



KaratGold Smart Contracts Security Analysis

This report is public.

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Abstract

In this report, we consider the security of the KaratGold project. Our task is to find and describe security issues in the smart contracts of the platform.

Disclaimer

The audit does not give any warranties on the security of the code. One audit cannot be considered enough. We always recommend proceeding with several independent audits and a public bug bounty program to ensure the security of smart contracts. Besides, security audit is not an investment advice.

Summary

In this report, we have considered the security of KaratGold smart contracts. We performed our audit according to the procedure described below.

The audit has shown neither critical nor medium severity issues. However, a number of low severity issues were found.

The token contract has already been <u>deployed</u>. The issues found during the audit do not endanger the project security.

General recommendations

The contracts code is of good code quality and does not contain issues that endanger project security. However, we would recommend completing the <u>Documentation</u> and informing users about <u>ERC20 approve issue</u>.

In addition, if the developers decide to improve the code, we would recommend following the best practices for Pragmas and OpenZeppelin versions, removing Redundant code and Deprecated constructions, and marking Visibility explicitly.

However, these are minor issues, which do not influence code operation.

The text below is for technical use; it details the statements made in Summary and General recommendations.

Procedure

In our audit, we consider the following crucial features of the smart contract code:

- 1. Whether the code is secure.
- 2. Whether the code corresponds to the documentation (including whitepaper).
- 3. Whether the code meets best practices in efficient use of gas, code readability, etc.

We perform our audit according to the following procedure:

- · automated analysis
 - we scan project's smart contracts with our own Solidity static code analyzer SmartCheck
 - we scan project's smart contracts with several publicly available automated
 Solidity analysis tools such as Remix, Oyente, and Solhint
 - o we manually verify (reject or confirm) all the issues found by tools
- manual audit
 - we manually analyze smart contracts for security vulnerabilities
 - we check smart contracts logic and compare it with the one described in the whitepaper
 - o we check ERC20 compliance
- report
 - o we reflect all the gathered information in the report

Checked vulnerabilities

We have scanned KaratGold smart contracts for commonly known and more specific vulnerabilities. Here are some of the commonly known vulnerabilities that we considered (the full list includes them but is not limited to them):

- Reentrancy
- <u>Timestamp Dependence</u>
- Gas Limit and Loops
- DoS with (Unexpected) Throw
- DoS with (Unexpected) revert
- DoS with Block Gas Limit
- Transaction-Ordering Dependence
- Use of tx.origin
- Exception disorder
- Gasless send
- Balance equality
- Byte array
- Transfer forwards all gas
- ERC20 API violation
- Malicious libraries
- Compiler version not fixed
- Redundant fallback function
- Send instead of transfer
- Style guide violation
- Unchecked external call
- Unchecked math
- Unsafe type inference
- Implicit visibility level
- Address hardcoded
- Using delete for arrays
- Integer overflow/underflow
- Locked money
- Private modifier
- Revert/require functions
- Using var
- Visibility
- Using blockhash
- Using SHA3
- Using suicide
- Using throw
- Using inline assembly

Project overview

Project description

In our analysis, we have considered KaratGold <u>whitepaper</u> ("karatgold-wp.pdf", sha1sum 9b24a6ab833ddb721e8f35dd9471b49a84e9cfb2) and <u>smart contracts code</u>.

Project architecture

For the audit, we have been provided with the smart contracts code.

 The code successfully compiles with solcjs command (with some warnings, see Compilation output in Appendix)

The provided code contains the following contracts from OpenZeppelin library with some minor modifications:

- ERC20Basic
- ERC20
- BasicToken
- StandardToken
- Ownable

The following contracts implement additional features for the token:

- InvestorsFeature (inherits Ownable and StandardToken contracts)
- KaratBankCoin (inherits Ownable, StandardToken, and InvestorsFeature contracts)

The total volume of audited Solidity code is 142 lines.

