

# Game of Life

1.0

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<b>1 Namespace Index</b>	<b>1</b>
1.1 Namespace List . . . . .	1
<b>2 Hierarchical Index</b>	<b>3</b>
2.1 Class Hierarchy . . . . .	3
<b>3 Class Index</b>	<b>9</b>
3.1 Class List . . . . .	9
<b>4 File Index</b>	<b>15</b>
4.1 File List . . . . .	15
<b>5 Namespace Documentation</b>	<b>17</b>
5.1 conway Namespace Reference . . . . .	17
5.1.1 Function Documentation . . . . .	17
5.1.1.1 divide_rows() . . . . .	17
5.1.1.2 evaluate_rules() . . . . .	18
5.1.1.3 update_boundary() . . . . .	18
5.2 matrix Namespace Reference . . . . .	18
5.2.1 Function Documentation . . . . .	18
5.2.1.1 count_neighbours() . . . . .	19
5.2.1.2 generate_matrix() . . . . .	19
5.2.1.3 read_file() . . . . .	19
5.2.1.4 read_matrix_str() . . . . .	20
5.2.1.5 write_matrix_str() . . . . .	20
5.3 proto2 Namespace Reference . . . . .	20
5.4 std Namespace Reference . . . . .	20
5.5 testing Namespace Reference . . . . .	21
5.5.1 Typedef Documentation . . . . .	24
5.5.1.1 TestCase . . . . .	24
5.5.1.2 TimeInMillis . . . . .	24
5.5.1.3 Types . . . . .	25
5.5.1.4 Unused . . . . .	25
5.5.2 Function Documentation . . . . .	25
5.5.2.1 AddGlobalTestEnvironment() . . . . .	25
5.5.2.2 AssertPred1Helper() . . . . .	25
5.5.2.3 AssertPred2Helper() . . . . .	25
5.5.2.4 AssertPred3Helper() . . . . .	26
5.5.2.5 AssertPred4Helper() . . . . .	26
5.5.2.6 AssertPred5Helper() . . . . .	26
5.5.2.7 Assign() . . . . .	27
5.5.2.8 Bool() . . . . .	27
5.5.2.9 ByMove() . . . . .	27
5.5.2.10 ByRef() . . . . .	27

5.5.2.11 Combine()	27
5.5.2.12 ConvertGenerator()	27
5.5.2.13 DeleteArg()	28
5.5.2.14 DoAll()	28
5.5.2.15 DoDefault()	28
5.5.2.16 DoubleLE()	28
5.5.2.17 FloatLE()	28
5.5.2.18 IgnoreResult()	28
5.5.2.19 InitGoogleMock() [1/3]	29
5.5.2.20 InitGoogleMock() [2/3]	29
5.5.2.21 InitGoogleMock() [3/3]	29
5.5.2.22 InitGoogleTest() [1/3]	29
5.5.2.23 InitGoogleTest() [2/3]	29
5.5.2.24 InitGoogleTest() [3/3]	29
5.5.2.25 Invoke() [1/2]	30
5.5.2.26 Invoke() [2/2]	30
5.5.2.27 InvokeArgument()	30
5.5.2.28 InvokeWithoutArgs() [1/2]	30
5.5.2.29 InvokeWithoutArgs() [2/2]	30
5.5.2.30 IsEmpty()	30
5.5.2.31 IsNotSubstring() [1/3]	31
5.5.2.32 IsNotSubstring() [2/3]	31
5.5.2.33 IsNotSubstring() [3/3]	31
5.5.2.34 IsSubstring() [1/3]	31
5.5.2.35 IsSubstring() [2/3]	31
5.5.2.36 IsSubstring() [3/3]	32
5.5.2.37 MakeAction()	32
5.5.2.38 MakePolymorphicAction()	32
5.5.2.39 MATCHER() [1/2]	32
5.5.2.40 MATCHER() [2/2]	32
5.5.2.41 operator<<()	32
5.5.2.42 PrintToString()	33
5.5.2.43 Range() [1/2]	33
5.5.2.44 Range() [2/2]	33
5.5.2.45 RegisterTest()	33
5.5.2.46 Return() [1/2]	33
5.5.2.47 Return() [2/2]	34
5.5.2.48 ReturnArg()	34
5.5.2.49 ReturnNew()	34
5.5.2.50 ReturnNull()	34
5.5.2.51 ReturnPointee()	34
5.5.2.52 ReturnRef() [1/2]	34

---

5.5.2.53 ReturnRef() [2/2] . . . . .	35
5.5.2.54 ReturnRefOfCopy() . . . . .	35
5.5.2.55 ReturnRoundRobin() [1/2] . . . . .	35
5.5.2.56 ReturnRoundRobin() [2/2] . . . . .	35
5.5.2.57 SaveArg() . . . . .	35
5.5.2.58 SaveArgPointee() . . . . .	35
5.5.2.59 SetArgPointee() . . . . .	36
5.5.2.60 SetArgReferee() . . . . .	36
5.5.2.61 SetArgumentPointee() . . . . .	36
5.5.2.62 SetArrayArgument() . . . . .	36
5.5.2.63 SetErrnoAndReturn() . . . . .	36
5.5.2.64 SrcDir() . . . . .	36
5.5.2.65 StaticAssertTypeEq() . . . . .	37
5.5.2.66 TempDir() . . . . .	37
5.5.2.67 Values() . . . . .	37
5.5.2.68 ValuesIn() [1/3] . . . . .	37
5.5.2.69 ValuesIn() [2/3] . . . . .	37
5.5.2.70 ValuesIn() [3/3] . . . . .	37
5.5.2.71 WithArg() . . . . .	38
5.5.2.72 WithArgs() . . . . .	38
5.5.2.73 WithoutArgs() . . . . .	38
5.5.3 Variable Documentation . . . . .	38
5.5.3.1 kMaxStackTraceDepth . . . . .	38
5.6 testing::gmock_matchers_test Namespace Reference . . . . .	38
5.6.1 Function Documentation . . . . .	39
5.6.1.1 Describe() . . . . .	39
5.6.1.2 DescribeNegation() . . . . .	39
5.6.1.3 Explain() . . . . .	39
5.6.1.4 GtestGreaterThan() . . . . .	39
5.7 testing::internal Namespace Reference . . . . .	39
5.7.1 Typedef Documentation . . . . .	50
5.7.1.1 BiggestInt . . . . .	50
5.7.1.2 call_result_t . . . . .	51
5.7.1.3 Double . . . . .	51
5.7.1.4 Float . . . . .	51
5.7.1.5 identity_t . . . . .	51
5.7.1.6 IndexSequenceFor . . . . .	51
5.7.1.7 is_callable_r . . . . .	51
5.7.1.8 IsContainer . . . . .	51
5.7.1.9 IsNotContainer . . . . .	52
5.7.1.10 LosslessArithmeticConvertible . . . . .	52
5.7.1.11 LosslessArithmeticConvertibleImpl . . . . .	52

5.7.1.12 MakeIndexSequence . . . . .	52
5.7.1.13 MutexLock . . . . .	52
5.7.1.14 ParameterizedTestCaseInfo . . . . .	52
5.7.1.15 SetUpTearDownSuiteFuncType . . . . .	53
5.7.1.16 SetUpTestSuiteFunc . . . . .	53
5.7.1.17 Strings . . . . .	53
5.7.1.18 TearDownTestSuiteFunc . . . . .	53
5.7.1.19 TimeInMillis . . . . .	53
5.7.1.20 TupleElement . . . . .	53
5.7.1.21 TypedTestCasePState . . . . .	53
5.7.1.22 Typeld . . . . .	54
5.7.1.23 void_t . . . . .	54
5.7.2 Enumeration Type Documentation . . . . .	54
5.7.2.1 GTestLogSeverity . . . . .	54
5.7.2.2 LogSeverity . . . . .	54
5.7.2.3 TypeKind . . . . .	54
5.7.3 Function Documentation . . . . .	55
5.7.3.1 AlwaysFalse() . . . . .	55
5.7.3.2 AlwaysTrue() . . . . .	55
5.7.3.3 AppendUserMessage() . . . . .	55
5.7.3.4 Apply() . . . . .	55
5.7.3.5 ApplyImpl() . . . . .	56
5.7.3.6 AppropriateResolution() . . . . .	56
5.7.3.7 ArrayAwareFind() . . . . .	56
5.7.3.8 ArrayEq() [1/3] . . . . .	56
5.7.3.9 ArrayEq() [2/3] . . . . .	56
5.7.3.10 ArrayEq() [3/3] . . . . .	57
5.7.3.11 as_const() . . . . .	57
5.7.3.12 Assert() [1/2] . . . . .	57
5.7.3.13 Assert() [2/2] . . . . .	57
5.7.3.14 Base64Unescape() . . . . .	57
5.7.3.15 BoolFromGTestEnv() . . . . .	57
5.7.3.16 CanonicalizeForStdLibVersioning() . . . . .	58
5.7.3.17 CaptureStderr() . . . . .	58
5.7.3.18 CaptureStdout() . . . . .	58
5.7.3.19 CheckedDowncastToActualType() . . . . .	58
5.7.3.20 CmpHelperEQ() . . . . .	58
5.7.3.21 CmpHelperEQFailure() . . . . .	58
5.7.3.22 CmpHelperFloatingPointEQ() . . . . .	59
5.7.3.23 CmpHelperOpFailure() . . . . .	59
5.7.3.24 CmpHelperSTRCASEEQ() . . . . .	59
5.7.3.25 CmpHelperSTRCASENE() . . . . .	59

5.7.3.26 CmpHelperSTREQ() [1/2] . . . . .	59
5.7.3.27 CmpHelperSTREQ() [2/2] . . . . .	60
5.7.3.28 CmpHelperSTRNE() [1/2] . . . . .	60
5.7.3.29 CmpHelperSTRNE() [2/2] . . . . .	60
5.7.3.30 CodePointToUtf8() . . . . .	60
5.7.3.31 ConvertIdentifierNameToWords() . . . . .	60
5.7.3.32 CopyArray() [1/3] . . . . .	60
5.7.3.33 CopyArray() [2/3] . . . . .	61
5.7.3.34 CopyArray() [3/3] . . . . .	61
5.7.3.35 CountIf() . . . . .	61
5.7.3.36 DefaultParamName() . . . . .	61
5.7.3.37 Delete() . . . . .	61
5.7.3.38 DoubleNearPredFormat() . . . . .	62
5.7.3.39 DownCast_() . . . . .	62
5.7.3.40 EndsWith() . . . . .	62
5.7.3.41 EqFailure() . . . . .	62
5.7.3.42 Equals() . . . . .	62
5.7.3.43 Expect() [1/2] . . . . .	63
5.7.3.44 Expect() [2/2] . . . . .	63
5.7.3.45 FlushInfoLog() . . . . .	63
5.7.3.46 ForEach() . . . . .	63
5.7.3.47 FormatCompilerIndependentFileLocation() . . . . .	63
5.7.3.48 FormatEpochTimeInMillisAsIso8601() . . . . .	63
5.7.3.49 FormatFileLocation() . . . . .	64
5.7.3.50 FormatForComparisonFailureMessage() . . . . .	64
5.7.3.51 FormatTimeInMillisAsSeconds() . . . . .	64
5.7.3.52 GenerateNames() . . . . .	64
5.7.3.53 GenerateNamesRecursively() [1/2] . . . . .	64
5.7.3.54 GenerateNamesRecursively() [2/2] . . . . .	64
5.7.3.55 GetArgs() . . . . .	65
5.7.3.56 GetBoolAssertionFailureMessage() . . . . .	65
5.7.3.57 GetCapturedStderr() . . . . .	65
5.7.3.58 GetCapturedStdout() . . . . .	65
5.7.3.59 GetCurrentOsStackTraceExceptTop() . . . . .	65
5.7.3.60 GetElementOr() . . . . .	65
5.7.3.61 GetFailureReporter() . . . . .	66
5.7.3.62 GetFileSize() . . . . .	66
5.7.3.63 GetIgnoredParameterizedTestSuites() . . . . .	66
5.7.3.64 GetNextRandomSeed() . . . . .	66
5.7.3.65 GetNotDefaultOrNull() . . . . .	66
5.7.3.66 GetPrefixUntilComma() . . . . .	66
5.7.3.67 GetRandomSeedFromFlag() . . . . .	66

---

5.7.3.68 GetRawPointer() [1/3] . . . . .	67
5.7.3.69 GetRawPointer() [2/3] . . . . .	67
5.7.3.70 GetRawPointer() [3/3] . . . . .	67
5.7.3.71 GetTestTypeId() . . . . .	67
5.7.3.72 GetThreadCount() . . . . .	67
5.7.3.73 GetTimeInMillis() . . . . .	67
5.7.3.74 GetTypeId() . . . . .	67
5.7.3.75 GetTypeName() . . . . .	68
5.7.3.76 GetUnitTestImpl() . . . . .	68
5.7.3.77 GetWithoutMatchers() . . . . .	68
5.7.3.78 GMOCK_DECLARE_KIND_() [1/16] . . . . .	68
5.7.3.79 GMOCK_DECLARE_KIND_() [2/16] . . . . .	68
5.7.3.80 GMOCK_DECLARE_KIND_() [3/16] . . . . .	68
5.7.3.81 GMOCK_DECLARE_KIND_() [4/16] . . . . .	68
5.7.3.82 GMOCK_DECLARE_KIND_() [5/16] . . . . .	69
5.7.3.83 GMOCK_DECLARE_KIND_() [6/16] . . . . .	69
5.7.3.84 GMOCK_DECLARE_KIND_() [7/16] . . . . .	69
5.7.3.85 GMOCK_DECLARE_KIND_() [8/16] . . . . .	69
5.7.3.86 GMOCK_DECLARE_KIND_() [9/16] . . . . .	69
5.7.3.87 GMOCK_DECLARE_KIND_() [10/16] . . . . .	69
5.7.3.88 GMOCK_DECLARE_KIND_() [11/16] . . . . .	70
5.7.3.89 GMOCK_DECLARE_KIND_() [12/16] . . . . .	70
5.7.3.90 GMOCK_DECLARE_KIND_() [13/16] . . . . .	70
5.7.3.91 GMOCK_DECLARE_KIND_() [14/16] . . . . .	70
5.7.3.92 GMOCK_DECLARE_KIND_() [15/16] . . . . .	70
5.7.3.93 GMOCK_DECLARE_KIND_() [16/16] . . . . .	70
5.7.3.94 GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_() [1/16] . . . . .	71
5.7.3.95 GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_() [2/16] . . . . .	71
5.7.3.96 GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_() [3/16] . . . . .	71
5.7.3.97 GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_() [4/16] . . . . .	71
5.7.3.98 GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_() [5/16] . . . . .	71
5.7.3.99 GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_() [6/16] . . . . .	71
5.7.3.100 GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_() [7/16] . . . . .	72
5.7.3.101 GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_() [8/16] . . . . .	72
5.7.3.102 GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_() [9/16] . . . . .	72
5.7.3.103 GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_() [10/16] . . . . .	72
5.7.3.104 GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_() [11/16] . . . . .	72
5.7.3.105 GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_() [12/16] . . . . .	72
5.7.3.106 GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_() [13/16] . . . . .	73
5.7.3.107 GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_() [14/16] . . . . .	73
5.7.3.108 GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_() [15/16] . . . . .	73
5.7.3.109 GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_() [16/16] . . . . .	73

---

5.7.3.110 GTEST_DISABLE_MSC_WARNINGS_POP_()	73
5.7.3.111 GTEST_DISABLE_MSC_WARNINGS_PUSH_()	73
5.7.3.112 GTEST_IMPL_FORMAT_C_STRING_AS_POINTER_() [1/4]	73
5.7.3.113 GTEST_IMPL_FORMAT_C_STRING_AS_POINTER_() [2/4]	74
5.7.3.114 GTEST_IMPL_FORMAT_C_STRING_AS_POINTER_() [3/4]	74
5.7.3.115 GTEST_IMPL_FORMAT_C_STRING_AS_POINTER_() [4/4]	74
5.7.3.116 GTEST_IMPL_FORMAT_C_STRING_AS_STRING_() [1/3]	74
5.7.3.117 GTEST_IMPL_FORMAT_C_STRING_AS_STRING_() [2/3]	74
5.7.3.118 GTEST_IMPL_FORMAT_C_STRING_AS_STRING_() [3/3]	74
5.7.3.119 GTEST_INTERNAL_DEPRECATED() [1/5]	75
5.7.3.120 GTEST_INTERNAL_DEPRECATED() [2/5]	75
5.7.3.121 GTEST_INTERNAL_DEPRECATED() [3/5]	75
5.7.3.122 GTEST_INTERNAL_DEPRECATED() [4/5]	75
5.7.3.123 GTEST_INTERNAL_DEPRECATED() [5/5]	75
5.7.3.124 HasStrictnessModifier()	75
5.7.3.125 IllegalDoDefault()	76
5.7.3.126 ImplicitCast_()	76
5.7.3.127 InsertSyntheticTestCase()	76
5.7.3.128 Int32FromEnvOrDie()	76
5.7.3.129 Int32FromGTestEnv()	76
5.7.3.130 Invalid()	76
5.7.3.131 InvokeArgument()	77
5.7.3.132 IsAINum()	77
5.7.3.133 IsAlpha()	77
5.7.3.134 IsContainerTest() [1/2]	77
5.7.3.135 IsContainerTest() [2/2]	77
5.7.3.136 IsDigit()	77
5.7.3.137 IsLower()	78
5.7.3.138 IsSpace()	78
5.7.3.139 IsTrue()	78
5.7.3.140 IsUpper()	78
5.7.3.141 IsXDigit() [1/4]	78
5.7.3.142 IsXDigit() [2/4]	78
5.7.3.143 IsXDigit() [3/4]	78
5.7.3.144 IsXDigit() [4/4]	79
5.7.3.145 JoinAsKeyValueTuple()	79
5.7.3.146 Log()	79
5.7.3.147 LogIsVisible()	79
5.7.3.148 LogToStderr()	79
5.7.3.149 MakeAction() [1/2]	79
5.7.3.150 MakeAction() [2/2]	80
5.7.3.151 MakeAndRegisterTestInfo()	80

5.7.3.152 operator"!=()	80
5.7.3.153 operator==( )	80
5.7.3.154 OutputFlagAlsoCheckEnvVar()	80
5.7.3.155 ParseFlag()	80
5.7.3.156 ParseGoogleTestFlagsOnly() [1/2]	81
5.7.3.157 ParseGoogleTestFlagsOnly() [2/2]	81
5.7.3.158 ParseInt32()	81
5.7.3.159 PrefixOf()	81
5.7.3.160 PrintBytesInObjectTo()	81
5.7.3.161 PrintRawArrayTo()	81
5.7.3.162 PrintSmartPointer() [1/2]	82
5.7.3.163 PrintSmartPointer() [2/2]	82
5.7.3.164 PrintStringTo()	82
5.7.3.165 PrintTo() [1/31]	82
5.7.3.166 PrintTo() [2/31]	82
5.7.3.167 PrintTo() [3/31]	82
5.7.3.168 PrintTo() [4/31]	83
5.7.3.169 PrintTo() [5/31]	83
5.7.3.170 PrintTo() [6/31]	83
5.7.3.171 PrintTo() [7/31]	83
5.7.3.172 PrintTo() [8/31]	83
5.7.3.173 PrintTo() [9/31]	83
5.7.3.174 PrintTo() [10/31]	84
5.7.3.175 PrintTo() [11/31]	84
5.7.3.176 PrintTo() [12/31]	84
5.7.3.177 PrintTo() [13/31]	84
5.7.3.178 PrintTo() [14/31]	84
5.7.3.179 PrintTo() [15/31]	84
5.7.3.180 PrintTo() [16/31]	85
5.7.3.181 PrintTo() [17/31]	85
5.7.3.182 PrintTo() [18/31]	85
5.7.3.183 PrintTo() [19/31]	85
5.7.3.184 PrintTo() [20/31]	85
5.7.3.185 PrintTo() [21/31]	85
5.7.3.186 PrintTo() [22/31]	86
5.7.3.187 PrintTo() [23/31]	86
5.7.3.188 PrintTo() [24/31]	86
5.7.3.189 PrintTo() [25/31]	86
5.7.3.190 PrintTo() [26/31]	86
5.7.3.191 PrintTo() [27/31]	86
5.7.3.192 PrintTo() [28/31]	87
5.7.3.193 PrintTo() [29/31]	87

---

5.7.3.194 PrintTo() [30/31] . . . . .	87
5.7.3.195 PrintTo() [31/31] . . . . .	87
5.7.3.196 PrintTupleTo() [1/2] . . . . .	87
5.7.3.197 PrintTupleTo() [2/2] . . . . .	87
5.7.3.198 PrintU16StringTo() . . . . .	88
5.7.3.199 PrintU32StringTo() . . . . .	88
5.7.3.200 PrintWithFallback() . . . . .	88
5.7.3.201 ReadEntireFile() . . . . .	88
5.7.3.202 RegisterTypeParameterizedTestSuite() . . . . .	88
5.7.3.203 RegisterTypeParameterizedTestSuiteInstantiation() . . . . .	88
5.7.3.204 ReportFailureInUnknownLocation() . . . . .	89
5.7.3.205 ReportInvalidTestSuiteType() . . . . .	89
5.7.3.206 ShouldRunTestOnShard() . . . . .	89
5.7.3.207 ShouldShard() . . . . .	89
5.7.3.208 ShouldUseColor() . . . . .	89
5.7.3.209 Shuffle() . . . . .	89
5.7.3.210 ShuffleRange() . . . . .	90
5.7.3.211 SkipPrefix() . . . . .	90
5.7.3.212 SplitString() . . . . .	90
5.7.3.213 StartsWith() . . . . .	90
5.7.3.214 StreamableToString() . . . . .	90
5.7.3.215 StrictnessModifierProbe() [1/4] . . . . .	90
5.7.3.216 StrictnessModifierProbe() [2/4] . . . . .	91
5.7.3.217 StrictnessModifierProbe() [3/4] . . . . .	91
5.7.3.218 StrictnessModifierProbe() [4/4] . . . . .	91
5.7.3.219 StringFromGTestEnv() . . . . .	91
5.7.3.220 StringStreamToString() . . . . .	91
5.7.3.221 StripTrailingSpaces() . . . . .	91
5.7.3.222 TersePrintPrefixToStrings() [1/2] . . . . .	92
5.7.3.223 TersePrintPrefixToStrings() [2/2] . . . . .	92
5.7.3.224 TestNotEmpty() [1/2] . . . . .	92
5.7.3.225 TestNotEmpty() [2/2] . . . . .	92
5.7.3.226 ToLower() . . . . .	92
5.7.3.227 ToUpper() . . . . .	92
5.7.3.228 UniversalPrint() . . . . .	93
5.7.3.229 UniversalPrintArray() [1/5] . . . . .	93
5.7.3.230 UniversalPrintArray() [2/5] . . . . .	93
5.7.3.231 UniversalPrintArray() [3/5] . . . . .	93
5.7.3.232 UniversalPrintArray() [4/5] . . . . .	93
5.7.3.233 UniversalPrintArray() [5/5] . . . . .	94
5.7.3.234 UniversalTersePrint() . . . . .	94
5.7.3.235 UniversalTersePrintTupleFieldsToStrings() . . . . .	94

