

multiloc

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Chapter 5

Namespace Documentation

5.1 proto2 Namespace Reference

5.2 testing Namespace Reference

Namespaces

- [internal](#)
- [internal2](#)

Classes

- class [EmptyTestEventListener](#)
- class [Environment](#)
- class [Message](#)
- struct [PrintToStringParamName](#)
- class [ScopedTrace](#)
- class [Test](#)
- class [TestEventListener](#)
- class [TestEventListeners](#)
- class [TestInfo](#)
- struct [TestParamInfo](#)
- class [TestProperty](#)
- class [TestResult](#)
- class [TestSuite](#)
- class [TestWithParam](#)
- class [UnitTest](#)
- class [WithParamInterface](#)

Typedefs

- typedef [internal::TimeInMillis](#) [TimeInMillis](#)

Functions

- [GTEST_DECLARE_string_](#) (death_test_style)
- `std::ostream & operator<< (std::ostream &os, const Message &sb)`
- `template<typename T, typename IncrementT >
internal::ParamGenerator< T > Range (T start, T end, IncrementT step)`
- `template<typename T >
internal::ParamGenerator< T > Range (T start, T end)`
- `template<typename ForwardIterator >
internal::ParamGenerator< typename ::testing::internal::IteratorTraits< ForwardIterator >::value_type >
ValuesIn (ForwardIterator begin, ForwardIterator end)`
- `template<typename T, size_t N>
internal::ParamGenerator< T > ValuesIn (const T(&array)[N])`
- `template<class Container >
internal::ParamGenerator< typename Container::value_type > ValuesIn (const Container &container)`
- `template<typename... T>
internal::ValueArray< T... > Values (T... v)`
- `internal::ParamGenerator< bool > Bool ()`
- `template<typename... Generator>
internal::CartesianProductHolder< Generator... > Combine (const Generator &... g)`
- `template<typename T >
::std::string PrintToString (const T &value)`
- `Environment * AddGlobalTestEnvironment (Environment *env)`
- `GTEST_API_ void InitGoogleTest (int *argc, char **argv)`
- `GTEST_API_ void InitGoogleTest (int *argc, wchar_t **argv)`
- `GTEST_API_ void InitGoogleTest ()`
- `GTEST_API_ AssertionResult IsSubstring (const char *needle_expr, const char *haystack_expr, const char *needle, const char *haystack)`
- `GTEST_API_ AssertionResult IsSubstring (const char *needle_expr, const char *haystack_expr, const wchar_t *needle, const wchar_t *haystack)`
- `GTEST_API_ AssertionResult IsNotSubstring (const char *needle_expr, const char *haystack_expr, const char *needle, const char *haystack)`
- `GTEST_API_ AssertionResult IsNotSubstring (const char *needle_expr, const char *haystack_expr, const wchar_t *needle, const wchar_t *haystack)`
- `GTEST_API_ AssertionResult IsSubstring (const char *needle_expr, const char *haystack_expr, const ↵ ::std::string &needle, const ::std::string &haystack)`
- `GTEST_API_ AssertionResult IsNotSubstring (const char *needle_expr, const char *haystack_expr, const ::std::string &needle, const ::std::string &haystack)`
- `GTEST_API_ AssertionResult FloatLE (const char *expr1, const char *expr2, float val1, float val2)`
- `GTEST_API_ AssertionResult DoubleLE (const char *expr1, const char *expr2, double val1, double val2)`
- `template<typename T1, typename T2 >
bool StaticAssertTypeEq ()`
- `GTEST_API_ std::string TempDir ()`
- `template<int &... ExplicitParameterBarrier, typename Factory >
TestInfo * RegisterTest (const char *test_suite_name, const char *test_name, const char *type_param, const char *value_param, const char *file, int line, Factory factory)`
- `template<typename Pred, typename T1 >
AssertionResult AssertPred1Helper (const char *pred_text, const char *e1, Pred pred, const T1 &v1)`
- `template<typename Pred, typename T1, typename T2 >
AssertionResult AssertPred2Helper (const char *pred_text, const char *e1, const char *e2, Pred pred, const T1 &v1, const T2 &v2)`
- `template<typename Pred, typename T1, typename T2, typename T3 >
AssertionResult AssertPred3Helper (const char *pred_text, const char *e1, const char *e2, const char *e3, Pred pred, const T1 &v1, const T2 &v2, const T3 &v3)`
- `template<typename Pred, typename T1, typename T2, typename T3, typename T4 >
AssertionResult AssertPred4Helper (const char *pred_text, const char *e1, const char *e2, const char *e3, const char *e4, Pred pred, const T1 &v1, const T2 &v2, const T3 &v3, const T4 &v4)`

- `template<typename Pred , typename T1 , typename T2 , typename T3 , typename T4 , typename T5 >`
`AssertionResult AssertPred5Helper (const char *pred_text, const char *e1, const char *e2, const char *e3,`
`const char *e4, const char *e5, Pred pred, const T1 &v1, const T2 &v2, const T3 &v3, const T4 &v4, const`
`T5 &v5)`

Variables

- class `GTEST_API_testing::ScopedTrace GTEST_ATTRIBUTE_UNUSED_`

5.2.1 Typedef Documentation

5.2.1.1 TimeInMillis

```
typedef internal::TimeInMillis testing::TimeInMillis
```

5.2.2 Function Documentation

5.2.2.1 AddGlobalTestEnvironment()

```
Environment* testing::AddGlobalTestEnvironment (
    Environment * env ) [inline]
```

5.2.2.2 AssertPred1Helper()

```
template<typename Pred , typename T1 >
AssertionResult testing::AssertPred1Helper (
    const char * pred_text,
    const char * e1,
    Pred pred,
    const T1 & v1 )
```

5.2.2.3 AssertPred2Helper()

```
template<typename Pred , typename T1 , typename T2 >
AssertionResult testing::AssertPred2Helper (
    const char * pred_text,
    const char * e1,
    const char * e2,
    Pred pred,
    const T1 & v1,
    const T2 & v2 )
```

5.2.2.4 AssertPred3Helper()

```
template<typename Pred , typename T1 , typename T2 , typename T3 >
AssertionResult testing::AssertPred3Helper (
    const char * pred_text,
    const char * e1,
    const char * e2,
    const char * e3,
    Pred pred,
    const T1 & v1,
    const T2 & v2,
    const T3 & v3 )
```

5.2.2.5 AssertPred4Helper()

```
template<typename Pred , typename T1 , typename T2 , typename T3 , typename T4 >
AssertionResult testing::AssertPred4Helper (
    const char * pred_text,
    const char * e1,
    const char * e2,
    const char * e3,
    const char * e4,
    Pred pred,
    const T1 & v1,
    const T2 & v2,
    const T3 & v3,
    const T4 & v4 )
```

5.2.2.6 AssertPred5Helper()

```
template<typename Pred , typename T1 , typename T2 , typename T3 , typename T4 , typename T5 >
AssertionResult testing::AssertPred5Helper (
    const char * pred_text,
    const char * e1,
    const char * e2,
    const char * e3,
    const char * e4,
    const char * e5,
    Pred pred,
    const T1 & v1,
    const T2 & v2,
    const T3 & v3,
    const T4 & v4,
    const T5 & v5 )
```

5.2.2.7 Bool()

```
internal::ParamGenerator<bool> testing::Bool ( ) [inline]
```


5.2.2.8 Combine()

```
template<typename... Generator>
internal::CartesianProductHolder<Generator...> testing::Combine (
    const Generator &... g )
```

5.2.2.9 DoubleLE()

```
GTEST_API_ AssertionResult testing::DoubleLE (
    const char * expr1,
    const char * expr2,
    double val1,
    double val2 )
```

5.2.2.10 FloatLE()

```
GTEST_API_ AssertionResult testing::FloatLE (
    const char * expr1,
    const char * expr2,
    float val1,
    float val2 )
```

5.2.2.11 GTEST_DECLARE_string_()

```
testing::GTEST_DECLARE_string_ (
    death_test_style )
```

5.2.2.12 InitGoogleTest() [1/3]

```
GTEST_API_ void testing::InitGoogleTest (
    int * argc,
    char ** argv )
```

5.2.2.13 InitGoogleTest() [2/3]

```
GTEST_API_ void testing::InitGoogleTest (
    int * argc,
    wchar_t ** argv )
```

5.2.2.14 InitGoogleTest() [3/3]

```
GTEST_API_ void testing::InitGoogleTest ( )
```

5.2.2.15 IsNotSubstring() [1/3]

```
GTEST_API_ AssertionResult testing::IsNotSubstring (
    const char * needle_expr,
    const char * haystack_expr,
    const char * needle,
    const char * haystack )
```

5.2.2.16 IsNotSubstring() [2/3]

```
GTEST_API_ AssertionResult testing::IsNotSubstring (
    const char * needle_expr,
    const char * haystack_expr,
    const wchar_t * needle,
    const wchar_t * haystack )
```

5.2.2.17 IsNotSubstring() [3/3]

```
GTEST_API_ AssertionResult testing::IsNotSubstring (
    const char * needle_expr,
    const char * haystack_expr,
    const ::std::string & needle,
    const ::std::string & haystack )
```

5.2.2.18 IsSubstring() [1/3]

```
GTEST_API_ AssertionResult testing::IsSubstring (
    const char * needle_expr,
    const char * haystack_expr,
    const char * needle,
    const char * haystack )
```

5.2.2.19 IsSubstring() [2/3]

```
GTEST_API_ AssertionResult testing::IsSubstring (
    const char * needle_expr,
    const char * haystack_expr,
    const wchar_t * needle,
    const wchar_t * haystack )
```

5.2.2.20 IsSubstring() [3/3]

```
GTEST_API_ AssertionResult testing::IsSubstring (
    const char * needle_expr,
    const char * haystack_expr,
    const ::std::string & needle,
    const ::std::string & haystack )
```

5.2.2.21 operator<<()

```
std::ostream& testing::operator<< (
    std::ostream & os,
    const Message & sb ) [inline]
```

5.2.2.22 PrintToString()

```
template<typename T >
::std::string testing::PrintToString (
    const T & value )
```

5.2.2.23 Range() [1/2]

```
template<typename T , typename IncrementT >
internal::ParamGenerator<T> testing::Range (
    T start,
    T end,
    IncrementT step )
```

5.2.2.24 Range() [2/2]

```
template<typename T >
internal::ParamGenerator<T> testing::Range (
    T start,
    T end )
```

5.2.2.25 RegisterTest()

```
template<int &... ExplicitParameterBarrier, typename Factory >
TestInfo* testing::RegisterTest (
    const char * test_suite_name,
    const char * test_name,
    const char * type_param,
    const char * value_param,
    const char * file,
    int line,
    Factory factory )
```

5.2.2.26 StaticAssertTypeEq()

```
template<typename T1 , typename T2 >
bool testing::StaticAssertTypeEq ( )
```

5.2.2.27 TempDir()

```
GTEST_API_ std::string testing::TempDir ( )
```

5.2.2.28 Values()

```
template<typename... T>
internal::ValueArray<T...> testing::Values (
    T... v )
```

5.2.2.29 ValuesIn() [1/3]

```
template<typename ForwardIterator >
internal::ParamGenerator< typename ::testing::internal::IteratorTraits<ForwardIterator>↵
::value_type> testing::ValuesIn (
    ForwardIterator begin,
    ForwardIterator end )
```

5.2.2.30 ValuesIn() [2/3]

```
template<typename T , size_t N>
internal::ParamGenerator<T> testing::ValuesIn (
    const T(&) array[N] )
```

5.2.2.31 ValuesIn() [3/3]

```
template<class Container >
internal::ParamGenerator< typename Container::value_type > testing::ValuesIn (
    const Container & container )
```

5.2.3 Variable Documentation

5.2.3.1 GTEST_ATTRIBUTE_UNUSED_

```
class GTEST_API_ testing::ScopedTrace testing::GTEST_ATTRIBUTE_UNUSED_
```

5.3 testing::internal Namespace Reference

Namespaces

- [edit_distance](#)
- [posix](#)

Classes

- struct [AddReference](#)
- struct [AddReference< T & >](#)
- class [AssertHelper](#)
- struct [bool_constant](#)
- class [CartesianProductGenerator](#)
- class [CartesianProductHolder](#)
- struct [CodeLocation](#)
- struct [CompileAssertTypesEqual](#)
- struct [CompileAssertTypesEqual< T, T >](#)
- struct [ConstCharPtr](#)
- struct [ConstRef](#)
- struct [ConstRef< T & >](#)
- struct [DoubleSequence](#)
- struct [DoubleSequence< false, IndexSequence< I... >, sizeofT >](#)
- struct [DoubleSequence< true, IndexSequence< I... >, sizeofT >](#)
- struct [ElemFromList](#)

- struct [ElemFromList< N, IndexSequence< I... >, T... >](#)
- struct [ElemFromListImpl](#)
- struct [ElemFromListImpl< T, I, I >](#)
- struct [EnableIf](#)
- struct [EnableIf< true >](#)
- class [EqHelper](#)
- struct [faketype](#)
- class [FlatTuple](#)
- struct [FlatTupleBase](#)
- struct [FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > >](#)
- struct [FlatTupleElemBase](#)
- struct [FlatTupleElemBase< FlatTuple< T... >, I >](#)
- class [FloatingPoint](#)
- class [FormatForComparison](#)
- class [FormatForComparison< ToPrint\[N\], OtherOperand >](#)
- class [GTestLog](#)
- class [GTestMutexLock](#)
- class [IgnoredValue](#)
- struct [IndexSequence](#)
- struct [is_same](#)
- struct [is_same< T, T >](#)
- struct [IsAProtocolMessage](#)
- struct [IsHashTable](#)
- struct [IsRecursiveContainer](#)
- struct [IsRecursiveContainerImpl](#)
- struct [IsRecursiveContainerImpl< C, false >](#)
- struct [IsRecursiveContainerImpl< C, true >](#)
- struct [IsSame](#)
- struct [IsSame< T, T >](#)
- struct [IteratorTraits](#)
- struct [IteratorTraits< const T * >](#)
- struct [IteratorTraits< T * >](#)
- struct [MakeIndexSequence](#)
- struct [MakeIndexSequence< 0 >](#)
- class [Mutex](#)
- class [NativeArray](#)
- class [ParameterizedTestFactory](#)
- class [ParameterizedTestSuiteInfo](#)
- class [ParameterizedTestSuiteInfoBase](#)
- class [ParameterizedTestSuiteRegistry](#)
- class [ParamGenerator](#)
- class [ParamGeneratorInterface](#)
- class [ParamIterator](#)
- class [ParamIteratorInterface](#)
- class [Random](#)
- class [RangeGenerator](#)
- class [RE](#)
- struct [RelationToSourceCopy](#)
- struct [RelationToSourceReference](#)
- struct [RemoveConst](#)
- struct [RemoveConst< const T >](#)
- struct [RemoveConst< const T\[N\]>](#)
- struct [RemoveReference](#)
- struct [RemoveReference< T & >](#)
- struct [StaticAssertTypeEqHelper](#)

- struct [StaticAssertTypeEqHelper< T, T >](#)
- class [String](#)
- struct [SuiteApiResolver](#)
- class [TestFactoryBase](#)
- class [TestFactoryImpl](#)
- class [TestMetaFactory](#)
- class [TestMetaFactoryBase](#)
- class [ThreadLocal](#)
- class [TypeIdHelper](#)
- class [TypeWithSize](#)
- class [TypeWithSize< 4 >](#)
- class [TypeWithSize< 8 >](#)
- class [UniversalPrinter](#)
- class [UniversalPrinter< T & >](#)
- class [UniversalPrinter< T\[N\]>](#)
- class [UniversalTersePrinter](#)
- class [UniversalTersePrinter< char * >](#)
- class [UniversalTersePrinter< const char * >](#)
- class [UniversalTersePrinter< T & >](#)
- class [UniversalTersePrinter< T\[N\]>](#)
- class [UniversalTersePrinter< wchar_t * >](#)
- class [ValueArray](#)
- class [ValuesInIteratorRangeGenerator](#)
- struct [WrapPrinterType](#)

Typedefs

- typedef [::std::vector< ::std::string > Strings](#)
- typedef [FloatingPoint< float > Float](#)
- typedef [FloatingPoint< double > Double](#)
- typedef const void * [TypeId](#)
- using [SetUpTestSuiteFunc](#) = void(*)()
- using [TearDownTestSuiteFunc](#) = void(*)()
- using [SetUpTearDownSuiteFuncType](#) = void(*)()
- typedef int [IsContainer](#)
- typedef char [IsNotContainer](#)
- template<class TestCase >
using [ParameterizedTestCaseInfo](#) = [ParameterizedTestSuiteInfo< TestCase >](#)
- typedef [GTestMutexLock MutexLock](#)
- typedef [bool_constant< false > false_type](#)
- typedef [bool_constant< true > true_type](#)
- typedef long long [BiggestInt](#)
- typedef [TypeWithSize< 4 >::Int Int32](#)
- typedef [TypeWithSize< 4 >::UInt UInt32](#)
- typedef [TypeWithSize< 8 >::Int Int64](#)
- typedef [TypeWithSize< 8 >::UInt UInt64](#)
- typedef [TypeWithSize< 8 >::Int TimeInMillis](#)

Enumerations

- enum [DefaultPrinterType](#) { [kPrintContainer](#), [kPrintPointer](#), [kPrintFunctionPointer](#), [kPrintOther](#) }
- enum [GTestColor](#) { [COLOR_DEFAULT](#), [COLOR_RED](#), [COLOR_GREEN](#), [COLOR_YELLOW](#) }
- enum [GTestLogSeverity](#) { [GTEST_INFO](#), [GTEST_WARNING](#), [GTEST_ERROR](#), [GTEST_FATAL](#) }

Functions

- `template<typename T >`
`std::string StreamableToString` (const T &streamable)
- `GTEST_IMPL_FORMAT_C_STRING_AS_POINTER_` (char)
- `GTEST_IMPL_FORMAT_C_STRING_AS_POINTER_` (wchar_t)
- `GTEST_IMPL_FORMAT_C_STRING_AS_STRING_` (char, ::std::string)
- `template<typename T1 , typename T2 >`
`std::string FormatForComparisonFailureMessage` (const T1 &value, const T2 &)
- `template<typename T >`
`void UniversalPrint` (const T &value, ::std::ostream *os)
- `template<typename C >`
`void DefaultPrintTo` (WrapPrinterType< kPrintContainer >, const C &container, ::std::ostream *os)
- `template<typename T >`
`void DefaultPrintTo` (WrapPrinterType< kPrintPointer >, T *p, ::std::ostream *os)
- `template<typename T >`
`void DefaultPrintTo` (WrapPrinterType< kPrintFunctionPointer >, T *p, ::std::ostream *os)
- `template<typename T >`
`void DefaultPrintTo` (WrapPrinterType< kPrintOther >, const T &value, ::std::ostream *os)
- `template<typename T >`
`void PrintTo` (const T &value, ::std::ostream *os)
- `GTEST_API_ void PrintTo` (unsigned char c, ::std::ostream *os)
- `GTEST_API_ void PrintTo` (signed char c, ::std::ostream *os)
- `void PrintTo` (char c, ::std::ostream *os)
- `void PrintTo` (bool x, ::std::ostream *os)
- `GTEST_API_ void PrintTo` (wchar_t wc, ::std::ostream *os)
- `GTEST_API_ void PrintTo` (const char *s, ::std::ostream *os)
- `void PrintTo` (char *s, ::std::ostream *os)
- `void PrintTo` (const signed char *s, ::std::ostream *os)
- `void PrintTo` (signed char *s, ::std::ostream *os)
- `void PrintTo` (const unsigned char *s, ::std::ostream *os)
- `void PrintTo` (unsigned char *s, ::std::ostream *os)
- `GTEST_API_ void PrintTo` (const wchar_t *s, ::std::ostream *os)
- `void PrintTo` (wchar_t *s, ::std::ostream *os)
- `template<typename T >`
`void PrintRawArrayTo` (const T a[], size_t count, ::std::ostream *os)
- `GTEST_API_ void PrintStringTo` (const ::std::string &s, ::std::ostream *os)
- `void PrintTo` (const ::std::string &s, ::std::ostream *os)
- `void PrintTo` (std::nullptr_t, ::std::ostream *os)
- `template<typename T >`
`void PrintTo` (std::reference_wrapper< T > ref, ::std::ostream *os)
- `template<typename T >`
`void PrintTupleTo` (const T &, std::integral_constant< size_t, 0 >, ::std::ostream *)
- `template<typename T , size_t I>`
`void PrintTupleTo` (const T &t, std::integral_constant< size_t, I >, ::std::ostream *os)
- `template<typename... Types>`
`void PrintTo` (const ::std::tuple< Types... > &t, ::std::ostream *os)
- `template<typename T1 , typename T2 >`
`void PrintTo` (const ::std::pair< T1, T2 > &value, ::std::ostream *os)
- `template<typename T >`
`void UniversalPrintArray` (const T *begin, size_t len, ::std::ostream *os)
- `GTEST_API_ void UniversalPrintArray` (const char *begin, size_t len, ::std::ostream *os)
- `GTEST_API_ void UniversalPrintArray` (const wchar_t *begin, size_t len, ::std::ostream *os)
- `template<typename T >`
`void UniversalTersePrint` (const T &value, ::std::ostream *os)

- `template<typename Tuple >`
`void TersePrintPrefixToStrings (const Tuple &, std::integral_constant< size_t, 0 >, Strings *)`
- `template<typename Tuple, size_t I>`
`void TersePrintPrefixToStrings (const Tuple &t, std::integral_constant< size_t, I >, Strings *strings)`
- `template<typename Tuple >`
`Strings UniversalTersePrintTupleFieldsToStrings (const Tuple &value)`
- `template<typename T1, typename T2 >`
`AssertionResult CmpHelperEQFailure (const char *lhs_expression, const char *rhs_expression, const T1 &lhs, const T2 &rhs)`
- `bool operator== (faketype, faketype)`
- `bool operator!= (faketype, faketype)`
- `template<typename T1, typename T2 >`
`AssertionResult CmpHelperEQ (const char *lhs_expression, const char *rhs_expression, const T1 &lhs, const T2 &rhs)`
- `GTEST_API_ AssertionResult CmpHelperEQ (const char *lhs_expression, const char *rhs_expression, BiggestInt lhs, BiggestInt rhs)`
- `template<typename T1, typename T2 >`
`AssertionResult CmpHelperOpFailure (const char *expr1, const char *expr2, const T1 &val1, const T2 &val2, const char *op)`
- `GTEST_IMPL_CMP_HELPER_ (NE, !=)`
- `GTEST_IMPL_CMP_HELPER_ (LE, <=)`
- `GTEST_IMPL_CMP_HELPER_ (LT, <)`
- `GTEST_IMPL_CMP_HELPER_ (GE, >=)`
- `GTEST_IMPL_CMP_HELPER_ (GT, >)`
- `GTEST_API_ AssertionResult CmpHelperSTREQ (const char *s1_expression, const char *s2_expression, const char *s1, const char *s2)`
- `GTEST_API_ AssertionResult CmpHelperSTRCASEEQ (const char *s1_expression, const char *s2_expression, const char *s1, const char *s2)`
- `GTEST_API_ AssertionResult CmpHelperSTRNE (const char *s1_expression, const char *s2_expression, const char *s1, const char *s2)`
- `GTEST_API_ AssertionResult CmpHelperSTRCASENE (const char *s1_expression, const char *s2_expression, const char *s1, const char *s2)`
- `GTEST_API_ AssertionResult CmpHelperSTREQ (const char *s1_expression, const char *s2_expression, const wchar_t *s1, const wchar_t *s2)`
- `GTEST_API_ AssertionResult CmpHelperSTRNE (const char *s1_expression, const char *s2_expression, const wchar_t *s1, const wchar_t *s2)`
- `template<typename RawType >`
`AssertionResult CmpHelperFloatingPointEQ (const char *lhs_expression, const char *rhs_expression, RawType lhs_value, RawType rhs_value)`
- `GTEST_API_ AssertionResult DoubleNearPredFormat (const char *expr1, const char *expr2, const char *abs_error_expr, double val1, double val2, double abs_error)`
- `GTEST_API_ GTEST_ATTRIBUTE_PRINTF_ (2, 3) void ColoredPrintf(GTestColor color`
- `GTEST_DECLARE_string_ (internal_run_death_test)`
- `GTEST_API_ std::string AppendUserMessage (const std::string >est_msg, const Message &user_msg)`
- `GTEST_API_ std::string DiffStrings (const std::string &left, const std::string &right, size_t *total_line_count)`
- `GTEST_API_ AssertionResult EqFailure (const char *expected_expression, const char *actual_expression, const std::string &expected_value, const std::string &actual_value, bool ignoring_case)`
- `GTEST_API_ std::string GetBoolAssertionFailureMessage (const AssertionResult &assertion_result, const char *expression_text, const char *actual_predicate_value, const char *expected_predicate_value)`
- `template<typename T >`
`Typeld GetTypeld ()`
- `GTEST_API_ Typeld GetTestTypeld ()`
- `SetUpTearDownSuiteFuncType GetNotDefaultOrNull (SetUpTearDownSuiteFuncType a, SetUpTearDownSuiteFuncType def)`
- `GTEST_API_ TestInfo * MakeAndRegisterTestInfo (const char *test_suite_name, const char *name, const char *type_param, const char *value_param, CodeLocation code_location, Typeld fixture_class_id, SetUpTestSuiteFunc set_up_tc, TearDownTestSuiteFunc tear_down_tc, TestFactoryBase *factory)`

- [GTEST_API_ bool SkipPrefix](#) (const char *prefix, const char **pstr)
- [GTEST_API_ std::string GetCurrentOsStackTraceExceptTop](#) ([UnitTest](#) *unit_test, int skip_count)
- [GTEST_API_ bool AlwaysTrue](#) ()
- [bool AlwaysFalse](#) ()
- [template<class C , class Iterator = decltype\(::std::declval<const C&>\(\).begin\(\)\), class = decltype\(::std::declval<const C&>\(\).end\(\)\), class = decltype\(++::std::declval<Iterator&>\(\)\), class = decltype\(*::std::declval<Iterator>\(\)\), class = typename C::const_iterator>](#)
[IsContainer IsContainerTest](#) (int)
- [template<class C >](#)
[IsNotContainer IsContainerTest](#) (long)
- [template<typename T , typename U >](#)
[bool ArrayEq](#) (const T *lhs, size_t size, const U *rhs)
- [template<typename T , typename U >](#)
[bool ArrayEq](#) (const T &lhs, const U &rhs)
- [template<typename T , typename U , size_t N>](#)
[bool ArrayEq](#) (const T (&lhs)[N], const U (&rhs)[N])
- [template<typename Iter , typename Element >](#)
[Iter ArrayAwareFind](#) (Iter begin, Iter end, const Element &elem)
- [template<typename T , typename U >](#)
[void CopyArray](#) (const T *from, size_t size, U *to)
- [template<typename T , typename U >](#)
[void CopyArray](#) (const T &from, U *to)
- [template<typename T , typename U , size_t N>](#)
[void CopyArray](#) (const T (&from)[N], U (*to)[N])
- [GTEST_INTERNAL_DEPRECATED](#) ("INstantiate_TestCase_P is deprecated, please use " "[INstantiateTestSuite_P](#)") const expr bool [InstantiateTestCase_P_IsDeprecated](#)()
- [GTEST_INTERNAL_DEPRECATED](#) ("Typed_TestCase_P is deprecated, please use " "[TypedTestSuite_P](#)") const expr bool [TypedTestCase_P_IsDeprecated](#)()
- [GTEST_INTERNAL_DEPRECATED](#) ("Typed_TestCase is deprecated, please use " "[TypedTestSuite](#)") const expr bool [TypedTestCasesIsDeprecated](#)()
- [GTEST_INTERNAL_DEPRECATED](#) ("Register_Typed_TestCase_P is deprecated, please use " "[RegisterTypedTestSuite_P](#)") const expr bool [RegisterTypedTestCase_P_IsDeprecated](#)()
- [GTEST_INTERNAL_DEPRECATED](#) ("Instantiate_Typed_TestCase_P is deprecated, please use " "[InstantiateTypedTestSuite_P](#)") const expr bool [InstantiateTypedTestCase_P_IsDeprecated](#)()
- [GTEST_API_ void ReportInvalidTestSuiteType](#) (const char *test_suite_name, [CodeLocation](#) code_location)
- [template<class ParamType >](#)
[std::string DefaultParamName](#) (const [TestParamInfo](#)< ParamType > &info)
- [template<typename T = int>](#)
[void TestNotEmpty](#) ()
- [template<typename T = int>](#)
[void TestNotEmpty](#) (const T &)
- [GTEST_API_ bool IsTrue](#) (bool condition)
- [GTEST_API_ ::std::string FormatFileLocation](#) (const char *file, int line)
- [GTEST_API_ ::std::string FormatCompilerIndependentFileLocation](#) (const char *file, int line)
- [void LogToStderr](#) ()
- [void FlushInfoLog](#) ()
- [template<typename To >](#)
[To ImplicitCast_](#) (To x)
- [template<typename To , typename From >](#)
[To DownCast_](#) (From *f)
- [template<class Derived , class Base >](#)
[Derived * CheckedDowncastToActualType](#) (Base *base)
- [GTEST_API_ void CaptureStdout](#) ()
- [GTEST_API_ std::string GetCapturedStdout](#) ()
- [GTEST_API_ void CaptureStderr](#) ()
- [GTEST_API_ std::string GetCapturedStderr](#) ()
- [GTEST_API_ size_t GetFileSize](#) (FILE *file)

- `GTEST_API_ std::string ReadEntireFile (FILE *file)`
- `GTEST_API_ std::vector< std::string > GetArgvs ()`
- `GTEST_API_ size_t GetThreadCount ()`
- `bool IsAlpha (char ch)`
- `bool IsAlNum (char ch)`
- `bool IsDigit (char ch)`
- `bool IsLower (char ch)`
- `bool IsSpace (char ch)`
- `bool IsUpper (char ch)`
- `bool IsXDigit (char ch)`
- `bool IsXDigit (wchar_t ch)`
- `char ToLower (char ch)`
- `char ToUpper (char ch)`
- `std::string StripTrailingSpaces (std::string str)`
- `bool ParseInt32 (const Message &src_text, const char *str, Int32 *value)`
- `bool BoolFromGTestEnv (const char *flag, bool default_val)`
- `GTEST_API_ Int32 Int32FromGTestEnv (const char *flag, Int32 default_val)`
- `std::string OutputFlagAlsoCheckEnvVar ()`
- `const char * StringFromGTestEnv (const char *flag, const char *default_val)`
- `GTEST_API_ std::string StringStreamToString (::std::stringstream *stream)`
- `std::string CanonicalizeForStdLibVersioning (std::string s)`
- `template<typename T >`
`std::string GetTypeName ()`

Variables

- `GTEST_API_ const char * fmt`
- `const char kDeathTestStyleFlag [] = "death_test_style"`
- `const char kDeathTestUseFork [] = "death_test_use_fork"`
- `const char kInternalRunDeathTestFlag [] = "internal_run_death_test"`
- `GTEST_API_ const char kStackTraceMarker []`
- `const BiggestInt kMaxBiggestInt`

5.3.1 Typedef Documentation

5.3.1.1 BiggestInt

```
typedef long long testing::internal::BiggestInt
```

5.3.1.2 Double

```
typedef FloatingPoint<double> testing::internal::Double
```

5.3.1.3 false_type

```
typedef bool_constant<false> testing::internal::false_type
```

5.3.1.4 Float

```
typedef FloatingPoint<float> testing::internal::Float
```

5.3.1.5 Int32

```
typedef TypeWithSize<4>::Int testing::internal::Int32
```

5.3.1.6 Int64

```
typedef TypeWithSize<8>::Int testing::internal::Int64
```

5.3.1.7 IsContainer

```
typedef int testing::internal::IsContainer
```

5.3.1.8 IsNotContainer

```
typedef char testing::internal::IsNotContainer
```

5.3.1.9 MutexLock

```
typedef GTestMutexLock testing::internal::MutexLock
```

5.3.1.10 ParameterizedTestCaseInfo

```
template<class TestCase >
using testing::internal::ParameterizedTestCaseInfo = typedef ParameterizedTestSuiteInfo<Test↵
Case>
```

5.3.1.11 SetUpTearDownSuiteFuncType

```
using testing::internal::SetUpTearDownSuiteFuncType = typedef void (*)()
```

5.3.1.12 SetUpTestSuiteFunc

```
using testing::internal::SetUpTestSuiteFunc = typedef void (*)()
```

5.3.1.13 Strings

```
typedef ::std::vector< ::std::string> testing::internal::Strings
```

5.3.1.14 TearDownTestSuiteFunc

```
using testing::internal::TearDownTestSuiteFunc = typedef void (*)()
```

5.3.1.15 TimeInMillis

```
typedef TypeWithSize<8>::Int testing::internal::TimeInMillis
```

5.3.1.16 true_type

```
typedef bool_constant<true> testing::internal::true_type
```

5.3.1.17 Typeld

```
typedef const void* testing::internal::TypeId
```

5.3.1.18 UInt32

```
typedef TypeWithSize<4>::UInt testing::internal::UInt32
```

5.3.1.19 UInt64

```
typedef TypeWithSize<8>::UInt testing::internal::UInt64
```

5.3.2 Enumeration Type Documentation

5.3.2.1 DefaultPrinterType

```
enum testing::internal::DefaultPrinterType
```

Enumerator

kPrintContainer	
kPrintPointer	
kPrintFunctionPointer	
kPrintOther	

5.3.2.2 GTestColor

```
enum testing::internal::GTestColor
```

Enumerator

COLOR_DEFAULT	
COLOR_RED	
COLOR_GREEN	
COLOR_YELLOW	

5.3.2.3 GTestLogSeverity

```
enum testing::internal::GTestLogSeverity
```

Enumerator

GTEST_INFO	
GTEST_WARNING	
GTEST_ERROR	
GTEST_FATAL	

5.3.3 Function Documentation

5.3.3.1 AlwaysFalse()

```
bool testing::internal::AlwaysFalse ( ) [inline]
```

5.3.3.2 AlwaysTrue()

```
GTEST_API_ bool testing::internal::AlwaysTrue ( )
```

5.3.3.3 AppendUserMessage()

```
GTEST_API_ std::string testing::internal::AppendUserMessage (
    const std::string & gtest_msg,
    const Message & user_msg )
```

5.3.3.4 ArrayAwareFind()

```
template<typename Iter , typename Element >
Iter testing::internal::ArrayAwareFind (
    Iter begin,
    Iter end,
    const Element & elem )
```

5.3.3.5 ArrayEq() [1/3]

```
template<typename T , typename U >
bool testing::internal::ArrayEq (
    const T * lhs,
    size_t size,
    const U * rhs )
```

5.3.3.6 ArrayEq() [2/3]

```
template<typename T , typename U >
bool testing::internal::ArrayEq (
    const T & lhs,
    const U & rhs ) [inline]
```

5.3.3.7 ArrayEq() [3/3]

```
template<typename T , typename U , size_t N>
bool testing::internal::ArrayEq (
    const T(&) lhs[N],
    const U(&) rhs[N] ) [inline]
```

5.3.3.8 BoolFromGTestEnv()

```
bool testing::internal::BoolFromGTestEnv (
    const char * flag,
    bool default_val )
```

5.3.3.9 CanonicalizeForStdLibVersioning()

```
std::string testing::internal::CanonicalizeForStdLibVersioning (
    std::string s ) [inline]
```

5.3.3.10 CaptureStderr()

```
GTEST\_API\_ void testing::internal::CaptureStderr ( )
```


5.3.3.11 CaptureStdout()

```
GTEST_API_ void testing::internal::CaptureStdout ( )
```

5.3.3.12 CheckedDowncastToActualType()

```
template<class Derived , class Base >  
Derived* testing::internal::CheckedDowncastToActualType (   
    Base * base )
```

5.3.3.13 CmpHelperEQ() [1/2]

```
template<typename T1 , typename T2 >  
AssertionResult testing::internal::CmpHelperEQ (   
    const char * lhs_expression,   
    const char * rhs_expression,   
    const T1 & lhs,   
    const T2 & rhs )
```

5.3.3.14 CmpHelperEQ() [2/2]

```
GTEST_API_ AssertionResult testing::internal::CmpHelperEQ (   
    const char * lhs_expression,   
    const char * rhs_expression,   
    BiggestInt lhs,   
    BiggestInt rhs )
```

5.3.3.15 CmpHelperEQFailure()

```
template<typename T1 , typename T2 >  
AssertionResult testing::internal::CmpHelperEQFailure (   
    const char * lhs_expression,   
    const char * rhs_expression,   
    const T1 & lhs,   
    const T2 & rhs )
```

5.3.3.16 CmpHelperFloatingPointEQ()

```
template<typename RawType >
AssertionResult testing::internal::CmpHelperFloatingPointEQ (
    const char * lhs_expression,
    const char * rhs_expression,
    RawType lhs_value,
    RawType rhs_value )
```

5.3.3.17 CmpHelperOpFailure()

```
template<typename T1 , typename T2 >
AssertionResult testing::internal::CmpHelperOpFailure (
    const char * expr1,
    const char * expr2,
    const T1 & val1,
    const T2 & val2,
    const char * op )
```

5.3.3.18 CmpHelperSTRCASEEQ()

```
GTEST_API_ AssertionResult testing::internal::CmpHelperSTRCASEEQ (
    const char * s1_expression,
    const char * s2_expression,
    const char * s1,
    const char * s2 )
```

5.3.3.19 CmpHelperSTRCASENE()

```
GTEST_API_ AssertionResult testing::internal::CmpHelperSTRCASENE (
    const char * s1_expression,
    const char * s2_expression,
    const char * s1,
    const char * s2 )
```

5.3.3.20 CmpHelperSTREQ() [1/2]

```
GTEST_API_ AssertionResult testing::internal::CmpHelperSTREQ (
    const char * s1_expression,
    const char * s2_expression,
    const char * s1,
    const char * s2 )
```

5.3.3.21 CmpHelperSTREQ() [2/2]

```
GTEST_API_ AssertionResult testing::internal::CmpHelperSTREQ (
    const char * s1_expression,
    const char * s2_expression,
    const wchar_t * s1,
    const wchar_t * s2 )
```

5.3.3.22 CmpHelperSTRNE() [1/2]

```
GTEST_API_ AssertionResult testing::internal::CmpHelperSTRNE (
    const char * s1_expression,
    const char * s2_expression,
    const char * s1,
    const char * s2 )
```

5.3.3.23 CmpHelperSTRNE() [2/2]

```
GTEST_API_ AssertionResult testing::internal::CmpHelperSTRNE (
    const char * s1_expression,
    const char * s2_expression,
    const wchar_t * s1,
    const wchar_t * s2 )
```

5.3.3.24 CopyArray() [1/3]

```
template<typename T , typename U >
void testing::internal::CopyArray (
    const T * from,
    size_t size,
    U * to )
```

5.3.3.25 CopyArray() [2/3]

```
template<typename T , typename U >
void testing::internal::CopyArray (
    const T & from,
    U * to ) [inline]
```

5.3.3.26 CopyArray() [3/3]

```
template<typename T , typename U , size_t N>
void testing::internal::CopyArray (
    const T(&) from[N],
    U(*) to[N] ) [inline]
```

5.3.3.27 DefaultParamName()

```
template<class ParamType >
std::string testing::internal::DefaultParamName (
    const TestParamInfo< ParamType > & info )
```

5.3.3.28 DefaultPrintTo() [1/4]

```
template<typename C >
void testing::internal::DefaultPrintTo (
    WrapPrinterType< kPrintContainer > ,
    const C & container,
    ::std::ostream * os )
```

5.3.3.29 DefaultPrintTo() [2/4]

```
template<typename T >
void testing::internal::DefaultPrintTo (
    WrapPrinterType< kPrintPointer > ,
    T * p,
    ::std::ostream * os )
```

5.3.3.30 DefaultPrintTo() [3/4]

```
template<typename T >
void testing::internal::DefaultPrintTo (
    WrapPrinterType< kPrintFunctionPointer > ,
    T * p,
    ::std::ostream * os )
```

5.3.3.31 DefaultPrintTo() [4/4]

```
template<typename T >
void testing::internal::DefaultPrintTo (
    WrapPrinterType< kPrintOther > ,
    const T & value,
    ::std::ostream * os )
```

5.3.3.32 DiffStrings()

```
GTEST_API_ std::string testing::internal::DiffStrings (
    const std::string & left,
    const std::string & right,
    size_t * total_line_count )
```

5.3.3.33 DoubleNearPredFormat()

```
GTEST_API_ AssertionResult testing::internal::DoubleNearPredFormat (
    const char * expr1,
    const char * expr2,
    const char * abs_error_expr,
    double val1,
    double val2,
    double abs_error )
```

5.3.3.34 DownCast_()

```
template<typename To , typename From >
To testing::internal::DownCast_ (
    From * f ) [inline]
```

5.3.3.35 EqFailure()

```
GTEST_API_ AssertionResult testing::internal::EqFailure (
    const char * expected_expression,
    const char * actual_expression,
    const std::string & expected_value,
    const std::string & actual_value,
    bool ignoring_case )
```

5.3.3.36 FlushInfoLog()

```
void testing::internal::FlushInfoLog ( ) [inline]
```

5.3.3.37 FormatCompilerIndependentFileLocation()

```
GTEST_API_ ::std::string testing::internal::FormatCompilerIndependentFileLocation (
    const char * file,
    int line )
```

5.3.3.38 FormatFileLocation()

```
GTEST_API_ ::std::string testing::internal::FormatFileLocation (
    const char * file,
    int line )
```

5.3.3.39 FormatForComparisonFailureMessage()

```
template<typename T1 , typename T2 >
std::string testing::internal::FormatForComparisonFailureMessage (
    const T1 & value,
    const T2 & )
```

5.3.3.40 GetArgvs()

```
GTEST_API_ std::vector<std::string> testing::internal::GetArgvs ( )
```

5.3.3.41 GetBoolAssertionFailureMessage()

```
GTEST_API_ std::string testing::internal::GetBoolAssertionFailureMessage (
    const AssertionResult & assertion_result,
    const char * expression_text,
    const char * actual_predicate_value,
    const char * expected_predicate_value )
```

5.3.3.42 GetCapturedStderr()

```
GTEST_API_ std::string testing::internal::GetCapturedStderr ( )
```

5.3.3.43 GetCapturedStdout()

```
GTEST_API_ std::string testing::internal::GetCapturedStdout ( )
```

5.3.3.44 GetCurrentOsStackTraceExceptTop()

```
GTEST_API_ std::string testing::internal::GetCurrentOsStackTraceExceptTop (
    UnitTest * unit_test,
    int skip_count )
```

5.3.3.45 GetFileSize()

```
GTEST_API_ size_t testing::internal::GetFileSize (
    FILE * file )
```

5.3.3.46 GetNotDefaultOrNull()

```
SetUpTearDownSuiteFuncType testing::internal::GetNotDefaultOrNull (
    SetUpTearDownSuiteFuncType a,
    SetUpTearDownSuiteFuncType def ) [inline]
```

5.3.3.47 GetTestTypeId()

```
GTEST_API_ TypeId testing::internal::GetTestTypeId ( )
```

5.3.3.48 GetThreadCount()

```
GTEST_API_ size_t testing::internal::GetThreadCount ( )
```

5.3.3.49 GetTypeId()

```
template<typename T >
TypeId testing::internal::GetTypeId ( )
```

5.3.3.50 GetTypeName()

```
template<typename T >
std::string testing::internal::GetTypeName ( )
```

5.3.3.51 GTEST_ATTRIBUTE_PRINTF_()

```
GTEST_API_ testing::internal::GTEST_ATTRIBUTE_PRINTF_ (
    2 ,
    3 )
```

5.3.3.52 GTEST_DECLARE_string_()

```
testing::internal::GTEST_DECLARE_string_ (
    internal_run_death_test )
```

5.3.3.53 GTEST_IMPL_CMP_HELPER_() [1/5]

```
testing::internal::GTEST_IMPL_CMP_HELPER_ (
    NE ,
    ! )
```

5.3.3.54 GTEST_IMPL_CMP_HELPER_() [2/5]

```
testing::internal::GTEST_IMPL_CMP_HELPER_ (
    LE ,
    <= )
```


5.3.3.55 GTEST_IMPL_CMP_HELPER_() [3/5]

```
testing::internal::GTEST_IMPL_CMP_HELPER_ (
    LT )
```

5.3.3.56 GTEST_IMPL_CMP_HELPER_() [4/5]

```
testing::internal::GTEST_IMPL_CMP_HELPER_ (
    GE ,
    >= )
```

5.3.3.57 GTEST_IMPL_CMP_HELPER_() [5/5]

```
testing::internal::GTEST_IMPL_CMP_HELPER_ (
    GT )
```

5.3.3.58 GTEST_IMPL_FORMAT_C_STRING_AS_POINTER_() [1/2]

```
testing::internal::GTEST_IMPL_FORMAT_C_STRING_AS_POINTER_ (
    char )
```

5.3.3.59 GTEST_IMPL_FORMAT_C_STRING_AS_POINTER_() [2/2]

```
testing::internal::GTEST_IMPL_FORMAT_C_STRING_AS_POINTER_ (
    wchar_t )
```

5.3.3.60 GTEST_IMPL_FORMAT_C_STRING_AS_STRING_()

```
testing::internal::GTEST_IMPL_FORMAT_C_STRING_AS_STRING_ (
    char ,
    ::std::string )
```

5.3.3.61 GTEST_INTERNAL_DEPRECATED() [1/5]

```
testing::internal::GTEST_INTERNAL_DEPRECATED (
    "INstantiate_TEST_CASE_P is deprecated,
    please use " "INstantiate_TEST_SUITE_P" ) const
```

5.3.3.62 GTEST_INTERNAL_DEPRECATED() [2/5]

```
testing::internal::GTEST_INTERNAL_DEPRECATED (
    "Typed_TEST_CASE_P is deprecated,
    please use " "Typed_TEST_SUITE_P" ) const
```

5.3.3.63 GTEST_INTERNAL_DEPRECATED() [3/5]

```
testing::internal::GTEST_INTERNAL_DEPRECATED (
    "Typed_TEST_CASE is deprecated,
    please use " "Typed_TEST_SUITE" ) const
```

5.3.3.64 GTEST_INTERNAL_DEPRECATED() [4/5]

```
testing::internal::GTEST_INTERNAL_DEPRECATED (
    "REGISTER_TYPED_TEST_CASE_P is deprecated,
    please use " "REGISTER_TYPED_TEST_SUITE_P" ) const
```

5.3.3.65 GTEST_INTERNAL_DEPRECATED() [5/5]

```
testing::internal::GTEST_INTERNAL_DEPRECATED (
    "INstantiate_TYPED_TEST_CASE_P is deprecated,
    please use " "INstantiate_TYPED_TEST_SUITE_P" ) const
```

5.3.3.66 ImplicitCast_()

```
template<typename To >
To testing::internal::ImplicitCast_ (
    To x ) [inline]
```

5.3.3.67 Int32FromGTestEnv()

```
GTEST_API_ Int32 testing::internal::Int32FromGTestEnv (
    const char * flag,
    Int32 default_val )
```

5.3.3.68 IsAlNum()

```
bool testing::internal::IsAlNum (
    char ch ) [inline]
```

5.3.3.69 IsAlpha()

```
bool testing::internal::IsAlpha (
    char ch ) [inline]
```

5.3.3.70 IsContainerTest() [1/2]

```
template<class C , class Iterator = decltype(::std::declval<const C&>().begin()), class =
decltype(::std::declval<const C&>().end()), class = decltype(++::std::declval<Iterator&>()),
class = decltype(*::std::declval<Iterator>()), class = typename C::const_iterator>
IsContainer testing::internal::IsContainerTest (
    int )
```

5.3.3.71 IsContainerTest() [2/2]

```
template<class C >
IsNotContainer testing::internal::IsContainerTest (
    long )
```

5.3.3.72 IsDigit()

```
bool testing::internal::IsDigit (
    char ch ) [inline]
```

5.3.3.73 IsLower()

```
bool testing::internal::IsLower (
    char ch ) [inline]
```

5.3.3.74 IsSpace()

```
bool testing::internal::IsSpace (
    char ch ) [inline]
```

5.3.3.75 IsTrue()

```
GTEST\_API\_ bool testing::internal::IsTrue (
    bool condition )
```

5.3.3.76 IsUpper()

```
bool testing::internal::IsUpper (
    char ch ) [inline]
```

5.3.3.77 IsXDigit() [1/2]

```
bool testing::internal::IsXDigit (
    char ch ) [inline]
```

5.3.3.78 IsXDigit() [2/2]

```
bool testing::internal::IsXDigit (
    wchar_t ch ) [inline]
```

5.3.3.79 LogToStderr()

```
void testing::internal::LogToStderr ( ) [inline]
```

5.3.3.80 MakeAndRegisterTestInfo()

```
GTEST_API_ TestInfo* testing::internal::MakeAndRegisterTestInfo (
    const char * test_suite_name,
    const char * name,
    const char * type_param,
    const char * value_param,
    CodeLocation code_location,
    TypeId fixture_class_id,
    SetUpTestSuiteFunc set_up_tc,
    TearDownTestSuiteFunc tear_down_tc,
    TestFactoryBase * factory )
```

5.3.3.81 operator"!="()

```
bool testing::internal::operator!= (
    faketype ,
    faketype ) [inline]
```

5.3.3.82 operator==()

```
bool testing::internal::operator== (
    faketype ,
    faketype ) [inline]
```

5.3.3.83 OutputFlagAlsoCheckEnvVar()

```
std::string testing::internal::OutputFlagAlsoCheckEnvVar ( )
```

5.3.3.84 ParseInt32()

```
bool testing::internal::ParseInt32 (
    const Message & src_text,
    const char * str,
    Int32 * value )
```

5.3.3.85 PrintRawArrayTo()

```
template<typename T >
void testing::internal::PrintRawArrayTo (
    const T a[],
    size_t count,
    ::std::ostream * os )
```

5.3.3.86 PrintStringTo()

```
GTEST_API_ void testing::internal::PrintStringTo (
    const ::std::string & s,
    ::std::ostream * os )
```

5.3.3.87 PrintTo() [1/19]

```
template<typename T >
void testing::internal::PrintTo (
    const T & value,
    ::std::ostream * os )
```

5.3.3.88 PrintTo() [2/19]

```
GTEST_API_ void testing::internal::PrintTo (
    unsigned char c,
    ::std::ostream * os )
```

5.3.3.89 PrintTo() [3/19]

```
GTEST_API_ void testing::internal::PrintTo (
    signed char c,
    ::std::ostream * os )
```

5.3.3.90 PrintTo() [4/19]

```
void testing::internal::PrintTo (
    char c,
    ::std::ostream * os ) [inline]
```

5.3.3.91 PrintTo() [5/19]

```
void testing::internal::PrintTo (
    bool x,
    ::std::ostream * os ) [inline]
```

5.3.3.92 PrintTo() [6/19]

```
GTEST_API_ void testing::internal::PrintTo (
    wchar_t wC,
    ::std::ostream * os )
```

5.3.3.93 PrintTo() [7/19]

```
GTEST_API_ void testing::internal::PrintTo (
    const char * s,
    ::std::ostream * os )
```

5.3.3.94 PrintTo() [8/19]

```
void testing::internal::PrintTo (
    char * s,
    ::std::ostream * os ) [inline]
```

5.3.3.95 PrintTo() [9/19]

```
void testing::internal::PrintTo (
    const signed char * s,
    ::std::ostream * os ) [inline]
```

5.3.3.96 PrintTo() [10/19]

```
void testing::internal::PrintTo (
    signed char * s,
    ::std::ostream * os ) [inline]
```

5.3.3.97 PrintTo() [11/19]

```
void testing::internal::PrintTo (
    const unsigned char * s,
    ::std::ostream * os ) [inline]
```

5.3.3.98 PrintTo() [12/19]

```
void testing::internal::PrintTo (
    unsigned char * s,
    ::std::ostream * os ) [inline]
```

5.3.3.99 PrintTo() [13/19]

```
GTEST_API_ void testing::internal::PrintTo (
    const wchar_t * s,
    ::std::ostream * os )
```

5.3.3.100 PrintTo() [14/19]

```
void testing::internal::PrintTo (
    wchar_t * s,
    ::std::ostream * os ) [inline]
```

5.3.3.101 PrintTo() [15/19]

```
void testing::internal::PrintTo (
    const ::std::string & s,
    ::std::ostream * os ) [inline]
```

5.3.3.102 PrintTo() [16/19]

```
void testing::internal::PrintTo (
    std::nullptr_t ,
    ::std::ostream * os ) [inline]
```


5.3.3.103 PrintTo() [17/19]

```
template<typename T >
void testing::internal::PrintTo (
    std::reference_wrapper< T > ref,
    ::std::ostream * os )
```