Code logic

KaratBankCoin is ERC20 compatible (compatibility has been checked during the audit) token contract with the following parameters:

- token name: "KaratBank Coin"
- token symbol: "KBC"
- token decimals: 7
- the initial supply: 12 000 000 000 tokens

Besides, some additional functionality is implemented:

- 1. The contract inherits **Ownable** contract. This means that the contract has an owner (initially, it is the address the contract was deployed from).
- 2. The contract includes <code>increaseApproval()</code> and <code>decreaseApproval()</code> functions. This makes changing the <code>allowance</code> mapping possible without using <code>approve()</code> function, which has a vulnerability (see ERC20 approve issue).
- 3. At the moment of deploy all the tokens are transferred to the token contract address.

The contract includes some additional functions:

```
function send(address addr, uint amount)
```

- Call restrictions: only owner can call the function
- Parameters requirements:
 - o addr address is not null
 - o amount is positive
- Logic:
 - puts every unique addr address in the investors array, which is publicly available
 - transfers amount of tokens from the token contract address to addr address

function moneyBack(address addr)

- Call restrictions: only owner can call the function
- Parameters requirements:
 - o addr address is not null
- Logic: transfers all the ETH from the token contract address to addr address

function burnRemainder(uint)

- Call restrictions: only owner can call the function
- Logic: burns all the tokens from the token contract address



Automated analysis

We used several publicly available automated Solidity analysis tools. Here are the combined results of SmartCheck, Solhint, and Remix. Oyente has found no issues. All the issues found by tools were manually checked (rejected or confirmed).

False positives are constructions that were discovered by the tools as vulnerabilities but do not consist a security threat.

True positives are constructions that were discovered by the tools as vulnerabilities and can actually be exploited by attackers or lead to incorrect contracts operation.

Cases when these issues lead to actual bugs or vulnerabilities are described in the next section.

Tool	Rule	False positives	True positives
Remix	Gas requirement of function high	18	
	Variables have very similar names	3	
Total Remix		21	
SmartCheck	Constant Functions		4
	Erc20 Approve		1
	No Payable Fallback	7	
	Pragmas Version		1
	Reentrancy External Call	6	
	Unchecked Math	1	
	Visibility		2
Total SmartCheck		14	8

Solhint	Compiler version must be fixed		1
	Explicitly mark visibility of state		2
Total Solhint			3
Total Overall		35	11

Manual analysis

The contracts were completely manually analyzed, their logic was checked and compared with the one described in the documentation. Besides, the results of the automated analysis were manually verified. All confirmed issues are described below.

Critical issues

Critical issues seriously endanger smart contracts security. We highly recommend fixing them.

The audit has shown no critical issues.

Medium severity issues

Medium issues can influence smart contracts operation in current implementation. We highly recommend addressing them.

The audit has shown no medium severity issues.

Low severity issues

Low severity issues can influence smart contracts operation in future versions of code. We recommend taking them into account.

Redundant code

The following lines include redundant code:

1. line 225:

```
function deposit(address investor, uint) internal {
```

The second argument in this function is redundant.

2. line 275:

```
function burnRemainder(uint) public onlyOwner {
```

The argument in this function is redundant.

We highly recommend removing redundant code in order to improve code readability.



Deprecated constructions

Deprecated syntax is used in some places in the code:

• this.balance is deprecated.

However, the mentioned construction is used in the code, line 272:

```
addr.transfer(this.balance);
```

We recommend using address (this).balance.

- constant modifier for functions is deprecated. However, our audit has shown the use of constant modifier for functions in the following places:
 - o line 41:

```
function balanceOf(address who) public constant returns
(uint256);
```

o line 51:

```
function allowance(address owner, address spender) public
constant returns (uint256);
```

o line 88:

```
function balanceOf(address _owner) public constant returns
(uint256 balance) {
```

o line 146:

```
function allowance(address _owner, address _spender) public
constant returns (uint256 remaining) {
```

We recommend using view instead of constant, since it will be deprecated for functions in compiler version 0.5.0.

- Invoking events without emit prefix is deprecated. However, emit prefix is not used in the following lines:
 - o line 261:

```
Transfer(address(0), this, INITIAL_SUPPLY);
```

o line 240:

```
Transfer(this, addr, amount);
```

Defining constructor as function of the same name as the contract is deprecated.
 However, the constructor of the KaratBankCoin contract is implemented in the following way:

```
function KaratBankCoin() public {
```

We highly recommend not using deprecated constructions and following the best practices instead.

