



# Billiard Crypto Reward Smart Contract Audit Report

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# AUDITED DETAILS

## Audited Project

Project name	Token ticker	Blockchain
Billiard Crypto Reward	BICR	Binance Smart Chain

## Addresses

Contract address	0xedbac1830c1b3280882c73449198ebf6a35ede43
Contract deployer address	0xA7618C49B0C419969F012B3e44a6DA9281744cc3

## Project Website

<https://billiardcrypto.com/>

## Codebase

<https://bscscan.com/address/0xedbac1830c1b3280882c73449198ebf6a35ede43#code>

# SUMMARY

Billiard Crypto is a simple game, but it takes players a lot of practice to get used to it. The primary operations are drag and drop and correct angles. Different game modes, such as Solo, PvP, and Tournament, will be released gradually according to the schedule.

## Contract Summary

### Documentation Quality

Billiard Crypto Reward provides a very good documentation with standard of solidity base code.

- The technical description is provided clearly and structured and also don't have any high risk issue.

### Code Quality

The Overall quality of the basecode is standard.

- Standard solidity basecode and rules are already followed by Billiard Crypto Reward 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 453.
- SWC-101 | It is recommended to use vetted safe math libraries for arithmetic operations consistently on lines 198, 220, 245, 276, 277, 292, 293, 315, 316, 460, 460, 529, 539, 550, 580, 589, 595, 604, 604, 611, 615, 615, 635, 636, 636, 638, 644, 645, 645, 647, 647, 655, 707, 707, 728, 736, 749, 767 and 770.
- SWC-103 | Pragma statements can be allowed to float when a contract is intended on lines 11.
- 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 667, 668, 750, 768 and 771.
- SWC-120 | It is recommended to use external sources of randomness via oracles on lines 580 and 714.

## CONCLUSION

We have audited the Billiard Crypto Reward project released on February 2023 to discover issues and identify potential security vulnerabilities in Billiard Crypto Reward 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 NamaFile 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, a floating pragma is set, a state variable visibility is not set, the 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. The current pragma Solidity directive is `^0.8.17`. Specifying a fixed compiler version is recommended 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. It is best practice to set the visibility of state variables explicitly. The default visibility for "IERCLiquidityPairToken" is internal. Other possible visibility settings are public and private. Potential use of "block.number" as a source of randomness, 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; be aware that using these variables introduces a certain level of trust in miners.

# 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.	ISSUE FOUND
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.	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	Monday Feb 20 2023 21:05:16 GMT+0000 (Coordinated Universal Time)
Finished	Tuesday Feb 21 2023 08:06:48 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	BilliardCryptoReward.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-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

<b>SWC-101</b>	ARITHMETIC OPERATION "*" DISCOVERED	<b>low</b>	acknowledged
<b>SWC-101</b>	ARITHMETIC OPERATION "*" DISCOVERED	<b>low</b>	acknowledged
<b>SWC-101</b>	ARITHMETIC OPERATION "**" DISCOVERED	<b>low</b>	acknowledged
<b>SWC-101</b>	ARITHMETIC OPERATION "+" DISCOVERED	<b>low</b>	acknowledged
<b>SWC-101</b>	ARITHMETIC OPERATION "+" DISCOVERED	<b>low</b>	acknowledged
<b>SWC-101</b>	ARITHMETIC OPERATION "++" DISCOVERED	<b>low</b>	acknowledged
<b>SWC-101</b>	ARITHMETIC OPERATION "++" DISCOVERED	<b>low</b>	acknowledged
<b>SWC-101</b>	ARITHMETIC OPERATION "++" DISCOVERED	<b>low</b>	acknowledged
<b>SWC-103</b>	A FLOATING PRAGMA IS SET.	<b>low</b>	acknowledged
<b>SWC-108</b>	STATE VARIABLE VISIBILITY IS NOT SET.	<b>low</b>	acknowledged
<b>SWC-110</b>	OUT OF BOUNDS ARRAY ACCESS	<b>low</b>	acknowledged
<b>SWC-110</b>	OUT OF BOUNDS ARRAY ACCESS	<b>low</b>	acknowledged
<b>SWC-110</b>	OUT OF BOUNDS ARRAY ACCESS	<b>low</b>	acknowledged
<b>SWC-110</b>	OUT OF BOUNDS ARRAY ACCESS	<b>low</b>	acknowledged
<b>SWC-110</b>	OUT OF BOUNDS ARRAY ACCESS	<b>low</b>	acknowledged
<b>SWC-120</b>	POTENTIAL USE OF "BLOCK.NUMBER" AS SOURCE OF RANDOMNESS.	<b>low</b>	acknowledged
<b>SWC-120</b>	POTENTIAL USE OF "BLOCK.NUMBER" AS SOURCE OF RANDOMNESS.	<b>low</b>	acknowledged

## SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 198

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
197     require(currentAllowance >= amount, "ERC20: transfer amount exceeds allowance");
198     _approve(sender, _msgSender(), currentAllowance - amount);
199
200     return true;
201 }
202
```

## SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 220

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
219  {
220  _approve(_msgSender(), spender, _allowances[_msgSender()][spender] + addedValue);
221  return true;
222  }
223
224
```

## SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 245

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
244   require(currentAllowance >= subtractedValue, "ERC20: decreased allowance below
zero");
245   _approve(_msgSender(), spender, currentAllowance - subtractedValue);
246
247   return true;
248   }
249
```

## SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 276

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
275   require(senderBalance >= amount, "ERC20: transfer amount exceeds balance");
276   _balances[sender] = senderBalance - amount;
277   _balances[recipient] += amount;
278
279   emit Transfer(sender, recipient, amount);
280
```

## SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 277

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
276  _balances[sender] = senderBalance - amount;  
277  _balances[recipient] += amount;  
278  
279  emit Transfer(sender, recipient, amount);  
280  }  
281
```



## SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 292

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
291
292   _totalSupply += amount;
293   _balances[account] += amount;
294   emit Transfer(address(0), account, amount);
295   }
296
```

# SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 293

## low SEVERITY

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

## Source File

- BilliardCryptoReward.sol

## Locations

```
292     _totalSupply += amount;
293     _balances[account] += amount;
294     emit Transfer(address(0), account, amount);
295 }
296
297
```

## SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 315

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
314   require(accountBalance >= amount, "ERC20: burn amount exceeds balance");
315   _balances[account] = accountBalance - amount;
316   _totalSupply -= amount;
317
318   emit Transfer(account, address(0), amount);
319
```

## SWC-101 | ARITHMETIC OPERATION "-=" DISCOVERED

LINE 316

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
315     _balances[account] = accountBalance - amount;  
316     _totalSupply -= amount;  
317  
318     emit Transfer(account, address(0), amount);  
319 }  
320
```

# SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 460

## low SEVERITY

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

## Source File

- BilliardCryptoReward.sol

## Locations

```
459
460  uint256 public tokenLiquidityThreshold = 1e4 * 10**18;
461
462  uint256 public genesis_block;
463  uint256 private deadline = 1;
464
```

## SWC-101 | ARITHMETIC OPERATION "\*\*" DISCOVERED

LINE 460

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
459
460  uint256 public tokenLiquidityThreshold = 1e4 * 10**18;
461
462  uint256 public genesis_block;
463  uint256 private deadline = 1;
464
```

## SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 529

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
528     require(currentAllowance >= amount, "ERC20: transfer amount exceeds allowance");
529     _approve(sender, _msgSender(), currentAllowance - amount);
530
531     return true;
532 }
533
```

## SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 539

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
538 {  
539   _approve(_msgSender(), spender, _allowances[_msgSender()][spender] + addedValue);  
540   return true;  
541 }  
542  
543
```



## SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 550

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
549   require(currentAllowance >= subtractedValue, "ERC20: decreased allowance below
zero");
550   _approve(_msgSender(), spender, currentAllowance - subtractedValue);
551
552   return true;
553   }
554
```

# SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 580

## low SEVERITY

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

## Source File

- BilliardCryptoReward.sol

## Locations

```
579     !exemptFee[recipient] &&  
580     block.number < genesis_block + deadline;  
581  
582     //set fee to zero if fees in contract are handled or exempted  
583     if (_interlock || exemptFee[sender] || exemptFee[recipient])  
584
```

## SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 589

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
588     feeswap =
589     sellTaxes.liquidity +
590     sellTaxes.marketing ;
591     feesum = feeswap;
592     currentTaxes = sellTaxes;
593
```

# SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 595

## low SEVERITY

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

## Source File

- BilliardCryptoReward.sol

## Locations

```
594 feeswap =
595 taxes.liquidity +
596 taxes.marketing ;
597 feesum = feeswap;
598 currentTaxes = taxes;
599
```

# SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 604

## low SEVERITY

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

## Source File

- BilliardCryptoReward.sol

## Locations

