

SciTools' Recommended Checks

This collection of standards identifies the violations we feel are the greatest hindrance to code safety, readability, best practice and maintainability.

The majority of these checks appear in one form or another in published best practices and generally accepted coding standards.

You can use these checks to get an idea of how cluttered or brilliant the code base is. You might use them as a basis for developing your own standards. Or you can ignore this collection completely and test your code against a published coding standard or select your own checks from the "All Checks" library.

If you can't find the checks you want here, we would be happy to help you develop checks to match your standards. Just send us an email at support@scitools.com.

Checks

Check ID	Check Name	Supported	Category	Severity
CPP_CT_BUGPRONE_A SSERT_SIDE_EFFECT	Assert Side Effect	Yes		High
CPP_CT_BUGPRONE_B RANCH_CLONE	Branch Clone	Yes		High
CPP_CT_BUGPRONE_C OPY_CONSTRUCTOR_I NIT	Copy Constructor Init	Yes		High
CPP_CT_BUGPRONE_I NFINITE_LOOP	Infinte Loop	Yes		High
CPP_CT_BUGPRONE_ MACRO_REPEATED_SI DE_EFFECTS	Macro Side Effects	Yes		High
CPP_CT_BUGPRONE_N OT_NULL_TERMINATE D_RESULT	Missing Null Terminator	Yes		High
CPP_CT_BUGPRONE_R EDUNDANT_BRANCH_ CONDITION	Redundant Condition	Yes		High
CPP_CT_READABILITY_ DELETE_NULL_POINTE R	Delete Null Pointer	Yes		High
CPP_CT_READABILITY_ REDUNDANT_CASTING	Redundant Cast	Yes		High
CPP_SA_DANGLING_P OINTERS	Dangling Pointer	Yes		High
CPP_SA_DIV_ZERO	Division by Zero	Yes		High

Check ID	Check Name	Supported	Category	Severity
CPP_SA_LEAKS	Memory Leak	Yes		High
CPP_SA_NULL_PTR	Null Pointer Dereference	Yes		High
CPP_SA_STACK_ADDR ESS_ESCAPE	Stack Address Escape	Yes		High
CPP_SA_UNDEFINED_ CALL	Undefined Call	Yes		High
CPP_SA_UNINITIALIZE D	Uninitialized Value	Yes		High
CPP_SA_VIRTUAL_CAL LS	Virtual Call	Yes		High
CPP_WARN_ADDRESS_ OF_TEMPORARY	Do Not Take the Address of Temporary Objects	Yes		High
CPP_WARN_ARRAY_BO UNDS	Array Bounds	Yes		High
CPP_WARN_AVAILABI TY	Availability Attribute	Yes		High
CPP_WARN_BACKSLAS H_NEWLINE_ESCAPE	Backslash Newline Escape	Yes		High
CPP_WARN_BITFIELD_ CONSTANT_CONVERSI ON	Bitfield Constant Conversion	Yes		High
CPP_WARN_BITFIELD_ WIDTH	Do Not Exceed Bit- Field Width	Yes		High
CPP_WARN_BOOL_CO NVERSION	Bool Conversion	Yes		High
CPP_WARN_BUILTIN_ MACRO_REDEFINED	Builtin Macro Redefined	Yes		High
CPP_WARN_BUILTIN_ MEMCPY_CHK_SIZE	Builtin Malloc Check Size	Yes		High
CPP_WARN_CALL_TO_ PURE_VIRTUAL_FROM _CTOR_DTOR	Call to Pure Virtual from Constructor or Destructor	Yes		High
CPP_WARN_CAST_QU AL_UNRELATED	Cast Qualifiers Unrelated	Yes		High
CPP_WARN_CLASS_C ONVERSION	Class Conversion	Yes		High
CPP_WARN_COMPARE _DISTINCT_POINTER_T YPES	Compare Distinct Pointer Types	Yes		High
CPP_WARN_COMPOUN D	Compound Token Split	Yes		High