Using outdated library

The version of OpenZeppelin library used in the code is outdated. The contracts inherited in the token contract include deprecated constructions and some redundant code.

We recommend using the latest available version of OpenZeppelin library in case developer.

We recommend using the latest available version of OpenZeppelin library in case developer wants to redeploy the token contract.

Pragmas version

Solidity source files indicate the versions of the compiler they can be compiled with. Example:

```
pragma solidity ^{0.4.13}; // bad: compiles w 0.4.13 and above pragma solidity 0.4.13; // good: compiles w 0.4.13 only
```

We recommend following the latter example, as future compiler versions may handle certain language constructions in a way the developer did not foresee. Besides, we recommend using the latest compiler version – 0.4.24 at the moment.

Implicit visibility level

There are two state variables with implicit visibility level in the code:

line 65:

```
mapping(address => uint256) balances;
```

line 224:

```
mapping(address => bool) isInvestor;
```

We recommend specifying visibility levels (public, private, external, internal) explicitly and correctly in order to improve code readability.

Notes

ERC20 approve issue

There is <u>ERC20 approve issue</u>: changing the approved amount from a nonzero value to another nonzero value allows a double spending with a front-running attack.

We recommend instructing users to follow one of two ways:

- not to use approve() function directly and to use
 increaseApproval()/decreaseApproval() functions instead
- to change the approved amount to 0, wait for the transaction to be mined, and then to change the approved amount to the desired value

Lack of the documentation

According to the whitepaper, ICO has already finished. The information regarding unsold tokens (about 7 000 000 000 KBC at the moment of audit) is not specified in the documentation.

Currently, all the unsold tokens are assigned to the token contract address, including tokens reserved for partners, referrals, etc. Therefore, tokens can be burned or transferred to any address without any restrictions.

We recommend completing the documentation by adding the relevant information.

This analysis was performed by **SmartDec**.

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June 22, 2018

SmartDec

Appendix

Compilation output

```
192:3: Warning: Defining constructors as functions with the same
name as the contract is deprecated. Use "constructor(...) { ... }"
instead.
    function Ownable() public {
     ^ (Relevant source part starts here and spans across multiple
lines).
   258:3: Warning: Defining constructors as functions with the same
name as the contract is deprecated. Use "constructor(...) { ... }"
     function KaratBankCoin() public {
     ^ (Relevant source part starts here and spans across multiple
lines).
   79:5: Warning: Invoking events without "emit" prefix is
deprecated.
      Transfer(msg.sender, to, value);
      ^_____
   120:5: Warning: Invoking events without "emit" prefix is
deprecated.
      Transfer( from, to, value);
   136:5: Warning: Invoking events without "emit" prefix is
deprecated.
      Approval (msg.sender, spender, value);
   158:5: Warning: Invoking events without "emit" prefix is
deprecated.
      Approval (msg.sender, spender,
allowed[msg.sender][ spender]);
      ^_____
   169:5: Warning: Invoking events without "emit" prefix is
deprecated.
      Approval (msg.sender, spender,
allowed[msg.sender][_spender]);
```

```
212:5: Warning: Invoking events without "emit" prefix is
deprecated.
      OwnershipTransferred(owner, newOwner);
      ^_____^
   240:9: Warning: Invoking events without "emit" prefix is
deprecated.
          Transfer(this, addr, amount);
   261:5: Warning: Invoking events without "emit" prefix is
deprecated.
      Transfer(address(0), this, INITIAL SUPPLY);
   272:21: Warning: Using contract member "balance" inherited from
the address type is deprecated. Convert the contract to "address"
type to access the member, for example use
"address (contract) .balance" instead.
        addr.transfer(this.balance);
                     ^____^
```

Solhint output

1:17 fixed	warning	Compiler version must be compi
ler-fixed		
7:1	error	Definition must be surrounded with two blank line
indent		two-lines-top-level-separator
8 : 3	error	Expected indentation of 4 spaces but found indent
9:5 4	error	Expected indentation of 8 spaces but found indent
10:5 4	error	Expected indentation of 8 spaces but found indent
11:5 4	error	Expected indentation of 8 spaces but found indent
12:3 2	error	Expected indentation of 4 spaces but found indent
14:3 2	error	Expected indentation of 4 spaces but found indent