5.3.3.104 PrintTo() [18/19]

```
template<typename... Types>
void testing::internal::PrintTo (
    const ::std::tuple< Types... > & t,
    ::std::ostream * os )
```

5.3.3.105 PrintTo() [19/19]

```
template<typename T1 , typename T2 >
void testing::internal::PrintTo (
    const ::std::pair< T1, T2 > & value,
    ::std::ostream * os )
```

5.3.3.106 PrintTupleTo() [1/2]

```
template<typename T >
void testing::internal::PrintTupleTo (
    const T & ,
    std::integral_constant< size_t, 0 > ,
    ::std::ostream * )
```

5.3.3.107 PrintTupleTo() [2/2]

```
template<typename T , size_t I>
void testing::internal::PrintTupleTo (
    const T & t,
    std::integral_constant< size_t, I > ,
    ::std::ostream * os )
```

5.3.3.108 ReadEntireFile()

```
GTEST_API_ std::string testing::internal::ReadEntireFile (
    FILE * file )
```

5.3.3.109 ReportInvalidTestSuiteType()

```
GTEST_API_ void testing::internal::ReportInvalidTestSuiteType (
    const char * test_suite_name,
    CodeLocation code_location )
```

5.3.3.110 SkipPrefix()

```
GTEST_API_ bool testing::internal::SkipPrefix (
    const char * prefix,
    const char ** pstr )
```

5.3.3.111 StreamableToString()

```
template<typename T >
std::string testing::internal::StreamableToString (
    const T & streamable )
```

5.3.3.112 StringFromGTestEnv()

```
const char* testing::internal::StringFromGTestEnv (
    const char * flag,
    const char * default_val )
```

5.3.3.113 StringStreamToString()

```
GTEST_API_ std::string testing::internal::StringStreamToString (
    ::std::stringstream * stream )
```

5.3.3.114 StripTrailingSpaces()

```
std::string testing::internal::StripTrailingSpaces (
    std::string str ) [inline]
```

5.3.3.115 TersePrintPrefixToStrings() [1/2]

```
template<typename Tuple >
void testing::internal::TersePrintPrefixToStrings (
    const Tuple & ,
    std::integral_constant< size_t, 0 > ,
    Strings * )
```

5.3.3.116 TersePrintPrefixToStrings() [2/2]

```
template<typename Tuple , size_t I>
void testing::internal::TersePrintPrefixToStrings (
    const Tuple & t,
    std::integral_constant< size_t, I > ,
    Strings * strings )
```

5.3.3.117 TestNotEmpty() [1/2]

```
template<typename T = int>
void testing::internal::TestNotEmpty ( )
```

5.3.3.118 TestNotEmpty() [2/2]

```
template<typename T = int>
void testing::internal::TestNotEmpty (
    const T & )
```

5.3.3.119 ToLower()

```
char testing::internal::ToLower (
    char ch ) [inline]
```

5.3.3.120 ToUpper()

```
char testing::internal::ToUpper (
    char ch ) [inline]
```

5.3.3.121 UniversalPrint()

```
template<typename T >
void testing::internal::UniversalPrint (
    const T & value,
    ::std::ostream * os )
```

5.3.3.122 UniversalPrintArray() [1/3]

```
template<typename T >
void testing::internal::UniversalPrintArray (
    const T * begin,
    size_t len,
    ::std::ostream * os )
```

5.3.3.123 UniversalPrintArray() [2/3]

```
GTEST_API_ void testing::internal::UniversalPrintArray (
    const char * begin,
    size_t len,
    ::std::ostream * os )
```

5.3.3.124 UniversalPrintArray() [3/3]

```
GTEST_API_ void testing::internal::UniversalPrintArray (
    const wchar_t * begin,
    size_t len,
    ::std::ostream * os )
```

5.3.3.125 UniversalTersePrint()

```
template<typename T >
void testing::internal::UniversalTersePrint (
    const T & value,
    ::std::ostream * os )
```

5.3.3.126 UniversalTersePrintTupleFieldsToStrings()

```
template<typename Tuple >
Strings testing::internal::UniversalTersePrintTupleFieldsToStrings (
    const Tuple & value )
```

5.3.4 Variable Documentation

5.3.4.1 fmt

```
GTEST_API_ const char* testing::internal::fmt
```

5.3.4.2 kDeathTestStyleFlag

```
const char testing::internal::kDeathTestStyleFlag[] = "death_test_style"
```

5.3.4.3 kDeathTestUseFork

```
const char testing::internal::kDeathTestUseFork[] = "death_test_use_fork"
```

5.3.4.4 kInternalRunDeathTestFlag

```
const char testing::internal::kInternalRunDeathTestFlag[] = "internal_run_death_test"
```

5.3.4.5 kMaxBiggestInt

```
const BiggestInt testing::internal::kMaxBiggestInt
```

Initial value:

```
=
~(static_cast<BiggestInt>(1) << (8*sizeof(BiggestInt) - 1))
```

5.3.4.6 kStackTraceMarker

```
GTEST_API_ const char testing::internal::kStackTraceMarker[ ]
```

5.4 testing::internal2 Namespace Reference

Classes

- class [TypeWithoutFormatter](#)
- class [TypeWithoutFormatter](#)< T, [kConvertibleToInteger](#) >
- class [TypeWithoutFormatter](#)< T, [kProtobuf](#) >

Enumerations

- enum [TypeKind](#) { [kProtobuf](#), [kConvertibleToInteger](#), [kOtherType](#) }

Functions

- [GTEST_API_ void PrintBytesInObjectTo](#) (const unsigned char *obj_bytes, size_t count, ::std::ostream *os)
- template<typename Char , typename CharTraits , typename T >
::std::basic_ostream< Char, CharTraits > & [operator<<](#) (::std::basic_ostream< Char, CharTraits > &os,
const T &x)

Variables

- const size_t [kProtobufOneLinerMaxLength](#) = 50

5.4.1 Enumeration Type Documentation

5.4.1.1 TypeKind

```
enum testing::internal2::TypeKind
```

Enumerator

kProtobuf	
kConvertibleToInteger	
kOtherType	

5.4.2 Function Documentation

5.4.2.1 operator<<()

```
template<typename Char , typename CharTraits , typename T >
::std::basic_ostream<Char, CharTraits>& testing::internal2::operator<< (
    ::std::basic_ostream< Char, CharTraits > & os,
    const T & x )
```

5.4.2.2 PrintBytesInObjectTo()

```
GTEST_API_ void testing::internal2::PrintBytesInObjectTo (
    const unsigned char * obj_bytes,
    size_t count,
    ::std::ostream * os )
```

5.4.3 Variable Documentation

5.4.3.1 kProtobufOneLinerMaxLength

```
const size_t testing::internal2::kProtobufOneLinerMaxLength = 50
```

5.5 testing::internal::edit_distance Namespace Reference

Enumerations

- enum [EditType](#) { [kMatch](#), [kAdd](#), [kRemove](#), [kReplace](#) }

Functions

- [GTEST_API_ std::vector< \[EditType\]\(#\) > CalculateOptimalEdits](#) (const std::vector< size_t > &left, const std::vector< size_t > &right)
- [GTEST_API_ std::vector< \[EditType\]\(#\) > CalculateOptimalEdits](#) (const std::vector< std::string > &left, const std::vector< std::string > &right)
- [GTEST_API_ std::string CreateUnifiedDiff](#) (const std::vector< std::string > &left, const std::vector< std::string > &right, size_t context=2)

5.5.1 Enumeration Type Documentation

5.5.1.1 EditType

```
enum testing::internal::edit\_distance::EditType
```

Enumerator

kMatch	
kAdd	
kRemove	
kReplace	

5.5.2 Function Documentation

5.5.2.1 CalculateOptimalEdits() [1/2]

```
GTEST_API_ std::vector<EditType> testing::internal::edit_distance::CalculateOptimalEdits (
    const std::vector< size_t > & left,
    const std::vector< size_t > & right )
```

5.5.2.2 CalculateOptimalEdits() [2/2]

```
GTEST_API_ std::vector<EditType> testing::internal::edit_distance::CalculateOptimalEdits (
    const std::vector< std::string > & left,
    const std::vector< std::string > & right )
```

5.5.2.3 CreateUnifiedDiff()

```
GTEST_API_ std::string testing::internal::edit_distance::CreateUnifiedDiff (
    const std::vector< std::string > & left,
    const std::vector< std::string > & right,
    size_t context = 2 )
```

5.6 testing::internal::posix Namespace Reference

Typedefs

- typedef struct stat [StatStruct](#)

Functions

- int [FileNo](#) (FILE *file)
- int [IsATTY](#) (int fd)
- int [Stat](#) (const char *path, [StatStruct](#) *buf)
- int [StrCaseCmp](#) (const char *s1, const char *s2)
- char * [StrDup](#) (const char *src)
- int [RmDir](#) (const char *dir)
- bool [IsDir](#) (const [StatStruct](#) &st)
- const char * [StrNCpy](#) (char *dest, const char *src, size_t n)
- int [ChDir](#) (const char *dir)
- FILE * [FOpen](#) (const char *path, const char *mode)
- FILE * [FReopen](#) (const char *path, const char *mode, FILE *stream)
- FILE * [FDOpen](#) (int fd, const char *mode)
- int [FClose](#) (FILE *fp)
- int [Read](#) (int fd, void *buf, unsigned int count)
- int [Write](#) (int fd, const void *buf, unsigned int count)
- int [Close](#) (int fd)
- const char * [StrError](#) (int errnum)
- const char * [GetEnv](#) (const char *name)
- void [Abort](#) ()

5.6.1 Typedef Documentation

5.6.1.1 StatStruct

```
typedef struct stat testing::internal::posix::StatStruct
```

5.6.2 Function Documentation

5.6.2.1 Abort()

```
void testing::internal::posix::Abort ( ) [inline]
```

5.6.2.2 ChDir()

```
int testing::internal::posix::ChDir (
    const char * dir ) [inline]
```

5.6.2.3 Close()

```
int testing::internal::posix::Close (
    int fd ) [inline]
```

5.6.2.4 FClose()

```
int testing::internal::posix::FClose (
    FILE * fp ) [inline]
```

5.6.2.5 FDOpen()

```
FILE* testing::internal::posix::FDOpen (
    int fd,
    const char * mode ) [inline]
```

5.6.2.6 FileNo()

```
int testing::internal::posix::FileNo (
    FILE * file ) [inline]
```

5.6.2.7 FOpen()

```
FILE* testing::internal::posix::FOpen (
    const char * path,
    const char * mode ) [inline]
```

5.6.2.8 FReopen()

```
FILE* testing::internal::posix::FReopen (
    const char * path,
    const char * mode,
    FILE * stream ) [inline]
```

5.6.2.9 GetEnv()

```
const char* testing::internal::posix::GetEnv (  
    const char * name ) [inline]
```

5.6.2.10 IsATTY()

```
int testing::internal::posix::IsATTY (  
    int fd ) [inline]
```

5.6.2.11 IsDir()

```
bool testing::internal::posix::IsDir (  
    const StatStruct & st ) [inline]
```

5.6.2.12 Read()

```
int testing::internal::posix::Read (  
    int fd,  
    void * buf,  
    unsigned int count ) [inline]
```

5.6.2.13 Rmdir()

```
int testing::internal::posix::Rmdir (  
    const char * dir ) [inline]
```

5.6.2.14 Stat()

```
int testing::internal::posix::Stat (  
    const char * path,  
    StatStruct * buf ) [inline]
```

5.6.2.15 StrCaseCmp()

```
int testing::internal::posix::StrCaseCmp (
    const char * s1,
    const char * s2 ) [inline]
```

5.6.2.16 StrDup()

```
char* testing::internal::posix::StrDup (
    const char * src ) [inline]
```

5.6.2.17 StrError()

```
const char* testing::internal::posix::StrError (
    int errnum ) [inline]
```

5.6.2.18 StrNCpy()

```
const char* testing::internal::posix::StrNCpy (
    char * dest,
    const char * src,
    size_t n ) [inline]
```

5.6.2.19 Write()

```
int testing::internal::posix::Write (
    int fd,
    const void * buf,
    unsigned int count ) [inline]
```

5.7 testing_internal Namespace Reference

Functions

- `template<typename T >`
void [DefaultPrintNonContainerTo](#) (const T &value, ::std::ostream *os)

5.7.1 Function Documentation

5.7.1.1 DefaultPrintNonContainerTo()

```
template<typename T >
void testing_internal::DefaultPrintNonContainerTo (
    const T & value,
    ::std::ostream * os )
```

Chapter 6

Class Documentation

6.1 `testing::internal::AddReference< T >` Struct Template Reference

```
#include <gtest-port.h>
```

Public Types

- typedef T & [type](#)

6.1.1 Member Typedef Documentation

6.1.1.1 `type`

```
template<typename T >  
typedef T& testing::internal::AddReference< T >::type
```

The documentation for this struct was generated from the following file:

- `tests/googletest/include/gtest/internal/gtest-port.h`

6.2 `testing::internal::AddReference< T & >` Struct Template Reference

```
#include <gtest-port.h>
```

Public Types

- typedef T & [type](#)

6.2.1 Member Typedef Documentation

6.2.1.1 type

```
template<typename T >
typedef T& testing::internal::AddReference< T & >::type
```

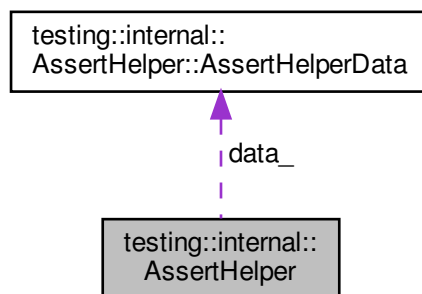
The documentation for this struct was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-port.h](#)

6.3 `testing::internal::AssertHelper` Class Reference

```
#include <gtest.h>
```

Collaboration diagram for `testing::internal::AssertHelper`:



Classes

- struct [AssertHelperData](#)

Public Member Functions

- [AssertHelper](#) (TestPartResult::Type type, const char *file, int line, const char *message)
- [~AssertHelper](#) ()
- void [operator=](#) (const [Message](#) &message) const

Private Member Functions

- [GTEST_DISALLOW_COPY_AND_ASSIGN_](#) (AssertHelper)

Private Attributes

- [AssertHelperData](#) *const `data_`

6.3.1 Constructor & Destructor Documentation

6.3.1.1 AssertHelper()

```
testing::internal::AssertHelper::AssertHelper (
    TestPartResult::Type type,
    const char * file,
    int line,
    const char * message )
```

6.3.1.2 ~AssertHelper()

```
testing::internal::AssertHelper::~~AssertHelper ( )
```

6.3.2 Member Function Documentation

6.3.2.1 GTEST_DISALLOW_COPY_AND_ASSIGN_()

```
testing::internal::AssertHelper::GTEST_DISALLOW_COPY_AND_ASSIGN_ (
    AssertHelper ) [private]
```

6.3.2.2 operator=()

```
void testing::internal::AssertHelper::operator= (
    const Message & message ) const
```

6.3.3 Member Data Documentation

6.3.3.1 data_

```
AssertHelperData* const testing::internal::AssertHelper::data_ [private]
```

The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/gtest.h](#)

6.4 testing::internal::AssertHelper::AssertHelperData Struct Reference

Public Member Functions

- [AssertHelperData](#) (TestPartResult::Type t, const char *srcfile, int line_num, const char *msg)

Public Attributes

- TestPartResult::Type const [type](#)
- const char *const [file](#)
- int const [line](#)
- std::string const [message](#)

Private Member Functions

- [GTEST_DISALLOW_COPY_AND_ASSIGN_](#) (AssertHelperData)

6.4.1 Constructor & Destructor Documentation

6.4.1.1 AssertHelperData()

```
testing::internal::AssertHelper::AssertHelperData::AssertHelperData (
    TestPartResult::Type t,
    const char * srcfile,
    int line_num,
    const char * msg ) [inline]
```

6.4.2 Member Function Documentation

6.4.2.1 GTEST_DISALLOW_COPY_AND_ASSIGN_()

```
testing::internal::AssertHelper::AssertHelperData::GTEST_DISALLOW_COPY_AND_ASSIGN_ (
    AssertHelperData ) [private]
```


6.4.3 Member Data Documentation

6.4.3.1 file

```
const char* const testing::internal::AssertHelper::AssertHelperData::file
```

6.4.3.2 line

```
int const testing::internal::AssertHelper::AssertHelperData::line
```

6.4.3.3 message

```
std::string const testing::internal::AssertHelper::AssertHelperData::message
```

6.4.3.4 type

```
TestPartResult::Type const testing::internal::AssertHelper::AssertHelperData::type
```

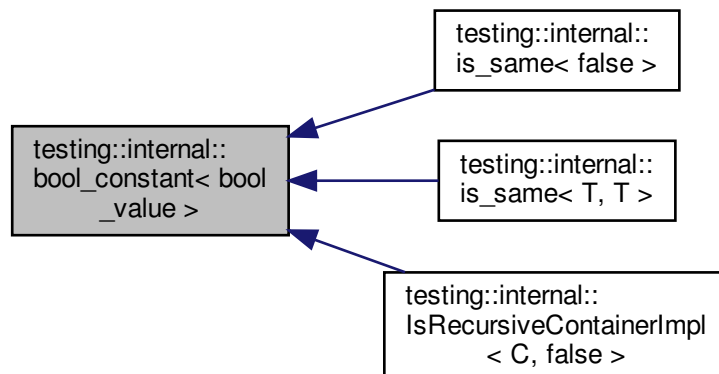
The documentation for this struct was generated from the following file:

- [tests/googletest/include/gtest/gtest.h](#)

6.5 testing::internal::bool_constant< bool_value > Struct Template Reference

```
#include <gtest-port.h>
```

Inheritance diagram for testing::internal::bool_constant< bool_value >:



Public Types

- typedef `bool_constant< bool_value > type`

Static Public Attributes

- static const bool `value = bool_value`

6.5.1 Member Typedef Documentation

6.5.1.1 type

```
template<bool bool_value>
typedef bool_constant<bool_value> testing::internal::bool_constant< bool_value >::type
```

6.5.2 Member Data Documentation

6.5.2.1 value

```
template<bool bool_value>
const bool testing::internal::bool_constant< bool_value >::value = bool_value [static]
```

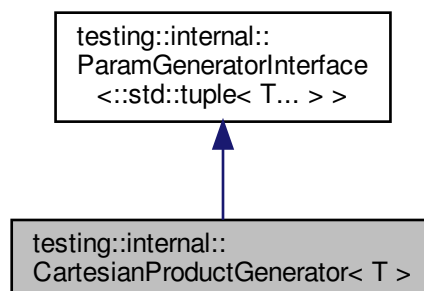
The documentation for this struct was generated from the following file:

- `tests/googletest/include/gtest/internal/gtest-port.h`

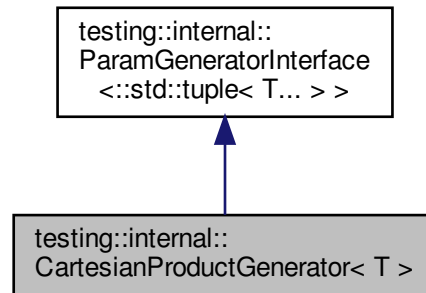
6.6 `testing::internal::CartesianProductGenerator< T >` Class Template Reference

```
#include <gtest-param-util.h>
```

Inheritance diagram for `testing::internal::CartesianProductGenerator< T >`:



Collaboration diagram for testing::internal::CartesianProductGenerator< T >:



Classes

- class [IteratorImpl](#)
- class [IteratorImpl< IndexSequence< I... > >](#)

Public Types

- typedef `::std::tuple< T... >` [ParamType](#)

Public Member Functions

- [CartesianProductGenerator](#) (const `std::tuple< ParamGenerator< T >... > &g`)
- [~CartesianProductGenerator](#) () override
- [ParamIteratorInterface< ParamType > * Begin](#) () const override
- [ParamIteratorInterface< ParamType > * End](#) () const override

Private Types

- using [Iterator](#) = [IteratorImpl](#)< typename [MakeIndexSequence](#)< sizeof...(T)>::type >

Private Attributes

- `std::tuple< ParamGenerator< T >... >` [generators_](#)

6.6.1 Member Typedef Documentation

6.6.1.1 Iterator

```
template<typename... T>
using testing::internal::CartesianProductGenerator< T >::Iterator = IteratorImpl<typename
MakeIndexSequence<sizeof...(T)>::type> [private]
```

6.6.1.2 ParamType

```
template<typename... T>
typedef ::std::tuple<T...> testing::internal::CartesianProductGenerator< T >::ParamType
```

6.6.2 Constructor & Destructor Documentation

6.6.2.1 CartesianProductGenerator()

```
template<typename... T>
testing::internal::CartesianProductGenerator< T >::CartesianProductGenerator (
    const std::tuple< ParamGenerator< T >... > & g ) [inline]
```

6.6.2.2 ~CartesianProductGenerator()

```
template<typename... T>
testing::internal::CartesianProductGenerator< T >::~~CartesianProductGenerator ( ) [inline],
[override]
```

6.6.3 Member Function Documentation

6.6.3.1 Begin()

```
template<typename... T>
ParamIteratorInterface<ParamType>* testing::internal::CartesianProductGenerator< T >::Begin (
) const [inline], [override], [virtual]
```

Implements `testing::internal::ParamGeneratorInterface<::std::tuple< T... > >`.

6.6.3.2 End()

```
template<typename... T>
ParamIteratorInterface<ParamType>* testing::internal::CartesianProductGenerator< T >::End ( )
const [inline], [override], [virtual]
```

Implements [testing::internal::ParamGeneratorInterface<::std::tuple< T... > >](#).

6.6.4 Member Data Documentation

6.6.4.1 generators_

```
template<typename... T>
std::tuple<ParamGenerator<T>...> testing::internal::CartesianProductGenerator< T >::generators↵
_ [private]
```

The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-param-util.h](#)

6.7 testing::internal::CartesianProductHolder< Gen > Class Template Reference

```
#include <gtest-param-util.h>
```

Public Member Functions

- [CartesianProductHolder](#) (const Gen &... g)
- template<typename... T>
[operator ParamGenerator<::std::tuple< T... >> \(\)](#) const

Private Attributes

- std::tuple< Gen... > [generators_](#)

6.7.1 Constructor & Destructor Documentation

6.7.1.1 CartesianProductHolder()

```
template<class... Gen>
testing::internal::CartesianProductHolder< Gen >::CartesianProductHolder (
    const Gen &... g ) [inline]
```

6.7.2 Member Function Documentation

6.7.2.1 operator ParamGenerator<::std::tuple< T... >>()

```
template<class... Gen>
template<typename... T>
testing::internal::CartesianProductHolder< Gen >::operator ParamGenerator<::std::tuple< T...
>> ( ) const [inline]
```

6.7.3 Member Data Documentation

6.7.3.1 generators_

```
template<class... Gen>
std::tuple<Gen...> testing::internal::CartesianProductHolder< Gen >::generators_ [private]
```

The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-param-util.h](#)

6.8 testing::internal::CodeLocation Struct Reference

```
#include <gtest-internal.h>
```

Public Member Functions

- [CodeLocation](#) (const std::string &a_file, int a_line)

Public Attributes

- std::string [file](#)
- int [line](#)

6.8.1 Constructor & Destructor Documentation

6.8.1.1 CodeLocation()

```
testing::internal::CodeLocation::CodeLocation (
    const std::string & a_file,
    int a_line ) [inline]
```

6.8.2 Member Data Documentation

6.8.2.1 file

```
std::string testing::internal::CodeLocation::file
```

6.8.2.2 line

```
int testing::internal::CodeLocation::line
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.9 testing::internal::CompileAssertTypesEqual< T1, T2 > Struct Template Reference

```
#include <gtest-internal.h>
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.10 testing::internal::CompileAssertTypesEqual< T, T > Struct Template Reference

```
#include <gtest-internal.h>
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.11 testing::internal::ConstCharPtr Struct Reference

```
#include <gtest-internal.h>
```

Public Member Functions

- [ConstCharPtr](#) (const char *str)
- [operator bool](#) () const

Public Attributes

- const char * [value](#)

6.11.1 Constructor & Destructor Documentation

6.11.1.1 ConstCharPtr()

```
testing::internal::ConstCharPtr::ConstCharPtr (  
    const char * str ) [inline]
```

6.11.2 Member Function Documentation

6.11.2.1 operator bool()

```
testing::internal::ConstCharPtr::operator bool ( ) const [inline]
```

6.11.3 Member Data Documentation

6.11.3.1 value

```
const char* testing::internal::ConstCharPtr::value
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.12 testing::internal::ConstRef< T > Struct Template Reference

```
#include <gtest-port.h>
```


Public Types

- typedef const T & [type](#)

6.12.1 Member Typedef Documentation

6.12.1.1 type

```
template<typename T >  
typedef const T& testing::internal::ConstRef< T >::type
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-port.h](#)

6.13 testing::internal::ConstRef< T & > Struct Template Reference

```
#include <gtest-port.h>
```

Public Types

- typedef T & [type](#)

6.13.1 Member Typedef Documentation

6.13.1.1 type

```
template<typename T >  
typedef T& testing::internal::ConstRef< T & >::type
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-port.h](#)

6.14 Counter Class Reference

```
#include <sample4.h>
```

Public Member Functions

- [Counter](#) ()
- int [Increment](#) ()
- int [Decrement](#) ()
- void [Print](#) () const

Private Attributes

- int [counter_](#)

6.14.1 Constructor & Destructor Documentation

6.14.1.1 Counter()

```
Counter::Counter ( ) [inline]
```

6.14.2 Member Function Documentation

6.14.2.1 Decrement()

```
int Counter::Decrement ( )
```

6.14.2.2 Increment()

```
int Counter::Increment ( )
```

6.14.2.3 Print()

```
void Counter::Print ( ) const
```

6.14.3 Member Data Documentation

6.14.3.1 counter_

```
int Counter::counter_ [private]
```

The documentation for this class was generated from the following file:

- tests/googletest/samples/[sample4.h](#)

6.15 testing::internal::DoubleSequence< plus_one, T, sizeofT > Struct Template Reference

```
#include <gtest-internal.h>
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.16 testing::internal::DoubleSequence< false, IndexSequence< I... >, sizeofT > Struct Template Reference

```
#include <gtest-internal.h>
```

Public Types

- using [type](#) = [IndexSequence](#)< I..., (sizeofT+I)... >

6.16.1 Member Typedef Documentation

6.16.1.1 type

```
template<size_t... I, size_t sizeofT>
using testing::internal::DoubleSequence< false, IndexSequence< I... >, sizeofT >::type =
IndexSequence<I..., (sizeofT + I)...>
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.17 `testing::internal::DoubleSequence< true, IndexSequence< I... >, sizeofT > Struct` Template Reference

```
#include <gtest-internal.h>
```

Public Types

- using `type` = `IndexSequence< I..., (sizeofT+1)..., 2 * sizeofT >`

6.17.1 Member Typedef Documentation

6.17.1.1 `type`

```
template<size_t... I, size_t sizeofT>
using testing::internal::DoubleSequence< true, IndexSequence< I... >, sizeofT >::type =
IndexSequence<I..., (sizeofT + 1)..., 2 * sizeofT>
```

The documentation for this struct was generated from the following file:

- `tests/googletest/include/gtest/internal/gtest-internal.h`

6.18 `testing::internal::ElemFromList< N, I, T > Struct` Template Reference

```
#include <gtest-internal.h>
```

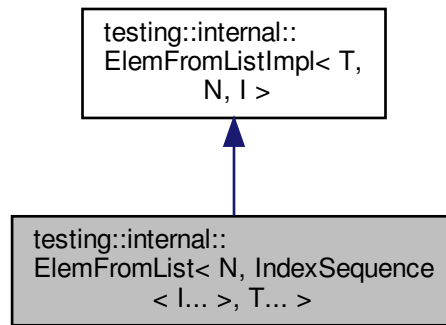
The documentation for this struct was generated from the following file:

- `tests/googletest/include/gtest/internal/gtest-internal.h`

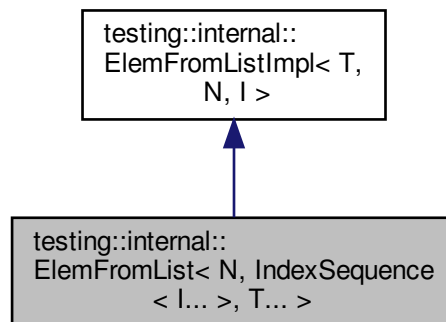
6.19 testing::internal::ElemFromList< N, IndexSequence< I... >, T... > Struct Template Reference

```
#include <gtest-internal.h>
```

Inheritance diagram for testing::internal::ElemFromList< N, IndexSequence< I... >, T... >:



Collaboration diagram for testing::internal::ElemFromList< N, IndexSequence< I... >, T... >:



The documentation for this struct was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-internal.h](#)

6.20 testing::internal::ElemFromListImpl< T, size_t, size_t > Struct Template Reference

```
#include <gtest-internal.h>
```

The documentation for this struct was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-internal.h](#)

6.21 testing::internal::ElemFromListImpl< T, I, I > Struct Template Reference

```
#include <gtest-internal.h>
```

Public Types

- using `type` = T

6.21.1 Member Typedef Documentation

6.21.1.1 type

```
template<typename T , size_t I>  
using testing::internal::ElemFromListImpl< T, I, I >::type = T
```

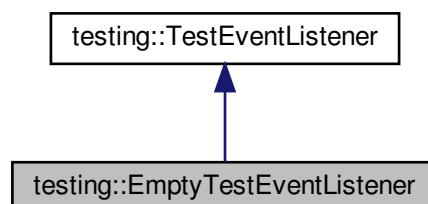
The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

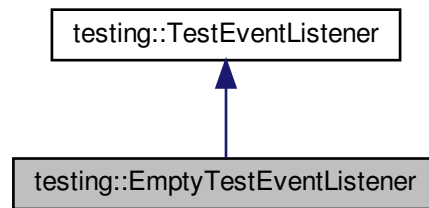
6.22 testing::EmptyTestEventListener Class Reference

```
#include <gtest.h>
```

Inheritance diagram for testing::EmptyTestEventListener:



Collaboration diagram for testing::EmptyTestEventListener:



Public Member Functions

- void [OnTestProgramStart](#) (const [UnitTest](#) &) override
- void [OnTestIterationStart](#) (const [UnitTest](#) &, int) override
- void [OnEnvironmentsSetUpStart](#) (const [UnitTest](#) &) override
- void [OnEnvironmentsSetUpEnd](#) (const [UnitTest](#) &) override
- void [OnTestSuiteStart](#) (const [TestSuite](#) &) override
- void [OnTestCaseStart](#) (const [TestCase](#) &) override
- void [OnTestStart](#) (const [TestInfo](#) &) override
- void [OnTestPartResult](#) (const [TestPartResult](#) &) override
- void [OnTestEnd](#) (const [TestInfo](#) &) override
- void [OnTestSuiteEnd](#) (const [TestSuite](#) &) override
- void [OnTestCaseEnd](#) (const [TestCase](#) &) override
- void [OnEnvironmentsTearDownStart](#) (const [UnitTest](#) &) override
- void [OnEnvironmentsTearDownEnd](#) (const [UnitTest](#) &) override
- void [OnTestIterationEnd](#) (const [UnitTest](#) &, int) override
- void [OnTestProgramEnd](#) (const [UnitTest](#) &) override

6.22.1 Member Function Documentation

6.22.1.1 OnEnvironmentsSetUpEnd()

```
void testing::EmptyTestEventListener::OnEnvironmentsSetUpEnd (
    const UnitTest & ) [inline], [override], [virtual]
```

Implements [testing::TestEventListener](#).

6.22.1.2 OnEnvironmentsSetUpStart()

```
void testing::EmptyTestEventListener::OnEnvironmentsSetUpStart (
    const UnitTest & ) [inline], [override], [virtual]
```

Implements [testing::TestEventListener](#).

6.22.1.3 OnEnvironmentsTearDownEnd()

```
void testing::EmptyTestEventListener::OnEnvironmentsTearDownEnd (
    const UnitTest & ) [inline], [override], [virtual]
```

Implements [testing::TestEventListener](#).

6.22.1.4 OnEnvironmentsTearDownStart()

```
void testing::EmptyTestEventListener::OnEnvironmentsTearDownStart (
    const UnitTest & ) [inline], [override], [virtual]
```

Implements [testing::TestEventListener](#).

6.22.1.5 OnTestCaseEnd()

```
void testing::EmptyTestEventListener::OnTestCaseEnd (
    const TestCase & ) [inline], [override], [virtual]
```

Reimplemented from [testing::TestEventListener](#).

6.22.1.6 OnTestCaseStart()

```
void testing::EmptyTestEventListener::OnTestCaseStart (
    const TestCase & ) [inline], [override], [virtual]
```

Reimplemented from [testing::TestEventListener](#).

6.22.1.7 OnTestEnd()

```
void testing::EmptyTestEventListener::OnTestEnd (
    const TestInfo & ) [inline], [override], [virtual]
```

Implements [testing::TestEventListener](#).

6.22.1.8 OnTestIterationEnd()

```
void testing::EmptyTestEventListener::OnTestIterationEnd (
    const UnitTest & ,
    int ) [inline], [override], [virtual]
```

Implements [testing::TestEventListener](#).

6.22.1.9 OnTestIterationStart()

```
void testing::EmptyTestEventListener::OnTestIterationStart (
    const UnitTest & ,
    int ) [inline], [override], [virtual]
```

Implements [testing::TestEventListener](#).

6.22.1.10 OnTestPartResult()

```
void testing::EmptyTestEventListener::OnTestPartResult (
    const TestPartResult & ) [inline], [override], [virtual]
```

Implements [testing::TestEventListener](#).

6.22.1.11 OnTestProgramEnd()

```
void testing::EmptyTestEventListener::OnTestProgramEnd (
    const UnitTest & ) [inline], [override], [virtual]
```

Implements [testing::TestEventListener](#).

6.22.1.12 OnTestProgramStart()

```
void testing::EmptyTestEventListener::OnTestProgramStart (
    const UnitTest & ) [inline], [override], [virtual]
```

Implements [testing::TestEventListener](#).

6.22.1.13 OnTestStart()

```
void testing::EmptyTestEventListener::OnTestStart (
    const TestInfo & ) [inline], [override], [virtual]
```

Implements [testing::TestEventListener](#).

6.22.1.14 OnTestSuiteEnd()

```
void testing::EmptyTestEventListener::OnTestSuiteEnd (
    const TestSuite & ) [inline], [override], [virtual]
```

Reimplemented from [testing::TestEventListener](#).

6.22.1.15 OnTestSuiteStart()

```
void testing::EmptyTestEventListener::OnTestSuiteStart (
    const TestSuite & ) [inline], [override], [virtual]
```

Reimplemented from [testing::TestEventListener](#).

The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/gtest.h](#)

6.23 testing::internal::EnableIf< bool > Struct Template Reference

```
#include <gtest-internal.h>
```

The documentation for this struct was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-internal.h](#)

6.24 testing::internal::EnableIf< true > Struct Template Reference

```
#include <gtest-internal.h>
```

Public Types

- typedef void [type](#)

6.24.1 Member Typedef Documentation

6.24.1.1 type

```
typedef void testing::internal::EnableIf< true >::type
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.25 testing::Environment Class Reference

```
#include <gtest.h>
```

Classes

- struct [Setup_should_be_spelled_SetUp](#)

Public Member Functions

- virtual [~Environment](#) ()
- virtual void [SetUp](#) ()
- virtual void [TearDown](#) ()

Private Member Functions

- virtual [Setup_should_be_spelled_SetUp](#) * [Setup](#) ()

6.25.1 Constructor & Destructor Documentation

6.25.1.1 ~Environment()

```
virtual testing::Environment::~~Environment ( ) [inline], [virtual]
```

6.25.2 Member Function Documentation

6.25.2.1 SetUp()

```
virtual void testing::Environment::SetUp ( ) [inline], [virtual]
```

6.25.2.2 Setup()

```
virtual Setup\_should\_be\_spelled\_SetUp* testing::Environment::Setup ( ) [inline], [private],  
[virtual]
```

6.25.2.3 TearDown()

```
virtual void testing::Environment::TearDown ( ) [inline], [virtual]
```

The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/gtest.h](#)

6.26 testing::internal::EqHelper Class Reference

```
#include <gtest.h>
```

Static Public Member Functions

- `template<typename T1, typename T2, typename std::enable_if<!std::is_integral< T1 >::value || !std::is_pointer< T2 >::value >::type
* = nullptr>
static AssertionResult Compare (const char *lhs_expression, const char *rhs_expression, const T1 &lhs,
const T2 &rhs)`
- `static AssertionResult Compare (const char *lhs_expression, const char *rhs_expression, BiggestInt lhs,
BiggestInt rhs)`
- `template<typename T >
static AssertionResult Compare (const char *lhs_expression, const char *rhs_expression, std::nullptr_t, T
*rhs)`

6.26.1 Member Function Documentation

6.26.1.1 Compare() [1/3]

```
template<typename T1 , typename T2 , typename std::enable_if<!std::is_integral< T1 >::value||!std::
::is_pointer< T2 >::value >::type * = nullptr>
static AssertionResult testing::internal::EqHelper::Compare (
    const char * lhs_expression,
    const char * rhs_expression,
    const T1 & lhs,
    const T2 & rhs ) [inline], [static]
```

6.26.1.2 Compare() [2/3]

```
static AssertionResult testing::internal::EqHelper::Compare (
    const char * lhs_expression,
    const char * rhs_expression,
    BiggestInt lhs,
    BiggestInt rhs ) [inline], [static]
```

6.26.1.3 Compare() [3/3]

```
template<typename T >
static AssertionResult testing::internal::EqHelper::Compare (
    const char * lhs_expression,
    const char * rhs_expression,
    std::nullptr_t ,
    T * rhs ) [inline], [static]
```

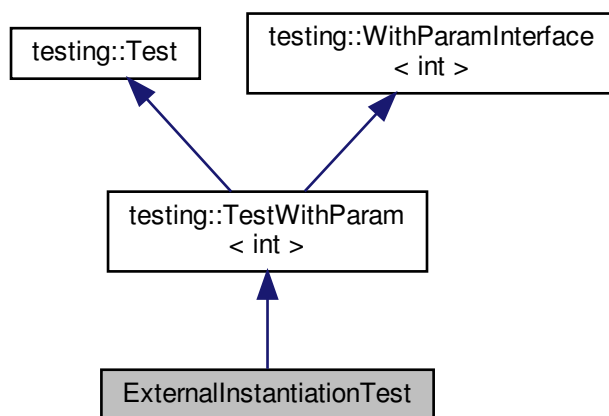
The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/gtest.h

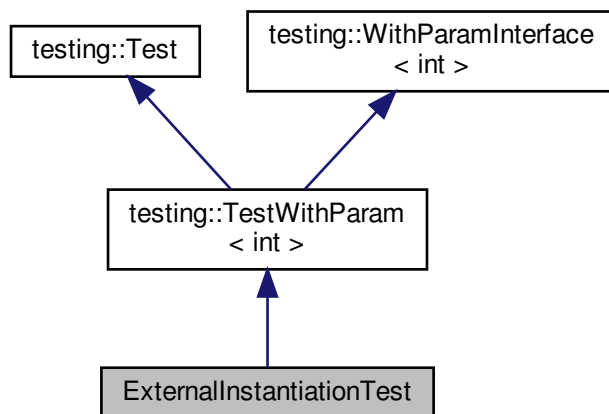
6.27 ExternalInstantiationTest Class Reference

```
#include <googletest-param-test-test.h>
```

Inheritance diagram for ExternalInstantiationTest:



Collaboration diagram for ExternalInstantiationTest:



Additional Inherited Members

The documentation for this class was generated from the following file:

- tests/googletest/test/[googletest-param-test-test.h](#)

6.28 testing::internal::fakeType Struct Reference

```
#include <gtest.h>
```

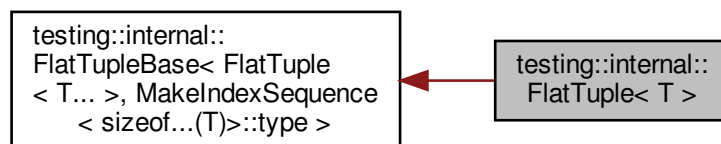
The documentation for this struct was generated from the following file:

- [tests/googletest/include/gtest/gtest.h](#)

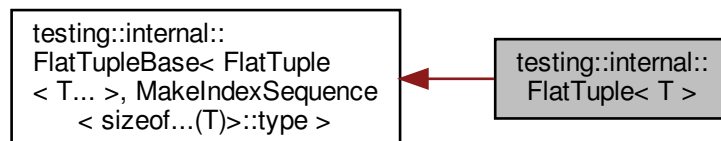
6.29 testing::internal::FlatTuple< T > Class Template Reference

```
#include <gtest-internal.h>
```

Inheritance diagram for testing::internal::FlatTuple< T >:



Collaboration diagram for testing::internal::FlatTuple< T >:



Public Member Functions

- [FlatTuple](#) ()=default
- [FlatTuple](#) (T... t)
- [template<size_t I>](#)
const [ElemFromList](#)< I, [Indices](#), T... >::type & [Get](#) () const
- [template<size_t I>](#)
[ElemFromList](#)< I, [Indices](#), T... >::type & [Get](#) ()

Private Types

- using `Indices` = typename FlatTuple::FlatTupleBase::Indices

6.29.1 Member Typedef Documentation

6.29.1.1 Indices

```
template<typename... T>
using testing::internal::FlatTuple< T >::Indices = typename FlatTuple::FlatTupleBase::Indices
[private]
```

6.29.2 Constructor & Destructor Documentation

6.29.2.1 FlatTuple() [1/2]

```
template<typename... T>
testing::internal::FlatTuple< T >::FlatTuple ( ) [default]
```

6.29.2.2 FlatTuple() [2/2]

```
template<typename... T>
testing::internal::FlatTuple< T >::FlatTuple (
    T... t ) [inline], [explicit]
```

6.29.3 Member Function Documentation

6.29.3.1 Get() [1/2]

```
template<typename... T>
template<size_t I>
const ElemFromList<I, Indices, T...>::type& testing::internal::FlatTuple< T >::Get ( ) const
[inline]
```


6.29.3.2 Get() [2/2]

```
template<typename... T>
template<size_t I>
ElemFromList<I, Indices, T...>::type& testing::internal::FlatTuple< T >::Get ( ) [inline]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/internal/gtest-internal.h

6.30 testing::internal::FlatTupleBase< Derived, Idx > Struct Template Reference

```
#include <gtest-internal.h>
```

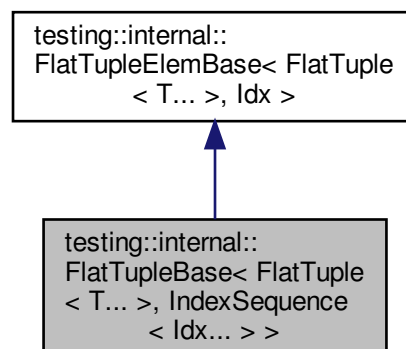
The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/gtest-internal.h

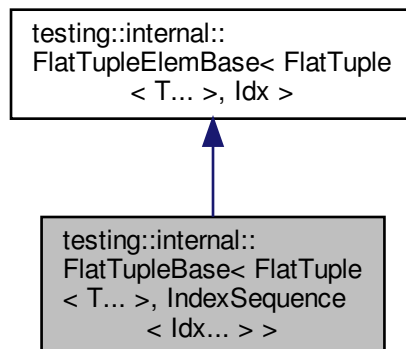
6.31 testing::internal::FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > > Struct Template Reference

```
#include <gtest-internal.h>
```

Inheritance diagram for testing::internal::FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > >:



Collaboration diagram for `testing::internal::FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > >`:



Public Types

- using `Indices` = `IndexSequence< Idx... >`

Public Member Functions

- `FlatTupleBase` ()=default
- `FlatTupleBase` (T... t)

6.31.1 Member Typedef Documentation

6.31.1.1 Indices

```

template<size_t... Idx, typename... T>
using testing::internal::FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > >::Indices = IndexSequence<Idx...>

```

6.31.2 Constructor & Destructor Documentation

6.31.2.1 FlatTupleBase() [1/2]

```

template<size_t... Idx, typename... T>
testing::internal::FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > >::FlatTupleBase ( ) [default]

```

6.31.2.2 FlatTupleBase() [2/2]

```
template<size_t... Idx, typename... T>
testing::internal::FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > >::Flat←
TupleBase (
    T... t ) [inline], [explicit]
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/gtest-internal.h

6.32 testing::internal::FlatTupleElemBase< Derived, I > Struct Template Reference

```
#include <gtest-internal.h>
```

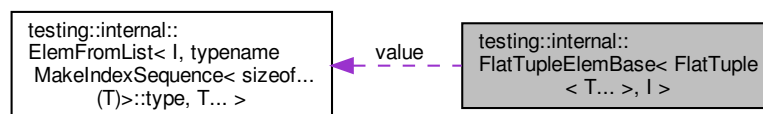
The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/gtest-internal.h

6.33 testing::internal::FlatTupleElemBase< FlatTuple< T... >, I > Struct Template Reference

```
#include <gtest-internal.h>
```

Collaboration diagram for testing::internal::FlatTupleElemBase< FlatTuple< T... >, I >:



Public Types

- using `value_type` = typename `ElemFromList< I, typename MakeIndexSequence< sizeof...(T)>::type, T... >::type`

Public Member Functions

- `FlatTupleElemBase()`=default
- `FlatTupleElemBase(value_type t)`

Public Attributes

- [value_type](#) value

6.33.1 Member Typedef Documentation

6.33.1.1 value_type

```
template<typename... T, size_t I>
using testing::internal::FlatTupleElemBase< FlatTuple< T... >, I >::value_type = typename
ElemFromList<I, typename MakeIndexSequence<sizeof...(T)>::type, T...>::type
```

6.33.2 Constructor & Destructor Documentation

6.33.2.1 FlatTupleElemBase() [1/2]

```
template<typename... T, size_t I>
testing::internal::FlatTupleElemBase< FlatTuple< T... >, I >::FlatTupleElemBase ( ) [default]
```

6.33.2.2 FlatTupleElemBase() [2/2]

```
template<typename... T, size_t I>
testing::internal::FlatTupleElemBase< FlatTuple< T... >, I >::FlatTupleElemBase (
    value_type t ) [inline], [explicit]
```

6.33.3 Member Data Documentation

6.33.3.1 value

```
template<typename... T, size_t I>
value_type testing::internal::FlatTupleElemBase< FlatTuple< T... >, I >::value
```

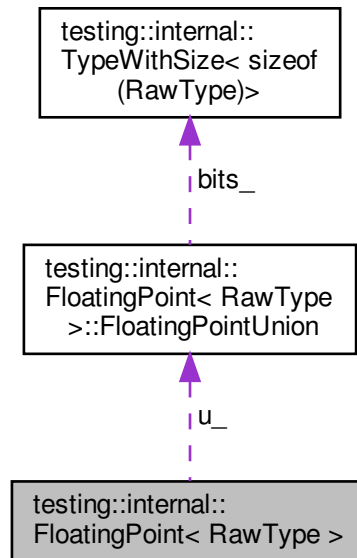
The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.34 testing::internal::FloatingPoint< RawType > Class Template Reference

```
#include <gtest-internal.h>
```

Collaboration diagram for testing::internal::FloatingPoint< RawType >:



Classes

- union `FloatingPointUnion`

Public Types

- typedef `TypeWithSize< sizeof(RawType)>::UInt` `Bits`

Public Member Functions

- `FloatingPoint` (const RawType &x)
- const `Bits` & `bits` () const
- `Bits` `exponent_bits` () const
- `Bits` `fraction_bits` () const
- `Bits` `sign_bit` () const
- bool `is_nan` () const
- bool `AlmostEquals` (const `FloatingPoint` &rhs) const
- template<>
float `Max` ()
- template<>
double `Max` ()

Static Public Member Functions

- static RawType [ReinterpretBits](#) (const [Bits](#) bits)
- static RawType [Infinity](#) ()
- static RawType [Max](#) ()

Static Public Attributes

- static const size_t [kBitCount](#) = 8*sizeof(RawType)
- static const size_t [kFractionBitCount](#)
- static const size_t [kExponentBitCount](#) = [kBitCount](#) - 1 - [kFractionBitCount](#)
- static const [Bits](#) [kSignBitMask](#) = static_cast<[Bits](#)>(1) << ([kBitCount](#) - 1)
- static const [Bits](#) [kFractionBitMask](#)
- static const [Bits](#) [kExponentBitMask](#) = ~([kSignBitMask](#) | [kFractionBitMask](#))
- static const size_t [kMaxUlp](#) = 4

Static Private Member Functions

- static [Bits](#) [SignAndMagnitudeToBiased](#) (const [Bits](#) &sam)
- static [Bits](#) [DistanceBetweenSignAndMagnitudeNumbers](#) (const [Bits](#) &sam1, const [Bits](#) &sam2)

Private Attributes

- [FloatingPointUnion](#) u_

6.34.1 Member Typedef Documentation

6.34.1.1 Bits

```
template<typename RawType>
typedef TypeWithSize<sizeof(RawType)>::UInt testing::internal::FloatingPoint< RawType >::Bits
```

6.34.2 Constructor & Destructor Documentation

6.34.2.1 FloatingPoint()

```
template<typename RawType>
testing::internal::FloatingPoint< RawType >::FloatingPoint (
    const RawType & x ) [inline], [explicit]
```

6.34.3 Member Function Documentation

6.34.3.1 AlmostEquals()

```
template<typename RawType>
bool testing::internal::FloatingPoint< RawType >::AlmostEquals (
    const FloatingPoint< RawType > & rhs ) const [inline]
```

6.34.3.2 bits()

```
template<typename RawType>
const Bits& testing::internal::FloatingPoint< RawType >::bits ( ) const [inline]
```

6.34.3.3 DistanceBetweenSignAndMagnitudeNumbers()

```
template<typename RawType>
static Bits testing::internal::FloatingPoint< RawType >::DistanceBetweenSignAndMagnitude←
Numbers (
    const Bits & sam1,
    const Bits & sam2 ) [inline], [static], [private]
```

6.34.3.4 exponent_bits()

```
template<typename RawType>
Bits testing::internal::FloatingPoint< RawType >::exponent_bits ( ) const [inline]
```

6.34.3.5 fraction_bits()

```
template<typename RawType>
Bits testing::internal::FloatingPoint< RawType >::fraction_bits ( ) const [inline]
```

6.34.3.6 Infinity()

```
template<typename RawType>
static RawType testing::internal::FloatingPoint< RawType >::Infinity ( ) [inline], [static]
```

6.34.3.7 is_nan()

```
template<typename RawType>
bool testing::internal::FloatingPoint< RawType >::is_nan ( ) const [inline]
```

6.34.3.8 Max() [1/3]

```
template<typename RawType>
static RawType testing::internal::FloatingPoint< RawType >::Max ( ) [static]
```

6.34.3.9 Max() [2/3]

```
template<>
float testing::internal::FloatingPoint< float >::Max ( ) [inline]
```

6.34.3.10 Max() [3/3]

```
template<>
double testing::internal::FloatingPoint< double >::Max ( ) [inline]
```

6.34.3.11 ReinterpretBits()

```
template<typename RawType>
static RawType testing::internal::FloatingPoint< RawType >::ReinterpretBits (
    const Bits bits ) [inline], [static]
```

6.34.3.12 sign_bit()

```
template<typename RawType>
Bits testing::internal::FloatingPoint< RawType >::sign_bit ( ) const [inline]
```

6.34.3.13 SignAndMagnitudeToBiased()

```
template<typename RawType>
static Bits testing::internal::FloatingPoint< RawType >::SignAndMagnitudeToBiased (
    const Bits & sam ) [inline], [static], [private]
```


6.34.4 Member Data Documentation

6.34.4.1 kBitCount

```
template<typename RawType>
const size_t testing::internal::FloatingPoint< RawType >::kBitCount = 8*sizeof(RawType) [static]
```

6.34.4.2 kExponentBitCount

```
template<typename RawType>
const size_t testing::internal::FloatingPoint< RawType >::kExponentBitCount = kBitCount - 1 -
kFractionBitCount [static]
```

6.34.4.3 kExponentBitMask

```
template<typename RawType>
const Bits testing::internal::FloatingPoint< RawType >::kExponentBitMask = ~(kSignBitMask |
kFractionBitMask) [static]
```

6.34.4.4 kFractionBitCount

```
template<typename RawType>
const size_t testing::internal::FloatingPoint< RawType >::kFractionBitCount [static]
```

Initial value:

```
=
std::numeric_limits<RawType>::digits - 1
```

6.34.4.5 kFractionBitMask

```
template<typename RawType>
const Bits testing::internal::FloatingPoint< RawType >::kFractionBitMask [static]
```

Initial value:

```
=
~static_cast<Bits>(0) >> (kExponentBitCount + 1)
```

6.34.4.6 kMaxUlp

```
template<typename RawType>
const size_t testing::internal::FloatingPoint< RawType >::kMaxUlp = 4 [static]
```

6.34.4.7 kSignBitMask

```
template<typename RawType>
const Bits testing::internal::FloatingPoint< RawType >::kSignBitMask = static_cast<Bits>(1)
<< (kBitCount - 1) [static]
```

6.34.4.8 u_

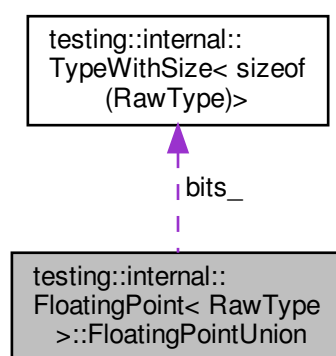
```
template<typename RawType>
FloatingPointUnion testing::internal::FloatingPoint< RawType >::u_ [private]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.35 testing::internal::FloatingPoint< RawType >::FloatingPointUnion Union Reference

Collaboration diagram for testing::internal::FloatingPoint< RawType >::FloatingPointUnion:



Public Attributes

- RawType [value_](#)
- Bits [bits_](#)

6.35.1 Member Data Documentation

6.35.1.1 bits_

```
template<typename RawType>
Bits testing::internal::FloatingPoint< RawType >::FloatingPointUnion::bits_
```

6.35.1.2 value_

```
template<typename RawType>
RawType testing::internal::FloatingPoint< RawType >::FloatingPointUnion::value_
```

The documentation for this union was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.36 testing::internal::FormatForComparison< ToPrint, OtherOperand > Class Template Reference

```
#include <gtest-printers.h>
```

Static Public Member Functions

- ::std::string [Format](#) (const ToPrint &value)

6.36.1 Member Function Documentation

6.36.1.1 Format()

```
template<typename ToPrint , typename OtherOperand >
::std::string testing::internal::FormatForComparison< ToPrint, OtherOperand >::Format (
    const ToPrint & value ) [inline], [static]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/[gtest-printers.h](#)

6.37 `testing::internal::FormatForComparison< ToPrint[N], OtherOperand >` Class Template Reference

```
#include <gtest-printers.h>
```

Static Public Member Functions

- `::std::string Format (const ToPrint *value)`

6.37.1 Member Function Documentation

6.37.1.1 `Format()`

```
template<typename ToPrint , size_t N, typename OtherOperand >
::std::string testing::internal::FormatForComparison< ToPrint [N], OtherOperand >::Format (
    const ToPrint * value ) [inline], [static]
```

The documentation for this class was generated from the following file:

- `tests/googletest/include/gtest/gtest-printers.h`

6.38 `testing::internal::GTestLog` Class Reference

```
#include <gtest-port.h>
```

Public Member Functions

- `GTestLog (GTestLogSeverity severity, const char *file, int line)`
- `~GTestLog ()`
- `::std::ostream & GetStream ()`

Private Member Functions

- `GTEST_DISALLOW_COPY_AND_ASSIGN_ (GTestLog)`

Private Attributes

- `const GTestLogSeverity severity_`

6.38.1 Constructor & Destructor Documentation

6.38.1.1 GTestLog()

```
testing::internal::GTestLog::GTestLog (
    GTestLogSeverity severity,
    const char * file,
    int line )
```

6.38.1.2 ~GTestLog()

```
testing::internal::GTestLog::~GTestLog ( )
```

6.38.2 Member Function Documentation

6.38.2.1 GetStream()

```
::std::ostream& testing::internal::GTestLog::GetStream ( ) [inline]
```

6.38.2.2 GTEST_DISALLOW_COPY_AND_ASSIGN_()

```
testing::internal::GTestLog::GTEST_DISALLOW_COPY_AND_ASSIGN_ (
    GTestLog ) [private]
```

6.38.3 Member Data Documentation

6.38.3.1 severity_

```
const GTestLogSeverity testing::internal::GTestLog::severity_ [private]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/internal/gtest-port.h

6.39 testing::internal::GTestMutexLock Class Reference

```
#include <gtest-port.h>
```

Public Member Functions

- [GTestMutexLock](#) ([Mutex](#) *)

6.39.1 Constructor & Destructor Documentation

6.39.1.1 GTestMutexLock()

```
testing::internal::GTestMutexLock::GTestMutexLock (
    Mutex * ) [inline], [explicit]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-port.h](#)

6.40 testing::internal::IgnoredValue Class Reference

```
#include <gtest-internal.h>
```

Classes

- struct [Sink](#)

Public Member Functions

- [template<typename T , typename std::enable_if<!std::is_convertible< T, Sink >::value, int >::type = 0> IgnoredValue](#) (const T &)

6.40.1 Constructor & Destructor Documentation

6.40.1.1 IgnoredValue()

```
template<typename T , typename std::enable_if<!std::is_convertible< T, Sink >::value, int >↔
::type = 0>
testing::internal::IgnoredValue::IgnoredValue (
    const T & ) [inline]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.41 testing::internal::IndexSequence< Is > Struct Template Reference

```
#include <gtest-internal.h>
```

Public Types

- using [type](#) = [IndexSequence](#)

6.41.1 Member Typedef Documentation

6.41.1.1 type

```
template<size_t... Is>
using testing::internal::IndexSequence< Is >::type = IndexSequence
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.42 testing::internal::ParameterizedTestSuiteInfo< TestSuite >::InstantiationInfo Struct Reference

Public Member Functions

- [InstantiationInfo](#) (const std::string &name_in, GeneratorCreationFunc *generator_in, [ParamNameGeneratorFunc](#) *name_func_in, const char *file_in, int line_in)

Public Attributes

- std::string [name](#)
- GeneratorCreationFunc * [generator](#)
- [ParamNameGeneratorFunc](#) * [name_func](#)
- const char * [file](#)
- int [line](#)

6.42.1 Constructor & Destructor Documentation

6.42.1.1 InstantiationInfo()

```
template<class TestSuite>
testing::internal::ParameterizedTestSuiteInfo< TestSuite >::InstantiationInfo↵
Info (
    const std::string & name_in,
    GeneratorCreationFunc * generator_in,
    ParamNameGeneratorFunc * name_func_in,
    const char * file_in,
    int line_in ) [inline]
```

6.42.2 Member Data Documentation

6.42.2.1 file

```
template<class TestSuite>
const char* testing::internal::ParameterizedTestSuiteInfo< TestSuite >::InstantiationInfo↵
::file
```

6.42.2.2 generator

```
template<class TestSuite>
GeneratorCreationFunc* testing::internal::ParameterizedTestSuiteInfo< TestSuite >::InstantiationInfo↵
Info::generator
```

6.42.2.3 line

```
template<class TestSuite>
int testing::internal::ParameterizedTestSuiteInfo< TestSuite >::InstantiationInfo::line
```

6.42.2.4 name

```
template<class TestSuite>
std::string testing::internal::ParameterizedTestSuiteInfo< TestSuite >::InstantiationInfo↵
::name
```


6.42.2.5 name_func

```
template<class TestSuite>
ParamNameGeneratorFunc* testing::internal::ParameterizedTestSuiteInfo< TestSuite >::InstantiationInfo::name_func
```

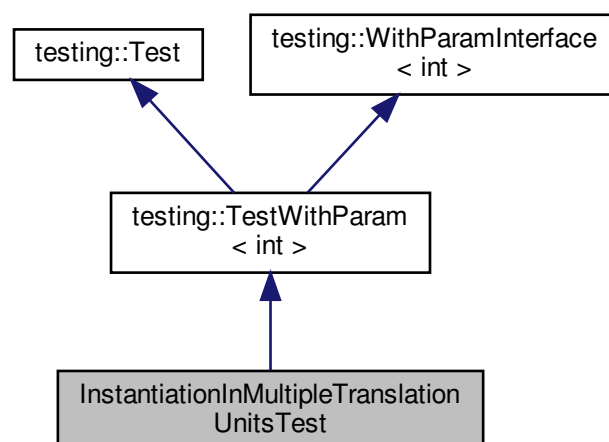
The documentation for this struct was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-param-util.h](#)

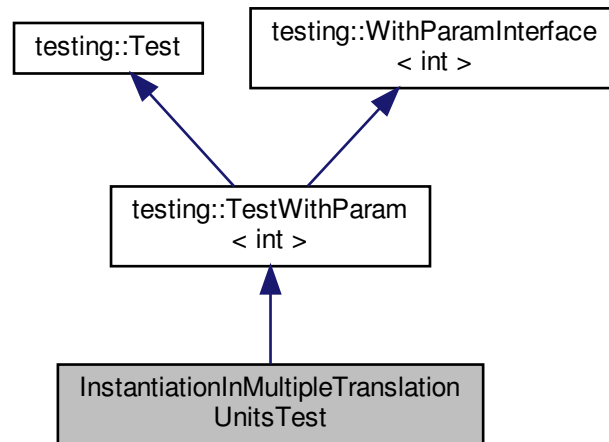
6.43 InstantiationInMultipleTranslationUnitsTest Class Reference

```
#include <googletest-param-test-test.h>
```

Inheritance diagram for InstantiationInMultipleTranslationUnitsTest:



Collaboration diagram for `InstantiationInMultipleTranslationUnitsTest`:



Additional Inherited Members

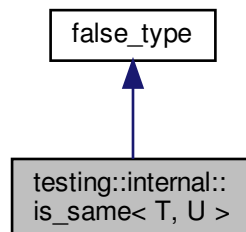
The documentation for this class was generated from the following file:

- <tests/googletest/test/googletest-param-test-test.h>

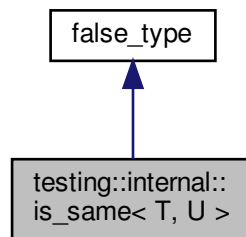
6.44 `testing::internal::is_same< T, U >` Struct Template Reference

```
#include <gtest-port.h>
```

Inheritance diagram for `testing::internal::is_same< T, U >`:



Collaboration diagram for testing::internal::is_same< T, U >:



Additional Inherited Members

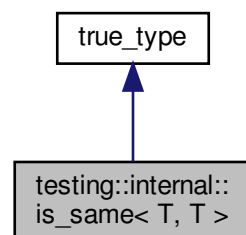
The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-port.h](#)

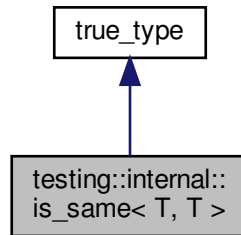
6.45 testing::internal::is_same< T, T > Struct Template Reference

```
#include <gtest-port.h>
```

Inheritance diagram for testing::internal::is_same< T, T >:



Collaboration diagram for `testing::internal::is_same< T, T >`:



Additional Inherited Members

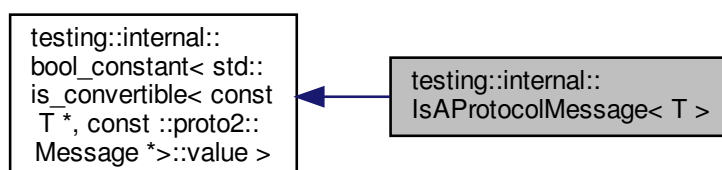
The documentation for this struct was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-port.h](#)

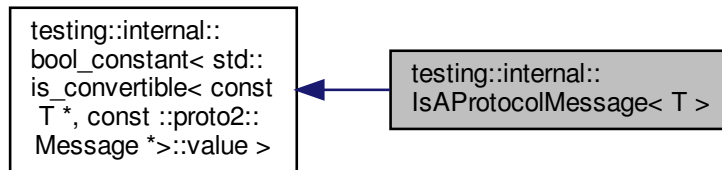
6.46 `testing::internal::IsAProtocolMessage< T >` Struct Template Reference

```
#include <gtest-internal.h>
```

Inheritance diagram for `testing::internal::IsAProtocolMessage< T >`:



Collaboration diagram for testing::internal::IsAProtocolMessage< T >:



Additional Inherited Members

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.47 testing::internal::IsHashTable< T > Struct Template Reference

```
#include <gtest-internal.h>
```

Static Public Attributes

- static const bool [value](#) = sizeof([test](#)<T>(nullptr, nullptr)) == sizeof(int)

Static Private Member Functions

- template<typename U >
static char [test](#) (typename U::hasher *, typename U::reverse_iterator *)
- template<typename U >
static int [test](#) (typename U::hasher *,...)
- template<typename U >
static char [test](#) (...)

6.47.1 Member Function Documentation

6.47.1.1 test() [1/3]

```
template<typename T >
template<typename U >
static char testing::internal::IsHashTable< T >::test (
    typename U::hasher * ,
    typename U::reverse_iterator * ) [static], [private]
```

6.47.1.2 test() [2/3]

```
template<typename T >
template<typename U >
static int testing::internal::IsHashTable< T >::test (
    typename U::hasher * ,
    ... ) [static], [private]
```

6.47.1.3 test() [3/3]

```
template<typename T >
template<typename U >
static char testing::internal::IsHashTable< T >::test (
    ... ) [static], [private]
```

6.47.2 Member Data Documentation

6.47.2.1 value

```
template<typename T >
const bool testing::internal::IsHashTable< T >::value = sizeof(test<T>(nullptr, nullptr)) ==
sizeof(int) [static]
```

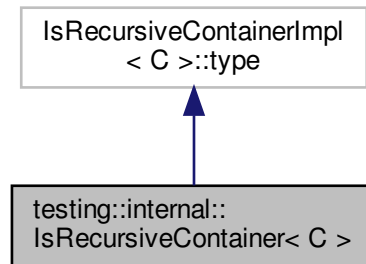
The documentation for this struct was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-internal.h](#)

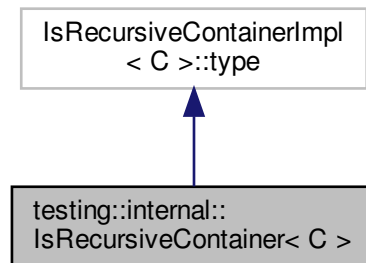
6.48 testing::internal::IsRecursiveContainer< C > Struct Template Reference

```
#include <gtest-internal.h>
```

Inheritance diagram for testing::internal::IsRecursiveContainer< C >:



Collaboration diagram for testing::internal::IsRecursiveContainer< C >:



The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.49 testing::internal::IsRecursiveContainerImpl< C, bool > Struct Template Reference

```
#include <gtest-internal.h>
```

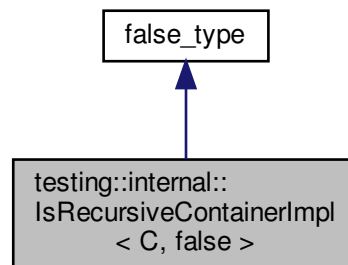
The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

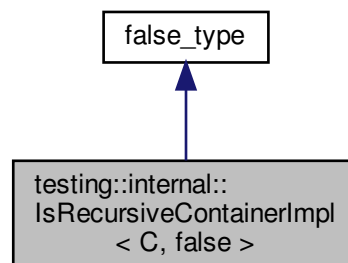
6.50 testing::internal::IsRecursiveContainerImpl< C, false > Struct Template Reference

```
#include <gtest-internal.h>
```

Inheritance diagram for testing::internal::IsRecursiveContainerImpl< C, false >:



Collaboration diagram for testing::internal::IsRecursiveContainerImpl< C, false >:



Additional Inherited Members

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.51 testing::internal::IsRecursiveContainerImpl< C, true > Struct Template Reference

```
#include <gtest-internal.h>
```


Public Types

- using `value_type` = `decltype(*std::declval< typename C::const_iterator >())`
- using `type` = `is_same< typename std::remove_const< typename std::remove_reference< value_type >::type >::type, C >`

6.51.1 Member Typedef Documentation

6.51.1.1 type

```
template<typename C >
using testing::internal::IsRecursiveContainerImpl< C, true >::type = is_same<typename std::remove_const<
typename std::remove_reference<value_type>::type>::type, C>
```

6.51.1.2 value_type

```
template<typename C >
using testing::internal::IsRecursiveContainerImpl< C, true >::value_type = decltype(*std::declval<
typename C::const_iterator>())
```

The documentation for this struct was generated from the following file:

- `tests/googletest/include/gtest/internal/gtest-internal.h`

6.52 testing::internal::IsSame< T, U > Struct Template Reference

```
#include <gtest-port.h>
```

Public Types

- enum { `value` = false }

6.52.1 Member Enumeration Documentation

6.52.1.1 anonymous enum

```
template<typename T , typename U >
anonymous enum
```

Enumerator

value	
-------	--

The documentation for this struct was generated from the following file:

- <tests/googletest/include/gtest/internal/gtest-port.h>

6.53 `testing::internal::IsSame< T, T >` Struct Template Reference

```
#include <gtest-port.h>
```

Public Types

- enum { `value` = true }

6.53.1 Member Enumeration Documentation

6.53.1.1 anonymous enum

```
template<typename T >  
anonymous enum
```

Enumerator

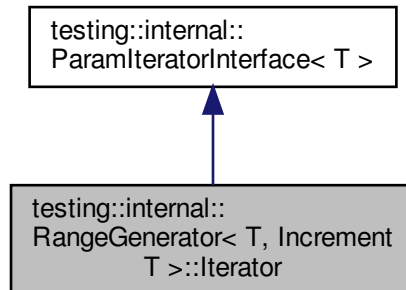
value	
-------	--

The documentation for this struct was generated from the following file:

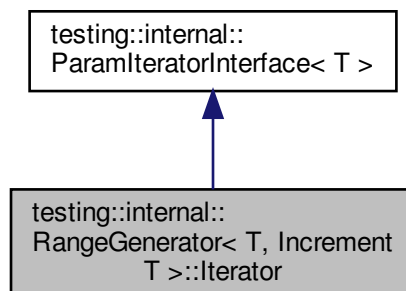
- <tests/googletest/include/gtest/internal/gtest-port.h>

6.54 testing::internal::RangeGenerator< T, IncrementT >::Iterator Class Reference

Inheritance diagram for testing::internal::RangeGenerator< T, IncrementT >::Iterator:



Collaboration diagram for testing::internal::RangeGenerator< T, IncrementT >::Iterator:



Public Member Functions

- [Iterator](#) (const [ParamGeneratorInterface](#)< T > *base, T value, int index, IncrementT step)
- [~Iterator](#) () override
- const [ParamGeneratorInterface](#)< T > * [BaseGenerator](#) () const override
- void [Advance](#) () override
- [ParamIteratorInterface](#)< T > * [Clone](#) () const override
- const T * [Current](#) () const override
- bool [Equals](#) (const [ParamIteratorInterface](#)< T > &other) const override

Private Member Functions

- [Iterator](#) (const [Iterator](#) &other)
- void [operator=](#) (const [Iterator](#) &other)

Private Attributes

- const [ParamGeneratorInterface](#)< T > *const [base_](#)
- T [value_](#)
- int [index_](#)
- const IncrementT [step_](#)

6.54.1 Constructor & Destructor Documentation

6.54.1.1 [Iterator\(\)](#) [1/2]

```
template<typename T , typename IncrementT >
testing::internal::RangeGenerator< T, IncrementT >::Iterator::Iterator (
    const ParamGeneratorInterface< T > * base,
    T value,
    int index,
    IncrementT step ) [inline]
```

6.54.1.2 [~Iterator\(\)](#)

```
template<typename T , typename IncrementT >
testing::internal::RangeGenerator< T, IncrementT >::Iterator::~~Iterator ( ) [inline], [override]
```

6.54.1.3 [Iterator\(\)](#) [2/2]

```
template<typename T , typename IncrementT >
testing::internal::RangeGenerator< T, IncrementT >::Iterator::Iterator (
    const Iterator & other ) [inline], [private]
```

6.54.2 Member Function Documentation

6.54.2.1 [Advance\(\)](#)

```
template<typename T , typename IncrementT >
void testing::internal::RangeGenerator< T, IncrementT >::Iterator::Advance ( ) [inline],
[override], [virtual]
```

Implements [testing::internal::ParamIteratorInterface](#)< T >.

6.54.2.2 BaseGenerator()

```
template<typename T , typename IncrementT >
const ParamGeneratorInterface<T>* testing::internal::RangeGenerator< T, IncrementT >::Iterator↵
::BaseGenerator ( ) const [inline], [override], [virtual]
```

Implements [testing::internal::ParamIteratorInterface< T >](#).

6.54.2.3 Clone()

```
template<typename T , typename IncrementT >
ParamIteratorInterface<T>* testing::internal::RangeGenerator< T, IncrementT >::Iterator::↵
Clone ( ) const [inline], [override], [virtual]
```

Implements [testing::internal::ParamIteratorInterface< T >](#).

6.54.2.4 Current()

```
template<typename T , typename IncrementT >
const T* testing::internal::RangeGenerator< T, IncrementT >::Iterator::Current ( ) const [inline],
[override], [virtual]
```

Implements [testing::internal::ParamIteratorInterface< T >](#).

6.54.2.5 Equals()

```
template<typename T , typename IncrementT >
bool testing::internal::RangeGenerator< T, IncrementT >::Iterator::Equals (
    const ParamIteratorInterface< T > & other ) const [inline], [override], [virtual]
```

Implements [testing::internal::ParamIteratorInterface< T >](#).

6.54.2.6 operator=()

```
template<typename T , typename IncrementT >
void testing::internal::RangeGenerator< T, IncrementT >::Iterator::operator= (
    const Iterator & other ) [private]
```

6.54.3 Member Data Documentation

6.54.3.1 base_

```
template<typename T , typename IncrementT >
const ParamGeneratorInterface<T>* const testing::internal::RangeGenerator< T, IncrementT >↔
::Iterator::base_ [private]
```

6.54.3.2 index_

```
template<typename T , typename IncrementT >
int testing::internal::RangeGenerator< T, IncrementT >::Iterator::index_ [private]
```

6.54.3.3 step_

```
template<typename T , typename IncrementT >
const IncrementT testing::internal::RangeGenerator< T, IncrementT >::Iterator::step_ [private]
```

6.54.3.4 value_

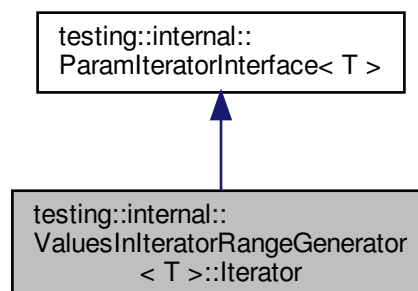
```
template<typename T , typename IncrementT >
T testing::internal::RangeGenerator< T, IncrementT >::Iterator::value_ [private]
```

The documentation for this class was generated from the following file:

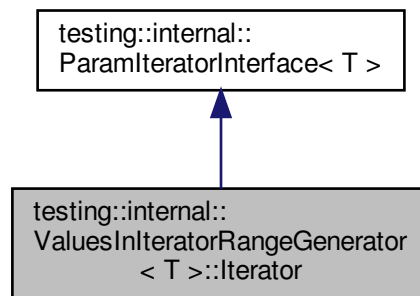
- tests/googletest/include/gtest/internal/gtest-param-util.h

6.55 testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator Class Reference

Inheritance diagram for testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator:



Collaboration diagram for testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator:



Public Member Functions

- `Iterator` (const `ParamGeneratorInterface< T > *base`, typename `ContainerType::const_iterator` `iterator`)
- `~Iterator` () override
- const `ParamGeneratorInterface< T > *BaseGenerator` () const override
- void `Advance` () override
- `ParamIteratorInterface< T > *Clone` () const override
- const `T *Current` () const override
- bool `Equals` (const `ParamIteratorInterface< T > &other`) const override

Private Member Functions

- `Iterator` (const `Iterator` &`other`)

Private Attributes

- const `ParamGeneratorInterface< T > *const base_`
- `ContainerType::const_iterator` `iterator_`
- `std::unique_ptr< const T > value_`

6.55.1 Constructor & Destructor Documentation

6.55.1.1 Iterator() [1/2]

```

template<typename T >
testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator::Iterator (
    const ParamGeneratorInterface< T > * base,
    typename ContainerType::const_iterator iterator ) [inline]
  
```

6.55.1.2 ~Iterator()

```
template<typename T >
testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator::~~Iterator ( ) [inline],
[override]
```

6.55.1.3 Iterator() [2/2]

```
template<typename T >
testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator::Iterator (
    const Iterator & other ) [inline], [private]
```

6.55.2 Member Function Documentation

6.55.2.1 Advance()

```
template<typename T >
void testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator::Advance ( ) [inline],
[override], [virtual]
```

Implements [testing::internal::ParamIteratorInterface< T >](#).

6.55.2.2 BaseGenerator()

```
template<typename T >
const ParamGeneratorInterface<T>* testing::internal::ValuesInIteratorRangeGenerator< T >↔
::Iterator::BaseGenerator ( ) const [inline], [override], [virtual]
```

Implements [testing::internal::ParamIteratorInterface< T >](#).

6.55.2.3 Clone()

```
template<typename T >
ParamIteratorInterface<T>* testing::internal::ValuesInIteratorRangeGenerator< T >↔
::Clone ( ) const [inline], [override], [virtual]
```

Implements [testing::internal::ParamIteratorInterface< T >](#).

6.55.2.4 Current()

```
template<typename T >
const T* testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator::Current ( ) const
[inline], [override], [virtual]
```

Implements [testing::internal::ParamIteratorInterface< T >](#).

6.55.2.5 Equals()

```
template<typename T >
bool testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator::Equals (
    const ParamIteratorInterface< T > & other ) const [inline], [override], [virtual]
```

Implements [testing::internal::ParamIteratorInterface< T >](#).

6.55.3 Member Data Documentation

6.55.3.1 base_

```
template<typename T >
const ParamGeneratorInterface<T>* const testing::internal::ValuesInIteratorRangeGenerator< T
>::Iterator::base_ [private]
```

6.55.3.2 iterator_

```
template<typename T >
ContainerType::const_iterator testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator↔
::iterator_ [private]
```

6.55.3.3 value_

```
template<typename T >
std::unique_ptr<const T> testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator↔
::value_ [mutable], [private]
```

The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-param-util.h](#)

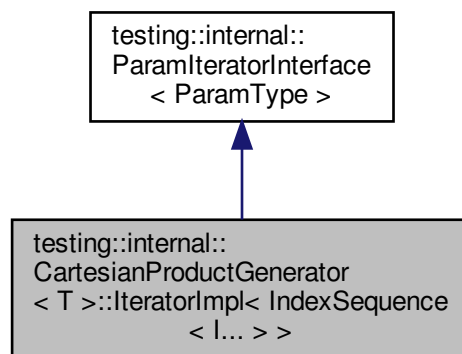
6.56 `testing::internal::CartesianProductGenerator< T >::IteratorImpl< I >` Class Template Reference

The documentation for this class was generated from the following file:

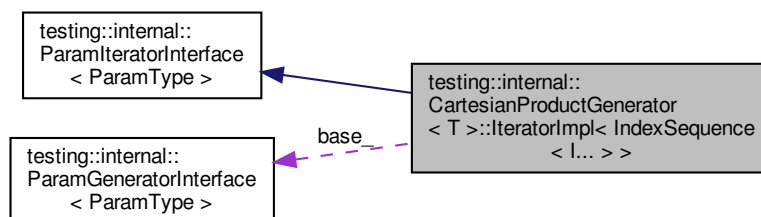
- `tests/gtest/include/gtest/internal/gtest-param-util.h`

6.57 `testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >` Class Template Reference

Inheritance diagram for `testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >`:



Collaboration diagram for `testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >`:



Public Member Functions

- [IteratorImpl](#) (const [ParamGeneratorInterface](#)< [ParamType](#) > *base, const std::tuple< [ParamGenerator](#)< T >... > &generators, bool is_end)
- [~IteratorImpl](#) () override
- const [ParamGeneratorInterface](#)< [ParamType](#) > * [BaseGenerator](#) () const override
- void [Advance](#) () override
- [ParamIteratorInterface](#)< [ParamType](#) > * [Clone](#) () const override
- const [ParamType](#) * [Current](#) () const override
- bool [Equals](#) (const [ParamIteratorInterface](#)< [ParamType](#) > &other) const override

Private Member Functions

- template<size_t ThisI>
void [AdvancelfEnd](#) ()
- void [ComputeCurrentValue](#) ()
- bool [AtEnd](#) () const

Private Attributes

- const [ParamGeneratorInterface](#)< [ParamType](#) > *const [base_](#)
- std::tuple< typename [ParamGenerator](#)< T >::iterator... > [begin_](#)
- std::tuple< typename [ParamGenerator](#)< T >::iterator... > [end_](#)
- std::tuple< typename [ParamGenerator](#)< T >::iterator... > [current_](#)
- std::shared_ptr< [ParamType](#) > [current_value_](#)

6.57.1 Constructor & Destructor Documentation

6.57.1.1 IteratorImpl()

```
template<typename... T>
template<size_t... I>
testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >↔
::IteratorImpl (
    const ParamGeneratorInterface< ParamType > * base,
    const std::tuple< ParamGenerator< T >... > & generators,
    bool is_end ) [inline]
```

6.57.1.2 ~IteratorImpl()

```
template<typename... T>
template<size_t... I>
testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >↔
::~~IteratorImpl ( ) [inline], [override]
```

6.57.2 Member Function Documentation

6.57.2.1 Advance()

```
template<typename... T>
template<size_t... I>
void testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... >
>::Advance ( ) [inline], [override], [virtual]
```

Implements [testing::internal::ParamIteratorInterface< ParamType >](#).

6.57.2.2 AdvanceIfEnd()

```
template<typename... T>
template<size_t... I>
template<size_t ThisI>
void testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... >
>::AdvanceIfEnd ( ) [inline], [private]
```

6.57.2.3 AtEnd()

```
template<typename... T>
template<size_t... I>
bool testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... >
>::AtEnd ( ) const [inline], [private]
```

6.57.2.4 BaseGenerator()

```
template<typename... T>
template<size_t... I>
const ParamGeneratorInterface<ParamType>* testing::internal::CartesianProductGenerator< T
>::IteratorImpl< IndexSequence< I... > >::BaseGenerator ( ) const [inline], [override],
[virtual]
```

Implements [testing::internal::ParamIteratorInterface< ParamType >](#).

6.57.2.5 Clone()

```
template<typename... T>
template<size_t... I>
ParamIteratorInterface<ParamType>* testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >::Clone ( ) const [inline], [override], [virtual]
```

Implements [testing::internal::ParamIteratorInterface< ParamType >](#).

6.57.2.6 ComputeCurrentValue()

```
template<typename... T>
template<size_t... I>
void testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >::ComputeCurrentValue ( ) [inline], [private]
```

6.57.2.7 Current()

```
template<typename... T>
template<size_t... I>
const ParamType* testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >::Current ( ) const [inline], [override], [virtual]
```

Implements [testing::internal::ParamIteratorInterface< ParamType >](#).

6.57.2.8 Equals()

```
template<typename... T>
template<size_t... I>
bool testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >::Equals (
    const ParamIteratorInterface< ParamType > & other ) const [inline], [override]
```

6.57.3 Member Data Documentation

6.57.3.1 base_

```
template<typename... T>
template<size_t... I>
const ParamGeneratorInterface<ParamType>* const testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >::base_ [private]
```

6.57.3.2 begin_

```
template<typename... T>
template<size_t... I>
std::tuple<typename ParamGenerator<T>::iterator...> testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >::begin_ [private]
```

6.57.3.3 current_

```
template<typename... T>
template<size_t... I>
std::tuple<typename ParamGenerator<T>::iterator...> testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >::current_ [private]
```

6.57.3.4 current_value_

```
template<typename... T>
template<size_t... I>
std::shared_ptr<ParamType> testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >::current_value_ [private]
```

6.57.3.5 end_

```
template<typename... T>
template<size_t... I>
std::tuple<typename ParamGenerator<T>::iterator...> testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >::end_ [private]
```

The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-param-util.h](#)

6.58 testing::internal::IteratorTraits< Iterator > Struct Template Reference

```
#include <gtest-port.h>
```

Public Types

- typedef Iterator::value_type [value_type](#)

6.58.1 Member Typedef Documentation

6.58.1.1 value_type

```
template<typename Iterator >  
typedef Iterator::value_type testing::internal::IteratorTraits< Iterator >::value_type
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/gtest-port.h

6.59 testing::internal::IteratorTraits< const T * > Struct Template Reference

```
#include <gtest-port.h>
```

Public Types

- typedef T value_type

6.59.1 Member Typedef Documentation

6.59.1.1 value_type

```
template<typename T >  
typedef T testing::internal::IteratorTraits< const T * >::value_type
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/gtest-port.h

6.60 testing::internal::IteratorTraits< T * > Struct Template Reference

```
#include <gtest-port.h>
```

Public Types

- typedef T value_type

6.60.1 Member Typedef Documentation

6.60.1.1 value_type

```
template<typename T >
typedef T testing::internal::IteratorTraits< T * >::value_type
```

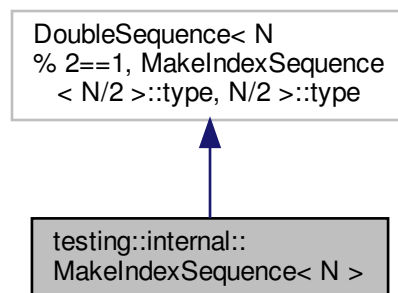
The documentation for this struct was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-port.h](#)

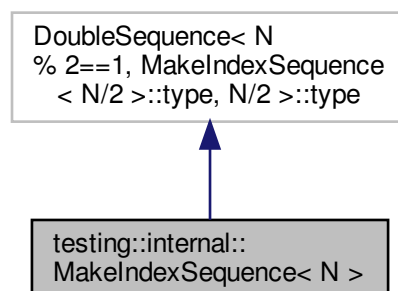
6.61 testing::internal::MakeIndexSequence< N > Struct Template Reference

```
#include <gtest-internal.h>
```

Inheritance diagram for testing::internal::MakeIndexSequence< N >:



Collaboration diagram for testing::internal::MakeIndexSequence< N >:



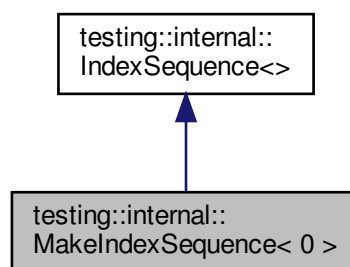
The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

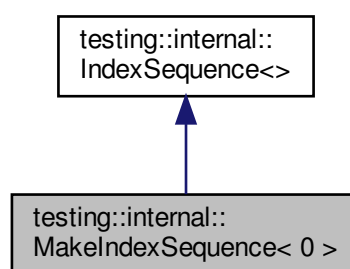
6.62 testing::internal::MakeIndexSequence< 0 > Struct Template Reference

```
#include <gtest-internal.h>
```

Inheritance diagram for testing::internal::MakeIndexSequence< 0 >:



Collaboration diagram for testing::internal::MakeIndexSequence< 0 >:



Additional Inherited Members

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.63 testing::Message Class Reference

```
#include <gtest-message.h>
```

Public Member Functions

- [Message](#) ()
- [Message](#) (const [Message](#) &msg)
- [Message](#) (const char *str)
- template<typename T >
[Message](#) & [operator<<](#) (const T &val)
- template<typename T >
[Message](#) & [operator<<](#) (T *const &pointer)
- [Message](#) & [operator<<](#) ([BasicNarrowIoManip](#) val)
- [Message](#) & [operator<<](#) (bool b)
- [Message](#) & [operator<<](#) (const wchar_t *wide_c_str)
- [Message](#) & [operator<<](#) (wchar_t *wide_c_str)
- std::string [GetString](#) () const

Private Types

- typedef std::ostream &(* [BasicNarrowIoManip](#)) (std::ostream &)

Private Member Functions

- void [operator=](#) (const [Message](#) &)

Private Attributes

- const std::unique_ptr< ::std::stringstream > [ss_](#)

6.63.1 Member Typedef Documentation

6.63.1.1 BasicNarrowIoManip

```
typedef std::ostream&(* testing::Message::BasicNarrowIoManip) (std::ostream &) [private]
```

6.63.2 Constructor & Destructor Documentation

6.63.2.1 Message() [1/3]

```
testing::Message::Message ( )
```

6.63.2.2 Message() [2/3]

```
testing::Message::Message (
    const Message & msg ) [inline]
```

6.63.2.3 Message() [3/3]

```
testing::Message::Message (
    const char * str ) [inline], [explicit]
```

6.63.3 Member Function Documentation

6.63.3.1 GetString()

```
std::string testing::Message::GetString ( ) const
```

6.63.3.2 operator<<() [1/6]

```
template<typename T >
Message& testing::Message::operator<< (
    const T & val ) [inline]
```

6.63.3.3 operator<<() [2/6]

```
template<typename T >
Message& testing::Message::operator<< (
    T *const & pointer ) [inline]
```

6.63.3.4 operator<<() [3/6]

```
Message& testing::Message::operator<< (
    BasicNarrowToManip val ) [inline]
```

6.63.3.5 operator<<() [4/6]

```
Message& testing::Message::operator<< (
    bool b ) [inline]
```

6.63.3.6 operator<<() [5/6]

```
Message& testing::Message::operator<< (
    const wchar_t * wide_c_str )
```

6.63.3.7 operator<<() [6/6]

```
Message& testing::Message::operator<< (
    wchar_t * wide_c_str )
```

6.63.3.8 operator=()

```
void testing::Message::operator= (
    const Message & ) [private]
```

6.63.4 Member Data Documentation

6.63.4.1 ss_

```
const std::unique_ptr< ::std::stringstream> testing::Message::ss_ [private]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/[gtest-message.h](#)

6.64 testing::internal::Mutex Class Reference

```
#include <gtest-port.h>
```

Public Member Functions

- [Mutex](#) ()
- void [Lock](#) ()
- void [Unlock](#) ()
- void [AssertHeld](#) () const

6.64.1 Constructor & Destructor Documentation

6.64.1.1 Mutex()

```
testing::internal::Mutex::Mutex ( ) [inline]
```

6.64.2 Member Function Documentation

6.64.2.1 AssertHeld()

```
void testing::internal::Mutex::AssertHeld ( ) const [inline]
```

6.64.2.2 Lock()

```
void testing::internal::Mutex::Lock ( ) [inline]
```

6.64.2.3 Unlock()

```
void testing::internal::Mutex::Unlock ( ) [inline]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-port.h](#)

6.65 MyString Class Reference

```
#include <sample2.h>
```

Public Member Functions

- [MyString](#) ()
- [MyString](#) (const char *a_c_string)
- [MyString](#) (const [MyString](#) &string)
- [~MyString](#) ()
- const char * [c_string](#) () const
- size_t [Length](#) () const
- void [Set](#) (const char *c_string)

Static Public Member Functions

- static const char * [CloneCString](#) (const char *a_c_string)

Private Member Functions

- const [MyString](#) & [operator=](#) (const [MyString](#) &rhs)

Private Attributes

- const char * [c_string_](#)

6.65.1 Constructor & Destructor Documentation

6.65.1.1 MyString() [1/3]

```
MyString::MyString ( ) [inline]
```

6.65.1.2 MyString() [2/3]

```
MyString::MyString (
    const char * a_c_string ) [inline], [explicit]
```

6.65.1.3 MyString() [3/3]

```
MyString::MyString (
    const MyString & string ) [inline]
```

6.65.1.4 ~MyString()

```
MyString::~MyString ( ) [inline]
```

6.65.2 Member Function Documentation

6.65.2.1 c_string()

```
const char* MyString::c_string ( ) const [inline]
```

6.65.2.2 CloneCString()

```
static const char* MyString::CloneCString (
    const char * a_c_string ) [static]
```

6.65.2.3 Length()

```
size_t MyString::Length ( ) const [inline]
```

6.65.2.4 operator=()

```
const MyString& MyString::operator= (
    const MyString & rhs ) [private]
```

6.65.2.5 Set()

```
void MyString::Set (
    const char * c_string )
```

6.65.3 Member Data Documentation

6.65.3.1 c_string_

```
const char* MyString::c_string_ [private]
```

The documentation for this class was generated from the following file:

- tests/googletest/samples/sample2.h

6.66 testing::internal::NativeArray< Element > Class Template Reference

```
#include <gtest-internal.h>
```

Public Types

- typedef Element [value_type](#)
- typedef Element * [iterator](#)
- typedef const Element * [const_iterator](#)

Public Member Functions

- [NativeArray](#) (const Element *array, size_t count, [RelationToSourceReference](#))
- [NativeArray](#) (const Element *array, size_t count, [RelationToSourceCopy](#))
- [NativeArray](#) (const [NativeArray](#) &rhs)
- [~NativeArray](#) ()
- size_t [size](#) () const
- [const_iterator](#) [begin](#) () const
- [const_iterator](#) [end](#) () const
- bool [operator==](#) (const [NativeArray](#) &rhs) const

Private Types

- enum { [kCheckTypesIsNotConstOrAReference](#) }

Private Member Functions

- void [InitCopy](#) (const Element *array, size_t a_size)
- void [InitRef](#) (const Element *array, size_t a_size)
- [GTEST_DISALLOW_ASSIGN_](#) ([NativeArray](#))

Private Attributes

- const Element * [array_](#)
- size_t [size_](#)
- void(NativeArray::* [clone_](#))(const Element *, size_t)

6.66.1 Member Typedef Documentation

6.66.1.1 const_iterator

```
template<typename Element >
typedef const Element* testing::internal::NativeArray< Element >::const\_iterator
```

6.66.1.2 iterator

```
template<typename Element >
typedef Element* testing::internal::NativeArray< Element >::iterator
```

6.66.1.3 value_type

```
template<typename Element >
typedef Element testing::internal::NativeArray< Element >::value\_type
```

6.66.2 Member Enumeration Documentation

6.66.2.1 anonymous enum

```
template<typename Element >
anonymous enum [private]
```

Enumerator

kCheckTypeIsNotConstOrAReference	
----------------------------------	--

6.66.3 Constructor & Destructor Documentation

6.66.3.1 `NativeArray()` [1/3]

```
template<typename Element >
testing::internal::NativeArray< Element >::NativeArray (
    const Element * array,
    size_t count,
    RelationToSourceReference ) [inline]
```

6.66.3.2 `NativeArray()` [2/3]

```
template<typename Element >
testing::internal::NativeArray< Element >::NativeArray (
    const Element * array,
    size_t count,
    RelationToSourceCopy ) [inline]
```

6.66.3.3 `NativeArray()` [3/3]

```
template<typename Element >
testing::internal::NativeArray< Element >::NativeArray (
    const NativeArray< Element > & rhs ) [inline]
```

6.66.3.4 `~NativeArray()`

```
template<typename Element >
testing::internal::NativeArray< Element >::~~NativeArray ( ) [inline]
```

6.66.4 Member Function Documentation

6.66.4.1 `begin()`

```
template<typename Element >
const_iterator testing::internal::NativeArray< Element >::begin ( ) const [inline]
```

6.66.4.2 end()

```
template<typename Element >
const_iterator testing::internal::NativeArray< Element >::end ( ) const [inline]
```

6.66.4.3 GTEST_DISALLOW_ASSIGN_()

```
template<typename Element >
testing::internal::NativeArray< Element >::GTEST_DISALLOW_ASSIGN_ (
    NativeArray< Element > ) [private]
```

6.66.4.4 InitCopy()

```
template<typename Element >
void testing::internal::NativeArray< Element >::InitCopy (
    const Element * array,
    size_t a_size ) [inline], [private]
```

6.66.4.5 InitRef()

```
template<typename Element >
void testing::internal::NativeArray< Element >::InitRef (
    const Element * array,
    size_t a_size ) [inline], [private]
```

6.66.4.6 operator==()

```
template<typename Element >
bool testing::internal::NativeArray< Element >::operator== (
    const NativeArray< Element > & rhs ) const [inline]
```

6.66.4.7 size()

```
template<typename Element >
size_t testing::internal::NativeArray< Element >::size ( ) const [inline]
```

6.66.5 Member Data Documentation

6.66.5.1 array_

```
template<typename Element >  
const Element* testing::internal::NativeArray< Element >::array_ [private]
```

6.66.5.2 clone_

```
template<typename Element >  
void(NativeArray::* testing::internal::NativeArray< Element >::clone_) (const Element *, size_t) [private]
```

6.66.5.3 size_

```
template<typename Element >  
size_t testing::internal::NativeArray< Element >::size_ [private]
```

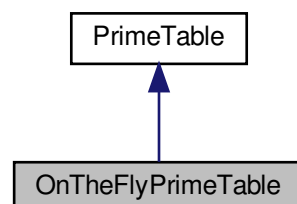
The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-internal.h](#)

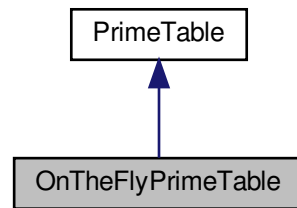
6.67 OnTheFlyPrimeTable Class Reference

```
#include <prime_tables.h>
```

Inheritance diagram for OnTheFlyPrimeTable:



Collaboration diagram for OnTheFlyPrimeTable:



Public Member Functions

- bool [IsPrime](#) (int n) const override
- int [GetNextPrime](#) (int p) const override

6.67.1 Member Function Documentation

6.67.1.1 GetNextPrime()

```
int OnTheFlyPrimeTable::GetNextPrime (  
    int p ) const [inline], [override], [virtual]
```

Implements [PrimeTable](#).

6.67.1.2 IsPrime()

```
bool OnTheFlyPrimeTable::IsPrime (  
    int n ) const [inline], [override], [virtual]
```

Implements [PrimeTable](#).

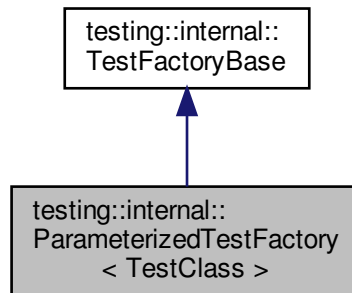
The documentation for this class was generated from the following file:

- tests/googletest/samples/[prime_tables.h](#)

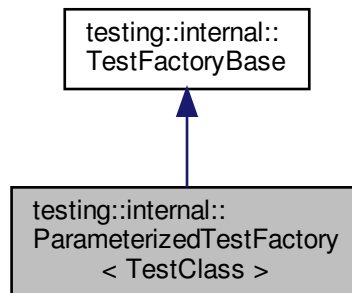
6.68 testing::internal::ParameterizedTestFactory< TestClass > Class Template Reference

```
#include <gtest-param-util.h>
```

Inheritance diagram for testing::internal::ParameterizedTestFactory< TestClass >:



Collaboration diagram for testing::internal::ParameterizedTestFactory< TestClass >:



Public Types

- typedef TestClass::ParamType [ParamType](#)

Public Member Functions

- [ParameterizedTestFactory](#) ([ParamType](#) parameter)
- [Test](#) * [CreateTest](#) () override

Private Member Functions

- [GTEST_DISALLOW_COPY_AND_ASSIGN_](#) ([ParameterizedTestFactory](#))

Private Attributes

- const [ParamType](#) [parameter_](#)

Additional Inherited Members

6.68.1 Member Typedef Documentation

6.68.1.1 ParamType

```
template<class TestClass >
typedef TestClass::ParamType testing::internal::ParameterizedTestFactory< TestClass >::ParamType
```

6.68.2 Constructor & Destructor Documentation

6.68.2.1 ParameterizedTestFactory()

```
template<class TestClass >
testing::internal::ParameterizedTestFactory< TestClass >::ParameterizedTestFactory (
    ParamType parameter ) [inline], [explicit]
```

6.68.3 Member Function Documentation

6.68.3.1 CreateTest()

```
template<class TestClass >
Test* testing::internal::ParameterizedTestFactory< TestClass >::CreateTest ( ) [inline],
[override], [virtual]
```

Implements [testing::internal::TestFactoryBase](#).

6.68.3.2 GTEST_DISALLOW_COPY_AND_ASSIGN_()

```
template<class TestClass >
testing::internal::ParameterizedTestFactory< TestClass >::GTEST_DISALLOW_COPY_AND_ASSIGN_ (
    ParameterizedTestFactory< TestClass > ) [private]
```

6.68.4 Member Data Documentation

6.68.4.1 parameter_

```
template<class TestClass >
const ParamType testing::internal::ParameterizedTestFactory< TestClass >::parameter_ [private]
```

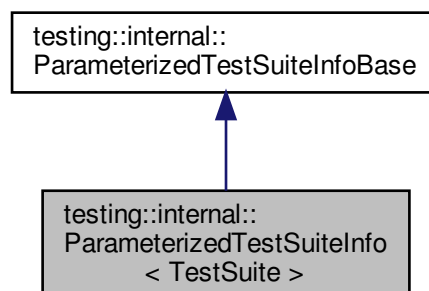
The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/internal/gtest-param-util.h

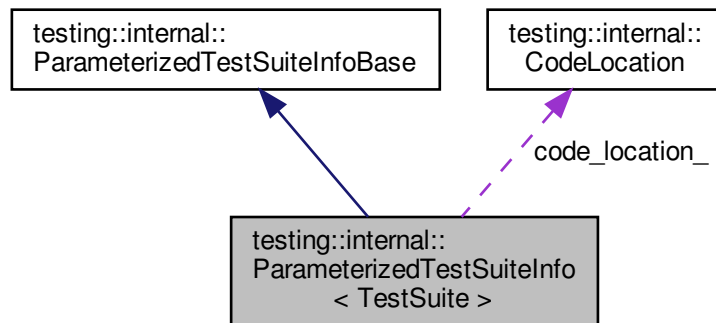
6.69 testing::internal::ParameterizedTestSuiteInfo< TestSuite > Class Template Reference

```
#include <gtest-param-util.h>
```

Inheritance diagram for testing::internal::ParameterizedTestSuiteInfo< TestSuite >:



Collaboration diagram for testing::internal::ParameterizedTestSuiteInfo< TestSuite >:



Classes

- struct [InstantiationInfo](#)
- struct [TestInfo](#)

Public Types

- using [ParamType](#) = typename TestSuite::ParamType
- using [ParamNameGeneratorFunc](#) = std::string(const [TestParamInfo](#)< [ParamType](#) > &)

Public Member Functions

- typedef [ParamGenerator](#) (GeneratorCreationFunc)()
- [ParameterizedTestSuiteInfo](#) (const char *name, [CodeLocation](#) code_location)
- const std::string & [GetTestSuiteName](#) () const override
- [TypeId](#) [GetTestSuiteTypeId](#) () const override
- void [AddTestPattern](#) (const char *test_suite_name, const char *test_base_name, [TestMetaFactoryBase](#)< [ParamType](#) > *meta_factory)
- int [AddTestSuiteInstantiation](#) (const std::string &instantiation_name, GeneratorCreationFunc *func, [ParamNameGeneratorFunc](#) *name_func, const char *file, int line)
- void [RegisterTests](#) () override

Private Types

- using [TestInfoContainer](#) = ::std::vector< std::shared_ptr< [TestInfo](#) > >
- typedef ::std::vector< [InstantiationInfo](#) > [InstantiationContainer](#)

Private Member Functions

- [GTEST_DISALLOW_COPY_AND_ASSIGN_](#) ([ParameterizedTestSuiteInfo](#))

Static Private Member Functions

- static bool [IsValidParamName](#) (const std::string &name)

Private Attributes

- const std::string [test_suite_name_](#)
- [CodeLocation](#) [code_location_](#)
- [TestInfoContainer](#) [tests_](#)
- [InstantiationContainer](#) [instantiations_](#)

Additional Inherited Members

6.69.1 Member Typedef Documentation

6.69.1.1 InstantiationContainer

```
template<class TestSuite>
typedef ::std::vector<InstantiationInfo> testing::internal::ParameterizedTestSuiteInfo< TestSuite >::InstantiationContainer [private]
```

6.69.1.2 ParamNameGeneratorFunc

```
template<class TestSuite>
using testing::internal::ParameterizedTestSuiteInfo< TestSuite >::ParamNameGeneratorFunc =
std::string(const TestParamInfo<ParamType>&)
```

6.69.1.3 ParamType

```
template<class TestSuite>
using testing::internal::ParameterizedTestSuiteInfo< TestSuite >::ParamType = typename TestSuite::ParamType
```

6.69.1.4 TestInfoContainer

```
template<class TestSuite>
using testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfoContainer = ::std::vector<std::shared_ptr<TestInfo> > [private]
```

6.69.2 Constructor & Destructor Documentation

6.69.2.1 ParameterizedTestSuiteInfo()

```
template<class TestSuite>
testing::internal::ParameterizedTestSuiteInfo< TestSuite >::ParameterizedTestSuiteInfo (
    const char * name,
    CodeLocation code_location ) [inline], [explicit]
```

6.69.3 Member Function Documentation

6.69.3.1 AddTestPattern()

```
template<class TestSuite>
void testing::internal::ParameterizedTestSuiteInfo< TestSuite >::AddTestPattern (
    const char * test_suite_name,
    const char * test_base_name,
    TestMetaFactoryBase< ParamType > * meta_factory ) [inline]
```

6.69.3.2 AddTestSuiteInstantiation()