Check ID	Check Name	Supported	Category	Severity
D_TOKEN_SPLIT_BY_M ACRO	by Macro			
CPP_WARN_CONDITIONAL_TYPE_MISMATCH	Conditional Type Mismatch	Yes		High
CPP_WARN_CONSTANT_CONVERSION	Constant Conversion	Yes		High
CPP_WARN_CONSTANT_LOGICAL_OPERAND	Constant Logical Operand	Yes		High
CPP_WARN_CPP11_COMPATIBILITY	C++11 Compatibility	Yes		High
MPAT_DEPRECATED_WRITABLE_STRINGS	Deprecated Writable Strings			
CPP_WARN_DANGLING_POINTERS	Dangling Pointers	Yes		High
CPP_WARN_DANGLING_FIELD	Dangling Field	Yes		High
CPP_WARN_DANGLING_POINTERS_GSL	Dangling Pointers Found by Guidelines Support Library	Yes		High
CPP_WARN_DANGLING_INITIALIZER_LIST	Dangling Initializer List	Yes		High
CPP_WARN_DEFAULTED_FUNCTION_DELETED	Defaulted Function Deleted	Yes		High
CPP_WARN_DELEGATING_CONSTRUCTOR_CYCLES	Delegating Constructor Cycles	Yes		High
CPP_WARN_DELETE_ABSTRACT_NON_VIRTUAL_DESTRUCTOR	Delete Abstract Non-Virtual Destructor	Yes		High
CPP_WARN_DELETE_INCOMPLETE	Delete Incomplete	Yes		High
CPP_WARN_DEPRECATED_BUILTINS	Deprecated Builtins	Yes		High
CPP_WARN_DEPRECATED_DECLARATIONS	Deprecated Declarations	Yes		High
CPP_WARN_DEPRECATED_INCREMENT_BOOL	Deprecated Increment Bool	Yes		High
CPP_WARN_DEPRECATED_NON_PROTOTYPE	Deprecated Non-Prototype	Yes		High
CPP_WARN_DEPRECATED_REGISTER	Deprecated Register	Yes		High
CPP_WARN_DEPRECATED_VOLATILE	Deprecated Volatile	Yes		High
CPP_WARN_DIVISION_BY_ZERO	Division by Zero	Yes		High

Check ID	Check Name	Supported	Category	Severity
BY_ZERO				
CPP_WARN_DYNAMIC_	Dynamic Class Memory Access	Yes		High
CLASS_MEMACCESS				
CPP_WARN_ENUM_CO	Enum Compare	Yes		High
MPARE				
CPP_WARN_ENUM_CO	Enum Compare Switch	Yes		High
MPARE_SWITCH				
CPP_WARN_EXCEPTIO	Exceptions	Yes		High
NS				
CPP_WARN_EXTERN_C	Extern C Compatibility	Yes		High
_COMPAT				
CPP_WARN_EXTERN_I	Extern Initializer	Yes		High
NITIALIZER				
CPP_WARN_EXTRA_Q	Extra Qualification	Yes		High
UALIFICATION				
CPP_WARN_FIXED_POI	Fixed Point Overflow	Yes		High
NT_OVERFLOW				
CPP_WARN_FLAG_ENU	Flag Enum	Yes		High
M				
CPP_WARN_FORMAT	Format String	Yes		High
CPP_WARN_FORMAT_E	Format Extra Args	Yes		High
XTRA_ARGS				
CPP_WARN_FORMAT_I	Format Insufficient	Yes		High
NSUFFICIENT_ARGS	Args			
CPP_WARN_FORMAT_I	Format Invalid Specifier	Yes		High
NVALID_SPECIFIER				
CPP_WARN_FORMAT_	Format Security	Yes		High
SECURITY				
CPP_WARN_FORMAT_	Format Zero Length	Yes		High
ZERO_LENGTH				
CPP_WARN_FORTIFY_	Fortify Source	Yes		High
SOURCE				
CPP_WARN_FREE_NO	Free Non-Heap Object	Yes		High
NHEAP_OBJECT				
CPP_WARN_HEADER_	Header Guard	Yes		High
GUARD				
CPP_WARN_IGNORED_	Ignored Attributes	Yes		High
ATTRIBUTES				
CPP_WARN_IGNORED_	Ignored Reference	Yes		High
REFERENCE_QUALIFIE	Qualifiers			
RS				

