



# Bridge Mutual Smart Contract Audit Report

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# AUDITED DETAILS

## Audited Project

Project name	Token ticker	Blockchain
Bridge Mutual	BMI	Ethereum

## Addresses

Contract address	0x725c263e32c72ddc3a19bea12c5a0479a81ee688
Contract deployer address	0xBA20fc2D665B6DDa0475D1bFDF60F4Af7F47524e

## Project Website

<https://bridgemutual.io/>

## Codebase

<https://etherscan.io/address/0x725c263e32c72ddc3a19bea12c5a0479a81ee688#code>

# SUMMARY

Bridge Mutual is a decentralized, discretionary p2p/p2b insurance platform that provides coverage for stablecoins, centralized exchanges, and smart contracts. Its platform allows users to provide insurance coverage, decide on insurance payouts, and get compensated for taking part in the ecosystem.

## Contract Summary

### Documentation Quality

Bridge Mutual 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 Bridge Mutual with the discovery of several low issues.

### Test Coverage

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

## Audit Findings Summary

- SWC-101 | It is recommended to use vetted safe math libraries for arithmetic operations consistently on lines 139, 171, 194, 195, 230, 266, 668, 893, 893, 893 and 893.
- SWC-103 | Pragma statements can be allowed to float when a contract is intended on lines 9, 34, 112, 272 and 638.

# CONCLUSION

We have audited the Bridge Mutual project released on January 2021 to discover issues and identify potential security vulnerabilities in Bridge Mutual 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 Bridge Mutual 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 and floating pragmas set on several lines. Specifying a fixed compiler version is recommended to ensure that the bytecode produced does not vary between builds.

# 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
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.	PASS
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.	PASS
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 grieving 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 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	Friday Jan 29 2021 07:20:58 GMT+0000 (Coordinated Universal Time)
Finished	Saturday Jan 30 2021 12:52:58 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	BMIToken.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-103	A FLOATING PRAGMA IS SET.	low	acknowledged
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# SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 139

## low SEVERITY

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

## Source File

- BMIToken.sol

## Locations

```
138     function add(uint256 a, uint256 b) internal pure returns (uint256) {  
139         uint256 c = a + b;  
140         require(c >= a, "SafeMath: addition overflow");  
141     }  
142     return c;  
143 }
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 171

## low SEVERITY

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

## Source File

- BMIToken.sol

## Locations

```
170   require(b <= a, errorMessage);  
171   uint256 c = a - b;  
172  
173   return c;  
174   }  
175
```

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

LINE 194

## low SEVERITY

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

## Source File

- BMIToken.sol

## Locations

```
193
194  uint256 c = a * b;
195  require(c / a == b, "SafeMath: multiplication overflow");
196
197  return c;
198
```

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

LINE 195

### low SEVERITY

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

### Source File

- BMIToken.sol

### Locations

```
194     uint256 c = a * b;  
195     require(c / a == b, "SafeMath: multiplication overflow");  
196  
197     return c;  
198 }  
199
```

# SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 230

## low SEVERITY

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

## Source File

- BMIToken.sol

## Locations

```
229     require(b > 0, errorMessage);
230     uint256 c = a / b;
231     // assert(a == b * c + a % b); // There is no case in which this doesn't hold
232
233     return c;
234
```

# SWC-101 | ARITHMETIC OPERATION "%" DISCOVERED

LINE 266

## low SEVERITY

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

## Source File

- BMIToken.sol

## Locations

```
265     require(b != 0, errorMessage);
266     return a % b;
267   }
268   }
269
270
```



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

LINE 668

## low SEVERITY

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

## Source File

- BMIToken.sol

## Locations

```
667 // The {SafeMath} overflow check can be skipped here, see the comment at the top
668 counter._value += 1;
669 }
670
671 function decrement(Counter storage counter) internal {
672
```

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

LINE 893

## low SEVERITY

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

## Source File

- BMIToken.sol

## Locations

```
892 contract BMIToken is ERC20Permit {
893     uint256 constant TOTAL_SUPPLY = 160 * (10**6) * (10**18);
894
895     constructor(address tokenReceiver) ERC20Permit("Bridge Mutual") ERC20("Bridge
Mutual", "BMI") {
896         _mint(tokenReceiver, TOTAL_SUPPLY);
897     }
```

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

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Mutual", "BMI") {  
896         _mint(tokenReceiver, TOTAL_SUPPLY);  
897     }
```

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

LINE 9

### low SEVERITY

The current pragma Solidity directive is "">=0.6.0<0.8.0"". 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

- BMIToken.sol

### Locations

```
8
9  pragma solidity >=0.6.0 <0.8.0;
10
11  /*
12   * @dev Provides information about the current execution context, including the
13
```

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

LINE 34

### low SEVERITY

The current pragma Solidity directive is "">=0.6.0<0.8.0"". 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

- BMIToken.sol

### Locations

```
33
34  pragma solidity >=0.6.0 <0.8.0;
35
36  /**
37   * @dev Interface of the ERC20 standard as defined in the EIP.
38
```

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

LINE 112

### low SEVERITY

The current pragma Solidity directive is ""`>=0.6.0<0.8.0`"". 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

- BMIToken.sol

### Locations

```
111
112  pragma solidity >=0.6.0 <0.8.0;
113
114  /**
115   * @dev Wrappers over Solidity's arithmetic operations with added overflow
116
```



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

LINE 272

### low SEVERITY

The current pragma Solidity directive is `">=0.6.0<0.8.0"`. 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

- BMIToken.sol

### Locations

```
271
272  pragma solidity >=0.6.0 <0.8.0;
273
274
275
276
```

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

LINE 638

### low SEVERITY

The current pragma Solidity directive is `">=0.6.0<0.8.0"`. 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

- BMIToken.sol

### Locations

```
637
638  pragma solidity >=0.6.0 <0.8.0;
639
640
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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