```
template<class TestSuite>
int testing::internal::ParameterizedTestSuiteInfo< TestSuite >::AddTestSuiteInstantiation (
    const std::string & instantiation_name,
    GeneratorCreationFunc * func,
    ParamNameGeneratorFunc * name_func,
    const char * file,
    int line ) [inline]
```

6.69.3.3 GetTestSuiteName()

```
template<class TestSuite>
const std::string& testing::internal::ParameterizedTestSuiteInfo< TestSuite >::GetTestSuiteName ( ) const [inline], [override], [virtual]
```

Implements `testing::internal::ParameterizedTestSuiteInfoBase`.

6.69.3.4 GetTestSuiteTypeId()

```
template<class TestSuite>
TypeId testing::internal::ParameterizedTestSuiteInfo< TestSuite >::GetTestSuiteTypeId ( )
const [inline], [override], [virtual]
```

Implements [testing::internal::ParameterizedTestSuiteInfoBase](#).

6.69.3.5 GTEST_DISALLOW_COPY_AND_ASSIGN_()

```
template<class TestSuite>
testing::internal::ParameterizedTestSuiteInfo< TestSuite >::GTEST_DISALLOW_COPY_AND_ASSIGN_ (
    ParameterizedTestSuiteInfo< TestSuite > ) [private]
```

6.69.3.6 IsValidParamName()

```
template<class TestSuite>
static bool testing::internal::ParameterizedTestSuiteInfo< TestSuite >::IsValidParamName (
    const std::string & name ) [inline], [static], [private]
```

6.69.3.7 ParamGenerator()

```
template<class TestSuite>
typedef testing::internal::ParameterizedTestSuiteInfo< TestSuite >::ParamGenerator (
    GeneratorCreationFunc )
```

6.69.3.8 RegisterTests()

```
template<class TestSuite>
void testing::internal::ParameterizedTestSuiteInfo< TestSuite >::RegisterTests ( ) [inline],
[override], [virtual]
```

Implements [testing::internal::ParameterizedTestSuiteInfoBase](#).

6.69.4 Member Data Documentation

6.69.4.1 code_location_

```
template<class TestSuite>
CodeLocation testing::internal::ParameterizedTestSuiteInfo< TestSuite >::code_location_↵
[private]
```

6.69.4.2 instantiations_

```
template<class TestSuite>
InstantiationContainer testing::internal::ParameterizedTestSuiteInfo< TestSuite >::instantiations↵
_ [private]
```

6.69.4.3 test_suite_name_

```
template<class TestSuite>
const std::string testing::internal::ParameterizedTestSuiteInfo< TestSuite >::test_suite_↵
name_ [private]
```

6.69.4.4 tests_

```
template<class TestSuite>
TestInfoContainer testing::internal::ParameterizedTestSuiteInfo< TestSuite >::tests_ [private]
```

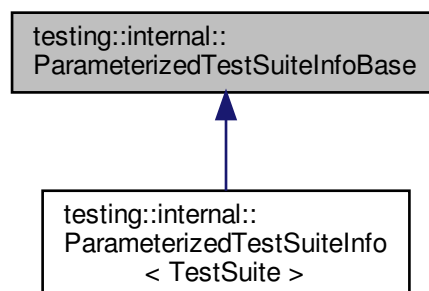
The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/internal/gtest-param-util.h

6.70 testing::internal::ParameterizedTestSuiteInfoBase Class Reference

```
#include <gtest-param-util.h>
```

Inheritance diagram for testing::internal::ParameterizedTestSuiteInfoBase:



Public Member Functions

- virtual [~ParameterizedTestSuiteInfoBase](#) ()
- virtual const std::string & [GetTestSuiteName](#) () const =0
- virtual [Typeld GetTestSuiteTypeld](#) () const =0
- virtual void [RegisterTests](#) ()=0

Protected Member Functions

- [ParameterizedTestSuiteInfoBase](#) ()

Private Member Functions

- [GTEST_DISALLOW_COPY_AND_ASSIGN_](#) (ParameterizedTestSuiteInfoBase)

6.70.1 Constructor & Destructor Documentation

6.70.1.1 ~ParameterizedTestSuiteInfoBase()

```
virtual testing::internal::ParameterizedTestSuiteInfoBase::~~ParameterizedTestSuiteInfoBase ( )
[inline], [virtual]
```

6.70.1.2 ParameterizedTestSuiteInfoBase()

```
testing::internal::ParameterizedTestSuiteInfoBase::ParameterizedTestSuiteInfoBase ( ) [inline],
[protected]
```

6.70.2 Member Function Documentation

6.70.2.1 GetTestSuiteName()

```
virtual const std::string& testing::internal::ParameterizedTestSuiteInfoBase::GetTestSuiteName
( ) const [pure virtual]
```

Implemented in [testing::internal::ParameterizedTestSuiteInfo< TestSuite >](#).

6.70.2.2 GetTestSuiteTypeId()

```
virtual TypeId testing::internal::ParameterizedTestSuiteInfoBase::GetTestSuiteTypeId ( ) const
[pure virtual]
```

Implemented in [testing::internal::ParameterizedTestSuiteInfo< TestSuite >](#).

6.70.2.3 GTEST_DISALLOW_COPY_AND_ASSIGN_()

```
testing::internal::ParameterizedTestSuiteInfoBase::GTEST_DISALLOW_COPY_AND_ASSIGN_ (
    ParameterizedTestSuiteInfoBase ) [private]
```

6.70.2.4 RegisterTests()

```
virtual void testing::internal::ParameterizedTestSuiteInfoBase::RegisterTests ( ) [pure virtual]
```

Implemented in [testing::internal::ParameterizedTestSuiteInfo< TestSuite >](#).

The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-param-util.h](#)

6.71 testing::internal::ParameterizedTestSuiteRegistry Class Reference

```
#include <gtest-param-util.h>
```

Public Member Functions

- [ParameterizedTestSuiteRegistry](#) ()
- [~ParameterizedTestSuiteRegistry](#) ()
- [template<class TestSuite >](#)
[ParameterizedTestSuiteInfo< TestSuite >](#) * [GetTestSuitePatternHolder](#) (const char *test_suite_name,
[CodeLocation](#) code_location)
- void [RegisterTests](#) ()
- [template<class TestCase >](#)
[ParameterizedTestCaseInfo< TestCase >](#) * [GetTestCasePatternHolder](#) (const char *test_case_name,
[CodeLocation](#) code_location)

Private Types

- using [TestSuiteInfoContainer](#) = ::std::vector< [ParameterizedTestSuiteInfoBase](#) * >

Private Member Functions

- [GTEST_DISALLOW_COPY_AND_ASSIGN_](#) ([ParameterizedTestSuiteRegistry](#))

Private Attributes

- [TestSuiteInfoContainer](#) [test_suite_infos_](#)

6.71.1 Member Typedef Documentation

6.71.1.1 TestSuiteInfoContainer

```
using testing::internal::ParameterizedTestSuiteRegistry::TestSuiteInfoContainer = ::std::
::vector<ParameterizedTestSuiteInfoBase*> [private]
```

6.71.2 Constructor & Destructor Documentation

6.71.2.1 ParameterizedTestSuiteRegistry()

```
testing::internal::ParameterizedTestSuiteRegistry::ParameterizedTestSuiteRegistry ( ) [inline]
```

6.71.2.2 ~ParameterizedTestSuiteRegistry()

```
testing::internal::ParameterizedTestSuiteRegistry::~~ParameterizedTestSuiteRegistry ( ) [inline]
```

6.71.3 Member Function Documentation

6.71.3.1 GetTestCasePatternHolder()

```
template<class TestCase >
ParameterizedTestCaseInfo<TestCase>* testing::internal::ParameterizedTestSuiteRegistry::Get↵
TestCasePatternHolder (
    const char * test_case_name,
    CodeLocation code_location ) [inline]
```


6.71.3.2 GetTestSuitePatternHolder()

```
template<class TestSuite >
ParameterizedTestSuiteInfo<TestSuite>* testing::internal::ParameterizedTestSuiteRegistry::↵
GetTestSuitePatternHolder (
    const char * test_suite_name,
    CodeLocation code_location ) [inline]
```

6.71.3.3 GTEST_DISALLOW_COPY_AND_ASSIGN_()

```
testing::internal::ParameterizedTestSuiteRegistry::GTEST_DISALLOW_COPY_AND_ASSIGN_ (
    ParameterizedTestSuiteRegistry ) [private]
```

6.71.3.4 RegisterTests()

```
void testing::internal::ParameterizedTestSuiteRegistry::RegisterTests ( ) [inline]
```

6.71.4 Member Data Documentation

6.71.4.1 test_suite_infos_

```
TestSuiteInfoContainer testing::internal::ParameterizedTestSuiteRegistry::test_suite_infos_↵
[private]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/internal/gtest-param-util.h

6.72 testing::internal::ParamGenerator< T > Class Template Reference

```
#include <gtest-param-util.h>
```

Public Types

- typedef ParamIterator< T > iterator

Public Member Functions

- [ParamGenerator](#) ([ParamGeneratorInterface](#)< T > *impl)
- [ParamGenerator](#) (const [ParamGenerator](#) &other)
- [ParamGenerator](#) & [operator=](#) (const [ParamGenerator](#) &other)
- [iterator begin](#) () const
- [iterator end](#) () const

Private Attributes

- std::shared_ptr< const [ParamGeneratorInterface](#)< T > > [impl_](#)

6.72.1 Member Typedef Documentation

6.72.1.1 iterator

```
template<typename T>
typedef ParamIterator<T> testing::internal::ParamGenerator< T >::iterator
```

6.72.2 Constructor & Destructor Documentation

6.72.2.1 ParamGenerator() [1/2]

```
template<typename T>
testing::internal::ParamGenerator< T >::ParamGenerator (
    ParamGeneratorInterface< T > * impl ) [inline], [explicit]
```

6.72.2.2 ParamGenerator() [2/2]

```
template<typename T>
testing::internal::ParamGenerator< T >::ParamGenerator (
    const ParamGenerator< T > & other ) [inline]
```

6.72.3 Member Function Documentation

6.72.3.1 begin()

```
template<typename T>
iterator testing::internal::ParamGenerator< T >::begin ( ) const [inline]
```

6.72.3.2 end()

```
template<typename T>
iterator testing::internal::ParamGenerator< T >::end ( ) const [inline]
```

6.72.3.3 operator=()

```
template<typename T>
ParamGenerator& testing::internal::ParamGenerator< T >::operator= (
    const ParamGenerator< T > & other ) [inline]
```

6.72.4 Member Data Documentation

6.72.4.1 impl_

```
template<typename T>
std::shared_ptr<const ParamGeneratorInterface<T> > testing::internal::ParamGenerator< T >↔
::impl_ [private]
```

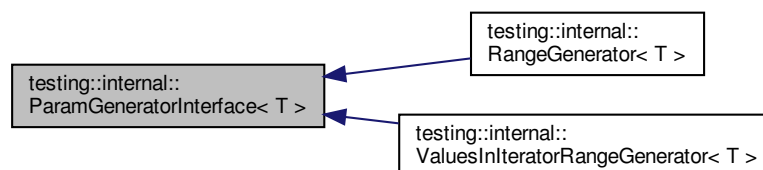
The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/internal/gtest-param-util.h

6.73 testing::internal::ParamGeneratorInterface< T > Class Template Reference

```
#include <gtest-param-util.h>
```

Inheritance diagram for testing::internal::ParamGeneratorInterface< T >:



Public Types

- typedef T [ParamType](#)

Public Member Functions

- virtual [~ParamGeneratorInterface](#) ()
- virtual [ParamIteratorInterface](#)< T > * [Begin](#) () const =0
- virtual [ParamIteratorInterface](#)< T > * [End](#) () const =0

6.73.1 Member Typedef Documentation

6.73.1.1 ParamType

```
template<typename T>
typedef T testing::internal::ParamGeneratorInterface< T >::ParamType
```

6.73.2 Constructor & Destructor Documentation

6.73.2.1 ~ParamGeneratorInterface()

```
template<typename T>
virtual testing::internal::ParamGeneratorInterface< T >::~~ParamGeneratorInterface ( ) [inline],
[virtual]
```

6.73.3 Member Function Documentation

6.73.3.1 Begin()

```
template<typename T>
virtual ParamIteratorInterface<T>* testing::internal::ParamGeneratorInterface< T >::Begin ( )
const [pure virtual]
```

Implemented in [testing::internal::CartesianProductGenerator](#)< T >, [testing::internal::ValuesInIteratorRangeGenerator](#)< T >, and [testing::internal::RangeGenerator](#)< T, IncrementT >.

6.73.3.2 End()

```
template<typename T>
virtual ParamIteratorInterface<T>* testing::internal::ParamGeneratorInterface< T >::End ( )
const [pure virtual]
```

Implemented in [testing::internal::CartesianProductGenerator< T >](#), [testing::internal::ValuesInIteratorRangeGenerator< T >](#), and [testing::internal::RangeGenerator< T, IncrementT >](#).

The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-param-util.h](#)

6.74 testing::internal::ParamIterator< T > Class Template Reference

```
#include <gtest-param-util.h>
```

Public Types

- typedef T [value_type](#)
- typedef const T & [reference](#)
- typedef ptrdiff_t [difference_type](#)

Public Member Functions

- [ParamIterator](#) (const [ParamIterator](#) &other)
- [ParamIterator](#) & [operator=](#) (const [ParamIterator](#) &other)
- const T & [operator*](#) () const
- const T * [operator->](#) () const
- [ParamIterator](#) & [operator++](#) ()
- [ParamIterator](#) [operator++](#) (int)
- bool [operator==](#) (const [ParamIterator](#) &other) const
- bool [operator!=](#) (const [ParamIterator](#) &other) const

Private Member Functions

- [ParamIterator](#) ([ParamIteratorInterface](#)< T > *impl)

Private Attributes

- std::unique_ptr< [ParamIteratorInterface](#)< T > > [impl_](#)

Friends

- class [ParamGenerator](#)< T >

6.74.1 Member Typedef Documentation

6.74.1.1 difference_type

```
template<typename T >
typedef ptrdiff_t testing::internal::ParamIterator< T >::difference_type
```

6.74.1.2 reference

```
template<typename T >
typedef const T& testing::internal::ParamIterator< T >::reference
```

6.74.1.3 value_type

```
template<typename T >
typedef T testing::internal::ParamIterator< T >::value_type
```

6.74.2 Constructor & Destructor Documentation

6.74.2.1 ParamIterator() [1/2]

```
template<typename T >
testing::internal::ParamIterator< T >::ParamIterator (
    const ParamIterator< T > & other ) [inline]
```

6.74.2.2 ParamIterator() [2/2]

```
template<typename T >
testing::internal::ParamIterator< T >::ParamIterator (
    ParamIteratorInterface< T > * impl ) [inline], [explicit], [private]
```

6.74.3 Member Function Documentation

6.74.3.1 operator!=(())

```
template<typename T >
bool testing::internal::ParamIterator< T >::operator!=(
    const ParamIterator< T > & other ) const [inline]
```

6.74.3.2 operator*()

```
template<typename T >
const T& testing::internal::ParamIterator< T >::operator* ( ) const [inline]
```

6.74.3.3 operator++() [1/2]

```
template<typename T >
ParamIterator& testing::internal::ParamIterator< T >::operator++ ( ) [inline]
```

6.74.3.4 operator++() [2/2]

```
template<typename T >
ParamIterator testing::internal::ParamIterator< T >::operator++ (
    int ) [inline]
```

6.74.3.5 operator->()

```
template<typename T >
const T* testing::internal::ParamIterator< T >::operator-> ( ) const [inline]
```

6.74.3.6 operator=()

```
template<typename T >
ParamIterator& testing::internal::ParamIterator< T >::operator= (
    const ParamIterator< T > & other ) [inline]
```

6.74.3.7 operator==()

```
template<typename T >
bool testing::internal::ParamIterator< T >::operator== (
    const ParamIterator< T > & other ) const [inline]
```

6.74.4 Friends And Related Function Documentation

6.74.4.1 ParamGenerator< T >

```
template<typename T >
friend class ParamGenerator< T > [friend]
```

6.74.5 Member Data Documentation

6.74.5.1 impl_

```
template<typename T >
std::unique_ptr<ParamIteratorInterface<T> > testing::internal::ParamIterator< T >::impl_↔
[private]
```

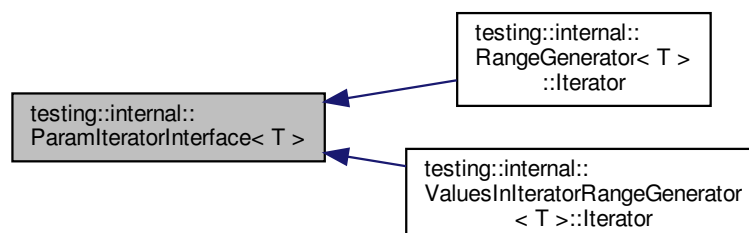
The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/internal/gtest-param-util.h

6.75 testing::internal::ParamIteratorInterface< T > Class Template Reference

```
#include <gtest-param-util.h>
```

Inheritance diagram for testing::internal::ParamIteratorInterface< T >:



Public Member Functions

- virtual [~ParamIteratorInterface](#) ()
- virtual const [ParamGeneratorInterface](#)< T > * [BaseGenerator](#) () const =0
- virtual void [Advance](#) ()=0
- virtual [ParamIteratorInterface](#) * [Clone](#) () const =0
- virtual const T * [Current](#) () const =0
- virtual bool [Equals](#) (const [ParamIteratorInterface](#) &other) const =0

6.75.1 Constructor & Destructor Documentation

6.75.1.1 ~ParamIteratorInterface()

```
template<typename T>
virtual testing::internal::ParamIteratorInterface< T >::~~ParamIteratorInterface ( ) [inline],
[virtual]
```

6.75.2 Member Function Documentation

6.75.2.1 Advance()

```
template<typename T>
virtual void testing::internal::ParamIteratorInterface< T >::Advance ( ) [pure virtual]
```

Implemented in [testing::internal::CartesianProductGenerator](#)< T >::IteratorImpl< [IndexSequence](#)< I... > >, [testing::internal::ValuesIteratorRangeGenerator](#)< T >::Iterator, and [testing::internal::RangeGenerator](#)< T, [IncrementT](#) >::Iterator.

6.75.2.2 BaseGenerator()

```
template<typename T>
virtual const ParamGeneratorInterface<T>* testing::internal::ParamIteratorInterface< T >::
::BaseGenerator ( ) const [pure virtual]
```

Implemented in [testing::internal::CartesianProductGenerator](#)< T >::IteratorImpl< [IndexSequence](#)< I... > >, [testing::internal::ValuesIteratorRangeGenerator](#)< T >::Iterator, and [testing::internal::RangeGenerator](#)< T, [IncrementT](#) >::Iterator.

6.75.2.3 Clone()

```
template<typename T>
virtual ParamIteratorInterface* testing::internal::ParamIteratorInterface< T >::Clone ( )
const [pure virtual]
```

Implemented in [testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >](#), [testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator](#), and [testing::internal::RangeGenerator< T, IncrementT >::Iterator](#).

6.75.2.4 Current()

```
template<typename T>
virtual const T* testing::internal::ParamIteratorInterface< T >::Current ( ) const [pure
virtual]
```

Implemented in [testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >](#), [testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator](#), and [testing::internal::RangeGenerator< T, IncrementT >::Iterator](#).

6.75.2.5 Equals()

```
template<typename T>
virtual bool testing::internal::ParamIteratorInterface< T >::Equals (
    const ParamIteratorInterface< T > & other ) const [pure virtual]
```

Implemented in [testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator](#), and [testing::internal::RangeGenerator< T, IncrementT >::Iterator](#).

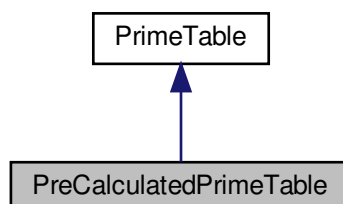
The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-param-util.h](#)

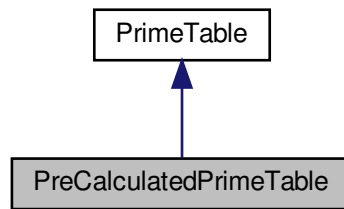
6.76 PreCalculatedPrimeTable Class Reference

```
#include <prime_tables.h>
```

Inheritance diagram for PreCalculatedPrimeTable:



Collaboration diagram for PreCalculatedPrimeTable:



Public Member Functions

- [PreCalculatedPrimeTable](#) (int max)
- [~PreCalculatedPrimeTable](#) () override
- bool [IsPrime](#) (int n) const override
- int [GetNextPrime](#) (int p) const override

Private Member Functions

- void [CalculatePrimesUpTo](#) (int max)
- void [operator=](#) (const [PreCalculatedPrimeTable](#) &rhs)

Private Attributes

- const int [is_prime_size_](#)
- bool *const [is_prime_](#)

6.76.1 Constructor & Destructor Documentation

6.76.1.1 PreCalculatedPrimeTable()

```
PreCalculatedPrimeTable::PreCalculatedPrimeTable (
    int max ) [inline], [explicit]
```

6.76.1.2 ~PreCalculatedPrimeTable()

```
PreCalculatedPrimeTable::~~PreCalculatedPrimeTable ( ) [inline], [override]
```

6.76.2 Member Function Documentation

6.76.2.1 CalculatePrimesUpTo()

```
void PreCalculatedPrimeTable::CalculatePrimesUpTo (  
    int max ) [inline], [private]
```

6.76.2.2 GetNextPrime()

```
int PreCalculatedPrimeTable::GetNextPrime (  
    int p ) const [inline], [override], [virtual]
```

Implements [PrimeTable](#).

6.76.2.3 IsPrime()

```
bool PreCalculatedPrimeTable::IsPrime (  
    int n ) const [inline], [override], [virtual]
```

Implements [PrimeTable](#).

6.76.2.4 operator=()

```
void PreCalculatedPrimeTable::operator= (  
    const PreCalculatedPrimeTable & rhs ) [private]
```

6.76.3 Member Data Documentation

6.76.3.1 is_prime_

```
bool* const PreCalculatedPrimeTable::is_prime_ [private]
```

6.76.3.2 is_prime_size_

```
const int PreCalculatedPrimeTable::is_prime_size_ [private]
```

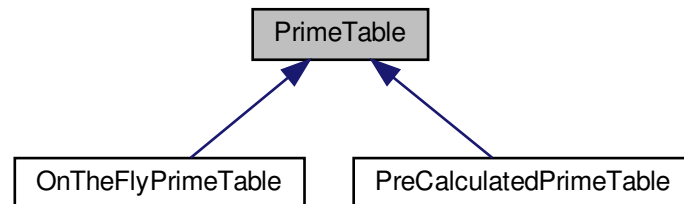
The documentation for this class was generated from the following file:

- tests/googletest/samples/[prime_tables.h](#)

6.77 PrimeTable Class Reference

```
#include <prime_tables.h>
```

Inheritance diagram for PrimeTable:



Public Member Functions

- virtual [~PrimeTable](#) ()
- virtual bool [IsPrime](#) (int n) const =0
- virtual int [GetNextPrime](#) (int p) const =0

6.77.1 Constructor & Destructor Documentation

6.77.1.1 ~PrimeTable()

```
virtual PrimeTable::~~PrimeTable ( ) [inline], [virtual]
```

6.77.2 Member Function Documentation

6.77.2.1 GetNextPrime()

```
virtual int PrimeTable::GetNextPrime (
    int p ) const [pure virtual]
```

Implemented in [PreCalculatedPrimeTable](#), and [OnTheFlyPrimeTable](#).

6.77.2.2 IsPrime()

```
virtual bool PrimeTable::IsPrime (
    int n ) const [pure virtual]
```

Implemented in [PreCalculatedPrimeTable](#), and [OnTheFlyPrimeTable](#).

The documentation for this class was generated from the following file:

- [tests/googletest/samples/prime_tables.h](#)

6.78 testing::PrintToStringParamName Struct Reference

```
#include <gtest-param-util.h>
```

Public Member Functions

- `template<class ParamType >`
`std::string operator() (const TestParamInfo< ParamType > &info) const`

6.78.1 Member Function Documentation

6.78.1.1 operator>()

```
template<class ParamType >
std::string testing::PrintToStringParamName::operator() (
    const TestParamInfo< ParamType > & info ) const [inline]
```

The documentation for this struct was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-param-util.h](#)

6.79 PrivateCode Class Reference

```
#include <production.h>
```

Public Member Functions

- [FRIEND_TEST](#) (PrivateCodeTest, CanAccessPrivateMembers)
- [FRIEND_TEST](#) (PrivateCodeFixtureTest, CanAccessPrivateMembers)
- [PrivateCode](#) ()
- [int x](#) () const

Private Member Functions

- void [set_x](#) (int an_x)

Private Attributes

- int [x_](#)

6.79.1 Constructor & Destructor Documentation

6.79.1.1 PrivateCode()

```
PrivateCode::PrivateCode ( )
```

6.79.2 Member Function Documentation

6.79.2.1 FRIEND_TEST() [1/2]

```
PrivateCode::FRIEND_TEST (
    PrivateCodeTest ,
    CanAccessPrivateMembers )
```

6.79.2.2 FRIEND_TEST() [2/2]

```
PrivateCode::FRIEND_TEST (
    PrivateCodeFixtureTest ,
    CanAccessPrivateMembers )
```

6.79.2.3 set_x()

```
void PrivateCode::set_x (
    int an_x ) [inline], [private]
```

6.79.2.4 x()

```
int PrivateCode::x ( ) const [inline]
```

6.79.3 Member Data Documentation

6.79.3.1 x_

```
int PrivateCode::x_ [private]
```

The documentation for this class was generated from the following file:

- tests/googletest/test/[production.h](#)

6.80 Queue< E > Class Template Reference

```
#include <sample3-inl.h>
```

Public Member Functions

- [Queue](#) ()
- [~Queue](#) ()
- void [Clear](#) ()
- size_t [Size](#) () const
- [QueueNode](#)< E > * [Head](#) ()
- const [QueueNode](#)< E > * [Head](#) () const
- [QueueNode](#)< E > * [Last](#) ()
- const [QueueNode](#)< E > * [Last](#) () const
- void [Enqueue](#) (const E &element)
- E * [Dequeue](#) ()
- template<typename F >
 [Queue](#) * [Map](#) (F function) const

Private Member Functions

- [Queue](#) (const [Queue](#) &)
- const [Queue](#) & [operator=](#) (const [Queue](#) &)

Private Attributes

- [QueueNode< E > * head_](#)
- [QueueNode< E > * last_](#)
- [size_t size_](#)

6.80.1 Constructor & Destructor Documentation

6.80.1.1 Queue() [1/2]

```
template<typename E >  
Queue< E >::Queue ( ) [inline]
```

6.80.1.2 ~Queue()

```
template<typename E >  
Queue< E >::~~Queue ( ) [inline]
```

6.80.1.3 Queue() [2/2]

```
template<typename E >  
Queue< E >::Queue (  
    const Queue< E > & ) [private]
```

6.80.2 Member Function Documentation

6.80.2.1 Clear()

```
template<typename E >  
void Queue< E >::Clear ( ) [inline]
```

6.80.2.2 Dequeue()

```
template<typename E >  
E* Queue< E >::Dequeue ( ) [inline]
```

6.80.2.3 Enqueue()

```
template<typename E >
void Queue< E >::Enqueue (
    const E & element ) [inline]
```

6.80.2.4 Head() [1/2]

```
template<typename E >
QueueNode<E>* Queue< E >::Head ( ) [inline]
```

6.80.2.5 Head() [2/2]

```
template<typename E >
const QueueNode<E>* Queue< E >::Head ( ) const [inline]
```

6.80.2.6 Last() [1/2]

```
template<typename E >
QueueNode<E>* Queue< E >::Last ( ) [inline]
```

6.80.2.7 Last() [2/2]

```
template<typename E >
const QueueNode<E>* Queue< E >::Last ( ) const [inline]
```

6.80.2.8 Map()

```
template<typename E >
template<typename F >
Queue* Queue< E >::Map (
    F function ) const [inline]
```

6.80.2.9 operator=()

```
template<typename E >
const Queue& Queue< E >::operator= (
    const Queue< E > & ) [private]
```

6.80.2.10 Size()

```
template<typename E >
size_t Queue< E >::Size ( ) const [inline]
```

6.80.3 Member Data Documentation

6.80.3.1 head_

```
template<typename E >
QueueNode<E>* Queue< E >::head_ [private]
```

6.80.3.2 last_

```
template<typename E >
QueueNode<E>* Queue< E >::last_ [private]
```

6.80.3.3 size_

```
template<typename E >
size_t Queue< E >::size_ [private]
```

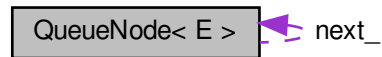
The documentation for this class was generated from the following file:

- tests/googletest/samples/[sample3-inl.h](#)

6.81 QueueNode< E > Class Template Reference

```
#include <sample3-inl.h>
```

Collaboration diagram for QueueNode< E >:



Public Member Functions

- const E & [element](#) () const
- [QueueNode](#) * [next](#) ()
- const [QueueNode](#) * [next](#) () const

Private Member Functions

- [QueueNode](#) (const E &an_element)
- const [QueueNode](#) & [operator=](#) (const [QueueNode](#) &)
- [QueueNode](#) (const [QueueNode](#) &)

Private Attributes

- E [element_](#)
- [QueueNode](#) * [next_](#)

Friends

- class [Queue](#)< E >

6.81.1 Constructor & Destructor Documentation

6.81.1.1 QueueNode() [1/2]

```
template<typename E>
QueueNode< E >::QueueNode (
    const E & an_element ) [inline], [explicit], [private]
```

6.81.1.2 QueueNode() [2/2]

```
template<typename E>
QueueNode< E >::QueueNode (
    const QueueNode< E > & ) [private]
```

6.81.2 Member Function Documentation

6.81.2.1 element()

```
template<typename E>
const E& QueueNode< E >::element ( ) const [inline]
```

6.81.2.2 next() [1/2]

```
template<typename E>
QueueNode* QueueNode< E >::next ( ) [inline]
```

6.81.2.3 next() [2/2]

```
template<typename E>
const QueueNode* QueueNode< E >::next ( ) const [inline]
```

6.81.2.4 operator=()

```
template<typename E>
const QueueNode& QueueNode< E >::operator= (
    const QueueNode< E > & ) [private]
```

6.81.3 Friends And Related Function Documentation

6.81.3.1 Queue< E >

```
template<typename E>
friend class Queue< E > [friend]
```

6.81.4 Member Data Documentation

6.81.4.1 element_

```
template<typename E>
E QueueNode< E >::element_ [private]
```

6.81.4.2 next_

```
template<typename E>
QueueNode* QueueNode< E >::next_ [private]
```

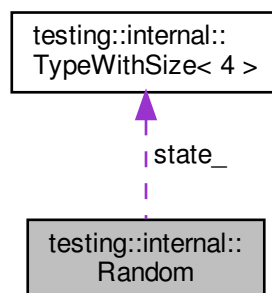
The documentation for this class was generated from the following file:

- tests/googletest/samples/[sample3-inl.h](#)

6.82 testing::internal::Random Class Reference

```
#include <gtest-internal.h>
```

Collaboration diagram for testing::internal::Random:



Public Member Functions

- [Random](#) (UInt32 seed)
- void [Reseed](#) (UInt32 seed)
- [UInt32 Generate](#) (UInt32 range)

Static Public Attributes

- static const [UInt32 kMaxRange](#) = 1u << 31

Private Member Functions

- [GTEST_DISALLOW_COPY_AND_ASSIGN_](#) ([Random](#))

Private Attributes

- [UInt32 state_](#)

6.82.1 Constructor & Destructor Documentation

6.82.1.1 Random()

```
testing::internal::Random::Random (  
    UInt32 seed ) [inline], [explicit]
```

6.82.2 Member Function Documentation

6.82.2.1 Generate()

```
UInt32 testing::internal::Random::Generate (  
    UInt32 range )
```

6.82.2.2 GTEST_DISALLOW_COPY_AND_ASSIGN_()

```
testing::internal::Random::GTEST_DISALLOW_COPY_AND_ASSIGN_ (  
    Random ) [private]
```

6.82.2.3 Reseed()

```
void testing::internal::Random::Reseed (  
    UInt32 seed ) [inline]
```

6.82.3 Member Data Documentation

6.82.3.1 kMaxRange

```
const UInt32 testing::internal::Random::kMaxRange = 1u << 31 [static]
```

6.82.3.2 state_

```
UInt32 testing::internal::Random::state_ [private]
```

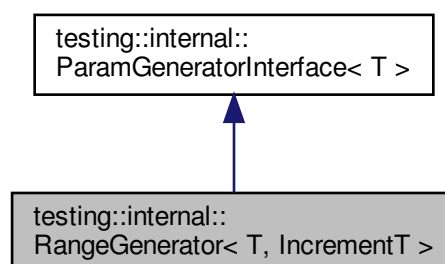
The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-internal.h](#)

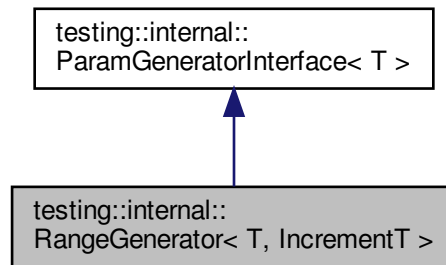
6.83 testing::internal::RangeGenerator< T, IncrementT > Class Template Reference

```
#include <gtest-param-util.h>
```

Inheritance diagram for testing::internal::RangeGenerator< T, IncrementT >:



Collaboration diagram for testing::internal::RangeGenerator< T, IncrementT >:



Classes

- class [Iterator](#)

Public Member Functions

- [RangeGenerator](#) (T begin, T end, IncrementT step)
- [~RangeGenerator](#) () override
- [ParamIteratorInterface](#)< T > * [Begin](#) () const override
- [ParamIteratorInterface](#)< T > * [End](#) () const override

Private Member Functions

- void [operator=](#) (const [RangeGenerator](#) &other)

Static Private Member Functions

- static int [CalculateEndIndex](#) (const T &begin, const T &end, const IncrementT &step)

Private Attributes

- const T [begin_](#)
- const T [end_](#)
- const IncrementT [step_](#)
- const int [end_index_](#)

Additional Inherited Members

6.83.1 Constructor & Destructor Documentation

6.83.1.1 RangeGenerator()

```
template<typename T , typename IncrementT >
testing::internal::RangeGenerator< T, IncrementT >::RangeGenerator (
    T begin,
    T end,
    IncrementT step ) [inline]
```

6.83.1.2 ~RangeGenerator()

```
template<typename T , typename IncrementT >
testing::internal::RangeGenerator< T, IncrementT >::~~RangeGenerator ( ) [inline], [override]
```

6.83.2 Member Function Documentation

6.83.2.1 Begin()

```
template<typename T , typename IncrementT >
ParamIteratorInterface<T>* testing::internal::RangeGenerator< T, IncrementT >::Begin ( )
const [inline], [override], [virtual]
```

Implements [testing::internal::ParamGeneratorInterface< T >](#).

6.83.2.2 CalculateEndIndex()

```
template<typename T , typename IncrementT >
static int testing::internal::RangeGenerator< T, IncrementT >::CalculateEndIndex (
    const T & begin,
    const T & end,
    const IncrementT & step ) [inline], [static], [private]
```

6.83.2.3 End()

```
template<typename T , typename IncrementT >
ParamIteratorInterface<T>* testing::internal::RangeGenerator< T, IncrementT >::End ( ) const
[inline], [override], [virtual]
```

Implements [testing::internal::ParamGeneratorInterface< T >](#).

6.83.2.4 operator=()

```
template<typename T , typename IncrementT >
void testing::internal::RangeGenerator< T, IncrementT >::operator= (
    const RangeGenerator< T, IncrementT > & other ) [private]
```

6.83.3 Member Data Documentation

6.83.3.1 begin_

```
template<typename T , typename IncrementT >
const T testing::internal::RangeGenerator< T, IncrementT >::begin_ [private]
```

6.83.3.2 end_

```
template<typename T , typename IncrementT >
const T testing::internal::RangeGenerator< T, IncrementT >::end_ [private]
```

6.83.3.3 end_index_

```
template<typename T , typename IncrementT >
const int testing::internal::RangeGenerator< T, IncrementT >::end_index_ [private]
```

6.83.3.4 step_

```
template<typename T , typename IncrementT >
const IncrementT testing::internal::RangeGenerator< T, IncrementT >::step_ [private]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-param-util.h](#)

6.84 testing::internal::RE Class Reference

```
#include <gtest-port.h>
```

Public Member Functions

- [RE](#) (const [RE](#) &other)
- [RE](#) (const ::std::string ®ex)
- [RE](#) (const char *regex)
- [~RE](#) ()
- const char * [pattern](#) () const

Static Public Member Functions

- static bool [FullMatch](#) (const ::std::string &str, const [RE](#) &re)
- static bool [PartialMatch](#) (const ::std::string &str, const [RE](#) &re)
- static bool [FullMatch](#) (const char *str, const [RE](#) &re)
- static bool [PartialMatch](#) (const char *str, const [RE](#) &re)

Private Member Functions

- void [Init](#) (const char *regex)
- [GTEST_DISALLOW_ASSIGN_](#) ([RE](#))

Private Attributes

- const char * [pattern_](#)
- bool [is_valid_](#)
- regex_t [full_regex_](#)
- regex_t [partial_regex_](#)

6.84.1 Constructor & Destructor Documentation

6.84.1.1 [RE\(\)](#) [1/3]

```
testing::internal::RE::RE (
    const RE & other ) [inline]
```

6.84.1.2 [RE\(\)](#) [2/3]

```
testing::internal::RE::RE (
    const ::std::string & regex ) [inline]
```

6.84.1.3 RE() [3/3]

```
testing::internal::RE::RE (
    const char * regex ) [inline]
```

6.84.1.4 ~RE()

```
testing::internal::RE::~~RE ( )
```

6.84.2 Member Function Documentation

6.84.2.1 FullMatch() [1/2]

```
static bool testing::internal::RE::FullMatch (
    const ::std::string & str,
    const RE & re ) [inline], [static]
```

6.84.2.2 FullMatch() [2/2]

```
static bool testing::internal::RE::FullMatch (
    const char * str,
    const RE & re ) [static]
```

6.84.2.3 GTEST_DISALLOW_ASSIGN_()

```
testing::internal::RE::GTEST_DISALLOW_ASSIGN_ (
    RE ) [private]
```

6.84.2.4 Init()

```
void testing::internal::RE::Init (
    const char * regex ) [private]
```

6.84.2.5 PartialMatch() [1/2]

```
static bool testing::internal::RE::PartialMatch (  
    const ::std::string & str,  
    const RE & re ) [inline], [static]
```

6.84.2.6 PartialMatch() [2/2]

```
static bool testing::internal::RE::PartialMatch (  
    const char * str,  
    const RE & re ) [static]
```

6.84.2.7 pattern()

```
const char* testing::internal::RE::pattern ( ) const [inline]
```

6.84.3 Member Data Documentation

6.84.3.1 full_regex_

```
regex_t testing::internal::RE::full_regex_ [private]
```

6.84.3.2 is_valid_

```
bool testing::internal::RE::is_valid_ [private]
```

6.84.3.3 partial_regex_

```
regex_t testing::internal::RE::partial_regex_ [private]
```

6.84.3.4 pattern_

```
const char* testing::internal::RE::pattern_ [private]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-port.h](#)

6.85 testing::internal::RelationToSourceCopy Struct Reference

```
#include <gtest-internal.h>
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.86 testing::internal::RelationToSourceReference Struct Reference

```
#include <gtest-internal.h>
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.87 testing::internal::RemoveConst< T > Struct Template Reference

```
#include <gtest-internal.h>
```

Public Types

- typedef T [type](#)

6.87.1 Member Typedef Documentation

6.87.1.1 type

```
template<typename T>  
typedef T testing::internal::RemoveConst< T >::type
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.88 testing::internal::RemoveConst< const T > Struct Template Reference

```
#include <gtest-internal.h>
```

Public Types

- typedef T [type](#)

6.88.1 Member Typedef Documentation

6.88.1.1 type

```
template<typename T >
typedef T testing::internal::RemoveConst< const T >::type
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.89 testing::internal::RemoveConst< const T[N]> Struct Template Reference

```
#include <gtest-internal.h>
```

Public Types

- typedef [RemoveConst](#)< T >::type [type](#)[N]

6.89.1 Member Typedef Documentation

6.89.1.1 type

```
template<typename T , size_t N>
typedef RemoveConst<T>::type testing::internal::RemoveConst< const T[N]>::type[N]
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.90 testing::internal::RemoveReference< T > Struct Template Reference

```
#include <gtest-internal.h>
```

Public Types

- typedef T [type](#)

6.90.1 Member Typedef Documentation

6.90.1.1 type

```
template<typename T >  
typedef T testing::internal::RemoveReference< T >::type
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.91 testing::internal::RemoveReference< T & > Struct Template Reference

```
#include <gtest-internal.h>
```

Public Types

- typedef T [type](#)

6.91.1 Member Typedef Documentation

6.91.1.1 type

```
template<typename T >  
typedef T testing::internal::RemoveReference< T & >::type
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.92 testing::ScopedTrace Class Reference

```
#include <gtest.h>
```

Public Member Functions

- `template<typename T >`
`ScopedTrace` (const char *file, int line, const T &message)
- `ScopedTrace` (const char *file, int line, const char *message)
- `ScopedTrace` (const char *file, int line, const std::string &message)
- `~ScopedTrace` ()

Private Member Functions

- void `PushTrace` (const char *file, int line, std::string message)
- `GTEST_DISALLOW_COPY_AND_ASSIGN_` (`ScopedTrace`)

6.92.1 Constructor & Destructor Documentation

6.92.1.1 ScopedTrace() [1/3]

```
template<typename T >  
testing::ScopedTrace::ScopedTrace (  
    const char * file,  
    int line,  
    const T & message ) [inline]
```

6.92.1.2 ScopedTrace() [2/3]

```
testing::ScopedTrace::ScopedTrace (  
    const char * file,  
    int line,  
    const char * message ) [inline]
```

6.92.1.3 ScopedTrace() [3/3]

```
testing::ScopedTrace::ScopedTrace (  
    const char * file,  
    int line,  
    const std::string & message ) [inline]
```

6.92.1.4 ~ScopedTrace()

```
testing::ScopedTrace::~ScopedTrace ( )
```

6.92.2 Member Function Documentation

6.92.2.1 GTEST_DISALLOW_COPY_AND_ASSIGN_()

```
testing::ScopedTrace::GTEST_DISALLOW_COPY_AND_ASSIGN_ (
    ScopedTrace ) [private]
```

6.92.2.2 PushTrace()

```
void testing::ScopedTrace::PushTrace (
    const char * file,
    int line,
    std::string message ) [private]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/[gtest.h](#)

6.93 testing::Test::Setup_should_be_spelled_SetUp Struct Reference

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/[gtest.h](#)

6.94 testing::Environment::Setup_should_be_spelled_SetUp Struct Reference

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/[gtest.h](#)

6.95 testing::internal::IgnoredValue::Sink Struct Reference

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.96 testing::internal::StaticAssertTypeEqHelper< T1, T2 > Struct Template Reference

```
#include <gtest-port.h>
```

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-port.h](#)

6.97 testing::internal::StaticAssertTypeEqHelper< T, T > Struct Template Reference

```
#include <gtest-port.h>
```

Public Types

- enum { [value](#) = true }

6.97.1 Member Enumeration Documentation

6.97.1.1 anonymous enum

```
template<typename T >
anonymous enum
```

Enumerator

value	
-------	--

The documentation for this struct was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-port.h](#)

6.98 testing::internal::String Class Reference

```
#include <gtest-string.h>
```

Static Public Member Functions

- static const char * [CloneCString](#) (const char *c_str)
- static bool [CStringEquals](#) (const char *lhs, const char *rhs)
- static std::string [ShowWideCString](#) (const wchar_t *wide_c_str)

- static bool [WideCStringEquals](#) (const wchar_t *lhs, const wchar_t *rhs)
- static bool [CaseInsensitiveCStringEquals](#) (const char *lhs, const char *rhs)
- static bool [CaseInsensitiveWideCStringEquals](#) (const wchar_t *lhs, const wchar_t *rhs)
- static bool [EndsWithCaseInsensitive](#) (const std::string &str, const std::string &suffix)
- static std::string [FormatIntWidth2](#) (int value)
- static std::string [FormatHexInt](#) (int value)
- static std::string [FormatHexUInt32](#) (UInt32 value)
- static std::string [FormatByte](#) (unsigned char value)

Private Member Functions

- [String](#) ()

6.98.1 Constructor & Destructor Documentation

6.98.1.1 String()

```
testing::internal::String::String ( ) [private]
```

6.98.2 Member Function Documentation

6.98.2.1 CaseInsensitiveCStringEquals()

```
static bool testing::internal::String::CaseInsensitiveCStringEquals (
    const char * lhs,
    const char * rhs ) [static]
```

6.98.2.2 CaseInsensitiveWideCStringEquals()

```
static bool testing::internal::String::CaseInsensitiveWideCStringEquals (
    const wchar_t * lhs,
    const wchar_t * rhs ) [static]
```

6.98.2.3 CloneCString()

```
static const char* testing::internal::String::CloneCString (
    const char * c_str ) [static]
```

6.98.2.4 CStringEquals()

```
static bool testing::internal::String::CStringEquals (
    const char * lhs,
    const char * rhs ) [static]
```

6.98.2.5 EndsWithCaseInsensitive()

```
static bool testing::internal::String::EndsWithCaseInsensitive (
    const std::string & str,
    const std::string & suffix ) [static]
```

6.98.2.6 FormatByte()

```
static std::string testing::internal::String::FormatByte (
    unsigned char value ) [static]
```

6.98.2.7 FormatHexInt()

```
static std::string testing::internal::String::FormatHexInt (
    int value ) [static]
```

6.98.2.8 FormatHexUInt32()

```
static std::string testing::internal::String::FormatHexUInt32 (
    UInt32 value ) [static]
```

6.98.2.9 FormatIntWidth2()

```
static std::string testing::internal::String::FormatIntWidth2 (
    int value ) [static]
```

6.98.2.10 ShowWideCString()

```
static std::string testing::internal::String::ShowWideCString (
    const wchar_t * wide_c_str ) [static]
```

6.98.2.11 WideCStringEquals()

```
static bool testing::internal::String::WideCStringEquals (
    const wchar_t * lhs,
    const wchar_t * rhs ) [static]
```

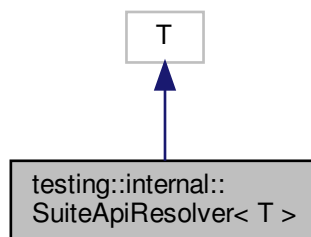
The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/internal/gtest-string.h

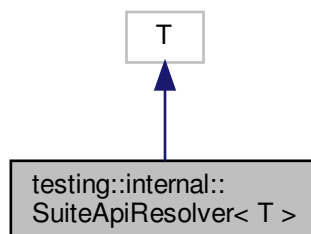
6.99 testing::internal::SuiteApiResolver< T > Struct Template Reference

```
#include <gtest-internal.h>
```

Inheritance diagram for testing::internal::SuiteApiResolver< T >:



Collaboration diagram for testing::internal::SuiteApiResolver< T >:



Public Types

- using [Test](#) = typename std::conditional< sizeof(T) !=0, ::testing::Test, void >::type

Static Public Member Functions

- static [SetUpTearDownSuiteFuncType GetSetUpCaseOrSuite](#) (const char *filename, int line_num)
- static [SetUpTearDownSuiteFuncType GetTearDownCaseOrSuite](#) (const char *filename, int line_num)

6.99.1 Member Typedef Documentation

6.99.1.1 Test

```
template<typename T >
using testing::internal::SuiteApiResolver< T >::Test = typename std::conditional<sizeof(T) !=
0, ::testing::Test, void>::type
```

6.99.2 Member Function Documentation

6.99.2.1 GetSetUpCaseOrSuite()

```
template<typename T >
static SetUpTearDownSuiteFuncType testing::internal::SuiteApiResolver< T >::GetSetUpCaseOr↵
Suite (
    const char * filename,
    int line_num ) [inline], [static]
```

6.99.2.2 GetTearDownCaseOrSuite()

```
template<typename T >
static SetUpTearDownSuiteFuncType testing::internal::SuiteApiResolver< T >::GetTearDownCase↵
OrSuite (
    const char * filename,
    int line_num ) [inline], [static]
```

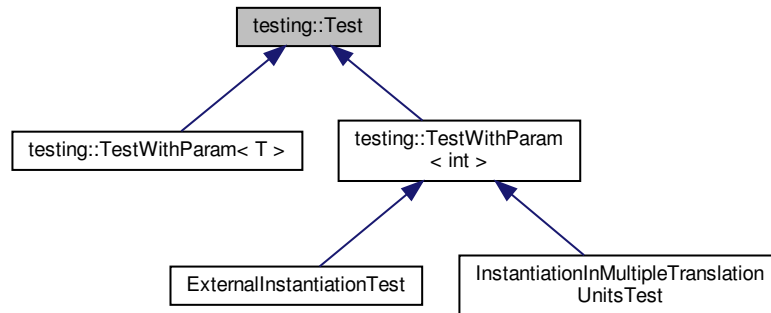
The documentation for this struct was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-internal.h](#)

6.100 testing::Test Class Reference

```
#include <gtest.h>
```

Inheritance diagram for testing::Test:



Classes

- struct [Setup_should_be_spelled_SetUp](#)

Public Member Functions

- virtual [~Test](#) ()

Static Public Member Functions

- static void [SetUpTestSuite](#) ()
- static void [TearDownTestSuite](#) ()
- static void [TearDownTestCase](#) ()
- static void [SetUpTestCase](#) ()
- static bool [HasFatalFailure](#) ()
- static bool [HasNonfatalFailure](#) ()
- static bool [IsSkipped](#) ()
- static bool [HasFailure](#) ()
- static void [RecordProperty](#) (const std::string &key, const std::string &value)
- static void [RecordProperty](#) (const std::string &key, int value)

Protected Member Functions

- [Test](#) ()
- virtual void [SetUp](#) ()
- virtual void [TearDown](#) ()

Private Member Functions

- virtual void [TestBody](#) ()=0
- void [Run](#) ()
- void [DeleteSelf_](#) ()
- virtual [Setup_should_be_spelled_SetUp](#) * [Setup](#) ()
- [GTEST_DISALLOW_COPY_AND_ASSIGN_](#) ([Test](#))

Static Private Member Functions

- static bool [HasSameFixtureClass](#) ()

Private Attributes

- const std::unique_ptr< [GTEST_FLAG_SAVER_](#) > [gtest_flag_saver_](#)

Friends

- class [TestInfo](#)

6.100.1 Constructor & Destructor Documentation

6.100.1.1 ~Test()

```
virtual testing::Test::~~Test ( ) [virtual]
```

6.100.1.2 Test()

```
testing::Test::Test ( ) [protected]
```

6.100.2 Member Function Documentation

6.100.2.1 DeleteSelf_()

```
void testing::Test::DeleteSelf_ ( ) [inline], [private]
```

6.100.2.2 GTEST_DISALLOW_COPY_AND_ASSIGN_()

```
testing::Test::GTEST_DISALLOW_COPY_AND_ASSIGN_ (  
    Test ) [private]
```

6.100.2.3 HasFailure()

```
static bool testing::Test::HasFailure ( ) [inline], [static]
```

6.100.2.4 HasFatalFailure()

```
static bool testing::Test::HasFatalFailure ( ) [static]
```

6.100.2.5 HasNonfatalFailure()

```
static bool testing::Test::HasNonfatalFailure ( ) [static]
```

6.100.2.6 HasSameFixtureClass()

```
static bool testing::Test::HasSameFixtureClass ( ) [static], [private]
```

6.100.2.7 IsSkipped()

```
static bool testing::Test::IsSkipped ( ) [static]
```

6.100.2.8 RecordProperty() [1/2]

```
static void testing::Test::RecordProperty (  
    const std::string & key,  
    const std::string & value ) [static]
```

6.100.2.9 RecordProperty() [2/2]

```
static void testing::Test::RecordProperty (
    const std::string & key,
    int value ) [static]
```

6.100.2.10 Run()

```
void testing::Test::Run ( ) [private]
```

6.100.2.11 SetUp()

```
virtual void testing::Test::SetUp ( ) [protected], [virtual]
```

6.100.2.12 Setup()

```
virtual Setup\_should\_be\_spelled\_SetUp* testing::Test::Setup ( ) [inline], [private], [virtual]
```

6.100.2.13 SetUpTestCase()

```
static void testing::Test::SetUpTestCase ( ) [inline], [static]
```

6.100.2.14 SetUpTestSuite()

```
static void testing::Test::SetUpTestSuite ( ) [inline], [static]
```

6.100.2.15 TearDown()

```
virtual void testing::Test::TearDown ( ) [protected], [virtual]
```

6.100.2.16 TearDownTestCase()

```
static void testing::Test::TearDownTestCase ( ) [inline], [static]
```

6.100.2.17 TearDownTestSuite()

```
static void testing::Test::TearDownTestSuite ( ) [inline], [static]
```

6.100.2.18 TestBody()

```
virtual void testing::Test::TestBody ( ) [private], [pure virtual]
```

6.100.3 Friends And Related Function Documentation

6.100.3.1 TestInfo

```
friend class TestInfo [friend]
```

6.100.4 Member Data Documentation

6.100.4.1 gtest_flag_saver_

```
const std::unique_ptr<GTEST_FLAG_SAVER> testing::Test::gtest_flag_saver_ [private]
```

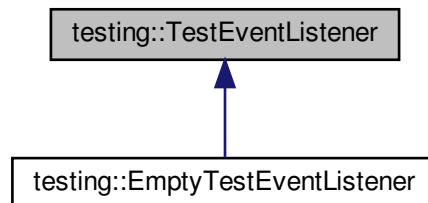
The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/[gtest.h](#)

6.101 testing::TestEventListener Class Reference

```
#include <gtest.h>
```

Inheritance diagram for testing::TestEventListener:



Public Member Functions

- virtual [~TestEventListener](#) ()
- virtual void [OnTestProgramStart](#) (const [UnitTest](#) &unit_test)=0
- virtual void [OnTestIterationStart](#) (const [UnitTest](#) &unit_test, int iteration)=0
- virtual void [OnEnvironmentsSetUpStart](#) (const [UnitTest](#) &unit_test)=0
- virtual void [OnEnvironmentsSetUpEnd](#) (const [UnitTest](#) &unit_test)=0
- virtual void [OnTestSuiteStart](#) (const [TestSuite](#) &)
- virtual void [OnTestCaseStart](#) (const [TestCase](#) &)
- virtual void [OnTestStart](#) (const [TestInfo](#) &test_info)=0
- virtual void [OnTestPartResult](#) (const [TestPartResult](#) &test_part_result)=0
- virtual void [OnTestEnd](#) (const [TestInfo](#) &test_info)=0
- virtual void [OnTestSuiteEnd](#) (const [TestSuite](#) &)
- virtual void [OnTestCaseEnd](#) (const [TestCase](#) &)
- virtual void [OnEnvironmentsTearDownStart](#) (const [UnitTest](#) &unit_test)=0
- virtual void [OnEnvironmentsTearDownEnd](#) (const [UnitTest](#) &unit_test)=0
- virtual void [OnTestIterationEnd](#) (const [UnitTest](#) &unit_test, int iteration)=0
- virtual void [OnTestProgramEnd](#) (const [UnitTest](#) &unit_test)=0

6.101.1 Constructor & Destructor Documentation

6.101.1.1 ~TestEventListener()

```
virtual testing::TestEventListener::~~TestEventListener ( ) [inline], [virtual]
```

6.101.2 Member Function Documentation

6.101.2.1 OnEnvironmentsSetUpEnd()

```
virtual void testing::TestEventListener::OnEnvironmentsSetUpEnd (
    const UnitTest & unit_test ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

6.101.2.2 OnEnvironmentsSetUpStart()

```
virtual void testing::TestEventListener::OnEnvironmentsSetUpStart (
    const UnitTest & unit_test ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

6.101.2.3 OnEnvironmentsTearDownEnd()

```
virtual void testing::TestEventListener::OnEnvironmentsTearDownEnd (
    const UnitTest & unit_test ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

6.101.2.4 OnEnvironmentsTearDownStart()

```
virtual void testing::TestEventListener::OnEnvironmentsTearDownStart (
    const UnitTest & unit_test ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

6.101.2.5 OnTestCaseEnd()

```
virtual void testing::TestEventListener::OnTestCaseEnd (
    const TestCase & ) [inline], [virtual]
```

Reimplemented in [testing::EmptyTestEventListener](#).

