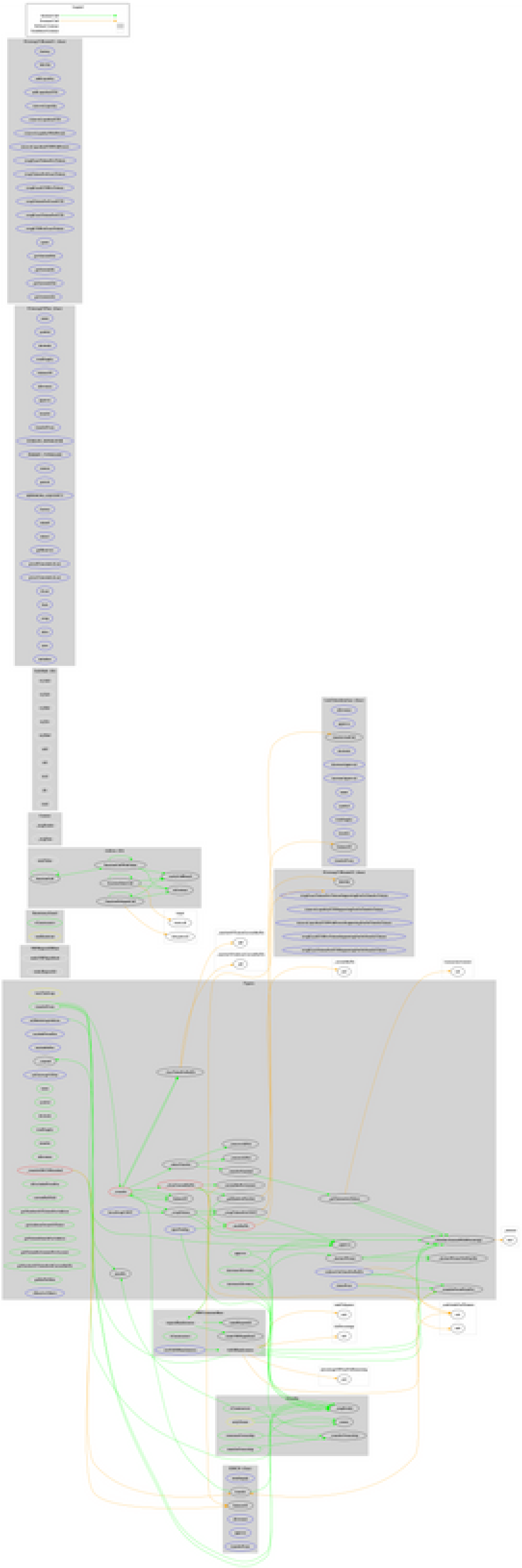
	tryMul	Internal		
	tryDiv	Internal		
	tryMod	Internal		
	add	Internal		
	sub	Internal		
	mul	Internal		
	div	Internal		
	mod	Internal		
	sub	Internal		
	div	Internal		
	mod	Internal		
Figures	Implementation	Context, IERC20, Ownable, VRFConsumerBase, ReentrancyGuard		
	<Constructor>	Public	✓	VRFConsumer Base
	_startRaffle	Private	✓	
	_closeCurrentRaffle	Private	✓	
	_getRandomNumber	Private	✓	
	fulfillRandomness	Internal	✓	
	_declareWinner	Private	✓	
	_declareWinnerNotEligible	Private	✓	
	_transferFromPrizePot	Private	✓	
	_expand	Private		
	_calculateAmountWithPercentage	Private		
	_removeAllFee	Private	✓	
	_restoreAllFee	Private	✓	
	_approve	Private	✓	
	_transfer	Private	✓	
	_buyTicketForRaffle	Private	✓	
	_swapTokens	Private	✓	lockTheSwap
	_swapTokensForUSDT	Private	✓	
	_tokenTransfer	Private	✓	

