第三章 CMake主要语法 cmake-language(7)

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message("src length ${length}") # list(GET <list> <element index> [<element index> ...] <output variable>) list(GET src 1 var) message("src 1 = ${var}") list(GET src 12 var) message("src 12 = ${var}") list(GET src -1 var) message("src -1 = ${var}") list(GET src -2 var) message("src -2 = ${var}") #list(JOIN <list> <glue> <output variable>) #a|b|c|d|e|f list(JOIN src "|" var) message("JOIN = ${var}") list(JOIN src "" var) message("JOIN = ${var}") #list(SUBLIST <list> <begin> <length> <output variable>) list(SUBLIST src 0 3 var) message("SUBLIST = ${var}") #list(FIND <list> <value> <output variable>) #全字匹配 list(FIND src "ca1" var) message("FIND = ${var}") # list(INSERT <list> <element_index> <element> [<element> ...]) list(INSERT src 1 "ff") list(INSERT src 3 "ff") message("src = ${src}") list(POP_BACK src var) # list(POP_BACK <list> [<out-var>...]) message("POP_BACK = ${var}") # list(POP_FRONT <list> [<out-var>...]) list(POP_FRONT src var) message("POP_FRONT = ${var}") message("src = ${src}") # list(SORT <list> [COMPARE <compare>] [CASE <case>] [ORDER <order>]) #[[
使用COMPARE关键字选择排序的比较方法。该<compare>选项应该是以下之一：
STRING：按字母顺序对字符串列表进行排序。COMPARE如果未给出该选项，这是默认行为。
FILE_BASENAME：按文件的基本名称对文件的路径名列表进行排序。
NATURAL：使用自然顺序对字符串列表进行排序（参见strverscmp(3)手册），即将连续数字作为整数进行比较。例如：以下列表10.0 1.1 2.1 8.0 2.0 3.1如果选择了比较，则将 排序为1.1 2.0 2.1 3.1 8.0 10.0 ，与比较将排序为1.1 10.0 2.0 2.1 3.1 8.0。NATURALSTRING
CASE关键字选择区分大小写或不区分大小写的排序模式。该<case>选项应该是以下之一：
SENSITIVE：列表项以区分大小写的方式排序。CASE如果未给出该选项，这是默认行为。
INSENSITIVE：列表项不区分大小写。未指定仅大写/小写不同的项目的顺序。
要控制排序顺序，ORDER可以给出关键字。该<order>选项应该是以下之一：
ASCENDING：按升序对列表进行排序。ORDER这是未给出选项时的默认行为。
DESCENDING：按降序对列表进行排序]] list(SORT src) message("SORT src = ${src}") #[[list(REMOVE_ITEM <list> <value> [<value> ...])]] list(REMOVE_DUPLICATES src) message("REMOVE_DUPLICATES src = ${src}") list(REMOVE_ITEM src f) message("REMOVE_ITEM f src = ${src}") list(REMOVE_AT src 2) message("REMOVE_AT 2 src = ${src}") 71

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8.5. continue() 78
8.5.1. if(NOT re) message(${var}) continue() endif() 78
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8.6.1. foreach(var RANGE 100) #string(APPEND out ${var} " ") math(EXPR re "${var} % 3") if(NOT re) message(${var}) continue() endif() if(var GREATER 50) break() endif() message(".") endforeach() message("end for") 79
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10.4.1. macro(foo) set(foo_var "foovar") #ARGN, ARGC,ARGV等ARGV0不是变量 # 通常宏使用全小写的名称 message(" ${ARGC} ${ARGV} ") message("ARGV0 = ${ARGV0}") message("ARGV1 = ${ARGV1}") message("ARGV2 = ${ARGV2}") message("ARGV3 = ${ARGV3}") message("macro(foo)") message("para1 = ${para1}") foreach(arg IN LISTS ARGN) message("arg = ${arg}") endforeach() endmacro() foo(1) Foo(33) FOO(44 "tt" 111) 90
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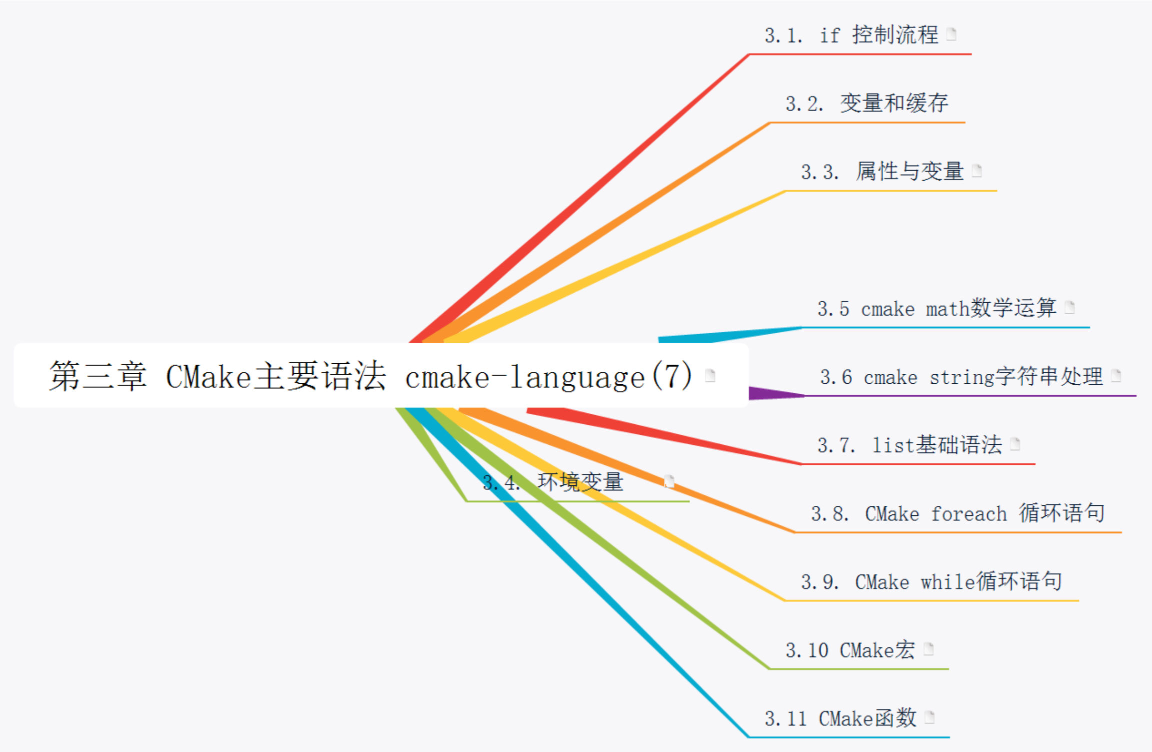
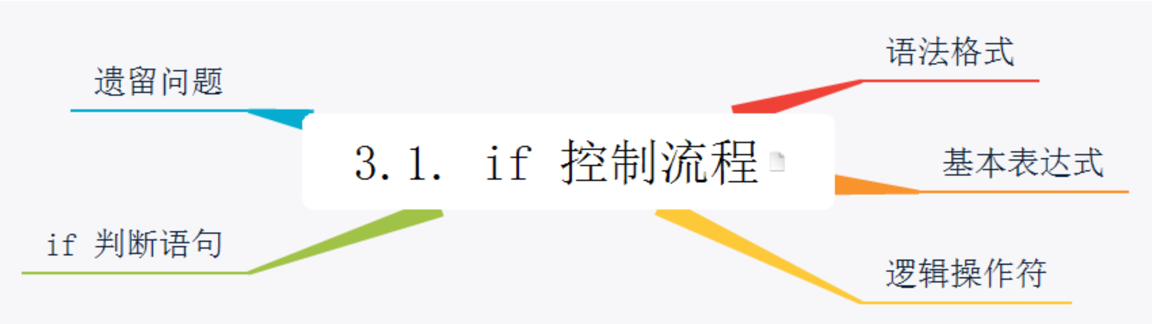
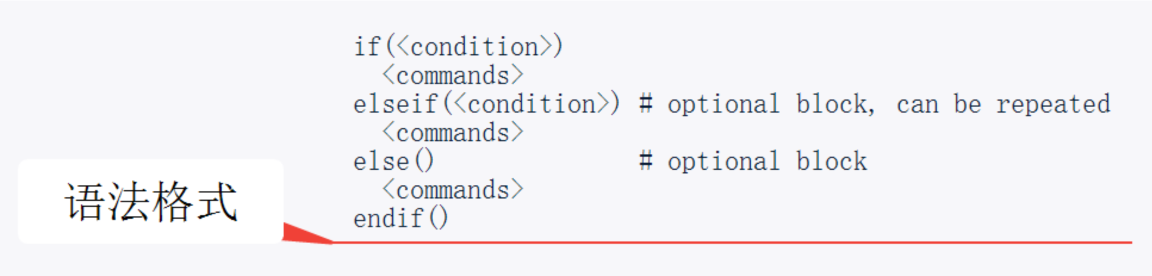
11.3.1. return() 91
11.4. code 92
11.4.1. function(fun arg1 arg2) # 通常函数使用全小写的名称 set(fun_var "fun var value") set(fun_var2 "fun2 var value" PARENT_SCOPE) message("call fun") message(" ${ARGC} ${ARGV} ") message("ARGV0 = ${ARGV0}") message("ARGV1 = ${ARGV1}") message("ARGV2 = ${ARGV2}") message("ARGV3 = ${ARGV3}") endif() 92
11.4.2. set(testm "001") macro(TestM) set(testm "002") endmacro() function(TestF) set(testm "003") endfunction() TestM() TestF() 92



1. 3.1. if 控制流程



1.1. 语法格式

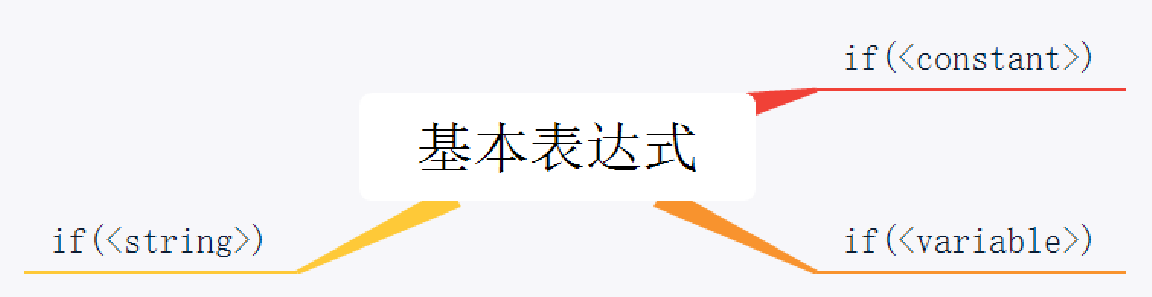


```
if(<condition>)
  <commands>
elseif(<condition>) # optional block, can be repeated
  <commands>
else()              # optional block
  <commands>
endif()
```

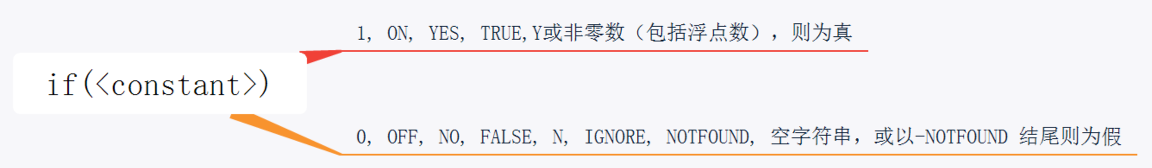
1.1.1. if(<condition>)

```
  <commands>
elseif(<condition>) # optional block, can be repeated
  <commands>
else()              # optional block
  <commands>
endif()
```

1.2. 基本表达式



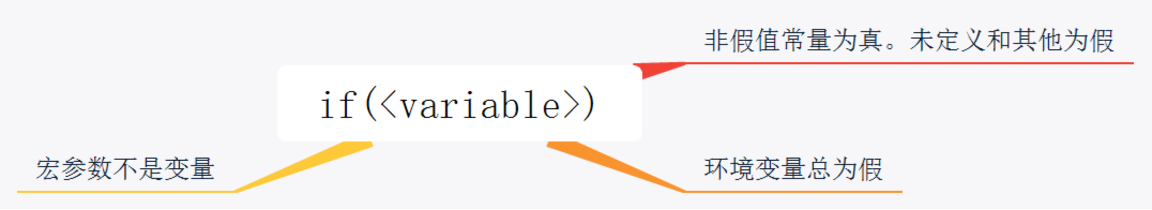
1.2.1. if(<constant>)


if(<constant>)
1, ON, YES, TRUE, Y或非零数（包括浮点数），则为真
0, OFF, NO, FALSE, N, IGNORE, NOTFOUND, 空字符串，或以-NOTFOUND 结尾则为假

1, ON, YES, TRUE,Y或非零数（包括浮点数），则为真

0, OFF, NO, FALSE, N, IGNORE, NOTFOUND, 空字符串，或以-NOTFOUND 结尾则为假

1.2.2. if(<variable>)



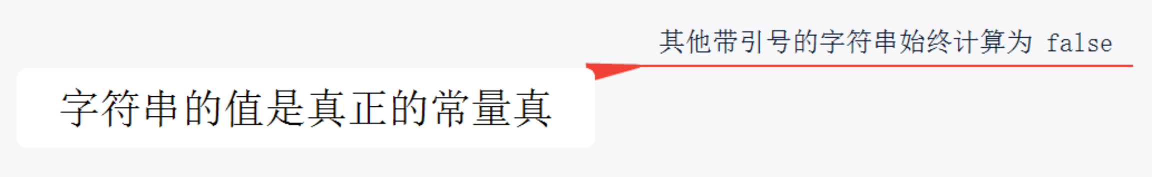
非假值常量为真。未定义和其他为假

环境变量总为假

宏参数不是变量

1.2.3. if(<string>)

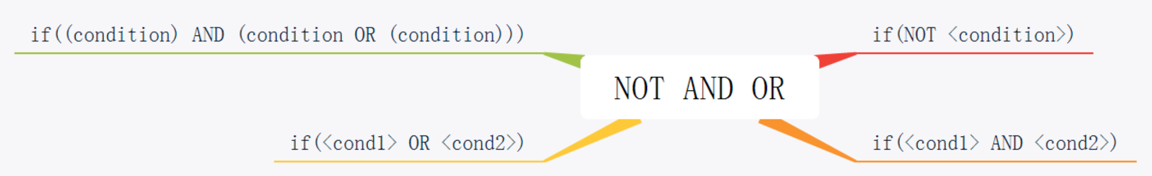
字符串的值是真正的常量真



其他带引号的字符串始终计算为 false

1.3. 逻辑操作符

1.3.1. NOT AND OR



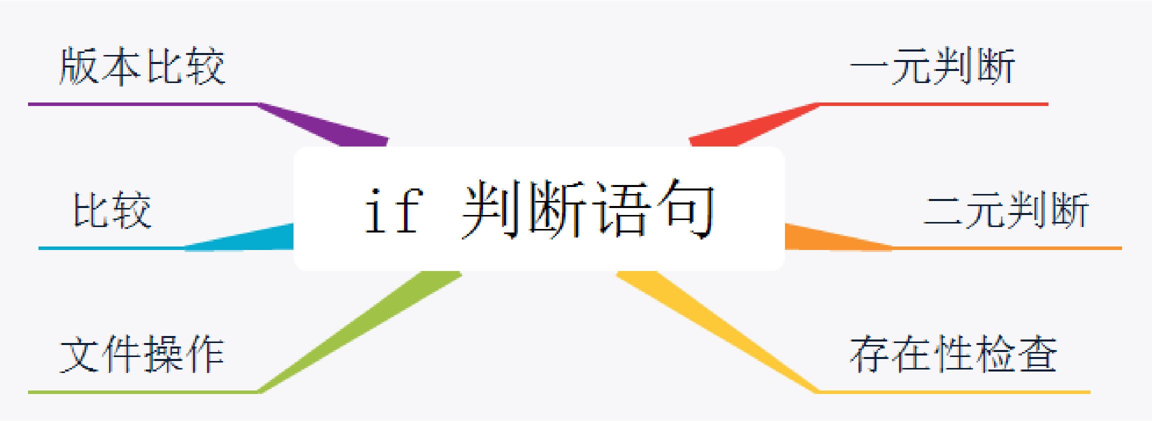
if(NOT <condition>)

if(<cond1> AND <cond2>)

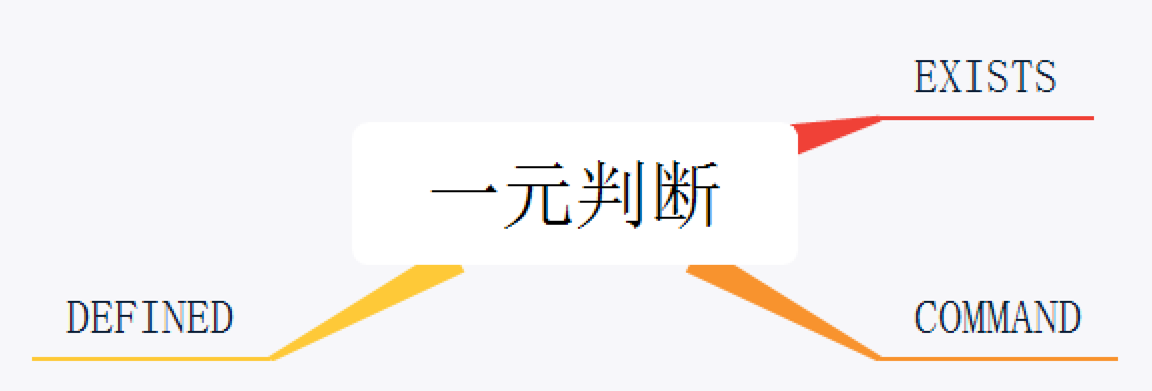
if(<cond1> OR <cond2>)

if((condition) AND (condition OR (condition)))

1.4. if 判断语句



1.4.1. 一元判断

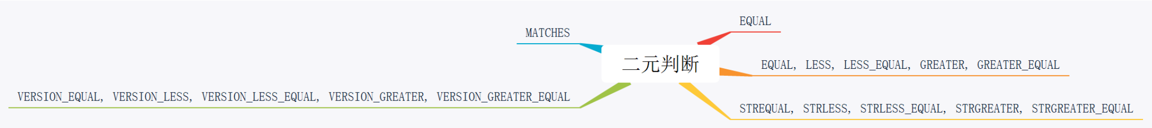


EXISTS

COMMAND

DEFINED

1.4.2. 二元判断


MATCHES
二元判断
EQUAL
EQUAL, LESS, LESS_EQUAL, GREATER, GREATER_EQUAL
VERSION_EQUAL, VERSION_LESS, VERSION_LESS_EQUAL, VERSION_GREATER, VERSION_GREATER_EQUAL
STREQUAL, STRLESS, STRLESS_EQUAL, STRGREATER, STRGREATER_EQUAL

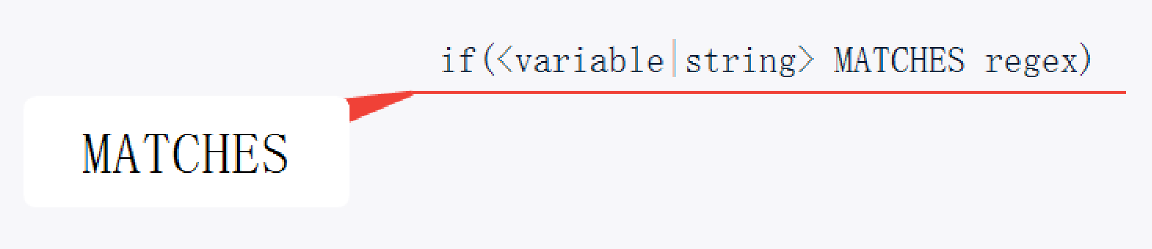
EQUAL

EQUAL, LESS, LESS_EQUAL, GREATER, GREATER_EQUAL

STREQUAL, STRLESS, STRLESS_EQUAL, STRGREATER, STRGREATER_EQUAL

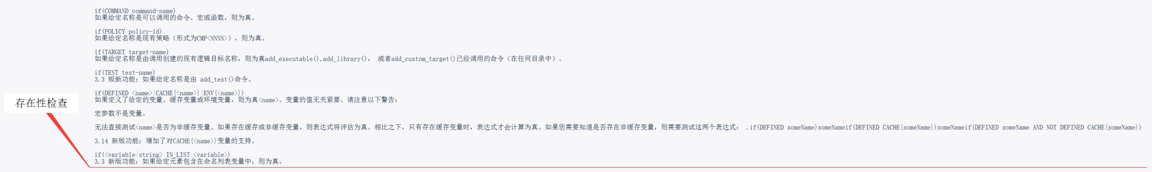
VERSION_EQUAL, VERSION_LESS, VERSION_LESS_EQUAL, VERSION_GREATER, VERSION_GREATER_EQUAL

MATCHES



if(<variable|string> MATCHES regex)

1.4.3. 存在性检查



if(COMMAND command-name)
如果给定名称是可以调用的命令、宏或函数，则为真。

if(POLICY policy-id)
如果给定名称是现有策略（形式为CMP<NNNN>），则为真。

if(TARGET target-name)
如果给定名称是由调用创建的现有逻辑目标名称，则为真add_executable(),add_library()， 或者add_custom_target()已经调用的命令（在任何目录中）。

if(TEST test-name)
3.3 版新功能：如果给定名称是由 add_test()命令。

if(DEFINED <name>|CACHE{<name>}|ENV{<name>})
如果定义了给定的变量、缓存变量或环境变量，则为真<name>。变量的值无关紧要。请注意以下警告：

宏参数不是变量。

无法直接测试<name>是否为非缓存变量。如果存在缓存或非缓存变量，则表达式将评估为真。相比之下，只有存在缓存变量时，表达式才会计算为真。如果您需要知道是否存在非缓存变量，则需要测试这两个表达式： .if(DEFINED someName)someNameif(DEFINED CACHE{someName})someNameif(DEFINED someName AND NOT DEFINED CACHE{someName})

3.14 新版功能：增加了对CACHE{<name>}变量的支持。

if(<variable|string> IN_LIST <variable>)
3.3 新版功能：如果给定元素包含在命名列表变量中，则为真。

if(COMMAND command-name)

如果给定名称是可以调用的命令、宏或函数，则为真。

if(POLICY policy-id)

如果给定名称是现有策略（形式为CMP<NNNN>），则为真。

if(TARGET target-name)

如果给定名称是由调用创建的现有逻辑目标名称，则为真**add_executable(),add_library()**， 或者**add_custom_target()**已经调用的命令（在任何目录中）。

if(TEST test-name)

3.3 版新功能：如果给定名称是由 **add_test()**命令。

if(DEFINED <name>|CACHE{<name>}|ENV{<name>})

如果定义了给定的变量、缓存变量或环境变量，则为真**<name>**。变量的值无关紧要。请注意以下警告：

宏参数不是变量。

无法直接测试**<name>**是否为非缓存变量。如果存在缓存或非缓存变量，则表达式将评估为真。相比之下，只有存在缓存变量时，表达式才会计算为真。如果您需要知道是否存在非缓存变量，则需要测试这两个表达式：

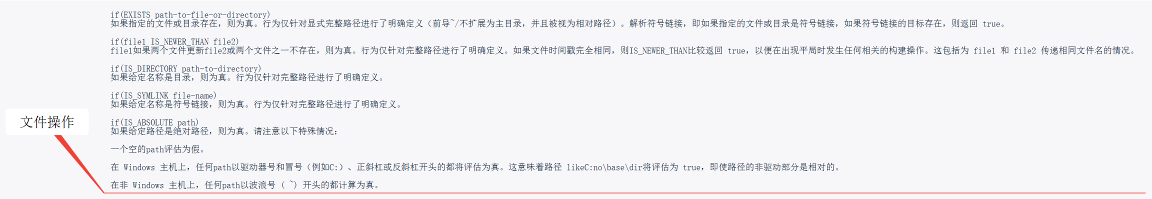
.if(DEFINED someName)someNameif(DEFINED CACHE{someName})someNameif(DEFINED someName AND NOT DEFINED CACHE{someName})

3.14 新版功能：增加了对**CACHE{<name>}**变量的支持。

if(<variable|string> IN_LIST <variable>)

3.3 新版功能：如果给定元素包含在命名列表变量中，则为真。

1.4.4. 文件操作



if(EXISTS path-to-file-or-directory)
如果指定的文件或目录存在，则为真。行为仅针对显式完整路径进行了明确定义（前导~/不扩展为主目录，并且被视为相对路径）。解析符号链接，即如果指定的文件或目录是符号链接，如果符号链接的目标存在，则返回 true。

if(file1 IS_NEWER_THAN file2)
file1如果两个文件更新file2或两个文件之一不存在，则为真。行为仅针对完整路径进行了明确定义。如果文件时间戳完全相同，则IS_NEWER_THAN比较返回 true，以便在出现平局时发生任何相关的构建操作。这包括为 file1 和 file2 传递相同文件名的情况。

if(IS_DIRECTORY path-to-directory)
如果给定名称是目录，则为真。行为仅针对完整路径进行了明确定义。

if(IS_SYMLINK file-name)
如果给定名称是符号链接，则为真。行为仅针对完整路径进行了明确定义。

if(IS_ABSOLUTE path)
如果给定路径是绝对路径，则为真。请注意以下特殊情况：

一个空的path评估为假。

在 Windows 主机上，任何path以驱动器号和冒号（例如C:）、正斜杠或反斜杠开头的都将评估为真。这意味着路径 likeC:no\base\dir将评估为 true，即使路径的非驱动部分是相对的。

在非 Windows 主机上，任何path以波浪号（ ~）开头的都计算为真。

if(EXISTS path-to-file-or-directory)

如果指定的文件或目录存在，则为真。行为仅针对显式完整路径进行了明确定义（前导~/不扩展为主目录，并且被视为相对路径）。解析符号链接，即如果指定的文件或目录是符号链接，如果符号链接的目标存在，则返回 **true**。

if(file1 IS_NEWER_THAN file2)

file1如果两个文件更新**file2**或两个文件之一不存在，则为真。行为仅针对完整路径进行了明确定义。如果文件时间戳完全相同，则**IS_NEWER_THAN**比较返回 **true**，以便在出现平局时发生任何相关的构建操作。这包括为 **file1** 和 **file2** 传递相同文件名的情况。

if(IS_DIRECTORY path-to-directory)

如果给定名称是目录，则为真。行为仅针对完整路径进行了明确定义。

if(IS_SYMLINK file-name)

如果给定名称是符号链接，则为真。行为仅针对完整路径进行了明确定义。

if(IS_ABSOLUTE path)