6.101.2.6 OnTestCaseStart()

```
virtual void testing::TestEventListener::OnTestCaseStart (
    const TestCase & ) [inline], [virtual]
```

Reimplemented in [testing::EmptyTestEventListener](#).

6.101.2.7 OnTestEnd()

```
virtual void testing::TestEventListener::OnTestEnd (
    const TestInfo & test_info ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

6.101.2.8 OnTestIterationEnd()

```
virtual void testing::TestEventListener::OnTestIterationEnd (
    const UnitTest & unit_test,
    int iteration ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

6.101.2.9 OnTestIterationStart()

```
virtual void testing::TestEventListener::OnTestIterationStart (
    const UnitTest & unit_test,
    int iteration ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

6.101.2.10 OnTestPartResult()

```
virtual void testing::TestEventListener::OnTestPartResult (
    const TestPartResult & test_part_result ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

6.101.2.11 OnTestProgramEnd()

```
virtual void testing::TestEventListener::OnTestProgramEnd (
    const UnitTest & unit_test ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

6.101.2.12 OnTestProgramStart()

```
virtual void testing::TestEventListener::OnTestProgramStart (
    const UnitTest & unit_test ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

6.101.2.13 OnTestStart()

```
virtual void testing::TestEventListener::OnTestStart (
    const TestInfo & test_info ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

6.101.2.14 OnTestSuiteEnd()

```
virtual void testing::TestEventListener::OnTestSuiteEnd (
    const TestSuite & ) [inline], [virtual]
```

Reimplemented in [testing::EmptyTestEventListener](#).

6.101.2.15 OnTestSuiteStart()

```
virtual void testing::TestEventListener::OnTestSuiteStart (
    const TestSuite & ) [inline], [virtual]
```

Reimplemented in [testing::EmptyTestEventListener](#).

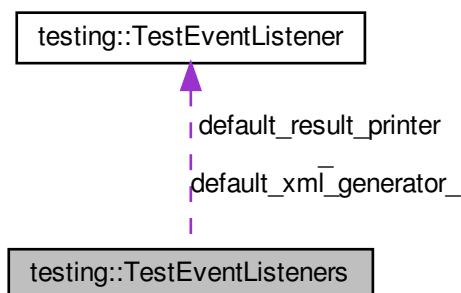
The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/gtest.h](#)

6.102 testing::TestEventListeners Class Reference

```
#include <gtest.h>
```

Collaboration diagram for testing::TestEventListeners:



Public Member Functions

- [TestEventListeners](#) ()
- [~TestEventListeners](#) ()
- void [Append](#) ([TestEventListener](#) *listener)
- [TestEventListener](#) * [Release](#) ([TestEventListener](#) *listener)
- [TestEventListener](#) * [default_result_printer](#) () const
- [TestEventListener](#) * [default_xml_generator](#) () const

Private Member Functions

- [TestEventListener](#) * [repeater](#) ()
- void [SetDefaultResultPrinter](#) ([TestEventListener](#) *listener)
- void [SetDefaultXmlGenerator](#) ([TestEventListener](#) *listener)
- bool [EventForwardingEnabled](#) () const
- void [SuppressEventForwarding](#) ()
- [GTEST_DISALLOW_COPY_AND_ASSIGN_](#) ([TestEventListeners](#))

Private Attributes

- internal::TestEventRepeater * [repeater_](#)
- [TestEventListener](#) * [default_result_printer_](#)
- [TestEventListener](#) * [default_xml_generator_](#)

Friends

- class [TestSuite](#)
- class [TestInfo](#)
- class [internal::DefaultGlobalTestPartResultReporter](#)
- class [internal::NoExecDeathTest](#)
- class [internal::TestEventListenersAccessor](#)
- class [internal::UnitTestImpl](#)

6.102.1 Constructor & Destructor Documentation

6.102.1.1 TestEventListeners()

```
testing::TestEventListeners::TestEventListeners ( )
```

6.102.1.2 ~TestEventListeners()

```
testing::TestEventListeners::~~TestEventListeners ( )
```

6.102.2 Member Function Documentation

6.102.2.1 Append()

```
void testing::TestEventListeners::Append (
    TestEventListener * listener )
```

6.102.2.2 default_result_printer()

```
TestEventListener* testing::TestEventListeners::default_result_printer ( ) const [inline]
```

6.102.2.3 default_xml_generator()

```
TestEventListener* testing::TestEventListeners::default_xml_generator ( ) const [inline]
```

6.102.2.4 EventForwardingEnabled()

```
bool testing::TestEventListeners::EventForwardingEnabled ( ) const [private]
```

6.102.2.5 GTEST_DISALLOW_COPY_AND_ASSIGN_()

```
testing::TestEventListeners::GTEST_DISALLOW_COPY_AND_ASSIGN_ (
    TestEventListeners ) [private]
```

6.102.2.6 Release()

```
TestEventListener* testing::TestEventListeners::Release (
    TestEventListener * listener )
```

6.102.2.7 repeater()

```
TestEventListener* testing::TestEventListeners::repeater ( ) [private]
```

6.102.2.8 SetDefaultResultPrinter()

```
void testing::TestEventListeners::SetDefaultResultPrinter (
    TestEventListener * listener ) [private]
```

6.102.2.9 SetDefaultXmlGenerator()

```
void testing::TestEventListeners::SetDefaultXmlGenerator (
    TestEventListener * listener ) [private]
```

6.102.2.10 SuppressEventForwarding()

```
void testing::TestEventListeners::SuppressEventForwarding ( ) [private]
```

6.102.3 Friends And Related Function Documentation

6.102.3.1 internal::DefaultGlobalTestPartResultReporter

```
friend class internal::DefaultGlobalTestPartResultReporter [friend]
```

6.102.3.2 internal::NoExecDeathTest

```
friend class internal::NoExecDeathTest [friend]
```

6.102.3.3 internal::TestEventListenersAccessor

```
friend class internal::TestEventListenersAccessor [friend]
```

6.102.3.4 internal::UnitTestImpl

```
friend class internal::UnitTestImpl [friend]
```

6.102.3.5 TestInfo

```
friend class TestInfo [friend]
```

6.102.3.6 TestSuite

```
friend class TestSuite [friend]
```

6.102.4 Member Data Documentation

6.102.4.1 default_result_printer_

```
TestEventListener* testing::TestEventListeners::default_result_printer_ [private]
```

6.102.4.2 default_xml_generator_

```
TestEventListener* testing::TestEventListeners::default_xml_generator_ [private]
```

6.102.4.3 repeater_

```
internal::TestEventRepeater* testing::TestEventListeners::repeater_ [private]
```

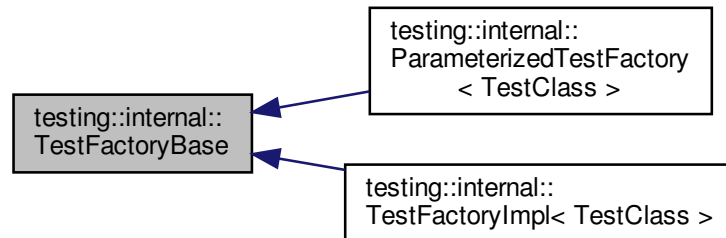
The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/[gtest.h](#)

6.103 testing::internal::TestFactoryBase Class Reference

```
#include <gtest-internal.h>
```

Inheritance diagram for testing::internal::TestFactoryBase:



Public Member Functions

- virtual [~TestFactoryBase](#) ()
- virtual [Test * CreateTest](#) ()=0

Protected Member Functions

- [TestFactoryBase](#) ()

Private Member Functions

- [GTEST_DISALLOW_COPY_AND_ASSIGN_](#) (TestFactoryBase)

6.103.1 Constructor & Destructor Documentation

6.103.1.1 ~TestFactoryBase()

```
virtual testing::internal::TestFactoryBase::~~TestFactoryBase ( ) [inline], [virtual]
```

6.103.1.2 TestFactoryBase()

```
testing::internal::TestFactoryBase::TestFactoryBase ( ) [inline], [protected]
```

6.103.2 Member Function Documentation

6.103.2.1 CreateTest()

```
virtual Test* testing::internal::TestFactoryBase::CreateTest ( ) [pure virtual]
```

Implemented in [testing::internal::TestFactoryImpl< TestClass >](#), and [testing::internal::ParameterizedTestFactory< TestClass >](#).

6.103.2.2 GTEST_DISALLOW_COPY_AND_ASSIGN_()

```
testing::internal::TestFactoryBase::GTEST_DISALLOW_COPY_AND_ASSIGN_ (
    TestFactoryBase ) [private]
```

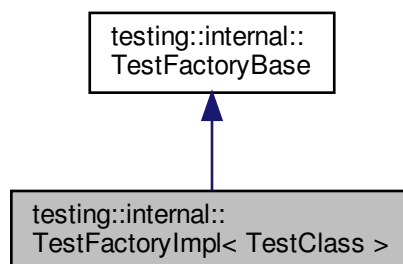
The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-internal.h](#)

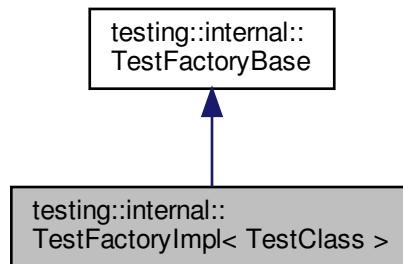
6.104 testing::internal::TestFactoryImpl< TestClass > Class Template Reference

```
#include <gtest-internal.h>
```

Inheritance diagram for testing::internal::TestFactoryImpl< TestClass >:



Collaboration diagram for `testing::internal::TestFactoryImpl< TestClass >`:



Public Member Functions

- `Test * CreateTest ()` override

Additional Inherited Members

6.104.1 Member Function Documentation

6.104.1.1 CreateTest()

```

template<class TestClass >
Test* testing::internal::TestFactoryImpl< TestClass >::CreateTest ( ) [inline], [override],
[virtual]
  
```

Implements `testing::internal::TestFactoryBase`.

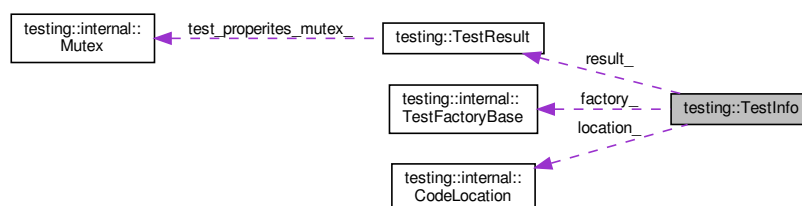
The documentation for this class was generated from the following file:

- `tests/googletest/include/gtest/internal/gtest-internal.h`

6.105 testing::TestInfo Class Reference

```
#include <gtest.h>
```

Collaboration diagram for `testing::TestInfo`:



Public Member Functions

- [~TestInfo](#) ()
- const char * [test_suite_name](#) () const
- const char * [test_case_name](#) () const
- const char * [name](#) () const
- const char * [type_param](#) () const
- const char * [value_param](#) () const
- const char * [file](#) () const
- int [line](#) () const
- bool [is_in_another_shard](#) () const
- bool [should_run](#) () const
- bool [is_reportable](#) () const
- const [TestResult](#) * [result](#) () const

Private Member Functions

- [TestInfo](#) (const std::string &[test_suite_name](#), const std::string &[name](#), const char *a_type_param, const char *a_value_param, [internal::CodeLocation](#) a_code_location, [internal::TypeId](#) fixture_class_id, [internal::TestFactoryBase](#) *factory)
- int [increment_death_test_count](#) ()
- void [Run](#) ()
- [GTEST_DISALLOW_COPY_AND_ASSIGN_](#) ([TestInfo](#))

Static Private Member Functions

- static void [ClearTestResult](#) ([TestInfo](#) *test_info)

Private Attributes

- const std::string [test_suite_name_](#)
- const std::string [name_](#)
- const std::unique_ptr< const ::std::string > [type_param_](#)
- const std::unique_ptr< const ::std::string > [value_param_](#)
- [internal::CodeLocation](#) [location_](#)
- const [internal::TypeId](#) [fixture_class_id_](#)
- bool [should_run_](#)
- bool [is_disabled_](#)
- bool [matches_filter_](#)
- bool [is_in_another_shard_](#)
- [internal::TestFactoryBase](#) *const [factory_](#)
- [TestResult](#) [result_](#)

Friends

- class [Test](#)
- class [TestSuite](#)
- class [internal::UnitTestImpl](#)
- class [internal::StreamingListenerTest](#)
- [TestInfo](#) * [internal::MakeAndRegisterTestInfo](#) (const char *[test_suite_name](#), const char *[name](#), const char *[type_param](#), const char *[value_param](#), [internal::CodeLocation](#) code_location, [internal::TypeId](#) fixture_class_id, [internal::SetUpTestSuiteFunc](#) set_up_tc, [internal::TearDownTestSuiteFunc](#) tear_down_tc, [internal::TestFactoryBase](#) *factory)

6.105.1 Constructor & Destructor Documentation

6.105.1.1 ~TestInfo()

```
testing::TestInfo::~~TestInfo ( )
```

6.105.1.2 TestInfo()

```
testing::TestInfo::TestInfo (
    const std::string & test_suite_name,
    const std::string & name,
    const char * a_type_param,
    const char * a_value_param,
    internal::CodeLocation a_code_location,
    internal::TypeId fixture_class_id,
    internal::TestFactoryBase * factory ) [private]
```

6.105.2 Member Function Documentation

6.105.2.1 ClearTestResult()

```
static void testing::TestInfo::ClearTestResult (
    TestInfo * test_info ) [inline], [static], [private]
```

6.105.2.2 file()

```
const char* testing::TestInfo::file ( ) const [inline]
```

6.105.2.3 GTEST_DISALLOW_COPY_AND_ASSIGN_()

```
testing::TestInfo::GTEST_DISALLOW_COPY_AND_ASSIGN_ (
    TestInfo ) [private]
```

6.105.2.4 increment_death_test_count()

```
int testing::TestInfo::increment_death_test_count ( ) [inline], [private]
```

6.105.2.5 is_in_another_shard()

```
bool testing::TestInfo::is_in_another_shard ( ) const [inline]
```

6.105.2.6 is_reportable()

```
bool testing::TestInfo::is_reportable ( ) const [inline]
```

6.105.2.7 line()

```
int testing::TestInfo::line ( ) const [inline]
```

6.105.2.8 name()

```
const char* testing::TestInfo::name ( ) const [inline]
```

6.105.2.9 result()

```
const TestResult* testing::TestInfo::result ( ) const [inline]
```

6.105.2.10 Run()

```
void testing::TestInfo::Run ( ) [private]
```

6.105.2.11 should_run()

```
bool testing::TestInfo::should_run ( ) const [inline]
```

6.105.2.12 test_case_name()

```
const char* testing::TestInfo::test_case_name ( ) const [inline]
```

6.105.2.13 test_suite_name()

```
const char* testing::TestInfo::test_suite_name ( ) const [inline]
```

6.105.2.14 type_param()

```
const char* testing::TestInfo::type_param ( ) const [inline]
```

6.105.2.15 value_param()

```
const char* testing::TestInfo::value_param ( ) const [inline]
```

6.105.3 Friends And Related Function Documentation

6.105.3.1 internal::MakeAndRegisterTestInfo

```
TestInfo* internal::MakeAndRegisterTestInfo (
    const char * test_suite_name,
    const char * name,
    const char * type_param,
    const char * value_param,
    internal::CodeLocation code_location,
    internal::TypeId fixture_class_id,
    internal::SetUpTestSuiteFunc set_up_tc,
    internal::TearDownTestSuiteFunc tear_down_tc,
    internal::TestFactoryBase * factory ) [friend]
```

6.105.3.2 internal::StreamingListenerTest

```
friend class internal::StreamingListenerTest [friend]
```

6.105.3.3 internal::UnitTestImpl

```
friend class internal::UnitTestImpl [friend]
```

6.105.3.4 Test

```
friend class Test [friend]
```

6.105.3.5 TestSuite

```
friend class TestSuite [friend]
```

6.105.4 Member Data Documentation

6.105.4.1 factory_

```
internal::TestFactoryBase* const testing::TestInfo::factory_ [private]
```

6.105.4.2 fixture_class_id_

```
const internal::TypeId testing::TestInfo::fixture_class_id_ [private]
```

6.105.4.3 is_disabled_

```
bool testing::TestInfo::is_disabled_ [private]
```

6.105.4.4 is_in_another_shard_

```
bool testing::TestInfo::is_in_another_shard_ [private]
```

6.105.4.5 location_

```
internal::CodeLocation testing::TestInfo::location_ [private]
```

6.105.4.6 matches_filter_

```
bool testing::TestInfo::matches_filter_ [private]
```

6.105.4.7 name_

```
const std::string testing::TestInfo::name_ [private]
```

6.105.4.8 result_

```
TestResult testing::TestInfo::result_ [private]
```

6.105.4.9 should_run_

```
bool testing::TestInfo::should_run_ [private]
```

6.105.4.10 test_suite_name_

```
const std::string testing::TestInfo::test_suite_name_ [private]
```

6.105.4.11 type_param_

```
const std::unique_ptr<const ::std::string> testing::TestInfo::type_param_ [private]
```

6.105.4.12 value_param_

```
const std::unique_ptr<const ::std::string> testing::TestInfo::value_param_ [private]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/gtest.h

6.106 testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfo Struct Reference

Public Member Functions

- [TestInfo](#) (const char *a_test_suite_base_name, const char *a_test_base_name, [TestMetaFactoryBase](#)< [ParamType](#) > *a_test_meta_factory)

Public Attributes

- const std::string [test_suite_base_name](#)
- const std::string [test_base_name](#)
- const std::unique_ptr< [TestMetaFactoryBase](#)< [ParamType](#) > > [test_meta_factory](#)

6.106.1 Constructor & Destructor Documentation

6.106.1.1 TestInfo()

```
template<class TestSuite>
testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfo::TestInfo (
    const char * a_test_suite_base_name,
    const char * a_test_base_name,
    TestMetaFactoryBase< ParamType > * a_test_meta_factory ) [inline]
```

6.106.2 Member Data Documentation

6.106.2.1 test_base_name

```
template<class TestSuite>
const std::string testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfo::test↵
_base_name
```

6.106.2.2 test_meta_factory

```
template<class TestSuite>
const std::unique_ptr<TestMetaFactoryBase<ParamType> > testing::internal::ParameterizedTest<
SuiteInfo< TestSuite >::TestInfo::test_meta_factory
```

6.106.2.3 test_suite_base_name

```
template<class TestSuite>
const std::string testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfo::test_
_suite_base_name
```

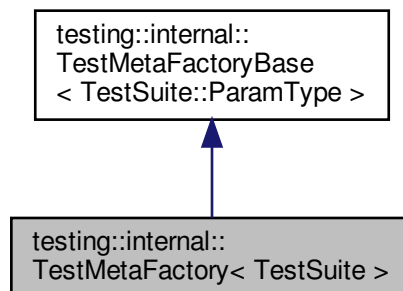
The documentation for this struct was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-param-util.h](#)

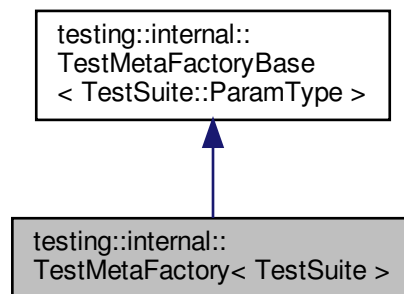
6.107 testing::internal::TestMetaFactory< TestSuite > Class Template Reference

```
#include <gtest-param-util.h>
```

Inheritance diagram for testing::internal::TestMetaFactory< TestSuite >:



Collaboration diagram for testing::internal::TestMetaFactory< TestSuite >:



Public Types

- using [ParamType](#) = typename TestSuite::ParamType

Public Member Functions

- [TestMetaFactory](#) ()
- [TestFactoryBase](#) * [CreateTestFactory](#) ([ParamType](#) parameter) override

Private Member Functions

- [GTEST_DISALLOW_COPY_AND_ASSIGN_](#) ([TestMetaFactory](#))

6.107.1 Member Typedef Documentation

6.107.1.1 ParamType

```
template<class TestSuite >
using testing::internal::TestMetaFactory< TestSuite >::ParamType = typename TestSuite::ParamType
```

6.107.2 Constructor & Destructor Documentation

6.107.2.1 TestMetaFactory()

```
template<class TestSuite >
testing::internal::TestMetaFactory< TestSuite >::TestMetaFactory ( ) [inline]
```

6.107.3 Member Function Documentation

6.107.3.1 CreateTestFactory()

```
template<class TestSuite >
TestFactoryBase* testing::internal::TestMetaFactory< TestSuite >::CreateTestFactory (
    ParamType parameter ) [inline], [override]
```

6.107.3.2 GTEST_DISALLOW_COPY_AND_ASSIGN_()

```
template<class TestSuite >
testing::internal::TestMetaFactory< TestSuite >::GTEST_DISALLOW_COPY_AND_ASSIGN_ (
    TestMetaFactory< TestSuite > ) [private]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/internal/gtest-param-util.h

6.108 testing::internal::TestMetaFactoryBase< ParamType > Class Template Reference

```
#include <gtest-param-util.h>
```

Public Member Functions

- virtual [~TestMetaFactoryBase](#) ()
- virtual [TestFactoryBase](#) * [CreateTestFactory](#) (ParamType parameter)=0

6.108.1 Constructor & Destructor Documentation

6.108.1.1 ~TestMetaFactoryBase()

```
template<class ParamType>
virtual testing::internal::TestMetaFactoryBase< ParamType >::~~TestMetaFactoryBase ( ) [inline],
[virtual]
```

6.108.2 Member Function Documentation

6.108.2.1 CreateTestFactory()

```
template<class ParamType>
virtual TestFactoryBase* testing::internal::TestMetaFactoryBase< ParamType >::CreateTestFactory (
    ParamType parameter ) [pure virtual]
```

The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-param-util.h](#)

6.109 testing::TestParamInfo< ParamType > Struct Template Reference

```
#include <gtest-param-util.h>
```

Public Member Functions

- [TestParamInfo](#) (const ParamType &a_param, size_t an_index)

Public Attributes

- ParamType [param](#)
- size_t [index](#)

6.109.1 Constructor & Destructor Documentation

6.109.1.1 TestParamInfo()

```
template<class ParamType>
testing::TestParamInfo< ParamType >::TestParamInfo (
    const ParamType & a_param,
    size_t an_index ) [inline]
```

6.109.2 Member Data Documentation

6.109.2.1 index

```
template<class ParamType>
size_t testing::TestParamInfo< ParamType >::index
```

6.109.2.2 param

```
template<class ParamType>
ParamType testing::TestParamInfo< ParamType >::param
```

The documentation for this struct was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-param-util.h](#)

6.110 [testing::TestProperty](#) Class Reference

```
#include <gtest.h>
```

Public Member Functions

- [TestProperty](#) (const std::string &a_key, const std::string &a_value)
- const char * [key](#) () const
- const char * [value](#) () const
- void [SetValue](#) (const std::string &new_value)

Private Attributes

- std::string [key_](#)
- std::string [value_](#)

6.110.1 Constructor & Destructor Documentation

6.110.1.1 [TestProperty\(\)](#)

```
testing::TestProperty::TestProperty (
    const std::string & a_key,
    const std::string & a_value ) [inline]
```

6.110.2 Member Function Documentation

6.110.2.1 key()

```
const char* testing::TestProperty::key ( ) const [inline]
```

6.110.2.2 SetValue()

```
void testing::TestProperty::SetValue (
    const std::string & new_value ) [inline]
```

6.110.2.3 value()

```
const char* testing::TestProperty::value ( ) const [inline]
```

6.110.3 Member Data Documentation

6.110.3.1 key_

```
std::string testing::TestProperty::key_ [private]
```

6.110.3.2 value_

```
std::string testing::TestProperty::value_ [private]
```

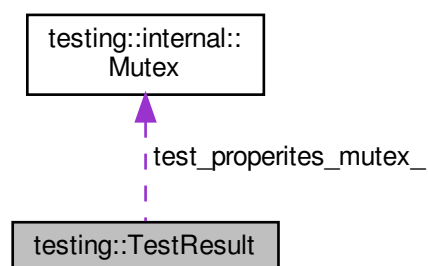
The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/gtest.h](#)

6.111 testing::TestResult Class Reference

```
#include <gtest.h>
```

Collaboration diagram for testing::TestResult:



Public Member Functions

- [TestResult](#) ()
- [~TestResult](#) ()
- int [total_part_count](#) () const
- int [test_property_count](#) () const
- bool [Passed](#) () const
- bool [Skipped](#) () const
- bool [Failed](#) () const
- bool [HasFatalFailure](#) () const
- bool [HasNonfatalFailure](#) () const
- [TimeInMillis elapsed_time](#) () const
- const TestPartResult & [GetTestPartResult](#) (int i) const
- const [TestProperty](#) & [GetTestProperty](#) (int i) const

Private Member Functions

- const std::vector< TestPartResult > & [test_part_results](#) () const
- const std::vector< [TestProperty](#) > & [test_properties](#) () const
- void [set_elapsed_time](#) ([TimeInMillis](#) elapsed)
- void [RecordProperty](#) (const std::string &xml_element, const [TestProperty](#) &test_property)
- void [AddTestPartResult](#) (const TestPartResult &test_part_result)
- int [death_test_count](#) () const
- int [increment_death_test_count](#) ()
- void [ClearTestPartResults](#) ()
- void [Clear](#) ()
- [GTEST_DISALLOW_COPY_AND_ASSIGN_](#) ([TestResult](#))

Static Private Member Functions

- static bool [ValidateTestProperty](#) (const std::string &xml_element, const [TestProperty](#) &test_property)

Private Attributes

- [internal::Mutex](#) [test_properites_mutex_](#)
- std::vector< TestPartResult > [test_part_results_](#)
- std::vector< [TestProperty](#) > [test_properties_](#)
- int [death_test_count_](#)
- [TimeInMillis](#) [elapsed_time_](#)

Friends

- class [TestInfo](#)
- class [TestSuite](#)
- class [UnitTest](#)
- class [internal::DefaultGlobalTestPartResultReporter](#)
- class [internal::ExecDeathTest](#)
- class [internal::TestResultAccessor](#)
- class [internal::UnitTestImpl](#)
- class [internal::WindowsDeathTest](#)
- class [internal::FuchsiaDeathTest](#)

6.111.1 Constructor & Destructor Documentation

6.111.1.1 TestResult()

```
testing::TestResult::TestResult ( )
```

6.111.1.2 ~TestResult()

```
testing::TestResult::~~TestResult ( )
```

6.111.2 Member Function Documentation

6.111.2.1 AddTestPartResult()

```
void testing::TestResult::AddTestPartResult (
    const TestPartResult & test_part_result ) [private]
```

6.111.2.2 Clear()

```
void testing::TestResult::Clear ( ) [private]
```

6.111.2.3 ClearTestPartResults()

```
void testing::TestResult::ClearTestPartResults ( ) [private]
```

6.111.2.4 death_test_count()

```
int testing::TestResult::death_test_count ( ) const [inline], [private]
```

6.111.2.5 elapsed_time()

```
TimeInMillis testing::TestResult::elapsed_time ( ) const [inline]
```

6.111.2.6 Failed()

```
bool testing::TestResult::Failed ( ) const
```

6.111.2.7 GetTestPartResult()

```
const TestPartResult& testing::TestResult::GetTestPartResult (
    int i ) const
```

6.111.2.8 GetTestProperty()

```
const TestProperty& testing::TestResult::GetTestProperty (
    int i ) const
```

6.111.2.9 GTEST_DISALLOW_COPY_AND_ASSIGN_()

```
testing::TestResult::GTEST_DISALLOW_COPY_AND_ASSIGN_ (
    TestResult ) [private]
```

6.111.2.10 HasFatalFailure()

```
bool testing::TestResult::HasFatalFailure ( ) const
```

6.111.2.11 HasNonfatalFailure()

```
bool testing::TestResult::HasNonfatalFailure ( ) const
```


6.111.2.12 increment_death_test_count()

```
int testing::TestResult::increment_death_test_count ( ) [inline], [private]
```

6.111.2.13 Passed()

```
bool testing::TestResult::Passed ( ) const [inline]
```

6.111.2.14 RecordProperty()

```
void testing::TestResult::RecordProperty (
    const std::string & xml_element,
    const TestProperty & test_property ) [private]
```

6.111.2.15 set_elapsed_time()

```
void testing::TestResult::set_elapsed_time (
    TimeInMillis elapsed ) [inline], [private]
```

6.111.2.16 Skipped()

```
bool testing::TestResult::Skipped ( ) const
```

6.111.2.17 test_part_results()

```
const std::vector<TestPartResult>& testing::TestResult::test_part_results ( ) const [inline],
[private]
```

6.111.2.18 test_properties()

```
const std::vector<TestProperty>& testing::TestResult::test_properties ( ) const [inline],
[private]
```

6.111.2.19 test_property_count()

```
int testing::TestResult::test_property_count ( ) const
```

6.111.2.20 total_part_count()

```
int testing::TestResult::total_part_count ( ) const
```

6.111.2.21 ValidateTestProperty()

```
static bool testing::TestResult::ValidateTestProperty (
    const std::string & xml_element,
    const TestProperty & test_property ) [static], [private]
```

6.111.3 Friends And Related Function Documentation

6.111.3.1 internal::DefaultGlobalTestPartResultReporter

```
friend class internal::DefaultGlobalTestPartResultReporter [friend]
```

6.111.3.2 internal::ExecDeathTest

```
friend class internal::ExecDeathTest [friend]
```

6.111.3.3 internal::FuchsiaDeathTest

```
friend class internal::FuchsiaDeathTest [friend]
```

6.111.3.4 internal::TestResultAccessor

```
friend class internal::TestResultAccessor [friend]
```

6.111.3.5 internal::UnitTestImpl

```
friend class internal::UnitTestImpl [friend]
```

6.111.3.6 internal::WindowsDeathTest

```
friend class internal::WindowsDeathTest [friend]
```

6.111.3.7 TestInfo

```
friend class TestInfo [friend]
```

6.111.3.8 TestSuite

```
friend class TestSuite [friend]
```

6.111.3.9 UnitTest

```
friend class UnitTest [friend]
```

6.111.4 Member Data Documentation

6.111.4.1 death_test_count_

```
int testing::TestResult::death_test_count_ [private]
```

6.111.4.2 elapsed_time_

```
TimeInMillis testing::TestResult::elapsed_time_ [private]
```

6.111.4.3 test_part_results_

```
std::vector<TestPartResult> testing::TestResult::test_part_results_ [private]
```

6.111.4.4 test_properites_mutex_

```
internal::Mutex testing::TestResult::test_properites_mutex_ [private]
```

6.111.4.5 test_properties_

```
std::vector<TestProperty> testing::TestResult::test_properties_ [private]
```

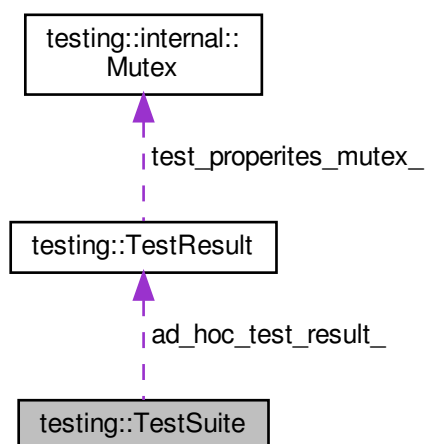
The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/gtest.h

6.112 testing::TestSuite Class Reference

```
#include <gtest.h>
```

Collaboration diagram for testing::TestSuite:



Public Member Functions

- [TestSuite](#) (const char *name, const char *a_type_param, [internal::SetUpTestSuiteFunc](#) set_up_tc, [internal::TearDownTestSuiteFunc](#) tear_down_tc)
- virtual [~TestSuite](#) ()
- const char * [name](#) () const
- const char * [type_param](#) () const
- bool [should_run](#) () const
- int [successful_test_count](#) () const
- int [skipped_test_count](#) () const
- int [failed_test_count](#) () const
- int [reportable_disabled_test_count](#) () const
- int [disabled_test_count](#) () const
- int [reportable_test_count](#) () const
- int [test_to_run_count](#) () const
- int [total_test_count](#) () const
- bool [Passed](#) () const
- bool [Failed](#) () const
- [TimeInMillis](#) [elapsed_time](#) () const
- const [TestInfo](#) * [GetTestInfo](#) (int i) const
- const [TestResult](#) & [ad_hoc_test_result](#) () const

Private Member Functions

- std::vector< [TestInfo](#) * > & [test_info_list](#) ()
- const std::vector< [TestInfo](#) * > & [test_info_list](#) () const
- [TestInfo](#) * [GetMutableTestInfo](#) (int i)
- void [set_should_run](#) (bool should)
- void [AddTestInfo](#) ([TestInfo](#) *test_info)
- void [ClearResult](#) ()
- void [Run](#) ()
- void [RunSetUpTestSuite](#) ()
- void [RunTearDownTestSuite](#) ()
- void [ShuffleTests](#) ([internal::Random](#) *random)
- void [UnshuffleTests](#) ()
- [GTEST_DISALLOW_COPY_AND_ASSIGN_](#) ([TestSuite](#))

Static Private Member Functions

- static void [ClearTestSuiteResult](#) ([TestSuite](#) *test_suite)
- static bool [TestPassed](#) (const [TestInfo](#) *test_info)
- static bool [TestSkipped](#) (const [TestInfo](#) *test_info)
- static bool [TestFailed](#) (const [TestInfo](#) *test_info)
- static bool [TestReportableDisabled](#) (const [TestInfo](#) *test_info)
- static bool [TestDisabled](#) (const [TestInfo](#) *test_info)
- static bool [TestReportable](#) (const [TestInfo](#) *test_info)
- static bool [ShouldRunTest](#) (const [TestInfo](#) *test_info)

Private Attributes

- `std::string` `name_`
- `const std::unique_ptr< const ::std::string >` `type_param_`
- `std::vector< TestInfo * >` `test_info_list_`
- `std::vector< int >` `test_indices_`
- `internal::SetUpTestSuiteFunc` `set_up_tc_`
- `internal::TearDownTestSuiteFunc` `tear_down_tc_`
- `bool` `should_run_`
- `TimeInMillis` `elapsed_time_`
- `TestResult` `ad_hoc_test_result_`

Friends

- class `Test`
- class `internal::UnitTestImpl`

6.112.1 Constructor & Destructor Documentation

6.112.1.1 TestSuite()

```
testing::TestSuite::TestSuite (
    const char * name,
    const char * a_type_param,
    internal::SetUpTestSuiteFunc set_up_tc,
    internal::TearDownTestSuiteFunc tear_down_tc )
```

6.112.1.2 ~TestSuite()

```
virtual testing::TestSuite::~~TestSuite ( ) [virtual]
```

6.112.2 Member Function Documentation

6.112.2.1 ad_hoc_test_result()

```
const TestResult& testing::TestSuite::ad_hoc_test_result ( ) const [inline]
```

6.112.2.2 AddTestInfo()

```
void testing::TestSuite::AddTestInfo (
    TestInfo * test_info ) [private]
```

6.112.2.3 ClearResult()

```
void testing::TestSuite::ClearResult ( ) [private]
```

6.112.2.4 ClearTestSuiteResult()

```
static void testing::TestSuite::ClearTestSuiteResult (
    TestSuite * test_suite ) [inline], [static], [private]
```

6.112.2.5 disabled_test_count()

```
int testing::TestSuite::disabled_test_count ( ) const
```

6.112.2.6 elapsed_time()

```
TimeInMillis testing::TestSuite::elapsed_time ( ) const [inline]
```

6.112.2.7 Failed()

```
bool testing::TestSuite::Failed ( ) const [inline]
```

6.112.2.8 failed_test_count()

```
int testing::TestSuite::failed_test_count ( ) const
```

6.112.2.9 GetMutableTestInfo()

```
TestInfo* testing::TestSuite::GetMutableTestInfo (
    int i ) [private]
```

6.112.2.10 GetTestInfo()

```
const TestInfo* testing::TestSuite::GetTestInfo (
    int i ) const
```

6.112.2.11 GTEST_DISALLOW_COPY_AND_ASSIGN_()

```
testing::TestSuite::GTEST_DISALLOW_COPY_AND_ASSIGN_ (
    TestSuite ) [private]
```

6.112.2.12 name()

```
const char* testing::TestSuite::name ( ) const [inline]
```

6.112.2.13 Passed()

```
bool testing::TestSuite::Passed ( ) const [inline]
```

6.112.2.14 reportable_disabled_test_count()

```
int testing::TestSuite::reportable_disabled_test_count ( ) const
```

6.112.2.15 reportable_test_count()

```
int testing::TestSuite::reportable_test_count ( ) const
```


6.112.2.16 Run()

```
void testing::TestSuite::Run ( ) [private]
```

6.112.2.17 RunSetUpTestSuite()

```
void testing::TestSuite::RunSetUpTestSuite ( ) [inline], [private]
```

6.112.2.18 RunTearDownTestSuite()

```
void testing::TestSuite::RunTearDownTestSuite ( ) [inline], [private]
```

6.112.2.19 set_should_run()

```
void testing::TestSuite::set_should_run (
    bool should ) [inline], [private]
```

6.112.2.20 should_run()

```
bool testing::TestSuite::should_run ( ) const [inline]
```

6.112.2.21 ShouldRunTest()

```
static bool testing::TestSuite::ShouldRunTest (
    const TestInfo * test_info ) [inline], [static], [private]
```

6.112.2.22 ShuffleTests()

```
void testing::TestSuite::ShuffleTests (
    internal::Random * random ) [private]
```

6.112.2.23 skipped_test_count()

```
int testing::TestSuite::skipped_test_count ( ) const
```

6.112.2.24 successful_test_count()

```
int testing::TestSuite::successful_test_count ( ) const
```

6.112.2.25 test_info_list() [1/2]

```
std::vector<TestInfo*>& testing::TestSuite::test_info_list ( ) [inline], [private]
```

6.112.2.26 test_info_list() [2/2]

```
const std::vector<TestInfo*>& testing::TestSuite::test_info_list ( ) const [inline], [private]
```

6.112.2.27 test_to_run_count()

```
int testing::TestSuite::test_to_run_count ( ) const
```

6.112.2.28 TestDisabled()

```
static bool testing::TestSuite::TestDisabled (
    const TestInfo * test_info ) [inline], [static], [private]
```

6.112.2.29 TestFailed()

```
static bool testing::TestSuite::TestFailed (
    const TestInfo * test_info ) [inline], [static], [private]
```

6.112.2.30 TestPassed()

```
static bool testing::TestSuite::TestPassed (
    const TestInfo * test_info ) [inline], [static], [private]
```

6.112.2.31 TestReportable()

```
static bool testing::TestSuite::TestReportable (
    const TestInfo * test_info ) [inline], [static], [private]
```

6.112.2.32 TestReportableDisabled()

```
static bool testing::TestSuite::TestReportableDisabled (
    const TestInfo * test_info ) [inline], [static], [private]
```

6.112.2.33 TestSkipped()

```
static bool testing::TestSuite::TestSkipped (
    const TestInfo * test_info ) [inline], [static], [private]
```

6.112.2.34 total_test_count()

```
int testing::TestSuite::total_test_count ( ) const
```

6.112.2.35 type_param()

```
const char* testing::TestSuite::type_param ( ) const [inline]
```

6.112.2.36 UnshuffleTests()

```
void testing::TestSuite::UnshuffleTests ( ) [private]
```

6.112.3 Friends And Related Function Documentation

6.112.3.1 internal::UnitTestImpl

```
friend class internal::UnitTestImpl [friend]
```

6.112.3.2 Test

```
friend class Test [friend]
```

6.112.4 Member Data Documentation

6.112.4.1 ad_hoc_test_result_

```
TestResult testing::TestSuite::ad_hoc_test_result_ [private]
```

6.112.4.2 elapsed_time_

```
TimeInMillis testing::TestSuite::elapsed_time_ [private]
```

6.112.4.3 name_

```
std::string testing::TestSuite::name_ [private]
```

6.112.4.4 set_up_tc_

```
internal::SetUpTestSuiteFunc testing::TestSuite::set_up_tc_ [private]
```

6.112.4.5 should_run_

```
bool testing::TestSuite::should_run_ [private]
```

6.112.4.6 tear_down_tc_

```
internal::TearDownTestSuiteFunc testing::TestSuite::tear_down_tc_ [private]
```

6.112.4.7 test_indices_

```
std::vector<int> testing::TestSuite::test_indices_ [private]
```

6.112.4.8 test_info_list_

```
std::vector<TestInfo*> testing::TestSuite::test_info_list_ [private]
```

6.112.4.9 type_param_

```
const std::unique_ptr<const ::std::string> testing::TestSuite::type_param_ [private]
```

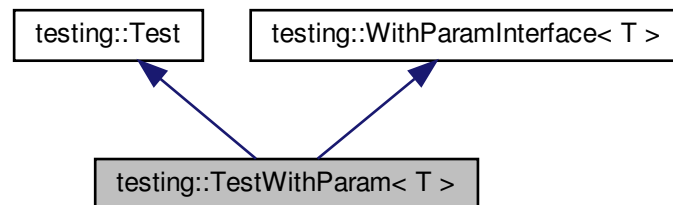
The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/gtest.h

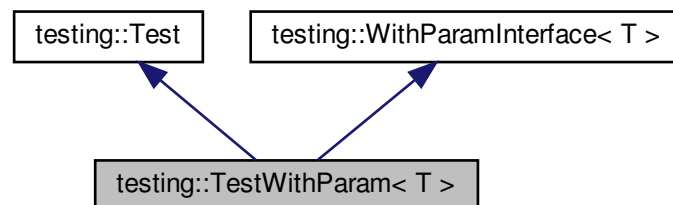
6.113 testing::TestWithParam< T > Class Template Reference

```
#include <gtest.h>
```

Inheritance diagram for testing::TestWithParam< T >:



Collaboration diagram for testing::TestWithParam< T >:



Additional Inherited Members

The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/gtest.h](#)

6.114 testing::internal::ThreadLocal< T > Class Template Reference

```
#include <gtest-port.h>
```

Public Member Functions

- [ThreadLocal](#) ()
- [ThreadLocal](#) (const T &value)
- T * [pointer](#) ()
- const T * [pointer](#) () const
- const T & [get](#) () const
- void [set](#) (const T &value)

Private Attributes

- T [value_](#)

6.114.1 Constructor & Destructor Documentation

6.114.1.1 ThreadLocal() [1/2]

```
template<typename T >
testing::internal::ThreadLocal< T >::ThreadLocal ( ) [inline]
```

6.114.1.2 ThreadLocal() [2/2]

```
template<typename T >
testing::internal::ThreadLocal< T >::ThreadLocal (
    const T & value ) [inline], [explicit]
```

6.114.2 Member Function Documentation

6.114.2.1 get()

```
template<typename T >
const T& testing::internal::ThreadLocal< T >::get ( ) const [inline]
```

6.114.2.2 pointer() [1/2]

```
template<typename T >
T* testing::internal::ThreadLocal< T >::pointer ( ) [inline]
```

6.114.2.3 pointer() [2/2]

```
template<typename T >
const T* testing::internal::ThreadLocal< T >::pointer ( ) const [inline]
```

6.114.2.4 set()

```
template<typename T >
void testing::internal::ThreadLocal< T >::set (
    const T & value ) [inline]
```

6.114.3 Member Data Documentation

6.114.3.1 value_

```
template<typename T >
T testing::internal::ThreadLocal< T >::value_ [private]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-port.h](#)

6.115 testing::internal::TypeIdHelper< T > Class Template Reference

```
#include <gtest-internal.h>
```

Static Public Attributes

- static bool [dummy_](#) = false

6.115.1 Member Data Documentation

6.115.1.1 dummy_

```
template<typename T >
bool testing::internal::TypeIdHelper< T >::dummy_ = false [static]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-internal.h](#)

6.116 testing::internal2::TypeWithoutFormatter< T, kTypeKind > Class Template Reference

```
#include <gtest-printers.h>
```

Static Public Member Functions

- static void [PrintValue](#) (const T &value, ::std::ostream *os)

6.116.1 Member Function Documentation

6.116.1.1 PrintValue()

```
template<typename T , TypeKind kTypeKind>
static void testing::internal2::TypeWithoutFormatter< T, kTypeKind >::PrintValue (
    const T & value,
    ::std::ostream * os ) [inline], [static]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/[gtest-printers.h](#)

6.117 testing::internal2::TypeWithoutFormatter< T, kConvertibleToInteger > Class Template Reference

```
#include <gtest-printers.h>
```

Static Public Member Functions

- static void [PrintValue](#) (const T &value, ::std::ostream *os)

6.117.1 Member Function Documentation

6.117.1.1 PrintValue()

```
template<typename T >
static void testing::internal2::TypeWithoutFormatter< T, kConvertibleToInteger >::PrintValue (
    const T & value,
    ::std::ostream * os ) [inline], [static]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/[gtest-printers.h](#)

6.118 testing::internal2::TypeWithoutFormatter< T, kProtobuf > Class Template Reference

```
#include <gtest-printers.h>
```

Static Public Member Functions

- static void [PrintValue](#) (const T &value, ::std::ostream *os)

6.118.1 Member Function Documentation

6.118.1.1 PrintValue()

```
template<typename T >
static void testing::internal2::TypeWithoutFormatter< T, kProtobuf >::PrintValue (
    const T & value,
    ::std::ostream * os ) [inline], [static]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/[gtest-printers.h](#)

6.119 testing::internal::TypeWithSize< size > Class Template Reference

```
#include <gtest-port.h>
```

Public Types

- typedef void [UInt](#)

6.119.1 Member Typedef Documentation

6.119.1.1 UInt

```
template<size_t size>
typedef void testing::internal::TypeWithSize< size >::UInt
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/internal/[gtest-port.h](#)

6.120 `testing::internal::TypeWithSize< 4 >` Class Template Reference

```
#include <gtest-port.h>
```

Public Types

- typedef int [Int](#)
- typedef unsigned int [UInt](#)

6.120.1 Member Typedef Documentation

6.120.1.1 `Int`

```
typedef int testing::internal::TypeWithSize< 4 >::Int
```

6.120.1.2 `UInt`

```
typedef unsigned int testing::internal::TypeWithSize< 4 >::UInt
```

The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-port.h](#)

6.121 `testing::internal::TypeWithSize< 8 >` Class Template Reference

```
#include <gtest-port.h>
```

Public Types

- typedef long long [Int](#)
- typedef unsigned long long [UInt](#)

6.121.1 Member Typedef Documentation

6.121.1.1 Int

```
typedef long long testing::internal::TypeWithSize< 8 >::Int
```

6.121.1.2 UInt

```
typedef unsigned long long testing::internal::TypeWithSize< 8 >::UInt
```

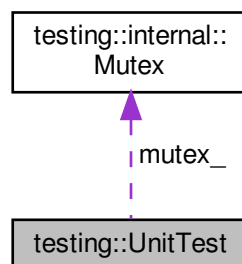
The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-port.h](#)

6.122 testing::UnitTest Class Reference

```
#include <gtest.h>
```

Collaboration diagram for testing::UnitTest:



Public Member Functions

- `int Run () GTEST_MUST_USE_RESULT_`
- `const char * original_working_dir () const`
- `const TestSuite * current_test_suite () const GTEST_LOCK_EXCLUDED_(mutex_)`
- `const TestCase * current_test_case () const GTEST_LOCK_EXCLUDED_(mutex_)`
- `const TestInfo * current_test_info () const GTEST_LOCK_EXCLUDED_(mutex_)`
- `int random_seed () const`
- `internal::ParameterizedTestSuiteRegistry & parameterized_test_registry () GTEST_LOCK_EXCLUDED_(mutex_)`
- `int successful_test_suite_count () const`
- `int failed_test_suite_count () const`
- `int total_test_suite_count () const`
- `int test_suite_to_run_count () const`

- int [successful_test_case_count](#) () const
- int [failed_test_case_count](#) () const
- int [total_test_case_count](#) () const
- int [test_case_to_run_count](#) () const
- int [successful_test_count](#) () const
- int [skipped_test_count](#) () const
- int [failed_test_count](#) () const
- int [reportable_disabled_test_count](#) () const
- int [disabled_test_count](#) () const
- int [reportable_test_count](#) () const
- int [total_test_count](#) () const
- int [test_to_run_count](#) () const
- [TimeInMillis](#) [start_timestamp](#) () const
- [TimeInMillis](#) [elapsed_time](#) () const
- bool [Passed](#) () const
- bool [Failed](#) () const
- const [TestSuite](#) * [GetTestSuite](#) (int i) const
- const [TestCase](#) * [GetTestCase](#) (int i) const
- const [TestResult](#) & [ad_hoc_test_result](#) () const
- [TestEventListeners](#) & [listeners](#) ()

Static Public Member Functions

- static [UnitTest](#) * [GetInstance](#) ()

Private Member Functions

- [Environment](#) * [AddEnvironment](#) ([Environment](#) *env)
- void [AddTestPartResult](#) ([TestPartResult::Type](#) result_type, const char *file_name, int line_number, const std::string &message, const std::string &os_stack_trace) [GTEST_LOCK_EXCLUDED_\(mutex_\)](#)
- void [RecordProperty](#) (const std::string &key, const std::string &value)
- [TestSuite](#) * [GetMutableTestSuite](#) (int i)
- internal::UnitTestImpl * [impl](#) ()
- const internal::UnitTestImpl * [impl](#) () const
- [UnitTest](#) ()
- virtual ~[UnitTest](#) ()
- void [PushGTestTrace](#) (const internal::TraceInfo &trace) [GTEST_LOCK_EXCLUDED_\(mutex_\)](#)
- void [PopGTestTrace](#) () [GTEST_LOCK_EXCLUDED_\(mutex_\)](#)
- [GTEST_DISALLOW_COPY_AND_ASSIGN_](#) ([UnitTest](#))

Private Attributes

- internal::Mutex [mutex_](#)
- internal::UnitTestImpl * [impl_](#)

Friends

- class [ScopedTrace](#)
- class [Test](#)
- class [internal::AssertHelper](#)
- class [internal::StreamingListenerTest](#)
- class [internal::UnitTestRecordPropertyTestHelper](#)
- [Environment](#) * [AddGlobalTestEnvironment](#) ([Environment](#) *env)
- [internal::UnitTestImpl](#) * [internal::GetUnitTestImpl](#) ()
- void [internal::ReportFailureInUnknownLocation](#) ([TestPartResult::Type](#) result_type, const std::string &message)

6.122.1 Constructor & Destructor Documentation

6.122.1.1 [UnitTest\(\)](#)

