

REPORT 652E3B27BFE98400197ADE5C

Created Tue Oct 17 2023 07:43:35 GMT+0000 (Coordinated Universal Time)  
Number of analyses 1  
User 652d06cba867272eac357bcf

## REPORT SUMMARY

Analyses ID	Main source file	Detected vulnerabilities
<a href="#">bb917f4f-5be7-4804-81ef-efc63f8ea438</a>	contracts/src/ERC1363BondingCurveToken.sol	3

Started	Tue Oct 17 2023 07:43:44 GMT+0000 (Coordinated Universal Time)
Finished	Tue Oct 17 2023 08:28:59 GMT+0000 (Coordinated Universal Time)
Mode	Deep
Client Tool	Remythx
Main Source File	Contracts/Src/ERC1363BondingCurveToken.Sol

## DETECTED VULNERABILITIES

HIGH	MEDIUM	LOW
0	0	3

## ISSUES

## UNKNOWN Arithmetic operation "-" discovered

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

SWC-101

Source file

contracts/src/ERC1363BondingCurveToken.sol

Locations

```
166 | */
167 | function calculateCurvedMintReturn(uint256 depositAmount) public view returns (uint256) {
168 |     return calculatePurchaseReturn(totalSupply(), reserveBalance() - depositAmount, RESERVE_RATION, depositAmount);
169 | }
```

LOW

## State variable visibility is not set.

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

SWC-108

Source file

contracts/src/ERC1363BondingCurveToken.sol

Locations

```
68 |
69 | // prevent sandwich, when one sells BCTToken, shouldn't beyond the time that he bought the BCTToken last time.
70 | error SellerBeyondCoolDownTime(address seller, uint256 lastBuyTime);
71 |
72 | // verifies that the gas price is lower than the universal limit
```

LOW

### State variable visibility is not set.

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

SWC-108

Source file

contracts/src/ERC1363BondingCurveToken.sol

Locations

```
68 |
69 | // prevent sandwich, when one sells BCTToken, shouldn't beyond the time that he bought the BCTToken last time.
70 | error SellerBeyondCoolDownTime(address seller, uint256 lastBuyTime);
71 |
72 | // verifies that the gas price is lower than the universal limit
```

LOW

### State variable visibility is not set.

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

SWC-108

Source file

contracts/src/ERC1363BondingCurveToken.sol

Locations

```
68 |
69 | // prevent sandwich, when one sells BCTToken, shouldn't beyond the time that he bought the BCTToken last time.
70 | error SellerBeyondCoolDownTime(address seller, uint256 lastBuyTime);
71 |
72 | // verifies that the gas price is lower than the universal limit
```

### UNKNOWN Out of bounds array access

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

SWC-110

Source file

contracts/src/erc1363-payable-token/ERC1363.sol

Locations

```
91 |
92 | /**
93 |  * @dev Approve spender to transfer tokens and then execute a callback on `spender`.
94 |  * @param spender The address allowed to transfer to.
95 |  * @param amount The amount allowed to be transferred.
```

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

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Source file

contracts/src/erc1363-payable-token/ERC1363.sol

Locations

```
91 |
92 | /**
93 |  * @dev Approve spender to transfer tokens and then execute a callback on `spender`.
94 |  * @param spender The address allowed to transfer to.
95 |  * @param amount The amount allowed to be transferred.
96 |  * @param data Additional data with no specified format.
```

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Locations

```
93 |  * @dev Approve spender to transfer tokens and then execute a callback on `spender`.
94 |  * @param spender The address allowed to transfer to.
95 |  * @param amount The amount allowed to be transferred.
96 |  * @param data Additional data with no specified format.
97 |  * @return A boolean that indicates if the operation was successful.
```

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Locations

```
94 |  * @param spender The address allowed to transfer to.
95 |  * @param amount The amount allowed to be transferred.
96 |  * @param data Additional data with no specified format.
97 |  * @return A boolean that indicates if the operation was successful.
98 |  */
```

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Source file

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Locations

```
95 | * @param amount The amount allowed to be transferred.  
96 | * @param data Additional data with no specified format.  
97 | * @return A boolean that indicates if the operation was successful.  
98 | */  
99 | function approveAndCall(address spender, uint256 amount, bytes memory data)
```

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SWC-110

Source file

contracts/src/erc1363-payable-token/ERC1363.sol

Locations

```
96 | * @param data Additional data with no specified format.  
97 | * @return A boolean that indicates if the operation was successful.  
98 | */  
99 | function approveAndCall(address spender, uint256 amount, bytes memory data)  
100 | public  
101 | virtual
```

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```
97 | * @return A boolean that indicates if the operation was successful.  
98 | */  
99 | function approveAndCall(address spender, uint256 amount, bytes memory data)  
100 | public  
101 | virtual
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SWC-110

Source file

contracts/src/erc1363-payable-token/ERC1363.sol

Locations

```
100 | public
101 | virtual
102 | override
103 | returns (bool)
104 | {
105 |     approve(spender, amount);
```