4	16:5	error	Expected	indentation	of	8	spaces indent	but	found
4	18:5	error	Expected	indentation	of	8		but	found
2	19:3	error	Expected	indentation	of	4		but	found
2	21:3	error	Expected	indentation	of	4		but	found
4	22:5	error	Expected	indentation	of	8		but	found
4	23:5	error	Expected	indentation	of	8	spaces indent	but	found
2	24:3	error	Expected	indentation	of	4	spaces indent	but	found
2	26:3	error	Expected	indentation	of	4	spaces indent	but	found
4	27:5	error	Expected	indentation	of	8	spaces indent	but	found
4	28:5	error	Expected	indentation	of	8	spaces indent	but	found
4	29:5	error	Expected	indentation	of	8	spaces indent	but	found
2	30:3	error	Expected	indentation	of	4	spaces indent	but	found
	39:1	error	Definitio						vo blank line
ind	dent			tı	wo-l	.ir	nes-top-	-leve	el-separator
2	40:3	error	Expected	indentation	of	4	spaces indent	but	found
2	41:3	error	Expected	indentation	of	4	spaces indent	but	found
2	42:3	error	Expected	indentation	of	4	spaces indent	but	found
	43:3	warning	Event and	d function na	ames	n	must be		
	fferent							r	no-simple-
eve	ent-fund	c-name							
2	43:3	error	Expected	indentation	of	4	spaces indent	but	found
ino	50:1 dent	error	Definition						vo blank line el-separator
2	51:3	error	Expected	indentation	of	4	spaces indent	but	found
2	52:3	error	Expected	indentation	of	4	spaces indent	but	found
2	53:3	error	Expected	indentation	of	4	spaces indent	but	found
	54:3	error	Expected	indentation	of	4	_	but	found
2							indent		

in	62:1 dent	error	Definition						wo blank line el-separator
	63:3	error	Expected	indentation			_		_
2			1				indent		
_	65:3	error	Expected	indentation	n of	4		hut	found
2	00.0	CIIOI	пирессеа	inacircacioi	1 01	_	indent	Duc	Tourid
	65:3		Erroliaiti	l	h-11-	. + -			
~ +		warning	Expircit	Ly mark vis:	LDTTI	LLY	y OI		a+a+a
	ate								state-
Vl	sibility	-	- ·	1 6			. 1		
, ,	72:3	warning	Event and	d function a	names	s r	nust be		
	fferent							I	no-simple-
ev	ent-fund		_						
	72:3	error	Expected	indentation	n oi	4	_	but	found
2							indent		
	73:5	error	Expected	indentation	n of	8	_	but	found
4							indent		
	74:5	error	Expected	indentation	n of	8	_	but	found
4							indent		
	77:5	error	Expected	indentation	n of	8	_	but	found
4							indent		
	78:5	error	Expected	indentation	n of	8	spaces	but	found
4							indent		
	79:5	error	Expected	indentation	n of	8	spaces	but	found
4							indent		
	80:5	error	Expected	indentation	n of	8	spaces	but	found
4							indent		
	81:3	error	Expected	indentation	n of	4	spaces	but	found
2							indent		
	88:3	error	Expected	indentation	n of	4	spaces	but	found
2							indent		
	89:5	error	Expected	indentation	n of	8	spaces	but	found
4			_				indent		
	90:3	error	Expected	indentation	n of	4	spaces	but	found
2			_				indent		
	99:2	error	Line lend	oth must be	no n	noı	re than	120	but current
le	ngth is	122		,			ine-lend		
	101:1	error	Definition	on must be s				_	wo blank line
	dent								el-separator
	103:3	error	Expected	indentation			_		_
2	100.0	01101	Lipededa	1114611646161	. 01	-	indent	240	104114
	112:3	error	Definition	ons inside (contr	^a^		orarı	y must he
		by one la							e-in-contract
	112:3	error		indentation			_		
2	112.0	CIIOI	Typecred	Indentation	. ОТ	7	indent	Dut	Louila
	113:5	orror	Evnoatod	indontation	o o f	Q		hıı+	found
4	113.3	error	Typected	indentation	IOI	O	indent	Dut	Lound
4							Indent		