---

5.7.3.236 ValidateSpec()	94
5.7.3.237 VoidifyPointer() [1/2]	94
5.7.3.238 VoidifyPointer() [2/2]	94
5.7.3.239 WideStringToUtf8()	95
5.7.3.240 WriteToShardStatusFileIfNeeded()	95
5.7.4 Variable Documentation	95
5.7.4.1 g_help_flag	95
5.7.4.2 kDeathTestStyleFlag	95
5.7.4.3 kDeathTestUseFork	95
5.7.4.4 kErrorVerbosity	95
5.7.4.5 kInfoVerbosity	95
5.7.4.6 kInternalRunDeathTestFlag	96
5.7.4.7 kMaxBiggestInt	96
5.7.4.8 kMaxRandomSeed	96
5.7.4.9 kStackTraceMarker	96
5.7.4.10 kTestTypeInGoogleTest	96
5.7.4.11 kWaringVerbosity	96
5.8 testing::internal::edit_distance Namespace Reference	96
5.8.1 Enumeration Type Documentation	97
5.8.1.1 EditType	97
5.8.2 Function Documentation	98
5.8.2.1 CalculateOptimalEdits() [1/2]	98
5.8.2.2 CalculateOptimalEdits() [2/2]	98
5.8.2.3 CreateUnifiedDiff()	98
5.9 testing::internal::internal_stream_operator_without_lexical_name_lookup Namespace Reference	98
5.9.1 Function Documentation	99
5.9.1.1 operator<<()	99
5.10 testing::internal::posix Namespace Reference	99
5.10.1 Typedef Documentation	99
5.10.1.1 StatStruct	99
5.10.2 Function Documentation	100
5.10.2.1 Abort()	100
5.10.2.2 ChDir()	100
5.10.2.3 Close()	100
5.10.2.4 DolsATTY()	100
5.10.2.5 FClose()	100
5.10.2.6 FOpen()	100
5.10.2.7 FileNo()	101
5.10.2.8 FOpen()	101
5.10.2.9 FReopen()	101
5.10.2.10 GetEnv()	101
5.10.2.11 IsATTY()	101

---

5.10.2.12 IsDir()	101
5.10.2.13 Read()	102
5.10.2.14 RmDir()	102
5.10.2.15 Stat()	102
5.10.2.16 StrCaseCmp()	102
5.10.2.17 StrDup()	102
5.10.2.18 StrError()	102
5.10.2.19 Write()	103
5.11 timing Namespace Reference	103
5.11.1 Function Documentation	103
5.11.1.1 get_split()	103
5.11.1.2 start_clock()	103
<b>6 Class Documentation</b>	<b>105</b>
6.1 testing::Action< F > Class Template Reference	105
6.2 testing::Action< R(Args...)> Class Template Reference	105
6.2.1 Member Typedef Documentation	106
6.2.1.1 ArgumentTuple	106
6.2.1.2 F	106
6.2.1.3 IsCompatibleFunctor	106
6.2.1.4 Result	107
6.2.2 Constructor & Destructor Documentation	107
6.2.2.1 Action() [1/4]	107
6.2.2.2 Action() [2/4]	107
6.2.2.3 Action() [3/4]	107
6.2.2.4 Action() [4/4]	107
6.2.3 Member Function Documentation	107
6.2.3.1 Init() [1/2]	108
6.2.3.2 Init() [2/2]	108
6.2.3.3 IsDoDefault()	108
6.2.3.4 operator OnceAction< F >()	108
6.2.3.5 Perform()	108
6.2.4 Friends And Related Function Documentation	108
6.2.4.1 Action	108
6.2.5 Member Data Documentation	109
6.2.5.1 fun_	109
6.3 testing::Action< R(Args...)>::ActionAdapter Struct Reference	109
6.3.1 Member Function Documentation	109
6.3.1.1 operator()()	109
6.3.2 Member Data Documentation	109
6.3.2.1 impl_	109
6.4 testing::internal::ActionImpl< F, Impl > Struct Template Reference	110

---

6.5 testing::internal::ActionImpl< R(Args...), Impl > Struct Template Reference . . . . .	110
6.5.1 Member Typedef Documentation . . . . .	111
6.5.1.1 args_type . . . . .	111
6.5.1.2 Base . . . . .	111
6.5.1.3 function_type . . . . .	111
6.5.2 Constructor & Destructor Documentation . . . . .	111
6.5.2.1 ActionImpl() [1/2] . . . . .	111
6.5.2.2 ActionImpl() [2/2] . . . . .	111
6.5.3 Member Function Documentation . . . . .	112
6.5.3.1 Apply() . . . . .	112
6.5.3.2 operator()() . . . . .	112
6.6 testing::ActionInterface< F > Class Template Reference . . . . .	112
6.6.1 Member Typedef Documentation . . . . .	113
6.6.1.1 ArgumentTuple . . . . .	113
6.6.1.2 Result . . . . .	113
6.6.2 Constructor & Destructor Documentation . . . . .	113
6.6.2.1 ActionInterface() [1/2] . . . . .	113
6.6.2.2 ~ActionInterface() . . . . .	114
6.6.2.3 ActionInterface() [2/2] . . . . .	114
6.6.3 Member Function Documentation . . . . .	114
6.6.3.1 operator=() . . . . .	114
6.6.3.2 Perform() . . . . .	114
6.7 testing::internal::AssertHelper Class Reference . . . . .	115
6.7.1 Constructor & Destructor Documentation . . . . .	115
6.7.1.1 AssertHelper() [1/2] . . . . .	116
6.7.1.2 ~AssertHelper() . . . . .	116
6.7.1.3 AssertHelper() [2/2] . . . . .	116
6.7.2 Member Function Documentation . . . . .	116
6.7.2.1 operator=() [1/2] . . . . .	116
6.7.2.2 operator=() [2/2] . . . . .	116
6.7.3 Member Data Documentation . . . . .	116
6.7.3.1 data_ . . . . .	116
6.8 testing::internal::AssertHelper::AssertHelperData Struct Reference . . . . .	117
6.8.1 Constructor & Destructor Documentation . . . . .	117
6.8.1.1 AssertHelperData() [1/2] . . . . .	117
6.8.1.2 AssertHelperData() [2/2] . . . . .	117
6.8.2 Member Function Documentation . . . . .	117
6.8.2.1 operator=() . . . . .	117
6.8.3 Member Data Documentation . . . . .	118
6.8.3.1 file . . . . .	118
6.8.3.2 line . . . . .	118
6.8.3.3 message . . . . .	118

---

6.8.3.4 type . . . . .	118
6.9 testing::internal::AssignAction< T1, T2 > Class Template Reference . . . . .	118
6.9.1 Constructor & Destructor Documentation . . . . .	119
6.9.1.1 AssignAction() . . . . .	119
6.9.2 Member Function Documentation . . . . .	119
6.9.2.1 Perform() . . . . .	119
6.9.3 Member Data Documentation . . . . .	119
6.9.3.1 ptr_ . . . . .	119
6.9.3.2 value_ . . . . .	119
6.10 testing::internal::TemplateSel< Tmpl >::Bind< T > Struct Template Reference . . . . .	120
6.10.1 Member Typedef Documentation . . . . .	120
6.10.1.1 type . . . . .	120
6.11 testing::internal::BuiltInDefaultValue< T > Class Template Reference . . . . .	120
6.11.1 Member Function Documentation . . . . .	120
6.11.1.1 Exists() . . . . .	120
6.11.1.2 Get() . . . . .	121
6.12 testing::internal::BuiltInDefaultValue< const T > Class Template Reference . . . . .	121
6.12.1 Member Function Documentation . . . . .	121
6.12.1.1 Exists() . . . . .	121
6.12.1.2 Get() . . . . .	121
6.13 testing::internal::BuiltInDefaultValue< T * > Class Template Reference . . . . .	121
6.13.1 Member Function Documentation . . . . .	122
6.13.1.1 Exists() . . . . .	122
6.13.1.2 Get() . . . . .	122
6.14 testing::internal::BuiltInDefaultValueGetter< T, kDefaultConstructible > Struct Template Reference . . . . .	122
6.14.1 Member Function Documentation . . . . .	122
6.14.1.1 Get() . . . . .	122
6.15 testing::internal::BuiltInDefaultValueGetter< T, false > Struct Template Reference . . . . .	123
6.15.1 Member Function Documentation . . . . .	123
6.15.1.1 Get() . . . . .	123
6.16 testing::internal::ByMoveWrapper< T > Struct Template Reference . . . . .	123
6.16.1 Constructor & Destructor Documentation . . . . .	123
6.16.1.1 ByMoveWrapper() . . . . .	123
6.16.2 Member Data Documentation . . . . .	124
6.16.2.1 payload . . . . .	124
6.17 testing::OnceAction< Result(Args...) >::StdFunctionAdaptor< Callable >::CallableTag Struct Reference . . . . .	124
6.18 testing::internal::CartesianProductGenerator< T > Class Template Reference . . . . .	124
6.18.1 Member Typedef Documentation . . . . .	125
6.18.1.1 Iterator . . . . .	126
6.18.1.2 ParamType . . . . .	126
6.18.2 Constructor & Destructor Documentation . . . . .	126

---

6.18.2.1 <code>CartesianProductGenerator()</code>	126
6.18.2.2 <code>~CartesianProductGenerator()</code>	126
6.18.3 Member Function Documentation	126
6.18.3.1 <code>Begin()</code>	126
6.18.3.2 <code>End()</code>	127
6.18.4 Member Data Documentation	127
6.18.4.1 <code>generators_</code>	127
6.19 <code>testing::internal::CartesianProductHolder&lt; Gen &gt;</code> Class Template Reference	127
6.19.1 Constructor & Destructor Documentation	127
6.19.1.1 <code>CartesianProductHolder()</code>	127
6.19.2 Member Function Documentation	128
6.19.2.1 <code>operator ParamGenerator&lt;::std::tuple&lt; T... &gt;&gt;()</code>	128
6.19.3 Member Data Documentation	128
6.19.3.1 <code>generators_</code>	128
6.20 <code>testing::internal::CodeLocation</code> Struct Reference	128
6.20.1 Constructor & Destructor Documentation	128
6.20.1.1 <code>CodeLocation()</code>	129
6.20.2 Member Data Documentation	129
6.20.2.1 <code>file</code>	129
6.20.2.2 <code>line</code>	129
6.21 <code>testing::internal::conjunction&lt;... &gt;</code> Struct Template Reference	129
6.22 <code>testing::internal::conjunction&lt; P1 &gt;</code> Struct Template Reference	130
6.23 <code>testing::internal::conjunction&lt; P1, Ps... &gt;</code> Struct Template Reference	131
6.24 <code>testing::internal::ConstCharPtr</code> Struct Reference	132
6.24.1 Constructor & Destructor Documentation	132
6.24.1.1 <code>ConstCharPtr()</code>	132
6.24.2 Member Function Documentation	133
6.24.2.1 <code>operator bool()</code>	133
6.24.3 Member Data Documentation	133
6.24.3.1 <code>value</code>	133
6.25 <code>testing::internal::ConstRef&lt; T &gt;</code> Struct Template Reference	133
6.25.1 Member Typedef Documentation	133
6.25.1.1 <code>type</code>	133
6.26 <code>testing::internal::ConstRef&lt; T &amp; &gt;</code> Struct Template Reference	134
6.26.1 Member Typedef Documentation	134
6.26.1.1 <code>type</code>	134
6.27 <code>testing::gmock_matchers_test::ContainerHelper</code> Struct Reference	134
6.27.1 Member Function Documentation	134
6.27.1.1 <code>MOCK_METHOD1()</code>	134
6.28 <code>testing::internal::ContainerPrinter</code> Struct Reference	135
6.28.1 Member Function Documentation	135
6.28.1.1 <code>PrintValue()</code>	135

---

6.29 ContainerTest< T > Class Template Reference . . . . .	135
6.30 testing::internal::ConvertibleToIntegerPrinter Struct Reference . . . . .	136
6.30.1 Member Function Documentation . . . . .	136
6.30.1.1 PrintValue() . . . . .	136
6.31 testing::internal::ConvertibleToStringViewPrinter Struct Reference . . . . .	137
6.32 Counter Class Reference . . . . .	137
6.32.1 Constructor & Destructor Documentation . . . . .	137
6.32.1.1 Counter() . . . . .	137
6.32.2 Member Function Documentation . . . . .	137
6.32.2.1 Decrement() . . . . .	137
6.32.2.2 Increment() . . . . .	138
6.32.2.3 Print() . . . . .	138
6.32.3 Member Data Documentation . . . . .	138
6.32.3.1 counter_ . . . . .	138
6.33 testing::internal::DefaultGlobalTestPartResultReporter Class Reference . . . . .	138
6.33.1 Constructor & Destructor Documentation . . . . .	139
6.33.1.1 DefaultGlobalTestPartResultReporter() [1/2] . . . . .	139
6.33.1.2 DefaultGlobalTestPartResultReporter() [2/2] . . . . .	139
6.33.2 Member Function Documentation . . . . .	140
6.33.2.1 operator=() . . . . .	140
6.33.2.2 ReportTestPartResult() . . . . .	140
6.33.3 Member Data Documentation . . . . .	140
6.33.3.1 unit_test_ . . . . .	140
6.34 testing::internal::DefaultNameGenerator Struct Reference . . . . .	140
6.34.1 Member Function Documentation . . . . .	140
6.34.1.1 GetName() . . . . .	141
6.35 testing::internal::DefaultPerThreadTestPartResultReporter Class Reference . . . . .	141
6.35.1 Constructor & Destructor Documentation . . . . .	142
6.35.1.1 DefaultPerThreadTestPartResultReporter() [1/2] . . . . .	142
6.35.1.2 DefaultPerThreadTestPartResultReporter() [2/2] . . . . .	142
6.35.2 Member Function Documentation . . . . .	142
6.35.2.1 operator=() . . . . .	142
6.35.2.2 ReportTestPartResult() . . . . .	143
6.35.3 Member Data Documentation . . . . .	143
6.35.3.1 unit_test_ . . . . .	143
6.36 testing::DefaultValue< T > Class Template Reference . . . . .	143
6.36.1 Member Typedef Documentation . . . . .	144
6.36.1.1 FactoryFunction . . . . .	144
6.36.2 Member Function Documentation . . . . .	144
6.36.2.1 Clear() . . . . .	144
6.36.2.2 Exists() . . . . .	144
6.36.2.3 Get() . . . . .	145

---

6.36.2.4 IsSet() . . . . .	145
6.36.2.5 Set() . . . . .	145
6.36.2.6 SetFactory() . . . . .	145
6.36.3 Member Data Documentation . . . . .	145
6.36.3.1 producer_ . . . . .	145
6.37 testing::DefaultValue< T & > Class Template Reference . . . . .	145
6.37.1 Member Function Documentation . . . . .	146
6.37.1.1 Clear() . . . . .	146
6.37.1.2 Exists() . . . . .	146
6.37.1.3 Get() . . . . .	146
6.37.1.4 IsSet() . . . . .	146
6.37.1.5 Set() . . . . .	147
6.37.2 Member Data Documentation . . . . .	147
6.37.2.1 address_ . . . . .	147
6.38 testing::DefaultValue< void > Class Reference . . . . .	147
6.38.1 Member Function Documentation . . . . .	147
6.38.1.1 Exists() . . . . .	147
6.38.1.2 Get() . . . . .	147
6.39 testing::internal::DeleteArgAction< k > Struct Template Reference . . . . .	148
6.39.1 Member Function Documentation . . . . .	148
6.39.1.1 operator()() . . . . .	148
6.40 testing::internal::disjunction<... > Struct Template Reference . . . . .	148
6.41 testing::internal::disjunction< P1 > Struct Template Reference . . . . .	149
6.42 testing::internal::disjunction< P1, Ps... > Struct Template Reference . . . . .	150
6.43 testing::internal::DoAllAction< Actions > Class Template Reference . . . . .	151
6.44 testing::internal::DoAllAction< FinalAction > Class Template Reference . . . . .	151
6.44.1 Constructor & Destructor Documentation . . . . .	152
6.44.1.1 DoAllAction() . . . . .	152
6.44.2 Member Function Documentation . . . . .	152
6.44.2.1 operator Action< R() . . . . .	152
6.44.2.2 operator OnceAction< R() . . . . .	152
6.44.3 Member Data Documentation . . . . .	152
6.44.3.1 final_action_ . . . . .	153
6.45 testing::internal::DoAllAction< InitialAction, OtherActions... > Class Template Reference . . . . .	153
6.45.1 Member Typedef Documentation . . . . .	154
6.45.1.1 Base . . . . .	154
6.45.1.2 InitialActionArgType . . . . .	154
6.45.2 Constructor & Destructor Documentation . . . . .	154
6.45.2.1 DoAllAction() . . . . .	155
6.45.3 Member Function Documentation . . . . .	155
6.45.3.1 operator Action< R() . . . . .	155
6.45.3.2 operator OnceAction< R() . . . . .	155

---

6.45.4 Member Data Documentation . . . . .	155
6.45.4.1 initial_action_ . . . . .	155
6.46 testing::internal::DoDefaultAction Class Reference . . . . .	156
6.46.1 Member Function Documentation . . . . .	156
6.46.1.1 operator Action< F >() . . . . .	156
6.47 testing::internal::DoubleSequence< plus_one, T, sizeofT > Struct Template Reference . . . . .	156
6.48 testing::internal::DoubleSequence< false, IndexSequence< I... >, sizeofT > Struct Template Reference . . . . .	156
6.48.1 Member Typedef Documentation . . . . .	156
6.48.1.1 type . . . . .	157
6.49 testing::internal::DoubleSequence< true, IndexSequence< I... >, sizeofT > Struct Template Reference . . . . .	157
6.49.1 Member Typedef Documentation . . . . .	157
6.49.1.1 type . . . . .	157
6.50 testing::internal::ElemFromList< N, T > Struct Template Reference . . . . .	157
6.50.1 Member Typedef Documentation . . . . .	158
6.50.1.1 type . . . . .	158
6.51 testing::internal::ElemFromListImpl< typename > Struct Template Reference . . . . .	158
6.52 testing::internal::ElemFromListImpl< IndexSequence< I... > > Struct Template Reference . . . . .	158
6.52.1 Member Function Documentation . . . . .	158
6.52.1.1 Apply() . . . . .	158
6.53 testing::EmptyTestEventListener Class Reference . . . . .	159
6.53.1 Member Function Documentation . . . . .	160
6.53.1.1 OnEnvironmentsSetUpEnd() . . . . .	160
6.53.1.2 OnEnvironmentsSetUpStart() . . . . .	160
6.53.1.3 OnEnvironmentsTearDownEnd() . . . . .	160
6.53.1.4 OnEnvironmentsTearDownStart() . . . . .	160
6.53.1.5 OnTestCaseEnd() . . . . .	160
6.53.1.6 OnTestCaseStart() . . . . .	161
6.53.1.7 OnTestDisabled() . . . . .	161
6.53.1.8 OnTestEnd() . . . . .	161
6.53.1.9 OnTestIterationEnd() . . . . .	161
6.53.1.10 OnTestIterationStart() . . . . .	161
6.53.1.11 OnTestPartResult() . . . . .	162
6.53.1.12 OnTestProgramEnd() . . . . .	162
6.53.1.13 OnTestProgramStart() . . . . .	162
6.53.1.14 OnTestStart() . . . . .	162
6.53.1.15 OnTestSuiteEnd() . . . . .	162
6.53.1.16 OnTestSuiteStart() . . . . .	163
6.54 testing::Environment Class Reference . . . . .	163
6.54.1 Constructor & Destructor Documentation . . . . .	163
6.54.1.1 ~Environment() . . . . .	163
6.54.2 Member Function Documentation . . . . .	163

---

6.54.2.1 SetUp() . . . . .	164
6.54.2.2 Setup() . . . . .	164
6.54.2.3 TearDown() . . . . .	164
6.55 testing::internal::EqHelper Class Reference . . . . .	164
6.55.1 Member Function Documentation . . . . .	164
6.55.1.1 Compare() [1/3] . . . . .	164
6.55.1.2 Compare() [2/3] . . . . .	165
6.55.1.3 Compare() [3/3] . . . . .	165
6.56 testing::internal::ExcessiveArg Struct Reference . . . . .	165
6.57 ExternalInstantiationTest Class Reference . . . . .	165
6.58 testing::DefaultValue< T >::FactoryValueProducer Class Reference . . . . .	166
6.58.1 Constructor & Destructor Documentation . . . . .	167
6.58.1.1 FactoryValueProducer() [1/2] . . . . .	167
6.58.1.2 FactoryValueProducer() [2/2] . . . . .	167
6.58.2 Member Function Documentation . . . . .	168
6.58.2.1 operator=() . . . . .	168
6.58.2.2 Produce() . . . . .	168
6.58.3 Member Data Documentation . . . . .	168
6.58.3.1 factory_ . . . . .	168
6.59 testing::internal::FailureReporterInterface Class Reference . . . . .	168
6.59.1 Member Enumeration Documentation . . . . .	168
6.59.1.1 FailureType . . . . .	168
6.59.2 Constructor & Destructor Documentation . . . . .	169
6.59.2.1 ~FailureReporterInterface() . . . . .	169
6.59.3 Member Function Documentation . . . . .	169
6.59.3.1 ReportFailure() . . . . .	169
6.60 testing::internal::faketype Struct Reference . . . . .	169
6.61 testing::internal::FallbackPrinter Struct Reference . . . . .	169
6.61.1 Member Function Documentation . . . . .	170
6.61.1.1 PrintValue() . . . . .	170
6.62 FieldHelper Class Reference . . . . .	170
6.62.1 Constructor & Destructor Documentation . . . . .	170
6.62.1.1 FieldHelper() . . . . .	170
6.62.2 Member Function Documentation . . . . .	171
6.62.2.1 field() . . . . .	171
6.62.3 Member Data Documentation . . . . .	171
6.62.3.1 field_ . . . . .	171
6.63 testing::internal::FindFirstPrinter< T, E, Printer, Printers > Struct Template Reference . . . . .	171
6.64 testing::internal::FindFirstPrinter< T, decltype(Printer::PrintValue(std::declval< const T & >()), nullptr), Printer, Printers... > Struct Template Reference . . . . .	171
6.64.1 Member Typedef Documentation . . . . .	171
6.64.1.1 type . . . . .	172