Check ID	Check Name	Supported	Category	Severity
CPP_WARN_IMPLICIT_CONST_INT_FLOAT	Implicit Const Int Float Conversion	Yes		High
CPP_WARN_IMPLICIT_CONVERSION_FLOATING_POINT_TO_BOOL	Implicit Conversion Floating Point to Bool	Yes		High
CPP_WARN_IMPLICIT_EXCEPTION_SPEC_MISMATCH	Implicit Exception Spec Mismatch	Yes		High
CPP_WARN_IMPLICIT_FIXED_POINT_CONVERSION	Implicit Fixed Point Conversion	Yes		High
CPP_WARN_IMPLICITLY_UNSIGNED_LITERAL	Implicitly Unsigned Literal	Yes		High
CPP_WARN_INACCESSIBLE_BASE	Inaccessible Base	Yes		High
CPP_WARN_INCOMPATIBLE_EXCEPTION_SPEC_C	Incompatible Exception Spec C	Yes		High
CPP_WARN_INCOMPATIBLE_LIBRARY_REDECLARATION	Incompatible Library Redclaration	Yes		High
CPP_WARN_INCOMPATIBLE_POINTER_TYPES	Incompatible Pointer Types	Yes		High
CPP_WARN_INCOMPATIBLE_POINTER_TYPES_DISCARDS_QUALIFIERS	Incompatible Pointer Types Discards Qualifiers	Yes		High
CPP_WARN_INCONSISTENT_MISSING_OVERRIDE	Inconsistent Missing Override	Yes		High
CPP_WARN_INCREMENT_BOOL	Increment Bool	Yes		High
CPP_WARN_INJECTED_CLASS_NAME	Injected Class Name	Yes		High
CPP_WARN_INLINE_NAMESPACE_REOPENED_NON_INLINE	Inline Namespace Reopened Non-Inline	Yes		High
CPP_WARN_INSTANTIATION_AFTER_SPECIALIZATION	Instantiation After Specialization	Yes		High
CPP_WARN_INT_TO_POINTER_CAST	Int to Pointer Cast	Yes		High

Check ID	Check Name	Supported	Category	Severity
OINTER_CAST				
CPP_WARN_INT_TO_V	Int to Void Pointer Cast	Yes		High
OID_POINTER_CAST				
CPP_WARN_INTEGER_OVERFLOW	Integer Overflow	Yes		High
CPP_WARN_INVALID_NO_BUILTIN_NAMES	Invalid No Builtin Names	Yes		High
CPP_WARN_INVALID_NORETURN_ATTRIBUTE	Invalid Noreturn Attribute	Yes		High
CPP_WARN_INVALID_OFFSETOF	Invalid Offsetof	Yes		High
CPP_WARN_INVALID_PREPROCESSOR_TOKEN	Invalid Preprocessor Token	Yes		High
CPP_WARN_LARGE_BY_VALUE_COPY	Large by Value Copy	Yes		High
CPP_WARN_LITERAL_CONVERSION	Literal Conversion	Yes		High
CPP_WARN_LITERAL_RANGE	Literal Range	Yes		High
CPP_WARN_LOGICAL_NOT_PARENTHESES	Logical Not Parentheses	Yes		High
CPP_WARN_MACRO_REDEFINED	Macro Redefined	Yes		High
CPP_WARN_MAIN_RETURN_TYPE	Main Return Type	Yes		High
CPP_WARN_MANY_BRACES_AROUND_SCALAR_INIT	Many Braces Around Scalar Init	Yes		High
CPP_WARN_MAX_UNSIGNED_ZERO	Max Unsigned Zero	Yes		High
CPP_WARN_MEMSET_TRANSPOSED_ARGS	Memset Transposed Args	Yes		High
CPP_WARN_MEMSIZE_COMPARISON	Memsize Comparison	Yes		High
CPP_WARN_MISMATCHED_NEW_DELETE	Mismatched New Delete	Yes		High
CPP_WARN_MISSING_DECLARATIONS	Missing Declarations	Yes		High
CPP_WARN_MISSING_EXCEPTION_SPEC	Missing Exception Spec	Yes		High
CPP_WARN_MULTICHAR	Multiple Characters in	Yes		High

Check ID	Check Name	Supported	Category	Severity
R	Character Literal			
CPP_WARN_MULTIPLE_MOVE_VBASE	Multiple Move Virtual Base	Yes		High
CPP_WARN_NEW_RETURNS_NULL	New Returns Null	Yes		High
CPP_WARN_NODEREF	Noderef Attirbute	Yes		High
CPP_WARN_NON_C_TYPEDDEF_FOR_LINKAGE	Non-C Typedef for Linkage	Yes		High
CPP_WARN_NON_LITERAL_NULL_CONVERSION	Non-Literal Null Conversion	Yes		High
CPP_WARN_NON_POD_VARARGS	Non-POD (Plain Old Data) Variadic Arguments	Yes		High
CPP_WARN_NON_POWER_OF_TWO_ALIGNMENT	Non-Power of Two Alignment	Yes		High
CPP_WARN_NONNULL	Null as an Argument	Yes		High
CPP_WARN_NONPORTABLE_INCLUDE_PATH	Non-Portable Include Path	Yes		High
CPP_WARN_NONTRIVIAL_MEMORY_ACCESS	Nontrivial Memory Access	Yes		High
CPP_WARN_NULL_ARITHMETIC	Null Arithmetic	Yes		High
CPP_WARN_NULL_CHARACTER	Null Character	Yes		High
CPP_WARN_NULL_CONVERSION	Null Conversion	Yes		High
CPP_WARN_NULL_DEREFERENCE	Null Dereference	Yes		High
CPP_WARN_ODR	One Definition Rule	Yes		High
CPP_WARN_ORDERED_COMPARE_FUNCTION_POINTERS	Ordered Compare Function Pointers	Yes		High
CPP_WARN_OUT_OF_SCOPE_FUNCTION	Out of Scope Function	Yes		High
CPP_WARN_OVERLOADED_SHIFT_OPERATOR_PARENTHESIS	Overloaded Shift Operator Parentheses	Yes		High
CPP_WARN_PARENTHESES_EQUALITY	Parentheses Equality	Yes		High