	_transferStandard	Private	✓	
	_transferERC20Standard	Private	✓	
	_getTransactionValues	Private		
	excludeFromFee	External	✓	onlyOwner
	includeInFee	External	✓	onlyOwner
	setMarketingAddress	External	✓	onlyOwner
	setUniswapV2Pair	External	✓	onlyOwner
	openTrading	External	✓	onlyOwner
	forceSwapUSDT	External	✓	onlyOwner
	redirectUnClaimForRaffle	External	✓	onlyOwner
	claimPrize	External	✓	-
	name	Public		-
	symbol	Public		-
	decimals	Public		-
	totalSupply	Public		-
	balanceOf	Public		-
	transfer	Public	✓	-
	allowance	Public		-
	approve	Public	✓	-
	transferFrom	Public	✓	-
	increaseAllowance	Public	✓	-
	decreaseAllowance	Public	✓	-
	isExcludedFromFee	Public		-
	currentRaffleId	Public		-
	currentRaffleAmount	Public		-
	getNumbersOfTicketsForAddress	Public		-
	getAddressOwnerOfTicket	Public		-
	getTicketsDetailsForAddress	Public		-
	getClaimableAmountForAccount	Public		-
	getNumberOfTicketSoldCurrentRaffle	Public		-
	getRaffleMeta	Public		-
	<Receive Ether>	External	Payable	-
IUniswapV2Pair	Interface			
	name	External		-

	symbol	External		-
	decimals	External		-
	totalSupply	External		-
	balanceOf	External		-
	allowance	External		-
	approve	External	✓	-
	transfer	External	✓	-
	transferFrom	External	✓	-
	DOMAIN_SEPARATOR	External		-
	PERMIT_TYPEHASH	External		-
	nonces	External		-
	permit	External	✓	-
	MINIMUM_LIQUIDITY	External		-
	factory	External		-
	token0	External		-
	token1	External		-
	getReserves	External		-
	price0CumulativeLast	External		-
	price1CumulativeLast	External		-
	kLast	External		-
	burn	External	✓	-
	swap	External	✓	-
	skim	External	✓	-
	sync	External	✓	-
	initialize	External	✓	-
IUniswapV2Router01	Interface			
	factory	External		-
	WETH	External		-
	addLiquidity	External	✓	-
	addLiquidityETH	External	Payable	-
	removeLiquidity	External	✓	-
	removeLiquidityETH	External	✓	-
	removeLiquidityWithPermit	External	✓	-
	removeLiquidityETHWithPermit	External	✓	-

	swapExactTokensForTokens	External	✓	-
	swapTokensForExactTokens	External	✓	-
	swapExactETHForTokens	External	Payable	-
	swapTokensForExactETH	External	✓	-
	swapExactTokensForETH	External	✓	-
	swapETHForExactTokens	External	Payable	-
	quote	External		-
	getAmountOut	External		-
	getAmountIn	External		-
	getAmountsOut	External		-
	getAmountsIn	External		-
IUniswapV2Router02	Interface	IUniswapV2Router01		
	removeLiquidityETHSupportingFeeOnTransferTokens	External	✓	-
	removeLiquidityETHWithPermitSupportingFeeOnTransferTokens	External	✓	-
	swapExactTokensForTokensSupportingFeeOnTransferTokens	External	✓	-
	swapExactETHForTokensSupportingFeeOnTransferTokens	External	Payable	-
	swapExactTokensForETHSupportingFeeOnTransferTokens	External	✓	-

Contract Flow



Domain Info

Domain Name	figures.exchange
Registry Domain ID	afe0f0f846684a17b52d33c14df5d470-DONUTS
Creation Date	2021-12-16T21:43:13Z
Updated Date	2021-12-21T21:43:55Z
Registry Expiry Date	2022-12-16T21:43:13Z
Registrar WHOIS Server	whois.namecheap.com
Registrar URL	https://www.namecheap.com/
Registrar	NameCheap, Inc.
Registrar IANA ID	1068

The domain has been created 3 months before the creation of the audit. It will expire in 9 months.

There is no public billing information, the creator is protected by the privacy settings.

Summary

The Smart Contract analysis reported no compiler error or critical issues. The contract Owner can access some admin functions that can not be used in a malicious way to disturb the users' transactions. There is also a fixed 7% fee. The contract implements a lottery feature. The audit mentions some security concerns, business logic recommendations and performance improvements.

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Coinscope audit and K.Y.C. service has been rebranded to Cyberscope.

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The Cyberscope team

https://www.cyberscope.io