---

6.65 testing::DefaultValue< T >::FixedValueProducer Class Reference . . . . .	172
6.65.1 Constructor & Destructor Documentation . . . . .	173
6.65.1.1 FixedValueProducer() [1/2] . . . . .	173
6.65.1.2 FixedValueProducer() [2/2] . . . . .	173
6.65.2 Member Function Documentation . . . . .	173
6.65.2.1 operator=() . . . . .	173
6.65.2.2 Produce() . . . . .	173
6.65.3 Member Data Documentation . . . . .	174
6.65.3.1 value_ . . . . .	174
6.66 testing::internal::FlatTuple< T > Class Template Reference . . . . .	174
6.66.1 Member Typedef Documentation . . . . .	175
6.66.1.1 Indices . . . . .	175
6.66.2 Constructor & Destructor Documentation . . . . .	175
6.66.2.1 FlatTuple() [1/2] . . . . .	175
6.66.2.2 FlatTuple() [2/2] . . . . .	175
6.67 testing::internal::FlatTupleBase< Derived, Idx > Struct Template Reference . . . . .	175
6.68 testing::internal::FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > > Struct Template Reference . . . . .	176
6.68.1 Member Typedef Documentation . . . . .	177
6.68.1.1 Indices . . . . .	177
6.68.2 Constructor & Destructor Documentation . . . . .	177
6.68.2.1 FlatTupleBase() [1/2] . . . . .	177
6.68.2.2 FlatTupleBase() [2/2] . . . . .	177
6.68.3 Member Function Documentation . . . . .	177
6.68.3.1 Apply() [1/2] . . . . .	178
6.68.3.2 Apply() [2/2] . . . . .	178
6.68.3.3 Get() [1/2] . . . . .	178
6.68.3.4 Get() [2/2] . . . . .	178
6.69 testing::internal::FlatTupleConstructTag Struct Reference . . . . .	178
6.70 testing::internal::FlatTupleElemBase< Derived, I > Struct Template Reference . . . . .	179
6.71 testing::internal::FlatTupleElemBase< FlatTuple< T... >, I > Struct Template Reference . . . . .	179
6.71.1 Member Typedef Documentation . . . . .	180
6.71.1.1 value_type . . . . .	180
6.71.2 Constructor & Destructor Documentation . . . . .	180
6.71.2.1 FlatTupleElemBase() [1/2] . . . . .	180
6.71.2.2 FlatTupleElemBase() [2/2] . . . . .	180
6.71.3 Member Data Documentation . . . . .	180
6.71.3.1 value . . . . .	180
6.72 testing::internal::FloatingPoint< RawType > Class Template Reference . . . . .	181
6.72.1 Member Typedef Documentation . . . . .	182
6.72.1.1 Bits . . . . .	182
6.72.2 Constructor & Destructor Documentation . . . . .	182

---

6.72.2.1 FloatingPoint() . . . . .	182
6.72.3 Member Function Documentation . . . . .	183
6.72.3.1 AlmostEquals() . . . . .	183
6.72.3.2 bits() . . . . .	183
6.72.3.3 DistanceBetweenSignAndMagnitudeNumbers() . . . . .	183
6.72.3.4 exponent_bits() . . . . .	183
6.72.3.5 fraction_bits() . . . . .	183
6.72.3.6 Infinity() . . . . .	183
6.72.3.7 is_nan() . . . . .	184
6.72.3.8 Max() [1/3] . . . . .	184
6.72.3.9 Max() [2/3] . . . . .	184
6.72.3.10 Max() [3/3] . . . . .	184
6.72.3.11 ReinterpretBits() . . . . .	184
6.72.3.12 sign_bit() . . . . .	184
6.72.3.13 SignAndMagnitudeToBiased() . . . . .	184
6.72.4 Member Data Documentation . . . . .	185
6.72.4.1 kBitCount . . . . .	185
6.72.4.2 kExponentBitCount . . . . .	185
6.72.4.3 kExponentBitMask . . . . .	185
6.72.4.4 kFractionBitCount . . . . .	185
6.72.4.5 kFractionBitMask . . . . .	185
6.72.4.6 kMaxUlps . . . . .	186
6.72.4.7 kSignBitMask . . . . .	186
6.72.4.8 u_ . . . . .	186
6.73 testing::internal::FloatingPoint< RawType >::FloatingPointUnion Union Reference . . . . .	186
6.73.1 Member Data Documentation . . . . .	187
6.73.1.1 bits_ . . . . .	187
6.73.1.2 value_ . . . . .	187
6.74 testing::internal::FormatForComparison< ToPrint, OtherOperand > Class Template Reference . . . . .	187
6.74.1 Member Function Documentation . . . . .	187
6.74.1.1 Format() . . . . .	187
6.75 testing::internal::FormatForComparison< ToPrint[N], OtherOperand > Class Template Reference . . . . .	188
6.75.1 Member Function Documentation . . . . .	188
6.75.1.1 Format() . . . . .	188
6.76 testing::internal::Function< T > Struct Template Reference . . . . .	188
6.77 testing::internal::Function< R(Args...) > Struct Template Reference . . . . .	188
6.77.1 Member Typedef Documentation . . . . .	189
6.77.1.1 Arg . . . . .	189
6.77.1.2 ArgumentMatcherTuple . . . . .	189
6.77.1.3 ArgumentTuple . . . . .	189
6.77.1.4 MakeResultIgnoredValue . . . . .	189
6.77.1.5 MakeResultVoid . . . . .	189

---

6.77.1.6 Result . . . . .	190
6.77.2 Member Data Documentation . . . . .	190
6.77.2.1 ArgumentCount . . . . .	190
6.78 testing::internal::FunctionPointerPrinter Struct Reference . . . . .	190
6.78.1 Member Function Documentation . . . . .	190
6.78.1.1 PrintValue() . . . . .	190
6.79 testing::internal::GenerateTypeList< T > Struct Template Reference . . . . .	191
6.79.1 Member Typedef Documentation . . . . .	191
6.79.1.1 proxy . . . . .	191
6.79.1.2 type . . . . .	191
6.80 testing::gmock_matchers_test::GreaterThanMatcher< T > Class Template Reference . . . . .	192
6.80.1 Constructor & Destructor Documentation . . . . .	193
6.80.1.1 GreaterThanMatcher() . . . . .	193
6.80.2 Member Function Documentation . . . . .	193
6.80.2.1 DescribeNegationTo() . . . . .	193
6.80.2.2 DescribeTo() . . . . .	193
6.80.2.3 MatchAndExplain() . . . . .	193
6.80.3 Member Data Documentation . . . . .	193
6.80.3.1 impl_ . . . . .	194
6.81 testing::internal::GTestFlagSaver Class Reference . . . . .	194
6.81.1 Constructor & Destructor Documentation . . . . .	194
6.81.1.1 GTestFlagSaver() . . . . .	195
6.81.1.2 ~GTestFlagSaver() . . . . .	195
6.81.2 Member Data Documentation . . . . .	195
6.81.2.1 also_run_disabled_tests_ . . . . .	195
6.81.2.2 break_on_failure_ . . . . .	195
6.81.2.3 brief_ . . . . .	195
6.81.2.4 catch_exceptions_ . . . . .	195
6.81.2.5 color_ . . . . .	195
6.81.2.6 death_test_style_ . . . . .	196
6.81.2.7 death_test_use_fork_ . . . . .	196
6.81.2.8 fail_fast_ . . . . .	196
6.81.2.9 filter_ . . . . .	196
6.81.2.10 internal_run_death_test_ . . . . .	196
6.81.2.11 list_tests_ . . . . .	196
6.81.2.12 output_ . . . . .	196
6.81.2.13 print_time_ . . . . .	196
6.81.2.14 print_utf8_ . . . . .	197
6.81.2.15 random_seed_ . . . . .	197
6.81.2.16 recreate_environments_when_repeating_ . . . . .	197
6.81.2.17 repeat_ . . . . .	197
6.81.2.18 shuffle_ . . . . .	197

---

6.81.2.19 stack_trace_depth_ . . . . .	197
6.81.2.20 stream_result_to_ . . . . .	197
6.81.2.21 throw_on_failure_ . . . . .	198
6.82 testing::gmock_matchers_test::GtestGreaterThanOrMatcher< T > Struct Template Reference . . . . .	198
6.82.1 Member Typedef Documentation . . . . .	198
6.82.1.1 is_gtest_matcher . . . . .	198
6.82.2 Member Function Documentation . . . . .	198
6.82.2.1 DescribeNegationTo() . . . . .	199
6.82.2.2 DescribeTo() . . . . .	199
6.82.2.3 MatchAndExplain() . . . . .	199
6.82.3 Member Data Documentation . . . . .	199
6.82.3.1 rhs . . . . .	199
6.83 testing::internal::GTestLog Class Reference . . . . .	199
6.83.1 Constructor & Destructor Documentation . . . . .	200
6.83.1.1 GTestLog() [1/2] . . . . .	200
6.83.1.2 ~GTestLog() . . . . .	200
6.83.1.3 GTestLog() [2/2] . . . . .	200
6.83.2 Member Function Documentation . . . . .	200
6.83.2.1 GetStream() . . . . .	200
6.83.2.2 operator=(()) . . . . .	201
6.83.3 Member Data Documentation . . . . .	201
6.83.3.1 severity_ . . . . .	201
6.84 testing::gmock_matchers_test::GTestMatcherTestP Class Reference . . . . .	201
6.84.1 Member Function Documentation . . . . .	202
6.84.1.1 GreaterThan() . . . . .	202
6.84.2 Member Data Documentation . . . . .	202
6.84.2.1 use_gtest_matcher_ . . . . .	203
6.85 testing::internal::GTestMutexLock Class Reference . . . . .	203
6.85.1 Constructor & Destructor Documentation . . . . .	203
6.85.1.1 GTestMutexLock() . . . . .	203
6.86 testing::internal::GTestNonCopyable Class Reference . . . . .	203
6.86.1 Constructor & Destructor Documentation . . . . .	203
6.86.1.1 GTestNonCopyable() [1/2] . . . . .	204
6.86.1.2 GTestNonCopyable() [2/2] . . . . .	204
6.86.1.3 ~GTestNonCopyable() . . . . .	204
6.86.2 Member Function Documentation . . . . .	204
6.86.2.1 operator=(()) . . . . .	204
6.87 testing::internal::HasDebugStringAndShortDebugString< T > Class Template Reference . . . . .	204
6.87.1 Member Typedef Documentation . . . . .	205
6.87.1.1 HasDebugStringType . . . . .	205
6.87.1.2 HasShortDebugStringType . . . . .	205
6.87.2 Member Function Documentation . . . . .	205

---

6.87.2.1 CheckDebugString() [1/2] . . . . .	205
6.87.2.2 CheckDebugString() [2/2] . . . . .	206
6.87.2.3 CheckShortDebugString() [1/2] . . . . .	206
6.87.2.4 CheckShortDebugString() [2/2] . . . . .	206
6.87.3 Member Data Documentation . . . . .	206
6.87.3.1 value . . . . .	206
6.88 testing::internal::ImplBase< Impl >::Holder Struct Reference . . . . .	206
6.88.1 Member Function Documentation . . . . .	207
6.88.1.1 operator const Impl &() . . . . .	207
6.88.2 Member Data Documentation . . . . .	207
6.88.2.1 ptr . . . . .	207
6.89 testing::internal::Ignore< size_t > Struct Template Reference . . . . .	207
6.89.1 Constructor & Destructor Documentation . . . . .	207
6.89.1.1 Ignore() . . . . .	208
6.90 testing::Action< R(Args...) >::IgnoreArgs< FunctionImpl > Struct Template Reference . . . . .	208
6.90.1 Member Function Documentation . . . . .	208
6.90.1.1 operator()() . . . . .	208
6.90.2 Member Data Documentation . . . . .	208
6.90.2.1 function_impl . . . . .	208
6.91 testing::internal::IgnoredValue Class Reference . . . . .	209
6.91.1 Constructor & Destructor Documentation . . . . .	209
6.91.1.1 IgnoredValue() . . . . .	209
6.92 testing::OnceAction< Result(Args...) >::IgnoreIncomingArguments< Callable > Struct Template Reference . . . . .	209
6.92.1 Member Function Documentation . . . . .	209
6.92.1.1 operator()() . . . . .	210
6.92.2 Member Data Documentation . . . . .	210
6.92.2.1 callable . . . . .	210
6.93 testing::internal::IgnoreResultAction< A > Class Template Reference . . . . .	210
6.93.1 Constructor & Destructor Documentation . . . . .	211
6.93.1.1 IgnoreResultAction() . . . . .	211
6.93.2 Member Function Documentation . . . . .	211
6.93.2.1 operator Action< F >() . . . . .	211
6.93.3 Member Data Documentation . . . . .	211
6.93.3.1 action_ . . . . .	211
6.94 testing::internal::IgnoreResultAction< A >::Impl< F > Class Template Reference . . . . .	212
6.94.1 Member Typedef Documentation . . . . .	213
6.94.1.1 ArgumentTuple . . . . .	213
6.94.1.2 OriginalFunction . . . . .	213
6.94.1.3 Result . . . . .	213
6.94.2 Constructor & Destructor Documentation . . . . .	213
6.94.2.1 Impl() . . . . .	213

---

6.94.3 Member Function Documentation . . . . .	213
6.94.3.1 Perform() . . . . .	214
6.94.4 Member Data Documentation . . . . .	214
6.94.4.1 action_ . . . . .	214
6.95 testing::internal::ReturnAction< R >::Impl< U > Class Template Reference . . . . .	214
6.95.1 Constructor & Destructor Documentation . . . . .	214
6.95.1.1 Impl() [1/2] . . . . .	215
6.95.1.2 Impl() [2/2] . . . . .	215
6.95.2 Member Function Documentation . . . . .	215
6.95.2.1 operator()() [1/2] . . . . .	215
6.95.2.2 operator()() [2/2] . . . . .	215
6.95.3 Member Data Documentation . . . . .	215
6.95.3.1 state_ . . . . .	215
6.96 testing::internal::ReturnRefAction< T >::Impl< F > Class Template Reference . . . . .	216
6.96.1 Member Typedef Documentation . . . . .	217
6.96.1.1 ArgumentTuple . . . . .	217
6.96.1.2 Result . . . . .	217
6.96.2 Constructor & Destructor Documentation . . . . .	217
6.96.2.1 Impl() . . . . .	217
6.96.3 Member Function Documentation . . . . .	217
6.96.3.1 Perform() . . . . .	217
6.96.4 Member Data Documentation . . . . .	217
6.96.4.1 ref_ . . . . .	218
6.97 testing::internal::ReturnRefOfCopyAction< T >::Impl< F > Class Template Reference . . . . .	218
6.97.1 Member Typedef Documentation . . . . .	219
6.97.1.1 ArgumentTuple . . . . .	219
6.97.1.2 Result . . . . .	219
6.97.2 Constructor & Destructor Documentation . . . . .	219
6.97.2.1 Impl() . . . . .	219
6.97.3 Member Function Documentation . . . . .	220
6.97.3.1 Perform() . . . . .	220
6.97.4 Member Data Documentation . . . . .	220
6.97.4.1 value_ . . . . .	220
6.98 testing::internal::ImplBase< Impl > Struct Template Reference . . . . .	220
6.98.1 Member Typedef Documentation . . . . .	220
6.98.1.1 type . . . . .	221
6.99 testing::internal::IndexSequence< Is > Struct Template Reference . . . . .	221
6.99.1 Member Typedef Documentation . . . . .	221
6.99.1.1 type . . . . .	221
6.100 testing::internal::ParameterizedTestSuiteInfo< TestSuite >::InstantiationInfo Struct Reference . . . . .	221
6.100.1 Constructor & Destructor Documentation . . . . .	222
6.100.1.1 InstantiationInfo() . . . . .	222

---

6.100.2 Member Data Documentation . . . . .	222
6.100.2.1 file . . . . .	222
6.100.2.2 generator . . . . .	222
6.100.2.3 line . . . . .	222
6.100.2.4 name . . . . .	222
6.100.2.5 name_func . . . . .	223
6.101 InstantiationInMultipleTranslationUnitsTest Class Reference . . . . .	223
6.102 Interface Class Reference . . . . .	224
6.102.1 Constructor & Destructor Documentation . . . . .	225
6.102.1.1 ~Interface() . . . . .	225
6.102.2 Member Function Documentation . . . . .	225
6.102.2.1 IntFromString() . . . . .	225
6.102.2.2 IntRefFromString() . . . . .	225
6.102.2.3 StringFromString() . . . . .	225
6.102.2.4 VoidFromDouble() . . . . .	226
6.102.2.5 VoidFromFloat() . . . . .	226
6.102.2.6 VoidFromFunc() . . . . .	226
6.102.2.7 VoidFromIntRef() . . . . .	226
6.102.2.8 VoidFromString() . . . . .	226
6.102.2.9 VoidFromVector() . . . . .	226
6.103 testing::internal::InvokeArgumentAction< index, Params > Struct Template Reference . . . . .	227
6.103.1 Member Function Documentation . . . . .	227
6.103.1.1 operator()() . . . . .	227
6.103.2 Member Data Documentation . . . . .	227
6.103.2.1 params . . . . .	227
6.104 InvokeHelper Class Reference . . . . .	228
6.104.1 Member Function Documentation . . . . .	228
6.104.1.1 StaticBoolFromString() . . . . .	228
6.104.1.2 StaticIntFromString() . . . . .	228
6.104.1.3 StaticVoidFromString() . . . . .	228
6.104.1.4 StaticVoidFromVoid() . . . . .	228
6.104.1.5 VoidFromString() . . . . .	229
6.104.1.6 VoidFromVoid() . . . . .	229
6.105 testing::internal::InvokeMethodAction< Class, MethodPtr > Struct Template Reference . . . . .	229
6.105.1 Member Function Documentation . . . . .	229
6.105.1.1 operator()() . . . . .	229
6.105.2 Member Data Documentation . . . . .	229
6.105.2.1 method_ptr . . . . .	230
6.105.2.2 obj_ptr . . . . .	230
6.106 testing::internal::InvokeMethodWithoutArgsAction< Class, MethodPtr > Struct Template Reference	230
6.106.1 Member Typedef Documentation . . . . .	230
6.106.1.1 ReturnType . . . . .	230

---

6.106.2 Member Function Documentation . . . . .	231
6.106.2.1 operator()() . . . . .	231
6.106.3 Member Data Documentation . . . . .	231
6.106.3.1 method_ptr . . . . .	231
6.106.3.2 obj_ptr . . . . .	231
6.107 testing::internal::InvokeWithoutArgsAction< FunctionImpl > Struct Template Reference . . . . .	231
6.107.1 Member Function Documentation . . . . .	232
6.107.1.1 operator()() . . . . .	232
6.107.2 Member Data Documentation . . . . .	232
6.107.2.1 function_impl . . . . .	232
6.108 testing::internal::is_callable_r_Impl< Void, R, F, Args > Struct Template Reference . . . . .	232
6.109 testing::internal::is_callable_r_Impl< void_t< call_result_t< F, Args... > >, R, F, Args... > Struct Template Reference . . . . .	233
6.110 testing::internal::is_implicitly_convertible< From, To > Struct Template Reference . . . . .	234
6.110.1 Member Typedef Documentation . . . . .	234
6.110.1.1 type . . . . .	235
6.110.2 Member Function Documentation . . . . .	235
6.110.2.1 Accept() . . . . .	235
6.110.2.2 Make() . . . . .	235
6.110.2.3 TestImplicitConversion() [1/2] . . . . .	235
6.110.2.4 TestImplicitConversion() [2/2] . . . . .	235
6.110.3 Member Data Documentation . . . . .	235
6.110.3.1 value . . . . .	236
6.111 testing::internal::is_proxy_type_list< typename > Struct Template Reference . . . . .	236
6.112 testing::internal::is_proxy_type_list< ProxyTypeList< Ts... > > Struct Template Reference . . . . .	237
6.113 testing::internal::IsEmptyMatcher Class Reference . . . . .	237
6.113.1 Member Function Documentation . . . . .	238
6.113.1.1 DescribeNegationTo() . . . . .	238
6.113.1.2 DescribeTo() . . . . .	238
6.113.1.3 MatchAndExplain() [1/2] . . . . .	238
6.113.1.4 MatchAndExplain() [2/2] . . . . .	238
6.114 testing::internal::IsHashTable< T > Struct Template Reference . . . . .	239
6.114.1 Member Function Documentation . . . . .	239
6.114.1.1 test() [1/3] . . . . .	239
6.114.1.2 test() [2/3] . . . . .	239
6.114.1.3 test() [3/3] . . . . .	239
6.114.2 Member Data Documentation . . . . .	240
6.114.2.1 value . . . . .	240
6.115 testing::internal::IsRecursiveContainer< C > Struct Template Reference . . . . .	240
6.116 testing::internal::IsRecursiveContainerImpl< C, bool > Struct Template Reference . . . . .	241
6.117 testing::internal::IsRecursiveContainerImpl< C, false > Struct Template Reference . . . . .	241
6.118 testing::internal::IsRecursiveContainerImpl< C, true > Struct Template Reference . . . . .	242