4	114:5	error	Expected	indentation	of	8	spaces indent	but	found
	115:5	error	Expected	indentation	of	8	spaces	but	found
4	117:5	error	Expected	indentation	of	8	_	but	found
4	118:5	error	Expected	indentation	of	8	-	but	found
4	119:5	error	Expected	indentation	of	8	<pre>indent spaces</pre>	but	found
4	120:5	error	Expected	indentation	of	8	<pre>indent spaces</pre>	but	found
4	121:5	error	Expected	indentation	of	8	<pre>indent spaces</pre>	but	found
4	122:3	error	_	indentation			indent		
2			_				indent		
2	134:3	error	-	indentation			indent		
4	135:5	error	Expected	indentation	of	8	<pre>spaces indent</pre>	but	found
4	136:5	error	Expected	indentation	of	8	spaces indent	but	found
4	137:5	error	Expected	indentation	of	8	spaces indent	but	found
2	138:3	error	Expected	indentation	of	4		but	found
	146:3	error	Expected	indentation	of	4		but	found
2	147:5	error	Expected	indentation	of	8	spaces	but	found
4	148:3	error	Expected	indentation	of	4		but	found
2	156:3	error	Expected	indentation	of	4	<pre>indent spaces</pre>	but	found
2	157:5	error	Expected	indentation	of	8	<pre>indent spaces</pre>	but	found
4	158:5	error	-	indentation			indent		
4			_				indent		
4	159:5	error	_	indentation			indent		
2	160:3	error	_	indentation			indent		
2	162:3	error	Expected	indentation	of	4	spaces indent	but	found
4	163:5	error	Expected	indentation	of	8	spaces indent	but	found

164		
4	d:5 error	Expected indentation of 8 spaces but found indent
165	5:7 error	Expected indentation of 12 spaces but found
6		indent
166	s:5 error	Expected indentation of 8 spaces but found
4	7 . 7	indent
167 6	7:7 error	Expected indentation of 12 spaces but found indent
168	3:5 error	Expected indentation of 8 spaces but found
4		indent
169	error	Expected indentation of 8 spaces but found
4 170):5 error	indent Expected indentation of 8 spaces but found
4	.5 CIIOI	indent
171	:3 error	Expected indentation of 4 spaces but found
2		indent
	:1 error	Definition must be surrounded with two blank line
inder		two-lines-top-level-separator
2	2:3 error	Expected indentation of 4 spaces but found indent
185	5:3 error	Expected indentation of 4 spaces but found
2		indent
192		Definitions inside contract / library must be
_	rated by one	
192 2	2:3 error	Expected indentation of 4 spaces but found indent
193	3:5 error	Expected indentation of 8 spaces but found
4		indent
	1:3 error	Expected indentation of 4 spaces but found
2		indent
2 200):3 error	indent Definitions inside contract / library must be
2 200 separ):3 error	indent Definitions inside contract / library must be separate-by-one-line-in-contract
2 200 separ 200):3 error	indent Definitions inside contract / library must be e line separate-by-one-line-in-contract Expected indentation of 4 spaces but found
2 200 separ	o:3 error rated by one error	indent Definitions inside contract / library must be eline separate-by-one-line-in-contract Expected indentation of 4 spaces but found indent
2 200 separ 200 2	o:3 error rated by one error	indent Definitions inside contract / library must be e line separate-by-one-line-in-contract Expected indentation of 4 spaces but found
2 200 separ 200 2 2 201 4 202	o:3 error rated by one error error error	indent Definitions inside contract / library must be eline separate-by-one-line-in-contract Expected indentation of 4 spaces but found
2 200 separ 200 2 201 4 202 4	error eated by one error error error error error error	indent Definitions inside contract / library must be line separate-by-one-line-in-contract Expected indentation of 4 spaces but found
2 200 separ 200 2 2 201 4 202 4 203	error eated by one error error error error error error	indent Definitions inside contract / library must be line separate-by-one-line-in-contract Expected indentation of 4 spaces but found
2 200 separ 200 2 201 4 202 4	error ated by one error error error error error error error error error	indent Definitions inside contract / library must be line separate-by-one-line-in-contract Expected indentation of 4 spaces but found
2 200 separ 200 2 2 201 4 203 2 210 2	error eated by one error	indent Definitions inside contract / library must be line separate-by-one-line-in-contract Expected indentation of 4 spaces but found
2 200 separ 200 2 201 4 202 4 203 2 210 2 210	o:3 error rated by one o:3 error o:5 error o:5 error o:6:5 error o:3 error	indent Definitions inside contract / library must be line separate-by-one-line-in-contract Expected indentation of 4 spaces but found
2 200 separ 200 2 201 4 202 4 203 2 210 2 210 separ	o:3 error rated by one o:3 error o:5 error o:5 error o:3 error o:3 error o:3 error	indent Definitions inside contract / library must be line separate-by-one-line-in-contract Expected indentation of 4 spaces but found
2 200 separ 200 2 201 4 202 4 203 2 210 2 210	o:3 error rated by one o:3 error o:5 error o:5 error o:3 error o:3 error o:3 error	indent Definitions inside contract / library must be line separate-by-one-line-in-contract Expected indentation of 4 spaces but found