```
testing::UnitTest::UnitTest ( ) [private]
```

6.122.1.2 [~UnitTest\(\)](#)

```
virtual testing::UnitTest::~~UnitTest ( ) [private], [virtual]
```

6.122.2 Member Function Documentation

6.122.2.1 [ad_hoc_test_result\(\)](#)

```
const TestResult& testing::UnitTest::ad_hoc_test_result ( ) const
```

6.122.2.2 [AddEnvironment\(\)](#)

```
Environment* testing::UnitTest::AddEnvironment (
    Environment * env ) [private]
```

6.122.2.3 AddTestPartResult()

```
void testing::UnitTest::AddTestPartResult (
    TestPartResult::Type result_type,
    const char * file_name,
    int line_number,
    const std::string & message,
    const std::string & os_stack_trace ) [private]
```

6.122.2.4 current_test_case()

```
const TestCase* testing::UnitTest::current_test_case ( ) const
```

6.122.2.5 current_test_info()

```
const TestInfo* testing::UnitTest::current_test_info ( ) const
```

6.122.2.6 current_test_suite()

```
const TestSuite* testing::UnitTest::current_test_suite ( ) const
```

6.122.2.7 disabled_test_count()

```
int testing::UnitTest::disabled_test_count ( ) const
```

6.122.2.8 elapsed_time()

```
TimeInMillis testing::UnitTest::elapsed_time ( ) const
```

6.122.2.9 Failed()

```
bool testing::UnitTest::Failed ( ) const
```

6.122.2.10 failed_test_case_count()

```
int testing::UnitTest::failed_test_case_count ( ) const
```

6.122.2.11 failed_test_count()

```
int testing::UnitTest::failed_test_count ( ) const
```

6.122.2.12 failed_test_suite_count()

```
int testing::UnitTest::failed_test_suite_count ( ) const
```

6.122.2.13 GetInstance()

```
static UnitTest* testing::UnitTest::GetInstance ( ) [static]
```

6.122.2.14 GetMutableTestSuite()

```
TestSuite* testing::UnitTest::GetMutableTestSuite (
    int i ) [private]
```

6.122.2.15 GetTestCase()

```
const TestCase* testing::UnitTest::GetTestCase (
    int i ) const
```

6.122.2.16 GetTestSuite()

```
const TestSuite* testing::UnitTest::GetTestSuite (
    int i ) const
```


6.122.2.17 GTEST_DISALLOW_COPY_AND_ASSIGN_()

```
testing::UnitTest::GTEST_DISALLOW_COPY_AND_ASSIGN_ (
    UnitTest ) [private]
```

6.122.2.18 impl() [1/2]

```
internal::UnitTestImpl* testing::UnitTest::impl ( ) [inline], [private]
```

6.122.2.19 impl() [2/2]

```
const internal::UnitTestImpl* testing::UnitTest::impl ( ) const [inline], [private]
```

6.122.2.20 listeners()

```
TestEventListeners& testing::UnitTest::listeners ( )
```

6.122.2.21 original_working_dir()

```
const char* testing::UnitTest::original_working_dir ( ) const
```

6.122.2.22 parameterized_test_registry()

```
internal::ParameterizedTestSuiteRegistry& testing::UnitTest::parameterized_test_registry ( )
```

6.122.2.23 Passed()

```
bool testing::UnitTest::Passed ( ) const
```

6.122.2.24 PopGTestTrace()

```
void testing::UnitTest::PopGTestTrace ( ) [private]
```

6.122.2.25 PushGTestTrace()

```
void testing::UnitTest::PushGTestTrace (
    const internal::TraceInfo & trace ) [private]
```

6.122.2.26 random_seed()

```
int testing::UnitTest::random_seed ( ) const
```

6.122.2.27 RecordProperty()

```
void testing::UnitTest::RecordProperty (
    const std::string & key,
    const std::string & value ) [private]
```

6.122.2.28 reportable_disabled_test_count()

```
int testing::UnitTest::reportable_disabled_test_count ( ) const
```

6.122.2.29 reportable_test_count()

```
int testing::UnitTest::reportable_test_count ( ) const
```

6.122.2.30 Run()

```
int testing::UnitTest::Run ( )
```

6.122.2.31 skipped_test_count()

```
int testing::UnitTest::skipped_test_count ( ) const
```

6.122.2.32 start_timestamp()

```
TimeInMillis testing::UnitTest::start_timestamp ( ) const
```

6.122.2.33 successful_test_case_count()

```
int testing::UnitTest::successful_test_case_count ( ) const
```

6.122.2.34 successful_test_count()

```
int testing::UnitTest::successful_test_count ( ) const
```

6.122.2.35 successful_test_suite_count()

```
int testing::UnitTest::successful_test_suite_count ( ) const
```

6.122.2.36 test_case_to_run_count()

```
int testing::UnitTest::test_case_to_run_count ( ) const
```

6.122.2.37 test_suite_to_run_count()

```
int testing::UnitTest::test_suite_to_run_count ( ) const
```

6.122.2.38 test_to_run_count()

```
int testing::UnitTest::test_to_run_count ( ) const
```

6.122.2.39 total_test_case_count()

```
int testing::UnitTest::total_test_case_count ( ) const
```

6.122.2.40 total_test_count()

```
int testing::UnitTest::total_test_count ( ) const
```

6.122.2.41 total_test_suite_count()

```
int testing::UnitTest::total_test_suite_count ( ) const
```

6.122.3 Friends And Related Function Documentation**6.122.3.1 AddGlobalTestEnvironment**

```
Environment* AddGlobalTestEnvironment (
    Environment * env ) [friend]
```

6.122.3.2 internal::AssertHelper

```
friend class internal::AssertHelper [friend]
```

6.122.3.3 internal::GetUnitTestImpl

```
internal::UnitTestImpl* internal::GetUnitTestImpl ( ) [friend]
```

6.122.3.4 internal::ReportFailureInUnknownLocation

```
void internal::ReportFailureInUnknownLocation (
    TestPartResult::Type result_type,
    const std::string & message ) [friend]
```

6.122.3.5 internal::StreamingListenerTest

```
friend class internal::StreamingListenerTest [friend]
```

6.122.3.6 internal::UnitTestRecordPropertyTestHelper

```
friend class internal::UnitTestRecordPropertyTestHelper [friend]
```

6.122.3.7 ScopedTrace

```
friend class ScopedTrace [friend]
```

6.122.3.8 Test

```
friend class Test [friend]
```

6.122.4 Member Data Documentation

6.122.4.1 impl_

```
internal::UnitTestImpl* testing::UnitTest::impl_ [private]
```

6.122.4.2 mutex_

```
internal::Mutex testing::UnitTest::mutex_ [mutable], [private]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/gtest.h

6.123 testing::internal::UniversalPrinter< T > Class Template Reference

```
#include <gtest-printers.h>
```

Static Public Member Functions

- static void [Print](#) (const T &value, ::std::ostream *os)

6.123.1 Member Function Documentation

6.123.1.1 Print()

```
template<typename T >
static void testing::internal::UniversalPrinter< T >::Print (
    const T & value,
    ::std::ostream * os ) [inline], [static]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/[gtest-printers.h](#)

6.124 [testing::internal::UniversalPrinter](#)< T & > Class Template Reference

```
#include <gtest-printers.h>
```

Static Public Member Functions

- static void [Print](#) (const T &value, ::std::ostream *os)

6.124.1 Member Function Documentation

6.124.1.1 Print()

```
template<typename T >
static void testing::internal::UniversalPrinter< T & >::Print (
    const T & value,
    ::std::ostream * os ) [inline], [static]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/[gtest-printers.h](#)

6.125 testing::internal::UniversalPrinter< T[N]> Class Template Reference

```
#include <gtest-printers.h>
```

Static Public Member Functions

- static void [Print](#) (const T(&a)[N], ::std::ostream *os)

6.125.1 Member Function Documentation

6.125.1.1 Print()

```
template<typename T , size_t N>
static void testing::internal::UniversalPrinter< T[N]>::Print (
    const T(&) a[N],
    ::std::ostream * os ) [inline], [static]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/[gtest-printers.h](#)

6.126 testing::internal::UniversalTersePrinter< T > Class Template Reference

```
#include <gtest-printers.h>
```

Static Public Member Functions

- static void [Print](#) (const T &value, ::std::ostream *os)

6.126.1 Member Function Documentation

6.126.1.1 Print()

```
template<typename T >
static void testing::internal::UniversalTersePrinter< T >::Print (
    const T & value,
    ::std::ostream * os ) [inline], [static]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/[gtest-printers.h](#)

6.127 `testing::internal::UniversalTersePrinter< char * >` Class Template Reference

```
#include <gtest-printers.h>
```

Static Public Member Functions

- static void [Print](#) (char *str, ::std::ostream *os)

6.127.1 Member Function Documentation

6.127.1.1 `Print()`

```
static void testing::internal::UniversalTersePrinter< char * >::Print (
    char * str,
    ::std::ostream * os ) [inline], [static]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/[gtest-printers.h](#)

6.128 `testing::internal::UniversalTersePrinter< const char * >` Class Template Reference

```
#include <gtest-printers.h>
```

Static Public Member Functions

- static void [Print](#) (const char *str, ::std::ostream *os)

6.128.1 Member Function Documentation

6.128.1.1 `Print()`

```
static void testing::internal::UniversalTersePrinter< const char * >::Print (
    const char * str,
    ::std::ostream * os ) [inline], [static]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/[gtest-printers.h](#)

6.129 testing::internal::UniversalTersePrinter< T & > Class Template Reference

```
#include <gtest-printers.h>
```

Static Public Member Functions

- static void [Print](#) (const T &value, ::std::ostream *os)

6.129.1 Member Function Documentation

6.129.1.1 Print()

```
template<typename T >
static void testing::internal::UniversalTersePrinter< T & >::Print (
    const T & value,
    ::std::ostream * os ) [inline], [static]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/[gtest-printers.h](#)

6.130 testing::internal::UniversalTersePrinter< T[N]> Class Template Reference

```
#include <gtest-printers.h>
```

Static Public Member Functions

- static void [Print](#) (const T(&value)[N], ::std::ostream *os)

6.130.1 Member Function Documentation

6.130.1.1 Print()

```
template<typename T , size_t N>
static void testing::internal::UniversalTersePrinter< T[N]>::Print (
    const T(&) value[N],
    ::std::ostream * os ) [inline], [static]
```

The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/[gtest-printers.h](#)

6.131 testing::internal::UniversalTersePrinter< wchar_t * > Class Template Reference

```
#include <gtest-printers.h>
```

Static Public Member Functions

- static void [Print](#) (wchar_t *str, ::std::ostream *os)

6.131.1 Member Function Documentation

6.131.1.1 Print()

```
static void testing::internal::UniversalTersePrinter< wchar_t * >::Print (
    wchar_t * str,
    ::std::ostream * os ) [inline], [static]
```

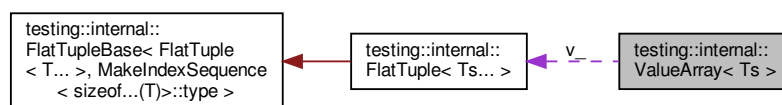
The documentation for this class was generated from the following file:

- tests/googletest/include/gtest/[gtest-printers.h](#)

6.132 testing::internal::ValueArray< Ts > Class Template Reference

```
#include <gtest-param-util.h>
```

Collaboration diagram for testing::internal::ValueArray< Ts >:



Public Member Functions

- [ValueArray](#) (Ts... v)
- template<typename T >
[operator ParamGenerator< T > \(\)](#) const

Private Member Functions

- template<typename T , size_t... I>
std::vector< T > [MakeVector](#) (IndexSequence< I... >) const

Private Attributes

- [FlatTuple< Ts... > v_](#)

6.132.1 Constructor & Destructor Documentation

6.132.1.1 ValueArray()

```
template<typename... Ts>
testing::internal::ValueArray< Ts >::ValueArray (
    Ts... v ) [inline]
```

6.132.2 Member Function Documentation

6.132.2.1 MakeVector()

```
template<typename... Ts>
template<typename T , size_t... I>
std::vector<T> testing::internal::ValueArray< Ts >::MakeVector (
    IndexSequence< I... > ) const [inline], [private]
```

6.132.2.2 operator ParamGenerator< T >()

```
template<typename... Ts>
template<typename T >
testing::internal::ValueArray< Ts >::operator ParamGenerator< T > ( ) const [inline]
```

6.132.3 Member Data Documentation

6.132.3.1 v_

```
template<typename... Ts>
FlatTuple<Ts...> testing::internal::ValueArray< Ts >::v_ [private]
```

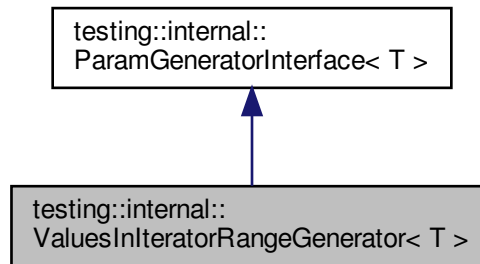
The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-param-util.h](#)

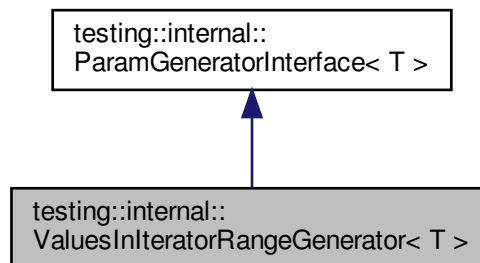
6.133 testing::internal::ValuesInIteratorRangeGenerator< T > Class Template Reference

```
#include <gtest-param-util.h>
```

Inheritance diagram for testing::internal::ValuesInIteratorRangeGenerator< T >:



Collaboration diagram for testing::internal::ValuesInIteratorRangeGenerator< T >:



Classes

- class [Iterator](#)

Public Member Functions

- `template<typename ForwardIterator >`
[ValuesInIteratorRangeGenerator](#) (ForwardIterator begin, ForwardIterator end)
- `~ValuesInIteratorRangeGenerator` () override
- `ParamIteratorInterface< T > * Begin` () const override
- `ParamIteratorInterface< T > * End` () const override

Private Types

- typedef ::std::vector< T > [ContainerType](#)

Private Member Functions

- void [operator=](#) (const [ValuesInIteratorRangeGenerator](#) &other)

Private Attributes

- const [ContainerType](#) [container_](#)

Additional Inherited Members

6.133.1 Member Typedef Documentation

6.133.1.1 ContainerType

```
template<typename T >
typedef ::std::vector<T> testing::internal::ValuesInIteratorRangeGenerator< T >::ContainerType
Type [private]
```

6.133.2 Constructor & Destructor Documentation

6.133.2.1 ValuesInIteratorRangeGenerator()

```
template<typename T >
template<typename ForwardIterator >
testing::internal::ValuesInIteratorRangeGenerator< T >::ValuesInIteratorRangeGenerator (
    ForwardIterator begin,
    ForwardIterator end ) [inline]
```

6.133.2.2 ~ValuesInIteratorRangeGenerator()

```
template<typename T >
testing::internal::ValuesInIteratorRangeGenerator< T >::~~ValuesInIteratorRangeGenerator ( )
[inline], [override]
```

6.133.3 Member Function Documentation

6.133.3.1 Begin()

```
template<typename T >
ParamIteratorInterface<T>* testing::internal::ValuesInIteratorRangeGenerator< T >::Begin ( )
const [inline], [override], [virtual]
```

Implements [testing::internal::ParamGeneratorInterface< T >](#).

6.133.3.2 End()

```
template<typename T >
ParamIteratorInterface<T>* testing::internal::ValuesInIteratorRangeGenerator< T >::End ( )
const [inline], [override], [virtual]
```

Implements [testing::internal::ParamGeneratorInterface< T >](#).

6.133.3.3 operator=()

```
template<typename T >
void testing::internal::ValuesInIteratorRangeGenerator< T >::operator= (
    const ValuesInIteratorRangeGenerator< T > & other ) [private]
```

6.133.4 Member Data Documentation

6.133.4.1 container_

```
template<typename T >
const ContainerType testing::internal::ValuesInIteratorRangeGenerator< T >::container_ [private]
```

The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/internal/gtest-param-util.h](#)

6.134 Widget Class Reference

```
#include <widget.h>
```

Public Member Functions

- [Widget](#) (int number, const std::string &name)
- [~Widget](#) ()
- float [GetFloatValue](#) () const
- int [GetIntValue](#) () const
- std::string [GetStringValue](#) () const
- void [GetCharPtrValue](#) (char *buffer, size_t max_size) const

Private Attributes

- float [number_](#)
- std::string [name_](#)

6.134.1 Constructor & Destructor Documentation

6.134.1.1 Widget()

```
Widget::Widget (
    int number,
    const std::string & name )
```

6.134.1.2 ~Widget()

```
Widget::~~Widget ( )
```

6.134.2 Member Function Documentation

6.134.2.1 GetCharPtrValue()

```
void Widget::GetCharPtrValue (
    char * buffer,
    size_t max_size ) const
```

6.134.2.2 GetFloatValue()

```
float Widget::GetFloatValue ( ) const
```

6.134.2.3 GetIntValue()

```
int Widget::GetIntValue ( ) const
```

6.134.2.4 GetStringValue()

```
std::string Widget::GetStringValue ( ) const
```

6.134.3 Member Data Documentation

6.134.3.1 name_

```
std::string Widget::name_ [private]
```

6.134.3.2 number_

```
float Widget::number_ [private]
```

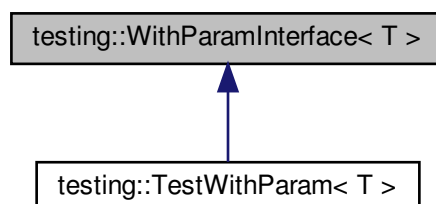
The documentation for this class was generated from the following file:

- tests/googletest/xcode/Samples/FrameworkSample/widget.h

6.135 testing::WithParamInterface< T > Class Template Reference

```
#include <gtest.h>
```

Inheritance diagram for testing::WithParamInterface< T >:



Public Types

- typedef T [ParamType](#)

Public Member Functions

- virtual [~WithParamInterface](#) ()

Static Public Member Functions

- static const [ParamType](#) & [GetParam](#) ()

Static Private Member Functions

- static void [SetParam](#) (const [ParamType](#) *parameter)

Static Private Attributes

- static const [ParamType](#) * [parameter_](#) = nullptr

Friends

- template<class TestClass >
class [internal::ParameterizedTestFactory](#)

6.135.1 Member Typedef Documentation

6.135.1.1 ParamType

```
template<typename T>
typedef T testing::WithParamInterface< T >::ParamType
```

6.135.2 Constructor & Destructor Documentation

6.135.2.1 ~WithParamInterface()

```
template<typename T>
virtual testing::WithParamInterface< T >::~~WithParamInterface ( ) [inline], [virtual]
```

6.135.3 Member Function Documentation

6.135.3.1 GetParam()

```
template<typename T>
static const ParamType& testing::WithParamInterface< T >::GetParam ( ) [inline], [static]
```

6.135.3.2 SetParam()

```
template<typename T>
static void testing::WithParamInterface< T >::SetParam (
    const ParamType * parameter ) [inline], [static], [private]
```

6.135.4 Friends And Related Function Documentation

6.135.4.1 internal::ParameterizedTestFactory

```
template<typename T>
template<class TestClass >
friend class internal::ParameterizedTestFactory [friend]
```

6.135.5 Member Data Documentation

6.135.5.1 parameter_

```
template<typename T>
const T * testing::WithParamInterface< T >::parameter_ = nullptr [static], [private]
```

The documentation for this class was generated from the following file:

- [tests/googletest/include/gtest/gtest.h](#)

6.136 testing::internal::WrapPrinterType< type > Struct Template Reference

```
#include <gtest-printers.h>
```

The documentation for this struct was generated from the following file:

- [tests/googletest/include/gtest/gtest-printers.h](#)

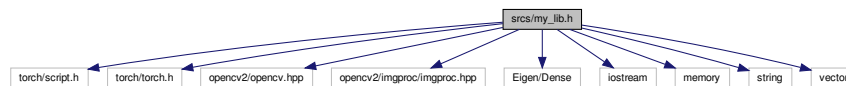
Chapter 7

File Documentation

7.1 srcs/my_lib.h File Reference

```
#include <torch/script.h>
#include <torch/torch.h>
#include <opencv2/opencv.hpp>
#include <opencv2/imgproc/imgproc.hpp>
#include <Eigen/Dense>
#include <iostream>
#include <memory>
#include <string>
#include <vector>
```

Include dependency graph for my_lib.h:



Functions

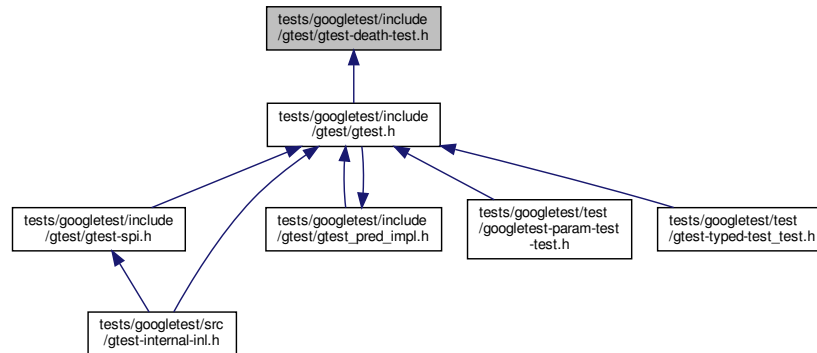
- int [my_add](#) (int x, int y)
- Mat [tensorToMat](#) (const at::Tensor &one_heat_map)
- void [tensor2Mat](#) (at::Tensor &t, Mat &image)
- at::Tensor [MatToTensor](#) (string path)

7.1.1 Function Documentation

7.1.1.1 MatToTensor()

```
at::Tensor MatToTensor (
    string path )
```


This graph shows which files directly or indirectly include this file:



Namespaces

- [testing](#)

Macros

- `#define GTEST_UNSUPPORTED_DEATH_TEST(statement, regex, terminator)`
- `#define EXPECT_DEATH_IF_SUPPORTED(statement, regex) GTEST_UNSUPPORTED_DEATH_TEST(statement, regex,)`
- `#define ASSERT_DEATH_IF_SUPPORTED(statement, regex) GTEST_UNSUPPORTED_DEATH_TEST(statement, regex, return)`

Functions

- `testing::GTEST_DECLARE_string_(death_test_style)`

7.2.1 Macro Definition Documentation

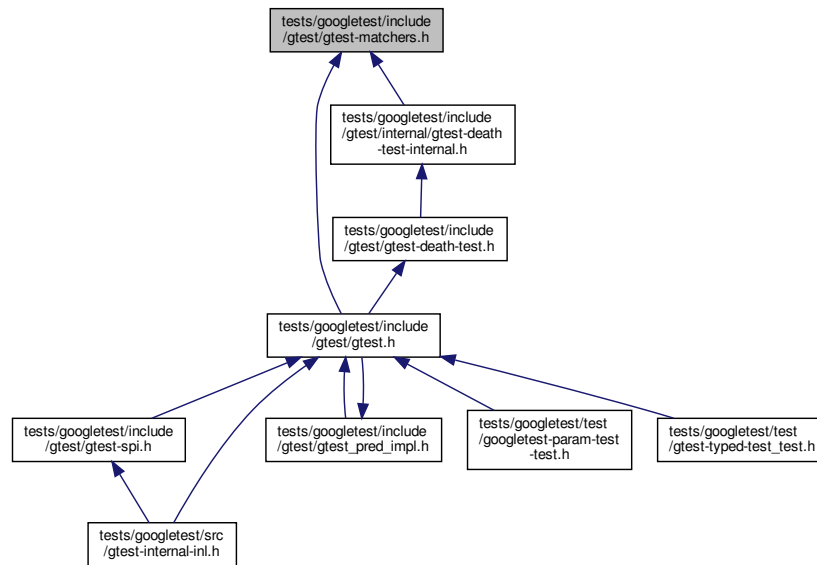
7.2.1.1 ASSERT_DEATH_IF_SUPPORTED

```

#define ASSERT_DEATH_IF_SUPPORTED(
    statement,
    regex ) GTEST_UNSUPPORTED_DEATH_TEST(statement, regex, return)

```


This graph shows which files directly or indirectly include this file:



Macros

- `#define` [GTEST_MAYBE_5046_](#)

Functions

- [GTEST_DISABLE_MSC_WARNINGS_PUSH_](#) (4251 [GTEST_MAYBE_5046_](#)) namespace testing

7.3.1 Macro Definition Documentation

7.3.1.1 GTEST_MAYBE_5046_

```
#define GTEST_MAYBE_5046_
```

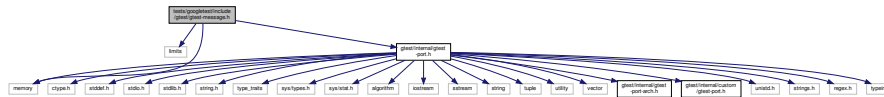
7.3.2 Function Documentation

7.3.2.1 GTEST_DISABLE_MSC_WARNINGS_PUSH_()

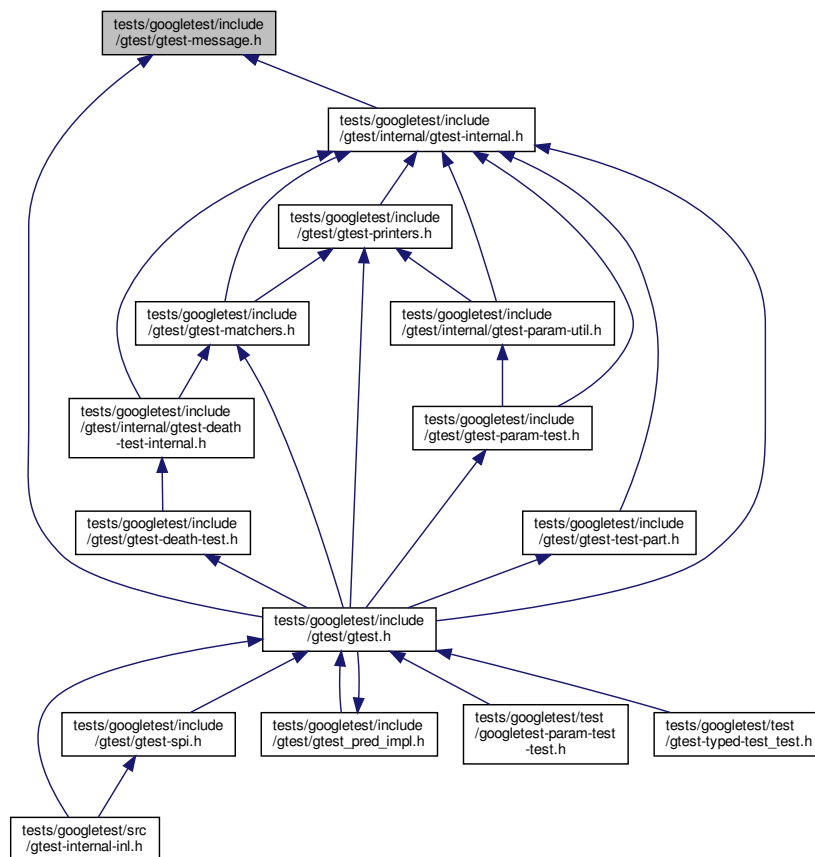
```
GTEST_DISABLE_MSC_WARNINGS_PUSH_ (
    4251 GTEST\_MAYBE\_5046\_ )
```

7.4 tests/googletest/include/gtest/gtest-message.h File Reference

```
#include <limits>
#include <memory>
#include "gtest/internal/gtest-port.h"
Include dependency graph for gtest-message.h:
```



This graph shows which files directly or indirectly include this file:



Classes

- class [testing::Message](#)

Namespaces

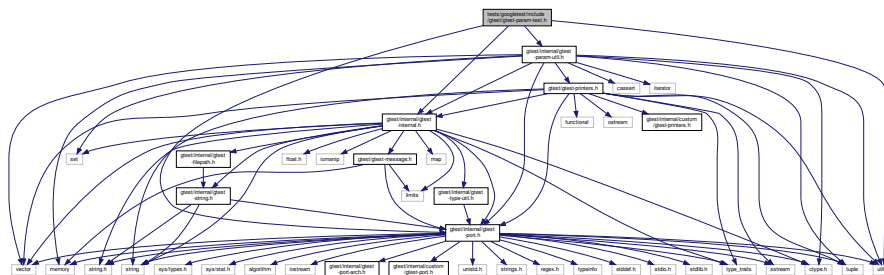
- [testing](#)
- [testing::internal](#)

Functions

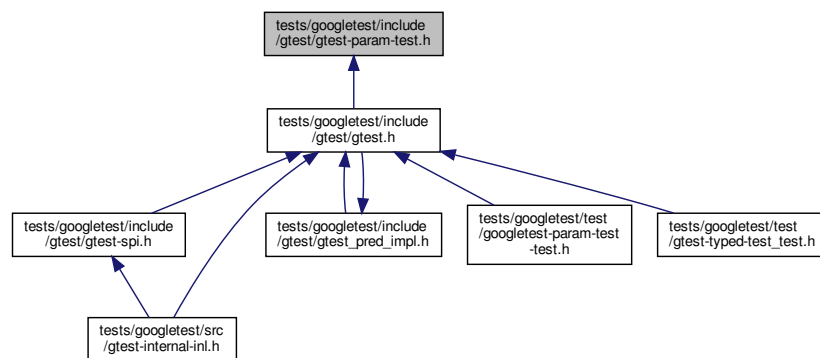
- `std::ostream & testing::operator<< (std::ostream &os, const Message &sb)`
- `template<typename T > std::string testing::internal::StreamableToString (const T &streamable)`

7.5 tests/googletest/include/gtest/gtest-param-test.h File Reference

```
#include <utility>
#include "gtest/internal/gtest-internal.h"
#include "gtest/internal/gtest-param-util.h"
#include "gtest/internal/gtest-port.h"
Include dependency graph for gtest-param-test.h:
```



This graph shows which files directly or indirectly include this file:



Namespaces

- `testing`

Macros

- `#define TEST_P(test_suite_name, test_name)`
- `#define GTEST_EXPAND_(arg) arg`
- `#define GTEST_GET_FIRST_(first, ...) first`
- `#define GTEST_GET_SECOND_(first, second, ...) second`
- `#define INSTANTIATE_TEST_SUITE_P(prefix, test_suite_name, ...)`
- `#define INSTANTIATE_TEST_CASE_P`

Functions

- `template<typename T , typename IncrementT >`
`internal::ParamGenerator< T > testing::Range (T start, T end, IncrementT step)`
- `template<typename T >`
`internal::ParamGenerator< T > testing::Range (T start, T end)`
- `template<typename ForwardIterator >`
`internal::ParamGenerator< typename ::testing::internal::IteratorTraits< ForwardIterator >::value_type >`
`testing::ValuesIn (ForwardIterator begin, ForwardIterator end)`
- `template<typename T , size_t N>`
`internal::ParamGenerator< T > testing::ValuesIn (const T(&array)[N])`
- `template<class Container >`
`internal::ParamGenerator< typename Container::value_type > testing::ValuesIn (const Container &container)`
- `template<typename... T>`
`internal::ValueArray< T... > testing::Values (T... v)`
- `internal::ParamGenerator< bool > testing::Bool ()`
- `template<typename... Generator>`
`internal::CartesianProductHolder< Generator... > testing::Combine (const Generator &... g)`

7.5.1 Macro Definition Documentation

7.5.1.1 GTEST_EXPAND_

```
#define GTEST_EXPAND_(  
    arg ) arg
```

7.5.1.2 GTEST_GET_FIRST_

```
#define GTEST_GET_FIRST_(  
    first,  
    ... ) first
```

7.5.1.3 GTEST_GET_SECOND_

```
#define GTEST_GET_SECOND_(  
    first,  
    second,  
    ... ) second
```

7.5.1.4 INSTANTIATE_TEST_CASE_P

```
#define INSTANTIATE_TEST_CASE_P
```

Value:

```
static_assert(::testing::internal::InstantiateTestCase_P_IsDeprecated(), \
              " ");
INSTANTIATE_TEST_SUITE_P
```

7.5.1.5 INSTANTIATE_TEST_SUITE_P

```
#define INSTANTIATE_TEST_SUITE_P(
    prefix,
    test_suite_name,
    ... )
```

7.5.1.6 TEST_P

```
#define TEST_P(
    test_suite_name,
    test_name )
```

Value:

```
class GTEST_TEST_CLASS_NAME_(test_suite_name, test_name)
: public test_suite_name {
public:
    GTEST_TEST_CLASS_NAME_(test_suite_name, test_name)() {}
    virtual void TestBody();

private:
    static int AddToRegistry() {
        ::testing::UnitTest::GetInstance()
            ->parameterized_test_registry()
            .GetTestSuitePatternHolder<test_suite_name>(
                #test_suite_name,
                ::testing::internal::CodeLocation(__FILE__, __LINE__))
            ->AddTestPattern(
                GTEST_STRINGIFY_(test_suite_name), GTEST_STRINGIFY_(test_name),
                new ::testing::internal::TestMetaFactory<GTEST_TEST_CLASS_NAME_(
                    test_suite_name, test_name)>());
        return 0;
    }
    static int gtest_registering_dummy_ GTEST_ATTRIBUTE_UNUSED_;
    GTEST_DISALLOW_COPY_AND_ASSIGN_(GTEST_TEST_CLASS_NAME_(test_suite_name,
                                                                test_name));
};
int GTEST_TEST_CLASS_NAME_(test_suite_name,
                           test_name)::gtest_registering_dummy_ =
    GTEST_TEST_CLASS_NAME_(test_suite_name, test_name)::AddToRegistry();
void GTEST_TEST_CLASS_NAME_(test_suite_name, test_name)::TestBody()
```


- class `testing::internal2::TypeWithoutFormatter< T, kProtobuf >`
- class `testing::internal2::TypeWithoutFormatter< T, kConvertibleToInteger >`
- class `testing::internal::FormatForComparison< ToPrint, OtherOperand >`
- class `testing::internal::FormatForComparison< ToPrint[N], OtherOperand >`
- class `testing::internal::UniversalPrinter< T >`
- struct `testing::internal::WrapPrinterType< type >`
- class `testing::internal::UniversalPrinter< T >`
- class `testing::internal::UniversalPrinter< T[N]>`
- class `testing::internal::UniversalPrinter< T & >`
- class `testing::internal::UniversalTersePrinter< T >`
- class `testing::internal::UniversalTersePrinter< T & >`
- class `testing::internal::UniversalTersePrinter< T[N]>`
- class `testing::internal::UniversalTersePrinter< const char * >`
- class `testing::internal::UniversalTersePrinter< char * >`
- class `testing::internal::UniversalTersePrinter< wchar_t * >`

Namespaces

- `testing`
- `testing::internal2`
- `testing_internal`
- `testing::internal`

Macros

- `#define GTEST_IMPL_FORMAT_C_STRING_AS_POINTER_(CharType)`
- `#define GTEST_IMPL_FORMAT_C_STRING_AS_STRING_(CharType, OtherStringType)`

Typedefs

- `typedef ::std::vector< ::std::string > testing::internal::Strings`

Enumerations

- enum `testing::internal2::TypeKind` { `testing::internal2::kProtobuf`, `testing::internal2::kConvertibleToInteger`, `testing::internal2::kOtherType` }
- enum `testing::internal::DefaultPrinterType` { `testing::internal::kPrintContainer`, `testing::internal::kPrintPointer`, `testing::internal::kPrintFunctionPointer`, `testing::internal::kPrintOther` }

Functions

- `GTEST_API_ void testing::internal2::PrintBytesInObjectTo` (const unsigned char *obj_bytes, size_t count, ↵
::std::ostream *os)
- `template<typename Char , typename CharTraits , typename T >`
`::std::basic_ostream< Char, CharTraits > & testing::internal2::operator<<` (::std::basic_ostream< Char,
CharTraits > &os, const T &x)
- `template<typename T >`
`void testing::internal::DefaultPrintNonContainerTo` (const T &value, ::std::ostream *os)
- `testing::internal::GTEST_IMPL_FORMAT_C_STRING_AS_POINTER_` (char)
- `testing::internal::GTEST_IMPL_FORMAT_C_STRING_AS_POINTER_` (wchar_t)
- `testing::internal::GTEST_IMPL_FORMAT_C_STRING_AS_STRING_` (char, ::std::string)
- `template<typename T1 , typename T2 >`
`std::string testing::internal::FormatForComparisonFailureMessage` (const T1 &value, const T2 &)
- `template<typename T >`
`void testing::internal::UniversalPrint` (const T &value, ::std::ostream *os)
- `template<typename C >`
`void testing::internal::DefaultPrintTo` (WrapPrinterType< kPrintContainer >, const C &container, ::std↵
::ostream *os)
- `template<typename T >`
`void testing::internal::DefaultPrintTo` (WrapPrinterType< kPrintPointer >, T *p, ::std::ostream *os)
- `template<typename T >`
`void testing::internal::DefaultPrintTo` (WrapPrinterType< kPrintFunctionPointer >, T *p, ::std::ostream *os)
- `template<typename T >`
`void testing::internal::DefaultPrintTo` (WrapPrinterType< kPrintOther >, const T &value, ::std::ostream *os)
- `template<typename T >`
`void testing::internal::PrintTo` (const T &value, ::std::ostream *os)
- `GTEST_API_ void testing::internal::PrintTo` (unsigned char c, ::std::ostream *os)
- `GTEST_API_ void testing::internal::PrintTo` (signed char c, ::std::ostream *os)
- `void testing::internal::PrintTo` (char c, ::std::ostream *os)
- `void testing::internal::PrintTo` (bool x, ::std::ostream *os)
- `GTEST_API_ void testing::internal::PrintTo` (wchar_t wc, ::std::ostream *os)
- `GTEST_API_ void testing::internal::PrintTo` (const char *s, ::std::ostream *os)
- `void testing::internal::PrintTo` (char *s, ::std::ostream *os)
- `void testing::internal::PrintTo` (const signed char *s, ::std::ostream *os)
- `void testing::internal::PrintTo` (signed char *s, ::std::ostream *os)
- `void testing::internal::PrintTo` (const unsigned char *s, ::std::ostream *os)
- `void testing::internal::PrintTo` (unsigned char *s, ::std::ostream *os)
- `GTEST_API_ void testing::internal::PrintTo` (const wchar_t *s, ::std::ostream *os)
- `void testing::internal::PrintTo` (wchar_t *s, ::std::ostream *os)
- `template<typename T >`
`void testing::internal::PrintRawArrayTo` (const T a[], size_t count, ::std::ostream *os)
- `GTEST_API_ void testing::internal::PrintStringTo` (const ::std::string &s, ::std::ostream *os)
- `void testing::internal::PrintTo` (const ::std::string &s, ::std::ostream *os)
- `void testing::internal::PrintTo` (std::nullptr_t, ::std::ostream *os)
- `template<typename T >`
`void testing::internal::PrintTo` (std::reference_wrapper< T > ref, ::std::ostream *os)
- `template<typename T >`
`void testing::internal::PrintTupleTo` (const T &, std::integral_constant< size_t, 0 >, ::std::ostream *)
- `template<typename T , size_t I >`
`void testing::internal::PrintTupleTo` (const T &t, std::integral_constant< size_t, I >, ::std::ostream *os)
- `template<typename... Types>`
`void testing::internal::PrintTo` (const ::std::tuple< Types... > &t, ::std::ostream *os)
- `template<typename T1 , typename T2 >`
`void testing::internal::PrintTo` (const ::std::pair< T1, T2 > &value, ::std::ostream *os)

- template<typename T >
void [testing::internal::UniversalPrintArray](#) (const T *begin, size_t len, ::std::ostream *os)
- [GTEST_API_](#) void [testing::internal::UniversalPrintArray](#) (const char *begin, size_t len, ::std::ostream *os)
- [GTEST_API_](#) void [testing::internal::UniversalPrintArray](#) (const wchar_t *begin, size_t len, ::std::ostream *os)
- template<typename T >
void [testing::internal::UniversalTersePrint](#) (const T &value, ::std::ostream *os)
- template<typename Tuple >
void [testing::internal::TersePrintPrefixToStrings](#) (const Tuple &, std::integral_constant< size_t, 0 >, Strings *)
- template<typename Tuple, size_t I>
void [testing::internal::TersePrintPrefixToStrings](#) (const Tuple &t, std::integral_constant< size_t, I >, Strings *strings)
- template<typename Tuple >
Strings [testing::internal::UniversalTersePrintTupleFieldsToStrings](#) (const Tuple &value)
- template<typename T >
::std::string [testing::PrintToString](#) (const T &value)

Variables

- const size_t [testing::internal2::kProtobufOneLinerMaxLength](#) = 50

7.6.1 Macro Definition Documentation

7.6.1.1 GTEST_IMPL_FORMAT_C_STRING_AS_POINTER_

```
#define GTEST_IMPL_FORMAT_C_STRING_AS_POINTER_(  
    CharType )
```

Value:

```
template <typename OtherOperand>
class FormatForComparison<CharType*, OtherOperand> {
public:
    static ::std::string Format(CharType* value) {
        return ::testing::PrintToString(static_cast<const void*>(value))
    ; \
    }
}
```

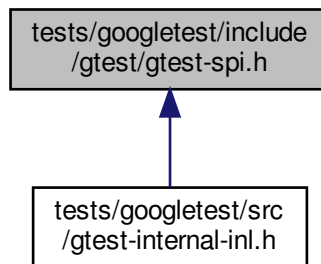
7.6.1.2 GTEST_IMPL_FORMAT_C_STRING_AS_STRING_

```
#define GTEST_IMPL_FORMAT_C_STRING_AS_STRING_(  
    CharType,  
    OtherStringType )
```

Value:

```
template <>
class FormatForComparison<CharType*, OtherStringType> {
public:
    static ::std::string Format(CharType* value) {
        return ::testing::PrintToString(value);
    }
}
```


This graph shows which files directly or indirectly include this file:



Macros

- `#define EXPECT_FATAL_FAILURE(statement, substr)`
- `#define EXPECT_FATAL_FAILURE_ON_ALL_THREADS(statement, substr)`
- `#define EXPECT_NONFATAL_FAILURE(statement, substr)`
- `#define EXPECT_NONFATAL_FAILURE_ON_ALL_THREADS(statement, substr)`

Functions

- `gtest_disable_msc_warnings_push_` (4251) namespace testing

7.8.1 Macro Definition Documentation

7.8.1.1 EXPECT_FATAL_FAILURE

```
#define EXPECT_FATAL_FAILURE(
    statement,
    substr )
```

Value:

```
do { \
    class GTestExpectFatalFailureHelper { \
    public: \
        static void Execute() { statement; } \
    }; \
    ::testing::TestPartResultArray gtest_failures; \
    ::testing::internal::SingleFailureChecker gtest_checker( \
        &gtest_failures, ::testing::TestPartResult::kFatalFailure, (substr)); \
    { \
        ::testing::ScopedFakeTestPartResultReporter gtest_reporter( \
            ::testing::ScopedFakeTestPartResultReporter:: \
                INTERCEPT_ONLY_CURRENT_THREAD, &gtest_failures); \
        GTestExpectFatalFailureHelper::Execute(); \
    } \
} while (::testing::internal::AlwaysFalse())
```

7.8.1.2 EXPECT_FATAL_FAILURE_ON_ALL_THREADS

```
#define EXPECT_FATAL_FAILURE_ON_ALL_THREADS(  
    statement,  
    substr )
```

Value:

```
do { \  
    class GTestExpectFatalFailureHelper { \  
    public: \  
        static void Execute() { statement; } \  
    }; \  
    ::testing::TestPartResultArray gtest_failures; \  
    ::testing::internal::SingleFailureChecker gtest_checker( \  
        &gtest_failures, ::testing::TestPartResult::kFatalFailure, (substr)); \  
    { \  
        ::testing::ScopedFakeTestPartResultReporter gtest_reporter( \  
            ::testing::ScopedFakeTestPartResultReporter:: \  
                INTERCEPT_ALL_THREADS, &gtest_failures); \  
        GTestExpectFatalFailureHelper::Execute(); \  
    } \  
} while (::testing::internal::AlwaysFalse())
```

7.8.1.3 EXPECT_NONFATAL_FAILURE

```
#define EXPECT_NONFATAL_FAILURE(  
    statement,  
    substr )
```

Value:

```
do { \  
    ::testing::TestPartResultArray gtest_failures; \  
    ::testing::internal::SingleFailureChecker gtest_checker( \  
        &gtest_failures, ::testing::TestPartResult::kNonFatalFailure, \  
        (substr)); \  
    { \  
        ::testing::ScopedFakeTestPartResultReporter gtest_reporter( \  
            ::testing::ScopedFakeTestPartResultReporter:: \  
                INTERCEPT_ONLY_CURRENT_THREAD, &gtest_failures); \  
        if (::testing::internal::AlwaysTrue()) { statement; } \  
    } \  
} while (::testing::internal::AlwaysFalse())
```

7.8.1.4 EXPECT_NONFATAL_FAILURE_ON_ALL_THREADS

```
#define EXPECT_NONFATAL_FAILURE_ON_ALL_THREADS(  
    statement,  
    substr )
```

Value:

```
do { \  
    ::testing::TestPartResultArray gtest_failures; \  
    ::testing::internal::SingleFailureChecker gtest_checker( \  
        &gtest_failures, ::testing::TestPartResult::kNonFatalFailure, \  
        (substr)); \  
    { \  
        ::testing::ScopedFakeTestPartResultReporter gtest_reporter( \  
            ::testing::ScopedFakeTestPartResultReporter::INTERCEPT_ALL_THREADS, \  
            &gtest_failures); \  
        if (::testing::internal::AlwaysTrue()) { statement; } \  
    } \  
} while (::testing::internal::AlwaysFalse())
```

7.8.2.1 GTEST_DISABLE_MSC_WARNINGS_PUSH()

7.9 tests/googletest/include/gtest/gtest-test-part.h File Reference

[illegible]

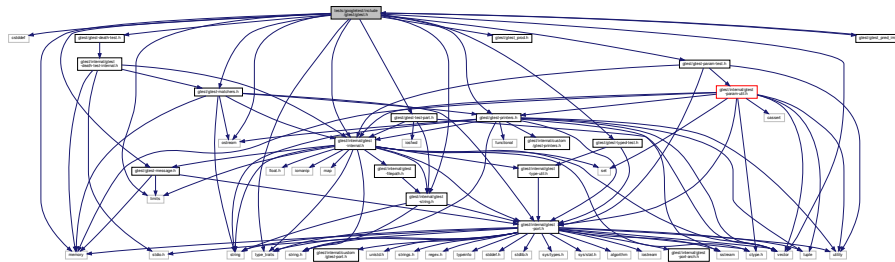
```

graph TD
    A["tests/googletest/include/gtest/gtest-part.h"] --> B["tests/googletest/include/gtest/gtest.h"]
    B --> C["tests/googletest/include/gtest/gtest-spi.h"]
    B --> D["tests/googletest/include/gtest/gtest_pred_impl.h"]
    B --> E["tests/googletest/test/googletest-param-test-test.h"]
    B --> F["tests/googletest/test/gtest-typed-test_test.h"]
    C --> G["tests/googletest/src/gtest-internal-inl.h"]
    G --> B
    G --> D
    D --> B
  
```

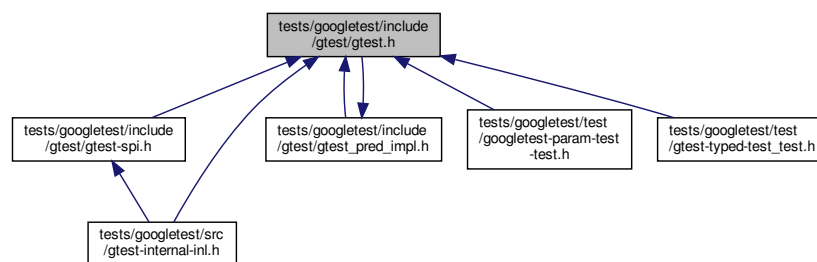
- `GTEST_DISABLE_MSC_WARNINGS_PUSH` (4251) namespace testing


