Candy P2E

Smart Contract Audit Report

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23 Jan 2023

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Candy P2E | Security Analysis

TABLE OF CONTENTS

AUDITED DETAILS

▍Audited Project

Project name	Token ticker	Blockchain
Candy P2E	CAD	BSC

▍Addresses

Contract address	0x4F59bb93b680d70EF750327c3A1193fa69eb6d54
Contract deployer address	0x9dACf80d90e92e88d553CDA00A7a53821307E87C

▍Project Website

https://candyp2e.com/

▍Codebase

https://bscscan.com/address/0x4F59bb93b680d70EF750327c3A1193fa69eb6d54#code

SUMMARY

Candy P2E is a combination of traditional gaming and Blockchain technology to create a Play-to-Earn mechanism. They aim for real entertainment and rewards every time you play, making your entertainment no longer a waste of time.

▍Contract Summary

Documentation Quality

The amount of documentation in this project is GOOD.

- The technical description is provided.

Code Quality

The Overall quality of the code is GOOD

- The official Solidity style guide is followed.

Test Coverage

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

▍Audit Findings Summary

- SWC-101 | Arithmetic operation Issues discovered on lines 194, 216, 241, 270, 271, 400, 431, 462, 472, 483, 511, 520, 521, 526, 527, 535, 542, 546, 566, 567, 568, 569, 575, 576, 577, 584, 633, 659.
- SWC-103 | A floating pragma is set on lines 7. The current pragma Solidity directive is ""^0.8.17"". 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.
- SWC-110 | Out of bounds array access on lines 595, 596. The index access expression can cause an exception in case an invalid array index value is used.
- SWC-120 | Potential use of "block.number" as a source of randomness on lines 511, 640.

CONCLUSION

CONCLUSION

We have audited the Candy P2E Coin which has released on January 2023 to discover issues and identifying potential security vulnerabilities in Candy P2E Project. This process is used to find bugs, technical issues, and security loopholes that finds some common issues in the code.

The security audit report produced satisfactory results with a low risk issue on contract project.

The most common issue found in writing code on contracts that do not pose a big risk, writing on contracts is close to the standard of writing contracts in general. Some of the low issues that were found were assert violation, a floating pragma is setn and weak sources of the randomness contained in the contract

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.	ISSUE FOUND
Unchecked Call Return Value	SWC-104	The return value of a message call should be checked.	PASS
SELFDESTRUCT Instruction	SWC-106	The contract should not be self-destructible while it has funds belonging to users.	PASS
Check-Effect Interaction	SWC-107	Check-Effect-Interaction pattern should be followed if the code performs ANY external call.	PASS
Assert Violation	SWC-110	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 Caller	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
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
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

SMART CONTRACT ANALYSIS

Started	Sun Jan 22 2023 22:03:42 GMT+0000 (Coordinated Universal Time)
Finished	Mon Jan 23 2023 05:06:33 GMT+0000 (Coordinated Universal Time)
Mode	Quick
Main Source File	Candy2pe.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

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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
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SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged
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SWC-120	POTENTIAL USE OF "BLOCK.NUMBER" AS SOURCE OF RANDONMNESS.	low	acknowledged
SWC-120	POTENTIAL USE OF "BLOCK.NUMBER" AS SOURCE OF RANDONMNESS.	low	acknowledged

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED
LINE 194

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
193    require(currentAllowance >= amount, "BEP20: transfer amount exceeds allowance");
194    _approve(sender, _msgSender(), currentAllowance - amount);
195    return true;
196    |
```

SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED
LINE 216

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
215    {
216    _approve(_msgSender(), spender, _allowances[_msgSender()][spender] + addedValue);
217    return true;
218    }
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED
LINE 241

low SEVERITY
This plugin produces issues to support false positive discovery within Mythril.

Source File
- candy2pe.sol

Locations

```
240    require(currentAllowance >= subtractedValue, "BEP20: decreased allowance below
zero");
241    _approve(_msgSender(), spender, currentAllowance - subtractedValue);
242    return true;
243    |
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED
LINE 270

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
269    require(senderBalance >= amount, "BEP20: transfer amount exceeds balance");
270    _balances[sender] = senderBalance - amount;
271    _balances[recipient] += amount;
272    |
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED
LINE 271

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
270    _balances[sender] = senderBalance - amount;
271    _balances[recipient] += amount;
272    emit Transfer(sender, recipient, amount);
273    |
```

SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED
LINE 400

low SEVERITY
This plugin produces issues to support false positive discovery within Mythril.

Source File
- candy2pe.sol

Locations

```
399    bool public tradingEnabled = false;
400    uint256 public tokenLiquidityThreshold = 1e3 * 10**18;
401    uint256 public genesis_block;
402    |
```

SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED
LINE 431

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
430    constructor() BEP20("Candy P2E", "CAD") {
431    _tokengeneration(msg.sender, 1e6 * 10**decimals());
432    IRouter _router = IRouter(0x10ED43C718714eb63d5aA57B78B54704E256024E);
433    |
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED
LINE 462

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
461    require(currentAllowance >= amount, "BEP20: transfer amount exceeds allowance");
462    _approve(sender, _msgSender(), currentAllowance - amount);
463    return true;
464    |
```

SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED
LINE 472

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
471    {
472    _approve(_msgSender(), spender, _allowances[_msgSender()][spender] + addedValue);
473    return true;
474    }
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED
LINE 483

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
482   require(currentAllowance >= subtractedValue, "BEP20: decreased allowance below
zero");
483   _approve(_msgSender(), spender, currentAllowance - subtractedValue);
484   return true;
485   |
```

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SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED
LINE 511

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
510    !exemptFee[recipient] &&
511    block.number < genesis_block + deadline;
512    //set fee to zero if fees in contract are handled or exempted
513    |
```

SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED
LINE 520

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
519    feeswap =
520    sellTaxes.liquidity +
521    sellTaxes.marketing;
522    feesum = feeswap;
```

SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED
LINE 526

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
525    feeswap =
526    taxes.liquidity +
527    taxes.marketing;
528    feesum = feeswap;
```

SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED
LINE 535

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
534    }
535    fee = (amount * feesum) / 100;
536    //send fees if threshold has been reached
537    |
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED
LINE 542

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
541    //rest to recipient
542    super._transfer(sender, recipient, amount - fee);
543    if (fee > 0) {
```

SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED
LINE 546

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
545    if (feeswap > 0) {
546    uint256 feeAmount = (amount * feeswap) / 100;
547    super._transfer(sender, address(this), feeAmount);
```

SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED
LINE 546

low SEVERITY
This plugin produces issues to support false positive discovery within Mythril.

Source File
- candy2pe.sol

Locations

```
545    if (feeswap > 0) {
546    uint256 feeAmount = (amount * feeswap) / 100;
547    super._transfer(sender, address(this), feeAmount);
548    }
```

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SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED
LINE 566

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
565    // Split the contract balance into halves
566    uint256 denominator = feeswap * 2;
567    uint256 tokensToAddLiquidityWith = (contractBalance * swapTaxes.liquidity) /
568    denominator;
```

SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED
LINE 566

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
565    uint256 denominator = feeswap * 2;
566    uint256 tokensToAddLiquidityWith = (contractBalance * swapTaxes.liquidity) /
567    denominator;
568    uint256 toSwap = contractBalance - tokensToAddLiquidityWith;
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED
LINE 569

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
568    denominator;
569    uint256 toSwap = contractBalance - tokensToAddLiquidityWith;
570    uint256 initialBalance = address(this).balance;
571    |
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED
LINE 575

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
574    swapTokensForETH(toSwap);
575    uint256 deltaBalance = address(this).balance - initialBalance;
576    uint256 unitBalance = deltaBalance / (denominator - swapTaxes.liquidity);
577    uint256 ethToAddLiquidityWith = unitBalance * swapTaxes.liquidity;
```

SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED
LINE 576

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
575    uint256 deltaBalance = address(this).balance - initialBalance;
576    uint256 unitBalance = deltaBalance / (denominator - swapTaxes.liquidity);
577    uint256 ethToAddLiquidityWith = unitBalance * swapTaxes.liquidity;
578    |
```

SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED
LINE 577

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
576    uint256 unitBalance = deltaBalance / (denominator - swapTaxes.liquidity);
577    uint256 ethToAddLiquidityWith = unitBalance * swapTaxes.liquidity;
578    if (ethToAddLiquidityWith > 0) {
579    |
```

SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED
LINE 584

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
583    }
584    uint256 marketingAmt = unitBalance * 2 * swapTaxes.marketing;
585    if (marketingAmt > 0) {
586    payable(marketingWallet).sendValue(marketingAmt);
```

SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED
LINE 633

low SEVERITY
This plugin produces issues to support false positive discovery within Mythril.

Source File
- candy2pe.sol

Locations

```
632    //update the treshhold
633    require(new_amount <= 1e4, "Swap threshold amount should be lower or equal to 1% of
tokens");
634    tokenLiquidityThreshold = new_amount * 10**decimals();
635    }
```

SWC-101 | ARITHMETIC OPERATION "++" DISCOVERED
LINE 659

low SEVERITY

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

Source File

- candy2pe.sol

Locations

```
658    function bulkExemptFee(address[] memory accounts, bool state) external onlyOwner {
659    for (uint256 i = 0; i < accounts.length; i++) {
660    exemptFee[accounts[i]] = state;
661    }
```

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SWC-103 | A FLOATING PRAGMA IS SET.
LINE 7

low SEVERITY

The current pragma Solidity directive is ""^0.8.17"". 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

- candy2pe.sol

Locations

```
6    //SPDX-License-Identifier: UNLICENSED
7    pragma solidity ^0.8.17;
8    abstract contract Context {
9    |
```

SWC-110 | OUT OF BOUNDS ARRAY ACCESS
LINE 595

low SEVERITY

The current pragma Solidity directive is ""^0.8.17"". 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

- candy2pe.sol

Locations

```
594    address[] memory path = new address[](2);
595    path[0] = address(this);
596    path[1] = router.WETH();
597    |
```

SWC-110 | OUT OF BOUNDS ARRAY ACCESS
LINE 596

low SEVERITY

The current pragma Solidity directive is ""^0.8.17"". 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

- candy2pe.sol

Locations

```
595   path[0] = address(this);
596   path[1] = router.WETH();
597   _approve(address(this), address(router), tokenAmount);
598   |
```

SWC-110 | OUT OF BOUNDS ARRAY ACCESS
LINE 660

low SEVERITY

The current pragma Solidity directive is ""^0.8.17"". 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

- candy2pe.sol

Locations

```
659    for (uint256 i = 0; i < accounts.length; i++) {
660    exemptFee[accounts[i]] = state;
661    }
662    }
```

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

LINE 660

low 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

- candy2pe.sol

Locations

```
659    !exemptFee[recipient] &&
660    block.number < genesis_block + deadline;
661    //set fee to zero if fees in contract are handled or exempted
662    |
```

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

LINE 640

low 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

- candy2pe.sol

Locations

```
639    providingLiquidity = true;
640    genesis_block = block.number;
641    }
642    |
```

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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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