



BRB Cash

# Smart Contract Audit Report

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# AUDITED DETAILS

## Audited Project

Project name	Token ticker	Blockchain
BRB Cash	BRBC	Ethereum

## Addresses

Contract address	0x02130d419dc3c0e73fb9d028741ccabbd2d31062
Contract deployer address	0x9653fAb1EDB1704FbA4838E1Be129C8cB9d3cd52

## Project Website

<a href="https://brbinc.us/">https://brbinc.us/</a>
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## Codebase

<a href="https://etherscan.io/address/0x02130d419dc3c0e73fb9d028741ccabbd2d31062#code">https://etherscan.io/address/0x02130d419dc3c0e73fb9d028741ccabbd2d31062#code</a>
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# SUMMARY

BRBC is an ERC-20 utility token used in a cross-chain ecosystem with utilities to support a WEB3 marketplace. By incorporating WEB3 utilities and explicitly using the Ethereum blockchain, we are also reducing the overall energy consumed.

## Contract Summary

### Documentation Quality

BRB Cash 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 BRB Cash 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 395.
- SWC-101 | It is recommended to use vetted safe math libraries for arithmetic operations consistently on lines 23, 31, 37, 38, 45, 51, 55, 58, 61, 64, 67, 72, 78, 84, 380, 380, 381, 381, 397, 397, 398, 398, 500, 502, 538, 577, 601, 606, 611 and 502.
- SWC-103 | Pragma statements can be allowed to float when a contract is intended on lines 7.
- 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 501, 502, 502, 578, 578, 579, 580, 679 and 680.

## CONCLUSION

We have audited the BRB Cash project released on November 2022 to discover issues and identify potential security vulnerabilities in BRB Cash 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 with some low-risk issues.

The issues found in the BRB Cash 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, 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. 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.

# 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)	<b>SWC-113</b> <b>SWC-128</b>	Execution of the code should never be blocked by a specific contract state unless required.	<b>PASS</b>
Race Conditions	<b>SWC-114</b>	Race Conditions and Transactions Order Dependency should not be possible.	<b>PASS</b>
Authorization through tx.origin	<b>SWC-115</b>	tx.origin should not be used for authorization.	<b>PASS</b>
Block values as a proxy for time	<b>SWC-116</b>	Block numbers should not be used for time calculations.	<b>PASS</b>
Signature Unique ID	<b>SWC-117</b> <b>SWC-121</b> <b>SWC-122</b>	Signed messages should always have a unique id. A transaction hash should not be used as a unique id.	<b>PASS</b>
Incorrect Constructor Name	<b>SWC-118</b>	Constructors are special functions that are called only once during the contract creation.	<b>PASS</b>
Shadowing State Variable	<b>SWC-119</b>	State variables should not be shadowed.	<b>PASS</b>
Weak Sources of Randomness	<b>SWC-120</b>	Random values should never be generated from Chain Attributes or be predictable.	<b>PASS</b>
Write to Arbitrary Storage Location	<b>SWC-124</b>	The contract is responsible for ensuring that only authorized user or contract accounts may write to sensitive storage locations.	<b>PASS</b>
Incorrect Inheritance Order	<b>SWC-125</b>	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/.	<b>PASS</b>
Insufficient Gas Griefing	<b>SWC-126</b>	Insufficient gas grieving attacks can be performed on contracts which accept data and use it in a sub-call on another contract.	<b>PASS</b>
Arbitrary Jump Function	<b>SWC-127</b>	As Solidity doesnt support pointer arithmetics, it is impossible to change such variable to an arbitrary value.	<b>PASS</b>

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



# SMART CONTRACT ANALYSIS

Started	Wednesday Nov 09 2022 10:05:41 GMT+0000 (Coordinated Universal Time)
Finished	Thursday Nov 10 2022 10:38:48 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	BRBToken.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

LINE 23

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
22  unchecked {  
23    uint256 c = a + b;  
24    if (c < a) return (false, 0);  
25    return (true, c);  
26  }  
27
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 31