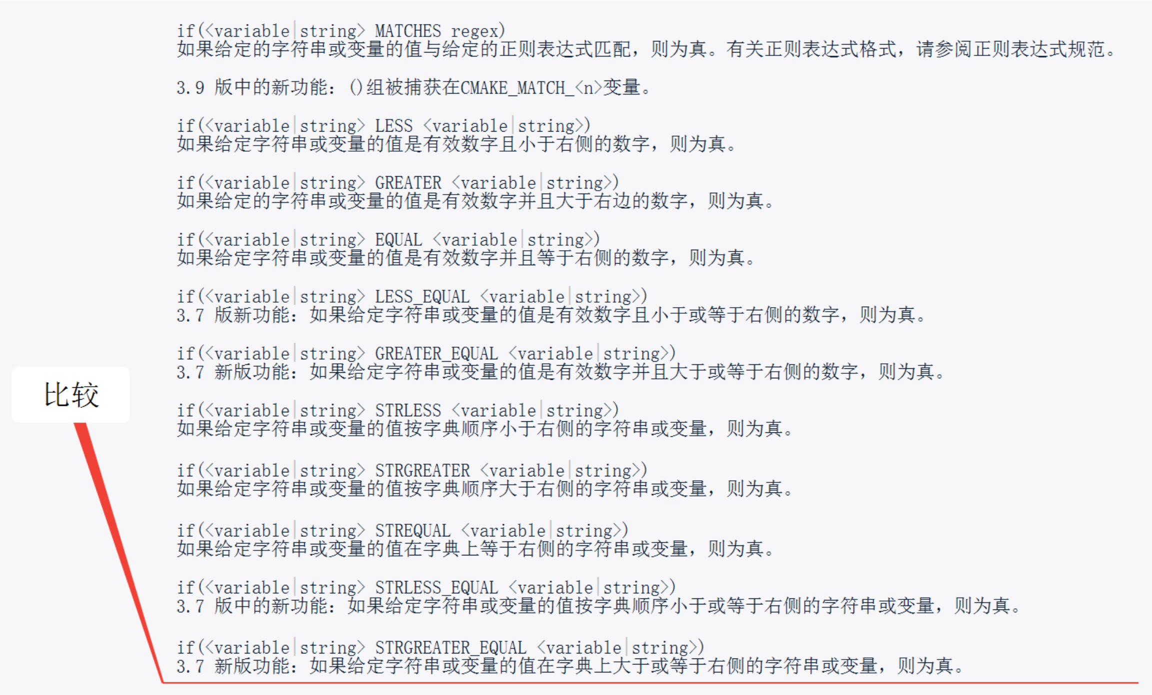
如果给定路径是绝对路径，则为真。请注意以下特殊情况：

一个空的**path**评估为假。

在 **Windows**
主机上，任何**path**以驱动器号和冒号（例如**C:**）、正斜杠或反斜杠开头的都将评估为真。这意味着路径 **likeC:no\base\dir**将评估为
true，即使路径的非驱动部分是相对的。

在非 **Windows** 主机上，任何**path**以波浪号 **(~)** 开头的都计算为真。

1.4.5. 比较



if(<variable|string> MATCHES regex)
如果给定的字符串或变量的值与给定的正则表达式匹配，则为真。有关正则表达式格式，请参阅正则表达式规范。

3.9 版中的新功能：()组被捕获在CMAKE_MATCH_<n>变量。

if(<variable|string> LESS <variable|string>)
如果给定字符串或变量的值是有效数字且小于右侧的数字，则为真。

if(<variable|string> GREATER <variable|string>)
如果给定的字符串或变量的值是有效数字并且大于右边的数字，则为真。

if(<variable|string> EQUAL <variable|string>)
如果给定字符串或变量的值是有效数字并且等于右侧的数字，则为真。

if(<variable|string> LESS_EQUAL <variable|string>)
3.7 版新功能：如果给定字符串或变量的值是有效数字且小于或等于右侧的数字，则为真。

if(<variable|string> GREATER_EQUAL <variable|string>)
3.7 新版功能：如果给定字符串或变量的值是有效数字并且大于或等于右侧的数字，则为真。

if(<variable|string> STRLESS <variable|string>)
如果给定字符串或变量的值按字典顺序小于右侧的字符串或变量，则为真。

if(<variable|string> STRGREATER <variable|string>)
如果给定字符串或变量的值按字典顺序大于右侧的字符串或变量，则为真。

if(<variable|string> STREQUAL <variable|string>)
如果给定字符串或变量的值在字典上等于右侧的字符串或变量，则为真。

if(<variable|string> STRLESS_EQUAL <variable|string>)
3.7 版中的新功能：如果给定字符串或变量的值按字典顺序小于或等于右侧的字符串或变量，则为真。

if(<variable|string> STRGREATER_EQUAL <variable|string>)
3.7 新版功能：如果给定字符串或变量的值在字典上大于或等于右侧的字符串或变量，则为真。

if(<variable|string> MATCHES regex)

如果给定的字符串或变量的值与给定的正则表达式匹配，则为真。有关正则表达式格式，请参阅正则表达式规范。

3.9 版中的新功能：()组被捕获在CMAKE_MATCH_<n>变量。

if(<variable|string> LESS <variable|string>)

如果给定字符串或变量的值是有效数字且小于右侧的数字，则为真。

if(<variable|string> GREATER <variable|string>)

如果给定的字符串或变量的值是有效数字并且大于右边的数字，则为真。

if(<variable|string> EQUAL <variable|string>)

如果给定字符串或变量的值是有效数字并且等于右侧的数字，则为真。

if(<variable|string> LESS_EQUAL <variable|string>)

3.7

版新功能：如果给定字符串或变量的值是有效数字且小于或等于右侧的数字，则为真。

if(<variable|string> GREATER_EQUAL <variable|string>)

3.7

新版功能：如果给定字符串或变量的值是有效数字并且大于或等于右侧的数字，则为真。

if(<variable|string> STRLESS <variable|string>)

如果给定字符串或变量的值按字典顺序小于右侧的字符串或变量，则为真。

if(<variable|string> STRGREATER <variable|string>)

如果给定字符串或变量的值按字典顺序大于右侧的字符串或变量，则为真。

if(<variable|string> STREQUAL <variable|string>)

如果给定字符串或变量的值在字典上等于右侧的字符串或变量，则为真。

if(<variable|string> STRLESS_EQUAL <variable|string>)

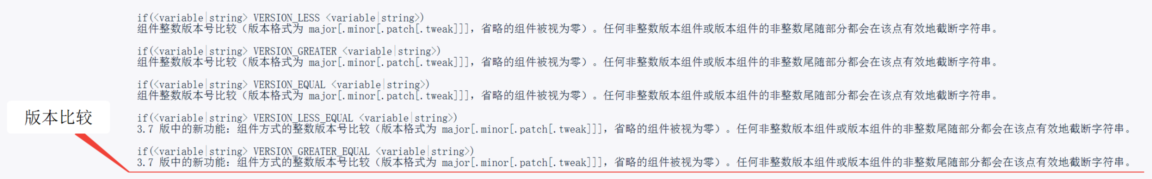
3.7 版中的新功能：如果给定字符串或变量的值按字典顺序小于或等于右侧的字符串或变量，则为真。

if(<variable|string> STRGREATER_EQUAL <variable|string>)

3.7

新版功能：如果给定字符串或变量的值在字典上大于或等于右侧的字符串或变量，则为真。

1.4.6. 版本比较



if(<variable|string> VERSION_LESS <variable|string>)
组件整数版本号比较（版本格式为 major[.minor[.patch[.tweak]]]，省略的组件被视为零）。任何非整数版本组件或版本组件的非整数尾随部分都会在该点有效地截断字符串。

if(<variable|string> VERSION_GREATER <variable|string>)
组件整数版本号比较（版本格式为 major[.minor[.patch[.tweak]]]，省略的组件被视为零）。任何非整数版本组件或版本组件的非整数尾随部分都会在该点有效地截断字符串。

if(<variable|string> VERSION_EQUAL <variable|string>)
组件整数版本号比较（版本格式为 major[.minor[.patch[.tweak]]]，省略的组件被视为零）。任何非整数版本组件或版本组件的非整数尾随部分都会在该点有效地截断字符串。

if(<variable|string> VERSION_LESS_EQUAL <variable|string>)
3.7 版中的新功能：组件方式的整数版本号比较（版本格式为 major[.minor[.patch[.tweak]]]，省略的组件被视为零）。任何非整数版本组件或版本组件的非整数尾随部分都会在该点有效地截断字符串。

if(<variable|string> VERSION_GREATER_EQUAL <variable|string>)
3.7 版中的新功能：组件方式的整数版本号比较（版本格式为 major[.minor[.patch[.tweak]]]，省略的组件被视为零）。任何非整数版本组件或版本组件的非整数尾随部分都会在该点有效地截断字符串。

if(<variable|string> VERSION_LESS <variable|string>)

组件整数版本号比较（版本格式为 **major[.minor[.patch[.tweak]]]**，省略的组件被视为零）。任何非整数版本组件或版本组件的非整数尾随部分都会在该点有效地截断字符串。

if(<variable|string> VERSION_GREATER <variable|string>)

组件整数版本号比较（版本格式为 **major[.minor[.patch[.tweak]]]**，省略的组件被视为零）。任何非整数版本组件或版本组件的非整数尾随部分都会在该点有效地截断字符串。

if(<variable|string> VERSION_EQUAL <variable|string>)

组件整数版本号比较（版本格式为 **major[.minor[.patch[.tweak]]]**，省略的组件被视为零）。任何非整数版本组件或版本组件的非整数尾随部分都会在该点有效地截断字符串。

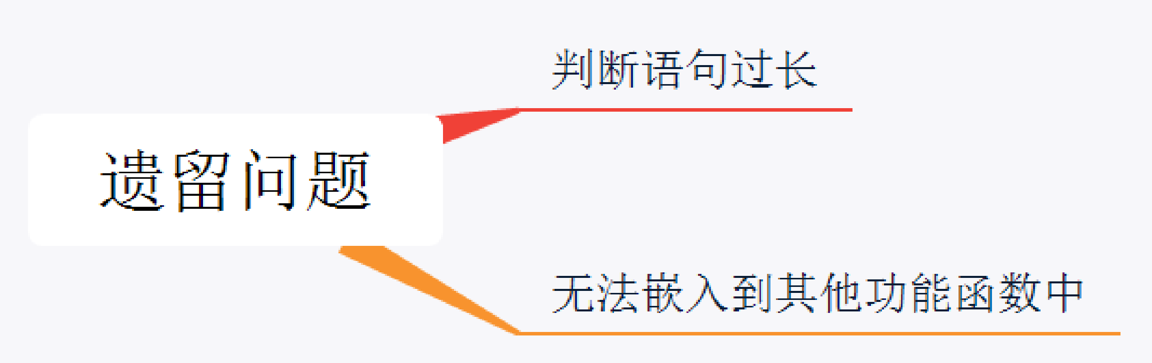
if(<variable|string> VERSION_LESS_EQUAL <variable|string>)

3.7 版中的新功能：组件方式的整数版本号比较（版本格式为 **major[.minor[.patch[.tweak]]]**，省略的组件被视为零）。任何非整数版本组件或版本组件的非整数尾随部分都会在该点有效地截断字符串。

if(<variable|string> VERSION_GREATER_EQUAL <variable|string>)

3.7 版中的新功能：组件方式的整数版本号比较（版本格式为 **major[.minor[.patch[.tweak]]]**，省略的组件被视为零）。任何非整数版本组件或版本组件的非整数尾随部分都会在该点有效地截断字符串。

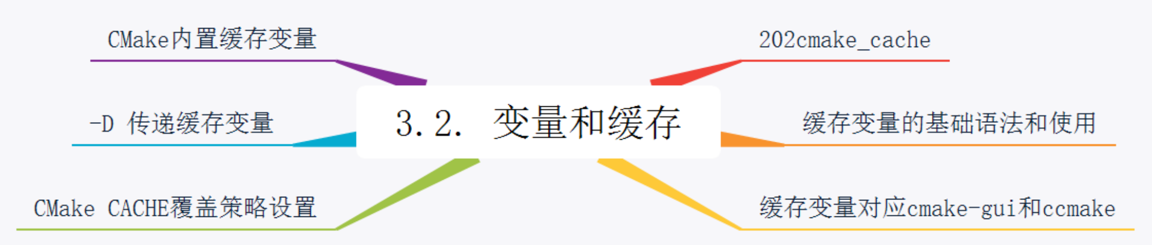
1.5.遗留问题



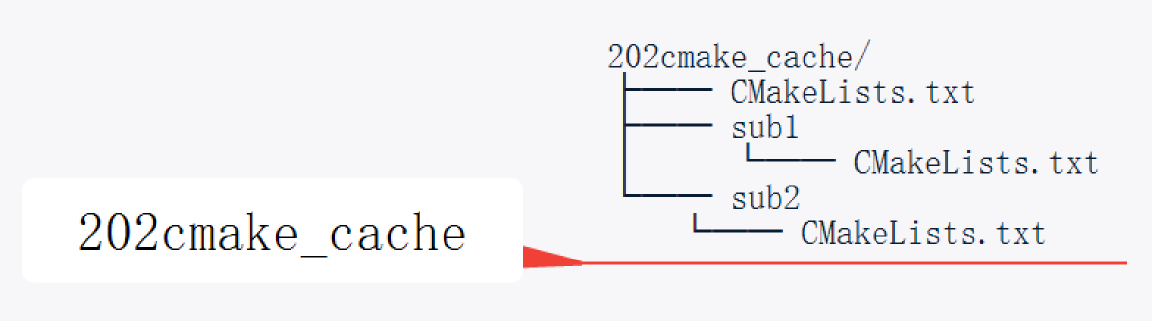
1.5.1. 判断语句过长

1.5.2. 无法嵌入到其他功能函数中

2. 3.2. 变量和缓存



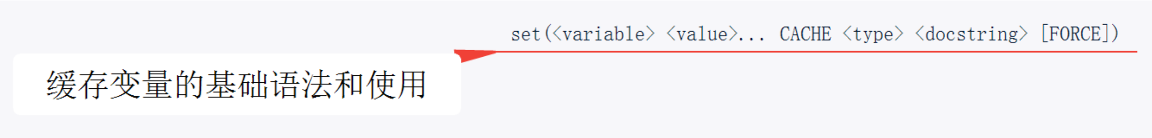
2.1. 202cmake_cache



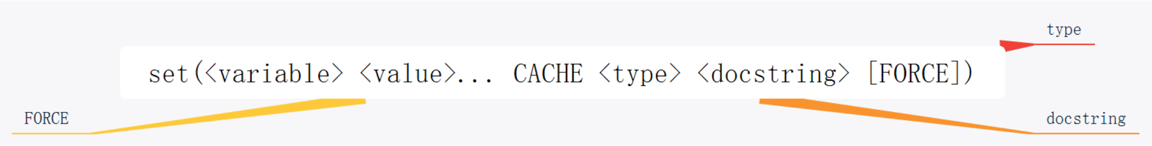
2.1.1. 202cmake_cache/

```
├── CMakeLists.txt
├── sub1
│   └── CMakeLists.txt
└── sub2
    └── CMakeLists.txt
```

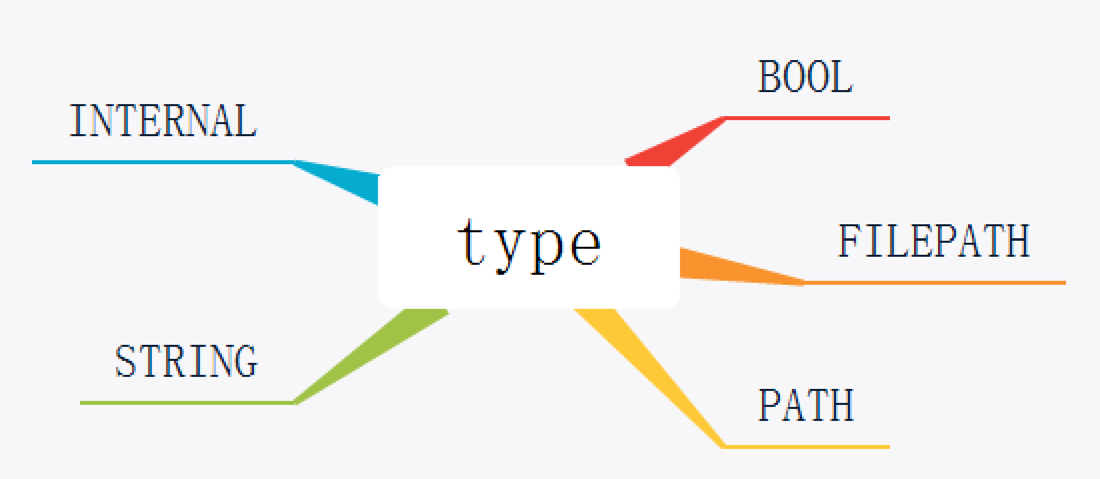
2.2. 缓存变量的基础语法和使用



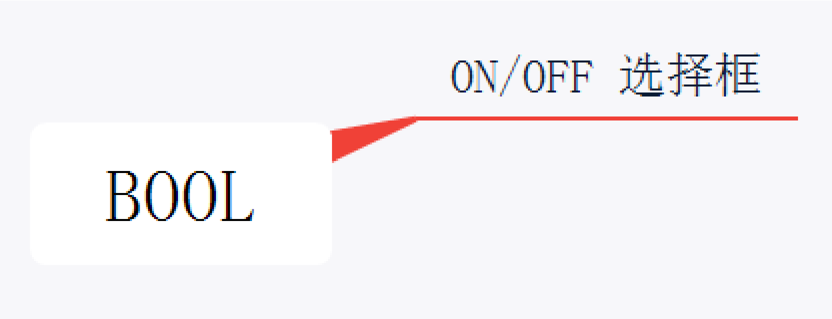
2.2.1. set(<variable> <value>... CACHE <type> <docstring> [FORCE])



type



BOOL



ON/OFF 选择框

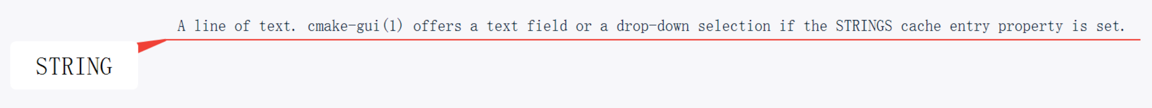
FILEPATH

文件选择

PATH

目录选择

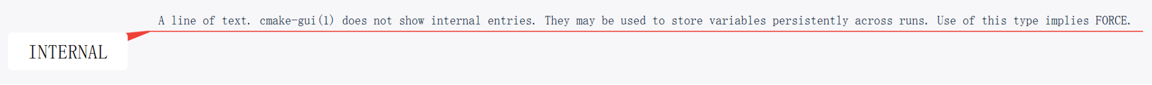
STRING



A line of text. cmake-gui(1) offers a text field or a drop-down selection if the STRINGS cache entry property is set.

A line of text. cmake-gui(1) offers a text field or a drop-down selection if the STRINGS cache entry property is set.

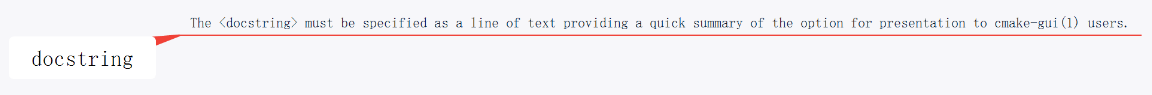
INTERNAL



A line of text. cmake-gui(1) does not show internal entries. They may be used to store variables persistently across runs. Use of this type implies FORCE.

A line of text. cmake-gui(1) does not show internal entries. They may be used to store variables persistently across runs. Use of this type implies FORCE.

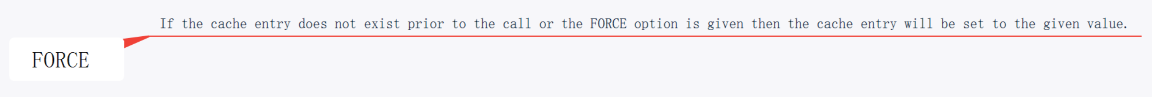
docstring



The <docstring> must be specified as a line of text providing a quick summary of the option for presentation to cmake-gui(1) users.

The <docstring> must be specified as a line of text providing a quick summary of the option for presentation to cmake-gui(1) users.

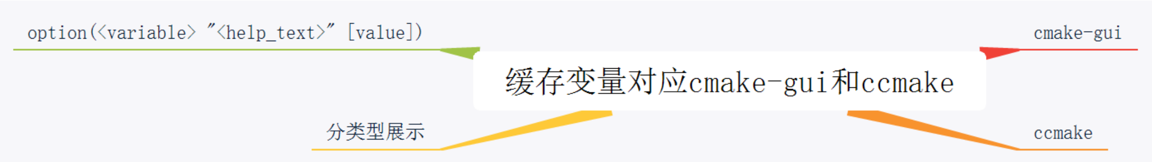
FORCE



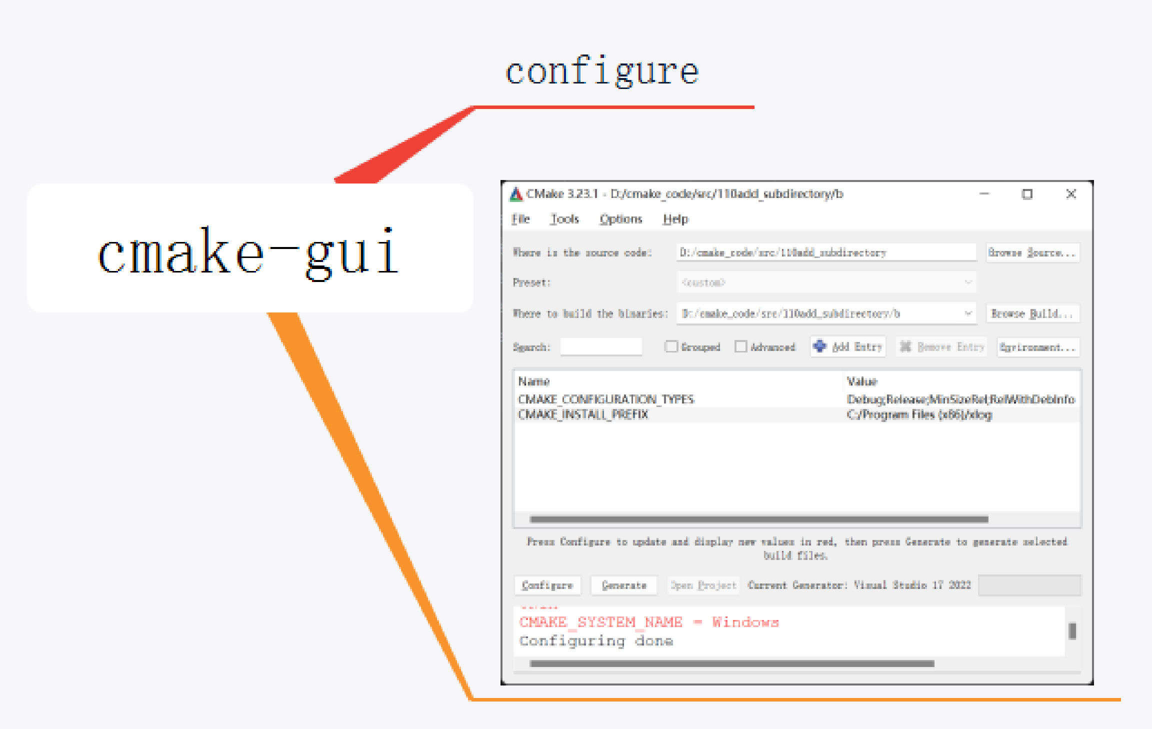
If the cache entry does not exist prior to the call or the FORCE option is given then the cache entry will be set to the given value.

If the cache entry does not exist prior to the call or the FORCE option is given then the cache entry will be set to the given value.

2.3. 缓存变量对应cmake-gui和ccmake


option(<variable> "<help_text>" [value])
缓存变量对应cmake-gui和ccmake
cmake-gui
分类型展示
ccmake

2.3.1. cmake-gui



Where is the source code: D:/cmake_code/src/110add_subdirectory

Preset: <custom>

Where to build the binaries: D:/cmake_code/src/110add_subdirectory/b

Search:

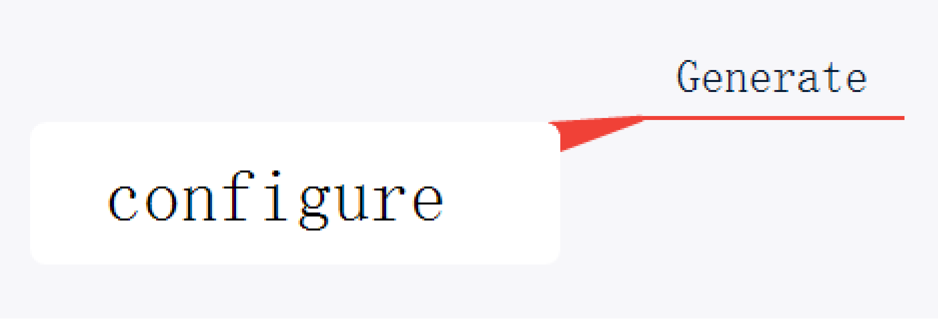
Name	Value
CMAKE_CONFIGURATION_TYPES	Debug;Release;MinSizeRel;RelWithDebInfo
CMAKE_INSTALL_PREFIX	C:/Program Files (x86)/xlog

Press Configure to update and display new values in red, then press Generate to generate selected build files.

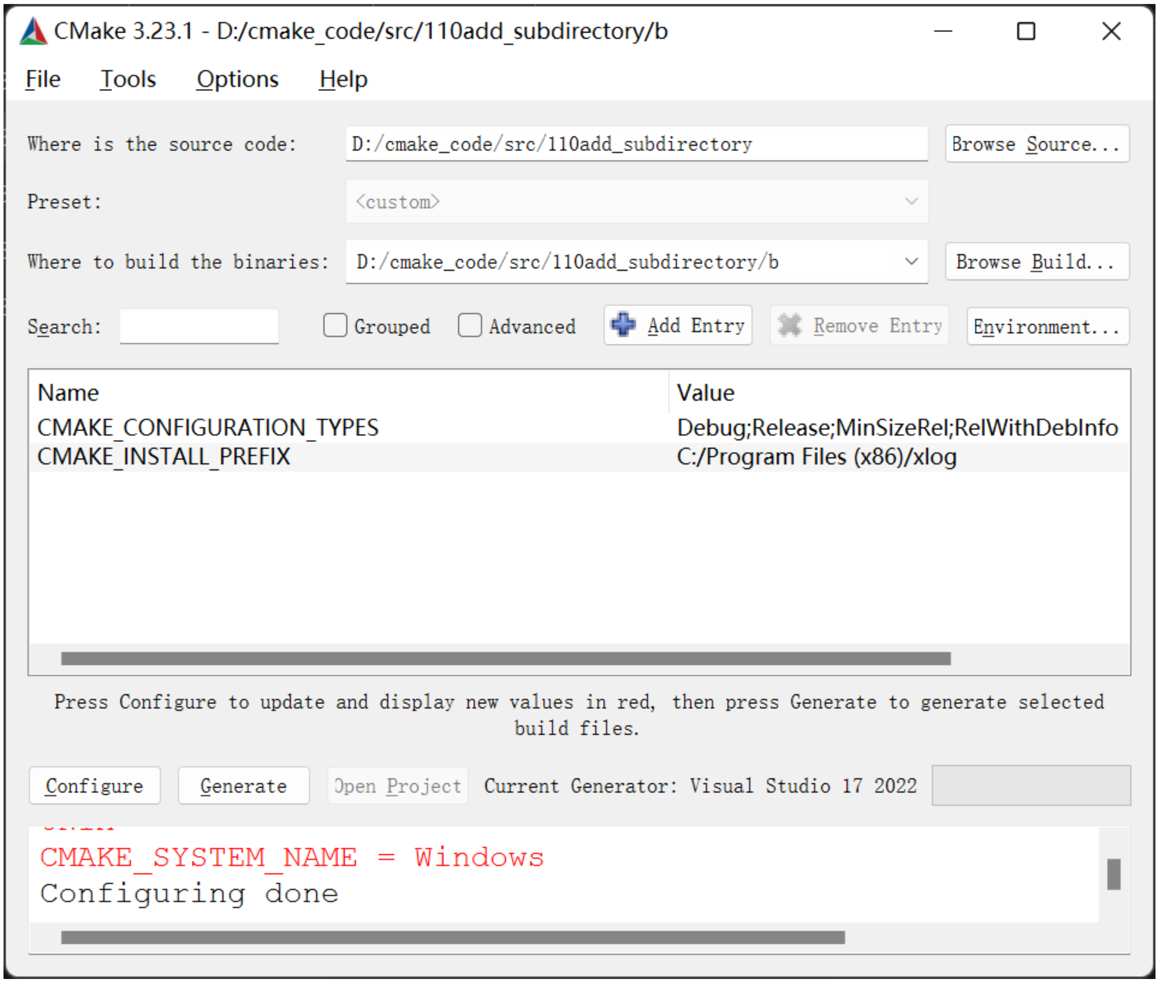
Current Generator: Visual Studio 17 2022

```
CMAKE_SYSTEM_NAME = Windows
Configuring done
```

configure



Generate



Where is the source code: D:/cmake_code/src/110add_subdirectory

Preset: <custom>

Where to build the binaries: D:/cmake_code/src/110add_subdirectory/b

Search:

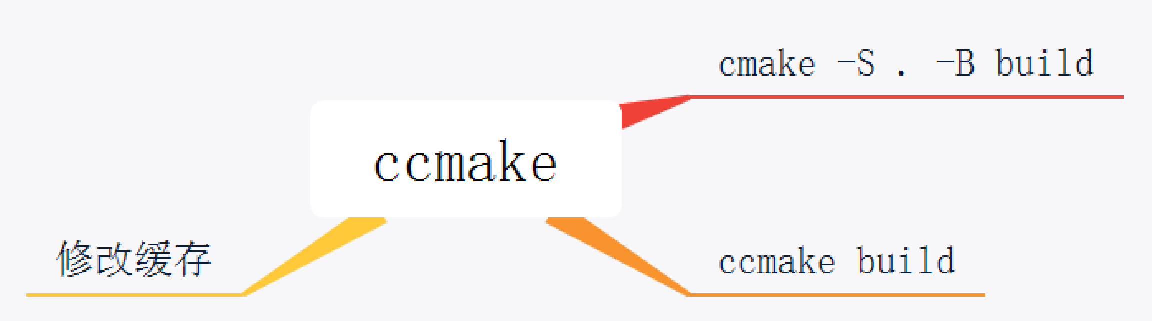
Name	Value
CMAKE_CONFIGURATION_TYPES	Debug;Release;MinSizeRel;RelWithDebInfo
CMAKE_INSTALL_PREFIX	C:/Program Files (x86)/xlog

Press Configure to update and display new values in red, then press Generate to generate selected build files.