```
#include "gtest/internal/gtest-string.h"
#include "gtest/gtest-death-test.h"
#include "gtest/gtest-matchers.h"
#include "gtest/gtest-message.h"
#include "gtest/gtest-param-test.h"
#include "gtest/gtest-printers.h"
#include "gtest/gtest_prod.h"
#include "gtest/gtest-test-part.h"
#include "gtest/gtest-typed-test.h"
#include "gtest/gtest_pred_impl.h"
```

Include dependency graph for gtest.h:



This graph shows which files directly or indirectly include this file:



Classes

- class `testing::Test`
- struct `testing::Test::Setup_should_be_spelled_SetUp`
- class `testing::TestProperty`
- class `testing::TestResult`
- class `testing::TestInfo`
- class `testing::TestSuite`
- class `testing::Environment`
- struct `testing::Environment::Setup_should_be_spelled_SetUp`
- class `testing::TestEventListener`
- class `testing::EmptyTestEventListener`
- class `testing::TestEventListeners`
- class `testing::UnitTest`
- struct `testing::internal::faketype`
- class `testing::internal::EqHelper`

- class [testing::internal::AssertHelper](#)
- struct [testing::internal::AssertHelper::AssertHelperData](#)
- class [testing::WithParamInterface< T >](#)
- class [testing::TestWithParam< T >](#)
- class [testing::ScopedTrace](#)

Namespaces

- [testing](#)
- [testing::internal](#)

Macros

- `#define GTEST_IMPL_CMP_HELPER_\(op_name, op\)`
- `#define GTEST_SKIP\(\) GTEST_SKIP_("Skipped")`
- `#define ADD_FAILURE\(\) GTEST_NONFATAL_FAILURE_("Failed")`
- `#define ADD_FAILURE_AT(file, line)`
- `#define GTEST_FAIL\(\) GTEST_FATAL_FAILURE_("Failed")`
- `#define GTEST_FAIL_AT(file, line)`
- `#define FAIL\(\) GTEST_FAIL_()`
- `#define GTEST_SUCCEED\(\) GTEST_SUCCESS_("Succeeded")`
- `#define SUCCEED\(\) GTEST_SUCCEED_()`
- `#define EXPECT_THROW(statement, expected_exception) GTEST_TEST_THROW_(statement, expected_exception, GTEST_NONFATAL_FAILURE_)`
- `#define EXPECT_NO_THROW(statement) GTEST_TEST_NO_THROW_(statement, GTEST_NONFATAL_FAILURE_)`
- `#define EXPECT_ANY_THROW(statement) GTEST_TEST_ANY_THROW_(statement, GTEST_NONFATAL_FAILURE_)`
- `#define ASSERT_THROW(statement, expected_exception) GTEST_TEST_THROW_(statement, expected_exception, GTEST_FATAL_FAILURE_)`
- `#define ASSERT_NO_THROW(statement) GTEST_TEST_NO_THROW_(statement, GTEST_FATAL_FAILURE_)`
- `#define ASSERT_ANY_THROW(statement) GTEST_TEST_ANY_THROW_(statement, GTEST_FATAL_FAILURE_)`
- `#define EXPECT_TRUE(condition)`
- `#define EXPECT_FALSE(condition)`
- `#define ASSERT_TRUE(condition)`
- `#define ASSERT_FALSE(condition)`
- `#define EXPECT_EQ(val1, val2) EXPECT_PRED_FORMAT2(::testing::internal::EqHelper::Compare, val1, val2)`
- `#define EXPECT_NE(val1, val2) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperNE, val1, val2)`
- `#define EXPECT_LE(val1, val2) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperLE, val1, val2)`
- `#define EXPECT_LT(val1, val2) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperLT, val1, val2)`
- `#define EXPECT_GE(val1, val2) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperGE, val1, val2)`
- `#define EXPECT_GT(val1, val2) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperGT, val1, val2)`
- `#define GTEST_ASSERT_EQ(val1, val2) ASSERT_PRED_FORMAT2(::testing::internal::EqHelper::Compare, val1, val2)`
- `#define GTEST_ASSERT_NE(val1, val2) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperNE, val1, val2)`
- `#define GTEST_ASSERT_LE(val1, val2) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperLE, val1, val2)`
- `#define GTEST_ASSERT_LT(val1, val2) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperLT, val1, val2)`

- `#define GTEST_ASSERT_GE(val1, val2) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperGE, val1, val2)`
- `#define GTEST_ASSERT_GT(val1, val2) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperGT, val1, val2)`
- `#define ASSERT_EQ(val1, val2) GTEST_ASSERT_EQ(val1, val2)`
- `#define ASSERT_NE(val1, val2) GTEST_ASSERT_NE(val1, val2)`
- `#define ASSERT_LE(val1, val2) GTEST_ASSERT_LE(val1, val2)`
- `#define ASSERT_LT(val1, val2) GTEST_ASSERT_LT(val1, val2)`
- `#define ASSERT_GE(val1, val2) GTEST_ASSERT_GE(val1, val2)`
- `#define ASSERT_GT(val1, val2) GTEST_ASSERT_GT(val1, val2)`
- `#define EXPECT_STREQ(s1, s2) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperSTREQ, s1, s2)`
- `#define EXPECT_STRNE(s1, s2) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperSTRNE, s1, s2)`
- `#define EXPECT_STRCASEEQ(s1, s2) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperSTRCASEEQ, s1, s2)`
- `#define EXPECT_STRCASENE(s1, s2) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperSTRCASENE, s1, s2)`
- `#define ASSERT_STREQ(s1, s2) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperSTREQ, s1, s2)`
- `#define ASSERT_STRNE(s1, s2) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperSTRNE, s1, s2)`
- `#define ASSERT_STRCASEEQ(s1, s2) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperSTRCASEEQ, s1, s2)`
- `#define ASSERT_STRCASENE(s1, s2) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperSTRCASENE, s1, s2)`
- `#define EXPECT_FLOAT_EQ(val1, val2)`
- `#define EXPECT_DOUBLE_EQ(val1, val2)`
- `#define ASSERT_FLOAT_EQ(val1, val2)`
- `#define ASSERT_DOUBLE_EQ(val1, val2)`
- `#define EXPECT_NEAR(val1, val2, abs_error)`
- `#define ASSERT_NEAR(val1, val2, abs_error)`
- `#define ASSERT_NO_FATAL_FAILURE(statement) GTEST_TEST_NO_FATAL_FAILURE_(statement, GTEST_TEST_FATAL_FAILURE_)`
- `#define EXPECT_NO_FATAL_FAILURE(statement) GTEST_TEST_NO_FATAL_FAILURE_(statement, GTEST_TEST_NONFATAL_FAILURE_)`
- `#define SCOPED_TRACE(message)`
- `#define GTEST_TEST(test_suite_name, test_name)`
- `#define TEST(test_suite_name, test_name) GTEST_TEST(test_suite_name, test_name)`
- `#define TEST_F(test_fixture, test_name)`

Typedefs

- `typedef internal::TimeInMillis testing::TimeInMillis`

Enumerations

- `enum testing::internal::GTestColor { testing::internal::COLOR_DEFAULT, testing::internal::COLOR_RED, testing::internal::COLOR_GREEN, testing::internal::COLOR_YELLOW }`

Functions

- [GTEST_DISABLE_MSC_WARNINGS_PUSH_](#) (4251) namespace testing
- Environment * [testing::AddGlobalTestEnvironment](#) (Environment *env)
- [GTEST_API_](#) void [testing::InitGoogleTest](#) (int *argc, char **argv)
- [GTEST_API_](#) void [testing::InitGoogleTest](#) (int *argc, wchar_t **argv)
- [GTEST_API_](#) void [testing::InitGoogleTest](#) ()
- template<typename T1 , typename T2 >
AssertionResult [testing::internal::CmpHelperEQFailure](#) (const char *lhs_expression, const char *rhs_↵
expression, const T1 &lhs, const T2 &rhs)
- bool [testing::internal::operator==](#) (faketype, faketype)
- bool [testing::internal::operator!=](#) (faketype, faketype)
- template<typename T1 , typename T2 >
AssertionResult [testing::internal::CmpHelperEQ](#) (const char *lhs_expression, const char *rhs_expression,
const T1 &lhs, const T2 &rhs)
- [GTEST_API_](#) AssertionResult [testing::internal::CmpHelperEQ](#) (const char *lhs_expression, const char
*rhs_expression, BiggestInt lhs, BiggestInt rhs)
- template<typename T1 , typename T2 >
AssertionResult [testing::internal::CmpHelperOpFailure](#) (const char *expr1, const char *expr2, const T1
&val1, const T2 &val2, const char *op)
- [testing::internal::GTEST_IMPL_CMP_HELPER_](#) (NE, !=)
- [testing::internal::GTEST_IMPL_CMP_HELPER_](#) (LE, <=)
- [testing::internal::GTEST_IMPL_CMP_HELPER_](#) (LT, <)
- [testing::internal::GTEST_IMPL_CMP_HELPER_](#) (GE, >=)
- [testing::internal::GTEST_IMPL_CMP_HELPER_](#) (GT, >)
- [GTEST_API_](#) AssertionResult [testing::internal::CmpHelperSTREQ](#) (const char *s1_expression, const char
*s2_expression, const char *s1, const char *s2)
- [GTEST_API_](#) AssertionResult [testing::internal::CmpHelperSTRCASEEQ](#) (const char *s1_expression, const
char *s2_expression, const char *s1, const char *s2)
- [GTEST_API_](#) AssertionResult [testing::internal::CmpHelperSTRNE](#) (const char *s1_expression, const char
*s2_expression, const char *s1, const char *s2)
- [GTEST_API_](#) AssertionResult [testing::internal::CmpHelperSTRCASENE](#) (const char *s1_expression, const
char *s2_expression, const char *s1, const char *s2)
- [GTEST_API_](#) AssertionResult [testing::internal::CmpHelperSTREQ](#) (const char *s1_expression, const char
*s2_expression, const wchar_t *s1, const wchar_t *s2)
- [GTEST_API_](#) AssertionResult [testing::internal::CmpHelperSTRNE](#) (const char *s1_expression, const char
*s2_expression, const wchar_t *s1, const wchar_t *s2)
- [GTEST_API_](#) AssertionResult [testing::IsSubstring](#) (const char *needle_expr, const char *haystack_expr,
const char *needle, const char *haystack)
- [GTEST_API_](#) AssertionResult [testing::IsSubstring](#) (const char *needle_expr, const char *haystack_expr,
const wchar_t *needle, const wchar_t *haystack)
- [GTEST_API_](#) AssertionResult [testing::IsNotSubstring](#) (const char *needle_expr, const char *haystack_expr,
const char *needle, const char *haystack)
- [GTEST_API_](#) AssertionResult [testing::IsNotSubstring](#) (const char *needle_expr, const char *haystack_expr,
const wchar_t *needle, const wchar_t *haystack)
- [GTEST_API_](#) AssertionResult [testing::IsSubstring](#) (const char *needle_expr, const char *haystack_expr,
const ::std::string &needle, const ::std::string &haystack)
- [GTEST_API_](#) AssertionResult [testing::IsNotSubstring](#) (const char *needle_expr, const char *haystack_expr,
const ::std::string &needle, const ::std::string &haystack)
- template<typename RawType >
AssertionResult [testing::internal::CmpHelperFloatingPointEQ](#) (const char *lhs_expression, const char *rhs_↵
_expression, RawType lhs_value, RawType rhs_value)
- [GTEST_API_](#) AssertionResult [testing::internal::DoubleNearPredFormat](#) (const char *expr1, const char
*expr2, const char *abs_error_expr, double val1, double val2, double abs_error)
- [GTEST_API_](#) [testing::internal::GTEST_ATTRIBUTE_PRINTF_](#) (2, 3) void ColoredPrintf(GTestColor color
color)
- [GTEST_API_](#) AssertionResult [testing::FloatLE](#) (const char *expr1, const char *expr2, float val1, float val2)

- `GTEST_API_` AssertionResult `testing::DoubleLE` (const char *expr1, const char *expr2, double val1, double val2)
- `template<typename T1 , typename T2 >`
`bool testing::StaticAssertTypeEq ()`
- `GTEST_API_` std::string `testing::TempDir ()`
- `template<int &... ExplicitParameterBarrier, typename Factory >`
`TestInfo * testing::RegisterTest` (const char *test_suite_name, const char *test_name, const char *type_↵
param, const char *value_param, const char *file, int line, Factory factory)
- int `RUN_ALL_TESTS ()` `GTEST_MUST_USE_RESULT_`

Variables

- `GTEST_API_` const char * `testing::internal::fmt`
- class `GTEST_API_` `testing::ScopedTrace` `testing::GTEST_ATTRIBUTE_UNUSED_`

7.11.1 Macro Definition Documentation

7.11.1.1 ADD_FAILURE

```
#define ADD_FAILURE( ) GTEST_NONFATAL_FAILURE_("Failed")
```

7.11.1.2 ADD_FAILURE_AT

```
#define ADD_FAILURE_AT(  
    file,  
    line )
```

Value:

```
GTEST_MESSAGE_AT_(file, line, "Failed", \  
    ::testing::TestPartResult::kNonFatalFailure)
```

7.11.1.3 ASSERT_ANY_THROW

```
#define ASSERT_ANY_THROW(  
    statement ) GTEST_TEST_ANY_THROW_(statement, GTEST_FATAL_FAILURE_)
```

7.11.1.4 ASSERT_DOUBLE_EQ

```
#define ASSERT_DOUBLE_EQ(  
    val1,  
    val2 )
```

Value:

```
ASSERT_PRED_FORMAT2 (::testing::internal::CmpHelperFloatingPointEQ<double>, \  
    val1, val2)
```

7.11.1.5 ASSERT_EQ

```
#define ASSERT_EQ(  
    val1,  
    val2 ) GTEST_ASSERT_EQ(val1, val2)
```

7.11.1.6 ASSERT_FALSE

```
#define ASSERT_FALSE(  
    condition )
```

Value:

```
GTEST_TEST_BOOLEAN_(!(condition), #condition, true, false, \  
    GTEST_FATAL_FAILURE_)
```

7.11.1.7 ASSERT_FLOAT_EQ

```
#define ASSERT_FLOAT_EQ(  
    val1,  
    val2 )
```

Value:

```
ASSERT_PRED_FORMAT2 (::testing::internal::CmpHelperFloatingPointEQ<float>, \  
    val1, val2)
```

7.11.1.8 ASSERT_GE

```
#define ASSERT_GE(  
    val1,  
    val2 ) GTEST_ASSERT_GE(val1, val2)
```

7.11.1.9 ASSERT_GT

```
#define ASSERT_GT(  
    val1,  
    val2 ) GTEST_ASSERT_GT(val1, val2)
```

7.11.1.10 ASSERT_LE

```
#define ASSERT_LE(  
    val1,  
    val2 ) GTEST_ASSERT_LE(val1, val2)
```

7.11.1.11 ASSERT_LT

```
#define ASSERT_LT(  
    val1,  
    val2 ) GTEST_ASSERT_LT(val1, val2)
```

7.11.1.12 ASSERT_NE

```
#define ASSERT_NE(  
    val1,  
    val2 ) GTEST_ASSERT_NE(val1, val2)
```

7.11.1.13 ASSERT_NEAR

```
#define ASSERT_NEAR(  
    val1,  
    val2,  
    abs_error )
```

Value:

```
ASSERT_PRED_FORMAT3(::testing::internal::DoubleNearPredFormat  
    , \n                    val1, val2, abs_error)
```

7.11.1.14 ASSERT_NO_FATAL_FAILURE

```
#define ASSERT_NO_FATAL_FAILURE(  
    statement ) GTEST_TEST_NO_FATAL_FAILURE_(statement, GTEST_FATAL_FAILURE_)
```

7.11.1.15 ASSERT_NO_THROW

```
#define ASSERT_NO_THROW(  
    statement ) GTEST_TEST_NO_THROW_(statement, GTEST_FATAL_FAILURE_)
```

7.11.1.16 ASSERT_STRCASEEQ

```
#define ASSERT_STRCASEEQ(  
    s1,  
    s2 ) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperSTRCASEEQ, s1, s2)
```

7.11.1.17 ASSERT_STRCASENE

```
#define ASSERT_STRCASENE(  
    s1,  
    s2 ) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperSTRCASENE, s1, s2)
```

7.11.1.18 ASSERT_STREQ

```
#define ASSERT_STREQ(  
    s1,  
    s2 ) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperSTREQ, s1, s2)
```

7.11.1.19 ASSERT_STRNE

```
#define ASSERT_STRNE(  
    s1,  
    s2 ) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperSTRNE, s1, s2)
```

7.11.1.20 ASSERT_THROW

```
#define ASSERT_THROW(  
    statement,  
    expected_exception ) GTEST_TEST_THROW_(statement, expected_exception, GTEST_FATAL_FAILURE_)
```

7.11.1.21 ASSERT_TRUE

```
#define ASSERT_TRUE(  
    condition )
```

Value:

```
GTEST_TEST_BOOLEAN_(condition, #condition, false, true, \  
    GTEST_FATAL_FAILURE_)
```

7.11.1.22 EXPECT_ANY_THROW

```
#define EXPECT_ANY_THROW(  
    statement ) GTEST_TEST_ANY_THROW_(statement, GTEST_NONFATAL_FAILURE_)
```

7.11.1.23 EXPECT_DOUBLE_EQ

```
#define EXPECT_DOUBLE_EQ(  
    val1,  
    val2 )
```

Value:

```
EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperFloatingPointEQ<double>, \  
    val1, val2)
```

7.11.1.24 EXPECT_EQ

```
#define EXPECT_EQ(  
    val1,  
    val2 ) EXPECT_PRED_FORMAT2(::testing::internal::EqHelper::Compare, val1, val2)
```

7.11.1.25 EXPECT_FALSE

```
#define EXPECT_FALSE(  
    condition )
```

Value:

```
GTEST_TEST_BOOLEAN_(!(condition), #condition, true, false, \  
    GTEST_NONFATAL_FAILURE_)
```

7.11.1.26 EXPECT_FLOAT_EQ

```
#define EXPECT_FLOAT_EQ(  
    val1,  
    val2 )
```

Value:

```
EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperFloatingPointEQ<float>, \  
    val1, val2)
```

7.11.1.27 EXPECT_GE

```
#define EXPECT_GE(  
    val1,  
    val2 ) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperGE, val1, val2)
```

7.11.1.28 EXPECT_GT

```
#define EXPECT_GT(  
    val1,  
    val2 ) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperGT, val1, val2)
```

7.11.1.29 EXPECT_LE

```
#define EXPECT_LE(  
    val1,  
    val2 ) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperLE, val1, val2)
```

7.11.1.30 EXPECT_LT

```
#define EXPECT_LT(  
    val1,  
    val2 ) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperLT, val1, val2)
```

7.11.1.31 EXPECT_NE

```
#define EXPECT_NE(  
    val1,  
    val2 ) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperNE, val1, val2)
```

7.11.1.32 EXPECT_NEAR

```
#define EXPECT_NEAR(  
    val1,  
    val2,  
    abs_error )
```

Value:

```
EXPECT_PRED_FORMAT3(::testing::internal::DoubleNearPredFormat  
    , \n                    val1, val2, abs_error)
```

7.11.1.33 EXPECT_NO_FATAL_FAILURE

```
#define EXPECT_NO_FATAL_FAILURE(  
    statement ) GTEST_TEST_NO_FATAL_FAILURE_(statement, GTEST_NONFATAL_FAILURE_)
```

7.11.1.34 EXPECT_NO_THROW

```
#define EXPECT_NO_THROW(  
    statement ) GTEST_TEST_NO_THROW_(statement, GTEST_NONFATAL_FAILURE_)
```

7.11.1.35 EXPECT_STRCASEEQ

```
#define EXPECT_STRCASEEQ(  
    s1,  
    s2 ) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperSTRCASEEQ, s1, s2)
```

7.11.1.36 EXPECT_STRCASENE

```
#define EXPECT_STRCASENE(
    s1,
    s2 ) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperSTRCASENE, s1, s2)
```

7.11.1.37 EXPECT_STREQ

```
#define EXPECT_STREQ(
    s1,
    s2 ) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperSTREQ, s1, s2)
```

7.11.1.38 EXPECT_STRNE

```
#define EXPECT_STRNE(
    s1,
    s2 ) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperSTRNE, s1, s2)
```

7.11.1.39 EXPECT_THROW

```
#define EXPECT_THROW(
    statement,
    expected_exception ) GTEST_TEST_THROW_(statement, expected_exception, GTEST_NONFATAL_FAILURE_)
```

7.11.1.40 EXPECT_TRUE

```
#define EXPECT_TRUE(
    condition )
```

Value:

```
GTEST_TEST_BOOLEAN_(condition, #condition, false, true, \
    GTEST_NONFATAL_FAILURE_)
```

7.11.1.41 FAIL

```
#define FAIL( ) GTEST_FAIL()
```


7.11.1.42 GTEST_ASSERT_EQ

```
#define GTEST_ASSERT_EQ(  
    val1,  
    val2 ) ASSERT_PRED_FORMAT2(::testing::internal::EqHelper::Compare, val1, val2)
```

7.11.1.43 GTEST_ASSERT_GE

```
#define GTEST_ASSERT_GE(  
    val1,  
    val2 ) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperGE, val1, val2)
```

7.11.1.44 GTEST_ASSERT_GT

```
#define GTEST_ASSERT_GT(  
    val1,  
    val2 ) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperGT, val1, val2)
```

7.11.1.45 GTEST_ASSERT_LE

```
#define GTEST_ASSERT_LE(  
    val1,  
    val2 ) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperLE, val1, val2)
```

7.11.1.46 GTEST_ASSERT_LT

```
#define GTEST_ASSERT_LT(  
    val1,  
    val2 ) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperLT, val1, val2)
```

7.11.1.47 GTEST_ASSERT_NE

```
#define GTEST_ASSERT_NE(  
    val1,  
    val2 ) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperNE, val1, val2)
```

7.11.1.48 GTEST_FAIL

```
#define GTEST_FAIL( ) GTEST_FATAL_FAILURE_("Failed")
```

7.11.1.49 GTEST_FAIL_AT

```
#define GTEST_FAIL_AT(  
    file,  
    line )
```

Value:

```
GTEST_MESSAGE_AT_(file, line, "Failed", \  
    ::testing::TestPartResult::kFatalFailure)
```

7.11.1.50 GTEST_IMPL_CMP_HELPER_

```
#define GTEST_IMPL_CMP_HELPER_(  
    op_name,  
    op )
```

Value:

```
template <typename T1, typename T2>\nAssertionResult CmpHelper##op_name(const char* expr1, const char* expr2, \  
    const T1& val1, const T2& val2) {\n    if (val1 op val2) {\n        return AssertionSuccess();\n    } else {\n        return CmpHelperOpFailure(expr1, expr2, val1, val2, #op);\n    }\n}\n\nGTEST_API_ AssertionResult CmpHelper##op_name(\n    const char* expr1, const char* expr2, BiggestInt val1, BiggestInt val2)
```

7.11.1.51 GTEST_SKIP

```
#define GTEST_SKIP( ) GTEST_SKIP_("Skipped")
```

7.11.1.52 GTEST_SUCCEED

```
#define GTEST_SUCCEED( ) GTEST_SUCCESS_("Succeeded")
```

7.11.1.53 GTEST_TEST

```
#define GTEST_TEST(  
    test_suite_name,  
    test_name )
```

Value:

```
GTEST_TEST_(test_suite_name, test_name, ::testing::Test, \  
    ::testing::internal::GetTestTypeId())
```

7.11.1.54 SCOPED_TRACE

```
#define SCOPED_TRACE(  
    message )
```

Value:

```
::testing::ScopedTrace GTEST_CONCAT_TOKEN_(gtest_trace_, __LINE__)  
(\  
    __FILE__, __LINE__, (message))
```

7.11.1.55 SUCCEED

```
#define SUCCEED( ) GTEST_SUCCEED()
```

7.11.1.56 TEST

```
#define TEST(  
    test_suite_name,  
    test_name ) GTEST_TEST(test_suite_name, test_name)
```

7.11.1.57 TEST_F

```
#define TEST_F(  
    test_fixture,  
    test_name )
```

Value:

```
GTEST_TEST_(test_fixture, test_name, test_fixture, \  
    ::testing::internal::GetTypeId<test_fixture>())
```

7.11.2 Function Documentation

7.11.2.1 GTEST_DISABLE_MSC_WARNINGS_PUSH_()

```
GTEST_DISABLE_MSC_WARNINGS_PUSH_ (
    4251 )
```

7.11.2.2 RUN_ALL_TESTS()

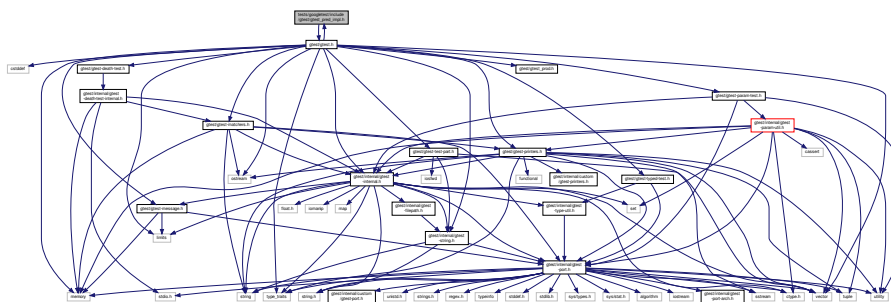
```
int RUN_ALL_TESTS ( ) [inline]
```

7.12 tests/googletest/include/gtest/internal/custom/gtest.h File Reference

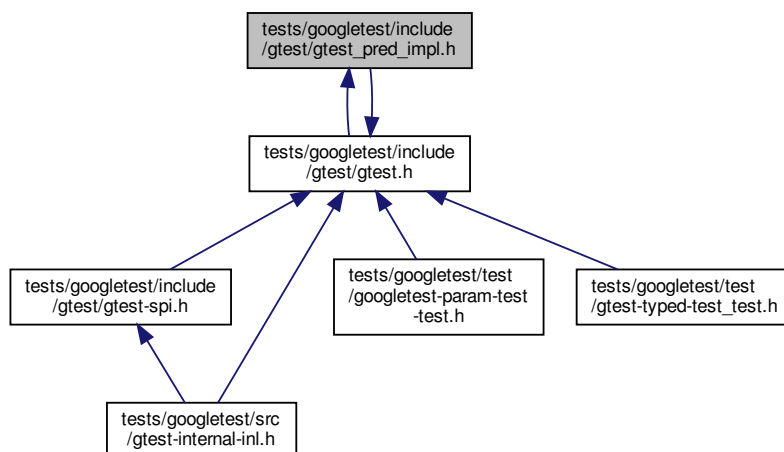
7.13 tests/googletest/include/gtest/gtest_pred_impl.h File Reference

```
#include "gtest/gtest.h"
```

Include dependency graph for gtest_pred_impl.h:



This graph shows which files directly or indirectly include this file:



Namespaces

- [testing](#)

Macros

- `#define GTEST_ASSERT_(expression, on_failure)`
- `#define GTEST_PRED_FORMAT1_(pred_format, v1, on_failure)`
- `#define GTEST_PRED1_(pred, v1, on_failure)`
- `#define EXPECT_PRED_FORMAT1(pred_format, v1) GTEST_PRED_FORMAT1_(pred_format, v1, GTEST_NONFATAL_FAILURE_)`
- `#define EXPECT_PRED1(pred, v1) GTEST_PRED1_(pred, v1, GTEST_NONFATAL_FAILURE_)`
- `#define ASSERT_PRED_FORMAT1(pred_format, v1) GTEST_PRED_FORMAT1_(pred_format, v1, GTEST_FATAL_FAILURE_)`
- `#define ASSERT_PRED1(pred, v1) GTEST_PRED1_(pred, v1, GTEST_FATAL_FAILURE_)`
- `#define GTEST_PRED_FORMAT2_(pred_format, v1, v2, on_failure)`
- `#define GTEST_PRED2_(pred, v1, v2, on_failure)`
- `#define EXPECT_PRED_FORMAT2(pred_format, v1, v2) GTEST_PRED_FORMAT2_(pred_format, v1, v2, GTEST_NONFATAL_FAILURE_)`
- `#define EXPECT_PRED2(pred, v1, v2) GTEST_PRED2_(pred, v1, v2, GTEST_NONFATAL_FAILURE_)`
- `#define ASSERT_PRED_FORMAT2(pred_format, v1, v2) GTEST_PRED_FORMAT2_(pred_format, v1, v2, GTEST_FATAL_FAILURE_)`
- `#define ASSERT_PRED2(pred, v1, v2) GTEST_PRED2_(pred, v1, v2, GTEST_FATAL_FAILURE_)`
- `#define GTEST_PRED_FORMAT3_(pred_format, v1, v2, v3, on_failure)`
- `#define GTEST_PRED3_(pred, v1, v2, v3, on_failure)`
- `#define EXPECT_PRED_FORMAT3(pred_format, v1, v2, v3) GTEST_PRED_FORMAT3_(pred_format, v1, v2, v3, GTEST_NONFATAL_FAILURE_)`
- `#define EXPECT_PRED3(pred, v1, v2, v3) GTEST_PRED3_(pred, v1, v2, v3, GTEST_NONFATAL_FAILURE_)`
- `#define ASSERT_PRED_FORMAT3(pred_format, v1, v2, v3) GTEST_PRED_FORMAT3_(pred_format, v1, v2, v3, GTEST_FATAL_FAILURE_)`
- `#define ASSERT_PRED3(pred, v1, v2, v3) GTEST_PRED3_(pred, v1, v2, v3, GTEST_FATAL_FAILURE_)`
- `#define GTEST_PRED_FORMAT4_(pred_format, v1, v2, v3, v4, on_failure)`
- `#define GTEST_PRED4_(pred, v1, v2, v3, v4, on_failure)`
- `#define EXPECT_PRED_FORMAT4(pred_format, v1, v2, v3, v4) GTEST_PRED_FORMAT4_(pred_format, v1, v2, v3, v4, GTEST_NONFATAL_FAILURE_)`
- `#define EXPECT_PRED4(pred, v1, v2, v3, v4) GTEST_PRED4_(pred, v1, v2, v3, v4, GTEST_NONFATAL_FAILURE_)`
- `#define ASSERT_PRED_FORMAT4(pred_format, v1, v2, v3, v4) GTEST_PRED_FORMAT4_(pred_format, v1, v2, v3, v4, GTEST_FATAL_FAILURE_)`
- `#define ASSERT_PRED4(pred, v1, v2, v3, v4) GTEST_PRED4_(pred, v1, v2, v3, v4, GTEST_FATAL_FAILURE_)`
- `#define GTEST_PRED_FORMAT5_(pred_format, v1, v2, v3, v4, v5, on_failure)`
- `#define GTEST_PRED5_(pred, v1, v2, v3, v4, v5, on_failure)`
- `#define EXPECT_PRED_FORMAT5(pred_format, v1, v2, v3, v4, v5) GTEST_PRED_FORMAT5_(pred_format, v1, v2, v3, v4, v5, GTEST_NONFATAL_FAILURE_)`
- `#define EXPECT_PRED5(pred, v1, v2, v3, v4, v5) GTEST_PRED5_(pred, v1, v2, v3, v4, v5, GTEST_NONFATAL_FAILURE_)`
- `#define ASSERT_PRED_FORMAT5(pred_format, v1, v2, v3, v4, v5) GTEST_PRED_FORMAT5_(pred_format, v1, v2, v3, v4, v5, GTEST_FATAL_FAILURE_)`
- `#define ASSERT_PRED5(pred, v1, v2, v3, v4, v5) GTEST_PRED5_(pred, v1, v2, v3, v4, v5, GTEST_FATAL_FAILURE_)`

Functions

- `template<typename Pred , typename T1 >`
`AssertionResult testing::AssertPred1Helper (const char *pred_text, const char *e1, Pred pred, const T1 &v1)`
- `template<typename Pred , typename T1 , typename T2 >`
`AssertionResult testing::AssertPred2Helper (const char *pred_text, const char *e1, const char *e2, Pred pred, const T1 &v1, const T2 &v2)`
- `template<typename Pred , typename T1 , typename T2 , typename T3 >`
`AssertionResult testing::AssertPred3Helper (const char *pred_text, const char *e1, const char *e2, const char *e3, Pred pred, const T1 &v1, const T2 &v2, const T3 &v3)`
- `template<typename Pred , typename T1 , typename T2 , typename T3 , typename T4 >`
`AssertionResult testing::AssertPred4Helper (const char *pred_text, const char *e1, const char *e2, const char *e3, const char *e4, Pred pred, const T1 &v1, const T2 &v2, const T3 &v3, const T4 &v4)`
- `template<typename Pred , typename T1 , typename T2 , typename T3 , typename T4 , typename T5 >`
`AssertionResult testing::AssertPred5Helper (const char *pred_text, const char *e1, const char *e2, const char *e3, const char *e4, const char *e5, Pred pred, const T1 &v1, const T2 &v2, const T3 &v3, const T4 &v4, const T5 &v5)`

7.13.1 Macro Definition Documentation

7.13.1.1 ASSERT_PRED1

```
#define ASSERT_PRED1(  
    pred,  
    v1 ) GTEST\_PRED1\_(pred, v1, GTEST\_FATAL\_FAILURE\_)
```

7.13.1.2 ASSERT_PRED2

```
#define ASSERT_PRED2(  
    pred,  
    v1,  
    v2 ) GTEST\_PRED2\_(pred, v1, v2, GTEST\_FATAL\_FAILURE\_)
```

7.13.1.3 ASSERT_PRED3

```
#define ASSERT_PRED3(  
    pred,  
    v1,  
    v2,  
    v3 ) GTEST\_PRED3\_(pred, v1, v2, v3, GTEST\_FATAL\_FAILURE\_)
```

7.13.1.4 ASSERT_PRED4

```
#define ASSERT_PRED4(  
    pred,  
    v1,  
    v2,  
    v3,  
    v4 ) GTEST_PRED4_(pred, v1, v2, v3, v4, GTEST_FATAL_FAILURE_)
```

7.13.1.5 ASSERT_PRED5

```
#define ASSERT_PRED5(  
    pred,  
    v1,  
    v2,  
    v3,  
    v4,  
    v5 ) GTEST_PRED5_(pred, v1, v2, v3, v4, v5, GTEST_FATAL_FAILURE_)
```

7.13.1.6 ASSERT_PRED_FORMAT1

```
#define ASSERT_PRED_FORMAT1(  
    pred_format,  
    v1 ) GTEST_PRED_FORMAT1_(pred_format, v1, GTEST_FATAL_FAILURE_)
```

7.13.1.7 ASSERT_PRED_FORMAT2

```
#define ASSERT_PRED_FORMAT2(  
    pred_format,  
    v1,  
    v2 ) GTEST_PRED_FORMAT2_(pred_format, v1, v2, GTEST_FATAL_FAILURE_)
```

7.13.1.8 ASSERT_PRED_FORMAT3

```
#define ASSERT_PRED_FORMAT3(  
    pred_format,  
    v1,  
    v2,  
    v3 ) GTEST_PRED_FORMAT3_(pred_format, v1, v2, v3, GTEST_FATAL_FAILURE_)
```

7.13.1.9 ASSERT_PRED_FORMAT4

```
#define ASSERT_PRED_FORMAT4(  
    pred_format,  
    v1,  
    v2,  
    v3,  
    v4 ) GTEST_PRED_FORMAT4_(pred_format, v1, v2, v3, v4, GTEST_FATAL_FAILURE_)
```

7.13.1.10 ASSERT_PRED_FORMAT5

```
#define ASSERT_PRED_FORMAT5(  
    pred_format,  
    v1,  
    v2,  
    v3,  
    v4,  
    v5 ) GTEST_PRED_FORMAT5_(pred_format, v1, v2, v3, v4, v5, GTEST_FATAL_FAILURE_)
```

7.13.1.11 EXPECT_PRED1

```
#define EXPECT_PRED1(  
    pred,  
    v1 ) GTEST_PRED1_(pred, v1, GTEST_NONFATAL_FAILURE_)
```

7.13.1.12 EXPECT_PRED2

```
#define EXPECT_PRED2(  
    pred,  
    v1,  
    v2 ) GTEST_PRED2_(pred, v1, v2, GTEST_NONFATAL_FAILURE_)
```

7.13.1.13 EXPECT_PRED3

```
#define EXPECT_PRED3(  
    pred,  
    v1,  
    v2,  
    v3 ) GTEST_PRED3_(pred, v1, v2, v3, GTEST_NONFATAL_FAILURE_)
```


7.13.1.14 EXPECT_PRED4

```
#define EXPECT_PRED4(  
    pred,  
    v1,  
    v2,  
    v3,  
    v4 ) GTEST_PRED4_(pred, v1, v2, v3, v4, GTEST_NONFATAL_FAILURE_)
```

7.13.1.15 EXPECT_PRED5

```
#define EXPECT_PRED5(  
    pred,  
    v1,  
    v2,  
    v3,  
    v4,  
    v5 ) GTEST_PRED5_(pred, v1, v2, v3, v4, v5, GTEST_NONFATAL_FAILURE_)
```

7.13.1.16 EXPECT_PRED_FORMAT1

```
#define EXPECT_PRED_FORMAT1(  
    pred_format,  
    v1 ) GTEST_PRED_FORMAT1_(pred_format, v1, GTEST_NONFATAL_FAILURE_)
```

7.13.1.17 EXPECT_PRED_FORMAT2

```
#define EXPECT_PRED_FORMAT2(  
    pred_format,  
    v1,  
    v2 ) GTEST_PRED_FORMAT2_(pred_format, v1, v2, GTEST_NONFATAL_FAILURE_)
```

7.13.1.18 EXPECT_PRED_FORMAT3

```
#define EXPECT_PRED_FORMAT3(  
    pred_format,  
    v1,  
    v2,  
    v3 ) GTEST_PRED_FORMAT3_(pred_format, v1, v2, v3, GTEST_NONFATAL_FAILURE_)
```

7.13.1.19 EXPECT_PRED_FORMAT4

```
#define EXPECT_PRED_FORMAT4(
    pred_format,
    v1,
    v2,
    v3,
    v4 ) GTEST_PRED_FORMAT4_(pred_format, v1, v2, v3, v4, GTEST_NONFATAL_FAILURE_)
```

7.13.1.20 EXPECT_PRED_FORMAT5

```
#define EXPECT_PRED_FORMAT5(
    pred_format,
    v1,
    v2,
    v3,
    v4,
    v5 ) GTEST_PRED_FORMAT5_(pred_format, v1, v2, v3, v4, v5, GTEST_NONFATAL_FAILURE_↵
E_)
```

7.13.1.21 GTEST_ASSERT_

```
#define GTEST_ASSERT_(
    expression,
    on_failure )
```

Value:

```
GTEST_AMBIGUOUS_ELSE_BLOCKER_ \
if (const ::testing::AssertionResult gtest_ar = (expression)) \
; \
else \
on_failure(gtest_ar.failure_message())
```

7.13.1.22 GTEST_PRED1_

```
#define GTEST_PRED1_(
    pred,
    v1,
    on_failure )
```

Value:

```
GTEST_ASSERT_(::testing::AssertPred1Helper(#pred, \
#v1, \
pred, \
v1), on_failure)
```

7.13.1.23 GTEST_PRED2_

```
#define GTEST_PRED2_(  
    pred,  
    v1,  
    v2,  
    on_failure )
```

Value:

```
GTEST_ASSERT_ (::testing::AssertPred2Helper (#pred, \  
    #v1, \  
    #v2, \  
    pred, \  
    v1, \  
    v2), on_failure)
```

7.13.1.24 GTEST_PRED3_

```
#define GTEST_PRED3_(  
    pred,  
    v1,  
    v2,  
    v3,  
    on_failure )
```

Value:

```
GTEST_ASSERT_ (::testing::AssertPred3Helper (#pred, \  
    #v1, \  
    #v2, \  
    #v3, \  
    pred, \  
    v1, \  
    v2, \  
    v3), on_failure)
```

7.13.1.25 GTEST_PRED4_

```
#define GTEST_PRED4_(  
    pred,  
    v1,  
    v2,  
    v3,  
    v4,  
    on_failure )
```

Value:

```
GTEST_ASSERT_ (::testing::AssertPred4Helper (#pred, \  
    #v1, \  
    #v2, \  
    #v3, \  
    #v4, \  
    pred, \  
    v1, \  
    v2, \  
    v3, \  
    v4), on_failure)
```

7.13.1.26 GTEST_PRED5_

```
#define GTEST_PRED5_(
    pred,
    v1,
    v2,
    v3,
    v4,
    v5,
    on_failure )
```

Value:

```
GTEST_ASSERT_ (::testing::AssertPred5Helper (#pred, \
                                             #v1, \
                                             #v2, \
                                             #v3, \
                                             #v4, \
                                             #v5, \
                                             pred, \
                                             v1, \
                                             v2, \
                                             v3, \
                                             v4, \
                                             v5), on_failure)
```

7.13.1.27 GTEST_PRED_FORMAT1_

```
#define GTEST_PRED_FORMAT1_(
    pred_format,
    v1,
    on_failure )
```

Value:

```
GTEST_ASSERT_(pred_format (#v1, v1), \
    on_failure)
```

7.13.1.28 GTEST_PRED_FORMAT2_

```
#define GTEST_PRED_FORMAT2_(
    pred_format,
    v1,
    v2,
    on_failure )
```

Value:

```
GTEST_ASSERT_(pred_format (#v1, #v2, v1, v2), \
    on_failure)
```

7.13.1.29 GTEST_PRED_FORMAT3_

```
#define GTEST_PRED_FORMAT3_(  
    pred_format,  
    v1,  
    v2,  
    v3,  
    on_failure )
```

Value:

```
GTEST_ASSERT_(pred_format(#v1, #v2, #v3, v1, v2, v3), \  
    on_failure)
```

7.13.1.30 GTEST_PRED_FORMAT4_

```
#define GTEST_PRED_FORMAT4_(  
    pred_format,  
    v1,  
    v2,  
    v3,  
    v4,  
    on_failure )
```

Value:

```
GTEST_ASSERT_(pred_format(#v1, #v2, #v3, #v4, v1, v2, v3, v4), \  
    on_failure)
```

7.13.1.31 GTEST_PRED_FORMAT5_

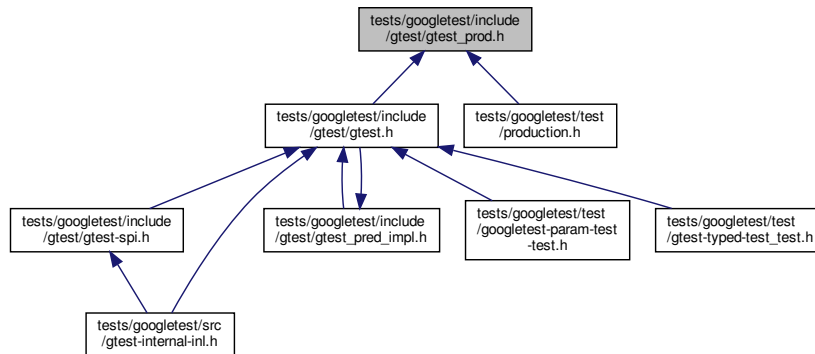
```
#define GTEST_PRED_FORMAT5_(  
    pred_format,  
    v1,  
    v2,  
    v3,  
    v4,  
    v5,  
    on_failure )
```

Value:

```
GTEST_ASSERT_(pred_format(#v1, #v2, #v3, #v4, #v5, v1, v2, v3, v4, v5), \  
    on_failure)
```

7.14 tests/googletest/include/gtest/gtest_prod.h File Reference

This graph shows which files directly or indirectly include this file:



Macros

- `#define FRIEND_TEST(test_case_name, test_name)` friend class test_case_name##_Test

7.14.1 Macro Definition Documentation

7.14.1.1 FRIEND_TEST

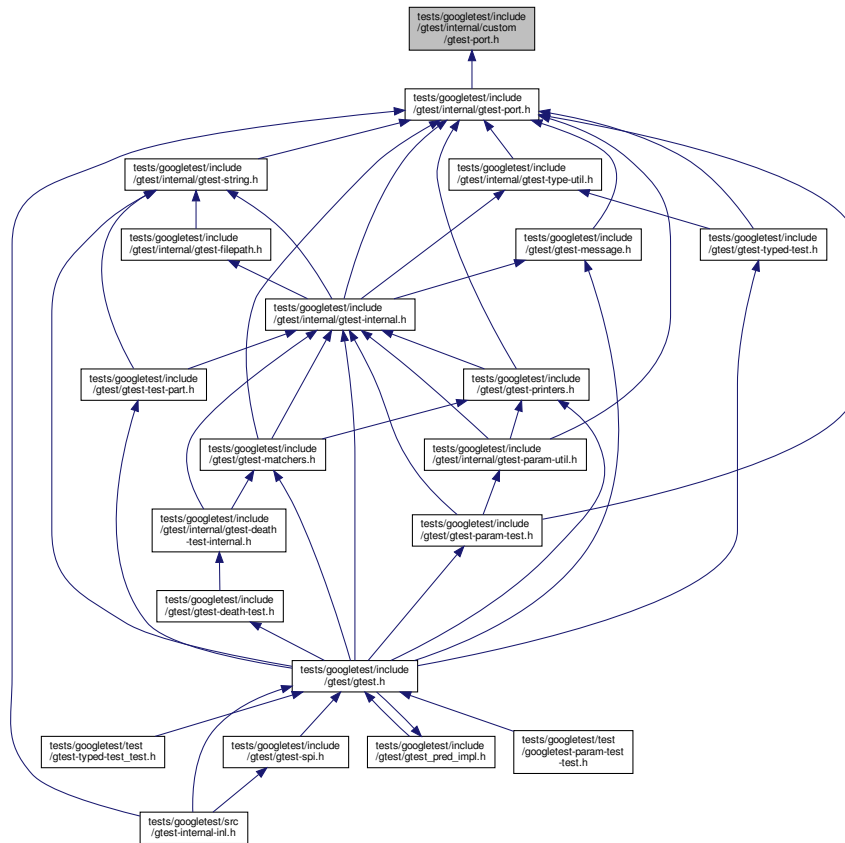
```

#define FRIEND_TEST(
    test_case_name,
    test_name ) friend class test_case_name##_Test

```

7.15 tests/googletest/include/gtest/internal/custom/gtest-port.h File Reference

This graph shows which files directly or indirectly include this file:



7.16 tests/googletest/include/gtest/internal/gtest-port.h File Reference

```
#include <ctype.h>
#include <stddef.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <memory>
#include <type_traits>
#include <sys/types.h>
#include <sys/stat.h>
#include <algorithm>
#include <iostream>
#include <sstream>
#include <string>
#include <tuple>
#include <utility>
#include <vector>
#include "gtest/internal/gtest-port-arch.h"
#include "gtest/internal/custom/gtest-port.h"
```


- class `testing::internal::ThreadLocal< T >`
- struct `testing::internal::bool_constant< bool_value >`
- struct `testing::internal::is_same< T, U >`
- struct `testing::internal::is_same< T, T >`
- struct `testing::internal::IteratorTraits< Iterator >`
- struct `testing::internal::IteratorTraits< T * >`
- struct `testing::internal::IteratorTraits< const T * >`
- class `testing::internal::TypeWithSize< size >`
- class `testing::internal::TypeWithSize< 4 >`
- class `testing::internal::TypeWithSize< 8 >`

Namespaces

- `testing`
- `testing::internal`
- `testing::internal::posix`

Macros

- `#define GTEST_DEV_EMAIL_ "googletestframework@@googlegroups.com"`
- `#define GTEST_FLAG_PREFIX_ "gtest_"`
- `#define GTEST_FLAG_PREFIX_DASH_ "gtest-"`
- `#define GTEST_FLAG_PREFIX_UPPER_ "GTEST_"`
- `#define GTEST_NAME_ "Google Test"`
- `#define GTEST_PROJECT_URL_ "https://github.com/google/googletest/"`
- `#define GTEST_INIT_GOOGLE_TEST_NAME_ "testing::InitGoogleTest"`
- `#define GTEST_DISABLE_MSC_WARNINGS_PUSH_(warnings)`
- `#define GTEST_DISABLE_MSC_WARNINGS_POP_()`
- `#define GTEST_DISABLE_MSC_DEPRECATED_PUSH_() GTEST_DISABLE_MSC_WARNINGS_PUSH_↵`
`H_(4996)`
- `#define GTEST_DISABLE_MSC_DEPRECATED_POP_() GTEST_DISABLE_MSC_WARNINGS_POP_()`
- `#define GTEST_HAS_POSIX_RE (!GTEST_OS_WINDOWS)`
- `#define GTEST_USES_POSIX_RE 1`
- `#define GTEST_HAS_EXCEPTIONS 0`
- `#define GTEST_HAS_STD_STRING 1`
- `#define GTEST_HAS_STD_WSTRING`
- `#define GTEST_HAS_RTTI 1`
- `#define GTEST_HAS_PTHREAD`
- `#define GTEST_HAS_CLONE 0`
- `#define GTEST_HAS_STREAM_REDIRECTION 1`
- `#define GTEST_WIDE_STRING_USES_UTF16_ (GTEST_OS_WINDOWS || GTEST_OS_CYGWIN || G↵`
`TEST_OS_AIX || GTEST_OS_OS2)`
- `#define GTEST_AMBIGUOUS_ELSE_BLOCKER_ switch (0) case 0: default:`
- `#define GTEST_ATTRIBUTE_UNUSED_`
- `#define GTEST_ATTRIBUTE_PRINTF_(string_index, first_to_check)`
- `#define GTEST_DISALLOW_ASSIGN_(type) void operator=(type const &) = delete`
- `#define GTEST_DISALLOW_COPY_AND_ASSIGN_(type)`
- `#define GTEST_MUST_USE_RESULT_`
- `#define GTEST_INTENTIONAL_CONST_COND_PUSH_() GTEST_DISABLE_MSC_WARNINGS_PUSH_↵`
`_(4127)`
- `#define GTEST_INTENTIONAL_CONST_COND_POP_() GTEST_DISABLE_MSC_WARNINGS_POP_()`
- `#define GTEST_HAS_SEH 0`
- `#define GTEST_IS_THREADSAFE`

- `#define GTEST_API_`
- `#define GTEST_DEFAULT_DEATH_TEST_STYLE "fast"`
- `#define GTEST_NO_INLINE_`
- `#define GTEST_HAS_CXXABI_H_ 0`
- `#define GTEST_ATTRIBUTE_NO_SANITIZE_MEMORY_`
- `#define GTEST_ATTRIBUTE_NO_SANITIZE_ADDRESS_`
- `#define GTEST_ATTRIBUTE_NO_SANITIZE_HWADDRESS_`
- `#define GTEST_ATTRIBUTE_NO_SANITIZE_THREAD_`
- `#define GTEST_COMPILE_ASSERT_(expr, msg) static_assert(expr, #msg)`
- `#define GTEST_ARRAY_SIZE_(array) (sizeof(array) / sizeof(array[0]))`
- `#define GTEST_LOG_(severity)`
- `#define GTEST_CHECK_(condition)`
- `#define GTEST_CHECK_POSIX_SUCCESS_(posix_call)`
- `#define GTEST_ADD_REFERENCE_(T) typename ::testing::internal::AddReference<T>::type`
- `#define GTEST_REFERENCE_TO_CONST_(T) typename ::testing::internal::ConstRef<T>::type`
- `#define GTEST_DECLARE_STATIC_MUTEX_(mutex) extern ::testing::internal::Mutex mutex`
- `#define GTEST_DEFINE_STATIC_MUTEX_(mutex) ::testing::internal::Mutex mutex`
- `#define GTEST_PATH_SEP_ "/"`
- `#define GTEST_HAS_ALT_PATH_SEP_ 0`
- `#define GTEST_SNPRINTF_ snprintf`
- `#define GTEST_FLAG(name) FLAGS_gtest_##name`
- `#define GTEST_USE_OWN_FLAGFILE_FLAG_ 1`
- `#define GTEST_FLAG_SAVER_ ::testing::internal::GTestFlagSaver`
- `#define GTEST_DECLARE_bool_(name) GTEST_API_ extern bool GTEST_FLAG(name)`
- `#define GTEST_DECLARE_int32_(name) GTEST_API_ extern ::testing::internal::Int32 GTEST_FLAG(name)`
- `#define GTEST_DECLARE_string_(name) GTEST_API_ extern ::std::string GTEST_FLAG(name)`
- `#define GTEST_DEFINE_bool_(name, default_val, doc) GTEST_API_ bool GTEST_FLAG(name) = (default_val)`
- `#define GTEST_DEFINE_int32_(name, default_val, doc) GTEST_API_ ::testing::internal::Int32 GTEST_FLAG(name) = (default_val)`
- `#define GTEST_DEFINE_string_(name, default_val, doc) GTEST_API_ ::std::string GTEST_FLAG(name) = (default_val)`
- `#define GTEST_EXCLUSIVE_LOCK_REQUIRED_(locks)`
- `#define GTEST_LOCK_EXCLUDED_(locks)`
- `#define GTEST_INTERNAL_DEPRECATED(message)`

Typedefs

- `typedef GTestMutexLock testing::internal::MutexLock`
- `typedef bool_constant< false > testing::internal::false_type`
- `typedef bool_constant< true > testing::internal::true_type`
- `typedef long long testing::internal::BiggestInt`
- `typedef struct stat testing::internal::posix::StatStruct`
- `typedef TypeWithSize< 4 >::Int testing::internal::Int32`
- `typedef TypeWithSize< 4 >::UInt testing::internal::UInt32`
- `typedef TypeWithSize< 8 >::Int testing::internal::Int64`
- `typedef TypeWithSize< 8 >::UInt testing::internal::UInt64`
- `typedef TypeWithSize< 8 >::Int testing::internal::TimeInMillis`

Enumerations

- `enum testing::internal::GTestLogSeverity { testing::internal::GTEST_INFO, testing::internal::GTEST_WARNING, testing::internal::GTEST_ERROR, testing::internal::GTEST_FATAL }`

Functions

- `GTEST_API_ bool testing::internal::IsTrue` (bool condition)
- `GTEST_API_ ::std::string testing::internal::FormatFileLocation` (const char *file, int line)
- `GTEST_API_ ::std::string testing::internal::FormatCompilerIndependentFileLocation` (const char *file, int line)
- `void testing::internal::LogToStderr` ()
- `void testing::internal::FlushInfoLog` ()
- `template<typename To >`
`To testing::internal::ImplicitCast_` (To x)
- `template<typename To, typename From >`
`To testing::internal::DownCast_` (From *f)
- `template<class Derived, class Base >`
`Derived * testing::internal::CheckedDowncastToActualType` (Base *base)
- `GTEST_API_ void testing::internal::CaptureStdout` ()
- `GTEST_API_ std::string testing::internal::GetCapturedStdout` ()
- `GTEST_API_ void testing::internal::CaptureStderr` ()
- `GTEST_API_ std::string testing::internal::GetCapturedStderr` ()
- `GTEST_API_ size_t testing::internal::GetFileSize` (FILE *file)
- `GTEST_API_ std::string testing::internal::ReadEntireFile` (FILE *file)
- `GTEST_API_ std::vector< std::string > testing::internal::GetArgvs` ()
- `GTEST_API_ size_t testing::internal::GetThreadCount` ()
- `bool testing::internal::IsAlpha` (char ch)
- `bool testing::internal::IsAlphaNum` (char ch)
- `bool testing::internal::IsDigit` (char ch)
- `bool testing::internal::IsLower` (char ch)
- `bool testing::internal::IsSpace` (char ch)
- `bool testing::internal::IsUpper` (char ch)
- `bool testing::internal::IsXDigit` (char ch)
- `bool testing::internal::IsXDigit` (wchar_t ch)
- `char testing::internal::ToLower` (char ch)
- `char testing::internal::ToUpper` (char ch)
- `std::string testing::internal::StripTrailingSpaces` (std::string str)
- `int testing::internal::posix::FileNo` (FILE *file)
- `int testing::internal::posix::IsATTY` (int fd)
- `int testing::internal::posix::Stat` (const char *path, StatStruct *buf)
- `int testing::internal::posix::StrCaseCmp` (const char *s1, const char *s2)
- `char * testing::internal::posix::StrDup` (const char *src)
- `int testing::internal::posix::RmDir` (const char *dir)
- `bool testing::internal::posix::IsDir` (const StatStruct &st)
- `const char * testing::internal::posix::StrNCpy` (char *dest, const char *src, size_t n)
- `int testing::internal::posix::ChDir` (const char *dir)
- `FILE * testing::internal::posix::FOpen` (const char *path, const char *mode)
- `FILE * testing::internal::posix::FReopen` (const char *path, const char *mode, FILE *stream)
- `FILE * testing::internal::posix::FDOpen` (int fd, const char *mode)
- `int testing::internal::posix::FClose` (FILE *fp)
- `int testing::internal::posix::Read` (int fd, void *buf, unsigned int count)
- `int testing::internal::posix::Write` (int fd, const void *buf, unsigned int count)
- `int testing::internal::posix::Close` (int fd)
- `const char * testing::internal::posix::StrError` (int errnum)
- `const char * testing::internal::posix::GetEnv` (const char *name)
- `void testing::internal::posix::Abort` ()
- `bool testing::internal::ParseInt32` (const Message &src_text, const char *str, Int32 *value)
- `bool testing::internal::BoolFromGTestEnv` (const char *flag, bool default_val)
- `GTEST_API_ Int32 testing::internal::Int32FromGTestEnv` (const char *flag, Int32 default_val)
- `std::string testing::internal::OutputFlagAlsoCheckEnvVar` ()
- `const char * testing::internal::StringFromGTestEnv` (const char *flag, const char *default_val)

Variables

- const BiggestInt [testing::internal::kMaxBiggestInt](#)

7.16.1 Macro Definition Documentation

7.16.1.1 GTEST_ADD_REFERENCE_