---

6.118.1 Member Typedef Documentation . . . . .	242
6.118.1.1 type . . . . .	242
6.118.1.2 value_type . . . . .	242
6.119 testing::internal::ParamGeneratorConverter< From, To >::Iterator Class Reference . . . . .	243
6.119.1 Constructor & Destructor Documentation . . . . .	244
6.119.1.1 Iterator() [1/2] . . . . .	244
6.119.1.2 ~Iterator() . . . . .	244
6.119.1.3 Iterator() [2/2] . . . . .	244
6.119.2 Member Function Documentation . . . . .	244
6.119.2.1 Advance() . . . . .	244
6.119.2.2 BaseGenerator() . . . . .	245
6.119.2.3 Clone() . . . . .	245
6.119.2.4 Current() . . . . .	245
6.119.2.5 Equals() . . . . .	245
6.119.3 Member Data Documentation . . . . .	245
6.119.3.1 base_ . . . . .	245
6.119.3.2 end_ . . . . .	246
6.119.3.3 it_ . . . . .	246
6.119.3.4 value_ . . . . .	246
6.120 testing::internal::RangeGenerator< T, IncrementT >::Iterator Class Reference . . . . .	246
6.120.1 Constructor & Destructor Documentation . . . . .	247
6.120.1.1 Iterator() [1/2] . . . . .	248
6.120.1.2 ~Iterator() . . . . .	248
6.120.1.3 Iterator() [2/2] . . . . .	248
6.120.2 Member Function Documentation . . . . .	248
6.120.2.1 Advance() . . . . .	248
6.120.2.2 BaseGenerator() . . . . .	248
6.120.2.3 Clone() . . . . .	249
6.120.2.4 Current() . . . . .	249
6.120.2.5 Equals() . . . . .	249
6.120.2.6 operator=() . . . . .	249
6.120.3 Member Data Documentation . . . . .	249
6.120.3.1 base_ . . . . .	249
6.120.3.2 index_ . . . . .	250
6.120.3.3 step_ . . . . .	250
6.120.3.4 value_ . . . . .	250
6.121 testing::internal::ValuesIteratorRangeGenerator< T >::Iterator Class Reference . . . . .	250
6.121.1 Constructor & Destructor Documentation . . . . .	251
6.121.1.1 Iterator() [1/2] . . . . .	251
6.121.1.2 ~Iterator() . . . . .	252
6.121.1.3 Iterator() [2/2] . . . . .	252
6.121.2 Member Function Documentation . . . . .	252

---

6.121.2.1 Advance()	252
6.121.2.2 BaseGenerator()	252
6.121.2.3 Clone()	252
6.121.2.4 Current()	253
6.121.2.5 Equals()	253
6.121.3 Member Data Documentation	253
6.121.3.1 base_	253
6.121.3.2 iterator_	253
6.121.3.3 value_	253
6.122 testing::internal::CartesianProductGenerator< T >::IteratorImpl< I > Class Template Reference	254
6.123 testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > > Class Template Reference	254
6.123.1 Constructor & Destructor Documentation	255
6.123.1.1 IteratorImpl()	255
6.123.1.2 ~IteratorImpl()	255
6.123.2 Member Function Documentation	256
6.123.2.1 Advance()	256
6.123.2.2 AdvanceIfEnd()	256
6.123.2.3 AtEnd()	256
6.123.2.4 BaseGenerator()	256
6.123.2.5 Clone()	257
6.123.2.6 ComputeCurrentValue()	257
6.123.2.7 Current()	257
6.123.2.8 Equals()	257
6.123.3 Member Data Documentation	257
6.123.3.1 base_	257
6.123.3.2 begin_	258
6.123.3.3 current_	258
6.123.3.4 current_value_	258
6.123.3.5 end_	258
6.124 testing::internal::KindOf< T > Struct Template Reference	258
6.124.1 Member Enumeration Documentation	258
6.124.1.1 anonymous enum	258
6.125 testing::internal::internal_stream_operator_without_lexical_name_lookup::LookupBlocker Struct Reference	259
6.126 testing::internal::MakeIndexSequenceImpl< N > Struct Template Reference	259
6.127 testing::internal::MakeIndexSequenceImpl< 0 > Struct Reference	260
6.128 testing::internal::MarkAsIgnored Struct Reference	261
6.128.1 Constructor & Destructor Documentation	261
6.128.1.1 MarkAsIgnored()	261
6.129 testing::Matcher< typename > Class Template Reference	262
6.130 Matrix Class Reference	262
6.130.1 Detailed Description	262

---

6.130.2 Constructor & Destructor Documentation . . . . .	262
6.130.2.1 Matrix() [1/2] . . . . .	262
6.130.2.2 ~Matrix() . . . . .	263
6.130.2.3 Matrix() [2/2] . . . . .	263
6.130.3 Member Function Documentation . . . . .	263
6.130.3.1 operator()() . . . . .	263
6.130.3.2 operator=() . . . . .	263
6.130.3.3 operator==() . . . . .	263
6.130.3.4 read_sub_matrix() . . . . .	264
6.130.3.5 write_sub_matrix() . . . . .	264
6.130.3.6 zero() . . . . .	264
6.130.4 Member Data Documentation . . . . .	264
6.130.4.1 data . . . . .	265
6.130.4.2 n_cols . . . . .	265
6.130.4.3 n_rows . . . . .	265
6.131 testing::Message Class Reference . . . . .	265
6.131.1 Member Typedef Documentation . . . . .	266
6.131.1.1 BasicNarrowIoManip . . . . .	266
6.131.2 Constructor & Destructor Documentation . . . . .	266
6.131.2.1 Message() [1/3] . . . . .	266
6.131.2.2 Message() [2/3] . . . . .	266
6.131.2.3 Message() [3/3] . . . . .	266
6.131.3 Member Function Documentation . . . . .	266
6.131.3.1 GetString() . . . . .	266
6.131.3.2 operator<<() [1/6] . . . . .	267
6.131.3.3 operator<<() [2/6] . . . . .	267
6.131.3.4 operator<<() [3/6] . . . . .	267
6.131.3.5 operator<<() [4/6] . . . . .	267
6.131.3.6 operator<<() [5/6] . . . . .	267
6.131.3.7 operator<<() [6/6] . . . . .	267
6.131.3.8 operator=() . . . . .	267
6.131.4 Member Data Documentation . . . . .	268
6.131.4.1 ss_ . . . . .	268
6.132 Mock Class Reference . . . . .	268
6.132.1 Constructor & Destructor Documentation . . . . .	269
6.132.1.1 Mock() [1/2] . . . . .	269
6.132.1.2 Mock() [2/2] . . . . .	269
6.132.2 Member Function Documentation . . . . .	269
6.132.2.1 MOCK_METHOD1() [1/9] . . . . .	269
6.132.2.2 MOCK_METHOD1() [2/9] . . . . .	270
6.132.2.3 MOCK_METHOD1() [3/9] . . . . .	270
6.132.2.4 MOCK_METHOD1() [4/9] . . . . .	270

6.132.2.5 MOCK_METHOD1() [5/9]	270
6.132.2.6 MOCK_METHOD1() [6/9]	270
6.132.2.7 MOCK_METHOD1() [7/9]	270
6.132.2.8 MOCK_METHOD1() [8/9]	271
6.132.2.9 MOCK_METHOD1() [9/9]	271
6.132.2.10 operator=()	271
6.133 testing::PolymorphicAction< Impl >::MonomorphicImpl< F > Class Template Reference	271
6.133.1 Member Typedef Documentation	272
6.133.1.1 ArgumentTuple	272
6.133.1.2 Result	272
6.133.2 Constructor & Destructor Documentation	273
6.133.2.1 MonomorphicImpl()	273
6.133.3 Member Function Documentation	273
6.133.3.1 Perform()	273
6.133.4 Member Data Documentation	273
6.133.4.1 impl_	273
6.134 testing::internal::Mutex Class Reference	273
6.134.1 Constructor & Destructor Documentation	274
6.134.1.1 Mutex()	274
6.134.2 Member Function Documentation	274
6.134.2.1 AssertHeld()	274
6.134.2.2 Lock()	274
6.134.2.3 Unlock()	274
6.135 MyString Class Reference	274
6.135.1 Constructor & Destructor Documentation	275
6.135.1.1 MyString() [1/3]	275
6.135.1.2 MyString() [2/3]	275
6.135.1.3 MyString() [3/3]	275
6.135.1.4 ~MyString()	276
6.135.2 Member Function Documentation	276
6.135.2.1 c_string()	276
6.135.2.2 CloneCString()	276
6.135.2.3 Length()	276
6.135.2.4 operator=()	276
6.135.2.5 Set()	276
6.135.3 Member Data Documentation	276
6.135.3.1 c_string_	277
6.136 testing::NaggyMock< MockClass > Class Template Reference	277
6.136.1 Constructor & Destructor Documentation	278
6.136.1.1 NaggyMock() [1/4]	278
6.136.1.2 NaggyMock() [2/4]	278
6.136.1.3 NaggyMock() [3/4]	278

6.136.1.4 NaggyMock() [4/4] . . . . .	278
6.136.2 Member Function Documentation . . . . .	279
6.136.2.1 operator=() . . . . .	279
6.137 testing::internal::NaggyMockImpl< Base > Class Template Reference . . . . .	279
6.137.1 Constructor & Destructor Documentation . . . . .	279
6.137.1.1 NaggyMockImpl() . . . . .	279
6.137.1.2 ~NaggyMockImpl() . . . . .	279
6.138 testing::internal::NameGeneratorSelector< Provided > Struct Template Reference . . . . .	280
6.138.1 Member Typedef Documentation . . . . .	280
6.138.1.1 type . . . . .	280
6.139 testing::internal::NativeArray< Element > Class Template Reference . . . . .	280
6.139.1 Member Typedef Documentation . . . . .	281
6.139.1.1 const_iterator . . . . .	281
6.139.1.2 iterator . . . . .	281
6.139.1.3 value_type . . . . .	281
6.139.2 Constructor & Destructor Documentation . . . . .	281
6.139.2.1 NativeArray() [1/3] . . . . .	281
6.139.2.2 NativeArray() [2/3] . . . . .	282
6.139.2.3 NativeArray() [3/3] . . . . .	282
6.139.2.4 ~NativeArray() . . . . .	282
6.139.3 Member Function Documentation . . . . .	282
6.139.3.1 begin() . . . . .	282
6.139.3.2 end() . . . . .	282
6.139.3.3 InitCopy() . . . . .	282
6.139.3.4 InitRef() . . . . .	283
6.139.3.5 operator==() . . . . .	283
6.139.3.6 size() . . . . .	283
6.139.4 Member Data Documentation . . . . .	283
6.139.4.1 array_ . . . . .	283
6.139.4.2 clone_ . . . . .	283
6.139.4.3 size_ . . . . .	283
6.140 testing::internal::negation< P > Struct Template Reference . . . . .	284
6.141 testing::NiceMock< MockClass > Class Template Reference . . . . .	284
6.141.1 Constructor & Destructor Documentation . . . . .	285
6.141.1.1 NiceMock() [1/4] . . . . .	286
6.141.1.2 NiceMock() [2/4] . . . . .	286
6.141.1.3 NiceMock() [3/4] . . . . .	286
6.141.1.4 NiceMock() [4/4] . . . . .	286
6.141.2 Member Function Documentation . . . . .	286
6.141.2.1 operator=() . . . . .	286
6.142 testing::internal::NiceMockImpl< Base > Class Template Reference . . . . .	287
6.142.1 Constructor & Destructor Documentation . . . . .	287

---

6.142.1.1 NiceMockImpl() . . . . .	287
6.142.1.2 ~NiceMockImpl() . . . . .	287
6.143 testing::internal::None Struct Reference . . . . .	287
6.144 testing::OnceAction< F > Class Template Reference . . . . .	287
6.145 testing::OnceAction< Result(Args...) > Class Template Reference . . . . .	288
6.145.1 Member Typedef Documentation . . . . .	288
6.145.1.1 IsCompatibleAfterIgnoringArguments . . . . .	288
6.145.1.2 IsDirectlyCompatible . . . . .	289
6.145.2 Constructor & Destructor Documentation . . . . .	289
6.145.2.1 OnceAction() [1/4] . . . . .	289
6.145.2.2 OnceAction() [2/4] . . . . .	289
6.145.2.3 OnceAction() [3/4] . . . . .	289
6.145.2.4 OnceAction() [4/4] . . . . .	289
6.145.3 Member Function Documentation . . . . .	290
6.145.3.1 Call() . . . . .	290
6.145.3.2 operator=() . . . . .	290
6.145.4 Member Data Documentation . . . . .	290
6.145.4.1 function_ . . . . .	290
6.146 OnTheFlyPrimeTable Class Reference . . . . .	290
6.146.1 Member Function Documentation . . . . .	291
6.146.1.1 GetNextPrime() . . . . .	291
6.146.1.2 IsPrime() . . . . .	291
6.147 testing::internal::OsStackTraceGetter Class Reference . . . . .	292
6.147.1 Constructor & Destructor Documentation . . . . .	293
6.147.1.1 OsStackTraceGetter() [1/2] . . . . .	293
6.147.1.2 OsStackTraceGetter() [2/2] . . . . .	293
6.147.2 Member Function Documentation . . . . .	293
6.147.2.1 CurrentStackTrace() . . . . .	293
6.147.2.2 operator=() . . . . .	293
6.147.2.3 UponLeavingGTest() . . . . .	293
6.148 testing::internal::OsStackTraceGetterInterface Class Reference . . . . .	294
6.148.1 Constructor & Destructor Documentation . . . . .	294
6.148.1.1 OsStackTraceGetterInterface() [1/2] . . . . .	294
6.148.1.2 ~OsStackTraceGetterInterface() . . . . .	295
6.148.1.3 OsStackTraceGetterInterface() [2/2] . . . . .	295
6.148.2 Member Function Documentation . . . . .	295
6.148.2.1 CurrentStackTrace() . . . . .	295
6.148.2.2 operator=() . . . . .	295
6.148.2.3 UponLeavingGTest() . . . . .	295
6.148.3 Member Data Documentation . . . . .	295
6.148.3.1 kElidedFramesMarker . . . . .	296
6.149 testing::internal::ParamConverterGenerator< Gen > Class Template Reference . . . . .	296

---

6.149.1 Constructor & Destructor Documentation . . . . .	296
6.149.1.1 ParamConverterGenerator() . . . . .	297
6.149.2 Member Function Documentation . . . . .	297
6.149.2.1 operator ParamGenerator< T >() . . . . .	297
6.149.3 Member Data Documentation . . . . .	297
6.149.3.1 generator_ . . . . .	297
6.150 testing::internal::ParameterizedTestFactory< TestClass > Class Template Reference . . . . .	297
6.150.1 Member Typedef Documentation . . . . .	298
6.150.1.1 ParamType . . . . .	298
6.150.2 Constructor & Destructor Documentation . . . . .	299
6.150.2.1 ParameterizedTestFactory() [1/2] . . . . .	299
6.150.2.2 ParameterizedTestFactory() [2/2] . . . . .	299
6.150.3 Member Function Documentation . . . . .	299
6.150.3.1 CreateTest() . . . . .	299
6.150.3.2 operator=( ) . . . . .	299
6.150.4 Member Data Documentation . . . . .	299
6.150.4.1 parameter_ . . . . .	300
6.151 testing::internal::ParameterizedTestSuiteInfo< TestSuite > Class Template Reference . . . . .	300
6.151.1 Member Typedef Documentation . . . . .	301
6.151.1.1 InstantiationContainer . . . . .	302
6.151.1.2 ParamNameGeneratorFunc . . . . .	302
6.151.1.3 ParamType . . . . .	302
6.151.1.4 TestInfoContainer . . . . .	302
6.151.2 Constructor & Destructor Documentation . . . . .	302
6.151.2.1 ParameterizedTestSuiteInfo() [1/2] . . . . .	302
6.151.2.2 ParameterizedTestSuiteInfo() [2/2] . . . . .	302
6.151.3 Member Function Documentation . . . . .	303
6.151.3.1 AddTestPattern() . . . . .	303
6.151.3.2 AddTestSuiteInstantiation() . . . . .	303
6.151.3.3 GetTestSuiteName() . . . . .	303
6.151.3.4 GetTestSuiteTypeId() . . . . .	303
6.151.3.5 IsValidParamName() . . . . .	304
6.151.3.6 operator=( ) . . . . .	304
6.151.3.7 ParamGenerator() . . . . .	304
6.151.3.8 RegisterTests() . . . . .	304
6.151.4 Member Data Documentation . . . . .	304
6.151.4.1 code_location_ . . . . .	304
6.151.4.2 instantiations_ . . . . .	305
6.151.4.3 test_suite_name_ . . . . .	305
6.151.4.4 tests_ . . . . .	305
6.152 testing::internal::ParameterizedTestSuiteInfoBase Class Reference . . . . .	305
6.152.1 Constructor & Destructor Documentation . . . . .	306

---

6.152.1.1 ~ParameterizedTestSuiteInfoBase() . . . . .	306
6.152.1.2 ParameterizedTestSuiteInfoBase() [1/2] . . . . .	306
6.152.1.3 ParameterizedTestSuiteInfoBase() [2/2] . . . . .	306
6.152.2 Member Function Documentation . . . . .	306
6.152.2.1 GetTestSuiteName() . . . . .	307
6.152.2.2 GetTestSuiteTypeId() . . . . .	307
6.152.2.3 operator=() . . . . .	307
6.152.2.4 RegisterTests() . . . . .	307
6.153 testing::internal::ParameterizedTestSuiteRegistry Class Reference . . . . .	307
6.153.1 Member Typedef Documentation . . . . .	308
6.153.1.1 TestSuiteInfoContainer . . . . .	308
6.153.2 Constructor & Destructor Documentation . . . . .	308
6.153.2.1 ParameterizedTestSuiteRegistry() [1/2] . . . . .	308
6.153.2.2 ~ParameterizedTestSuiteRegistry() . . . . .	308
6.153.2.3 ParameterizedTestSuiteRegistry() [2/2] . . . . .	308
6.153.3 Member Function Documentation . . . . .	309
6.153.3.1 GetTestCasePatternHolder() . . . . .	309
6.153.3.2 GetTestSuitePatternHolder() . . . . .	309
6.153.3.3 operator=() . . . . .	309
6.153.3.4 RegisterTests() . . . . .	309
6.153.4 Member Data Documentation . . . . .	309
6.153.4.1 test_suite_infos_ . . . . .	309
6.154 testing::internal::ParamGenerator< T > Class Template Reference . . . . .	310
6.154.1 Member Typedef Documentation . . . . .	310
6.154.1.1 iterator . . . . .	310
6.154.2 Constructor & Destructor Documentation . . . . .	310
6.154.2.1 ParamGenerator() [1/2] . . . . .	310
6.154.2.2 ParamGenerator() [2/2] . . . . .	310
6.154.3 Member Function Documentation . . . . .	311
6.154.3.1 begin() . . . . .	311
6.154.3.2 end() . . . . .	311
6.154.3.3 operator=() . . . . .	311
6.154.4 Member Data Documentation . . . . .	311
6.154.4.1 impl_ . . . . .	311
6.155 testing::internal::ParamGeneratorConverter< From, To > Class Template Reference . . . . .	312
6.155.1 Constructor & Destructor Documentation . . . . .	313
6.155.1.1 ParamGeneratorConverter() . . . . .	313
6.155.2 Member Function Documentation . . . . .	313
6.155.2.1 Begin() . . . . .	313
6.155.2.2 End() . . . . .	313
6.155.3 Member Data Documentation . . . . .	313
6.155.3.1 generator_ . . . . .	313

---

6.156 testing::internal::ParamGeneratorInterface< T > Class Template Reference . . . . .	314
6.156.1 Member Typedef Documentation . . . . .	314
6.156.1.1 ParamType . . . . .	314
6.156.2 Constructor & Destructor Documentation . . . . .	314
6.156.2.1 ~ParamGeneratorInterface() . . . . .	314
6.156.3 Member Function Documentation . . . . .	315
6.156.3.1 Begin() . . . . .	315
6.156.3.2 End() . . . . .	315
6.157 testing::internal::ParamIterator< T > Class Template Reference . . . . .	315
6.157.1 Member Typedef Documentation . . . . .	316
6.157.1.1 difference_type . . . . .	316
6.157.1.2 reference . . . . .	316
6.157.1.3 value_type . . . . .	316
6.157.2 Constructor & Destructor Documentation . . . . .	316
6.157.2.1 ParamIterator() [1/2] . . . . .	316
6.157.2.2 ParamIterator() [2/2] . . . . .	317
6.157.3 Member Function Documentation . . . . .	317
6.157.3.1 operator"!="() . . . . .	317
6.157.3.2 operator*() . . . . .	317
6.157.3.3 operator++() [1/2] . . . . .	317
6.157.3.4 operator++() [2/2] . . . . .	317
6.157.3.5 operator->() . . . . .	317
6.157.3.6 operator=() . . . . .	318
6.157.3.7 operator==() . . . . .	318
6.157.4 Friends And Related Function Documentation . . . . .	318
6.157.4.1 ParamGenerator< T > . . . . .	318
6.157.5 Member Data Documentation . . . . .	318
6.157.5.1 impl_ . . . . .	318
6.158 testing::internal::ParamIteratorInterface< T > Class Template Reference . . . . .	319
6.158.1 Constructor & Destructor Documentation . . . . .	319
6.158.1.1 ~ParamIteratorInterface() . . . . .	319
6.158.2 Member Function Documentation . . . . .	319
6.158.2.1 Advance() . . . . .	320
6.158.2.2 BaseGenerator() . . . . .	320
6.158.2.3 Clone() . . . . .	320
6.158.2.4 Current() . . . . .	320
6.158.2.5 Equals() . . . . .	320
6.159 testing::internal::PointerPrinter Struct Reference . . . . .	321
6.159.1 Member Function Documentation . . . . .	321
6.159.1.1 PrintValue() . . . . .	321
6.160 testing::PolymorphicAction< Impl > Class Template Reference . . . . .	321
6.160.1 Constructor & Destructor Documentation . . . . .	322

