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## C Compiler Package for RL78 Family

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### Outline

When using the C compiler package for RL family CC-RL, note the following points:

1. Point for caution when the `-misra2012` option is specified. (CCRL#023)

Note: The number following the note is an identifying number for the precautionary note.

### 1. Point for caution when the `-misra2012` option is specified. (CCRL#023)

#### 1.1 Applicable Products

CC-RL V1.03.00 to V1.07.00 [Professional edition] (Rule 16.1 and 16.4)

CC-RL V1.06.00 to V1.07.00 [Professional edition] (Rule 15.6, 15.7, and 16.2)

#### 1.2 Details

When checking source code against MISRA-C:2012 rules by specifying `-misra2012` option, the compiler may output a message for a code which does not violate the rules and may not output a message for a code which violates the rules.

MISRA-C is a set of software development guidelines whose purpose is to maintain the safety, portability and reliability of embedded systems programmed in the C language.

#### 1.3 Conditions

An error occurs when the following rules are specified.

- Rule 15.6  
No message is output for a code which violates the rule if the `-lang=c99` option is specified.
- Rule 15.7  
No message is output for a code which violates the rule if the `-lang=c99` option is specified.
- Rule 16.1  
No message is output for a code that violates the rule if all of the following conditions are met:
  - (1) “{“ is written immediately after a switch statement (controlling expression).
  - (2) Both a case clause and a default clause are written in the switch statement (1).
  - (3) Each case clause and default clause in (2) ends with a break statement or a compound statement <sup>(Note1)</sup> (block) which includes a break statement at the end.
  - (4) At least one of the case clauses or default clauses in (3) meets all the conditions below.
    - (4-1) A compound statement (block) which is neither a selection statement (if or switch) nor a repeat statement (while, do-while, or for) is written at the end.
    - (4-2) A statement is written before the compound statement (block) in (4-1).

- Rule 16.2  
No message is output for a code that violates the rule if all of the following conditions are met.
  - (1) The `-lang=c99` option is specified.
  - (2) A case or default label is written immediately after switch (controlling expression) without “{”.
- Rule 16.4  
A message may be output for a code that does not violate the rule if either of the following conditions is met:
  - (1) `-lang=c` is specified and a compound statement (block) is written in the function definition.
  - (2) `-lang=c99` is specified, and a compound statement (block), selection statement (if or switch), or repeat statement (while, do-while, or for) is written in the function definition.  
This includes a case where a selection statement or repeat statement is written without “{ }”.

Note: A compound statement refers to a statement enclosed with “{ }”. An if statement enclosed with “{ }” is also a compound statement.

### 1.4 Example

The example of an error is shown below. Characters in red are the parts corresponding to the conditions.

[C source code] (rule 16.1)

1:	<code>int x;</code>	
2:	<code>void func(void) {</code>	
3:	<code>  switch(x) {</code>	<code>// Condition (1)</code>
4:	<code>  case 1:</code>	<code>// Condition (2)</code>
5:	<code>    ++x;</code>	<code>// Condition (4-2)</code>
6:	<code>    {</code>	<code>// Condition (4-1)</code>
7:	<code>      --x;</code>	
8:	<code>      break;</code>	<code>// Condition (3)</code>
9:	<code>  }</code>	<code>// Condition (4-1)</code>
10:	<code>  default:</code>	<code>// Condition (2)</code>
11:	<code>    break;</code>	<code>// Condition (3)</code>
12:	<code>  }</code>	<code>// Condition (1)</code>
13:	<code>}</code>	

Although the C source code above violates rule 16.1 of MISRA C: 2012, no message is output.

Lines 3 and 12: Condition (1) is met because “{” is written immediately after switch (controlling expression).

Lines 4 and 10: Condition (2) is met because both a case clause and a default clause are written.

Lines 8 and 11: Condition (3) is met because the case clause and default clause end with a break statement.

Lines 6 and 9: Condition (4-1) is met because the case clause ends with a compound statement (block).

Line 5: Condition (4-2) is met because a statement is written before a compound statement (block).

[C source code] (rule 16.2)

1:	int x;	
2:	void func(void) {	
3:	switch(x)	// Condition (2)
4:	case 1:	// Condition (2)
5:	break;	
6:	}	

The C source code above violates rule 16.2 of MISRA C:2012. Although a message is output when `-lang=c` is specified, no message is output when `-lang=c99` is specified.

Lines 3 and 4: Condition (2) is met because a case label is written without “{” immediately after switch (controlling expression).

### 1.5 Workaround

There is no workaround for this problem.

### 1.6 Schedule for Fixing the Problem

This problem is fixed in CC-RL V1.08.00. (Scheduled to be released on January 21.)

**Revision History**

Rev.	Date	Description	
		Page	Summary
1.00	Jan. 16, 2019	-	First edition issued

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