Current Generator: Visual Studio 17 2022

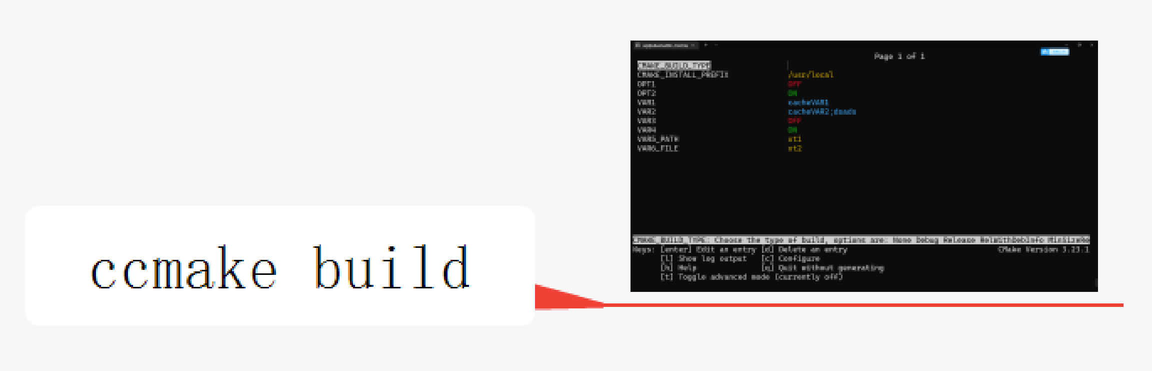
```
CMAKE_SYSTEM_NAME = Windows
Configuring done
```

2.3.2. ccmake

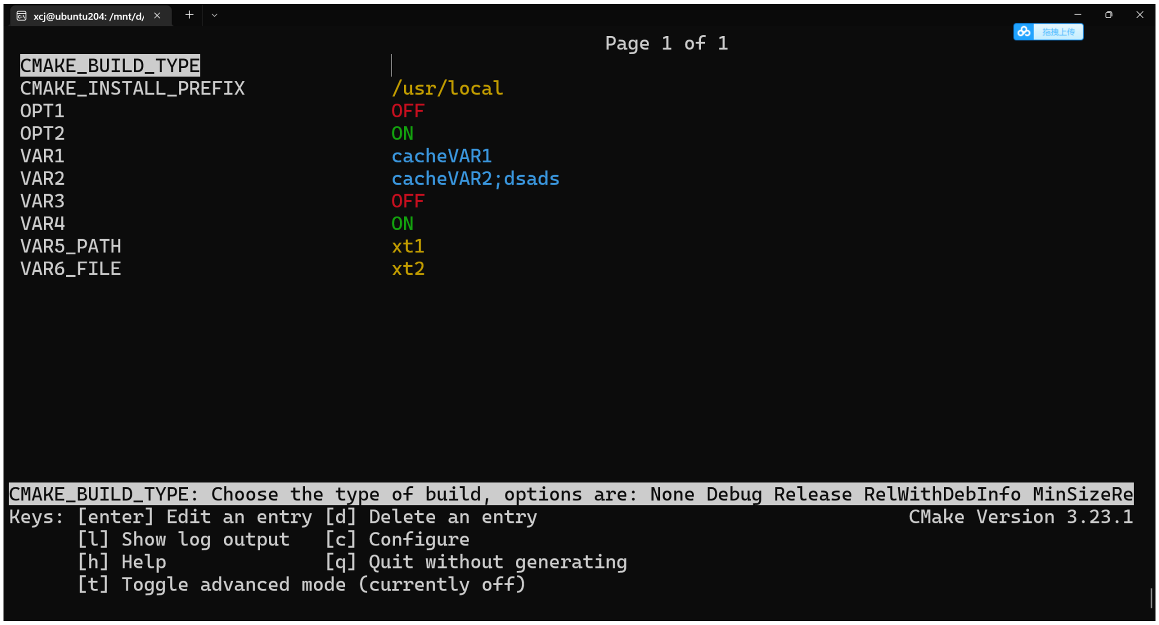


cmake -S . -B build

ccmake build



ccmake build



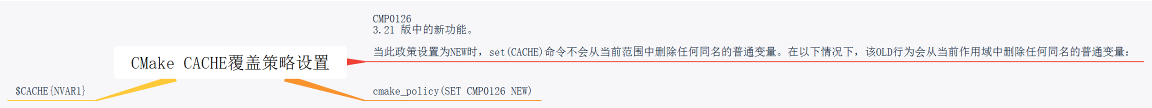
```
                                        Page 1 of 1
 CMAKE_BUILD_TYPE
 CMAKE_INSTALL_PREFIX             /usr/local
 OPT1                             OFF
 OPT2                             ON
 VAR1                             cacheVAR1
 VAR2                             cacheVAR2;dsads
 VAR3                             OFF
 VAR4                             ON
 VAR5_PATH                        xt1
 VAR6_FILE                        xt2







CMAKE_BUILD_TYPE: Choose the type of build, options are: None Debug Release RelWithDebInfo MinSizeRe
Keys: [enter] Edit an entry [d] Delete an entry                                  CMake Version 3.23.1
      [l] Show log output   [c] Configure
      [h] Help              [q] Quit without generating
      [t] Toggle advanced mode (currently off)
```

修改缓存

2.3.3. 分类型展示

2.3.4. option(<variable> "<help_text>" [value])

2.4. CMake CACHE覆盖策略设置



CMake CACHE覆盖策略设置

CMP0126
3.21 版中的新功能。

当此政策设置为NEW时，set(CACHE)命令不会从当前范围中删除任何同名的普通变量。在以下情况下，该OLD行为会从当前作用域中删除任何同名的普通变量：

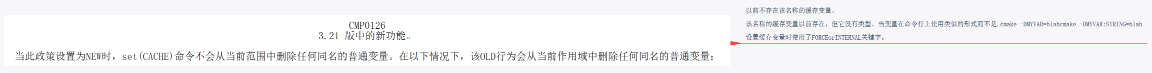
$CACHE{NVAR1}

cmake_policy(SET CMP0126 NEW)

2.4.1. CMP0126

3.21 版中的新功能。

当此政策设置为NEW时，set(CACHE)命令不会从当前范围中删除任何同名的普通变量。在以下情况下，该OLD行为会从当前作用域中删除任何同名的普通变量：



CMP0126
3.21 版中的新功能。

当此政策设置为NEW时，set(CACHE)命令不会从当前范围中删除任何同名的普通变量。在以下情况下，该OLD行为会从当前作用域中删除任何同名的普通变量：

以前不存在该名称的缓存变量。

该名称的缓存变量以前存在，但它没有类型。当变量在命令行上使用类似的形式而不是.cmake -DMYVAR=blahcmake -DMYVAR:STRING=blah

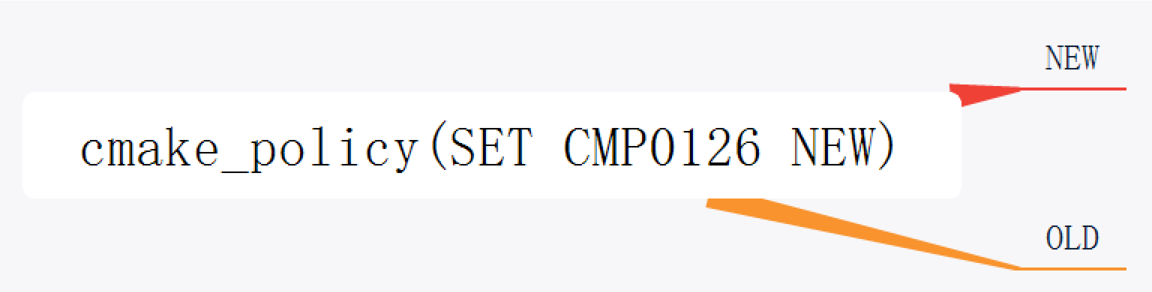
设置缓存变量时使用了FORCEorINTERNAL关键字。

以前不存在该名称的缓存变量。

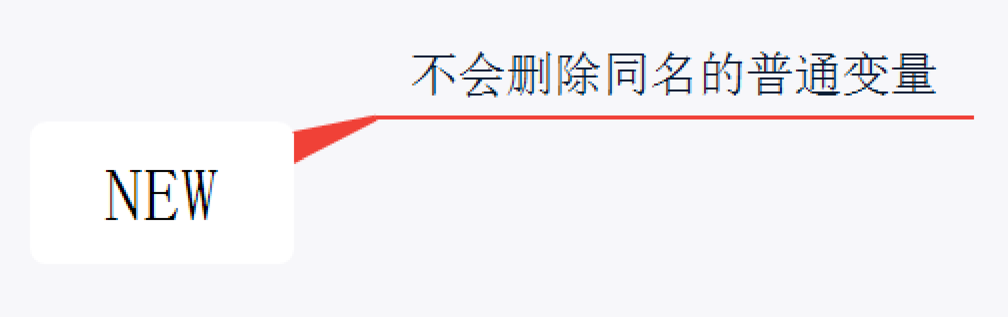
该名称的缓存变量以前存在，但它没有类型。当变量在命令行上使用类似的形式而不是.cmake -DMYVAR=blahcmake -DMYVAR:STRING=blah

设置缓存变量时使用了FORCEorINTERNAL关键字。

2.4.2. cmake_policy(SET CMP0126 NEW)



NEW



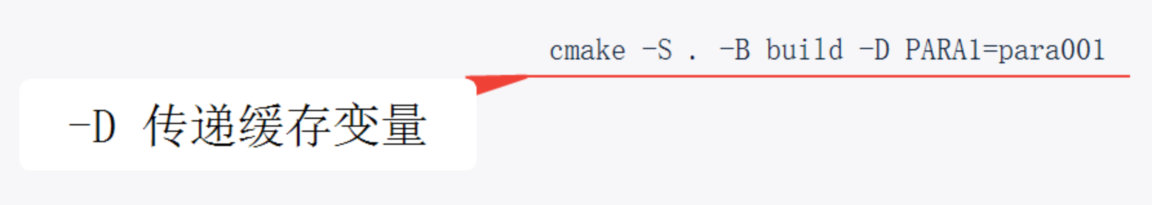
不会删除同名的普通变量

OLD

删除同名的普通变量

2.4.3. $CACHE{NVAR1}

2.5. -D 传递缓存变量



2.5.1. cmake -S . -B build -D PARA1=para001

2.6. CMake内置缓存变量

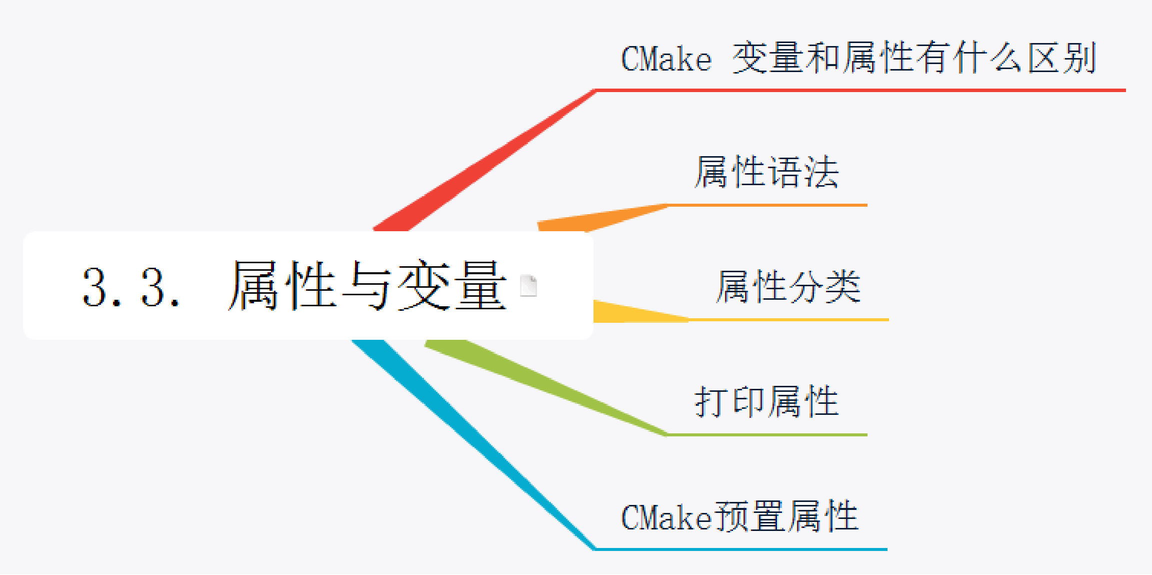
CMake内置缓存变量
BUILD_SHARED_LIBS
message("BUILD_SHARED_LIBS = ${BUILD_SHARED_LIBS}")
set(BUILD_SHARED_LIBS OFF CACHE BOOL "lib")

2.6.1. BUILD_SHARED_LIBS

2.6.2. set(BUILD_SHARED_LIBS OFF CACHE BOOL "lib")

2.6.3. message("BUILD_SHARED_LIBS = ${BUILD_SHARED_LIBS}")

3. 3.3. 属性与变量



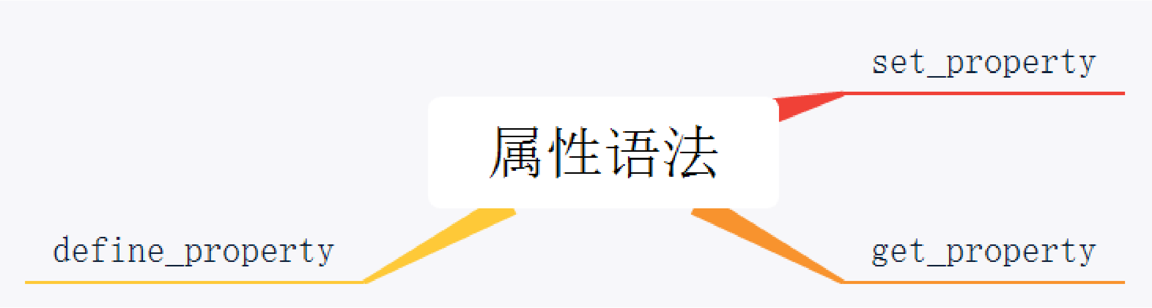
3.1. CMake 变量和属性有什么区别

CMake 变量和属性有什么区别
一种简短的说明是，属性是作用域为目标的变量。
global property can be a useful uncached global variable

3.1.1. 一种简短的说明是，属性是作用域为目标的变量。

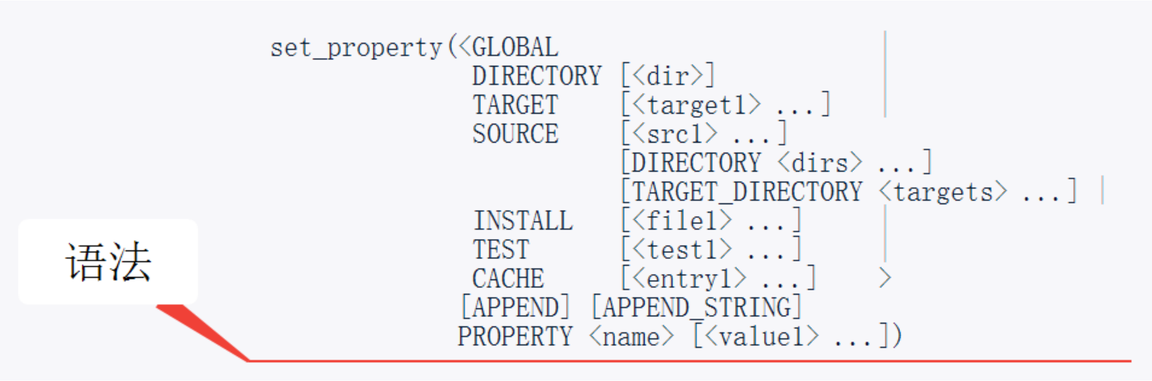
3.1.2. global property can be a useful uncached global variable

3.2. 属性语法



3.2.1. set_property

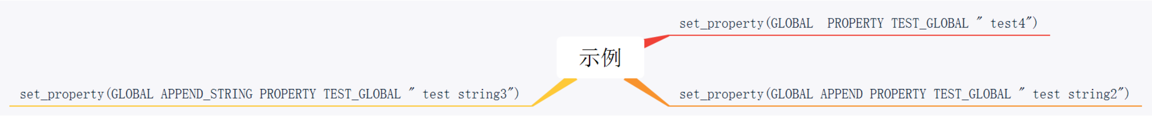
语法



```
set_property(<GLOBAL                      |
              DIRECTORY [<dir>]           |
              TARGET    [<target1> ...]   |
              SOURCE    [<src1> ...]
                        [DIRECTORY <dirs> ...]
                        [TARGET_DIRECTORY <targets> ...] |
              INSTALL   [<file1> ...]     |
              TEST      [<test1> ...]     |
              CACHE     [<entry1> ...]    >
             [APPEND] [APPEND_STRING]
             PROPERTY <name> [<value1> ...])
```

```
set_property(<GLOBAL                   |
         DIRECTORY [<dir>]         |
         TARGET    [<target1> ...]  |
         SOURCE    [<src1> ...]
               [DIRECTORY <dirs> ...]
               [TARGET_DIRECTORY <targets> ...] |
         INSTALL   [<file1> ...]    |
         TEST      [<test1> ...]    |
         CACHE     [<entry1> ...]   >
        [APPEND] [APPEND_STRING]
        PROPERTY <name> [<value1> ...])
```

示例



set_property(GLOBAL PROPERTY TEST_GLOBAL ″ test4″)

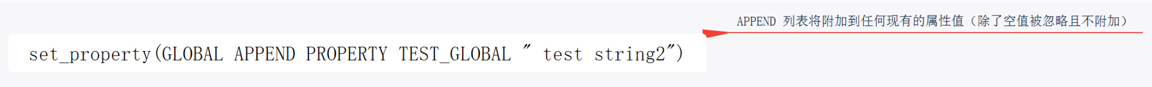
示例

set_property(GLOBAL APPEND_STRING PROPERTY TEST_GLOBAL ″ test string3″)

set_property(GLOBAL APPEND PROPERTY TEST_GLOBAL ″ test string2″)

set_property(GLOBAL PROPERTY TEST_GLOBAL " test4")

set_property(GLOBAL APPEND PROPERTY TEST_GLOBAL " test string2")

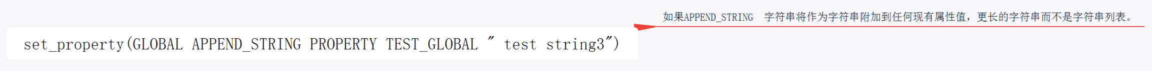


APPEND 列表将附加到任何现有的属性值（除了空值被忽略且不附加）

set_property(GLOBAL APPEND PROPERTY TEST_GLOBAL ″ test string2″)

APPEND 列表将附加到任何现有的属性值（除了空值被忽略且不附加）

set_property(GLOBAL APPEND_STRING PROPERTY TEST_GLOBAL " test string3")



如果APPEND_STRING 字符串将作为字符串附加到任何现有属性值，更长的字符串而不是字符串列表。

set_property(GLOBAL APPEND_STRING PROPERTY TEST_GLOBAL ″ test string3″)

如果APPEND_STRING

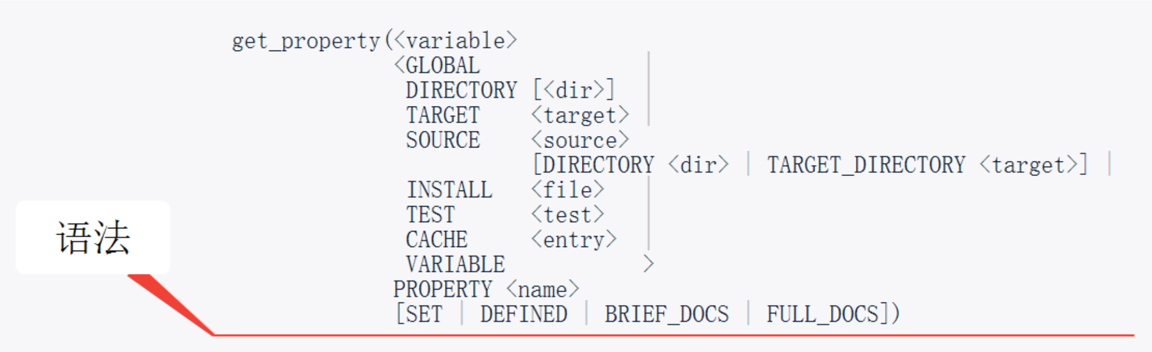
字符串将作为字符串附加到任何现有属性值，更长的字符串而不是字符串列表。

3.2.2. get_property

语法

get_property

语法



语法

```
get_property(<variable>
             <GLOBAL             |
              DIRECTORY [<dir>]  |
              TARGET    <target> |
              SOURCE    <source>
                        [DIRECTORY <dir> | TARGET_DIRECTORY <target>] |
              INSTALL   <file>   |
              TEST      <test>   |
              CACHE     <entry>  |
              VARIABLE           >
             PROPERTY <name>
             [SET | DEFINED | BRIEF_DOCS | FULL_DOCS])
```

get_property(<variable>

<GLOBAL |

DIRECTORY [<dir>] |

TARGET <target> |

SOURCE <source>

[DIRECTORY <dir> | TARGET_DIRECTORY <target>] |

INSTALL <file> |

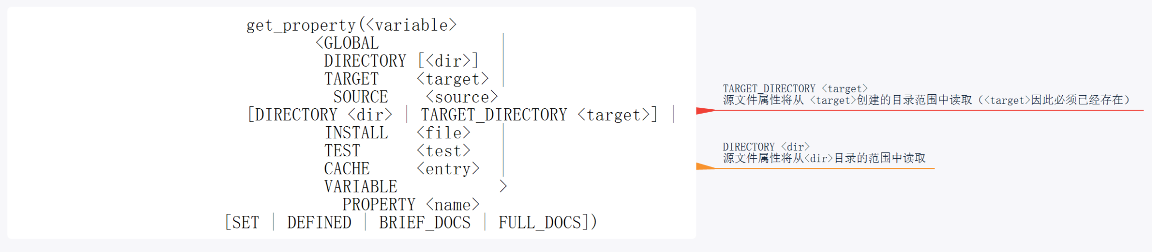
TEST <test> |

CACHE <entry> |

VARIABLE >

PROPERTY <name>

[SET | DEFINED | BRIEF_DOCS | FULL_DOCS])



```
get_property(<variable>
         <GLOBAL             |
          DIRECTORY [<dir>]  |
          TARGET    <target> |
           SOURCE    <source>
[DIRECTORY <dir> | TARGET_DIRECTORY <target>] |
          INSTALL   <file>   |
          TEST      <test>   |
          CACHE     <entry>  |
          VARIABLE           >
            PROPERTY <name>
[SET | DEFINED | BRIEF_DOCS | FULL_DOCS])
```

TARGET_DIRECTORY <target>
源文件属性将从 <target>创建的目录范围中读取（<target>因此必须已经存在）

DIRECTORY <dir>
源文件属性将从<dir>目录的范围中读取

TARGET_DIRECTORY <target>

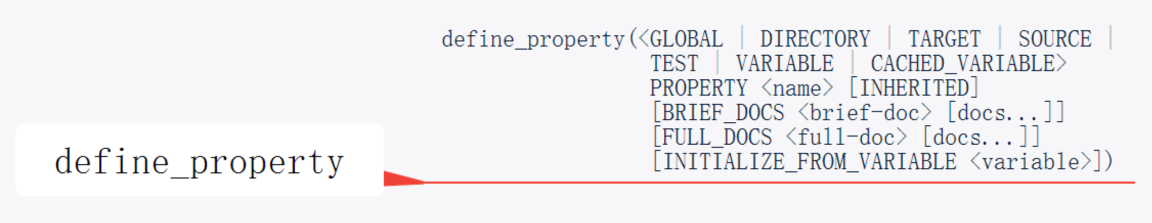
源文件属性将从

<target>创建的目录范围中读取（<target>因此必须已经存在）

DIRECTORY <dir>

源文件属性将从<dir>目录的范围中读取

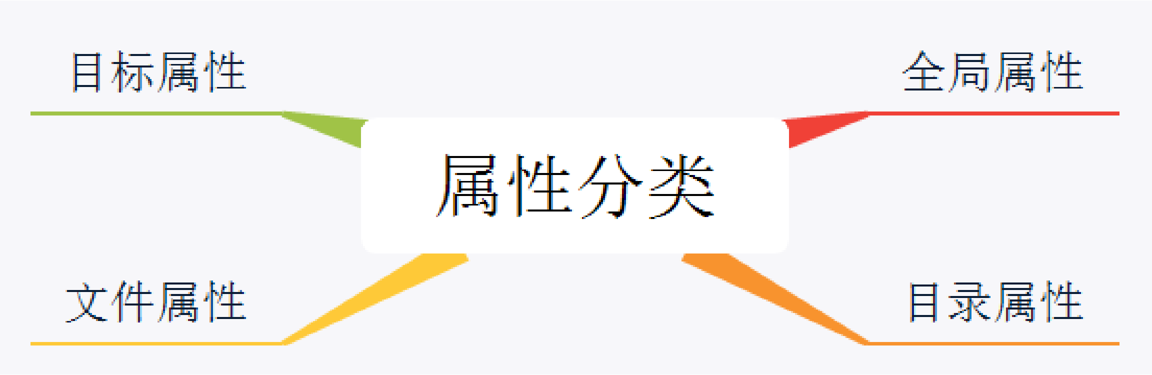
3.2.3. define_property



```
define_property(<GLOBAL | DIRECTORY | TARGET | SOURCE |
                TEST | VARIABLE | CACHED_VARIABLE>
                PROPERTY <name> [INHERITED]
                [BRIEF_DOCS <brief-doc> [docs...]]
                [FULL_DOCS <full-doc> [docs...]]
                [INITIALIZE_FROM_VARIABLE <variable>])
```