---

6.160.1.1 PolymorphicAction() . . . . .	322
6.160.2 Member Function Documentation . . . . .	322
6.160.2.1 operator Action< F >() . . . . .	322
6.160.3 Member Data Documentation . . . . .	322
6.160.3.1 impl_ . . . . .	322
6.161 PreCalculatedPrimeTable Class Reference . . . . .	323
6.161.1 Constructor & Destructor Documentation . . . . .	324
6.161.1.1 PreCalculatedPrimeTable() . . . . .	324
6.161.1.2 ~PreCalculatedPrimeTable() . . . . .	324
6.161.2 Member Function Documentation . . . . .	324
6.161.2.1 CalculatePrimesUpTo() . . . . .	324
6.161.2.2 GetNextPrime() . . . . .	324
6.161.2.3 IsPrime() . . . . .	324
6.161.2.4 operator=(()) . . . . .	325
6.161.3 Member Data Documentation . . . . .	325
6.161.3.1 is_prime_ . . . . .	325
6.161.3.2 is_prime_size_ . . . . .	325
6.162 PrimeTable Class Reference . . . . .	325
6.162.1 Constructor & Destructor Documentation . . . . .	326
6.162.1.1 ~PrimeTable() . . . . .	326
6.162.2 Member Function Documentation . . . . .	326
6.162.2.1 GetNextPrime() . . . . .	326
6.162.2.2 IsPrime() . . . . .	326
6.163 testing::PrintToStringParamName Struct Reference . . . . .	326
6.163.1 Member Function Documentation . . . . .	326
6.163.1.1 operator()() . . . . .	327
6.164 PrivateCode Class Reference . . . . .	327
6.164.1 Constructor & Destructor Documentation . . . . .	327
6.164.1.1 PrivateCode() . . . . .	327
6.164.2 Member Function Documentation . . . . .	327
6.164.2.1 FRIEND_TEST() [1/2] . . . . .	328
6.164.2.2 FRIEND_TEST() [2/2] . . . . .	328
6.164.2.3 set_x() . . . . .	328
6.164.2.4 x() . . . . .	328
6.164.3 Member Data Documentation . . . . .	328
6.164.3.1 x_ . . . . .	328
6.165 testing::internal::ProtobufPrinter Struct Reference . . . . .	328
6.165.1 Member Function Documentation . . . . .	329
6.165.1.1 PrintValue() . . . . .	329
6.165.2 Member Data Documentation . . . . .	329
6.165.2.1 kProtobufOneLinerMaxLength . . . . .	329
6.166 testing::internal::ProxyTypeList< Ts > Struct Template Reference . . . . .	329

---

6.166.1 Member Typedef Documentation . . . . .	329
6.166.1.1 type . . . . .	330
6.167 Queue< E > Class Template Reference . . . . .	330
6.167.1 Constructor & Destructor Documentation . . . . .	330
6.167.1.1 Queue() [1/2] . . . . .	331
6.167.1.2 ~Queue() . . . . .	331
6.167.1.3 Queue() [2/2] . . . . .	331
6.167.2 Member Function Documentation . . . . .	331
6.167.2.1 Clear() . . . . .	331
6.167.2.2 Dequeue() . . . . .	331
6.167.2.3 Enqueue() . . . . .	331
6.167.2.4 Head() [1/2] . . . . .	332
6.167.2.5 Head() [2/2] . . . . .	332
6.167.2.6 Last() [1/2] . . . . .	332
6.167.2.7 Last() [2/2] . . . . .	332
6.167.2.8 Map() . . . . .	332
6.167.2.9 operator=() . . . . .	332
6.167.2.10 Size() . . . . .	332
6.167.3 Member Data Documentation . . . . .	333
6.167.3.1 head_ . . . . .	333
6.167.3.2 last_ . . . . .	333
6.167.3.3 size_ . . . . .	333
6.168 QueueNode< E > Class Template Reference . . . . .	333
6.168.1 Constructor & Destructor Documentation . . . . .	334
6.168.1.1 QueueNode() [1/2] . . . . .	334
6.168.1.2 QueueNode() [2/2] . . . . .	334
6.168.2 Member Function Documentation . . . . .	334
6.168.2.1 element() . . . . .	334
6.168.2.2 next() [1/2] . . . . .	335
6.168.2.3 next() [2/2] . . . . .	335
6.168.2.4 operator=() . . . . .	335
6.168.3 Friends And Related Function Documentation . . . . .	335
6.168.3.1 Queue< E > . . . . .	335
6.168.4 Member Data Documentation . . . . .	335
6.168.4.1 element_ . . . . .	335
6.168.4.2 next_ . . . . .	335
6.169 testing::internal::Random Class Reference . . . . .	336
6.169.1 Constructor & Destructor Documentation . . . . .	336
6.169.1.1 Random() [1/2] . . . . .	336
6.169.1.2 Random() [2/2] . . . . .	336
6.169.2 Member Function Documentation . . . . .	336
6.169.2.1 Generate() . . . . .	337

6.169.2.2 operator=() . . . . .	337
6.169.2.3 Reseed() . . . . .	337
6.169.3 Member Data Documentation . . . . .	337
6.169.3.1 kMaxRange . . . . .	337
6.169.3.2 state_ . . . . .	337
6.170 testing::internal::RangeGenerator< T, IncrementT > Class Template Reference . . . . .	338
6.170.1 Constructor & Destructor Documentation . . . . .	339
6.170.1.1 RangeGenerator() . . . . .	339
6.170.1.2 ~RangeGenerator() . . . . .	339
6.170.2 Member Function Documentation . . . . .	339
6.170.2.1 Begin() . . . . .	339
6.170.2.2 CalculateEndIndex() . . . . .	340
6.170.2.3 End() . . . . .	340
6.170.2.4 operator=() . . . . .	340
6.170.3 Member Data Documentation . . . . .	340
6.170.3.1 begin_ . . . . .	340
6.170.3.2 end_ . . . . .	340
6.170.3.3 end_index_ . . . . .	340
6.170.3.4 step_ . . . . .	341
6.171 testing::internal::RawBytesPrinter Struct Reference . . . . .	341
6.171.1 Member Function Documentation . . . . .	341
6.171.1.1 PrintValue() . . . . .	341
6.172 testing::internal::RE Class Reference . . . . .	341
6.172.1 Constructor & Destructor Documentation . . . . .	342
6.172.1.1 RE() [1/3] . . . . .	342
6.172.1.2 RE() [2/3] . . . . .	342
6.172.1.3 RE() [3/3] . . . . .	342
6.172.1.4 ~RE() . . . . .	342
6.172.2 Member Function Documentation . . . . .	343
6.172.2.1 FullMatch() [1/2] . . . . .	343
6.172.2.2 FullMatch() [2/2] . . . . .	343
6.172.2.3 Init() . . . . .	343
6.172.2.4 PartialMatch() [1/2] . . . . .	343
6.172.2.5 PartialMatch() [2/2] . . . . .	343
6.172.2.6 pattern() . . . . .	343
6.172.3 Member Data Documentation . . . . .	344
6.172.3.1 full_regex_ . . . . .	344
6.172.3.2 is_valid_ . . . . .	344
6.172.3.3 partial_regex_ . . . . .	344
6.172.3.4 pattern_ . . . . .	344
6.173 testing::internal::RelationToSourceCopy Struct Reference . . . . .	344
6.174 testing::internal::RelationToSourceReference Struct Reference . . . . .	344

---

6.175 testing::internal::RemoveConstFromKey< T > Struct Template Reference . . . . .	345
6.175.1 Member Typedef Documentation . . . . .	345
6.175.1.1 type . . . . .	345
6.176 testing::internal::RemoveConstFromKey< std::pair< const K, V > > Struct Template Reference . . . . .	345
6.176.1 Member Typedef Documentation . . . . .	345
6.176.1.1 type . . . . .	345
6.177 testing::internal::ReturnAction< R > Class Template Reference . . . . .	346
6.177.1 Constructor & Destructor Documentation . . . . .	346
6.177.1.1 ReturnAction() . . . . .	346
6.177.2 Member Function Documentation . . . . .	346
6.177.2.1 operator Action< U() . . . . .	346
6.177.2.2 operator OnceAction< U() . . . . .	347
6.177.3 Member Data Documentation . . . . .	347
6.177.3.1 value_ . . . . .	347
6.178 testing::internal::ReturnAction< ByMoveWrapper< T > > Class Template Reference . . . . .	347
6.178.1 Constructor & Destructor Documentation . . . . .	347
6.178.1.1 ReturnAction() . . . . .	348
6.178.2 Member Function Documentation . . . . .	348
6.178.2.1 operator()() . . . . .	348
6.178.3 Member Data Documentation . . . . .	348
6.178.3.1 state_ . . . . .	348
6.179 testing::internal::ReturnArgAction< k > Struct Template Reference . . . . .	348
6.179.1 Member Function Documentation . . . . .	348
6.179.1.1 operator()() . . . . .	349
6.180 testing::internal::ReturnNewAction< T, Params > Struct Template Reference . . . . .	349
6.180.1 Member Function Documentation . . . . .	349
6.180.1.1 operator()() . . . . .	349
6.180.2 Member Data Documentation . . . . .	349
6.180.2.1 params . . . . .	349
6.181 testing::internal::ReturnNullAction Class Reference . . . . .	350
6.181.1 Member Function Documentation . . . . .	350
6.181.1.1 Perform() . . . . .	350
6.182 testing::internal::ReturnPointeeAction< Ptr > Struct Template Reference . . . . .	350
6.182.1 Member Function Documentation . . . . .	350
6.182.1.1 operator()() . . . . .	351
6.182.2 Member Data Documentation . . . . .	351
6.182.2.1 pointer . . . . .	351
6.183 testing::internal::ReturnRefAction< T > Class Template Reference . . . . .	351
6.183.1 Constructor & Destructor Documentation . . . . .	351
6.183.1.1 ReturnRefAction() . . . . .	352
6.183.2 Member Function Documentation . . . . .	352
6.183.2.1 operator Action< F >() . . . . .	352

---

6.183.3 Member Data Documentation . . . . .	352
6.183.3.1 ref_ . . . . .	352
6.184 testing::internal::ReturnRefOfCopyAction< T > Class Template Reference . . . . .	352
6.184.1 Constructor & Destructor Documentation . . . . .	353
6.184.1.1 ReturnRefOfCopyAction() . . . . .	353
6.184.2 Member Function Documentation . . . . .	353
6.184.2.1 operator Action< F >() . . . . .	353
6.184.3 Member Data Documentation . . . . .	353
6.184.3.1 value_ . . . . .	353
6.185 testing::internal::ReturnRoundRobinAction< T > Class Template Reference . . . . .	353
6.185.1 Constructor & Destructor Documentation . . . . .	354
6.185.1.1 ReturnRoundRobinAction() . . . . .	354
6.185.2 Member Function Documentation . . . . .	354
6.185.2.1 operator()() . . . . .	354
6.185.3 Member Data Documentation . . . . .	354
6.185.3.1 state_ . . . . .	354
6.186 testing::internal::ReturnVoidAction Class Reference . . . . .	355
6.186.1 Member Function Documentation . . . . .	355
6.186.1.1 Perform() . . . . .	355
6.187 testing::internal::SaveArgAction< k, Ptr > Struct Template Reference . . . . .	355
6.187.1 Member Function Documentation . . . . .	355
6.187.1.1 operator()() . . . . .	356
6.187.2 Member Data Documentation . . . . .	356
6.187.2.1 pointer . . . . .	356
6.188 testing::internal::SaveArgPointeeAction< k, Ptr > Struct Template Reference . . . . .	356
6.188.1 Member Function Documentation . . . . .	356
6.188.1.1 operator()() . . . . .	356
6.188.2 Member Data Documentation . . . . .	357
6.188.2.1 pointer . . . . .	357
6.189 testing::ScopedTrace Class Reference . . . . .	357
6.189.1 Constructor & Destructor Documentation . . . . .	357
6.189.1.1 ScopedTrace() [1/4] . . . . .	357
6.189.1.2 ScopedTrace() [2/4] . . . . .	358
6.189.1.3 ScopedTrace() [3/4] . . . . .	358
6.189.1.4 ~ScopedTrace() . . . . .	358
6.189.1.5 ScopedTrace() [4/4] . . . . .	358
6.189.2 Member Function Documentation . . . . .	358
6.189.2.1 operator=( ) . . . . .	358
6.189.2.2 PushTrace() . . . . .	358
6.190 testing::internal::SetArgRefereeAction< k, T > Struct Template Reference . . . . .	359
6.190.1 Member Function Documentation . . . . .	359
6.190.1.1 operator()() . . . . .	359

---

6.190.2 Member Data Documentation . . . . .	359
6.190.2.1 value . . . . .	359
6.191 testing::internal::SetArgumentPointeeAction< N, A, typename > Struct Template Reference . . . . .	360
6.191.1 Member Function Documentation . . . . .	360
6.191.1.1 operator()() . . . . .	360
6.191.2 Member Data Documentation . . . . .	360
6.191.2.1 value . . . . .	361
6.192 testing::internal::SetArrayArgumentAction< k, I1, I2 > Struct Template Reference . . . . .	361
6.192.1 Member Function Documentation . . . . .	361
6.192.1.1 operator()() . . . . .	361
6.192.2 Member Data Documentation . . . . .	361
6.192.2.1 first . . . . .	361
6.192.2.2 last . . . . .	362
6.193 testing::internal::SetErrnoAndReturnAction< T > Class Template Reference . . . . .	362
6.193.1 Constructor & Destructor Documentation . . . . .	362
6.193.1.1 SetErrnoAndReturnAction() . . . . .	362
6.193.2 Member Function Documentation . . . . .	362
6.193.2.1 Perform() . . . . .	362
6.193.3 Member Data Documentation . . . . .	363
6.193.3.1 errno_ . . . . .	363
6.193.3.2 result_ . . . . .	363
6.194 testing::Environment::Setup_should_be_spelled_SetUp Struct Reference . . . . .	363
6.195 testing::Test::Setup_should_be_spelled_SetUp Struct Reference . . . . .	363
6.196 testing::internal::IgnoredValue::Sink Struct Reference . . . . .	363
6.197 testing::internal::ReturnAction< R >::Impl< U >::State Struct Reference . . . . .	364
6.197.1 Constructor & Destructor Documentation . . . . .	364
6.197.1.1 State() [1/2] . . . . .	364
6.197.1.2 State() [2/2] . . . . .	364
6.197.2 Member Data Documentation . . . . .	364
6.197.2.1 input_value . . . . .	364
6.197.2.2 value . . . . .	365
6.198 testing::internal::ReturnAction< ByMoveWrapper< T > >::State Struct Reference . . . . .	365
6.198.1 Constructor & Destructor Documentation . . . . .	365
6.198.1.1 State() . . . . .	365
6.198.2 Member Data Documentation . . . . .	365
6.198.2.1 called . . . . .	365
6.198.2.2 value . . . . .	366
6.199 testing::internal::ReturnRoundRobinAction< T >::State Struct Reference . . . . .	366
6.199.1 Member Function Documentation . . . . .	366
6.199.1.1 Next() . . . . .	366
6.199.2 Member Data Documentation . . . . .	366
6.199.2.1 i . . . . .	366

---

6.199.2.2 values . . . . .	367
6.200 testing::OnceAction< Result(Args...)>::StdFunctionAdaptor< Callable > Class Template Reference	367
6.200.1 Constructor & Destructor Documentation . . . . .	367
6.200.1.1 StdFunctionAdaptor() . . . . .	367
6.200.2 Member Function Documentation . . . . .	367
6.200.2.1 operator()() . . . . .	368
6.200.3 Member Data Documentation . . . . .	368
6.200.3.1 callable_ . . . . .	368
6.201 testing::internal::StlContainerView< RawContainer > Class Template Reference . . . . .	368
6.201.1 Member Typedef Documentation . . . . .	368
6.201.1.1 const_reference . . . . .	369
6.201.1.2 type . . . . .	369
6.201.2 Member Function Documentation . . . . .	369
6.201.2.1 ConstReference() . . . . .	369
6.201.2.2 Copy() . . . . .	369
6.202 testing::internal::StlContainerView< ::std::tuple< ElementPointer, Size > > Class Template Reference . . . . .	369
6.202.1 Member Typedef Documentation . . . . .	370
6.202.1.1 const_reference . . . . .	370
6.202.1.2 RawElement . . . . .	370
6.202.1.3 type . . . . .	370
6.202.2 Member Function Documentation . . . . .	370
6.202.2.1 ConstReference() . . . . .	370
6.202.2.2 Copy() . . . . .	371
6.203 testing::internal::StlContainerView< Element[N]> Class Template Reference . . . . .	371
6.203.1 Member Typedef Documentation . . . . .	371
6.203.1.1 const_reference . . . . .	371
6.203.1.2 RawElement . . . . .	371
6.203.1.3 type . . . . .	372
6.203.2 Member Function Documentation . . . . .	372
6.203.2.1 ConstReference() . . . . .	372
6.203.2.2 Copy() . . . . .	372
6.204 testing::internal::internal_stream_operator_without_lexical_name_lookup::StreamPrinter Struct Reference . . . . .	372
6.204.1 Member Function Documentation . . . . .	372
6.204.1.1 PrintValue() . . . . .	373
6.205 testing::StrictMock< MockClass > Class Template Reference . . . . .	373
6.205.1 Constructor & Destructor Documentation . . . . .	374
6.205.1.1 StrictMock() [1/4] . . . . .	374
6.205.1.2 StrictMock() [2/4] . . . . .	374
6.205.1.3 StrictMock() [3/4] . . . . .	374
6.205.1.4 StrictMock() [4/4] . . . . .	374
6.205.2 Member Function Documentation . . . . .	375

---

6.205.2.1 operator=() . . . . .	375
6.206 testing::internal::StrictMockImpl< Base > Class Template Reference . . . . .	375
6.206.1 Constructor & Destructor Documentation . . . . .	375
6.206.1.1 StrictMockImpl() . . . . .	375
6.206.1.2 ~StrictMockImpl() . . . . .	375
6.207 testing::internal::String Class Reference . . . . .	376
6.207.1 Constructor & Destructor Documentation . . . . .	376
6.207.1.1 String() . . . . .	376
6.207.2 Member Function Documentation . . . . .	376
6.207.2.1 CaseInsensitiveCStringEquals() . . . . .	376
6.207.2.2 CaseInsensitiveWideCStringEquals() . . . . .	377
6.207.2.3 CloneCString() . . . . .	377
6.207.2.4 CStringEquals() . . . . .	377
6.207.2.5 EndsWithCaseInsensitive() . . . . .	377
6.207.2.6 FormatByte() . . . . .	377
6.207.2.7 FormatHexInt() . . . . .	377
6.207.2.8 FormatHexUInt32() . . . . .	378
6.207.2.9 FormatIntWidth2() . . . . .	378
6.207.2.10 FormatIntWidthN() . . . . .	378
6.207.2.11 ShowWideCString() . . . . .	378
6.207.2.12 WideCStringEquals() . . . . .	378
6.208 testing::internal::SuiteApiResolver< T > Struct Template Reference . . . . .	379
6.208.1 Member Typedef Documentation . . . . .	379
6.208.1.1 Test . . . . .	380
6.208.2 Member Function Documentation . . . . .	380
6.208.2.1 GetSetUpCaseOrSuite() . . . . .	380
6.208.2.2 GetTearDownCaseOrSuite() . . . . .	380
6.209 testing::internal::Templates< Head_ , Tail_ > Struct Template Reference . . . . .	380
6.209.1 Member Typedef Documentation . . . . .	380
6.209.1.1 Head . . . . .	381
6.209.1.2 Tail . . . . .	381
6.210 testing::internal::Templates< Head_ > Struct Template Reference . . . . .	381
6.210.1 Member Typedef Documentation . . . . .	381
6.210.1.1 Head . . . . .	381
6.210.1.2 Tail . . . . .	381
6.211 testing::internal::TemplateSel< Tmpl > Struct Template Reference . . . . .	382
6.212 testing::Test Class Reference . . . . .	382
6.212.1 Constructor & Destructor Documentation . . . . .	383
6.212.1.1 ~Test() . . . . .	384
6.212.1.2 Test() [1/2] . . . . .	384
6.212.1.3 Test() [2/2] . . . . .	384
6.212.2 Member Function Documentation . . . . .	384

6.212.2.1 DeleteSelf_()	384
6.212.2.2 HasFailure()	384
6.212.2.3 HasFatalFailure()	384
6.212.2.4 HasNonfatalFailure()	384
6.212.2.5 HasSameFixtureClass()	385
6.212.2.6 IsSkipped()	385
6.212.2.7 operator=()	385
6.212.2.8 RecordProperty() [1/2]	385
6.212.2.9 RecordProperty() [2/2]	385
6.212.2.10 Run()	385
6.212.2.11 SetUp()	385
6.212.2.12 Setup()	386
6.212.2.13 SetUpTestCase()	386
6.212.2.14 SetUpTestSuite()	386
6.212.2.15 TearDown()	386
6.212.2.16 TearDownTestCase()	386
6.212.2.17 TearDownTestSuite()	386
6.212.2.18 TestBody()	386
6.212.3 Friends And Related Function Documentation	386
6.212.3.1 TestInfo	387
6.212.4 Member Data Documentation	387
6.212.4.1 gtest_flag_saver_	387
6.213 testing::TestEventListener Class Reference	387
6.213.1 Constructor & Destructor Documentation	388
6.213.1.1 ~TestEventListener()	388
6.213.2 Member Function Documentation	388
6.213.2.1 OnEnvironmentsSetUpEnd()	388
6.213.2.2 OnEnvironmentsSetUpStart()	388
6.213.2.3 OnEnvironmentsTearDownEnd()	388
6.213.2.4 OnEnvironmentsTearDownStart()	388
6.213.2.5 OnTestCaseEnd()	389
6.213.2.6 OnTestCaseStart()	389
6.213.2.7 OnTestDisabled()	389
6.213.2.8 OnTestEnd()	389
6.213.2.9 OnTestIterationEnd()	389
6.213.2.10 OnTestIterationStart()	390
6.213.2.11 OnTestPartResult()	390
6.213.2.12 OnTestProgramEnd()	390
6.213.2.13 OnTestProgramStart()	390
6.213.2.14 OnTestStart()	390
6.213.2.15 OnTestSuiteEnd()	391
6.213.2.16 OnTestSuiteStart()	391