Check ID	Check Name	Supported	Category	Severity
CPP_WARN_POINTER_ARITH	Pointer Arithmetic	Yes		High
CPP_WARN_POINTER_BOOL_CONVERSION	Pointer Bool Conversion	Yes		High
CPP_WARN_POINTER_COMPARE	Pointer Compare	Yes		High
CPP_WARN_POINTER_INTEGER_COMPARE	Pointer Integer Compare	Yes		High
CPP_WARN_POINTER_SIGN	Pointer Sign	Yes		High
CPP_WARN_POINTER_TO_ENUM_CAST	Pointer to Enum Cast	Yes		High
CPP_WARN_POINTER_TO_INT_CAST	Pointer to Int Cast	Yes		High
CPP_WARN_POINTER_TYPE_MISMATCH	Pointer Type Mismatch	Yes		High
CPP_WARN_POTENTIALLY_EVALUATED_EXPR	Potentially Evaluated Expression	Yes		High
CPP_WARN_PRAGMA_ONCE_OUTSIDE_HEADER	Pragma once Outside Header	Yes		High
CPP_WARN_QUALIFIED_VOID_RETURN_TYPE	Qualified Void Return Type	Yes		High
CPP_WARN_REDECLARED_CLASS_MEMBER	Re-Declared Class Member	Yes		High
CPP_WARN_REDUNDANT_CONSTEVAL_IF	Redundant Consteval If	Yes		High
CPP_WARN_REINTERPRET_BASE_CLASS	Reinterpret Base Class	Yes		High
CPP_WARN_REORDER_INIT_LIST	Reorder Initializer List	Yes		High
CPP_WARN_RETURN_STACK_ADDRESS	Return Stack Address	Yes		High
CPP_WARN_RETURN_TYPE	Return Type	Yes		High
CPP_WARN_RETURN_TYPE_C_LINKAGE	Return Type C Linkage	Yes		High
CPP_WARN_SELF_ASSIGN_FIELD	Self Assign Field	Yes		High
CPP_WARN_SHIFT_COUNT_NEGATIVE	Shift Count Negative	Yes		High

Check ID	Check Name	Supported	Category	Severity
CPP_WARN_SHIFT_CO UNT_OVERFLOW	Shift Count Overflow	Yes		High
CPP_WARN_SHIFT_NE GATIVE_VALUE	Shift Negative Value	Yes		High
CPP_WARN_SHIFT_OP _PARENTHESES	Shift Operator Parentheses	Yes		High
CPP_WARN_SHIFT_OV ERFLOW	Shift Overflow	Yes		High
CPP_WARN_SINGLE_BIT T_BITFIELD_CONSTAN T_CONVERSION	Single Bit Bitfield Constant Conversion	Yes		High
CPP_WARN_SIZEOF_A RRAY_ARGUMENT	Sizeof Array Argument	Yes		High
CPP_WARN_SIZEOF_A RRAY_DECAY	Sizeof Array Decay	Yes		High
CPP_WARN_SIZEOF_A RRAY_DIV	Sizeof Array Division	Yes		High
CPP_WARN_SIZEOF_P OINTER_DIV	Sizeof Pointer Division	Yes		High
CPP_WARN_SIZEOF_P OINTER_MEMACCESS	Sizeof Pointer Memory Access	Yes		High
CPP_WARN_STATIC_IN LINE_EXPLICIT_INSTA NTIATION	Static Inline Explicit Instantiation	Yes		High
CPP_WARN_STATIC_L OCAL_IN_INLINE	Static Local in Inline	Yes		High
CPP_WARN_STATIC_SE LF_INIT	Static Self Init	Yes		High
CPP_WARN_STRING_C OMPARE	String Compare	Yes		High
CPP_WARN_STRING_P LUS_CHAR	String Plus Char	Yes		High
CPP_WARN_STRING_P LUS_INT	String Plus Int	Yes		High
CPP_WARN_STRLCPY_ STRLCAT_SIZE	Strlcpy Strlcat Size	Yes		High
CPP_WARN_STRNCAT_ SIZE	Strncat Size	Yes		High
CPP_WARN_SWITCH	Switch Statements	Yes		High
CPP_WARN_SWITCH_B OOL	Switch Bool	Yes		High