212:5 error Expected indentation of 8 spaces but found indent	
213:5 error Expected indentation of 8 spaces but found	
4 indent	
214:3 error Expected indentation of 4 spaces but found	
2 indent	
220:1 error Definition must be surrounded with two blands indent two-lines-top-level-sepa	
<pre>indent</pre>	lator
state state	.e-
visibility	
225:5 error Definitions inside contract / library must	be
separated by one line separate-by-one-line-in-con	tract
226:9 error Statement indentation is incorrect. Require	d
space after if statement-indent	
247:1 error Definition must be surrounded with two blan	
indent two-lines-top-level-sepa	
247:69 error Open bracket must be on same line. It must	be
indented by other constructions by space bracket-align 250:26 error Constant name must be in capitalized	
SNAKE CASE const-name-	
snakecase	
250:3 error Expected indentation of 4 spaces but found	
2 indent	
251:3 error Expected indentation of 4 spaces but found	
2 indent	
251:26 error Constant name must be in capitalized	
SNAKE_CASE const-name- snakecase	
252:3 error Expected indentation of 4 spaces but found	
2 indent	
252:25 error Constant name must be in capitalized	
SNAKE_CASE const-name-	
snakecase	
254:3 error Expected indentation of 4 spaces but found	
2 indent	
258:3 error Expected indentation of 4 spaces but found indent	
258:3 error Definitions inside contract / library must	he
separated by one line separate-by-one-line-in-co	
259:5 error Expected indentation of 8 spaces but found	
4 indent	
260:5 error Expected indentation of 8 spaces but found	
4 indent	
261:5 error Expected indentation of 8 spaces but found	
4 indent	

```
262:3
                  Expected indentation of 4 spaces but found
         error
2
                                             indent
 266:3
                  Expected indentation of 4 spaces but found
         error
                                             indent
  266:3
                  Definitions inside contract / library must be
         error
separated by one line
                                    separate-by-one-line-in-contract
        error
                  Expected indentation of 8 spaces but found
                                             indent
 268:3
                  Expected indentation of 4 spaces but found
         error
                                             indent
 270:3
                  Expected indentation of 4 spaces but found
         error
                                             indent
 271:7
                  Expected indentation of 8 spaces but found
         error
                                             indent
  272:7
         error
                  Expected indentation of 8 spaces but found
                                             indent
  273:3
         error
                  Expected indentation of 4 spaces but found
                                             indent
 275:3
         error
                  Expected indentation of 4 spaces but found
2
                                             indent
 276:7
                  Expected indentation of 8 spaces but found
         error
                                             indent
  277:7
         error
                  Expected indentation of 8 spaces but found
                                             indent
                  Expected indentation of 8 spaces but found
 278:7
         error
                                             indent
 279:3
                  Expected indentation of 4 spaces but found
         error
                                             indent
X 134 problems (129 errors, 5 warnings)
```