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SWC-110

Source file

contracts/src/erc1363-payable-token/ERC1363.sol

Locations

```
103 | returns (bool)
104 | {
105 |     approve(spender, amount);
106 |     require(_checkOnApprovalReceived(spender, amount, data), "ERC1363: spender returned wrong data");
107 |     return true;
108 | }
```

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contracts/src/erc1363-payable-token/ERC1363.sol

Locations

```
104 | {
105 |     approve(spender, amount);
106 |     require(_checkOnApprovalReceived(spender, amount, data), "ERC1363: spender returned wrong data");
107 |     return true;
108 | }
```

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### Source file

contracts/src/erc1363-payable-token/ERC1363.sol

### Locations

```
105 | approve(spender, amount);
106 | require(_checkOnApprovalReceived(spender, amount, data), "ERC1363: spender returned wrong data");
107 | return true;
108 |
109 |
110 | /**
111 |  * @dev Internal function to invoke {IERC1363Receiver-onTransferReceived} on a target address.
112 |  * The call is not executed if the target address is not a contract.
```

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110 | /**
111 |  * @dev Internal function to invoke {IERC1363Receiver-onTransferReceived} on a target address.
112 |  * The call is not executed if the target address is not a contract.
113 |  * @param sender address Representing the previous owner of the given token amount
```

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112 |  * The call is not executed if the target address is not a contract.
113 |  * @param sender address Representing the previous owner of the given token amount
114 |  * @param recipient address Target address that will receive the tokens
```

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112 |  * The call is not executed if the target address is not a contract.
113 |  * @param sender address Representing the previous owner of the given token amount
114 |  * @param recipient address Target address that will receive the tokens
115 |  * @param amount uint256 The amount mount of tokens to be transferred
```

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Locations

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112 |  * The call is not executed if the target address is not a contract.
113 |  * @param sender address Representing the previous owner of the given token amount
114 |  * @param recipient address Target address that will receive the tokens
115 |  * @param amount uint256 The amount mount of tokens to be transferred
116 |  * @param data bytes Optional data to send along with the call
```



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```
113 | * @param sender address Representing the previous owner of the given token amount
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115 | * @param amount uint256 The amount mount of tokens to be transferred
116 | * @param data bytes Optional data to send along with the call
117 | * @return whether the call correctly returned the expected magic value
```

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Source file

contracts/src/erc1363-payable-token/ERC1363.sol

Locations

```
114 | * @param recipient address Target address that will receive the tokens
115 | * @param amount uint256 The amount mount of tokens to be transferred
116 | * @param data bytes Optional data to send along with the call
117 | * @return whether the call correctly returned the expected magic value
118 | */
```

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Source file

contracts/src/erc1363-payable-token/ERC1363.sol

Locations

```
115 | * @param amount uint256 The amount mount of tokens to be transferred
116 | * @param data bytes Optional data to send along with the call
117 | * @return whether the call correctly returned the expected magic value
118 | */
119 | function _checkOnTransferReceived(address sender, address recipient, uint256 amount, bytes memory data)
```

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Source file

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Locations

```
116 | * @param data bytes Optional data to send along with the call
117 | * @return whether the call correctly returned the expected magic value
118 | */
119 | function _checkOnTransferReceived(address sender, address recipient, uint256 amount, bytes memory data)
120 | internal
121 | virtual
```

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contracts/src/erc1363-payable-token/ERC1363.sol

Locations

```
118 | */
119 | function _checkOnTransferReceived(address sender, address recipient, uint256 amount, bytes memory data)
120 | internal
121 | virtual
122 | returns (bool)
123 | {
```

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Source file

contracts/src/erc1363-payable-token/ERC1363.sol

Locations

```
122 | returns (bool)
123 | {
124 |   if (!recipient.isContract()) {
125 |     revert("ERC1363: transfer to non contract address");
126 | }
```

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Source file

contracts/src/erc1363-payable-token/ERC1363.sol

Locations

```
123 | {
124 |   if (!recipient.isContract()) {
125 |     revert("ERC1363: transfer to non contract address");
126 | }
```

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Source file

contracts/src/erc1363-payable-token/ERC1363.sol

Locations

```
126 | }
127 |
128 | try IERC1363Receiver(recipient).onTransferReceived(_msgSender(), sender, amount, data) returns (bytes4 retval) {
129 |   return retval == IERC1363Receiver.onTransferReceived.selector;
130 | } catch (bytes memory reason) {
```

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Locations

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126 | }  
127 |  
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```

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129 |     return retval == IERC1363Receiver.onTransferReceived.selector;  
130 | } catch (bytes memory reason) {  
131 |     if (reason.length == 0) {
```

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128 | try IERC1363Receiver(recipient).onTransferReceived(_msgSender(), sender, amount, data) returns (bytes4 retval) {  
129 |     return retval == IERC1363Receiver.onTransferReceived.selector;  
130 | } catch (bytes memory reason) {  
131 |     if (reason.length == 0) { if (reason.length == 0) {  
132 |         revert("ERC1363: transfer to non ERC1363Receiver implementer");  
133 |     } else {
```

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Source file

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Locations