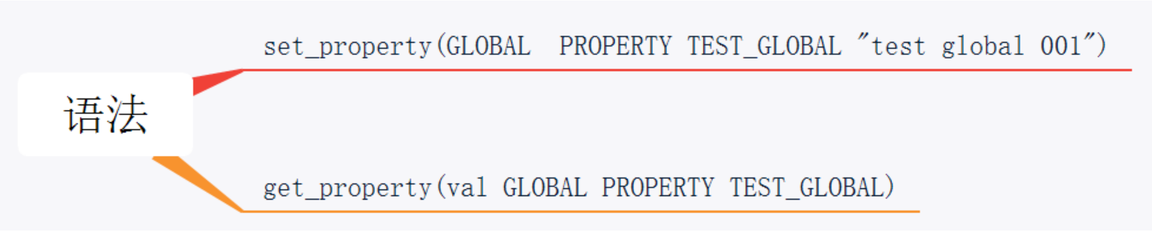
define_property(<GLOBAL | DIRECTORY | TARGET | SOURCE |
TEST | VARIABLE | CACHED_VARIABLE>
PROPERTY <name> [INHERITED]
[BRIEF_DOCS <brief-doc> [docs...]]
[FULL_DOCS <full-doc> [docs...]]
[INITIALIZE_FROM_VARIABLE <variable>])

3.3. 属性分类



3.3.1. 全局属性

语法



语法

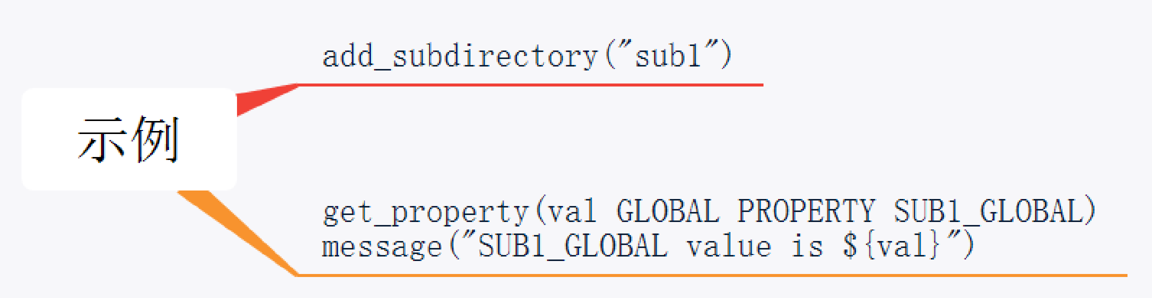
set_property(GLOBAL PROPERTY TEST_GLOBAL "test global 001")

get_property(val GLOBAL PROPERTY TEST_GLOBAL)

set_property(GLOBAL PROPERTY TEST_GLOBAL "test global 001")

get_property(val GLOBAL PROPERTY TEST_GLOBAL)

示例

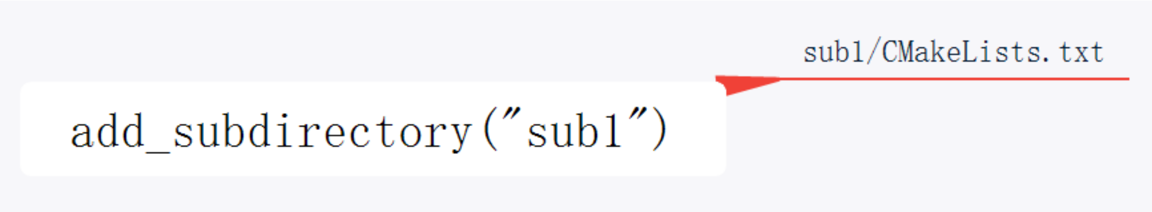


示例

add_subdirectory("sub1")

get_property(val GLOBAL PROPERTY SUB1_GLOBAL)
message("SUB1_GLOBAL value is ${val}")

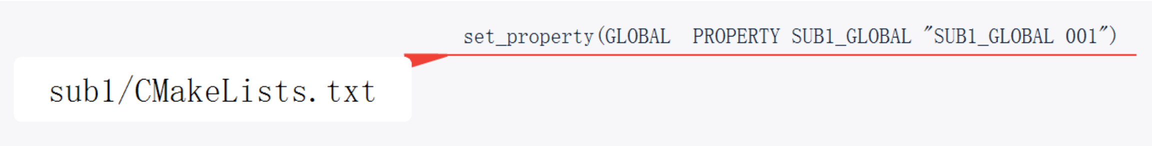
add_subdirectory("sub1")



add_subdirectory("sub1")

sub1/CMakeLists.txt

sub1/CMakeLists.txt



sub1/CMakeLists.txt

set_property(GLOBAL PROPERTY SUB1_GLOBAL "SUB1_GLOBAL 001")

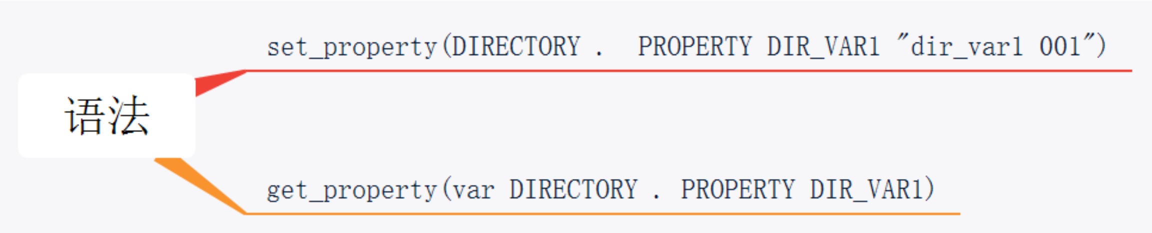
set_property(GLOBAL PROPERTY SUB1_GLOBAL "SUB1_GLOBAL 001")

get_property(val GLOBAL PROPERTY SUB1_GLOBAL)

message("SUB1_GLOBAL value is ${val}")

3.3.2. 目录属性

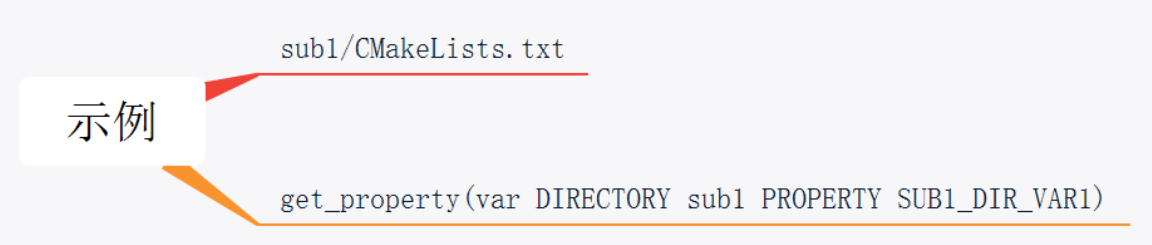
语法


语法
set_property(DIRECTORY . PROPERTY DIR_VAR1 "dir_var1 001")
get_property(var DIRECTORY . PROPERTY DIR_VAR1)

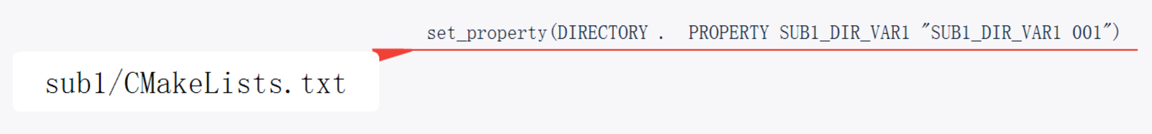
set_property(DIRECTORY . PROPERTY DIR_VAR1 "dir_var1 001")

get_property(var DIRECTORY . PROPERTY DIR_VAR1)

示例



sub1/CMakeLists.txt

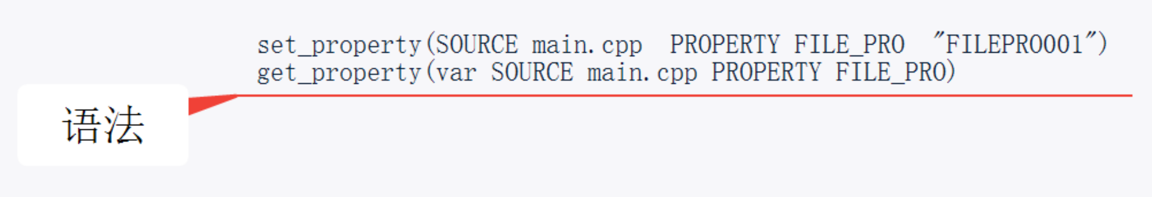

sub1/CMakeLists.txt
set_property(DIRECTORY . PROPERTY SUB1_DIR_VAR1 "SUB1_DIR_VAR1 001")

set_property(DIRECTORY . PROPERTY SUB1_DIR_VAR1 "SUB1_DIR_VAR1 001")

get_property(var DIRECTORY sub1 PROPERTY SUB1_DIR_VAR1)

3.3.3. 文件属性

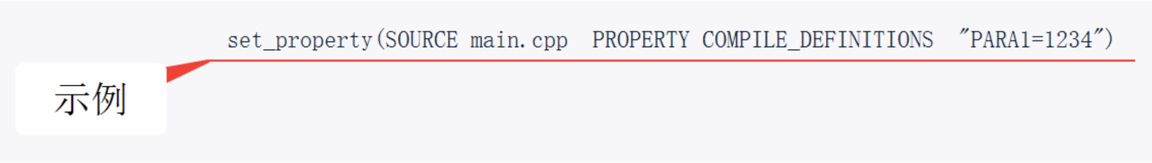
语法



```
set_property(SOURCE main.cpp  PROPERTY FILE_PRO  ″FILEPRO001″)
get_property(var SOURCE main.cpp PROPERTY FILE_PRO)
```

```
set_property(SOURCE main.cpp  PROPERTY FILE_PRO  "FILEPRO001")
get_property(var SOURCE main.cpp PROPERTY FILE_PRO)
```

示例

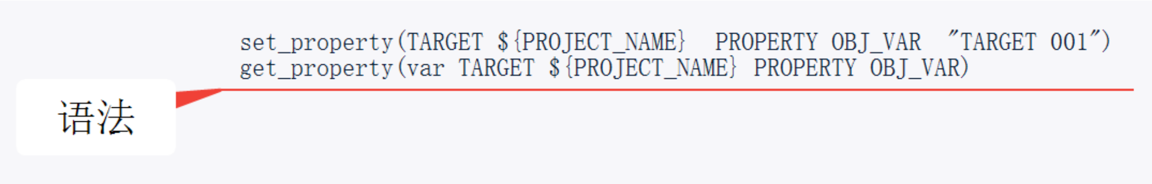


```
set_property(SOURCE main.cpp  PROPERTY COMPILE_DEFINITIONS  ″PARA1=1234″)
```

```
set_property(SOURCE main.cpp  PROPERTY COMPILE_DEFINITIONS
"PARA1=1234")
```

3.3.4. 目标属性

语法

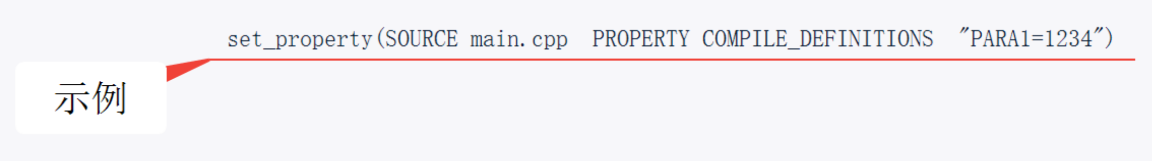


```
set_property(TARGET ${PROJECT_NAME}  PROPERTY OBJ_VAR  ”TARGET 001”)
get_property(var TARGET ${PROJECT_NAME} PROPERTY OBJ_VAR)
```

set_property(TARGET ${PROJECT_NAME} PROPERTY OBJ_VAR "TARGET 001")

get_property(var TARGET ${PROJECT_NAME} PROPERTY OBJ_VAR)

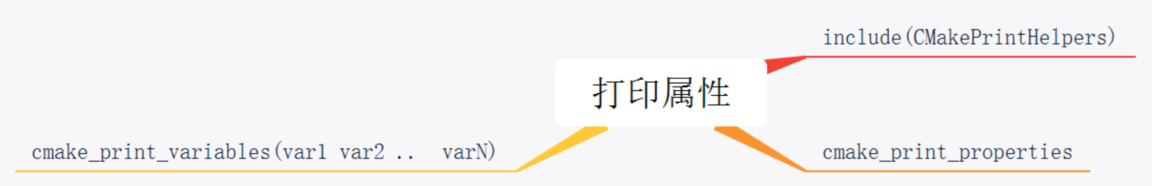
示例



```
set_property(SOURCE main.cpp  PROPERTY COMPILE_DEFINITIONS  ”PARA1=1234”)
```

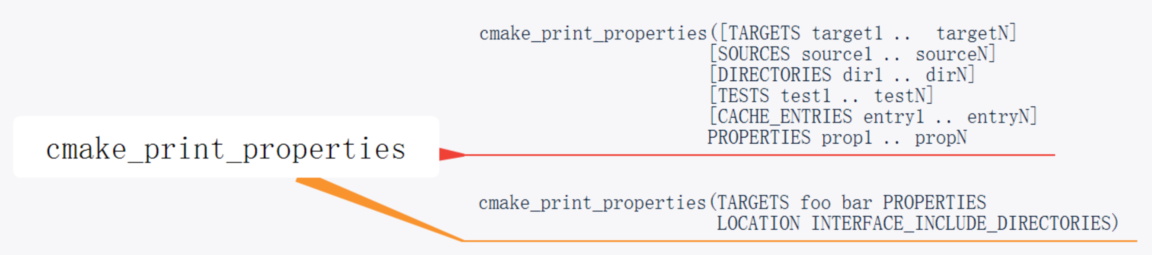
set_property(SOURCE main.cpp PROPERTY COMPILE_DEFINITIONS "PARA1=1234")

3.4. 打印属性


打印属性
include(CMakePrintHelpers)
cmake_print_variables(var1 var2 .. varN)
cmake_print_properties

3.4.1. include(CMakePrintHelpers)

3.4.2. cmake_print_properties



```
cmake_print_properties([TARGETS target1 ..  targetN]
                       [SOURCES source1 .. sourceN]
                       [DIRECTORIES dir1 .. dirN]
                       [TESTS test1 .. testN]
                       [CACHE_ENTRIES entry1 .. entryN]
                       PROPERTIES prop1 .. propN
```

```
cmake_print_properties(TARGETS foo bar PROPERTIES
                        LOCATION INTERFACE_INCLUDE_DIRECTORIES)
```

cmake_print_properties([TARGETS target1 .. targetN]

[SOURCES source1 .. sourceN]

[DIRECTORIES dir1 .. dirN]

[TESTS test1 .. testN]

[CACHE_ENTRIES entry1 .. entryN]

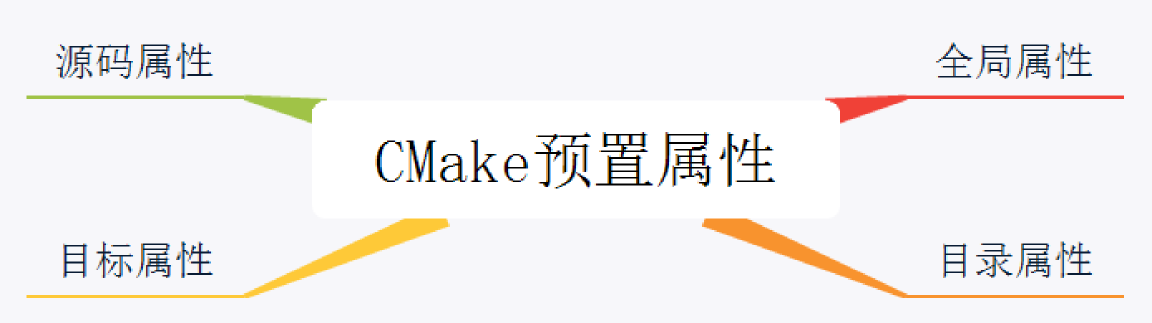
PROPERTIES prop1 .. propN

cmake_print_properties(TARGETS foo bar PROPERTIES

LOCATION INTERFACE_INCLUDE_DIRECTORIES)

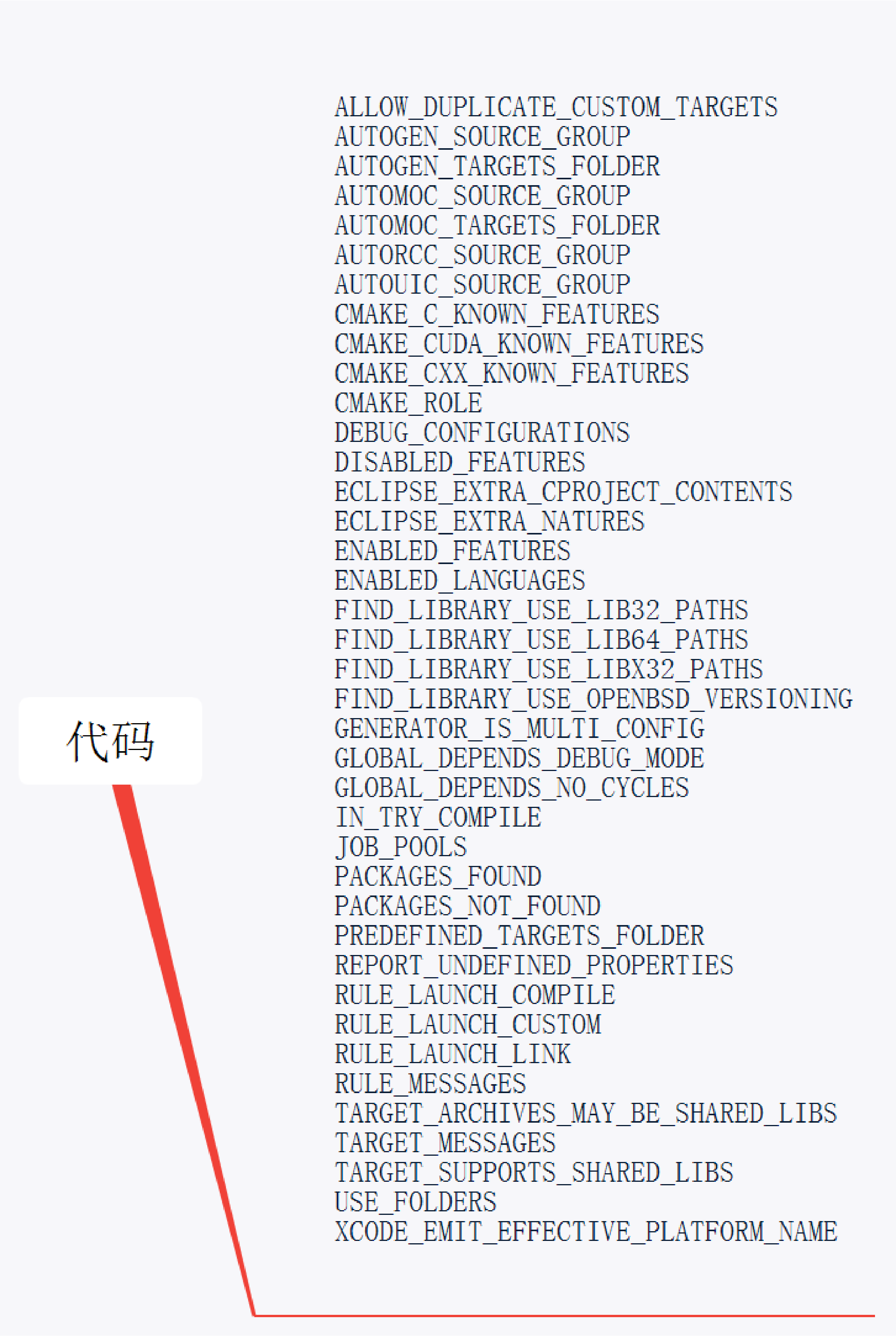
3.4.3. cmake_print_variables(var1 var2 .. varN)

3.5. CMake预置属性



3.5.1. 全局属性

代码



代码

```
ALLOW_DUPLICATE_CUSTOM_TARGETS
AUTOGEN_SOURCE_GROUP
AUTOGEN_TARGETS_FOLDER
AUTOMOC_SOURCE_GROUP
AUTOMOC_TARGETS_FOLDER
AUTORCC_SOURCE_GROUP
AUTOUIC_SOURCE_GROUP
CMAKE_C_KNOWN_FEATURES
CMAKE_CUDA_KNOWN_FEATURES
CMAKE_CXX_KNOWN_FEATURES
CMAKE_ROLE
DEBUG_CONFIGURATIONS
DISABLED_FEATURES
ECLIPSE_EXTRA_CPROJECT_CONTENTS
ECLIPSE_EXTRA_NATURES
ENABLED_FEATURES
ENABLED_LANGUAGES
FIND_LIBRARY_USE_LIB32_PATHS
FIND_LIBRARY_USE_LIB64_PATHS
FIND_LIBRARY_USE_LIBX32_PATHS
FIND_LIBRARY_USE_OPENBSD_VERSIONING
GENERATOR_IS_MULTI_CONFIG
GLOBAL_DEPENDS_DEBUG_MODE
GLOBAL_DEPENDS_NO_CYCLES
IN_TRY_COMPILE
JOB_POOLS
PACKAGES_FOUND
PACKAGES_NOT_FOUND
PREDEFINED_TARGETS_FOLDER
REPORT_UNDEFINED_PROPERTIES
RULE_LAUNCH_COMPILE
RULE_LAUNCH_CUSTOM
RULE_LAUNCH_LINK
RULE_MESSAGES
TARGET_ARCHIVES_MAY_BE_SHARED_LIBS
TARGET_MESSAGES
TARGET_SUPPORTS_SHARED_LIBS
USE_FOLDERS
XCODE_EMIT_EFFECTIVE_PLATFORM_NAME
```

ALLOW_DUPLICATE_CUSTOM_TARGETS

AUTOGEN_SOURCE_GROUP

AUTOGEN_TARGETS_FOLDER

AUTOMOC_SOURCE_GROUP

AUTOMOC_TARGETS_FOLDER

AUTORCC_SOURCE_GROUP

AUTOUIC_SOURCE_GROUP

CMAKE_C_KNOWN_FEATURES

CMAKE_CUDA_KNOWN_FEATURES

CMAKE_CXX_KNOWN_FEATURES

CMAKE_ROLE

DEBUG_CONFIGURATIONS

DISABLED_FEATURES

ECLIPSE_EXTRA_CPROJECT_CONTENTS

ECLIPSE_EXTRA_NATURES

ENABLED_FEATURES

ENABLED_LANGUAGES

FIND_LIBRARY_USE_LIB32_PATHS

FIND_LIBRARY_USE_LIB64_PATHS

FIND_LIBRARY_USE_LIBX32_PATHS

FIND_LIBRARY_USE_OPENBSD_VERSIONING

GENERATOR_IS_MULTI_CONFIG

GLOBAL_DEPENDS_DEBUG_MODE

GLOBAL_DEPENDS_NO_CYCLES

IN_TRY_COMPILE

JOB_POOLS

PACKAGES_FOUND

PACKAGES_NOT_FOUND

PREDEFINED_TARGETS_FOLDER

REPORT_UNDEFINED_PROPERTIES

RULE_LAUNCH_COMPILE

RULE_LAUNCH_CUSTOM

RULE_LAUNCH_LINK

RULE_MESSAGES

TARGET_ARCHIVES_MAY_BE_SHARED_LIBS

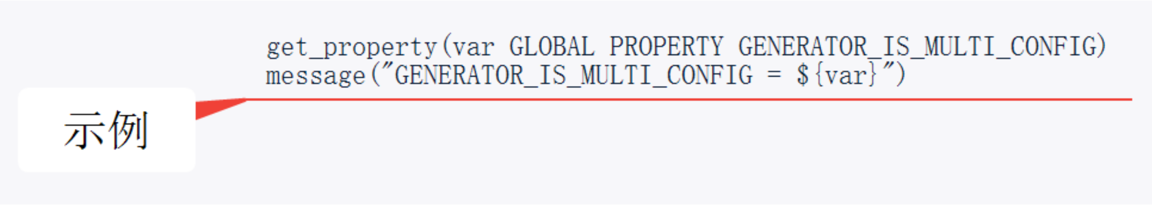
TARGET_MESSAGES

TARGET_SUPPORTS_SHARED_LIBS

USE_FOLDERS

XCODE_EMIT_EFFECTIVE_PLATFORM_NAME

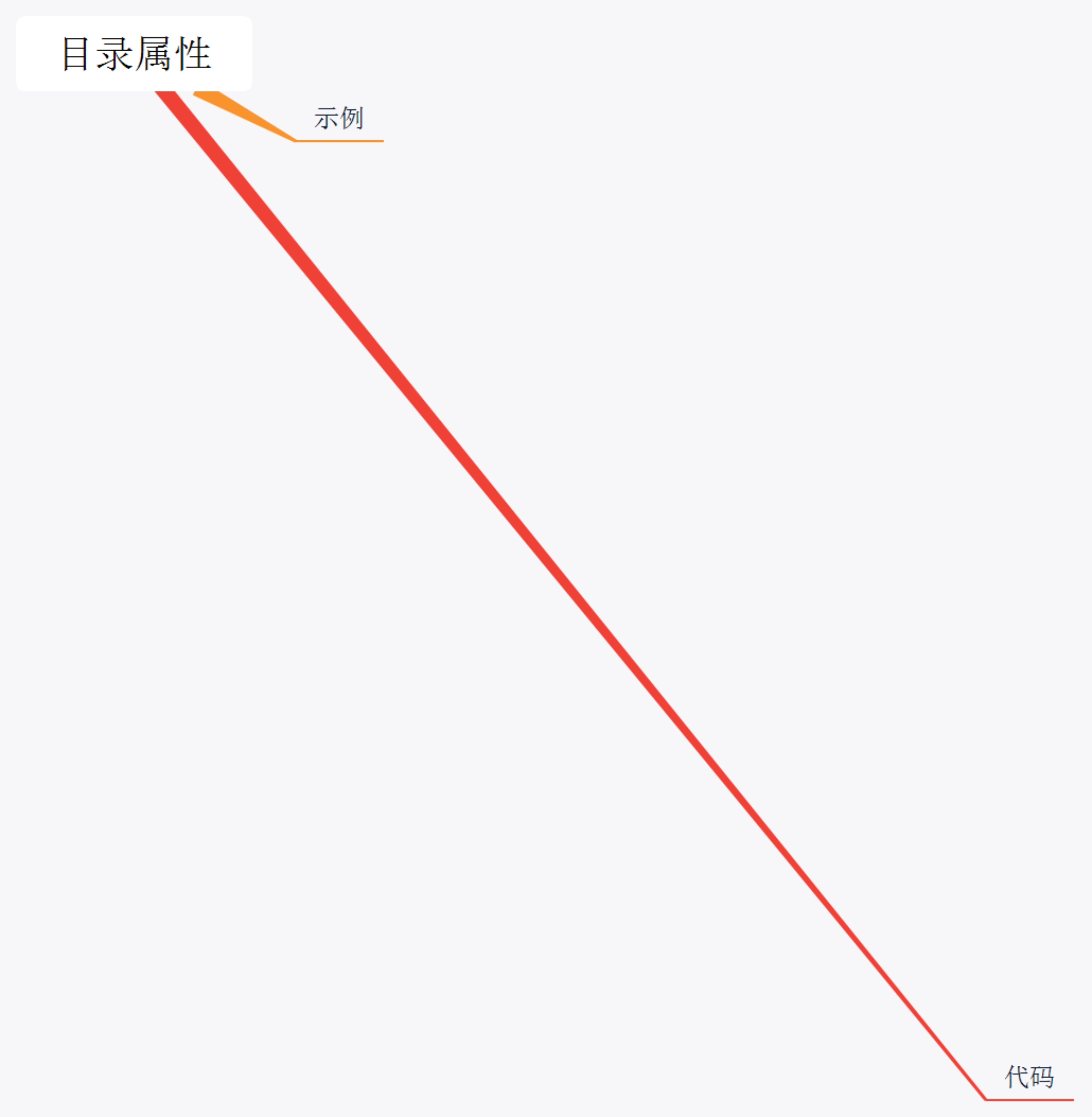
示例



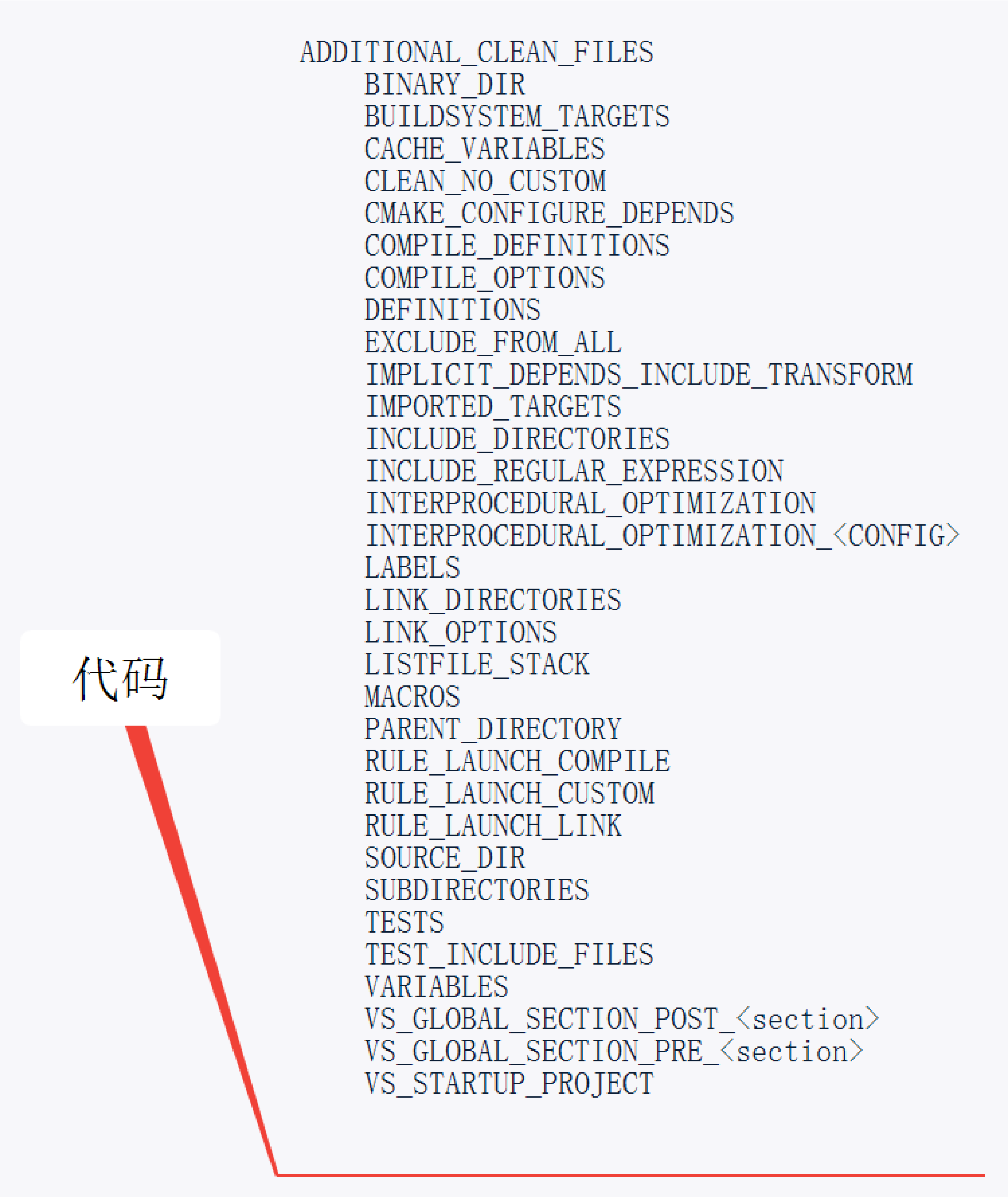
```
get_property(var GLOBAL PROPERTY GENERATOR_IS_MULTI_CONFIG)
message("GENERATOR_IS_MULTI_CONFIG = ${var}")
```

```
get_property(var GLOBAL PROPERTY GENERATOR_IS_MULTI_CONFIG)
message("GENERATOR_IS_MULTI_CONFIG = ${var}")
```