Solium output

8:2	error	Only use indent of 4 spaces. indentation
12:0	error	Only use indent of 4 spaces. indentation
14:2	error	Only use indent of 4 spaces. indentation
19:0	error	Only use indent of 4 spaces. indentation
21:2	error	Only use indent of 4 spaces. indentation
24:0	error	Only use indent of 4 spaces. indentation
26:2	error	Only use indent of 4 spaces. indentation
30:0	error	Only use indent of 4 spaces. indentation
40:2	error	Only use indent of 4 spaces. indentation
41:2	error	Only use indent of 4 spaces. indentation
41:41	warning	Use 'view' instead of deprecated

'constant'.	no-cons	tant						
42:2	error	Only	use	indent	of	4	spaces.	indentation
43:2	error	Only	use	indent	of	4	spaces.	indentation
51:2	error	Only	use	indent	of	4	spaces.	indentation
51:60	warning	Use '	view	v' inste	ead	01	f deprecated	
'constant'.	no-cons	tant						
52:2	error	Only	use	indent	of	4	spaces.	indentation
53:2	error	Only	use	indent	of	4	spaces.	indentation
54:2	error	Only	use	indent	of	4	spaces.	indentation
63:2	error	Only	use	indent	of	4	spaces.	indentation
65 : 2	error	_					spaces.	indentation
72:2	error	_					spaces.	indentation
81:0	error	_					spaces.	indentation
88:2	error	_					spaces.	indentation
88:44	warning		view	v' inste	ead	01	f deprecated	
'constant'.								
90:0	error						spaces.	indentation
103:2	error						spaces.	indentation
112:2	error	_					spaces.	indentation
122:0	error	_					spaces.	indentation
134:2	error	_					spaces.	indentation
138:0	error	_					spaces.	indentation
146:2 146:62	error warning	_					spaces. f deprecated	indentation
140.02	Wariiii							
!constant!	2		VICV	V III5CC	Jau	01	i depiceated	
'constant'.	no-cons	tant					-	indentation
148:0	no-cons error	tant Only	use	indent	of	4	spaces.	indentation
148:0 156:2	no-cons error	tant Only Only	use use	indent indent	of of	4	spaces.	indentation
148:0 156:2 160:0	no-cons error	tant Only Only Only	use use use	indent indent indent	of of of	4 4 4	spaces. spaces.	indentation indentation
148:0 156:2	no-cons error error	Only Only Only Only	use use use	indent indent indent indent	of of of	4 4 4	spaces. spaces. spaces.	indentation
148:0 156:2 160:0 162:2	no-cons error error error	Only only only only only	use use use use	indent indent indent indent indent	of of of of	4 4 4 4 8	spaces. spaces.	indentation indentation indentation
148:0 156:2 160:0 162:2 165:6	no-cons error error error error	Only Only Only Only Only Only	use use use use use	<pre>indent indent indent indent indent indent</pre>	of of of of of	4 4 4 8 8	spaces. spaces. spaces. spaces.	<pre>indentation indentation indentation indentation</pre>
148:0 156:2 160:0 162:2 165:6 167:6	no-cons error error error error error	Only Only Only Only Only Only Only Only	use use use use use use use	indent indent indent indent indent indent indent indent	of of of of of of	4 4 4 8 8 4	spaces. spaces. spaces. spaces. spaces. spaces.	<pre>indentation indentation indentation indentation indentation</pre>
148:0 156:2 160:0 162:2 165:6 167:6 171:0	no-cons error error error error error error error	Only Only Only Only Only Only Only Only	use use use use use use use	indent	of of of of of of	4 4 4 8 8 4 4	spaces. spaces. spaces. spaces. spaces. spaces. spaces.	<pre>indentation indentation indentation indentation indentation indentation</pre>
148:0 156:2 160:0 162:2 165:6 167:6 171:0 182:2	no-cons error error error error error error error error	Only Only Only Only Only Only Only Only	use use use use use use use use	indent	of of of of of of	4 4 4 8 8 4 4	spaces. spaces. spaces. spaces. spaces. spaces. spaces. spaces. spaces.	<pre>indentation indentation indentation indentation indentation indentation indentation</pre>