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
30  if (b > a) return (false, 0);
31  return (true, a - b);
32  }
33  }
34  function tryMul(uint256 a, uint256 b) internal pure returns (bool, uint256) {
35
```

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

LINE 37

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
36  if (a == 0) return (true, 0);
37  uint256 c = a * b;
38  if (c / a != b) return (false, 0);
39  return (true, c);
40  }
41
```

# SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 38

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
37  uint256 c = a * b;  
38  if (c / a != b) return (false, 0);  
39  return (true, c);  
40  }  
41  }  
42
```

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

LINE 45

### low SEVERITY

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

### Source File

- BRBToken.sol

### Locations

```
44     if (b == 0) return (false, 0);
45     return (true, a / b);
46 }
47 }
48 function tryMod(uint256 a, uint256 b) internal pure returns (bool, uint256) {
49
```



# SWC-101 | ARITHMETIC OPERATION "%" DISCOVERED

LINE 51

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
50  if (b == 0) return (false, 0);
51  return (true, a % b);
52  }
53  }
54  function add(uint256 a, uint256 b) internal pure returns (uint256) {
55
```

# SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 55

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
54  function add(uint256 a, uint256 b) internal pure returns (uint256) {  
55      return a + b;  
56  }  
57  function sub(uint256 a, uint256 b) internal pure returns (uint256) {  
58      return a - b;  
59  }
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 58

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
57  function sub(uint256 a, uint256 b) internal pure returns (uint256) {
58  return a - b;
59  }
60  function mul(uint256 a, uint256 b) internal pure returns (uint256) {
61  return a * b;
62  }
```

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

LINE 61

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
60  function mul(uint256 a, uint256 b) internal pure returns (uint256) {
61  return a * b;
62  }
63  function div(uint256 a, uint256 b) internal pure returns (uint256) {
64  return a / b;
65  }
```

# SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 64

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
63  function div(uint256 a, uint256 b) internal pure returns (uint256) {  
64  return a / b;  
65  }  
66  function mod(uint256 a, uint256 b) internal pure returns (uint256) {  
67  return a % b;  
68  }
```

# SWC-101 | ARITHMETIC OPERATION "%" DISCOVERED

LINE 67

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
66  function mod(uint256 a, uint256 b) internal pure returns (uint256) {
67  return a % b;
68  }
69  function sub(uint256 a, uint256 b, string memory errorMessage) internal pure returns
(uint256) {
70  unchecked {
71
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 72

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
71   require(b <= a, errorMessage);  
72   return a - b;  
73   }  
74   }  
75   function div(uint256 a, uint256 b, string memory errorMessage) internal pure returns  
    (uint256) {  
76
```

# SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 78

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
77     require(b > 0, errorMessage);
78     return a / b;
79 }
80 }
81 function mod(uint256 a, uint256 b, string memory errorMessage) internal pure returns
(uint256) {
82
```



# SWC-101 | ARITHMETIC OPERATION "%" DISCOVERED

LINE 84

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
83   require(b > 0, errorMessage);  
84   return a % b;  
85   }  
86   }  
87   }  
88
```

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

LINE 380

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
379  uint256 private constant MAX = ~uint256(0);
380  uint256 private _tTotal = 10000000000 * 10**18;
381  uint256 private _rTotal = (MAX - (MAX % _tTotal));
382  uint256 private _tFeeTotal;
383  string private _name = "BRB Cash";
384
```

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

LINE 380

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
379 uint256 private constant MAX = ~uint256(0);
380 uint256 private _tTotal = 10000000000 * 10**18;
381 uint256 private _rTotal = (MAX - (MAX % _tTotal));
382 uint256 private _tFeeTotal;
383 string private _name = "BRB Cash";
384
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 381

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
380  uint256 private _tTotal = 10000000000 * 10**18;
381  uint256 private _rTotal = (MAX - (MAX % _tTotal));
382  uint256 private _tFeeTotal;
383  string private _name = "BRB Cash";
384  string private _symbol = "BRBC";
385
```