---

6.214 testing::TestEventListeners Class Reference . . . . .	391
6.214.1 Constructor & Destructor Documentation . . . . .	392
6.214.1.1 TestEventListeners() [1/2] . . . . .	392
6.214.1.2 ~TestEventListeners() . . . . .	392
6.214.1.3 TestEventListeners() [2/2] . . . . .	392
6.214.2 Member Function Documentation . . . . .	393
6.214.2.1 Append() . . . . .	393
6.214.2.2 default_result_printer() . . . . .	393
6.214.2.3 default_xml_generator() . . . . .	393
6.214.2.4 EventForwardingEnabled() . . . . .	393
6.214.2.5 operator=() . . . . .	393
6.214.2.6 Release() . . . . .	393
6.214.2.7 repeater() . . . . .	394
6.214.2.8 SetDefaultResultPrinter() . . . . .	394
6.214.2.9 SetDefaultXmlGenerator() . . . . .	394
6.214.2.10 SuppressEventForwarding() . . . . .	394
6.214.3 Friends And Related Function Documentation . . . . .	394
6.214.3.1 internal::DefaultGlobalTestPartResultReporter . . . . .	394
6.214.3.2 internal::NoExecDeathTest . . . . .	394
6.214.3.3 internal::TestEventListenersAccessor . . . . .	394
6.214.3.4 internal::UnitTestFixture . . . . .	395
6.214.3.5 TestInfo . . . . .	395
6.214.3.6 TestSuite . . . . .	395
6.214.4 Member Data Documentation . . . . .	395
6.214.4.1 default_result_printer_ . . . . .	395
6.214.4.2 default_xml_generator_ . . . . .	395
6.214.4.3 repeater_ . . . . .	395
6.215 testing::internal::TestFactoryBase Class Reference . . . . .	396
6.215.1 Constructor & Destructor Documentation . . . . .	396
6.215.1.1 ~TestFactoryBase() . . . . .	396
6.215.1.2 TestFactoryBase() [1/2] . . . . .	396
6.215.1.3 TestFactoryBase() [2/2] . . . . .	397
6.215.2 Member Function Documentation . . . . .	397
6.215.2.1 CreateTest() . . . . .	397
6.215.2.2 operator=() . . . . .	397
6.216 testing::internal::TestFactoryImpl< TestClass > Class Template Reference . . . . .	397
6.216.1 Member Function Documentation . . . . .	398
6.216.1.1 CreateTest() . . . . .	398
6.217 testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfo Struct Reference . . . . .	399
6.217.1 Constructor & Destructor Documentation . . . . .	399
6.217.1.1 TestInfo() . . . . .	399
6.217.2 Member Data Documentation . . . . .	400

---

6.217.2.1 code_location . . . . .	400
6.217.2.2 test_base_name . . . . .	400
6.217.2.3 test_meta_factory . . . . .	400
6.217.2.4 test_suite_base_name . . . . .	400
6.218 testing::TestInfo Class Reference . . . . .	400
6.218.1 Constructor & Destructor Documentation . . . . .	402
6.218.1.1 ~TestInfo() . . . . .	402
6.218.1.2 TestInfo() [1/2] . . . . .	402
6.218.1.3 TestInfo() [2/2] . . . . .	402
6.218.2 Member Function Documentation . . . . .	402
6.218.2.1 ClearTestResult() . . . . .	402
6.218.2.2 file() . . . . .	402
6.218.2.3 increment_death_test_count() . . . . .	403
6.218.2.4 is_in_another_shard() . . . . .	403
6.218.2.5 is_reportable() . . . . .	403
6.218.2.6 line() . . . . .	403
6.218.2.7 name() . . . . .	403
6.218.2.8 operator=( ) . . . . .	403
6.218.2.9 result() . . . . .	403
6.218.2.10 Run() . . . . .	404
6.218.2.11 should_run() . . . . .	404
6.218.2.12 Skip() . . . . .	404
6.218.2.13 test_case_name() . . . . .	404
6.218.2.14 test_suite_name() . . . . .	404
6.218.2.15 type_param() . . . . .	404
6.218.2.16 value_param() . . . . .	404
6.218.3 Friends And Related Function Documentation . . . . .	404
6.218.3.1 internal::MakeAndRegisterTestInfo . . . . .	405
6.218.3.2 internal::StreamingListenerTest . . . . .	405
6.218.3.3 internal::UnitTestImpl . . . . .	405
6.218.3.4 Test . . . . .	405
6.218.3.5 TestSuite . . . . .	405
6.218.4 Member Data Documentation . . . . .	405
6.218.4.1 factory_ . . . . .	405
6.218.4.2 fixture_class_id_ . . . . .	406
6.218.4.3 is_disabled_ . . . . .	406
6.218.4.4 is_in_another_shard_ . . . . .	406
6.218.4.5 location_ . . . . .	406
6.218.4.6 matches_filter_ . . . . .	406
6.218.4.7 name_ . . . . .	406
6.218.4.8 result_ . . . . .	406
6.218.4.9 should_run_ . . . . .	406

---

6.218.4.10 test_suite_name . . . . .	407
6.218.4.11 type_param_ . . . . .	407
6.218.4.12 value_param_ . . . . .	407
6.219 testing::internal::TestMetaFactory< TestSuite > Class Template Reference . . . . .	407
6.219.1 Member Typedef Documentation . . . . .	408
6.219.1.1 ParamType . . . . .	408
6.219.2 Constructor & Destructor Documentation . . . . .	408
6.219.2.1 TestMetaFactory() [1/2] . . . . .	409
6.219.2.2 TestMetaFactory() [2/2] . . . . .	409
6.219.3 Member Function Documentation . . . . .	409
6.219.3.1 CreateTestFactory() . . . . .	409
6.219.3.2 operator=() . . . . .	409
6.220 testing::internal::TestMetaFactoryBase< ParamType > Class Template Reference . . . . .	409
6.220.1 Constructor & Destructor Documentation . . . . .	410
6.220.1.1 ~TestMetaFactoryBase() . . . . .	410
6.220.2 Member Function Documentation . . . . .	410
6.220.2.1 CreateTestFactory() . . . . .	410
6.221 testing::TestParamInfo< ParamType > Struct Template Reference . . . . .	410
6.221.1 Constructor & Destructor Documentation . . . . .	410
6.221.1.1 TestParamInfo() . . . . .	411
6.221.2 Member Data Documentation . . . . .	411
6.221.2.1 index . . . . .	411
6.221.2.2 param . . . . .	411
6.222 testing::TestProperty Class Reference . . . . .	411
6.222.1 Constructor & Destructor Documentation . . . . .	412
6.222.1.1 TestProperty() . . . . .	412
6.222.2 Member Function Documentation . . . . .	412
6.222.2.1 key() . . . . .	412
6.222.2.2 SetValue() . . . . .	412
6.222.2.3 value() . . . . .	412
6.222.3 Member Data Documentation . . . . .	412
6.222.3.1 key_ . . . . .	412
6.222.3.2 value_ . . . . .	413
6.223 testing::internal::TestPropertyKeyIs Class Reference . . . . .	413
6.223.1 Constructor & Destructor Documentation . . . . .	413
6.223.1.1 TestPropertyKeyIs() . . . . .	413
6.223.2 Member Function Documentation . . . . .	413
6.223.2.1 operator()() . . . . .	413
6.223.3 Member Data Documentation . . . . .	413
6.223.3.1 key_ . . . . .	414
6.224 testing::TestResult Class Reference . . . . .	414
6.224.1 Constructor & Destructor Documentation . . . . .	415

6.224.1.1 TestResult() [1/2] . . . . .	415
6.224.1.2 ~TestResult() . . . . .	416
6.224.1.3 TestResult() [2/2] . . . . .	416
6.224.2 Member Function Documentation . . . . .	416
6.224.2.1 AddTestPartResult() . . . . .	416
6.224.2.2 Clear() . . . . .	416
6.224.2.3 ClearTestPartResults() . . . . .	416
6.224.2.4 death_test_count() . . . . .	416
6.224.2.5 elapsed_time() . . . . .	416
6.224.2.6 Failed() . . . . .	417
6.224.2.7 GetTestPartResult() . . . . .	417
6.224.2.8 GetTestProperty() . . . . .	417
6.224.2.9 HasFatalFailure() . . . . .	417
6.224.2.10 HasNonfatalFailure() . . . . .	417
6.224.2.11 increment_death_test_count() . . . . .	417
6.224.2.12 operator=( ) . . . . .	417
6.224.2.13 Passed() . . . . .	418
6.224.2.14 RecordProperty() . . . . .	418
6.224.2.15 set_elapsed_time() . . . . .	418
6.224.2.16 set_start_timestamp() . . . . .	418
6.224.2.17 Skipped() . . . . .	418
6.224.2.18 start_timestamp() . . . . .	418
6.224.2.19 test_part_results() . . . . .	418
6.224.2.20 test_properties() . . . . .	419
6.224.2.21 test_property_count() . . . . .	419
6.224.2.22 total_part_count() . . . . .	419
6.224.2.23 ValidateTestProperty() . . . . .	419
6.224.3 Friends And Related Function Documentation . . . . .	419
6.224.3.1 internal::DefaultGlobalTestPartResultReporter . . . . .	419
6.224.3.2 internal::ExecDeathTest . . . . .	419
6.224.3.3 internal::FuchsiaDeathTest . . . . .	419
6.224.3.4 internal::TestResultAccessor . . . . .	420
6.224.3.5 internal::UnitTestImpl . . . . .	420
6.224.3.6 internal::WindowsDeathTest . . . . .	420
6.224.3.7 TestInfo . . . . .	420
6.224.3.8 TestSuite . . . . .	420
6.224.3.9 UnitTest . . . . .	420
6.224.4 Member Data Documentation . . . . .	420
6.224.4.1 death_test_count_ . . . . .	420
6.224.4.2 elapsed_time_ . . . . .	421
6.224.4.3 start_timestamp_ . . . . .	421
6.224.4.4 test_part_results_ . . . . .	421

---

6.224.4.5 test_properties_ . . . . .	421
6.224.4.6 test_properties_mutex_ . . . . .	421
6.225 testing::internal::TestResultAccessor Class Reference . . . . .	421
6.225.1 Member Function Documentation . . . . .	422
6.225.1.1 ClearTestPartResults() . . . . .	422
6.225.1.2 RecordProperty() . . . . .	422
6.225.1.3 test_part_results() . . . . .	422
6.226 testing::TestSuite Class Reference . . . . .	422
6.226.1 Constructor & Destructor Documentation . . . . .	424
6.226.1.1 TestSuite() [1/2] . . . . .	424
6.226.1.2 ~TestSuite() . . . . .	424
6.226.1.3 TestSuite() [2/2] . . . . .	424
6.226.2 Member Function Documentation . . . . .	424
6.226.2.1 ad_hoc_test_result() . . . . .	425
6.226.2.2 AddTestInfo() . . . . .	425
6.226.2.3 ClearResult() . . . . .	425
6.226.2.4 ClearTestSuiteResult() . . . . .	425
6.226.2.5 disabled_test_count() . . . . .	425
6.226.2.6 elapsed_time() . . . . .	425
6.226.2.7 Failed() . . . . .	425
6.226.2.8 failed_test_count() . . . . .	426
6.226.2.9 GetMutableTestInfo() . . . . .	426
6.226.2.10 GetTestInfo() . . . . .	426
6.226.2.11 name() . . . . .	426
6.226.2.12 operator=() . . . . .	426
6.226.2.13 Passed() . . . . .	426
6.226.2.14 reportable_disabled_test_count() . . . . .	426
6.226.2.15 reportable_test_count() . . . . .	427
6.226.2.16 Run() . . . . .	427
6.226.2.17 RunSetUpTestSuite() . . . . .	427
6.226.2.18 RunTearDownTestSuite() . . . . .	427
6.226.2.19 set_should_run() . . . . .	427
6.226.2.20 should_run() . . . . .	427
6.226.2.21 ShouldRunTest() . . . . .	427
6.226.2.22 ShuffleTests() . . . . .	428
6.226.2.23 Skip() . . . . .	428
6.226.2.24 skipped_test_count() . . . . .	428
6.226.2.25 start_timestamp() . . . . .	428
6.226.2.26 successful_test_count() . . . . .	428
6.226.2.27 test_info_list() [1/2] . . . . .	428
6.226.2.28 test_info_list() [2/2] . . . . .	428
6.226.2.29 test_to_run_count() . . . . .	429

---

6.226.2.30 TestDisabled()	429
6.226.2.31 TestFailed()	429
6.226.2.32 TestPassed()	429
6.226.2.33 TestReportable()	429
6.226.2.34 TestReportableDisabled()	429
6.226.2.35 TestSkipped()	429
6.226.2.36 total_test_count()	430
6.226.2.37 type_param()	430
6.226.2.38 UnshuffleTests()	430
6.226.3 Friends And Related Function Documentation	430
6.226.3.1 internal::UnitTestImpl	430
6.226.3.2 Test	430
6.226.4 Member Data Documentation	430
6.226.4.1 ad_hoc_test_result	430
6.226.4.2 elapsed_time_	430
6.226.4.3 name_	431
6.226.4.4 set_up_tc_	431
6.226.4.5 should_run_	431
6.226.4.6 start_timestamp_	431
6.226.4.7 tear_down_tc_	431
6.226.4.8 test_indices_	431
6.226.4.9 test_info_list_	431
6.226.4.10 type_param_	432
6.227 testing::TestWithParam< T > Class Template Reference	432
6.228 testing::internal::ThisRefAdjuster< Pattern > Struct Template Reference	433
6.228.1 Member Typedef Documentation	433
6.228.1.1 AdjustT	433
6.228.2 Member Function Documentation	433
6.228.2.1 Adjust()	433
6.229 testing::internal::ThreadLocal< T > Class Template Reference	434
6.229.1 Constructor & Destructor Documentation	434
6.229.1.1 ThreadLocal() [1/2]	434
6.229.1.2 ThreadLocal() [2/2]	434
6.229.2 Member Function Documentation	434
6.229.2.1 get()	434
6.229.2.2 pointer() [1/2]	435
6.229.2.3 pointer() [2/2]	435
6.229.2.4 set()	435
6.229.3 Member Data Documentation	435
6.229.3.1 value_	435
6.230 testing::internal::TraceInfo Struct Reference	435
6.230.1 Member Data Documentation	436

---

6.230.1.1 file . . . . .	436
6.230.1.2 line . . . . .	436
6.230.1.3 message . . . . .	436
6.231 testing::internal::TrueWithString Struct Reference . . . . .	436
6.231.1 Constructor & Destructor Documentation . . . . .	436
6.231.1.1 TrueWithString() [1/3] . . . . .	437
6.231.1.2 TrueWithString() [2/3] . . . . .	437
6.231.1.3 TrueWithString() [3/3] . . . . .	437
6.231.2 Member Function Documentation . . . . .	437
6.231.2.1 operator bool() . . . . .	437
6.231.3 Member Data Documentation . . . . .	437
6.231.3.1 value . . . . .	437
6.232 std::tuple_size< testing::internal::FlatTuple< Ts... > > Struct Template Reference . . . . .	438
6.233 testing::internal::TypeidHelper< T > Class Template Reference . . . . .	438
6.233.1 Member Data Documentation . . . . .	439
6.233.1.1 dummy_ . . . . .	439
6.234 testing::internal::TypeParameterizedTest< Fixture, TestSel, Types > Class Template Reference . . . . .	439
6.234.1 Member Function Documentation . . . . .	439
6.234.1.1 Register() . . . . .	439
6.235 testing::internal::TypeParameterizedTest< Fixture, TestSel, internal::None > Class Template Reference . . . . .	440
6.235.1 Member Function Documentation . . . . .	440
6.235.1.1 Register() . . . . .	440
6.236 testing::internal::TypeParameterizedTestSuite< Fixture, Tests, Types > Class Template Reference . . . . .	440
6.236.1 Member Function Documentation . . . . .	440
6.236.1.1 Register() . . . . .	441
6.237 testing::internal::TypeParameterizedTestSuite< Fixture, internal::None, Types > Class Template Reference . . . . .	441
6.237.1 Member Function Documentation . . . . .	441
6.237.1.1 Register() . . . . .	441
6.238 testing::internal::TypeParameterizedTestSuiteRegistry::TypeParameterizedTestSuiteInfo Struct Reference . . . . .	442
6.238.1 Constructor & Destructor Documentation . . . . .	442
6.238.1.1 TypeParameterizedTestSuiteInfo() . . . . .	442
6.238.2 Member Data Documentation . . . . .	442
6.238.2.1 code_location . . . . .	443
6.238.2.2 instantiated . . . . .	443
6.239 testing::internal::TypeParameterizedTestSuiteRegistry Class Reference . . . . .	443
6.239.1 Member Function Documentation . . . . .	443
6.239.1.1 CheckForInstantiations() . . . . .	443
6.239.1.2 RegisterInstantiation() . . . . .	444
6.239.1.3 RegisterTestSuite() . . . . .	444
6.239.2 Member Data Documentation . . . . .	444

---

6.239.2.1 suites . . . . .	444
6.240 testing::internal::Types< Head_, Tail_ > Struct Template Reference . . . . .	444
6.240.1 Member Typedef Documentation . . . . .	444
6.240.1.1 Head . . . . .	444
6.240.1.2 Tail . . . . .	445
6.241 testing::internal::Types< Head_ > Struct Template Reference . . . . .	445
6.241.1 Member Typedef Documentation . . . . .	445
6.241.1.1 Head . . . . .	445
6.241.1.2 Tail . . . . .	445
6.242 testing::internal::TypeWithSize< size > Class Template Reference . . . . .	445
6.242.1 Member Typedef Documentation . . . . .	446
6.242.1.1 UInt . . . . .	446
6.243 testing::internal::TypeWithSize< 4 > Class Reference . . . . .	446
6.243.1 Member Typedef Documentation . . . . .	446
6.243.1.1 Int . . . . .	446
6.243.1.2 UInt . . . . .	446
6.244 testing::internal::TypeWithSize< 8 > Class Reference . . . . .	447
6.244.1 Member Typedef Documentation . . . . .	447
6.244.1.1 Int . . . . .	447
6.244.1.2 UInt . . . . .	447
6.245 testing::UnitTest Class Reference . . . . .	447
6.245.1 Constructor & Destructor Documentation . . . . .	449
6.245.1.1 UnitTest() [1/2] . . . . .	449
6.245.1.2 ~UnitTest() . . . . .	449
6.245.1.3 UnitTest() [2/2] . . . . .	449
6.245.2 Member Function Documentation . . . . .	449
6.245.2.1 ad_hoc_test_result() . . . . .	450
6.245.2.2 AddEnvironment() . . . . .	450
6.245.2.3 AddTestPartResult() . . . . .	450
6.245.2.4 current_test_case() . . . . .	450
6.245.2.5 current_test_info() . . . . .	450
6.245.2.6 current_test_suite() . . . . .	450
6.245.2.7 disabled_test_count() . . . . .	450
6.245.2.8 elapsed_time() . . . . .	451
6.245.2.9 Failed() . . . . .	451
6.245.2.10 failed_test_case_count() . . . . .	451
6.245.2.11 failed_test_count() . . . . .	451
6.245.2.12 failed_test_suite_count() . . . . .	451
6.245.2.13 GetInstance() . . . . .	451
6.245.2.14 GetMutableTestSuite() . . . . .	451
6.245.2.15 GetTestCase() . . . . .	452
6.245.2.16 GetTestSuite() . . . . .	452

---

6.245.2.17 <code>impl()</code> [1/2] . . . . .	452
6.245.2.18 <code>impl()</code> [2/2] . . . . .	452
6.245.2.19 <code>listeners()</code> . . . . .	452
6.245.2.20 <code>operator=()</code> . . . . .	452
6.245.2.21 <code>original_working_dir()</code> . . . . .	452
6.245.2.22 <code>parameterized_test_registry()</code> . . . . .	453
6.245.2.23 <code>Passed()</code> . . . . .	453
6.245.2.24 <code>PopGTestTrace()</code> . . . . .	453
6.245.2.25 <code>PushGTestTrace()</code> . . . . .	453
6.245.2.26 <code>random_seed()</code> . . . . .	453
6.245.2.27 <code>RecordProperty()</code> . . . . .	453
6.245.2.28 <code>reportable_disabled_test_count()</code> . . . . .	453
6.245.2.29 <code>reportable_test_count()</code> . . . . .	454
6.245.2.30 <code>Run()</code> . . . . .	454
6.245.2.31 <code>skipped_test_count()</code> . . . . .	454
6.245.2.32 <code>start_timestamp()</code> . . . . .	454
6.245.2.33 <code>successful_test_case_count()</code> . . . . .	454
6.245.2.34 <code>successful_test_count()</code> . . . . .	454
6.245.2.35 <code>successful_test_suite_count()</code> . . . . .	454
6.245.2.36 <code>test_case_to_run_count()</code> . . . . .	454
6.245.2.37 <code>test_suite_to_run_count()</code> . . . . .	455
6.245.2.38 <code>test_to_run_count()</code> . . . . .	455
6.245.2.39 <code>total_test_case_count()</code> . . . . .	455
6.245.2.40 <code>total_test_count()</code> . . . . .	455
6.245.2.41 <code>total_test_suite_count()</code> . . . . .	455
6.245.3 Friends And Related Function Documentation . . . . .	455
6.245.3.1 <code>AddGlobalTestEnvironment</code> . . . . .	455
6.245.3.2 <code>internal::AssertHelper</code> . . . . .	455
6.245.3.3 <code>internal::GetIgnoredParameterizedTestSuites</code> . . . . .	456
6.245.3.4 <code>internal::GetUnitTestImpl</code> . . . . .	456
6.245.3.5 <code>internal::ReportFailureInUnknownLocation</code> . . . . .	456
6.245.3.6 <code>internal::StreamingListenerTest</code> . . . . .	456
6.245.3.7 <code>internal::UnitTestRecordPropertyTestHelper</code> . . . . .	456
6.245.3.8 <code>ScopedTrace</code> . . . . .	456
6.245.3.9 <code>Test</code> . . . . .	456
6.245.4 Member Data Documentation . . . . .	456
6.245.4.1 <code>impl_</code> . . . . .	457
6.245.4.2 <code>mutex_</code> . . . . .	457
6.246 <code>testing::internal::UnitTestImpl</code> Class Reference . . . . .	457
6.246.1 Member Enumeration Documentation . . . . .	459
6.246.1.1 <code>ReactionToSharding</code> . . . . .	459
6.246.2 Constructor & Destructor Documentation . . . . .	460