148:0 156:2 160:0 162:2 165:6 167:6 171:0 182:2 185:2	no-cons error error error error error error error error error	Only Only Only Only Only Only Only Only	use use use use use use use use use	indent indent indent indent indent indent indent indent indent	of of of of of of of	4 4 4 8 8 4 4 4	spaces.	indentation
148:0 156:2 160:0 162:2 165:6 167:6 171:0 182:2 185:2	no-cons error	Only Only Only Only Only Only Only Only	use	indent indent indent indent indent indent indent indent indent indent	of of of of of of of	4 4 4 8 8 4 4 4 4	spaces.	indentation
148:0 156:2 160:0 162:2 165:6 167:6 171:0 182:2 185:2 192:2 194:0	no-cons error	Only Only Only Only Only Only Only Only	use	indent indent indent indent indent indent indent indent indent indent indent	of of of of of of of of of	4 4 4 8 8 4 4 4 4 4	spaces.	indentation
148:0 156:2 160:0 162:2 165:6 167:6 171:0 182:2 185:2 192:2 194:0 200:2	no-cons error	only Only Only Only Only Only Only Only O	use	indent indent indent indent indent indent indent indent indent indent indent indent	of	4 4 4 8 8 4 4 4 4 4 4 4	spaces.	indentation
148:0 156:2 160:0 162:2 165:6 167:6 171:0 182:2 185:2 192:2 194:0 200:2 203:0	no-cons error	only Only Only Only Only Only Only Only O	use	indent indent indent indent indent indent indent indent indent indent indent indent indent	of	4 4 4 8 8 4 4 4 4 4 4 4 4	spaces.	indentation
148:0 156:2 160:0 162:2 165:6 167:6 171:0 182:2 185:2 192:2 194:0 200:2 203:0 210:2	no-cons error	only Only Only Only Only Only Only Only O	use	indent indent indent indent indent indent indent indent indent indent indent indent indent	of of of of of of of of of	4 4 4 8 8 4 4 4 4 4 4 4 4 4 5	spaces.	indentation
148:0 156:2 160:0 162:2 165:6 167:6 171:0 182:2 185:2 192:2 194:0 200:2 203:0 210:2 212:4 events. 214:0	no-cons error	tant Only Only Only Only Only Only Only Only	use	indent indent indent indent indent indent indent indent indent indent indent indent indent indent	of	4 4 4 8 8 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	spaces.	indentation
148:0 156:2 160:0 162:2 165:6 167:6 171:0 182:2 185:2 192:2 194:0 200:2 203:0 210:2 212:4 events. 214:0 250:2	no-cons error	tant Only Only Only Only Only Only Only Only	use	indent	of	4 4 4 8 8 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	spaces.	indentation
148:0 156:2 160:0 162:2 165:6 167:6 171:0 182:2 185:2 192:2 194:0 200:2 203:0 210:2 212:4 events. 214:0 250:2 251:2	no-cons error	only Only Only Only Only Only Only Only O	use	indent indent indent indent indent indent indent indent indent indent indent indent indent indent indent indent indent	of	4 4 4 8 8 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	spaces.	indentation
148:0 156:2 160:0 162:2 165:6 167:6 171:0 182:2 185:2 192:2 194:0 200:2 203:0 210:2 212:4 events. 214:0 250:2 251:2 252:2	no-cons error	only Only Only Only Only Only Only Only O	use	indent	of o	4 4 4 8 8 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	spaces.	indentation
148:0 156:2 160:0 162:2 165:6 167:6 171:0 182:2 185:2 192:2 194:0 200:2 203:0 210:2 212:4 events. 214:0 250:2 251:2	no-cons error	tant Only Only Only Only Only Only Only Only	use	indent	of	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	spaces.	indentation

262:0	error	Only use	indent	of 4	spaces.	indentation
266:2	error	Only use	indent	of 4	spaces.	indentation
268:0	error	Only use	indent	of 4	spaces.	indentation
270:2	error	Only use	indent	of 4	spaces.	indentation
273:0	error	Only use	indent	of 4	spaces.	indentation
275:2	error	Only use	indent	of 4	spaces.	Indentation
279:0	error	Only use	indent	of 4	spaces.	Indentation
		<u> </u>			±	

 $\boldsymbol{\mathsf{X}}$ 55 errors, 5 warnings found.