```
603
604     fee = (amount * feesum) / 100;
605
606     //send fees if threshold has been reached
607     //don't do this on buys, breaks swap
608
```

# SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 604

## low SEVERITY

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

## Source File

- BilliardCryptoReward.sol

## Locations

```
603
604     fee = (amount * feesum) / 100;
605
606     //send fees if threshold has been reached
607     //don't do this on buys, breaks swap
608
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 611

## low SEVERITY

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

## Source File

- BilliardCryptoReward.sol

## Locations

```
610 //rest to recipient
611 super._transfer(sender, recipient, amount - fee);
612 if (fee > 0) {
613 //send the fee to the contract
614 if (feeswap > 0) {
615
```

# SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 615

## low SEVERITY

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

## Source File

- BilliardCryptoReward.sol

## Locations

```
614   if (feeswap > 0) {
615       uint256 feeAmount = (amount * feeswap) / 100;
616       super._transfer(sender, address(this), feeAmount);
617   }
618
619
```



# SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 615

## low SEVERITY

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

## Source File

- BilliardCryptoReward.sol

## Locations

```
614   if (feeswap > 0) {
615       uint256 feeAmount = (amount * feeswap) / 100;
616       super._transfer(sender, address(this), feeAmount);
617   }
618
619
```

# SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 635

## low SEVERITY

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

## Source File

- BilliardCryptoReward.sol

## Locations

```
634 // Split the contract balance into halves
635 uint256 denominator = feeswap * 2;
636 uint256 tokensToAddLiquidityWith = (contractBalance * swapTaxes.liquidity) /
637 denominator;
638 uint256 toSwap = contractBalance - tokensToAddLiquidityWith;
639
```

## SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 636

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
635 uint256 denominator = feeswap * 2;  
636 uint256 tokensToAddLiquidityWith = (contractBalance * swapTaxes.liquidity) /  
637 denominator;  
638 uint256 toSwap = contractBalance - tokensToAddLiquidityWith;  
639  
640
```

## SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 636

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
635 uint256 denominator = feeswap * 2;  
636 uint256 tokensToAddLiquidityWith = (contractBalance * swapTaxes.liquidity) /  
637 denominator;  
638 uint256 toSwap = contractBalance - tokensToAddLiquidityWith;  
639  
640
```

## SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 638

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
637     denominator;  
638     uint256 toSwap = contractBalance - tokensToAddLiquidityWith;  
639  
640     uint256 initialBalance = IERCliquidityPairToken.balanceOf(address(liquifier));  
641  
642
```

## SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 644

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
643
644  uint256 deltaBalance = IERCliquidityPairToken.balanceOf(address(liquifier)) -
    initialBalance;
645  uint256 unitBalance = deltaBalance / (denominator - swapTaxes.liquidity);
646
647  uint256 marketingAmt = unitBalance * 2 * swapTaxes.marketing;
648
```

## SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 645

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
644 uint256 deltaBalance = IERCliquidityPairToken.balanceOf(address(liquifier)) -
initialBalance;
645 uint256 unitBalance = deltaBalance / (denominator - swapTaxes.liquidity);
646
647 uint256 marketingAmt = unitBalance * 2 * swapTaxes.marketing;
648 if (marketingAmt > 0) {
649
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 645

## low SEVERITY

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

## Source File

- BilliardCryptoReward.sol

## Locations

```
644 uint256 deltaBalance = IERCliquidityPairToken.balanceOf(address(liquifier)) -
initialBalance;
645 uint256 unitBalance = deltaBalance / (denominator - swapTaxes.liquidity);
646
647 uint256 marketingAmt = unitBalance * 2 * swapTaxes.marketing;
648 if (marketingAmt > 0) {
649
```



## SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 647

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
646
647     uint256 marketingAmt = unitBalance * 2 * swapTaxes.marketing;
648     if (marketingAmt > 0) {
649         IERCliquidityPairToken.transferFrom(address(liquifier), marketingWallet,
marketingAmt);
650     }
651
```

## SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 647

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
646
647  uint256 marketingAmt = unitBalance * 2 * swapTaxes.marketing;
648  if (marketingAmt > 0) {
649    IERCliquidityPairToken.transferFrom(address(liquifier), marketingWallet,
marketingAmt);
650  }
651
```

# SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 655

## low SEVERITY

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

## Source File

- BilliardCryptoReward.sol

## Locations

```
654
655 uint256 ethPairToAddLiquidityWith = unitBalance * swapTaxes.liquidity;
656 if (ethPairToAddLiquidityWith > 0) {
657     // Add liquidity to pancake
658     addLiquidity(tokensToAddLiquidityWith, ethPairToAddLiquidityWith);
659
```

## SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 707

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
706   require(new_amount <= 1e5, "Swap threshold amount should be lower or equal to 1% of
tokens");
707   tokenLiquidityThreshold = new_amount * 10**decimals();
708   }
709
710   function EnableTrading() external onlyOwner {
711
```

## SWC-101 | ARITHMETIC OPERATION "\*\*" DISCOVERED

LINE 707

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
706   require(new_amount <= 1e5, "Swap threshold amount should be lower or equal to 1% of
tokens");
707   tokenLiquidityThreshold = new_amount * 10**decimals();
708   }
709
710   function EnableTrading() external onlyOwner {
711
```

## SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 728

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
727 taxes = Taxes(_marketing, _liquidity);
728 require((_marketing + _liquidity) <= 5, "Must keep fees at 5% or less");
729 }
730
731 function SetSellTaxes(
732
```

## SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 736

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
735   sellTaxes = Taxes(_marketing, _liquidity);
736   require((_marketing + _liquidity ) <= 5, "Must keep fees at 5% or less");
737   }
738
739   function updateMarketingWallet(address newWallet) external onlyOwner {
740
```

# SWC-101 | ARITHMETIC OPERATION "++" DISCOVERED

LINE 749

## low SEVERITY

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

## Source File

- BilliardCryptoReward.sol

## Locations

```
748     function bulkExemptFee(address[] memory accounts, bool state) external onlyOwner {  
749         for (uint256 i = 0; i < accounts.length; i++) {  
750             exemptFee[accounts[i]] = state;  
751         }  
752     }  
753 }
```



## SWC-101 | ARITHMETIC OPERATION "++" DISCOVERED

LINE 767

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
766     ) public onlyOwner {
767     for (uint256 index; index < newAddr.length; index++) {
768     blacklist[newAddr[index]] = true;
769     }
770     for (uint256 index; index < removedAddr.length; index++) {
771
```

## SWC-101 | ARITHMETIC OPERATION "++" DISCOVERED

LINE 770

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
769     }  
770     for (uint256 index; index < removedAddr.length; index++) {  
771         blacklist[removedAddr[index]] = false;  
772     }  
773 }  
774
```

## SWC-103 | A FLOATING PRAGMA IS SET.

LINE 11

### 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

- BilliardCryptoReward.sol

### Locations

```
10
11  pragma solidity ^0.8.17;
12
13  abstract contract Context {
14  function _msgSender() internal view virtual returns (address) {
15
```

## SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 453

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
452 address public liquidityPairToken;  
453 IERC20 IERCliquidityPairToken;  
454 Liquifier public liquifier;  
455  
456 bool private _interlock = false;  
457
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 667

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
666 address[] memory path = new address[](2);
667 path[0] = address(this);
668 path[1] = liquidityPairToken;
669
670 _approve(address(this), address(router), tokenAmount);
671
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 668

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
667 path[0] = address(this);
668 path[1] = liquidityPairToken;
669
670 _approve(address(this), address(router), tokenAmount);
671
672
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 750

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
749   for (uint256 i = 0; i < accounts.length; i++) {  
750     exemptFee[accounts[i]] = state;  
751   }  
752 }  
753  
754
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 768

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
767   for (uint256 index; index < newAddr.length; index++) {  
768     blacklist[newAddr[index]] = true;  
769   }  
770   for (uint256 index; index < removedAddr.length; index++) {  
771     blacklist[removedAddr[index]] = false;  
772   }
```



## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 771

### low SEVERITY

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

### Source File

- BilliardCryptoReward.sol

### Locations

```
770     for (uint256 index; index < removedAddr.length; index++) {  
771         blacklist[removedAddr[index]] = false;  
772     }  
773 }  
774 }  
775 }
```

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

LINE 580

### 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

- BilliardCryptoReward.sol

### Locations

```
579     !exemptFee[recipient] &&  
580     block.number < genesis_block + deadline;  
581  
582     //set fee to zero if fees in contract are handled or exempted  
583     if (_interlock || exemptFee[sender] || exemptFee[recipient])  
584
```

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

LINE 714

### 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

- BilliardCryptoReward.sol

### Locations

```
713 providingLiquidity = true;
714 genesis_block = block.number;
715 }
716
717 function updateddeadline(uint256 _deadline) external onlyOwner {
718
```

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