# SWC-101 | ARITHMETIC OPERATION "%" DISCOVERED

LINE 381

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
380  uint256 private _tTotal = 10000000000 * 10**18;
381  uint256 private _rTotal = (MAX - (MAX % _tTotal));
382  uint256 private _tFeeTotal;
383  string private _name = "BRB Cash";
384  string private _symbol = "BRBC";
385
```

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

LINE 397

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
396 bool public swapAndLiquifyEnabled = true;
397 uint256 public _maxTxAmount = 1000000000 * 10**18;
398 uint256 private numTokensSellToAddToLiquidity = 500000000 * 10**18;
399 event MinTokensBeforeSwapUpdated(uint256 minTokensBeforeSwap);
400 event SwapAndLiquifyEnabledUpdated(bool enabled);
401
```

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

LINE 397

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
396 bool public swapAndLiquifyEnabled = true;
397 uint256 public _maxTxAmount = 1000000000 * 10**18;
398 uint256 private numTokensSellToAddToLiquidity = 500000000 * 10**18;
399 event MinTokensBeforeSwapUpdated(uint256 minTokensBeforeSwap);
400 event SwapAndLiquifyEnabledUpdated(bool enabled);
401
```

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

LINE 398

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
397 uint256 public _maxTxAmount = 1000000000 * 10**18;
398 uint256 private numTokensSellToAddToLiquidity = 500000000 * 10**18;
399 event MinTokensBeforeSwapUpdated(uint256 minTokensBeforeSwap);
400 event SwapAndLiquifyEnabledUpdated(bool enabled);
401 event SwapAndLiquify(
402
```



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

LINE 398

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
397 uint256 public _maxTxAmount = 1000000000 * 10**18;
398 uint256 private numTokensSellToAddToLiquidity = 500000000 * 10**18;
399 event MinTokensBeforeSwapUpdated(uint256 minTokensBeforeSwap);
400 event SwapAndLiquifyEnabledUpdated(bool enabled);
401 event SwapAndLiquify(
402
```

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

LINE 500

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
499   require(!_isExcluded[account], "Account is already included");
500   for (uint256 i = 0; i < _excluded.length; i++) {
501       if (_excluded[i] == account) {
502           _excluded[i] = _excluded[_excluded.length - 1];
503           _tOwned[account] = 0;
504       }
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 502

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
501  if (_excluded[i] == account) {  
502  _excluded[i] = _excluded[_excluded.length - 1];  
503  _tOwned[account] = 0;  
504  _isExcluded[account] = false;  
505  _excluded.pop();  
506
```

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

LINE 538

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
537     _maxTxAmount = _tTotal.mul(maxTxPercent).div(  
538         10**3  
539     );  
540 }  
541 function setSwapAndLiquifyEnabled(bool _enabled) public onlyOwner {  
542
```

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

LINE 577

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
576  uint256 tSupply = _tTotal;
577  for (uint256 i = 0; i < _excluded.length; i++) {
578    if (_rOwned[_excluded[i]] > rSupply || _tOwned[_excluded[i]] > tSupply) return
    (_rTotal, _tTotal);
579    rSupply = rSupply.sub(_rOwned[_excluded[i]]);
580    tSupply = tSupply.sub(_tOwned[_excluded[i]]);
581  }
```

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

LINE 601

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
600     return _amount.mul(_taxFee).div(  
601         10**3  
602     );  
603 }  
604 function calculateDevelopmentFee(uint256 _amount) private view returns (uint256) {  
605
```

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

LINE 606

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
605     return _amount.mul(_developmentFee).div(  
606         10**3  
607     );  
608 }  
609 function calculateLiquidityFee(uint256 _amount) private view returns (uint256) {  
610
```

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

LINE 611

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
610     return _amount.mul(_liquidityFee).div(  
611         10**3  
612     );  
613 }  
614 function removeAllFee() private {  
615
```



# SWC-101 | COMPILER-REWRITABLE "<UINT> - 1" DISCOVERED

LINE 502

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
501   if (_excluded[i] == account) {  
502     _excluded[i] = _excluded[_excluded.length - 1];  
503     _tOwned[account] = 0;  
504     _isExcluded[account] = false;  
505     _excluded.pop();  
506
```