Check ID	Check Name	Supported	Category	Severity
CPP_WARN_TAUTOLO GICAL_CONSTANT_CO MPARE	Tautological Constant Compare	Yes		High
CPP_WARN_TAUTOLO GICAL_CONSTANT_OU T_OF_RANGE_COMPAR E	Tautological Constant Out of Range Compare	Yes		High
CPP_WARN_TAUTOLO GICAL_POINTER_COM PARE	Tautological Pointer Compare	Yes		High
CPP_WARN_TAUTOLO GICAL_UNDEFINED_C OMPARE	Tautological Undefined Compare	Yes		High
CPP_WARN_TENTATIVE _DEFINITION_INCOMP LETE_TYPE	Tentative Definition Incomplete Type	Yes		High
CPP_WARN_TRIGRAPH S	Trigraphs	Yes		High
CPP_WARN_TYPE_SAF ETY	Type Safety	Yes		High
CPP_WARN_TPEDEF_ REDEFINITION	Typedef Redefinition	Yes		High
CPP_WARN_TYPENAM E_MISSING	Typename Missing	Yes		High
CPP_WARN_UNDEFINE D_BOOL_CONVERSION	Undefined Bool Conversion	Yes		High
CPP_WARN_UNDEFINE D_INLINE	Undefined Inline	Yes		High
CPP_WARN_UNDEFINE D_INTERNAL	Undefined Internal	Yes		High
CPP_WARN_UNDEFINE D_VAR_TEMPLATE	Undefined Var Template	Yes		High
CPP_WARN_UNEVALUA TED_EXPRESSION	Unevaluated Expression	Yes		High
CPP_WARN_UNGUARD ED_AVAILABILITY_NEW	Unguarded Availability New	Yes		High
CPP_WARN_UNICODE	Unicode Escape Sequences	Yes		High
CPP_WARN_UNICODE_ HOMOGLYPH	Unicode Homoglyph	Yes		High
CPP_WARN_UNICODE_ WHITESPACE	Unicode Whitespace	Yes		High

Check ID	Check Name	Supported	Category	Severity
CPP_WARN_UNICODE_ZERO_WIDTH	Unicode Zero Width	Yes		High
CPP_WARN_UNKNOWN_N_DIRECTIVES	Unknown Directives	Yes		High
CPP_WARN_UNKNOWN_N_ESCAPE_SEQUENCE	Unknown Escape Sequence	Yes		High
CPP_WARN_UNQUALIFIED_STD_CAST_CALL	Unqualified Standard Cast Call	Yes		High
CPP_WARN_UNSEQUENCED	Unsequenced Modifications	Yes		High
CPP_WARN_UNUPPORTED_RTED_AVAILABILITY_GUARD	Unsupported Availability Guard	Yes		High
CPP_WARN_UNUPPORTED_RTED_FRIEND	Unsupported Friend	Yes		High
CPP_WARN_UNUSED_COMPARISON	Unused Comparison	Yes		High
CPP_WARN_UNUSED_RESULT	Unused Result	Yes		High
CPP_WARN_UNUSED_VALUE	Unused Value	Yes		High
CPP_WARN_UNUSED_VOLATILE_LVALUE	Unused Volatile Lvalue	Yes		High
CPP_WARN_USER_DEFINED_LITERAL	User Defined Literals	Yes		High
CPP_WARN_VARARGS	Variadic Arguments	Yes		High
CPP_WARN_VEXING_PARSE	Vexing Parse Occurrences	Yes		High
CPP_WARN_VISIBILITY	Visibility of Declarations	Yes		High
CPP_WARN_VOID_POINTER_TO_ENUM_CAST	Void Pointer to Enum Cast	Yes		High
CPP_WARN_VOID_POINTER_TO_INT_CAST	Void Pointer to Int Cast	Yes		High
CPP_WARN_VOID_POINTER_DEREFERENCE	Void Pointer Dereference	Yes		High
CPP_WARN_WRITABLE_STRINGS	Writable Strings	Yes		High
CPP_WARN_XOR_USED_AS_POWER	Xor Used as Power	Yes		High
STI_FRIENDS	Unnecessary Friends	Yes	Recommended	High

Check ID	Check Name	Supported	Category	Severity
STI_SPECIAL_MEMBER_FUNCTIONS	Special Member Functions	Yes	Recommended	High
STI_UNUSED	Unused Entities	Yes	Recommended	High