6.246.2.1 UnitTestImpl() [1/2] . . . . .	460
6.246.2.2 ~UnitTestImpl() . . . . .	460
6.246.2.3 UnitTestImpl() [2/2] . . . . .	460
6.246.3 Member Function Documentation . . . . .	460
6.246.3.1 ad_hoc_test_result() . . . . .	460
6.246.3.2 AddTestInfo() . . . . .	460
6.246.3.3 catch_exceptions() . . . . .	461
6.246.3.4 ClearAdHocTestResult() . . . . .	461
6.246.3.5 ClearNonAdHocTestResult() . . . . .	461
6.246.3.6 ConfigureXmlOutput() . . . . .	461
6.246.3.7 current_test_info() [1/2] . . . . .	461
6.246.3.8 current_test_info() [2/2] . . . . .	461
6.246.3.9 current_test_result() . . . . .	461
6.246.3.10 current_test_suite() . . . . .	461
6.246.3.11 CurrentOsStackTraceExceptTop() . . . . .	462
6.246.3.12 disabled_test_count() . . . . .	462
6.246.3.13 elapsed_time() . . . . .	462
6.246.3.14 environments() . . . . .	462
6.246.3.15 Failed() . . . . .	462
6.246.3.16 failed_test_count() . . . . .	462
6.246.3.17 failed_test_suite_count() . . . . .	462
6.246.3.18 FilterTests() . . . . .	463
6.246.3.19 GetGlobalTestPartResultReporter() . . . . .	463
6.246.3.20 GetMutableSuiteCase() . . . . .	463
6.246.3.21 GetTestCase() [1/2] . . . . .	463
6.246.3.22 GetTestCase() [2/2] . . . . .	463
6.246.3.23 GetTestPartResultReporterForCurrentThread() . . . . .	463
6.246.3.24 GetTestSuite() [1/2] . . . . .	464
6.246.3.25 GetTestSuite() [2/2] . . . . .	464
6.246.3.26 gtest_trace_stack() [1/2] . . . . .	464
6.246.3.27 gtest_trace_stack() [2/2] . . . . .	464
6.246.3.28 ignored_parameterized_test_suites() . . . . .	464
6.246.3.29 listeners() . . . . .	464
6.246.3.30 ListTestsMatchingFilter() . . . . .	464
6.246.3.31 operator=() . . . . .	465
6.246.3.32 os_stack_trace_getter() . . . . .	465
6.246.3.33 parameterized_test_registry() . . . . .	465
6.246.3.34 Passed() . . . . .	465
6.246.3.35 PostFlagParsingInit() . . . . .	465
6.246.3.36 random() . . . . .	465
6.246.3.37 random_seed() . . . . .	465
6.246.3.38 RecordProperty() . . . . .	466

---

6.246.3.39 RegisterParameterizedTests()	466
6.246.3.40 reportable_disabled_test_count()	466
6.246.3.41 reportable_test_count()	466
6.246.3.42 RunAllTests()	466
6.246.3.43 set_catch_exceptions()	466
6.246.3.44 set_current_test_info()	466
6.246.3.45 set_current_test_suite()	467
6.246.3.46 set_os_stack_trace_getter()	467
6.246.3.47 SetGlobalTestPartResultReporter()	467
6.246.3.48 SetTestPartResultReporterForCurrentThread()	467
6.246.3.49 ShuffleTests()	467
6.246.3.50 skipped_test_count()	467
6.246.3.51 start_timestamp()	467
6.246.3.52 successful_test_count()	468
6.246.3.53 successful_test_suite_count()	468
6.246.3.54 test_suite_to_run_count()	468
6.246.3.55 test_to_run_count()	468
6.246.3.56 total_test_count()	468
6.246.3.57 total_test_suite_count()	468
6.246.3.58 type_parameterized_test_registry()	468
6.246.3.59 UnshuffleTests()	468
6.246.4 Friends And Related Function Documentation	469
6.246.4.1 ::testing::UnitTest	469
6.246.5 Member Data Documentation	469
6.246.5.1 ad_hoc_test_result_	469
6.246.5.2 catch_exceptions_	469
6.246.5.3 current_test_info_	469
6.246.5.4 current_test_suite_	469
6.246.5.5 default_global_test_part_result_reporter_	469
6.246.5.6 default_per_thread_test_part_result_reporter_	470
6.246.5.7 elapsed_time_	470
6.246.5.8 environments_	470
6.246.5.9 global_test_part_result_reporter_	470
6.246.5.10 global_test_part_result_reporter_mutex_	470
6.246.5.11 gtest_trace_stack_	470
6.246.5.12 ignored_parameterized_test_suites_	470
6.246.5.13 last_death_test_suite_	471
6.246.5.14 listeners_	471
6.246.5.15 os_stack_trace_getter_	471
6.246.5.16 parameterized_test_registry_	471
6.246.5.17 parameterized_tests_registered_	471
6.246.5.18 parent_	471

---

6.246.5.19 <code>per_thread_test_part_result_reporter_</code>	471
6.246.5.20 <code>post_flag_parse_init_performed_</code>	472
6.246.5.21 <code>random_</code>	472
6.246.5.22 <code>random_seed_</code>	472
6.246.5.23 <code>start_timestamp_</code>	472
6.246.5.24 <code>test_suite_indices_</code>	472
6.246.5.25 <code>test_suites_</code>	472
6.246.5.26 <code>type_parameterized_test_registry_</code>	472
6.247 <code>testing::internal::UnitTestOptions</code> Class Reference	473
6.247.1 Member Function Documentation	473
6.247.1.1 <code>FilterMatchesTest()</code>	473
6.247.1.2 <code>GetAbsolutePathToOutputFile()</code>	473
6.247.1.3 <code>GetOutputFormat()</code>	473
6.247.1.4 <code>MatchesFilter()</code>	473
6.248 <code>testing::internal::UniversalPrinter&lt; T &gt;</code> Class Template Reference	474
6.248.1 Member Function Documentation	474
6.248.1.1 <code>Print()</code>	474
6.249 <code>testing::internal::UniversalPrinter&lt; const T &gt;</code> Class Template Reference	475
6.250 <code>testing::internal::UniversalPrinter&lt; T &amp; &gt;</code> Class Template Reference	475
6.250.1 Member Function Documentation	476
6.250.1.1 <code>Print()</code>	476
6.251 <code>testing::internal::UniversalPrinter&lt; T[N]&gt;</code> Class Template Reference	476
6.251.1 Member Function Documentation	476
6.251.1.1 <code>Print()</code>	476
6.252 <code>testing::internal::UniversalTersePrinter&lt; T &gt;</code> Class Template Reference	477
6.252.1 Member Function Documentation	477
6.252.1.1 <code>Print()</code>	477
6.253 <code>testing::internal::UniversalTersePrinter&lt; char * &gt;</code> Class Reference	477
6.254 <code>testing::internal::UniversalTersePrinter&lt; char16_t * &gt;</code> Class Reference	478
6.255 <code>testing::internal::UniversalTersePrinter&lt; char32_t * &gt;</code> Class Reference	479
6.256 <code>testing::internal::UniversalTersePrinter&lt; const char * &gt;</code> Class Reference	480
6.256.1 Member Function Documentation	481
6.256.1.1 <code>Print()</code>	481
6.257 <code>testing::internal::UniversalTersePrinter&lt; const char16_t * &gt;</code> Class Reference	481
6.257.1 Member Function Documentation	482
6.257.1.1 <code>Print()</code>	482
6.258 <code>testing::internal::UniversalTersePrinter&lt; const char32_t * &gt;</code> Class Reference	482
6.258.1 Member Function Documentation	482
6.258.1.1 <code>Print()</code>	483
6.259 <code>testing::internal::UniversalTersePrinter&lt; std::reference_wrapper&lt; T &gt; &gt;</code> Class Template Reference	483
6.259.1 Member Function Documentation	483
6.259.1.1 <code>Print()</code>	483

---

6.260 testing::internal::UniversalTersePrinter< T & > Class Template Reference . . . . .	483
6.260.1 Member Function Documentation . . . . .	484
6.260.1.1 Print() . . . . .	484
6.261 testing::internal::UniversalTersePrinter< T[N]> Class Template Reference . . . . .	484
6.261.1 Member Function Documentation . . . . .	484
6.261.1.1 Print() . . . . .	484
6.262 testing::internal::UniversalTersePrinter< wchar_t * > Class Reference . . . . .	484
6.262.1 Member Function Documentation . . . . .	485
6.262.1.1 Print() . . . . .	485
6.263 testing::internal::DoAllAction< FinalAction >::UserConstructorTag Struct Reference . . . . .	485
6.264 testing::internal::DoAllAction< InitialAction, OtherActions... >::UserConstructorTag Struct Reference	485
6.265 testing::internal::ValueArray< Ts > Class Template Reference . . . . .	485
6.265.1 Constructor & Destructor Documentation . . . . .	486
6.265.1.1 ValueArray() . . . . .	486
6.265.2 Member Function Documentation . . . . .	486
6.265.2.1 MakeVector() . . . . .	486
6.265.2.2 operator ParamGenerator< T >() . . . . .	486
6.265.3 Member Data Documentation . . . . .	487
6.265.3.1 v_ . . . . .	487
6.266 testing::DefaultValue< T >::ValueProducer Class Reference . . . . .	487
6.266.1 Constructor & Destructor Documentation . . . . .	487
6.266.1.1 ~ValueProducer() . . . . .	487
6.266.2 Member Function Documentation . . . . .	488
6.266.2.1 Produce() . . . . .	488
6.267 testing::internal::ValuesIteratorRangeGenerator< T > Class Template Reference . . . . .	488
6.267.1 Member Typedef Documentation . . . . .	489
6.267.1.1 ContainerType . . . . .	489
6.267.2 Constructor & Destructor Documentation . . . . .	489
6.267.2.1 ValuesIteratorRangeGenerator() . . . . .	490
6.267.2.2 ~ValuesIteratorRangeGenerator() . . . . .	490
6.267.3 Member Function Documentation . . . . .	490
6.267.3.1 Begin() . . . . .	490
6.267.3.2 End() . . . . .	490
6.267.3.3 operator=(()) . . . . .	490
6.267.4 Member Data Documentation . . . . .	491
6.267.4.1 container_ . . . . .	491
6.268 testing::internal::WithArgsAction< InnerAction, I > Struct Template Reference . . . . .	491
6.268.1 Member Typedef Documentation . . . . .	491
6.268.1.1 InnerSignature . . . . .	491
6.268.2 Member Function Documentation . . . . .	492
6.268.2.1 operator Action< R() . . . . .	492
6.268.2.2 operator OnceAction< R() . . . . .	492

6.268.3 Member Data Documentation . . . . .	492
6.268.3.1 inner_action . . . . .	492
6.269 testing::internal::WithoutMatchers Class Reference . . . . .	492
6.269.1 Constructor & Destructor Documentation . . . . .	493
6.269.1.1 WithoutMatchers() . . . . .	493
6.269.2 Friends And Related Function Documentation . . . . .	493
6.269.2.1 GetWithoutMatchers . . . . .	493
6.270 testing::WithParamInterface< T > Class Template Reference . . . . .	493
6.270.1 Member Typedef Documentation . . . . .	494
6.270.1.1 ParamType . . . . .	494
6.270.2 Constructor & Destructor Documentation . . . . .	494
6.270.2.1 ~WithParamInterface() . . . . .	494
6.270.3 Member Function Documentation . . . . .	494
6.270.3.1 GetParam() . . . . .	495
6.270.3.2 SetParam() . . . . .	495
6.270.4 Friends And Related Function Documentation . . . . .	495
6.270.4.1 internal::ParameterizedTestFactory . . . . .	495
6.270.5 Member Data Documentation . . . . .	495
6.270.5.1 parameter_ . . . . .	495
6.271 World Class Reference . . . . .	496
6.271.1 Detailed Description . . . . .	496
6.271.2 Constructor & Destructor Documentation . . . . .	497
6.271.2.1 World() . . . . .	497
6.271.3 Member Function Documentation . . . . .	497
6.271.3.1 display_world() . . . . .	497
6.271.3.2 evaluate_rules() . . . . .	497
6.271.3.3 output_cells() . . . . .	497
6.271.3.4 random_seed() . . . . .	498
6.271.3.5 read_edge_1d() . . . . .	498
6.271.3.6 read_edge_2d() . . . . .	498
6.271.3.7 read_vertex_2d() . . . . .	498
6.271.3.8 update_boundary() . . . . .	499
6.271.3.9 write_edge_1d() . . . . .	499
6.271.3.10 write_edge_2d() . . . . .	499
6.271.3.11 write_vertex_2d() . . . . .	499
6.271.4 Member Data Documentation . . . . .	500
6.271.4.1 age . . . . .	500
6.271.4.2 Cells_0 . . . . .	500
6.271.4.3 Cells_1 . . . . .	500
6.271.4.4 n_cols . . . . .	500
6.271.4.5 n_rows . . . . .	500
6.271.4.6 side . . . . .	500

---

<b>7 File Documentation</b>	<b>501</b>
7.1 build/_deps/googletest-src/googlemock/include/gmock/gmock-actions.h File Reference . . . . .	501
7.1.1 Macro Definition Documentation . . . . .	506
7.1.1.1 ACTION . . . . .	506
7.1.1.2 ACTION_P . . . . .	507
7.1.1.3 ACTION_P10 . . . . .	507
7.1.1.4 ACTION_P2 . . . . .	507
7.1.1.5 ACTION_P3 . . . . .	507
7.1.1.6 ACTION_P4 . . . . .	508
7.1.1.7 ACTION_P5 . . . . .	508
7.1.1.8 ACTION_P6 . . . . .	508
7.1.1.9 ACTION_P7 . . . . .	508
7.1.1.10 ACTION_P8 . . . . .	508
7.1.1.11 ACTION_P9 . . . . .	508
7.1.1.12 GMOCK_ACTION_ARG_TYPES_AND_NAMES_ . . . . .	509
7.1.1.13 GMOCK_ACTION_ARG_TYPES_AND_NAMES_UNUSED_ . . . . .	509
7.1.1.14 GMOCK_ACTION_FIELD_PARAMS_ . . . . .	509
7.1.1.15 GMOCK_ACTION_GVALUE_PARAMS_ . . . . .	509
7.1.1.16 GMOCK_ACTION_INIT_PARAMS_ . . . . .	509
7.1.1.17 GMOCK_ACTION_TEMPLATE_ARGS_NAMES_ . . . . .	509
7.1.1.18 GMOCK_ACTION_TYPE_GVALUE_PARAMS_ . . . . .	510
7.1.1.19 GMOCK_ACTION_TYPE_PARAMS_ . . . . .	510
7.1.1.20 GMOCK_ACTION_TYPENAME_PARAMS_ . . . . .	510
7.1.1.21 GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_ . . . . .	510
7.1.1.22 GMOCK_INTERNAL_ACTION . . . . .	510
7.1.1.23 GMOCK_INTERNAL_ARG . . . . .	511
7.1.1.24 GMOCK_INTERNAL_ARG_UNUSED . . . . .	511
7.1.1.25 GMOCK_INTERNAL_FIELD_PARAM . . . . .	511
7.1.1.26 GMOCK_INTERNAL_GVALUE_PARAM . . . . .	511
7.1.1.27 GMOCK_INTERNAL_INIT_PARAM . . . . .	511
7.1.1.28 GMOCK_INTERNAL_TEMPLATE_ARG . . . . .	511
7.1.1.29 GMOCK_INTERNAL_TYPE_GVALUE_PARAM . . . . .	512
7.1.1.30 GMOCK_INTERNAL_TYPE_PARAM . . . . .	512
7.1.1.31 GMOCK_INTERNAL_TYPENAME_PARAM . . . . .	512
7.2 build/_deps/googletest-src/googlemock/include/gmock/gmock-cardinalities.h File Reference . . . . .	512
7.2.1 Function Documentation . . . . .	513
7.2.1.1 GTEST_DISABLE_MSC_WARNINGS_PUSH_() . . . . .	513
7.3 build/_deps/googletest-src/googlemock/include/gmock/gmock-function-mocker.h File Reference . . . . .	513
7.3.1 Macro Definition Documentation . . . . .	519
7.3.1.1 GMOCK_INTERNAL_A_MATCHER_ARGUMENT . . . . .	519
7.3.1.2 GMOCK_INTERNAL_ARG_O . . . . .	519
7.3.1.3 GMOCK_INTERNAL_ASSERT_PARENTHESIS . . . . .	519

---

7.3.1.4 GMOCK_INTERNAL_ASSERT_VALID_SIGNATURE . . . . .	519
7.3.1.5 GMOCK_INTERNAL_ASSERT_VALID_SPEC . . . . .	520
7.3.1.6 GMOCK_INTERNAL_ASSERT_VALID_SPEC_ELEMENT . . . . .	520
7.3.1.7 GMOCK_INTERNAL_CALLTYPE_SPEC_IF_CALLTYPE . . . . .	520
7.3.1.8 GMOCK_INTERNAL_DETECT_CALLTYPE . . . . .	520
7.3.1.9 GMOCK_INTERNAL_DETECT_CALLTYPE_I_Calltype . . . . .	520
7.3.1.10 GMOCK_INTERNAL_DETECT_CONST . . . . .	521
7.3.1.11 GMOCK_INTERNAL_DETECT_CONST_I_const . . . . .	521
7.3.1.12 GMOCK_INTERNAL_DETECT_FINAL . . . . .	521
7.3.1.13 GMOCK_INTERNAL_DETECT_FINAL_I_final . . . . .	521
7.3.1.14 GMOCK_INTERNAL_DETECT_NOEXCEPT . . . . .	521
7.3.1.15 GMOCK_INTERNAL_DETECT_NOEXCEPT_I_noexcept . . . . .	521
7.3.1.16 GMOCK_INTERNAL_DETECT_OVERRIDE . . . . .	522
7.3.1.17 GMOCK_INTERNAL_DETECT_OVERRIDE_I_override . . . . .	522
7.3.1.18 GMOCK_INTERNAL_DETECT_REF . . . . .	522
7.3.1.19 GMOCK_INTERNAL_DETECT_REF_I_ref . . . . .	522
7.3.1.20 GMOCK_INTERNAL_EXPAND . . . . .	522
7.3.1.21 GMOCK_INTERNAL_FORWARD_ARG . . . . .	522
7.3.1.22 GMOCK_INTERNAL_GET_CALLTYPE_SPEC . . . . .	523
7.3.1.23 GMOCK_INTERNAL_GET_NOEXCEPT_SPEC . . . . .	523
7.3.1.24 GMOCK_INTERNAL_GET_REF_SPEC . . . . .	523
7.3.1.25 GMOCK_INTERNAL_GET_TYPE . . . . .	523
7.3.1.26 GMOCK_INTERNAL_HAS_CONST . . . . .	523
7.3.1.27 GMOCK_INTERNAL_HAS_FINAL . . . . .	523
7.3.1.28 GMOCK_INTERNAL_HAS_OVERRIDE . . . . .	524
7.3.1.29 GMOCK_INTERNAL_MATCHER_ARGUMENT . . . . .	524
7.3.1.30 GMOCK_INTERNAL_MATCHER_O . . . . .	524
7.3.1.31 GMOCK_INTERNAL_MATCHER_PARAMETER . . . . .	524
7.3.1.32 GMOCK_INTERNAL_MOCK_METHOD_ARG_1 . . . . .	524
7.3.1.33 GMOCK_INTERNAL_MOCK_METHOD_ARG_2 . . . . .	525
7.3.1.34 GMOCK_INTERNAL_MOCK_METHOD_ARG_3 . . . . .	525
7.3.1.35 GMOCK_INTERNAL_MOCK_METHOD_ARG_4 . . . . .	525
7.3.1.36 GMOCK_INTERNAL_MOCK_METHOD_ARG_5 . . . . .	525
7.3.1.37 GMOCK_INTERNAL_MOCK_METHOD_ARG_6 . . . . .	525
7.3.1.38 GMOCK_INTERNAL_MOCK_METHOD_ARG_7 . . . . .	526
7.3.1.39 GMOCK_INTERNAL_MOCK_METHOD_IMPL . . . . .	526
7.3.1.40 GMOCK_INTERNAL_MOCK_METHODON . . . . .	526
7.3.1.41 GMOCK_INTERNAL_NOEXCEPT_SPEC_IF_NOEXCEPT . . . . .	527
7.3.1.42 GMOCK_INTERNAL_PARAMETER . . . . .	527
7.3.1.43 GMOCK_INTERNAL_REF_SPEC_IF_REF . . . . .	527
7.3.1.44 GMOCK_INTERNAL_SIGNATURE . . . . .	527
7.3.1.45 GMOCK_INTERNAL_UNPACK_Calltype . . . . .	528