## 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

- BRBToken.sol

### Locations

```
6
7  pragma solidity ^0.8.17;
8
9  interface IERC20 {
10     function totalSupply() external view returns (uint256);
11
```

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

LINE 395

### low 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

- BRBToken.sol

### Locations

```
394 address public immutable uniswapV2Pair;
395 bool inSwapAndLiquify;
396 bool public swapAndLiquifyEnabled = true;
397 uint256 public _maxTxAmount = 1000000000 * 10**18;
398 uint256 private numTokensSellToAddToLiquidity = 500000000 * 10**18;
399
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 501

### low SEVERITY

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

### Source File

- BRBToken.sol

### Locations

```
500   for (uint256 i = 0; i < _excluded.length; i++) {  
501     if (_excluded[i] == account) {  
502       _excluded[i] = _excluded[_excluded.length - 1];  
503       _tOwned[account] = 0;  
504       _isExcluded[account] = false;  
505     }
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 502

### low SEVERITY

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

### Source File

- BRBToken.sol

### Locations

```
501  if (_excluded[i] == account) {  
502  _excluded[i] = _excluded[_excluded.length - 1];  
503  _tOwned[account] = 0;  
504  _isExcluded[account] = false;  
505  _excluded.pop();  
506
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 502

### low SEVERITY

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

### Source File

- BRBToken.sol

### Locations

```
501   if (_excluded[i] == account) {  
502     _excluded[i] = _excluded[_excluded.length - 1];  
503     _tOwned[account] = 0;  
504     _isExcluded[account] = false;  
505     _excluded.pop();  
506
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 578

### low SEVERITY

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

### Source File

- BRBToken.sol

### Locations

```
577   for (uint256 i = 0; i < _excluded.length; i++) {  
578     if (_rOwned[_excluded[i]] > rSupply || _tOwned[_excluded[i]] > tSupply) return  
      (_rTotal, _tTotal);  
579     rSupply = rSupply.sub(_rOwned[_excluded[i]]);  
580     tSupply = tSupply.sub(_tOwned[_excluded[i]]);  
581   }  
582
```

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579     rSupply = rSupply.sub(_rOwned[_excluded[i]]);  
580     tSupply = tSupply.sub(_tOwned[_excluded[i]]);  
581   }  
582
```



## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 579

### low SEVERITY

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

### Source File

- BRBToken.sol

### Locations

```
578   if (_rOwned[_excluded[i]] > rSupply || _tOwned[_excluded[i]] > tSupply) return
    (_rTotal, _tTotal);
579   rSupply = rSupply.sub(_rOwned[_excluded[i]]);
580   tSupply = tSupply.sub(_tOwned[_excluded[i]]);
581   }
582   if (rSupply < _rTotal.div(_tTotal)) return (_rTotal, _tTotal);
583
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 580

### low SEVERITY

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

### Source File

- BRBToken.sol

### Locations

```
579     rSupply = rSupply.sub(_rOwned[_excluded[i]]);
580     tSupply = tSupply.sub(_tOwned[_excluded[i]]);
581 }
582 if (rSupply < _rTotal.div(_tTotal)) return (_rTotal, _tTotal);
583 return (rSupply, tSupply);
584
```

# SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 679

## low SEVERITY

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

## Source File

- BRBToken.sol

## Locations

```
678     address[] memory path = new address[](2);
679     path[0] = address(this);
680     path[1] = uniswapV2Router.WETH();
681     _approve(address(this), address(uniswapV2Router), tokenAmount);
682     uniswapV2Router.swapExactTokensForETHSupportingFeeOnTransferTokens(
683
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 680

### low SEVERITY

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

### Source File

- BRBToken.sol

### Locations

```
679     path[0] = address(this);
680     path[1] = uniswapV2Router.WETH();
681     _approve(address(this), address(uniswapV2Router), tokenAmount);
682     uniswapV2Router.swapExactTokensForETHSupportingFeeOnTransferTokens(
683         tokenAmount,
684
```

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