3.5.2. 目录属性



代码



```
ADDITIONAL_CLEAN_FILES
    BINARY_DIR
    BUILDSYSTEM_TARGETS
    CACHE_VARIABLES
    CLEAN_NO_CUSTOM
    CMAKE_CONFIGURE_DEPENDS
    COMPILE_DEFINITIONS
    COMPILE_OPTIONS
    DEFINITIONS
    EXCLUDE_FROM_ALL
    IMPLICIT_DEPENDS_INCLUDE_TRANSFORM
    IMPORTED_TARGETS
    INCLUDE_DIRECTORIES
    INCLUDE_REGULAR_EXPRESSION
    INTERPROCEDURAL_OPTIMIZATION
    INTERPROCEDURAL_OPTIMIZATION_<CONFIG>
    LABELS
    LINK_DIRECTORIES
    LINK_OPTIONS
    LISTFILE_STACK
    MACROS
    PARENT_DIRECTORY
    RULE_LAUNCH_COMPILE
    RULE_LAUNCH_CUSTOM
    RULE_LAUNCH_LINK
    SOURCE_DIR
    SUBDIRECTORIES
    TESTS
    TEST_INCLUDE_FILES
    VARIABLES
    VS_GLOBAL_SECTION_POST_<section>
    VS_GLOBAL_SECTION_PRE_<section>
    VS_STARTUP_PROJECT
```

ADDITIONAL_CLEAN_FILES

BINARY_DIR

BUILDSYSTEM_TARGETS

CACHE_VARIABLES

CLEAN_NO_CUSTOM

CMAKE_CONFIGURE_DEPENDS

COMPILE_DEFINITIONS

COMPILE_OPTIONS

DEFINITIONS

EXCLUDE_FROM_ALL

IMPLICIT_DEPENDS_INCLUDE_TRANSFORM

IMPORTED_TARGETS

INCLUDE_DIRECTORIES

INCLUDE_REGULAR_EXPRESSION

INTERPROCEDURAL_OPTIMIZATION

INTERPROCEDURAL_OPTIMIZATION_<CONFIG>

LABELS

LINK_DIRECTORIES

LINK_OPTIONS

LISTFILE_STACK

MACROS

PARENT_DIRECTORY

RULE_LAUNCH_COMPILE

RULE_LAUNCH_CUSTOM

RULE_LAUNCH_LINK

SOURCE_DIR

SUBDIRECTORIES

TESTS

TEST_INCLUDE_FILES

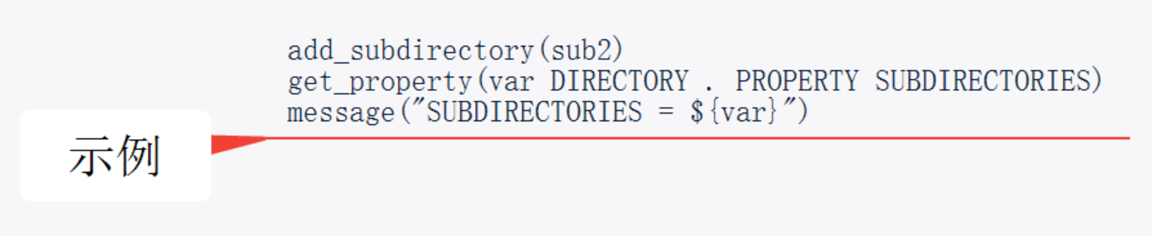
VARIABLES

VS_GLOBAL_SECTION_POST_<section>

VS_GLOBAL_SECTION_PRE_<section>

VS_STARTUP_PROJECT

示例



```
add_subdirectory(sub2)
get_property(var DIRECTORY . PROPERTY SUBDIRECTORIES)
message(”SUBDIRECTORIES = ${var}”)
```

add_subdirectory(sub2)

get_property(var DIRECTORY . PROPERTY SUBDIRECTORIES)

message("SUBDIRECTORIES = ${var}")

3.5.3. 目标属性

代码

```
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```

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<LANG>_CPPLINT

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XCODE_SCHEME_MAIN_THREAD_CHECKER_STOP

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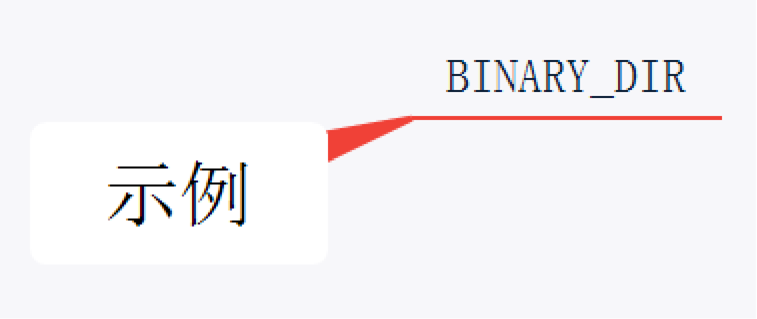
XCODE_SCHEME_UNDEFINED_BEHAVIOUR_SANITIZER_STOP

XCODE_SCHEME_WORKING_DIRECTORY

XCODE_SCHEME_ZOMBIE_OBJECTS

XCTEST

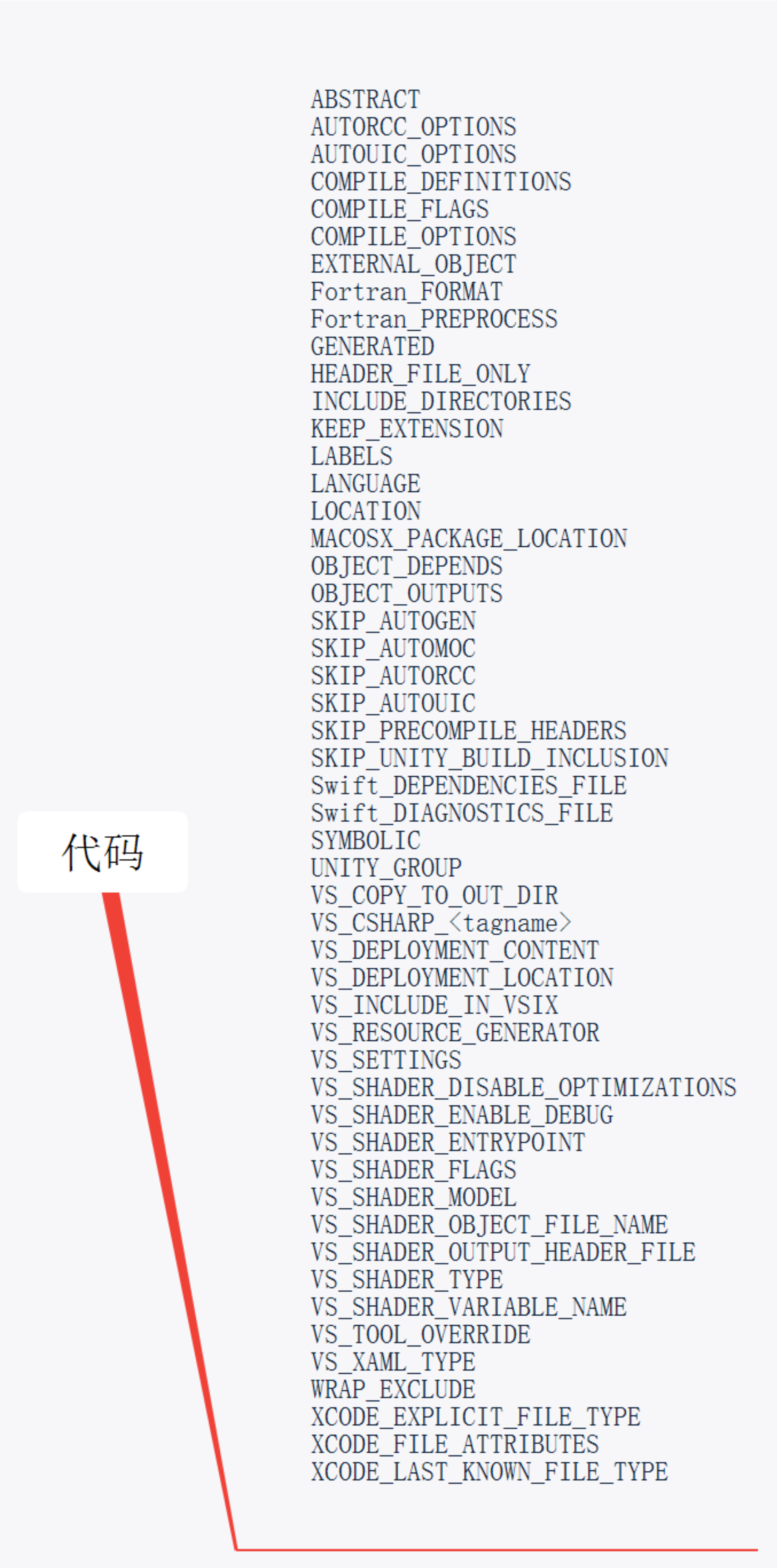
示例



BINARY_DIR

3.5.4. 源码属性

代码