```
130 | } catch (bytes memory reason) {  
131 | if (reason.length == 0) {  
132 | revert("ERC1363: transfer to non ERC1363Receiver implementer");  
133 | } else {  
134 | /// @solidity memory-safe-assembly
```

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130 | } catch (bytes memory reason) {  
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133 | } else {  
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135 | assembly {
```

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Source file

contracts/src/erc1363-payable-token/ERC1363.sol

Locations

```
132 | revert("ERC1363: transfer to non ERC1363Receiver implementer");  
133 | } else {  
134 | /// @solidity memory-safe-assembly  
135 | assembly {  
136 | revert(add(32, reason), mload(reason))  
137 | }
```

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### Source file

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135 | assembly {
136 |   revert(add(32, reason), mload(reason))
137 | }
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### Source file

contracts/src/erc1363-payable-token/ERC1363.sol

### Locations

```
136 | revert(add(32, reason), mload(reason))
137 | }
138 |
139 |
140 | }
141 |
142 | /**
```

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SWC-110

### Source file

contracts/src/erc1363-payable-token/ERC1363.sol

### Locations

```
141 |
142 | /**
143 |  * @dev Internal function to invoke {IERC1363Receiver-onApprovalReceived} on a target address.
144 |  * The call is not executed if the target address is not a contract.
145 |  * @param spender address The address which will spend the funds
```

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143 |  * @dev Internal function to invoke {IERC1363Receiver-onApprovalReceived} on a target address.
144 |  * The call is not executed if the target address is not a contract.
145 |  * @param spender address The address which will spend the funds
146 |  * @param amount uint256 The amount of tokens to be spent
```

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145 |  * @param spender address The address which will spend the funds
146 |  * @param amount uint256 The amount of tokens to be spent
147 |  * @param data bytes Optional data to send along with the call
148 |  * @return whether the call correctly returned the expected magic value
```

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Locations

```
144 | * The call is not executed if the target address is not a contract.
145 | * @param spender address The address which will spend the funds
146 | * @param amount uint256 The amount of tokens to be spent
147 | * @param data bytes Optional data to send along with the call
148 | * @return whether the call correctly returned the expected magic value
149 | */
```

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Source file

contracts/src/erc1363-payable-token/ERC1363.sol

Locations

```
145 | * @param spender address The address which will spend the funds
146 | * @param amount uint256 The amount of tokens to be spent
147 | * @param data bytes Optional data to send along with the call
148 | * @return whether the call correctly returned the expected magic value * @return whether the call correctly returned the expected magic value
149 | */
150 | function _checkOnApprovalReceived(address spender, uint256 amount, bytes memory data)
```

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Source file

contracts/src/erc1363-payable-token/ERC1363.sol

Locations

```
146 | * @param amount uint256 The amount of tokens to be spent
147 | * @param data bytes Optional data to send along with the call
148 | * @return whether the call correctly returned the expected magic value
149 | */
150 | function _checkOnApprovalReceived(address spender, uint256 amount, bytes memory data)
```



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Locations

```
148 | * @return whether the call correctly returned the expected magic value
149 | */
150 | function _checkOnApprovalReceived(address spender, uint256 amount, bytes memory data)
151 | internal
152 | virtual
```

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```
149 | */
150 | function _checkOnApprovalReceived(address spender, uint256 amount, bytes memory data)
151 | internal
152 | virtual
153 | returns (bool)
154 | {
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Source file

contracts/src/erc1363-payable-token/ERC1363.sol

Locations

```
153 | returns (bool)
154 | {
155 | if (!spender.isContract()) {
156 | revert("ERC1363: approve a non contract address");
157 | }
```

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154 | {  
155 |   if (!spender.isContract()) {  
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contracts/src/erc1363-payable-token/ERC1363.sol

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157 | }  
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159 | try IERC1363Spender(spender).onApprovalReceived(_msgSender(), amount, data) returns (bytes4 retval) {  
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161 | } catch (bytes memory reason) {
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160 |     return retval == IERC1363Spender.onApprovalReceived.selector;
161 | } catch (bytes memory reason) {
162 |     if (reason.length == 0) {
```

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161 | } catch (bytes memory reason) {
162 |     if (reason.length == 0) {
163 |         revert("ERC1363: approve a non ERC1363Spender implementer");
164 |     } else {
```

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165 |         /// @solidity memory-safe-assembly
```

## UNKNOWN Out of bounds array access

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

SWC-110

Source file

contracts/src/erc1363-payable-token/ERC1363.sol

Locations

```
162 | if (reason.length == 0) {
163 |     revert("ERC1363: approve a non ERC1363Spender implementer");
164 |     else {
165 |         /// @solidity memory-safe-assembly
166 |         assembly {
```

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163 | revert("ERC1363: approve a non ERC1363Spender implementer");
164 | } else {
165 |     /// @solidity memory-safe-assembly
166 |     assembly {
167 |         revert(add(32, reason), mload(reason))
168 |     }
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166 |     assembly {
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