```
#define GTEST_ADD_REFERENCE_(  
    T ) typename ::testing::internal::AddReference<T>::type
```

7.16.1.2 GTEST_AMBIGUOUS_ELSE_BLOCKER_

```
#define GTEST_AMBIGUOUS_ELSE_BLOCKER_ switch (0) case 0: default:
```

7.16.1.3 GTEST_API_

```
#define GTEST_API_
```

7.16.1.4 GTEST_ARRAY_SIZE_

```
#define GTEST_ARRAY_SIZE_(  
    array ) (sizeof(array) / sizeof(array[0]))
```

7.16.1.5 GTEST_ATTRIBUTE_NO_SANITIZE_ADDRESS_

```
#define GTEST_ATTRIBUTE_NO_SANITIZE_ADDRESS_
```

7.16.1.6 GTEST_ATTRIBUTE_NO_SANITIZE_HWADDRESS_

```
#define GTEST_ATTRIBUTE_NO_SANITIZE_HWADDRESS_
```

7.16.1.7 GTEST_ATTRIBUTE_NO_SANITIZE_MEMORY_

```
#define GTEST_ATTRIBUTE_NO_SANITIZE_MEMORY_
```

7.16.1.8 GTEST_ATTRIBUTE_NO_SANITIZE_THREAD_

```
#define GTEST_ATTRIBUTE_NO_SANITIZE_THREAD_
```

7.16.1.9 GTEST_ATTRIBUTE_PRINTF_

```
#define GTEST_ATTRIBUTE_PRINTF_(  
    string_index,  
    first_to_check )
```

7.16.1.10 GTEST_ATTRIBUTE_UNUSED_

```
#define GTEST_ATTRIBUTE_UNUSED_
```

7.16.1.11 GTEST_CHECK_

```
#define GTEST_CHECK_(  
    condition )
```

Value:

```
GTEST_AMBIGUOUS_ELSE_BLOCKER_ \  
    if (::testing::internal::IsTrue(condition)) \  
        ; \  
    else \  
        GTEST_LOG_(FATAL) << "Condition " #condition " failed. "
```

7.16.1.12 GTEST_CHECK_POSIX_SUCCESS_

```
#define GTEST_CHECK_POSIX_SUCCESS_(  
    posix_call )
```

Value:

```
if (const int gtest_error = (posix_call)) \  
    GTEST_LOG_(FATAL) << #posix_call << "failed with error " \  
        << gtest_error
```

7.16.1.13 GTEST_COMPILE_ASSERT_

```
#define GTEST_COMPILE_ASSERT_(  
    expr,  
    msg ) static_assert(expr, #msg)
```

7.16.1.14 GTEST_DECLARE_bool_

```
#define GTEST_DECLARE_bool_(  
    name ) GTEST_API_ extern bool GTEST_FLAG(name)
```

7.16.1.15 GTEST_DECLARE_int32_

```
#define GTEST_DECLARE_int32_(  
    name ) GTEST_API_ extern ::testing::internal::Int32 GTEST_FLAG(name)
```

7.16.1.16 GTEST_DECLARE_STATIC_MUTEX_

```
#define GTEST_DECLARE_STATIC_MUTEX_(  
    mutex ) extern ::testing::internal::Mutex mutex
```

7.16.1.17 GTEST_DECLARE_string_

```
#define GTEST_DECLARE_string_(  
    name ) GTEST_API_ extern ::std::string GTEST_FLAG(name)
```

7.16.1.18 GTEST_DEFAULT_DEATH_TEST_STYLE

```
#define GTEST_DEFAULT_DEATH_TEST_STYLE "fast"
```

7.16.1.19 GTEST_DEFINE_bool_

```
#define GTEST_DEFINE_bool_(  
    name,  
    default_val,  
    doc ) GTEST_API_ bool GTEST_FLAG(name) = (default_val)
```

7.16.1.20 GTEST_DEFINE_int32_

```
#define GTEST_DEFINE_int32_(  
    name,  
    default_val,  
    doc ) GTEST_API_ ::testing::internal::Int32 GTEST_FLAG(name) = (default_val)
```

7.16.1.21 GTEST_DEFINE_STATIC_MUTEX_

```
#define GTEST_DEFINE_STATIC_MUTEX_(  
    mutex ) ::testing::internal::Mutex mutex
```

7.16.1.22 GTEST_DEFINE_string_

```
#define GTEST_DEFINE_string_(  
    name,  
    default_val,  
    doc ) GTEST_API_ ::std::string GTEST_FLAG(name) = (default_val)
```

7.16.1.23 GTEST_DEV_EMAIL_

```
#define GTEST_DEV_EMAIL_ "googletestframework@googlegroups.com"
```

7.16.1.24 GTEST_DISABLE_MSC_DEPRECATED_POP_

```
#define GTEST_DISABLE_MSC_DEPRECATED_POP_( ) GTEST_DISABLE_MSC_WARNINGS_POP_()
```

7.16.1.25 GTEST_DISABLE_MSC_DEPRECATED_PUSH_

```
#define GTEST_DISABLE_MSC_DEPRECATED_PUSH_( ) GTEST_DISABLE_MSC_WARNINGS_PUSH_(4996)
```

7.16.1.26 GTEST_DISABLE_MSC_WARNINGS_POP_

```
#define GTEST_DISABLE_MSC_WARNINGS_POP_( )
```

7.16.1.27 GTEST_DISABLE_MSC_WARNINGS_PUSH_

```
#define GTEST_DISABLE_MSC_WARNINGS_PUSH_(  
    warnings )
```

7.16.1.28 GTEST_DISALLOW_ASSIGN_

```
#define GTEST_DISALLOW_ASSIGN_(  
    type ) void operator=(type const &) = delete
```

7.16.1.29 GTEST_DISALLOW_COPY_AND_ASSIGN_

```
#define GTEST_DISALLOW_COPY_AND_ASSIGN_(  
    type )
```

Value:

```
type(type const &) = delete; \  
    GTEST_DISALLOW_ASSIGN_(type)
```

7.16.1.30 GTEST_EXCLUSIVE_LOCK_REQUIRED_

```
#define GTEST_EXCLUSIVE_LOCK_REQUIRED_(  
    locks )
```

7.16.1.31 GTEST_FLAG

```
#define GTEST_FLAG(  
    name ) FLAGS_gtest_##name
```

7.16.1.32 GTEST_FLAG_PREFIX_

```
#define GTEST_FLAG_PREFIX_ "gtest_"
```


7.16.1.33 GTEST_FLAG_PREFIX_DASH_

```
#define GTEST_FLAG_PREFIX_DASH_ "gtest-"
```

7.16.1.34 GTEST_FLAG_PREFIX_UPPER_

```
#define GTEST_FLAG_PREFIX_UPPER_ "GTEST_"
```

7.16.1.35 GTEST_FLAG_SAVER_

```
#define GTEST_FLAG_SAVER_ ::testing::internal::GTestFlagSaver
```

7.16.1.36 GTEST_HAS_ALT_PATH_SEP_

```
#define GTEST_HAS_ALT_PATH_SEP_ 0
```

7.16.1.37 GTEST_HAS_CLONE

```
#define GTEST_HAS_CLONE 0
```

7.16.1.38 GTEST_HAS_CXXABI_H_

```
#define GTEST_HAS_CXXABI_H_ 0
```

7.16.1.39 GTEST_HAS_EXCEPTIONS

```
#define GTEST_HAS_EXCEPTIONS 0
```

7.16.1.40 GTEST_HAS_POSIX_RE

```
#define GTEST_HAS_POSIX_RE (!GTEST_OS_WINDOWS)
```

7.16.1.41 GTEST_HAS_PTHREAD

```
#define GTEST_HAS_PTHREAD
```

Value:

```
(GTEST_OS_LINUX || GTEST_OS_MAC || GTEST_OS_HPUX || GTEST_OS_QNX ||  
 GTEST_OS_FREEBSD || GTEST_OS_NACL || GTEST_OS_NETBSD || GTEST_OS_FUCHSIA ||  
 GTEST_OS_DRAGONFLY || GTEST_OS_GNU_KFREEBSD || GTEST_OS_OPENBSD ||  
 GTEST_OS_HAIKU)
```

7.16.1.42 GTEST_HAS_RTTI

```
#define GTEST_HAS_RTTI 1
```

7.16.1.43 GTEST_HAS_SEH

```
#define GTEST_HAS_SEH 0
```

7.16.1.44 GTEST_HAS_STD_STRING

```
#define GTEST_HAS_STD_STRING 1
```

7.16.1.45 GTEST_HAS_STD_WSTRING

```
#define GTEST_HAS_STD_WSTRING
```

Value:

```
(!(GTEST_OS_LINUX_ANDROID || GTEST_OS_CYGWIN || GTEST_OS_SOLARIS ||  
 GTEST_OS_HAIKU))
```

7.16.1.46 GTEST_HAS_STREAM_REDIRECTION

```
#define GTEST_HAS_STREAM_REDIRECTION 1
```

7.16.1.47 GTEST_INIT_GOOGLE_TEST_NAME_

```
#define GTEST_INIT_GOOGLE_TEST_NAME_ "testing::InitGoogleTest"
```

7.16.1.48 GTEST_INTENTIONAL_CONST_COND_POP_

```
#define GTEST_INTENTIONAL_CONST_COND_POP_( ) GTEST_DISABLE_MSC_WARNINGS_POP_()
```

7.16.1.49 GTEST_INTENTIONAL_CONST_COND_PUSH_

```
#define GTEST_INTENTIONAL_CONST_COND_PUSH_( ) GTEST_DISABLE_MSC_WARNINGS_PUSH_(4127)
```

7.16.1.50 GTEST_INTERNAL_DEPRECATED

```
#define GTEST_INTERNAL_DEPRECATED(  
    message )
```

7.16.1.51 GTEST_IS_THREADSAFE

```
#define GTEST_IS_THREADSAFE
```

Value:

```
(GTEST_HAS_MUTEX_AND_THREAD_LOCAL_ ||  
 (GTEST_OS_WINDOWS && !GTEST_OS_WINDOWS_PHONE && !GTEST_OS_WINDOWS_RT) || \  
 GTEST_HAS_PTHREAD)
```

7.16.1.52 GTEST_LOCK_EXCLUDED_

```
#define GTEST_LOCK_EXCLUDED_(  
    locks )
```

7.16.1.53 GTEST_LOG_

```
#define GTEST_LOG_(  
    severity )
```

Value:

```
::testing::internal::GTestLog(::testing::internal::GTEST_##severity, \  
    __FILE__, __LINE__).GetStream()
```

7.16.1.54 GTEST_MUST_USE_RESULT_

```
#define GTEST_MUST_USE_RESULT_
```

7.16.1.55 GTEST_NAME_

```
#define GTEST_NAME_ "Google Test"
```

7.16.1.56 GTEST_NO_INLINE_

```
#define GTEST_NO_INLINE_
```

7.16.1.57 GTEST_PATH_SEP_

```
#define GTEST_PATH_SEP_ "/"
```

7.16.1.58 GTEST_PROJECT_URL_

```
#define GTEST_PROJECT_URL_ "https://github.com/google/googletest/"
```

7.16.1.59 GTEST_REFERENCE_TO_CONST_

```
#define GTEST_REFERENCE_TO_CONST_(  
    T ) typename ::testing::internal::ConstRef<T>::type
```

```
#define GTEST_SNPRINTF_ snprintf
```

7.16.1.61 GTEST_USE_OWN_FLAGFILE_FLAG_

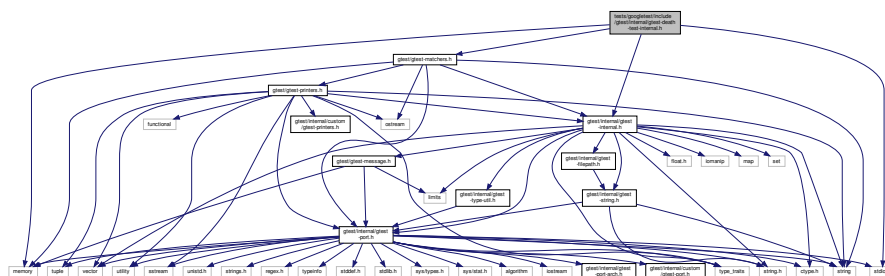
```
#define GTEST_USE_OWN_FLAGFILE_FLAG_ 1
```

```
#define GTEST_USES_POSIX_RE 1
```

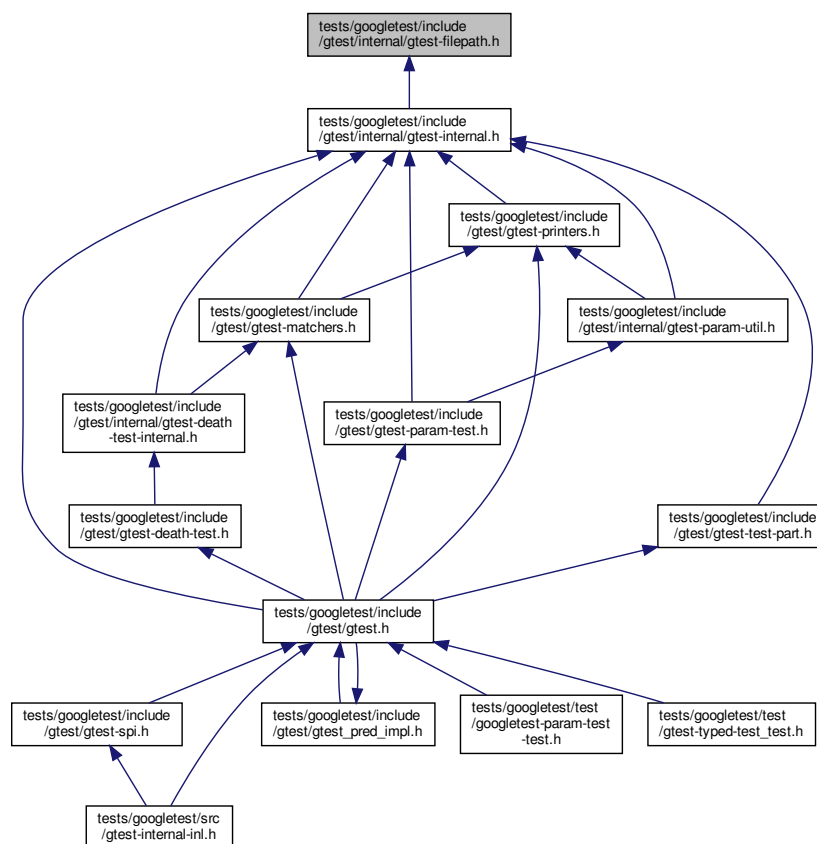
7.16.1.63 GTEST_WIDE_STRING_USES_UTF16_

```
#include "gtest/gtest-matchers.h"
#include "gtest/internal/gtest-internal.h"
#include <stdio.h>
#include <memory>
```

Include dependency graph for gtest-death-test-internal.h:



This graph shows which files directly or indirectly include this file:



Functions

- [GTEST_DISABLE_MSC_WARNINGS_PUSH_ \(4251\)](#) namespace testing

7.18.1 Function Documentation

7.18.1.1 GTEST_DISABLE_MSC_WARNINGS_PUSH_()

```

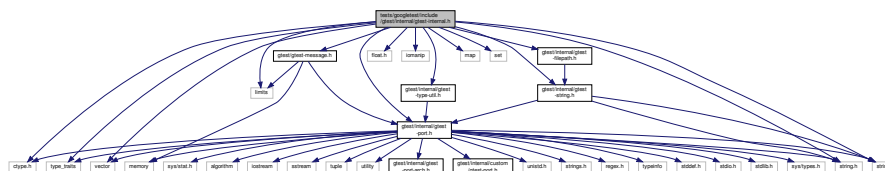
GTEST_DISABLE_MSC_WARNINGS_PUSH_ (
    4251
)

```

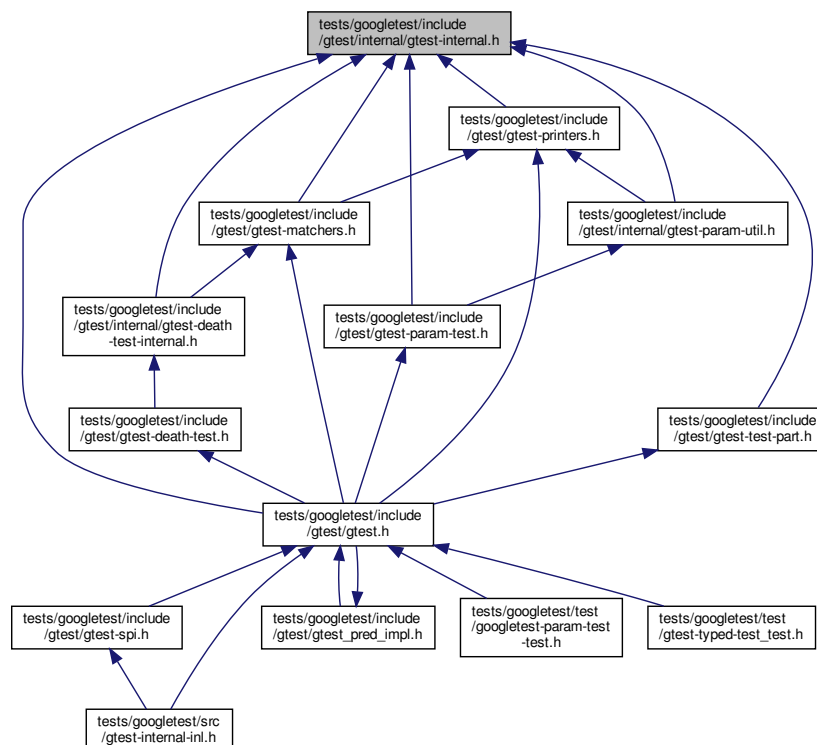
7.19 tests/googletest/include/gtest/internal/gtest-internal.h File Reference

```
#include "gtest/internal/gtest-port.h"
#include <ctype.h>
#include <float.h>
#include <string.h>
#include <iomanip>
#include <limits>
#include <map>
#include <set>
#include <string>
#include <type_traits>
#include <vector>
#include "gtest/gtest-message.h"
#include "gtest/internal/gtest-filepath.h"
#include "gtest/internal/gtest-string.h"
#include "gtest/internal/gtest-type-util.h"
```

Include dependency graph for gtest-internal.h:



This graph shows which files directly or indirectly include this file:



Classes

- class [testing::internal::IgnoredValue](#)
- struct [testing::internal::IgnoredValue::Sink](#)
- class [testing::internal::FloatingPoint< RawType >](#)
- union [testing::internal::FloatingPoint< RawType >::FloatingPointUnion](#)
- class [testing::internal::TypeIdHelper< T >](#)
- class [testing::internal::TestFactoryBase](#)
- class [testing::internal::TestFactoryImpl< TestClass >](#)
- struct [testing::internal::CodeLocation](#)
- struct [testing::internal::SuiteApiResolver< T >](#)
- struct [testing::internal::ConstCharPtr](#)
- class [testing::internal::Random](#)
- struct [testing::internal::CompileAssertTypesEqual< T1, T2 >](#)
- struct [testing::internal::CompileAssertTypesEqual< T, T >](#)
- struct [testing::internal::RemoveReference< T >](#)
- struct [testing::internal::RemoveReference< T & >](#)
- struct [testing::internal::RemoveConst< T >](#)
- struct [testing::internal::RemoveConst< const T >](#)
- struct [testing::internal::RemoveConst< const T\[N\]>](#)
- struct [testing::internal::IsAProtocolMessage< T >](#)
- struct [testing::internal::IsHashTable< T >](#)
- struct [testing::internal::IsRecursiveContainerImpl< C, bool >](#)
- struct [testing::internal::IsRecursiveContainerImpl< C, false >](#)
- struct [testing::internal::IsRecursiveContainerImpl< C, true >](#)
- struct [testing::internal::IsRecursiveContainer< C >](#)
- struct [testing::internal::EnableIf< bool >](#)
- struct [testing::internal::EnableIf< true >](#)
- struct [testing::internal::RelationToSourceReference](#)
- struct [testing::internal::RelationToSourceCopy](#)
- class [testing::internal::NativeArray< Element >](#)
- struct [testing::internal::IndexSequence< Is >](#)
- struct [testing::internal::DoubleSequence< plus_one, T, sizeofT >](#)
- struct [testing::internal::DoubleSequence< true, IndexSequence< I... >, sizeofT >](#)
- struct [testing::internal::DoubleSequence< false, IndexSequence< I... >, sizeofT >](#)
- struct [testing::internal::MakeIndexSequence< N >](#)
- struct [testing::internal::MakeIndexSequence< 0 >](#)
- struct [testing::internal::ElemFromListImpl< T, size_t, size_t >](#)
- struct [testing::internal::ElemFromListImpl< T, I, I >](#)
- struct [testing::internal::ElemFromList< N, I, T >](#)
- struct [testing::internal::ElemFromList< N, IndexSequence< I... >, T... >](#)
- class [testing::internal::FlatTuple< T >](#)
- struct [testing::internal::FlatTupleElemBase< Derived, I >](#)
- struct [testing::internal::FlatTupleElemBase< FlatTuple< T... >, I >](#)
- struct [testing::internal::FlatTupleBase< Derived, Idx >](#)
- struct [testing::internal::FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > >](#)
- class [testing::internal::FlatTuple< T >](#)

Namespaces

- [proto2](#)
- [testing](#)
- [testing::internal](#)
- [testing::internal::edit_distance](#)

Macros

- `#define GTEST_CONCAT_TOKEN_(foo, bar) GTEST_CONCAT_TOKEN_IMPL_(foo, bar)`
- `#define GTEST_CONCAT_TOKEN_IMPL_(foo, bar) foo ## bar`
- `#define GTEST_STRINGIFY_(name) #name`
- `#define GTEST_REMOVE_REFERENCE_(T) typename ::testing::internal::RemoveReference<T>::type`
- `#define GTEST_REMOVE_CONST_(T) typename ::testing::internal::RemoveConst<T>::type`
- `#define GTEST_REMOVE_REFERENCE_AND_CONST_(T) GTEST_REMOVE_CONST_(GTEST_REMOVE_REFERENCE_(T))`
- `#define GTEST_MESSAGE_AT_(file, line, message, result_type)`
- `#define GTEST_MESSAGE_(message, result_type) GTEST_MESSAGE_AT_(__FILE__, __LINE__, message, result_type)`
- `#define GTEST_FATAL_FAILURE_(message) return GTEST_MESSAGE_(message, ::testing::TestPartResult::kFatalFailure)`
- `#define GTEST_NONFATAL_FAILURE_(message) GTEST_MESSAGE_(message, ::testing::TestPartResult::kNonFatalFailure)`
- `#define GTEST_SUCCESS_(message) GTEST_MESSAGE_(message, ::testing::TestPartResult::kSuccess)`
- `#define GTEST_SKIP_(message) return GTEST_MESSAGE_(message, ::testing::TestPartResult::kSkip)`
- `#define GTEST_SUPPRESS_UNREACHABLE_CODE_WARNING_BELOW_(statement) if (::testing::internal::AlwaysTrue()) { statement; }`
- `#define GTEST_TEST_THROW_(statement, expected_exception, fail)`
- `#define GTEST_TEST_NO_THROW_(statement, fail)`
- `#define GTEST_TEST_ANY_THROW_(statement, fail)`
- `#define GTEST_TEST_BOOLEAN_(expression, text, actual, expected, fail)`
- `#define GTEST_TEST_NO_FATAL_FAILURE_(statement, fail)`
- `#define GTEST_TEST_CLASS_NAME_(test_suite_name, test_name) test_suite_name##_##_##test_name##_Test`
- `#define GTEST_TEST_(test_suite_name, test_name, parent_class, parent_id)`

Typedefs

- `typedef FloatingPoint< float > testing::internal::Float`
- `typedef FloatingPoint< double > testing::internal::Double`
- `typedef const void * testing::internal::TypeId`
- `using testing::internal::SetUpTestSuiteFunc = void(*)()`
- `using testing::internal::TearDownTestSuiteFunc = void(*)()`
- `using testing::internal::SetUpTearDownSuiteFuncType = void(*)()`
- `typedef int testing::internal::IsContainer`
- `typedef char testing::internal::IsNotContainer`

Enumerations

- `enum testing::internal::edit_distance::EditType { testing::internal::edit_distance::kMatch, testing::internal::edit_distance::kAdd, testing::internal::edit_distance::kRemove, testing::internal::edit_distance::kReplace }`

Functions

- `template<typename T >`
`::std::string testing::PrintToString (const T &value)`
- `GTEST_API_ std::string testing::internal::AppendUserMessage (const std::string >est_msg, const Message &user_msg)`
- `GTEST_API_ std::vector< EditType > testing::internal::edit_distance::CalculateOptimalEdits (const std::vector< size_t > &left, const std::vector< size_t > &right)`
- `GTEST_API_ std::vector< EditType > testing::internal::edit_distance::CalculateOptimalEdits (const std::vector< std::string > &left, const std::vector< std::string > &right)`
- `GTEST_API_ std::string testing::internal::edit_distance::CreateUnifiedDiff (const std::vector< std::string > &left, const std::vector< std::string > &right, size_t context=2)`
- `GTEST_API_ std::string testing::internal::DiffStrings (const std::string &left, const std::string &right, size_t *total_line_count)`
- `GTEST_API_ AssertionResult testing::internal::EqFailure (const char *expected_expression, const char *actual_expression, const std::string &expected_value, const std::string &actual_value, bool ignoring_case)`
- `GTEST_API_ std::string testing::internal::GetBoolAssertionFailureMessage (const AssertionResult &assertion_result, const char *expression_text, const char *actual_predicate_value, const char *expected_predicate_value)`
- `template<typename T >`
`TypeId testing::internal::GetTypeId ()`
- `GTEST_API_ TypeId testing::internal::GetTestTypeId ()`
- `SetUpTearDownSuiteFuncType testing::internal::GetNotDefaultOrNull (SetUpTearDownSuiteFuncType a, SetUpTearDownSuiteFuncType def)`
- `GTEST_API_ TestInfo * testing::internal::MakeAndRegisterTestInfo (const char *test_suite_name, const char *name, const char *type_param, const char *value_param, CodeLocation code_location, TypeId fixture_class_id, SetUpTestSuiteFunc set_up_tc, TearDownTestSuiteFunc tear_down_tc, TestFactoryBase *factory)`
- `GTEST_API_ bool testing::internal::SkipPrefix (const char *prefix, const char **pstr)`
- `GTEST_API_ std::string testing::internal::GetCurrentOsStackTraceExceptTop (UnitTest *unit_test, int skip_count)`
- `GTEST_API_ bool testing::internal::AlwaysTrue ()`
- `bool testing::internal::AlwaysFalse ()`
- `template<class C, class Iterator = decltype (::std::declval<const C &>().begin()), class = decltype (::std::declval<const C &>().end()), class = decltype (++::std::declval<Iterator &>()), class = decltype (*::std::declval<Iterator >()), class = typename C::const_iterator >`
`IsContainer testing::internal::IsContainerTest (int)`
- `template<class C >`
`IsNotContainer testing::internal::IsContainerTest (long)`
- `template<typename T, typename U >`
`bool testing::internal::ArrayEq (const T *lhs, size_t size, const U *rhs)`
- `template<typename T, typename U >`
`bool testing::internal::ArrayEq (const T &lhs, const U &rhs)`
- `template<typename T, typename U, size_t N >`
`bool testing::internal::ArrayEq (const T (&lhs)[N], const U (&rhs)[N])`
- `template<typename Iter, typename Element >`
`Iter testing::internal::ArrayAwareFind (Iter begin, Iter end, const Element &elem)`
- `template<typename T, typename U >`
`void testing::internal::CopyArray (const T *from, size_t size, U *to)`
- `template<typename T, typename U >`
`void testing::internal::CopyArray (const T &from, U *to)`
- `template<typename T, typename U, size_t N >`
`void testing::internal::CopyArray (const T (&from)[N], U (*to)[N])`
- `testing::internal::GTEST_INTERNAL_DEPRECATED` ("INstantiate_TEST_CASE_P is deprecated, please use " "INstantiate_TEST_SUITE_P") `const expr bool InstantiateTestCase_P_IsDeprecated()`
- `testing::internal::GTEST_INTERNAL_DEPRECATED` ("TYPED_TEST_CASE_P is deprecated, please use " "TYPED_TEST_SUITE_P") `const expr bool TypedTestCase_P_IsDeprecated()`
- `testing::internal::GTEST_INTERNAL_DEPRECATED` ("TYPED_TEST_CASE is deprecated, please use " "TYPED_TEST_SUITE") `const expr bool TypedTestCasesIsDeprecated()`

- `testing::internal::GTEST_INTERNAL_DEPRECATED` ("REGISTER_TYPED_TEST_CASE_P is deprecated, please use " "REGISTER_TYPED_TEST_SUITE_P") const expr bool RegisterTypedTestCase_P_IsDeprecated()
- `testing::internal::GTEST_INTERNAL_DEPRECATED` ("INstantiate_TYPED_TEST_CASE_P is deprecated, please use " "INstantiate_TYPED_TEST_SUITE_P") const expr bool InstantiateTypedTestCase_P_IsDeprecated()

Variables

- `GTEST_API_` const char `testing::internal::kStackTraceMarker` []

7.19.1 Macro Definition Documentation

7.19.1.1 GTEST_CONCAT_TOKEN_

```
#define GTEST_CONCAT_TOKEN_(
    foo,
    bar ) GTEST_CONCAT_TOKEN_IMPL_(foo, bar)
```

7.19.1.2 GTEST_CONCAT_TOKEN_IMPL_

```
#define GTEST_CONCAT_TOKEN_IMPL_(
    foo,
    bar ) foo ## bar
```

7.19.1.3 GTEST_FATAL_FAILURE_

```
#define GTEST_FATAL_FAILURE_(
    message ) return GTEST_MESSAGE_(message, ::testing::TestPartResult::kFatal↵
Failure)
```

7.19.1.4 GTEST_MESSAGE_

```
#define GTEST_MESSAGE_(
    message,
    result_type ) GTEST_MESSAGE_AT_(__FILE__, __LINE__, message, result_type)
```

7.19.1.5 GTEST_MESSAGE_AT_

```
#define GTEST_MESSAGE_AT_(  
    file,  
    line,  
    message,  
    result_type )
```

Value:

```
::testing::internal::AssertHelper(result_type, file, line, message) \  
    = ::testing::Message()
```

7.19.1.6 GTEST_NONFATAL_FAILURE_

```
#define GTEST_NONFATAL_FAILURE_(  
    message ) GTEST_MESSAGE_(message, ::testing::TestPartResult::kNonFatalFailure)
```

7.19.1.7 GTEST_REMOVE_CONST_

```
#define GTEST_REMOVE_CONST_(  
    T ) typename ::testing::internal::RemoveConst<T>::type
```

7.19.1.8 GTEST_REMOVE_REFERENCE_

```
#define GTEST_REMOVE_REFERENCE_(  
    T ) typename ::testing::internal::RemoveReference<T>::type
```

7.19.1.9 GTEST_REMOVE_REFERENCE_AND_CONST_

```
#define GTEST_REMOVE_REFERENCE_AND_CONST_(  
    T ) GTEST_REMOVE_CONST_(GTEST_REMOVE_REFERENCE_(T))
```

7.19.1.10 GTEST_SKIP_

```
#define GTEST_SKIP_(  
    message ) return GTEST_MESSAGE_(message, ::testing::TestPartResult::kSkip)
```

7.19.1.11 GTEST_STRINGIFY_

```
#define GTEST_STRINGIFY_(
    name ) #name
```

7.19.1.12 GTEST_SUCCESS_

```
#define GTEST_SUCCESS_(
    message ) GTEST_MESSAGE_(message, ::testing::TestPartResult::kSuccess)
```

7.19.1.13 GTEST_SUPPRESS_UNREACHABLE_CODE_WARNING_BELOW_

```
#define GTEST_SUPPRESS_UNREACHABLE_CODE_WARNING_BELOW_(
    statement ) if (::testing::internal::AlwaysTrue()) { statement; }
```

7.19.1.14 GTEST_TEST_

```
#define GTEST_TEST_(
    test_suite_name,
    test_name,
    parent_class,
    parent_id )
```

Value:

```
class GTEST_TEST_CLASS_NAME_(test_suite_name, test_name)
: public parent_class {
public:
    GTEST_TEST_CLASS_NAME_(test_suite_name, test_name)() {}

private:
    virtual void TestBody();
    static ::testing::TestInfo* const test_info_ GTEST_ATTRIBUTE_UNUSED_;
    GTEST_DISALLOW_COPY_AND_ASSIGN_(GTEST_TEST_CLASS_NAME_(test_suite_name,
                                                                test_name));
};

::testing::TestInfo* const GTEST_TEST_CLASS_NAME_(
    test_suite_name,
    test_name)::test_info_ =
::testing::internal::MakeAndRegisterTestInfo(
    \
    #test_suite_name, #test_name, nullptr, nullptr,
    ::testing::internal::CodeLocation(__FILE__, __LINE__), (parent_id),
    ::testing::internal::SuiteApiResolver<
        parent_class>::GetSetUpCaseOrSuite(__FILE__, __LINE__),
    ::testing::internal::SuiteApiResolver<
        parent_class>::GetTearDownCaseOrSuite(__FILE__, __LINE__),
    new ::testing::internal::TestFactoryImpl<GTEST_TEST_CLASS_NAME_(
        test_suite_name, test_name)>());
void GTEST_TEST_CLASS_NAME_(test_suite_name, test_name)::TestBody()
```

7.19.1.15 GTEST_TEST_ANY_THROW_

```
#define GTEST_TEST_ANY_THROW_(
    statement,
    fail )
```

Value:

```
GTEST_AMBIGUOUS_ELSE_BLOCKER_ \
if (::testing::internal::AlwaysTrue()) { \
    bool gtest_caught_any = false; \
    try { \
        GTEST_SUPPRESS_UNREACHABLE_CODE_WARNING_BELOW_(statement); \
    } \
    catch (...) { \
        gtest_caught_any = true; \
    } \
    if (!gtest_caught_any) { \
        goto GTEST_CONCAT_TOKEN_(gtest_label_testanythrow_, __LINE__); \
    } \
} else \
    GTEST_CONCAT_TOKEN_(gtest_label_testanythrow_, __LINE__): \
    fail("Expected: " #statement " throws an exception.\n" \
        " Actual: it doesn't.")
```

7.19.1.16 GTEST_TEST_BOOLEAN_

```
#define GTEST_TEST_BOOLEAN_(
    expression,
    text,
    actual,
    expected,
    fail )
```

Value:

```
GTEST_AMBIGUOUS_ELSE_BLOCKER_ \
if (const ::testing::AssertionResult gtest_ar_ = \
    ::testing::AssertionResult(expression)) \
    ; \
else \
    fail(::testing::internal::GetBoolAssertionFailureMessage \
        (\
            gtest_ar_, text, #actual, #expected).c_str())
```

7.19.1.17 GTEST_TEST_CLASS_NAME_

```
#define GTEST_TEST_CLASS_NAME_(
    test_suite_name,
    test_name ) test_suite_name##_##_test_name##_Test
```

7.19.1.18 GTEST_TEST_NO_FATAL_FAILURE_

```
#define GTEST_TEST_NO_FATAL_FAILURE_(
    statement,
    fail )
```

Value:

```
GTEST_AMBIGUOUS_ELSE_BLOCKER_ \
if (::testing::internal::AlwaysTrue()) { \
    ::testing::internal::HasNewFatalFailureHelper gtest_fatal_failure_checker; \
    GTEST_SUPPRESS_UNREACHABLE_CODE_WARNING_BELOW_(statement); \
    if (gtest_fatal_failure_checker.has_new_fatal_failure()) { \
        goto GTEST_CONCAT_TOKEN_(gtest_label_testnofatal_, __LINE__); \
    } \
} else \
GTEST_CONCAT_TOKEN_(gtest_label_testnofatal_, __LINE__): \
    fail("Expected: " #statement " doesn't generate new fatal " \
        "failures in the current thread.\n" \
        " Actual: it does.")
```

7.19.1.19 GTEST_TEST_NO_THROW_

```
#define GTEST_TEST_NO_THROW_(
    statement,
    fail )
```

Value:

```
GTEST_AMBIGUOUS_ELSE_BLOCKER_ \
if (::testing::internal::AlwaysTrue()) { \
    try { \
        GTEST_SUPPRESS_UNREACHABLE_CODE_WARNING_BELOW_(statement); \
    } \
    catch (...) { \
        goto GTEST_CONCAT_TOKEN_(gtest_label_testnothrow_, __LINE__); \
    } \
} else \
GTEST_CONCAT_TOKEN_(gtest_label_testnothrow_, __LINE__): \
    fail("Expected: " #statement " doesn't throw an exception.\n" \
        " Actual: it throws.")
```

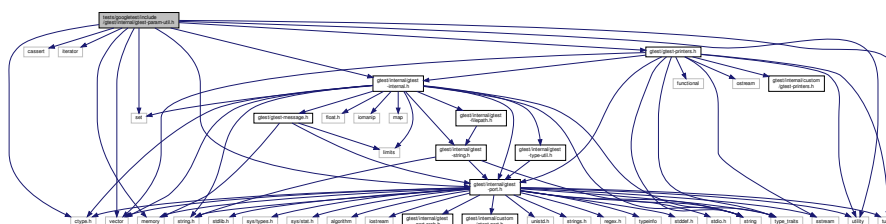
7.19.1.20 GTEST_TEST_THROW_

```
#define GTEST_TEST_THROW_(
    statement,
    expected_exception,
    fail )
```

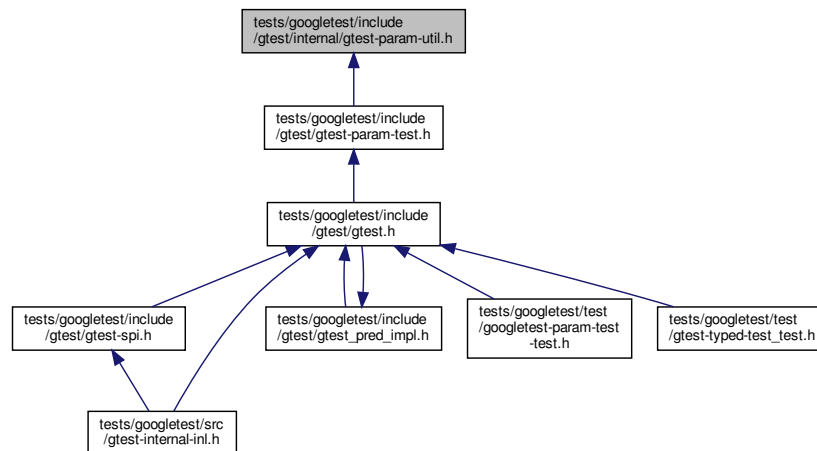
Value:

7.20 tests/googletest/include/gtest/internal/gtest-param-util.h File Reference

Include dependency graph for gtest-param-util.h:



This graph shows which files directly or indirectly include this file:



Classes

- struct [testing::TestParamInfo< ParamType >](#)
- struct [testing::PrintToStringParamName](#)
- class [testing::internal::ParamGeneratorInterface< T >](#)
- class [testing::internal::ParamGenerator< T >](#)
- class [testing::internal::ParamIteratorInterface< T >](#)
- class [testing::internal::ParamIterator< T >](#)
- class [testing::internal::ParamGeneratorInterface< T >](#)
- class [testing::internal::ParamGenerator< T >](#)
- class [testing::internal::RangeGenerator< T, IncrementT >](#)
- class [testing::internal::RangeGenerator< T, IncrementT >::Iterator](#)
- class [testing::internal::ValuesInIteratorRangeGenerator< T >](#)
- class [testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator](#)
- class [testing::internal::ParameterizedTestFactory< TestClass >](#)
- class [testing::internal::TestMetaFactoryBase< ParamType >](#)
- class [testing::internal::TestMetaFactory< TestSuite >](#)
- class [testing::internal::ParameterizedTestSuiteInfoBase](#)
- class [testing::internal::ParameterizedTestSuiteInfo< TestSuite >](#)
- struct [testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfo](#)
- struct [testing::internal::ParameterizedTestSuiteInfo< TestSuite >::InstantiationInfo](#)
- class [testing::internal::ParameterizedTestSuiteRegistry](#)
- class [testing::internal::ValueArray< Ts >](#)
- class [testing::internal::CartesianProductGenerator< T >](#)
- class [testing::internal::CartesianProductGenerator< T >::IteratorImpl< I >](#)
- class [testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >](#)
- class [testing::internal::CartesianProductHolder< Gen >](#)

Namespaces

- [testing](#)
- [testing::internal](#)

Typedefs

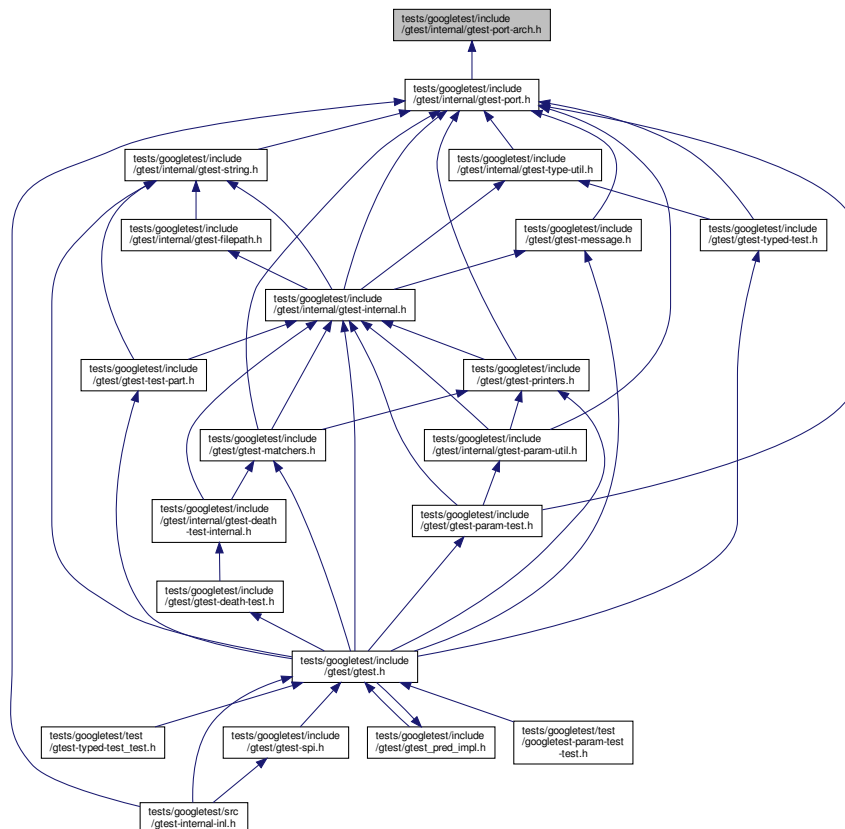
- `template<class TestCase >`
using `testing::internal::ParameterizedTestCaseInfo` = `ParameterizedTestSuiteInfo< TestCase >`

Functions

- `GTEST_API_ void testing::internal::ReportInvalidTestSuiteType` (`const char *test_suite_name`, `CodeLocation code_location`)
- `template<class ParamType >`
`std::string testing::internal::DefaultParamName` (`const TestParamInfo< ParamType > &info`)
- `template<typename T = int>`
`void testing::internal::TestNotEmpty` ()
- `template<typename T = int>`
`void testing::internal::TestNotEmpty` (`const T &`)
- `template<class Container >`
`internal::ParamGenerator< typename Container::value_type > testing::ValuesIn` (`const Container &container`)

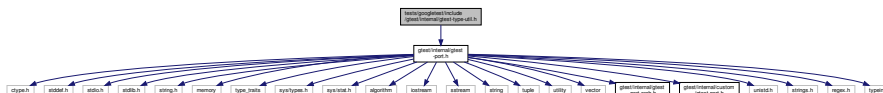
7.21 tests/gtest/include/gtest/internal/gtest-port-arch.h File Reference

This graph shows which files directly or indirectly include this file:



- `GTEST_API_ std::string testing::internal::StringStreamToString (::std::stringstream *stream)`

```
#include "gtest/internal/gtest-port.h"
Include dependency graph for gtest-type-util.h:
```



- testing
- testing::internal

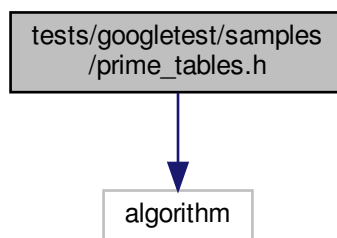
Functions

- `std::string testing::internal::CanonicalizeForStdLibVersioning` (`std::string s`)
- `template<typename T>`
`std::string testing::internal::GetTypeName` ()

7.24 tests/googletest/samples/prime_tables.h File Reference

```
#include <algorithm>
```

Include dependency graph for `prime_tables.h`:



Classes

- class `PrimeTable`
- class `OnTheFlyPrimeTable`
- class `PreCalculatedPrimeTable`

7.25 tests/googletest/samples/sample1.h File Reference

Functions

- `int Factorial` (`int n`)
- `bool IsPrime` (`int n`)

7.25.1 Function Documentation

7.25.1.1 Factorial()

```
int Factorial (  
    int n )
```

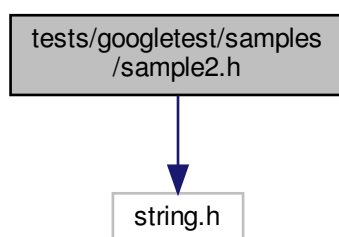
7.25.1.2 IsPrime()

```
bool IsPrime (  
    int n )
```

7.26 tests/googletest/samples/sample2.h File Reference

```
#include <string.h>
```

Include dependency graph for sample2.h:



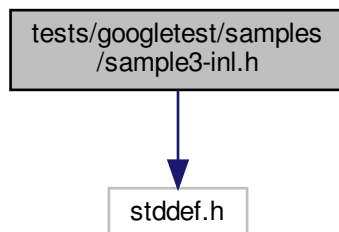
Classes

- class [MyString](#)

7.27 tests/googletest/samples/sample3-inl.h File Reference

```
#include <stddef.h>
```

Include dependency graph for sample3-inl.h:



Classes

- class [Queue< E >](#)
- class [QueueNode< E >](#)
- class [Queue< E >](#)

7.28 tests/googletest/samples/sample4.h File Reference

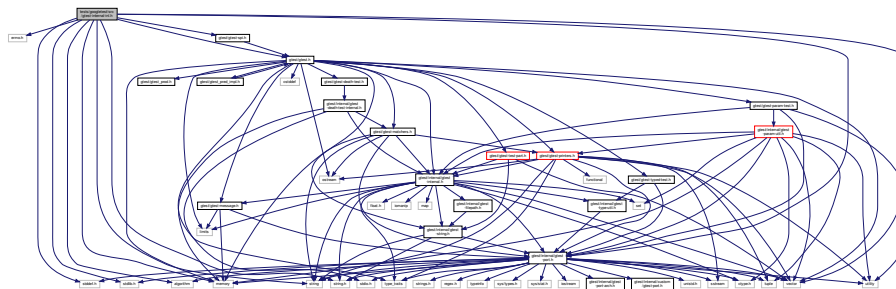
Classes

- class [Counter](#)

7.29 tests/googletest/src/gtest-internal-inl.h File Reference

```
#include <errno.h>
#include <stddef.h>
#include <stdlib.h>
#include <string.h>
#include <algorithm>
#include <memory>
#include <string>
#include <vector>
#include "gtest/internal/gtest-port.h"
#include "gtest/gtest.h"
#include "gtest/gtest-spi.h"
```

Include dependency graph for gtest-internal-inl.h:



Functions

- [GTEST_DISABLE_MSC_WARNINGS_PUSH_](#) (4251) namespace testing

7.29.1 Function Documentation

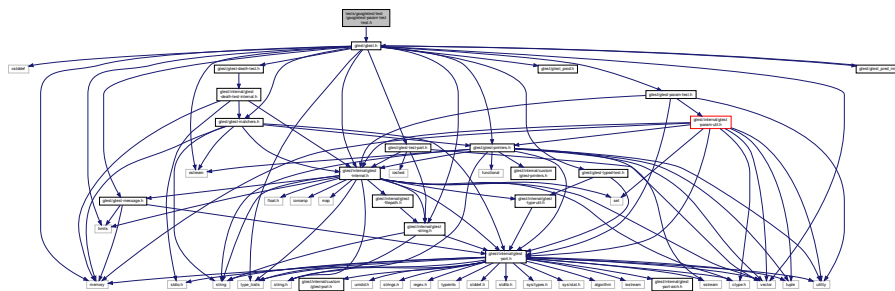
7.29.1.1 GTEST_DISABLE_MSC_WARNINGS_PUSH_()

```
GTEST_DISABLE_MSC_WARNINGS_PUSH_ (
    4251  )
```

7.30 tests/googletest/test/googletest-param-test-test.h File Reference

```
#include "gtest/gtest.h"
```

Include dependency graph for googletest-param-test-test.h:



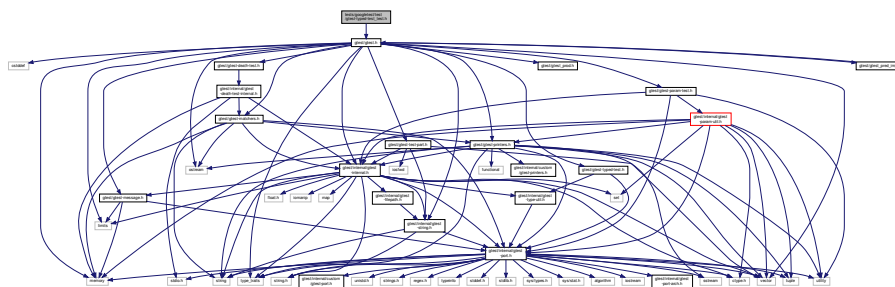
Classes

- class [ExternalInstantiationTest](#)
- class [InstantiationInMultipleTranslationUnitsTest](#)

7.31 tests/googletest/test/gtest-typed-test_test.h File Reference

```
#include "gtest/gtest.h"
```

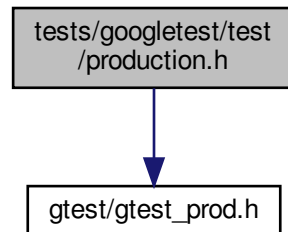
Include dependency graph for gtest-typed-test_test.h:



7.32 tests/googletest/test/production.h File Reference

```
#include "gtest/gtest_prod.h"
```

Include dependency graph for production.h:



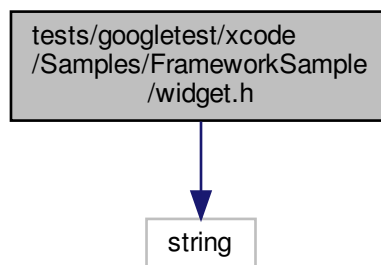
Classes

- class [PrivateCode](#)

7.33 tests/googletest/xcode/Samples/FrameworkSample/widget.h File Reference

```
#import <string>
```

Include dependency graph for widget.h:



Classes

- class [Widget](#)

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