```
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AUTOUIC_OPTIONS
COMPILE_DEFINITIONS
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COMPILE_OPTIONS
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SKIP_AUTORCC
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VS_SETTINGS
VS_SHADER_DISABLE_OPTIMIZATIONS
VS_SHADER_ENABLE_DEBUG
VS_SHADER_ENTRYPOINT
VS_SHADER_FLAGS
VS_SHADER_MODEL
VS_SHADER_OBJECT_FILE_NAME
VS_SHADER_OUTPUT_HEADER_FILE
VS_SHADER_TYPE
VS_SHADER_VARIABLE_NAME
VS_TOOL_OVERRIDE
VS_XAML_TYPE
WRAP_EXCLUDE
XCODE_EXPLICIT_FILE_TYPE
XCODE_FILE_ATTRIBUTES
XCODE_LAST_KNOWN_FILE_TYPE
```

ABSTRACT

AUTORCC_OPTIONS

AUTOUIC_OPTIONS

COMPILE_DEFINITIONS

COMPILE_FLAGS

COMPILE_OPTIONS

EXTERNAL_OBJECT

Fortran_FORMAT

Fortran_PREPROCESS

GENERATED

HEADER_FILE_ONLY

INCLUDE_DIRECTORIES

KEEP_EXTENSION

LABELS

LANGUAGE

LOCATION

MACOSX_PACKAGE_LOCATION

OBJECT_DEPENDS

OBJECT_OUTPUTS

SKIP_AUTOGEN

SKIP_AUTOMOC

SKIP_AUTORCC

SKIP_AUTOUIC

SKIP_PRECOMPILE_HEADERS

SKIP_UNITY_BUILD_INCLUSION

Swift_DEPENDENCIES_FILE

Swift_DIAGNOSTICS_FILE

SYMBOLIC

UNITY_GROUP

VS_COPY_TO_OUT_DIR

VS_CSHARP_<tagname>

VS_DEPLOYMENT_CONTENT

VS_DEPLOYMENT_LOCATION

VS_INCLUDE_IN_VSIX

VS_RESOURCE_GENERATOR

VS_SETTINGS

VS_SHADER_DISABLE_OPTIMIZATIONS

VS_SHADER_ENABLE_DEBUG

VS_SHADER_ENTRYPOINT

VS_SHADER_FLAGS

VS_SHADER_MODEL

VS_SHADER_OBJECT_FILE_NAME

VS_SHADER_OUTPUT_HEADER_FILE

VS_SHADER_TYPE

VS_SHADER_VARIABLE_NAME

VS_TOOL_OVERRIDE

VS_XAML_TYPE

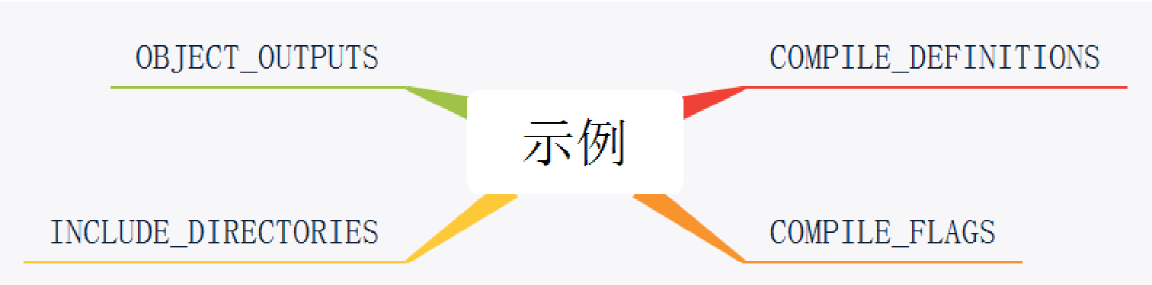
WRAP_EXCLUDE

XCODE_EXPLICIT_FILE_TYPE

XCODE_FILE_ATTRIBUTES

XCODE_LAST_KNOWN_FILE_TYPE

示例



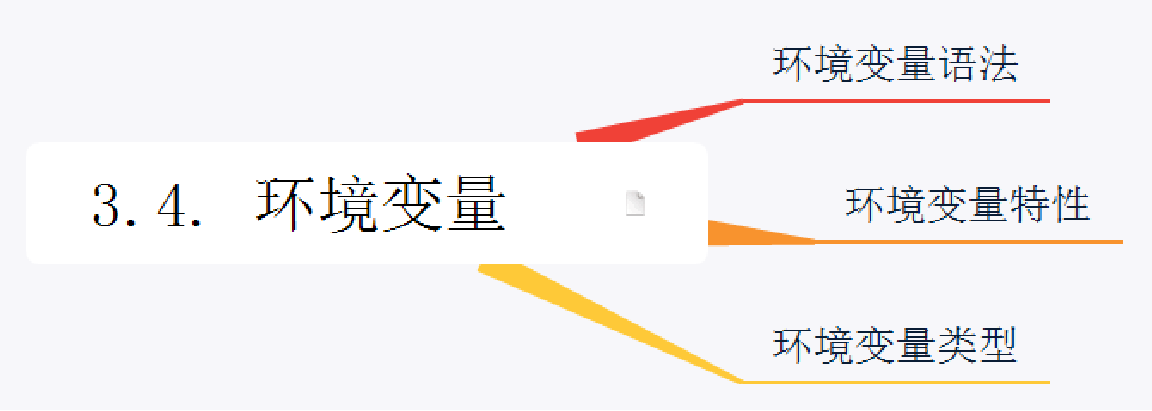
COMPILE_DEFINITIONS

COMPILE_FLAGS

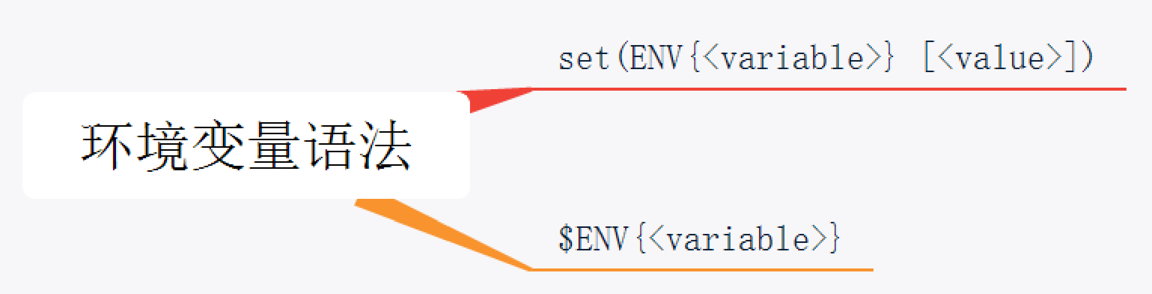
INCLUDE_DIRECTORIES

OBJECT_OUTPUTS

4. 3.4. 环境变量



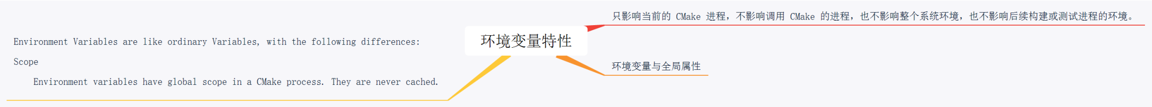
4.1. 环境变量语法



4.1.1. set(ENV{<variable>} [<value>])

4.1.2. $ENV{<variable>}

4.2. 环境变量特性



只影响当前的 CMake 进程，不影响调用 CMake 的进程，也不影响整个系统环境，也不影响后续构建或测试进程的环境。

Environment Variables are like ordinary Variables, with the following differences:

Scope

Environment variables have global scope in a CMake process. They are never cached.

4.2.1. 只影响当前的 CMake 进程，不影响调用 CMake 的进程，也不影响整个系统环境，也不影响后续构建或测试进程的环境。

4.2.2. 环境变量与全局属性

基本类似 全局属性可以加说明

环境变量访问简单

4.2.3. Environment Variables are like ordinary Variables, with the following differences:

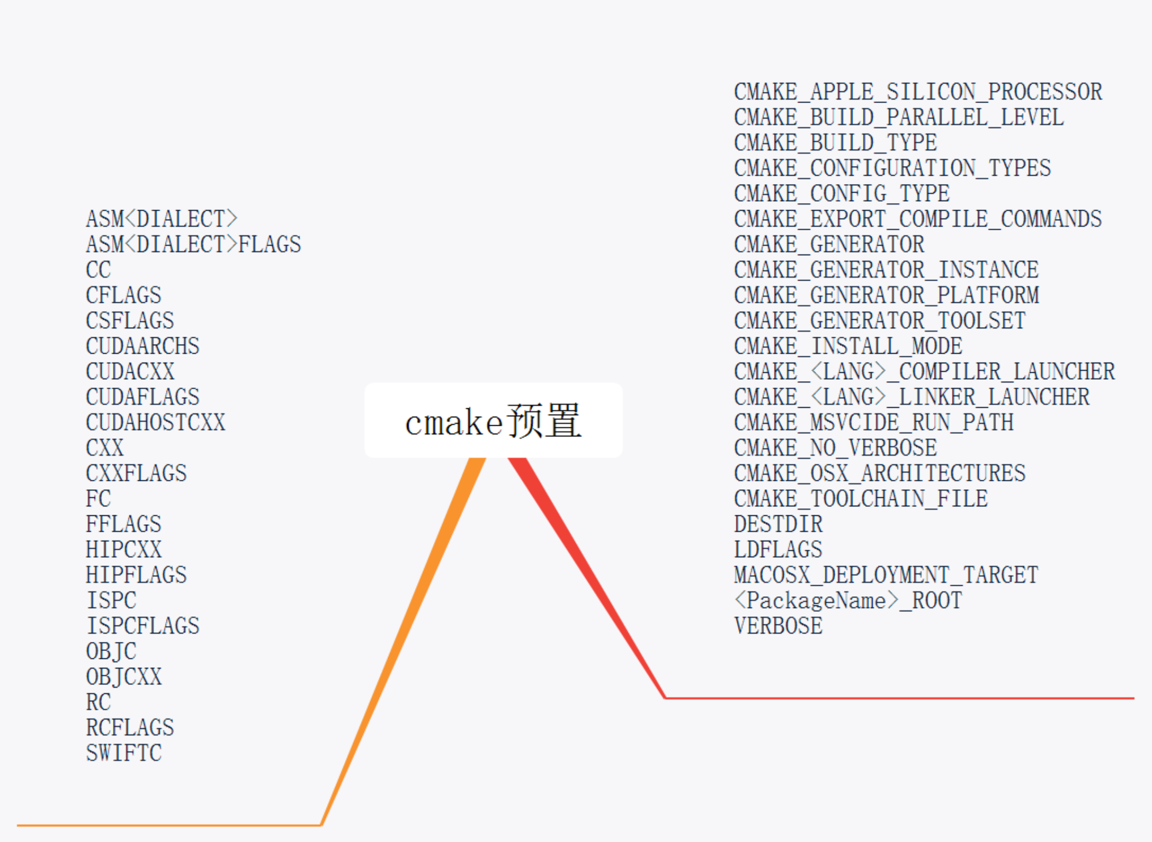
Scope

Environment variables have global scope in a CMake process. They are never cached.

4.3. 环境变量类型

环境变量类型
cmake预置
系统变量
自定义环境变量

4.3.1. cmake预置



CMAKE_APPLE_SILICON_PROCESSOR

CMAKE_BUILD_PARALLEL_LEVEL

CMAKE_BUILD_TYPE

CMAKE_CONFIGURATION_TYPES

CMAKE_CONFIG_TYPE

CMAKE_EXPORT_COMPILE_COMMANDS

CMAKE_GENERATOR

CMAKE_GENERATOR_INSTANCE

CMAKE_GENERATOR_PLATFORM

CMAKE_GENERATOR_TOOLSET

CMAKE_INSTALL_MODE

CMAKE_<LANG>_COMPILER_LAUNCHER

CMAKE_<LANG>_LINKER_LAUNCHER

CMAKE_MSVCIDE_RUN_PATH

CMAKE_NO_VERBOSE

CMAKE_OSX_ARCHITECTURES

CMAKE_TOOLCHAIN_FILE

DESTDIR

LDFLAGS

MACOSX_DEPLOYMENT_TARGET

<PackageName>_ROOT

VERBOSE

ASM<DIALECT>

ASM<DIALECT>FLAGS

CC

CFLAGS

CSFLAGS

CUDAARCHS

CUDACXX

CUDAFLAGS

CUDAHOSTCXX

CXX

CXXFLAGS

FC

FFLAGS

HIPCXX

HIPFLAGS

ISPC

ISPCFLAGS

OBJC

OBJCXX

RC

RCFLAGS

SWIFTC

4.3.2. 自定义环境变量

4.3.3. 系统变量

5. 3.5 cmake math数学运算

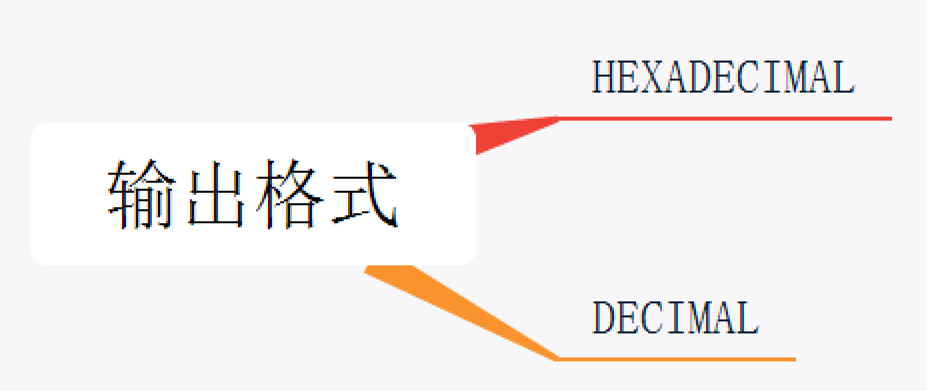
输出格式
math(EXPR <variable> "<expression>" [OUTPUT_FORMAT <format>])
3.5 cmake math数学运算
结果必须是64位有符号整数
"5 * (10 + 13)". 支持 +, -, *, /, %, |, &, ^, ~, <<, >>

5.1. math(EXPR <variable> "<expression>" [OUTPUT_FORMAT <format>])

5.2. "5 * (10 + 13)". 支持 +, -, *, /, %, |, &, ^, ~, <<, >>

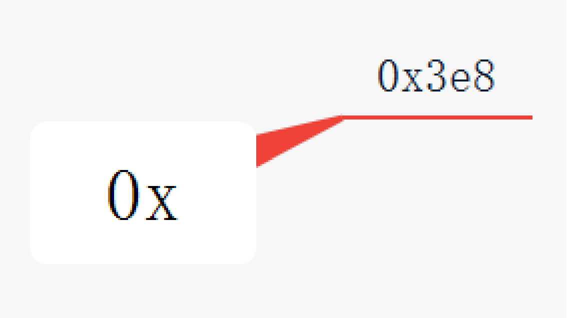
5.3. 结果必须是64位有符号整数

5.4. 输出格式



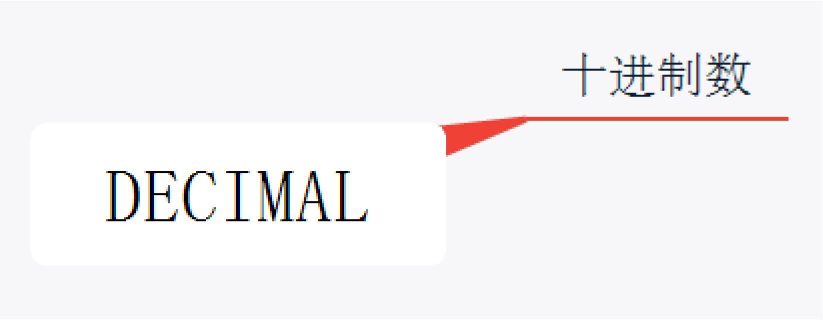
5.4.1. HEXADECIMAL

0x



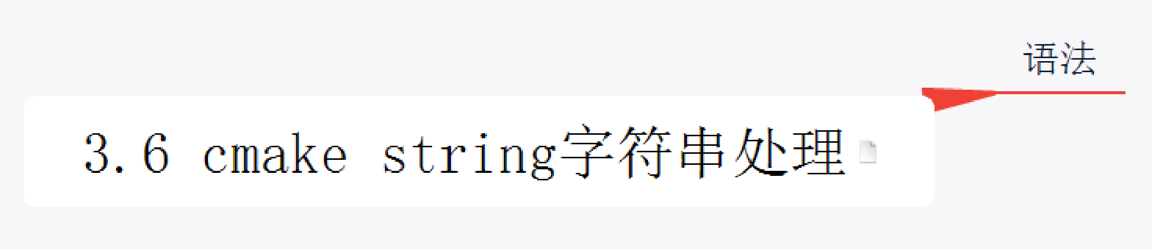
0x3e8

5.4.2. DECIMAL

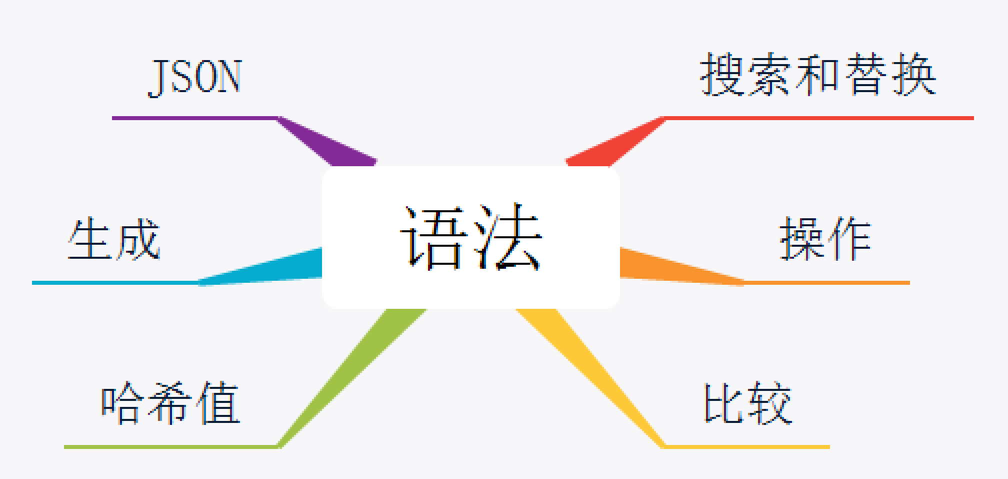


十进制数

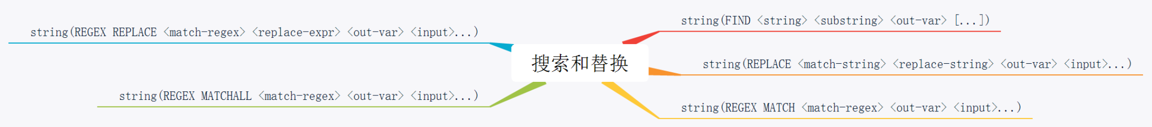
6. 3.6 cmake string字符串处理



6.1. 语法



6.1.1. 搜索和替换


string(REGEX REPLACE <match-regex> <replace-expr> <out-var> <input>...)
string(FIND <string> <substring> <out-var> [...])
搜索和替换
string(REPLACE <match-string> <replace-string> <out-var> <input>...)
string(REGEX MATCHALL <match-regex> <out-var> <input>...)
string(REGEX MATCH <match-regex> <out-var> <input>...)

string(FIND <string> <substring> <out-var> [...])

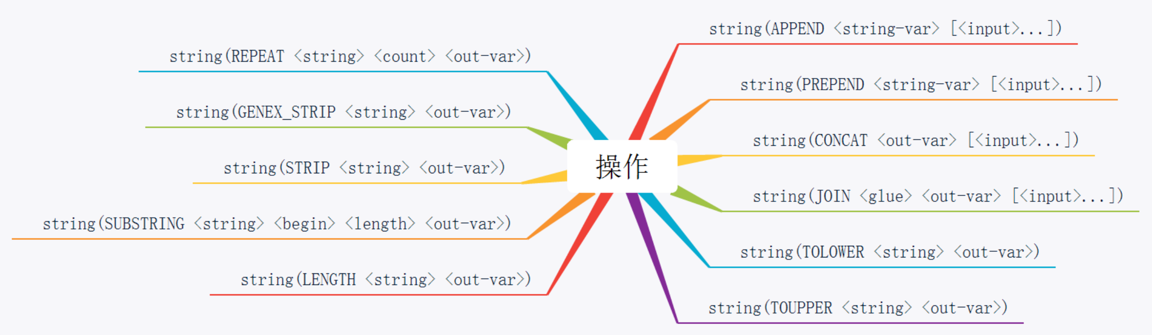
string(REPLACE <match-string> <replace-string> <out-var> <input>...)

string(REGEX MATCH <match-regex> <out-var> <input>...)

string(REGEX MATCHALL <match-regex> <out-var> <input>...)

string(REGEX REPLACE <match-regex> <replace-expr> <out-var> <input>...)

6.1.2. 操作


操作
string(APPEND <string-var> [<input>...])
string(PREPEND <string-var> [<input>...])
string(CONCAT <out-var> [<input>...])
string(JOIN <glue> <out-var> [<input>...])
string(TOLOWER <string> <out-var>)
string(TOUPPER <string> <out-var>)
string(REPEAT <string> <count> <out-var>)
string(GENEX_STRIP <string> <out-var>)
string(STRIP <string> <out-var>)
string(SUBSTRING <string> <begin> <length> <out-var>)
string(LENGTH <string> <out-var>)

string(APPEND <string-var> [<input>...])

string(PREPEND <string-var> [<input>...])

string(CONCAT <out-var> [<input>...])

string(JOIN <glue> <out-var> [<input>...])

string(TOLOWER <string> <out-var>)

string(TOUPPER <string> <out-var>)

string(LENGTH <string> <out-var>)

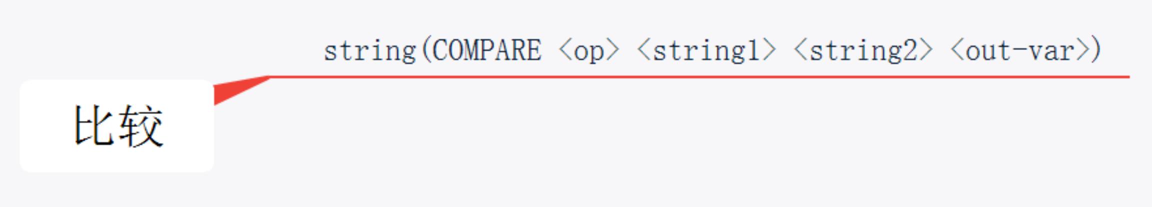
string(SUBSTRING <string> <begin> <length> <out-var>)

string(STRIP <string> <out-var>)

string(GENEX_STRIP <string> <out-var>)

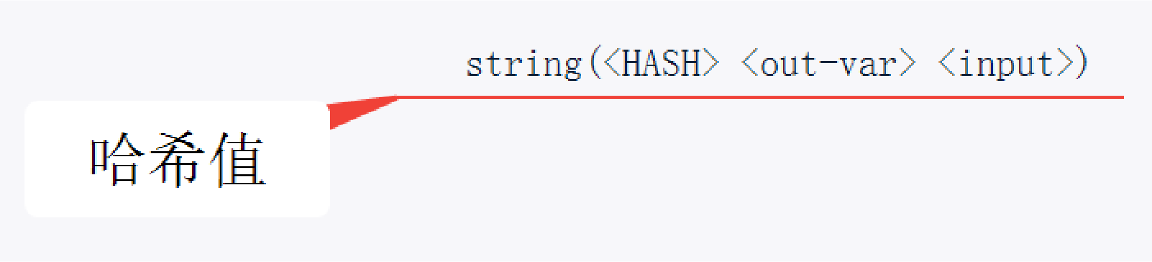
string(REPEAT <string> <count> <out-var>)

6.1.3. 比较



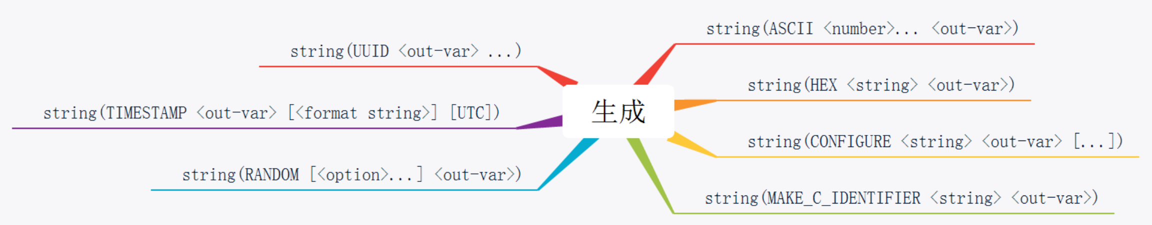
string(COMPARE <op> <string1> <string2> <out-var>)

6.1.4. 哈希值



string(<HASH> <out-var> <input>)

6.1.5. 生成


生成
string(UUID <out-var> ...)
string(TIMESTAMP <out-var> [<format string>] [UTC])
string(RANDOM [<option>...] <out-var>)
string(ASCII <number>... <out-var>)
string(HEX <string> <out-var>)
string(CONFIGURE <string> <out-var> [...])
string(MAKE_C_IDENTIFIER <string> <out-var>)

string(ASCII <number>... <out-var>)

string(HEX <string> <out-var>)

string(CONFIGURE <string> <out-var> [...])

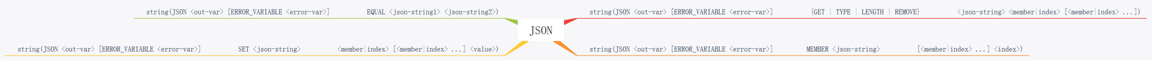
string(MAKE_C_IDENTIFIER <string> <out-var>)

string(RANDOM [<option>...] <out-var>)

string(TIMESTAMP <out-var> [<format string>] [UTC])

string(UUID <out-var> ...)

6.1.6. JSON


JSON
string(JSON <out-var> [ERROR_VARIABLE <error-var>] EQUAL <json-string1> <json-string2>)
string(JSON <out-var> [ERROR_VARIABLE <error-var>] SET <json-string> <member|index> [<member|index> ...] <value>)
string(JSON <out-var> [ERROR_VARIABLE <error-var>] {GET | TYPE | LENGTH | REMOVE} <json-string> <member|index> [<member|index> ...])
string(JSON <out-var> [ERROR_VARIABLE <error-var>] MEMBER <json-string> [<member|index> ...] <index>)

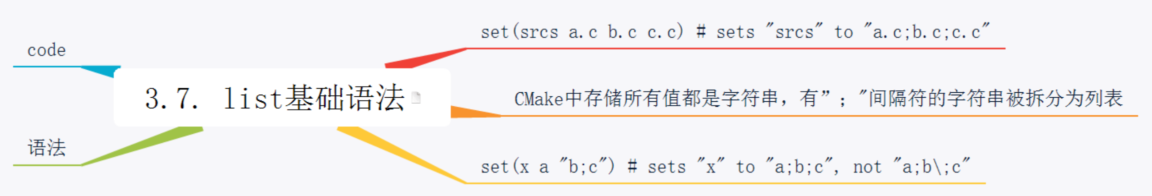
string(JSON <out-var> [ERROR_VARIABLE <error-var>] {GET | TYPE | LENGTH | REMOVE} <json-string> <member|index> [<member|index> ...])

string(JSON <out-var> [ERROR_VARIABLE <error-var>] MEMBER <json-string> [<member|index> ...] <index>)

string(JSON <out-var> [ERROR_VARIABLE <error-var>] SET <json-string> <member|index> [<member|index> ...] <value>)

string(JSON <out-var> [ERROR_VARIABLE <error-var>] EQUAL <json-string1> <json-string2>)

7. 3.7. list基础语法



3.7. list基础语法

code

语法

set(srcs a.c b.c c.c) # sets ″srcs″ to ″a.c;b.c;c.c″

CMake中存储所有值都是字符串，有″；″间隔符的字符串被拆分为列表

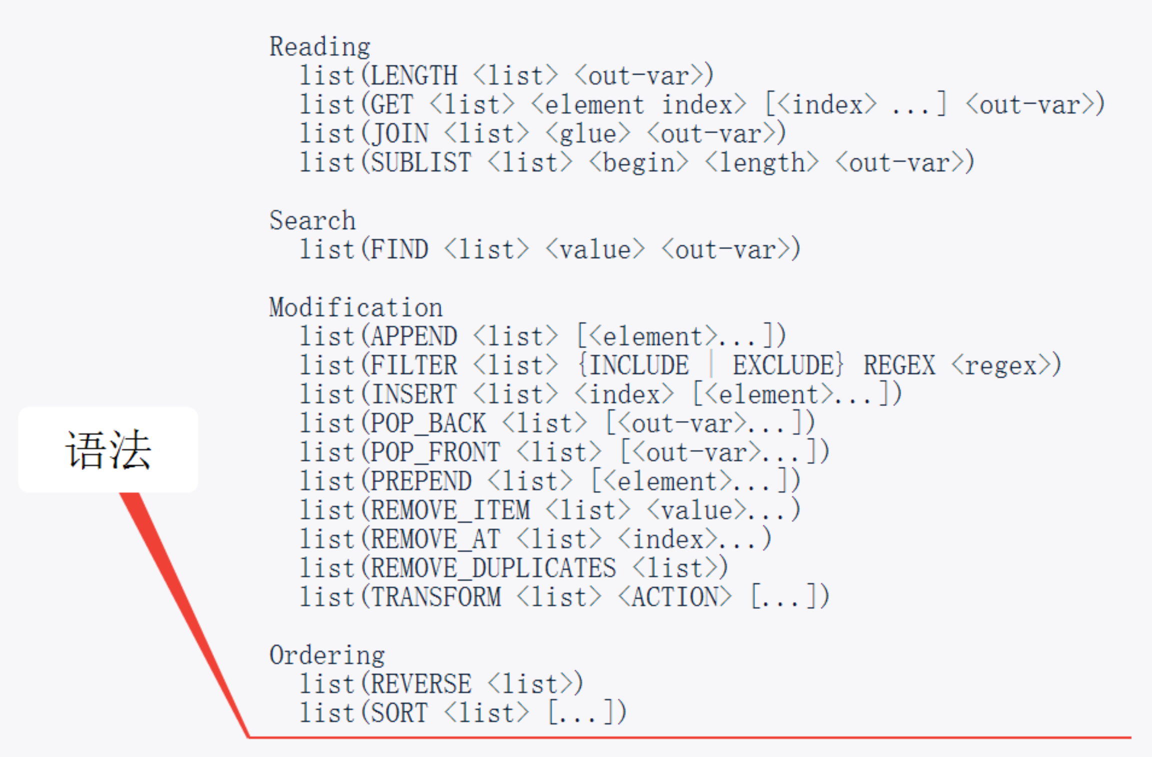
set(x a ″b;c″) # sets ″x″ to ″a;b;c″, not ″a;b\;c″

7.1. set(srcs a.c b.c c.c) # sets "srcs" to "a.c;b.c;c.c"

7.2. CMake中存储所有值都是字符串，有”；"间隔符的字符串被拆分为列表

7.3. set(x a "b;c") # sets "x" to "a;b;c", not "a;b\;c"

7.4. 语法



```
Reading
  list(LENGTH <list> <out-var>)
  list(GET <list> <element index> [<index> ...] <out-var>)
  list(JOIN <list> <glue> <out-var>)
  list(SUBLIST <list> <begin> <length> <out-var>)

Search
  list(FIND <list> <value> <out-var>)

Modification
  list(APPEND <list> [<element>...])
  list(FILTER <list> {INCLUDE | EXCLUDE} REGEX <regex>)
  list(INSERT <list> <index> [<element>...])
  list(POP_BACK <list> [<out-var>...])
  list(POP_FRONT <list> [<out-var>...])
  list(PREPEND <list> [<element>...])
  list(REMOVE_ITEM <list> <value>...)
  list(REMOVE_AT <list> <index>...)
  list(REMOVE_DUPLICATES <list>)
  list(TRANSFORM <list> <ACTION> [...])

Ordering
  list(REVERSE <list>)
  list(SORT <list> [...])
```

7.4.1. Reading

list(LENGTH <list> <out-var>)

list(GET <list> <element index> [<index> ...] <out-var>)

list(JOIN <list> <glue> <out-var>)

list(SUBLIST <list> <begin> <length> <out-var>)

Search

list(FIND <list> <value> <out-var>)

Modification

list(APPEND <list> [<element>...])

list(FILTER <list> {INCLUDE | EXCLUDE} REGEX <regex>)

list(INSERT <list> <index> [<element>...])

list(POP_BACK <list> [<out-var>...])

list(POP_FRONT <list> [<out-var>...])

list(PREPEND <list> [<element>...])

list(REMOVE_ITEM <list> <value>...)

list(REMOVE_AT <list> <index>...)

list(REMOVE_DUPLICATES <list>)

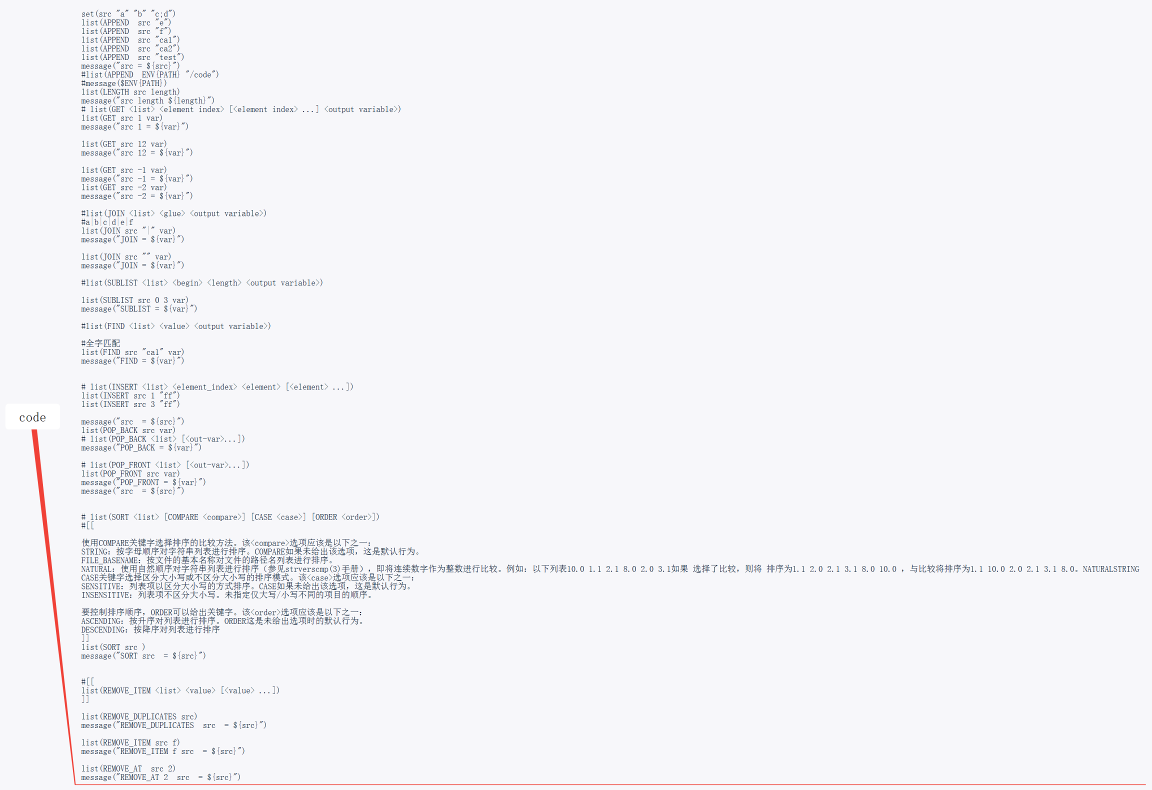
list(TRANSFORM <list> <ACTION> [...])

Ordering

list(REVERSE <list>)

list(SORT <list> [...])

7.5. code



```
set(src "a" "b" "c;d")
list(APPEND  src "e")
list(APPEND  src "f")
list(APPEND  src "ca1")
list(APPEND  src "ca2")
list(APPEND  src "test")
message("src = ${src}")
#list(APPEND  ENV{PATH} "/code")
#message($ENV{PATH})
list(LENGTH src length)
message("src length ${length}")
# list(GET <list> <element index> [<element index> ...] <output variable>)
list(GET src 1 var)
message("src 1 = ${var}")

list(GET src 12 var)
message("src 12 = ${var}")

list(GET src -1 var)
message("src -1 = ${var}")
list(GET src -2 var)
message("src -2 = ${var}")

#list(JOIN <list> <glue> <output variable>)
#a|b|c|d|e|f
list(JOIN src "|" var)
message("JOIN = ${var}")

list(JOIN src "" var)
message("JOIN = ${var}")

#list(SUBLIST <list> <begin> <length> <output variable>)

list(SUBLIST src 0 3 var)
message("SUBLIST = ${var}")

#list(FIND <list> <value> <output variable>)

#全字匹配
list(FIND src "ca1" var)
message("FIND = ${var}")


# list(INSERT <list> <element_index> <element> [<element> ...])
list(INSERT src 1 "ff")
list(INSERT src 3 "ff")

message("src  = ${src}")
list(POP_BACK src var)
# list(POP_BACK <list> [<out-var>...])
message("POP_BACK = ${var}")

# list(POP_FRONT <list> [<out-var>...])
list(POP_FRONT src var)
message("POP_FRONT = ${var}")
message("src  = ${src}")


# list(SORT <list> [COMPARE <compare>] [CASE <case>] [ORDER <order>])
#[[

使用COMPARE关键字选择排序的比较方法。该<compare>选项应该是以下之一：
STRING：按字母顺序对字符串列表进行排序。COMPARE如果未给出该选项，这是默认行为。
FILE_BASENAME：按文件的基本名称对文件的路径名列表进行排序。
NATURAL：使用自然顺序对字符串列表进行排序（参见strverscmp(3)手册），即将连续数字作为整数进行比较。例如：以下列表10.0 1.1 2.1 8.0 2.0 3.1如果 选择了比较，则将 排序为1.1 2.0 2.1 3.1 8.0 10.0 ，与比较将排序为1.1 10.0 2.0 2.1 3.1 8.0。NATURALSTRING
CASE关键字选择区分大小写或不区分大小写的排序模式。该<case>选项应该是以下之一：
SENSITIVE：列表项以区分大小写的方式排序。CASE如果未给出该选项，这是默认行为。
INSENSITIVE：列表项不区分大小写。未指定仅大写/小写不同的项目的顺序。

要控制排序顺序，ORDER可以给出关键字。该<order>选项应该是以下之一：
ASCENDING：按升序对列表进行排序。ORDER这是未给出选项时的默认行为。
DESCENDING：按降序对列表进行排序
]]
list(SORT src )
message("SORT src  = ${src}")


#[[
list(REMOVE_ITEM <list> <value> [<value> ...])
]]

list(REMOVE_DUPLICATES src)
message("REMOVE_DUPLICATES  src  = ${src}")

list(REMOVE_ITEM src f)
message("REMOVE_ITEM f src  = ${src}")

list(REMOVE_AT  src 2)
message("REMOVE_AT 2  src  = ${src}")
```

7.5.1. set(src "a" "b" "c;d")

list(APPEND src "e")

list(APPEND src "f")

list(APPEND src "ca1")

list(APPEND src "ca2")

list(APPEND src "test")

```
message("src = ${src}")
#list(APPEND  ENV{PATH} "/code")
#message($ENV{PATH})
list(LENGTH src length)
message("src length ${length}")
# list(GET <list> <element index> [<element index> ...] <output variable>)
list(GET src 1 var)
message("src 1 = ${var}")

list(GET src 12 var)
message("src 12 = ${var}")

list(GET src -1 var)
message("src -1 = ${var}")
list(GET src -2 var)
message("src -2 = ${var}")

#list(JOIN <list> <glue> <output variable>)
#a|b|c|d|e|f
list(JOIN src "|" var)
message("JOIN = ${var}")

list(JOIN src "" var)
message("JOIN = ${var}")

#list(SUBLIST <list> <begin> <length> <output variable>)

list(SUBLIST src 0 3 var)
message("SUBLIST = ${var}")

#list(FIND <list> <value> <output variable>)
```

```
#全字匹配
list(FIND src "ca1" var)
message("FIND = ${var}")


# list(INSERT <list> <element_index> <element> [<element> ...])
list(INSERT src 1 "ff")
list(INSERT src 3 "ff")

message("src  = ${src}")
list(POP_BACK src var)
# list(POP_BACK <list> [<out-var>...])
message("POP_BACK = ${var}")

# list(POP_FRONT <list> [<out-var>...])
list(POP_FRONT src var)
message("POP_FRONT = ${var}")
message("src  = ${src}")


# list(SORT <list> [COMPARE <compare>] [CASE <case>] [ORDER <order>])
#[[

使用COMPARE关键字选择排序的比较方法。该<compare>选项应该是以下之一：
STRING：按字母顺序对字符串列表进行排序。COMPARE如果未给出该选项，这是默认行为。
FILE_BASENAME：按文件的基本名称对文件的路径名列表进行排序。
NATURAL：使用自然顺序对字符串列表进行排序（参见strverscmp(3)手册），
```

即将连续数字作为整数进行比较。例如：以下列表10.0 1.1 2.1 8.0 2.0 3.1如果选择了比较，则将 排序为1.1 2.0 2.1 3.1 8.0 10.0 ，与比较将排序为1.1 10.0 2.0 2.1 3.1 8.0。NATURALSTRING

CASE关键字选择区分大小写或不区分大小写的排序模式。该<case>选项应该是以下之一：

SENSITIVE：列表项以区分大小写的方式排序。CASE如果未给出该选项，这是默认行为。

INSENSITIVE：列表项不区分大小写。未指定仅大写/小写不同的项目的顺序。

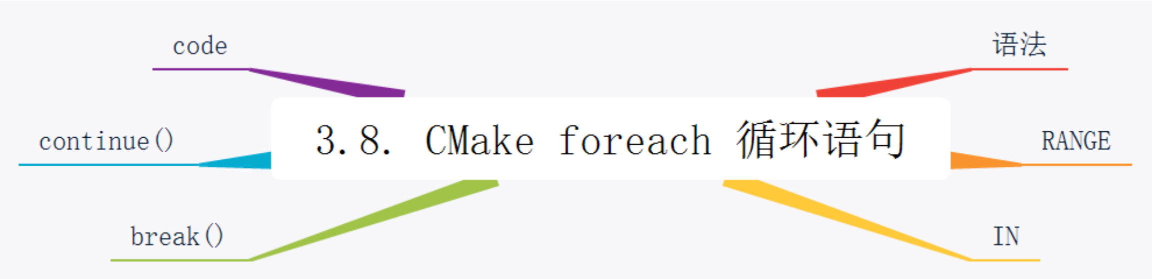
要控制排序顺序，ORDER可以给出关键字。该<order>选项应该是以下之一：

ASCENDING：按升序对列表进行排序。ORDER这是未给出选项时的默认行为。

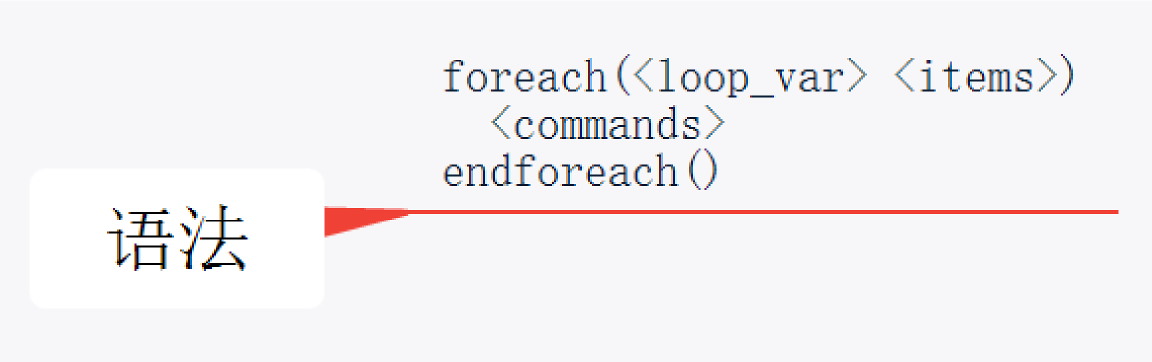
DESCENDING：按降序对列表进行排序

```
]]
list(SORT src )
message("SORT src  = ${src}")



#[[
list(REMOVE_ITEM <list> <value> [<value> ...])
]]

list(REMOVE_DUPLICATES src)
message("REMOVE_DUPLICATES  src  = ${src}")

list(REMOVE_ITEM src f)
message("REMOVE_ITEM f src  = ${src}")

list(REMOVE_AT  src 2)
message("REMOVE_AT 2  src  = ${src}")
```

8. 3.8. CMake foreach 循环语句



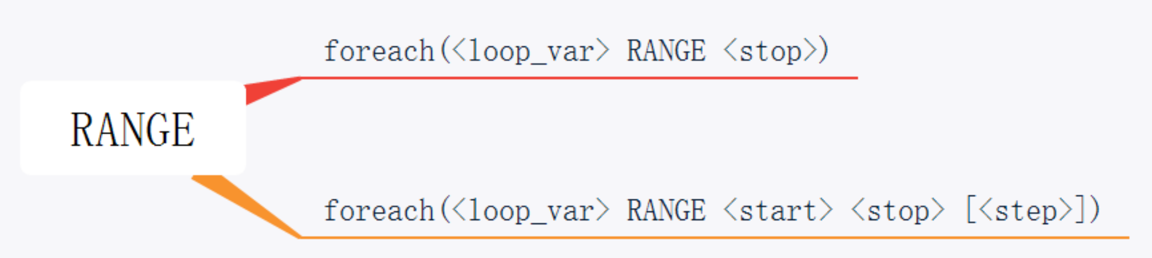
8.1. 语法



```
foreach(<loop_var> <items>)
  <commands>
endforeach()
```

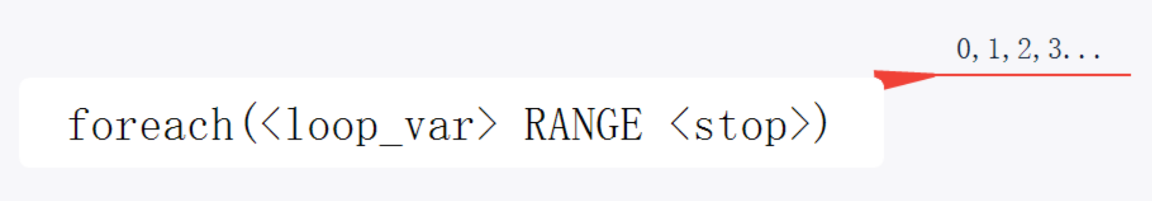
8.1.1. foreach(<loop_var> <items>)
<commands>
endforeach()

8.2. RANGE



```
foreach(<loop_var> RANGE <stop>)
foreach(<loop_var> RANGE <start> <stop> [<step>])
```

8.2.1. foreach(<loop_var> RANGE <stop>)

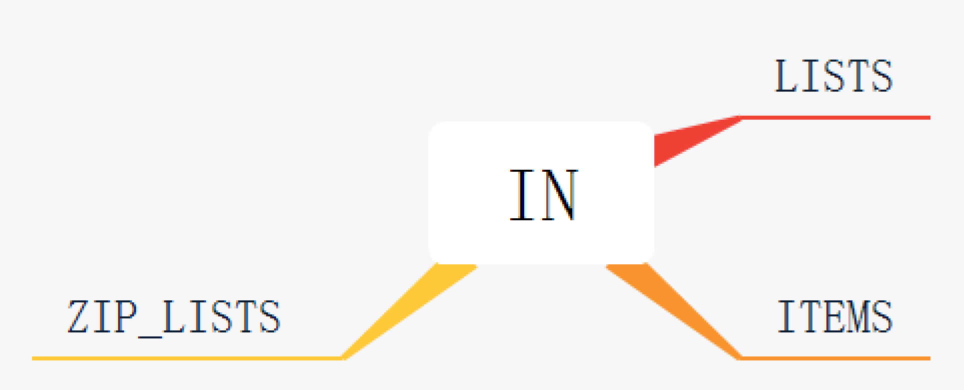


```
foreach(<loop_var> RANGE <stop>)
```

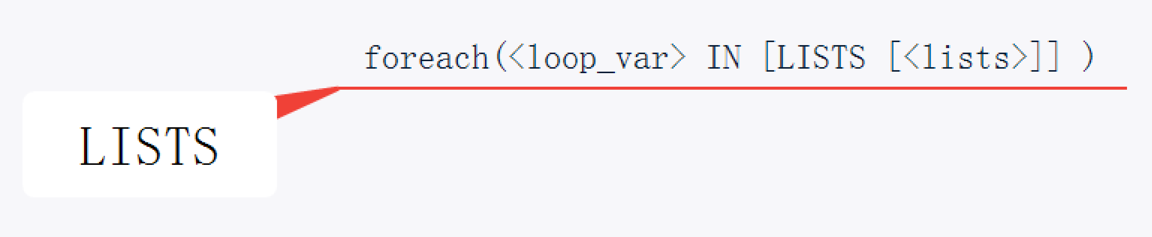
0,1,2,3...

8.2.2. foreach(<loop_var> RANGE <start> <stop> [<step>])

8.3. IN

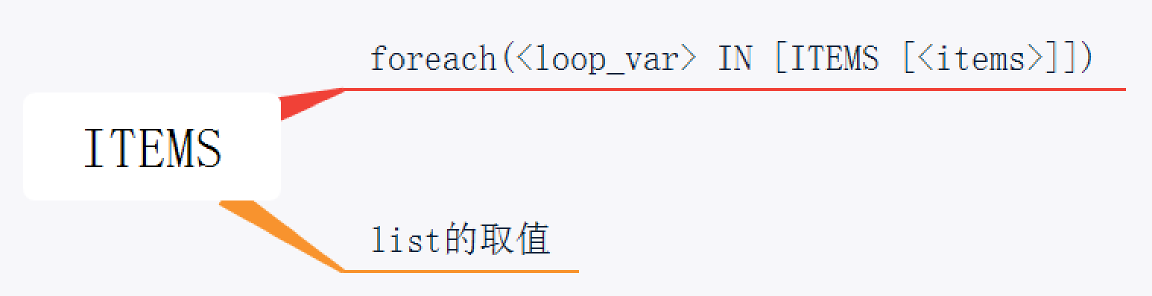


8.3.1. LISTS



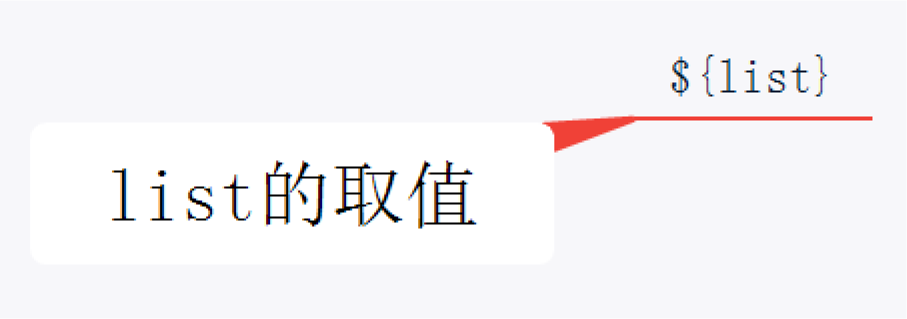
foreach(<loop_var> IN [LISTS [<lists>]])

8.3.2. ITEMS



foreach(<loop_var> IN [ITEMS [<items>]])

list的取值

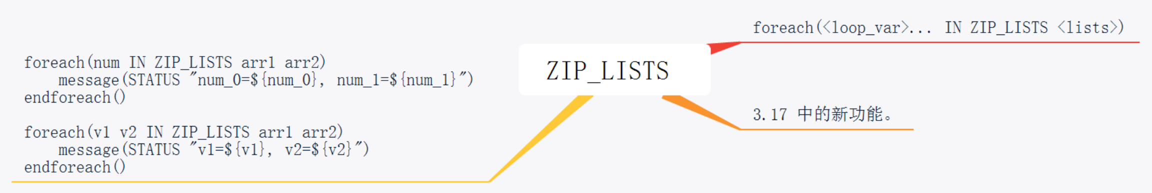


list的取值

${list}

${list}

8.3.3. ZIP_LISTS



```
foreach(num IN ZIP_LISTS arr1 arr2)
    message(STATUS ″num_0=${num_0}, num_1=${num_1}″)
endforeach()

foreach(v1 v2 IN ZIP_LISTS arr1 arr2)
    message(STATUS ″v1=${v1}, v2=${v2}″)
endforeach()
```

ZIP_LISTS

foreach(<loop_var>... IN ZIP_LISTS <lists>)

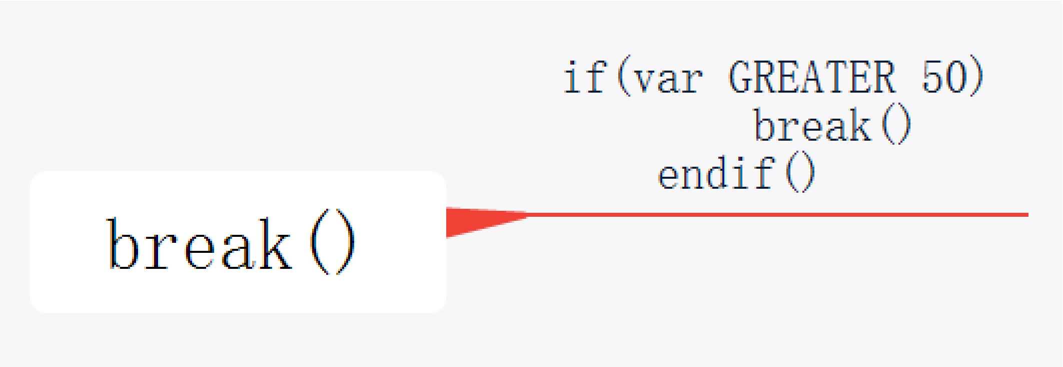
3.17 中的新功能。

foreach(<loop_var>... IN ZIP_LISTS <lists>)

3.17 中的新功能。

```
foreach(num IN ZIP_LISTS arr1 arr2)
  message(STATUS "num_0=${num_0}, num_1=${num_1}")
endforeach()


foreach(v1 v2 IN ZIP_LISTS arr1 arr2)
  message(STATUS "v1=${v1}, v2=${v2}")
endforeach()
```

8.4. break()

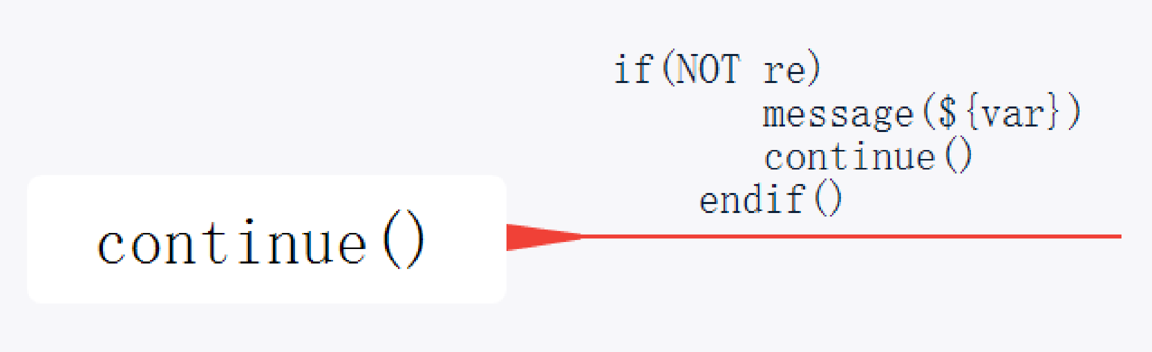


8.4.1. if(var GREATER 50)

break()

endif()

8.5. continue()



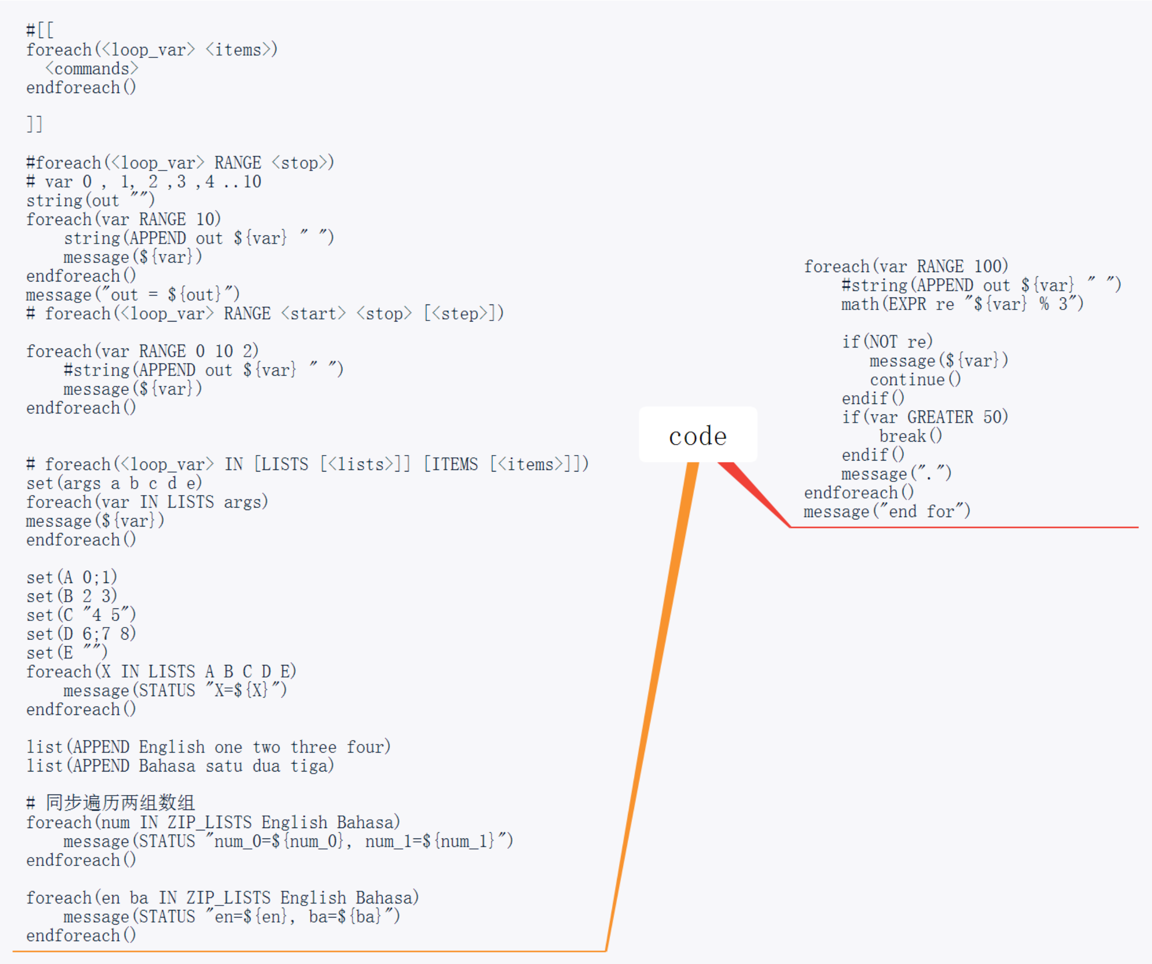
8.5.1. if(NOT re)

message(${var})

continue()

endif()

8.6. code



```
#[[
foreach(<loop_var> <items>)
  <commands>
endforeach()

]]

#foreach(<loop_var> RANGE <stop>)
# var 0 , 1, 2 ,3 ,4 ..10
string(out "")
foreach(var RANGE 10)
    string(APPEND out ${var} " ")
    message(${var})
endforeach()
message("out = ${out}")
# foreach(<loop_var> RANGE <start> <stop> [<step>])

foreach(var RANGE 0 10 2)
    #string(APPEND out ${var} " ")
    message(${var})
endforeach()


# foreach(<loop_var> IN [LISTS [<lists>]] [ITEMS [<items>]])
set(args a b c d e)
foreach(var IN LISTS args)
message(${var})
endforeach()

set(A 0;1)
set(B 2 3)
set(C "4 5")
set(D 6;7 8)
set(E "")
foreach(X IN LISTS A B C D E)
    message(STATUS "X=${X}")
endforeach()

list(APPEND English one two three four)
list(APPEND Bahasa satu dua tiga)

# 同步遍历两组数组
foreach(num IN ZIP_LISTS English Bahasa)
    message(STATUS "num_0=${num_0}， num_1=${num_1}")
endforeach()

foreach(en ba IN ZIP_LISTS English Bahasa)
    message(STATUS "en=${en}， ba=${ba}")
endforeach()
```

```
foreach(var RANGE 100)
    #string(APPEND out ${var} " ")
    math(EXPR re "${var} % 3")

    if(NOT re)
       message(${var})
       continue()
    endif()
    if(var GREATER 50)
        break()
    endif()
    message(".")
endforeach()
message("end for")
```

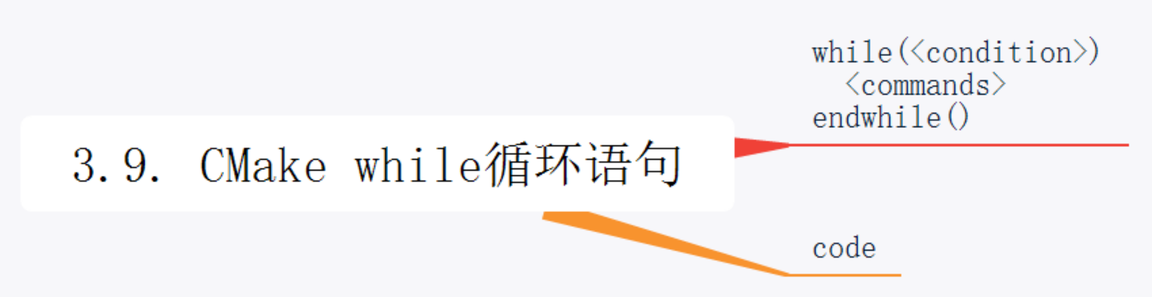
8.6.1. foreach(var RANGE 100)

```
  #string(APPEND out ${var} " ")
  math(EXPR re "${var} % 3")


  if(NOT re)
    message(${var})
    continue()
  endif()
  if(var GREATER 50)
     break()
  endif()
  message(".")
```

```
endforeach()
message("end for")

8.6.2. #[[
foreach(<loop_var> <items>)
  <commands>
endforeach()

]]

#foreach(<loop_var> RANGE <stop>)
# var 0 , 1, 2 ,3 ,4 ..10
string(out "")
foreach(var RANGE 10)
   string(APPEND out ${var} " ")
   message(${var})
endforeach()
message("out = ${out}")
# foreach(<loop_var> RANGE <start> <stop> [<step>])

foreach(var RANGE 0 10 2)
   #string(APPEND out ${var} " ")
   message(${var})
endforeach()


# foreach(<loop_var> IN [LISTS [<lists>]] [ITEMS [<items>]])
set(args a b c d e)
foreach(var IN LISTS args)
message(${var})
endforeach()
```

```
set(A 0;1)
set(B 2 3)
set(C "4 5")
set(D 6;7 8)
set(E "")
foreach(X IN LISTS A B C D E)
   message(STATUS "X=${X}")
endforeach()

list(APPEND English one two three four)
list(APPEND Bahasa satu dua tiga)

# 同步遍历两组数组
foreach(num IN ZIP_LISTS English Bahasa)
   message(STATUS "num_0=${num_0}, num_1=${num_1}")
endforeach()

foreach(en ba IN ZIP_LISTS English Bahasa)
   message(STATUS "en=${en}, ba=${ba}")
endforeach()
```

9. 3.9. CMake while循环语句



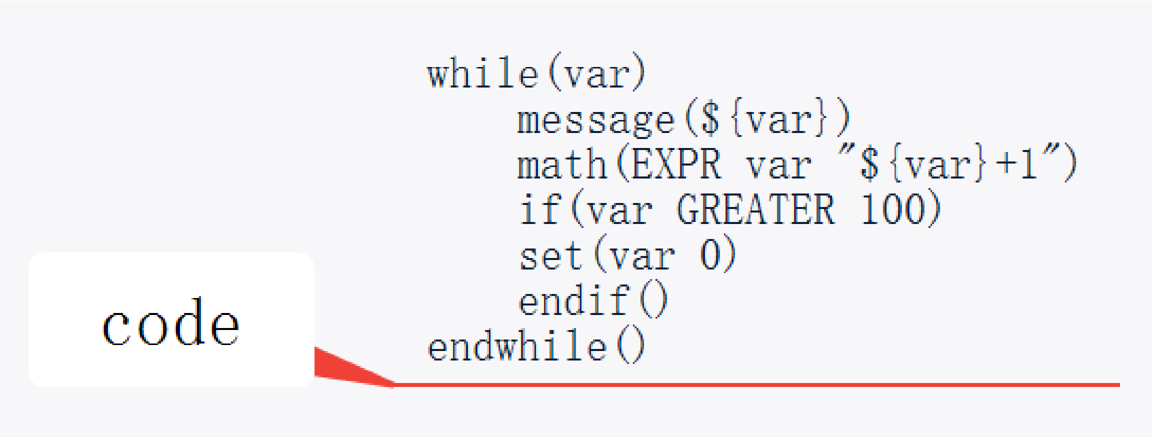
```
while(<condition>)
   <commands>
endwhile()
```

9.1. while(<condition>)

<commands>

endwhile()

9.2. code



```
while(var)
    message(${var})
    math(EXPR var "${var}+1")
    if(var GREATER 100)
    set(var 0)
    endif()
endwhile()
```

9.2.1. while(var)

message(${var})

math(EXPR var "${var}+1")

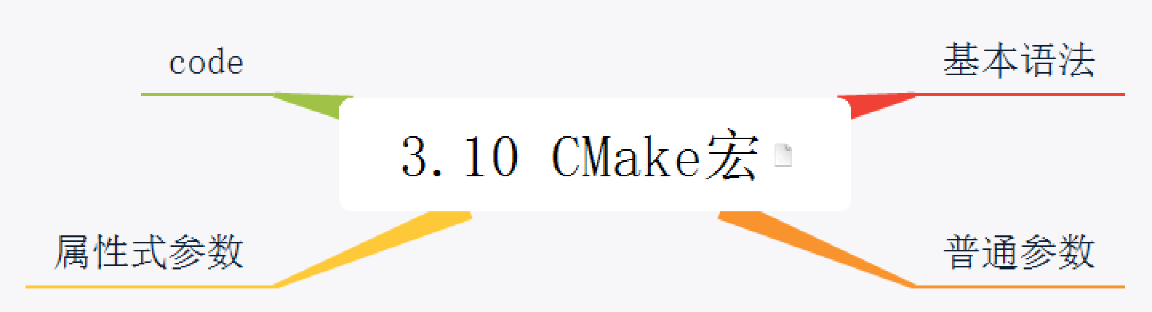
if(var GREATER 100)

set(var 0)

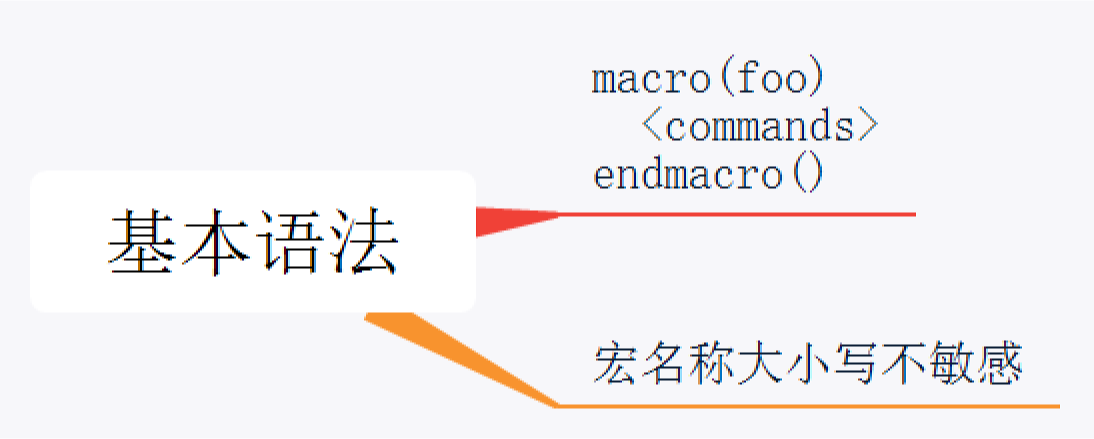
endif()

endwhile()

10. 3.10 CMake宏



10.1. 基本语法

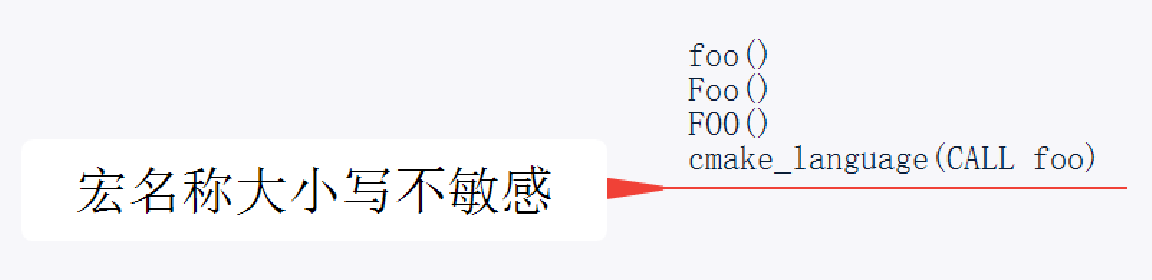


10.1.1. macro(foo)

 <commands>

endmacro()

10.1.2. 宏名称大小写不敏感



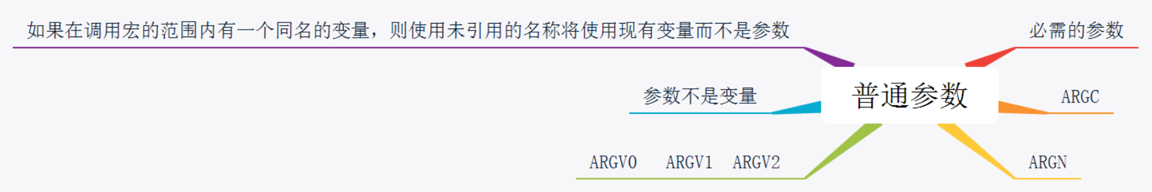
foo()

Foo()

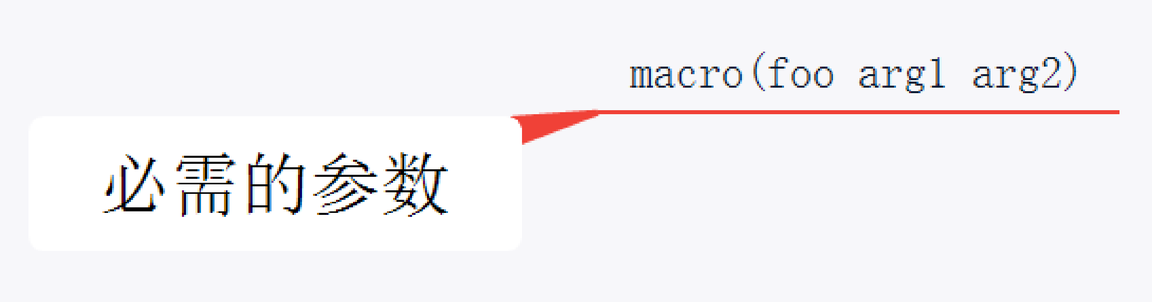
FOO()

cmake_language(CALL foo)

10.2. 普通参数


普通参数
如果在调用宏的范围内有一个同名的变量，则使用未引用的名称将使用现有变量而不是参数
必需的参数
参数不是变量
ARGC
ARGV0 ARGV1 ARGV2
ARGN

10.2.1. 必需的参数



macro(foo arg1 arg2)

10.2.2. ARGC

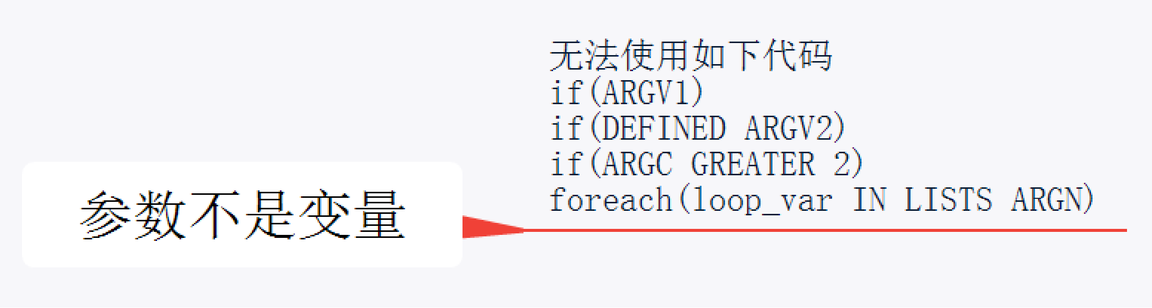
参数个数

10.2.3. ARGN

参数数组

10.2.4. ARGV0 ARGV1 ARGV2

10.2.5. 参数不是变量



无法使用如下代码

if(ARGV1)

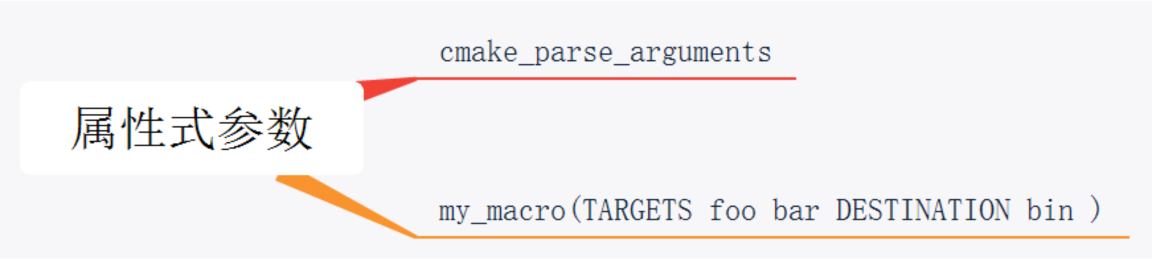
if(DEFINED ARGV2)

if(ARGC GREATER 2)

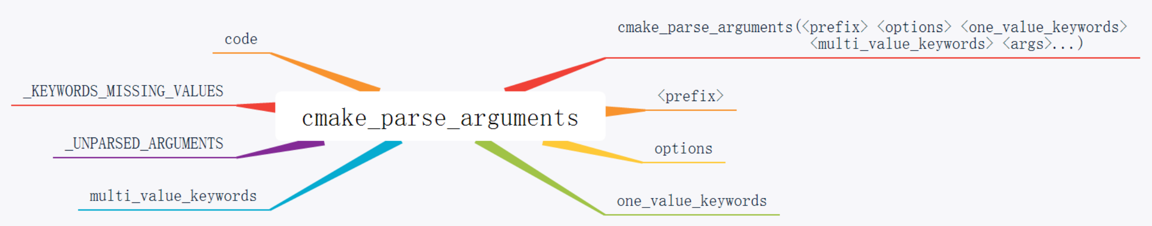
foreach(loop_var IN LISTS ARGN)

10.2.6. 如果在调用宏的范围内有一个同名的变量，则使用未引用的名称将使用现有变量而不是参数

10.3. 属性式参数

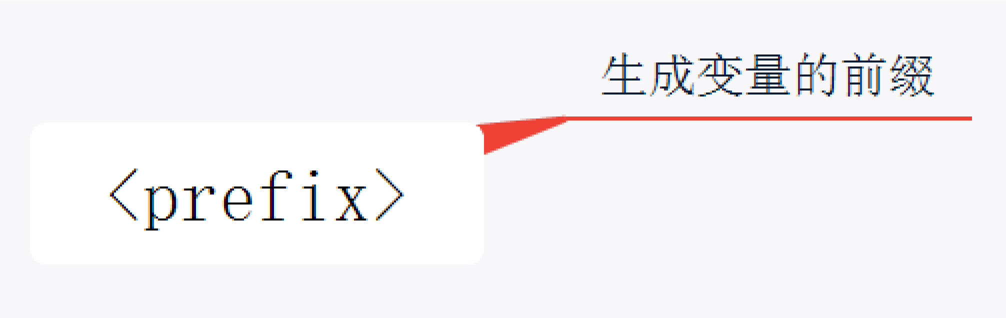


10.3.1. cmake_parse_arguments



cmake_parse_arguments(<prefix> <options> <one_value_keywords>
<multi_value_keywords> <args>...)

<prefix>

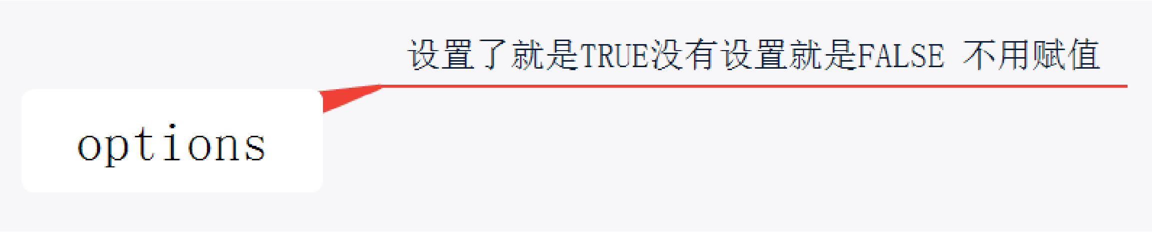


生成变量的前缀

```
<prefix>
```

生成变量的前缀

options

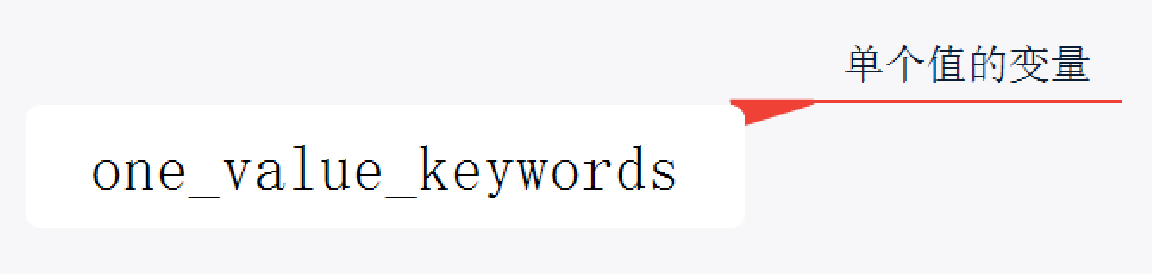


设置了就是TRUE没有设置就是FALSE 不用赋值

```
options
```

设置了就是TRUE没有设置就是FALSE 不用赋值

one_value_keywords

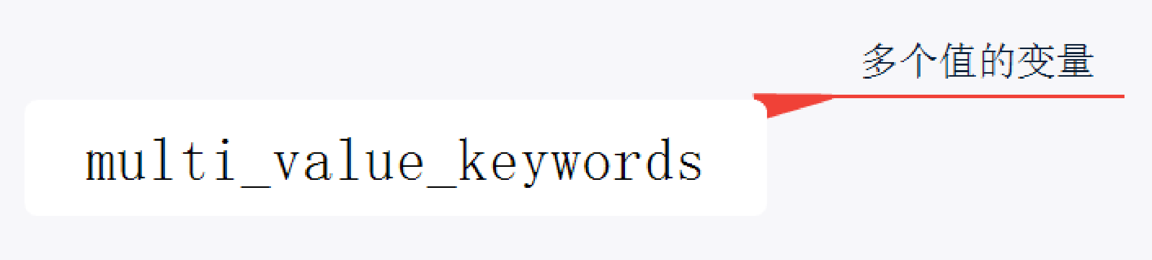


单个值的变量

```
one_value_keywords
```

单个值的变量

multi_value_keywords

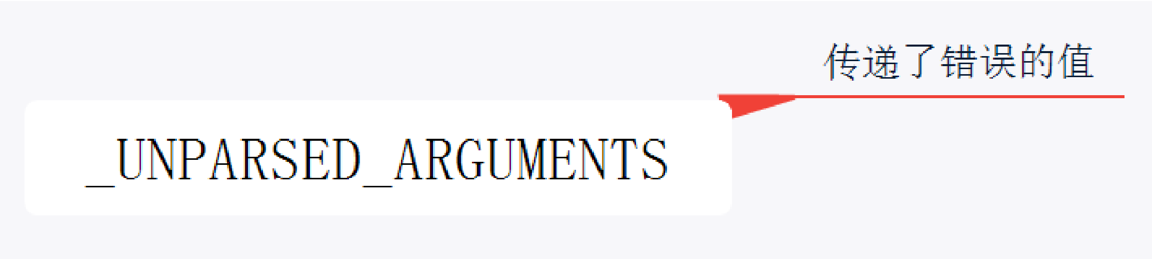


多个值的变量

```
multi_value_keywords
```

多个值的变量

_UNPARSED_ARGUMENTS

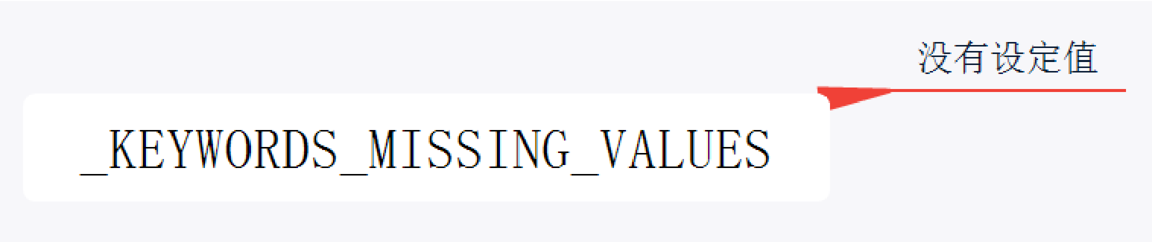


传递了错误的值

```
_UNPARSED_ARGUMENTS
```

传递了错误的值

_KEYWORDS_MISSING_VALUES

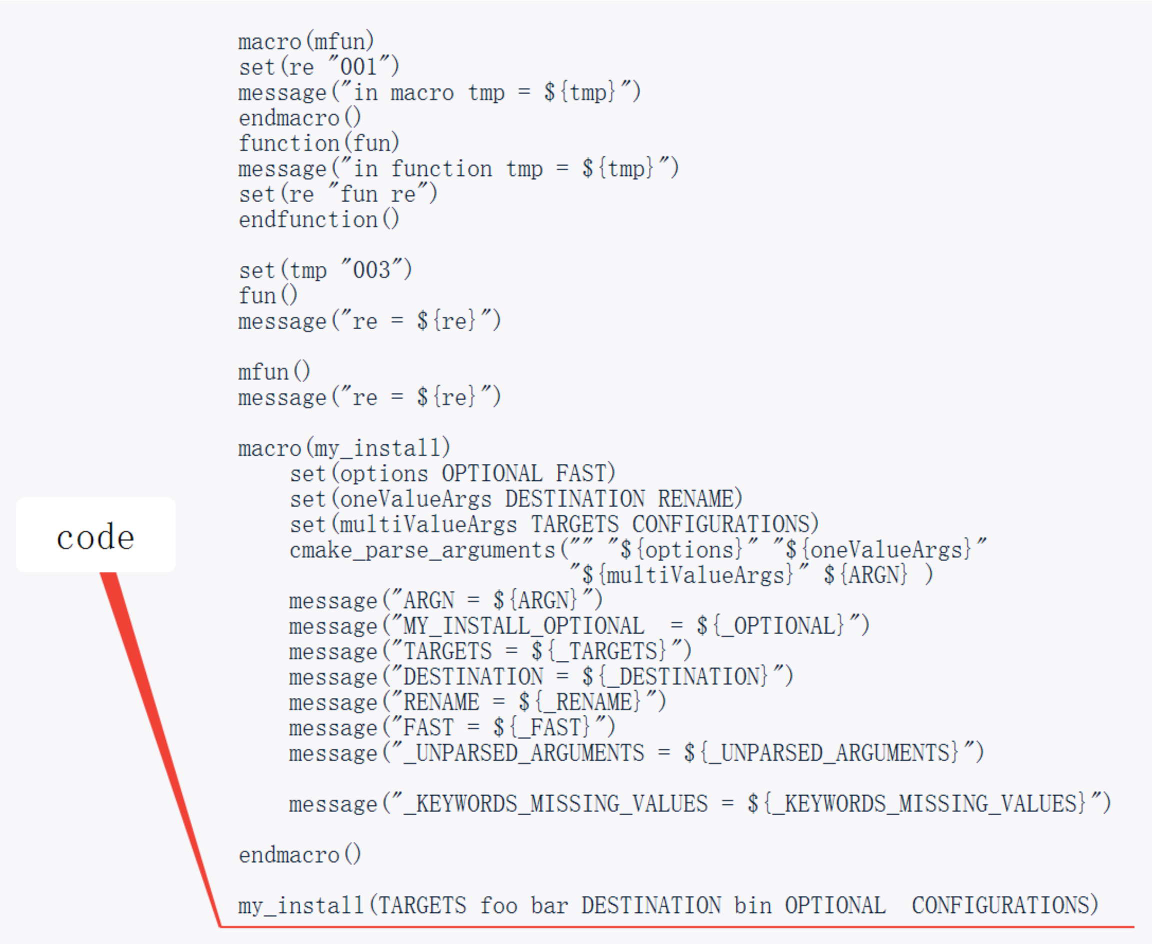


没有设定值

```
_KEYWORDS_MISSING_VALUES
```

没有设定值

code



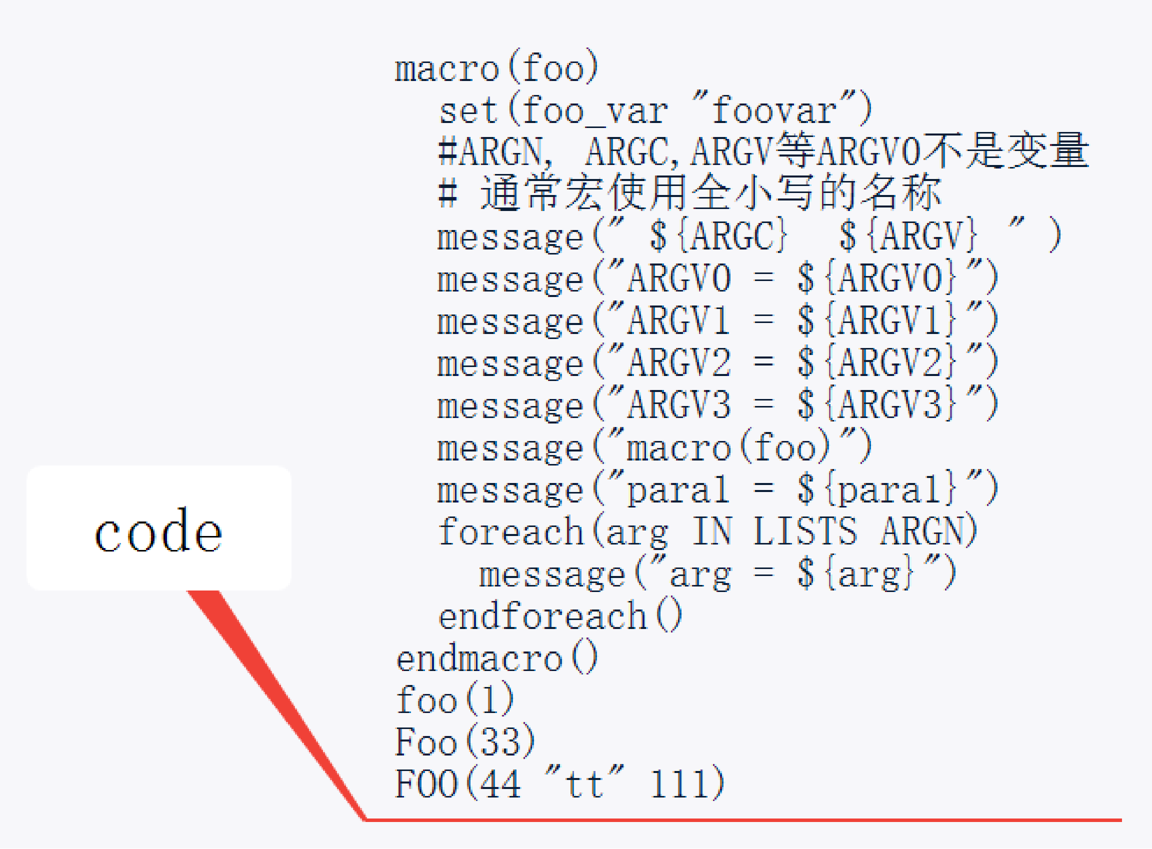
```
macro(mfun)
set(re "001")
message("in macro tmp = ${tmp}")
endmacro()
function(fun)
message("in function tmp = ${tmp}")
set(re "fun re")
endfunction()

set(tmp "003")
fun()
message("re = ${re}")

mfun()
message("re = ${re}")

macro(my_install)
    set(options OPTIONAL FAST)
    set(oneValueArgs DESTINATION RENAME)
    set(multiValueArgs TARGETS CONFIGURATIONS)
    cmake_parse_arguments("" "${options}" "${oneValueArgs}"
                          "${multiValueArgs}" ${ARGN} )
    message("ARGN = ${ARGN}")
    message("MY_INSTALL_OPTIONAL  = ${_OPTIONAL}")
    message("TARGETS = ${_TARGETS}")
    message("DESTINATION = ${_DESTINATION}")
    message("RENAME = ${_RENAME}")
    message("FAST = ${_FAST}")
    message("_UNPARSED_ARGUMENTS = ${_UNPARSED_ARGUMENTS}")

    message("_KEYWORDS_MISSING_VALUES = ${_KEYWORDS_MISSING_VALUES}")

endmacro()

my_install(TARGETS foo bar DESTINATION bin OPTIONAL  CONFIGURATIONS)
```

```
macro(mfun)
set(re "001")
message("in macro tmp = ${tmp}")
endmacro()
function(fun)
message("in function tmp = ${tmp}")
set(re "fun re")
endfunction()

set(tmp "003")
fun()
message("re = ${re}")
```

```
mfun()
message("re = ${re}")

macro(my_install)
  set(options OPTIONAL FAST)
  set(oneValueArgs DESTINATION RENAME)
  set(multiValueArgs TARGETS CONFIGURATIONS)
  cmake_parse_arguments("" "${options}" "${oneValueArgs}"
                        "${multiValueArgs}" ${ARGN} )
  message("ARGN = ${ARGN}")
  message("MY_INSTALL_OPTIONAL  = ${_OPTIONAL}")
  message("TARGETS = ${_TARGETS}")
  message("DESTINATION = ${_DESTINATION}")
  message("RENAME = ${_RENAME}")
  message("FAST = ${_FAST}")
  message("_UNPARSED_ARGUMENTS = ${_UNPARSED_ARGUMENTS}")

  message("_KEYWORDS_MISSING_VALUES =
${_KEYWORDS_MISSING_VALUES}")

endmacro()

my_install(TARGETS foo bar DESTINATION bin OPTIONAL  CONFIGURATIONS)
```

10.3.2. my_macro(TARGETS foo bar DESTINATION bin)

10.4. code



```
macro(foo)
  set(foo_var "foovar")
  #ARGN, ARGC,ARGV等ARGV0不是变量
  # 通常宏使用全小写的名称
  message(" ${ARGC}  ${ARGV}  " )
  message("ARGV0 = ${ARGV0}")
  message("ARGV1 = ${ARGV1}")
  message("ARGV2 = ${ARGV2}")
  message("ARGV3 = ${ARGV3}")
  message("macro(foo)")
  message("para1 = ${para1}")
  foreach(arg IN LISTS ARGN)
    message("arg = ${arg}")
  endforeach()
endmacro()
foo(1)
Foo(33)
FOO(44 "tt" 111)
```

10.4.1. macro(foo)

```
 set(foo_var "foovar")
 #ARGN, ARGC,ARGV等ARGV0不是变量
 # 通常宏使用全小写的名称
 message(" ${ARGC}  ${ARGV} " )
 message("ARGV0 = ${ARGV0}")
 message("ARGV1 = ${ARGV1}")
 message("ARGV2 = ${ARGV2}")
 message("ARGV3 = ${ARGV3}")
 message("macro(foo)")
 message("para1 = ${para1}")
 foreach(arg IN LISTS ARGN)
   message("arg = ${arg}")
 endforeach()
endmacro()
```

foo(1)

Foo(33)

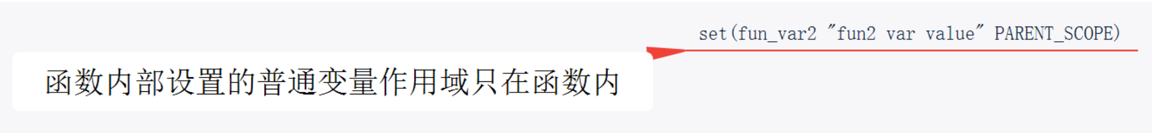
FOO(44 "tt" 111)

11. 3.11 CMake函数

code
函数的参数是变量
3. 11 CMake函数
函数可以用return返回
函数内部设置的普通变量作用域只在函数内

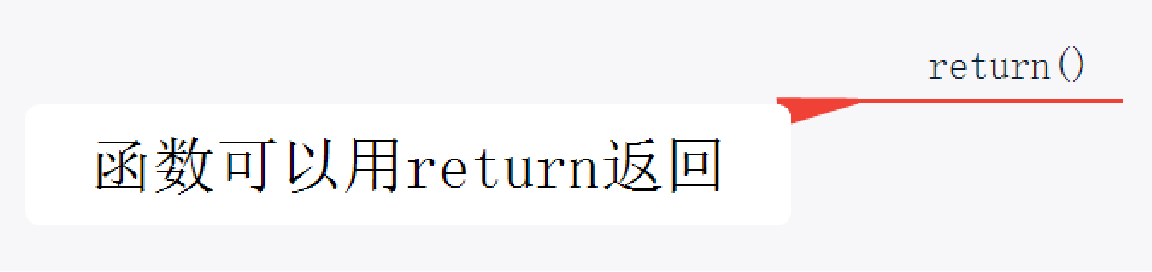
11.1. 函数的参数是变量

11.2. 函数内部设置的普通变量作用域只在函数内

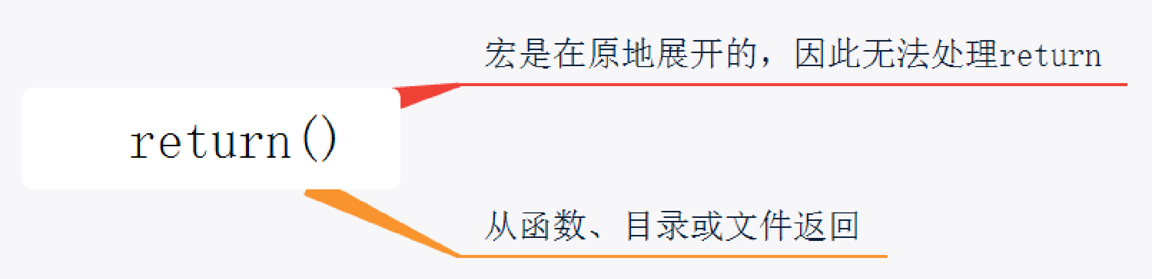

set(fun_var2 "fun2 var value" PARENT_SCOPE)
函数内部设置的普通变量作用域只在函数内

11.2.1. set(fun_var2 "fun2 var value" PARENT_SCOPE)

11.3. 函数可以用return返回



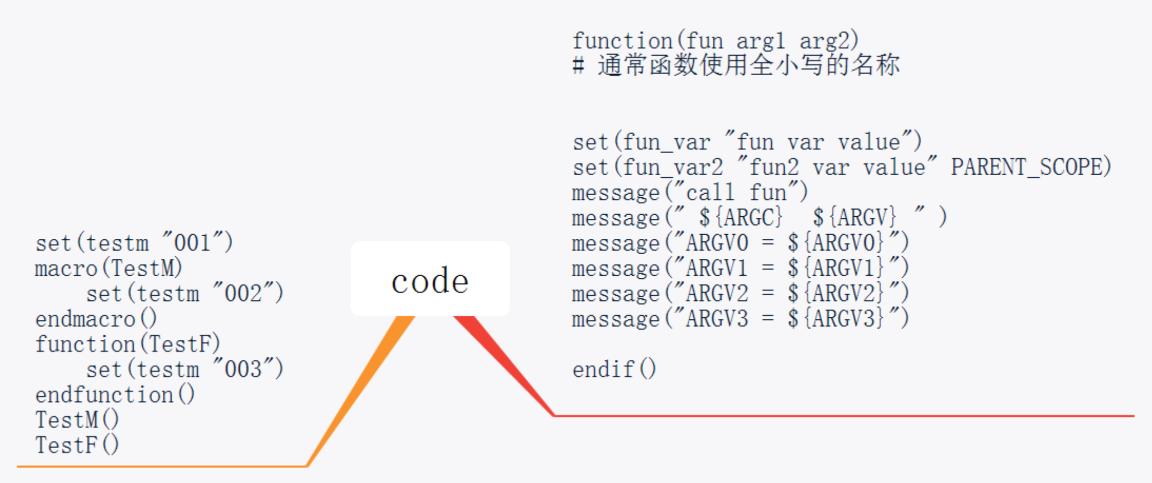
11.3.1. return()



宏是在原地展开的，因此无法处理**return**

从函数、目录或文件返回

11.4. code



```
set(testm "001")
macro(TestM)
    set(testm "002")
endmacro()
function(TestF)
    set(testm "003")
endfunction()
TestM()
TestF()
```

```
function(fun arg1 arg2)
# 通常函数使用全小写的名称


set(fun_var "fun var value")
set(fun_var2 "fun2 var value" PARENT_SCOPE)
message("call fun")
message(" ${ARGC}  ${ARGV} " )
message("ARGV0 = ${ARGV0}")
message("ARGV1 = ${ARGV1}")
message("ARGV2 = ${ARGV2}")
message("ARGV3 = ${ARGV3}")

endif()
```

11.4.1. function(fun arg1 arg2)

# 通常函数使用全小写的名称

set(fun_var "fun var value")

set(fun_var2 "fun2 var value" PARENT_SCOPE)

message("call fun")

message(" ${ARGC} ${ARGV} ")

message("ARGV0 = ${ARGV0}")

message("ARGV1 = ${ARGV1}")

message("ARGV2 = ${ARGV2}")

message("ARGV3 = ${ARGV3}")

endif()

11.4.2. set(testm "001")

macro(TestM)

```
   set(testm "002")
endmacro()
function(TestF)
   set(testm "003")
endfunction()
TestM()
TestF()
```