---

7.3.1.46 GMOCK_INTERNAL_UNPACK_ref . . . . .	528
7.3.1.47 GMOCK_INTERNAL_WRONG_ARITY . . . . .	528
7.3.1.48 GMOCK_MOCKER_ . . . . .	528
7.3.1.49 MOCK_CONST_METHOD0 . . . . .	528
7.3.1.50 MOCK_CONST_METHOD0_T . . . . .	528
7.3.1.51 MOCK_CONST_METHOD0_T_WITH_CALLTYPE . . . . .	529
7.3.1.52 MOCK_CONST_METHOD0_WITH_CALLTYPE . . . . .	529
7.3.1.53 MOCK_CONST_METHOD1 . . . . .	529
7.3.1.54 MOCK_CONST_METHOD10 . . . . .	529
7.3.1.55 MOCK_CONST_METHOD10_T . . . . .	529
7.3.1.56 MOCK_CONST_METHOD10_T_WITH_CALLTYPE . . . . .	529
7.3.1.57 MOCK_CONST_METHOD10_WITH_CALLTYPE . . . . .	530
7.3.1.58 MOCK_CONST_METHOD1_T . . . . .	530
7.3.1.59 MOCK_CONST_METHOD1_T_WITH_CALLTYPE . . . . .	530
7.3.1.60 MOCK_CONST_METHOD1_WITH_CALLTYPE . . . . .	530
7.3.1.61 MOCK_CONST_METHOD2 . . . . .	530
7.3.1.62 MOCK_CONST_METHOD2_T . . . . .	530
7.3.1.63 MOCK_CONST_METHOD2_T_WITH_CALLTYPE . . . . .	531
7.3.1.64 MOCK_CONST_METHOD2_WITH_CALLTYPE . . . . .	531
7.3.1.65 MOCK_CONST_METHOD3 . . . . .	531
7.3.1.66 MOCK_CONST_METHOD3_T . . . . .	531
7.3.1.67 MOCK_CONST_METHOD3_T_WITH_CALLTYPE . . . . .	531
7.3.1.68 MOCK_CONST_METHOD3_WITH_CALLTYPE . . . . .	531
7.3.1.69 MOCK_CONST_METHOD4 . . . . .	532
7.3.1.70 MOCK_CONST_METHOD4_T . . . . .	532
7.3.1.71 MOCK_CONST_METHOD4_T_WITH_CALLTYPE . . . . .	532
7.3.1.72 MOCK_CONST_METHOD4_WITH_CALLTYPE . . . . .	532
7.3.1.73 MOCK_CONST_METHOD5 . . . . .	532
7.3.1.74 MOCK_CONST_METHOD5_T . . . . .	532
7.3.1.75 MOCK_CONST_METHOD5_T_WITH_CALLTYPE . . . . .	533
7.3.1.76 MOCK_CONST_METHOD5_WITH_CALLTYPE . . . . .	533
7.3.1.77 MOCK_CONST_METHOD6 . . . . .	533
7.3.1.78 MOCK_CONST_METHOD6_T . . . . .	533
7.3.1.79 MOCK_CONST_METHOD6_T_WITH_CALLTYPE . . . . .	533
7.3.1.80 MOCK_CONST_METHOD6_WITH_CALLTYPE . . . . .	533
7.3.1.81 MOCK_CONST_METHOD7 . . . . .	534
7.3.1.82 MOCK_CONST_METHOD7_T . . . . .	534
7.3.1.83 MOCK_CONST_METHOD7_T_WITH_CALLTYPE . . . . .	534
7.3.1.84 MOCK_CONST_METHOD7_WITH_CALLTYPE . . . . .	534
7.3.1.85 MOCK_CONST_METHOD8 . . . . .	534
7.3.1.86 MOCK_CONST_METHOD8_T . . . . .	534
7.3.1.87 MOCK_CONST_METHOD8_T_WITH_CALLTYPE . . . . .	535

7.3.1.88 MOCK_CONST_METHOD8_WITH_CALLTYPE . . . . .	535
7.3.1.89 MOCK_CONST_METHOD9 . . . . .	535
7.3.1.90 MOCK_CONST_METHOD9_T . . . . .	535
7.3.1.91 MOCK_CONST_METHOD9_T_WITH_CALLTYPE . . . . .	535
7.3.1.92 MOCK_CONST_METHOD9_WITH_CALLTYPE . . . . .	535
7.3.1.93 MOCK_METHOD . . . . .	536
7.3.1.94 MOCK_METHOD0 . . . . .	536
7.3.1.95 MOCK_METHOD0_T . . . . .	536
7.3.1.96 MOCK_METHOD0_T_WITH_CALLTYPE . . . . .	536
7.3.1.97 MOCK_METHOD0_WITH_CALLTYPE . . . . .	536
7.3.1.98 MOCK_METHOD1 . . . . .	536
7.3.1.99 MOCK_METHOD10 . . . . .	537
7.3.1.100 MOCK_METHOD10_T . . . . .	537
7.3.1.101 MOCK_METHOD10_T_WITH_CALLTYPE . . . . .	537
7.3.1.102 MOCK_METHOD10_WITH_CALLTYPE . . . . .	537
7.3.1.103 MOCK_METHOD1_T . . . . .	537
7.3.1.104 MOCK_METHOD1_T_WITH_CALLTYPE . . . . .	537
7.3.1.105 MOCK_METHOD1_WITH_CALLTYPE . . . . .	538
7.3.1.106 MOCK_METHOD2 . . . . .	538
7.3.1.107 MOCK_METHOD2_T . . . . .	538
7.3.1.108 MOCK_METHOD2_T_WITH_CALLTYPE . . . . .	538
7.3.1.109 MOCK_METHOD2_WITH_CALLTYPE . . . . .	538
7.3.1.110 MOCK_METHOD3 . . . . .	538
7.3.1.111 MOCK_METHOD3_T . . . . .	539
7.3.1.112 MOCK_METHOD3_T_WITH_CALLTYPE . . . . .	539
7.3.1.113 MOCK_METHOD3_WITH_CALLTYPE . . . . .	539
7.3.1.114 MOCK_METHOD4 . . . . .	539
7.3.1.115 MOCK_METHOD4_T . . . . .	539
7.3.1.116 MOCK_METHOD4_T_WITH_CALLTYPE . . . . .	539
7.3.1.117 MOCK_METHOD4_WITH_CALLTYPE . . . . .	540
7.3.1.118 MOCK_METHOD5 . . . . .	540
7.3.1.119 MOCK_METHOD5_T . . . . .	540
7.3.1.120 MOCK_METHOD5_T_WITH_CALLTYPE . . . . .	540
7.3.1.121 MOCK_METHOD5_WITH_CALLTYPE . . . . .	540
7.3.1.122 MOCK_METHOD6 . . . . .	540
7.3.1.123 MOCK_METHOD6_T . . . . .	541
7.3.1.124 MOCK_METHOD6_T_WITH_CALLTYPE . . . . .	541
7.3.1.125 MOCK_METHOD6_WITH_CALLTYPE . . . . .	541
7.3.1.126 MOCK_METHOD7 . . . . .	541
7.3.1.127 MOCK_METHOD7_T . . . . .	541
7.3.1.128 MOCK_METHOD7_T_WITH_CALLTYPE . . . . .	541
7.3.1.129 MOCK_METHOD7_WITH_CALLTYPE . . . . .	542

---

7.3.1.130 MOCK_METHOD8 . . . . .	542
7.3.1.131 MOCK_METHOD8_T . . . . .	542
7.3.1.132 MOCK_METHOD8_T_WITH_CALLTYPE . . . . .	542
7.3.1.133 MOCK_METHOD8_WITH_CALLTYPE . . . . .	542
7.3.1.134 MOCK_METHOD9 . . . . .	542
7.3.1.135 MOCK_METHOD9_T . . . . .	543
7.3.1.136 MOCK_METHOD9_T_WITH_CALLTYPE . . . . .	543
7.3.1.137 MOCK_METHOD9_WITH_CALLTYPE . . . . .	543
7.4 build/_deps/googletest-src/googlemock/include/gmock/gmock-matchers.h File Reference . . . . .	543
7.4.1 Macro Definition Documentation . . . . .	545
7.4.1.1 ASSERT_THAT . . . . .	545
7.4.1.2 EXPECT_THAT . . . . .	545
7.4.1.3 GMOCK_INTERNAL_MATCHER . . . . .	545
7.4.1.4 GMOCK_INTERNAL_MATCHER_ARG_USAGE . . . . .	546
7.4.1.5 GMOCK_INTERNAL_MATCHER_ARGS_USAGE . . . . .	546
7.4.1.6 GMOCK_INTERNAL_MATCHER_FORWARD_ARG . . . . .	546
7.4.1.7 GMOCK_INTERNAL_MATCHER_FORWARD_ARGS . . . . .	546
7.4.1.8 GMOCK_INTERNAL_MATCHER_FUNCTION_ARG . . . . .	546
7.4.1.9 GMOCK_INTERNAL_MATCHER_FUNCTION_ARGS . . . . .	546
7.4.1.10 GMOCK_INTERNAL_MATCHER_MEMBER . . . . .	547
7.4.1.11 GMOCK_INTERNAL_MATCHER_MEMBER_USAGE . . . . .	547
7.4.1.12 GMOCK_INTERNAL_MATCHER_MEMBERS . . . . .	547
7.4.1.13 GMOCK_INTERNAL_MATCHER_MEMBERS_USAGE . . . . .	547
7.4.1.14 GMOCK_INTERNAL_MATCHER_TEMPLATE_PARAM . . . . .	547
7.4.1.15 GMOCK_INTERNAL_MATCHER_TEMPLATE_PARAMS . . . . .	547
7.4.1.16 GMOCK_INTERNAL_MATCHER_TYPE_PARAM . . . . .	548
7.4.1.17 GMOCK_INTERNAL_MATCHER_TYPE_PARAMS . . . . .	548
7.4.1.18 GMOCK_MAYBE_5046_ . . . . .	548
7.4.1.19 MATCHER . . . . .	548
7.4.1.20 MATCHER_P . . . . .	548
7.4.1.21 MATCHER_P10 . . . . .	549
7.4.1.22 MATCHER_P2 . . . . .	549
7.4.1.23 MATCHER_P3 . . . . .	549
7.4.1.24 MATCHER_P4 . . . . .	550
7.4.1.25 MATCHER_P5 . . . . .	550
7.4.1.26 MATCHER_P6 . . . . .	550
7.4.1.27 MATCHER_P7 . . . . .	551
7.4.1.28 MATCHER_P8 . . . . .	551
7.4.1.29 MATCHER_P9 . . . . .	551
7.4.2 Function Documentation . . . . .	552
7.4.2.1 GTEST_DISABLE_MSC_WARNINGS_PUSH_() . . . . .	552

7.5 build/_deps/googletest-src/gmock/include/gmock/internal/custom/gmock-matchers.h File Reference . . . . .	552
7.6 build/_deps/googletest-src/gmock/include/gmock/gmock-more-actions.h File Reference . . . . .	552
7.6.1 Macro Definition Documentation . . . . .	556
7.6.1.1 ACTION_TEMPLATE . . . . .	557
7.6.1.2 GMOCK_ACTION_CLASS_ . . . . .	557
7.6.1.3 GMOCK_INTERNAL_COUNT_AND_0_VALUE_PARAMS . . . . .	557
7.6.1.4 GMOCK_INTERNAL_COUNT_AND_10_VALUE_PARAMS . . . . .	557
7.6.1.5 GMOCK_INTERNAL_COUNT_AND_1_VALUE_PARAMS . . . . .	557
7.6.1.6 GMOCK_INTERNAL_COUNT_AND_2_VALUE_PARAMS . . . . .	558
7.6.1.7 GMOCK_INTERNAL_COUNT_AND_3_VALUE_PARAMS . . . . .	558
7.6.1.8 GMOCK_INTERNAL_COUNT_AND_4_VALUE_PARAMS . . . . .	558
7.6.1.9 GMOCK_INTERNAL_COUNT_AND_5_VALUE_PARAMS . . . . .	558
7.6.1.10 GMOCK_INTERNAL_COUNT_AND_6_VALUE_PARAMS . . . . .	558
7.6.1.11 GMOCK_INTERNAL_COUNT_AND_7_VALUE_PARAMS . . . . .	559
7.6.1.12 GMOCK_INTERNAL_COUNT_AND_8_VALUE_PARAMS . . . . .	559
7.6.1.13 GMOCK_INTERNAL_COUNT_AND_9_VALUE_PARAMS . . . . .	559
7.6.1.14 GMOCK_INTERNAL_DECL_AND_0_VALUE_PARAMS . . . . .	559
7.6.1.15 GMOCK_INTERNAL_DECL_AND_10_VALUE_PARAMS . . . . .	560
7.6.1.16 GMOCK_INTERNAL_DECL_AND_1_VALUE_PARAMS . . . . .	560
7.6.1.17 GMOCK_INTERNAL_DECL_AND_2_VALUE_PARAMS . . . . .	560
7.6.1.18 GMOCK_INTERNAL_DECL_AND_3_VALUE_PARAMS . . . . .	560
7.6.1.19 GMOCK_INTERNAL_DECL_AND_4_VALUE_PARAMS . . . . .	560
7.6.1.20 GMOCK_INTERNAL_DECL_AND_5_VALUE_PARAMS . . . . .	561
7.6.1.21 GMOCK_INTERNAL_DECL_AND_6_VALUE_PARAMS . . . . .	561
7.6.1.22 GMOCK_INTERNAL_DECL_AND_7_VALUE_PARAMS . . . . .	561
7.6.1.23 GMOCK_INTERNAL_DECL_AND_8_VALUE_PARAMS . . . . .	561
7.6.1.24 GMOCK_INTERNAL_DECL_AND_9_VALUE_PARAMS . . . . .	562
7.6.1.25 GMOCK_INTERNAL_DECL_HAS_10_TEMPLATE_PARAMS . . . . .	562
7.6.1.26 GMOCK_INTERNAL_DECL_HAS_1_TEMPLATE_PARAMS . . . . .	562
7.6.1.27 GMOCK_INTERNAL_DECL_HAS_2_TEMPLATE_PARAMS . . . . .	563
7.6.1.28 GMOCK_INTERNAL_DECL_HAS_3_TEMPLATE_PARAMS . . . . .	563
7.6.1.29 GMOCK_INTERNAL_DECL_HAS_4_TEMPLATE_PARAMS . . . . .	563
7.6.1.30 GMOCK_INTERNAL_DECL_HAS_5_TEMPLATE_PARAMS . . . . .	563
7.6.1.31 GMOCK_INTERNAL_DECL_HAS_6_TEMPLATE_PARAMS . . . . .	564
7.6.1.32 GMOCK_INTERNAL_DECL_HAS_7_TEMPLATE_PARAMS . . . . .	564
7.6.1.33 GMOCK_INTERNAL_DECL_HAS_8_TEMPLATE_PARAMS . . . . .	564
7.6.1.34 GMOCK_INTERNAL_DECL_HAS_9_TEMPLATE_PARAMS . . . . .	565
7.6.1.35 GMOCK_INTERNAL_DECL_TYPE_AND_0_VALUE_PARAMS . . . . .	565
7.6.1.36 GMOCK_INTERNAL_DECL_TYPE_AND_10_VALUE_PARAMS . . . . .	566
7.6.1.37 GMOCK_INTERNAL_DECL_TYPE_AND_1_VALUE_PARAMS . . . . .	566
7.6.1.38 GMOCK_INTERNAL_DECL_TYPE_AND_2_VALUE_PARAMS . . . . .	566

---

7.6.1.39 GMOCK_INTERNAL_DECL_TYPE_AND_3_VALUE_PARAMS . . . . .	566
7.6.1.40 GMOCK_INTERNAL_DECL_TYPE_AND_4_VALUE_PARAMS . . . . .	566
7.6.1.41 GMOCK_INTERNAL_DECL_TYPE_AND_5_VALUE_PARAMS . . . . .	567
7.6.1.42 GMOCK_INTERNAL_DECL_TYPE_AND_6_VALUE_PARAMS . . . . .	567
7.6.1.43 GMOCK_INTERNAL_DECL_TYPE_AND_7_VALUE_PARAMS . . . . .	567
7.6.1.44 GMOCK_INTERNAL_DECL_TYPE_AND_8_VALUE_PARAMS . . . . .	568
7.6.1.45 GMOCK_INTERNAL_DECL_TYPE_AND_9_VALUE_PARAMS . . . . .	568
7.6.1.46 GMOCK_INTERNAL_DEFN_AND_0_VALUE_PARAMS . . . . .	568
7.6.1.47 GMOCK_INTERNAL_DEFN_AND_10_VALUE_PARAMS . . . . .	569
7.6.1.48 GMOCK_INTERNAL_DEFN_AND_1_VALUE_PARAMS . . . . .	569
7.6.1.49 GMOCK_INTERNAL_DEFN_AND_2_VALUE_PARAMS . . . . .	569
7.6.1.50 GMOCK_INTERNAL_DEFN_AND_3_VALUE_PARAMS . . . . .	569
7.6.1.51 GMOCK_INTERNAL_DEFN_AND_4_VALUE_PARAMS . . . . .	570
7.6.1.52 GMOCK_INTERNAL_DEFN_AND_5_VALUE_PARAMS . . . . .	570
7.6.1.53 GMOCK_INTERNAL_DEFN_AND_6_VALUE_PARAMS . . . . .	570
7.6.1.54 GMOCK_INTERNAL_DEFN_AND_7_VALUE_PARAMS . . . . .	571
7.6.1.55 GMOCK_INTERNAL_DEFN_AND_8_VALUE_PARAMS . . . . .	571
7.6.1.56 GMOCK_INTERNAL_DEFN_AND_9_VALUE_PARAMS . . . . .	571
7.6.1.57 GMOCK_INTERNAL_DEFN_COPY_AND_0_VALUE_PARAMS . . . . .	572
7.6.1.58 GMOCK_INTERNAL_DEFN_COPY_AND_10_VALUE_PARAMS . . . . .	572
7.6.1.59 GMOCK_INTERNAL_DEFN_COPY_AND_1_VALUE_PARAMS . . . . .	572
7.6.1.60 GMOCK_INTERNAL_DEFN_COPY_AND_2_VALUE_PARAMS . . . . .	572
7.6.1.61 GMOCK_INTERNAL_DEFN_COPY_AND_3_VALUE_PARAMS . . . . .	572
7.6.1.62 GMOCK_INTERNAL_DEFN_COPY_AND_4_VALUE_PARAMS . . . . .	572
7.6.1.63 GMOCK_INTERNAL_DEFN_COPY_AND_5_VALUE_PARAMS . . . . .	573
7.6.1.64 GMOCK_INTERNAL_DEFN_COPY_AND_6_VALUE_PARAMS . . . . .	573
7.6.1.65 GMOCK_INTERNAL_DEFN_COPY_AND_7_VALUE_PARAMS . . . . .	573
7.6.1.66 GMOCK_INTERNAL_DEFN_COPY_AND_8_VALUE_PARAMS . . . . .	573
7.6.1.67 GMOCK_INTERNAL_DEFN_COPY_AND_9_VALUE_PARAMS . . . . .	573
7.6.1.68 GMOCK_INTERNAL_INIT_AND_0_VALUE_PARAMS . . . . .	573
7.6.1.69 GMOCK_INTERNAL_INIT_AND_10_VALUE_PARAMS . . . . .	574
7.6.1.70 GMOCK_INTERNAL_INIT_AND_1_VALUE_PARAMS . . . . .	574
7.6.1.71 GMOCK_INTERNAL_INIT_AND_2_VALUE_PARAMS . . . . .	574
7.6.1.72 GMOCK_INTERNAL_INIT_AND_3_VALUE_PARAMS . . . . .	574
7.6.1.73 GMOCK_INTERNAL_INIT_AND_4_VALUE_PARAMS . . . . .	575
7.6.1.74 GMOCK_INTERNAL_INIT_AND_5_VALUE_PARAMS . . . . .	575
7.6.1.75 GMOCK_INTERNAL_INIT_AND_6_VALUE_PARAMS . . . . .	575
7.6.1.76 GMOCK_INTERNAL_INIT_AND_7_VALUE_PARAMS . . . . .	576
7.6.1.77 GMOCK_INTERNAL_INIT_AND_8_VALUE_PARAMS . . . . .	576
7.6.1.78 GMOCK_INTERNAL_INIT_AND_9_VALUE_PARAMS . . . . .	576
7.6.1.79 GMOCK_INTERNAL_LIST_AND_0_VALUE_PARAMS . . . . .	577
7.6.1.80 GMOCK_INTERNAL_LIST_AND_10_VALUE_PARAMS . . . . .	577

---

7.6.1.81 GMOCK_INTERNAL_LIST_AND_1_VALUE_PARAMS . . . . .	577
7.6.1.82 GMOCK_INTERNAL_LIST_AND_2_VALUE_PARAMS . . . . .	577
7.6.1.83 GMOCK_INTERNAL_LIST_AND_3_VALUE_PARAMS . . . . .	578
7.6.1.84 GMOCK_INTERNAL_LIST_AND_4_VALUE_PARAMS . . . . .	578
7.6.1.85 GMOCK_INTERNAL_LIST_AND_5_VALUE_PARAMS . . . . .	578
7.6.1.86 GMOCK_INTERNAL_LIST_AND_6_VALUE_PARAMS . . . . .	578
7.6.1.87 GMOCK_INTERNAL_LIST_AND_7_VALUE_PARAMS . . . . .	578
7.6.1.88 GMOCK_INTERNAL_LIST_AND_8_VALUE_PARAMS . . . . .	579
7.6.1.89 GMOCK_INTERNAL_LIST_AND_9_VALUE_PARAMS . . . . .	579
7.6.1.90 GMOCK_INTERNAL_LIST_HAS_10_TEMPLATE_PARAMS . . . . .	579
7.6.1.91 GMOCK_INTERNAL_LIST_HAS_1_TEMPLATE_PARAMS . . . . .	580
7.6.1.92 GMOCK_INTERNAL_LIST_HAS_2_TEMPLATE_PARAMS . . . . .	580
7.6.1.93 GMOCK_INTERNAL_LIST_HAS_3_TEMPLATE_PARAMS . . . . .	580
7.6.1.94 GMOCK_INTERNAL_LIST_HAS_4_TEMPLATE_PARAMS . . . . .	580
7.6.1.95 GMOCK_INTERNAL_LIST_HAS_5_TEMPLATE_PARAMS . . . . .	580
7.6.1.96 GMOCK_INTERNAL_LIST_HAS_6_TEMPLATE_PARAMS . . . . .	581
7.6.1.97 GMOCK_INTERNAL_LIST_HAS_7_TEMPLATE_PARAMS . . . . .	581
7.6.1.98 GMOCK_INTERNAL_LIST_HAS_8_TEMPLATE_PARAMS . . . . .	581
7.6.1.99 GMOCK_INTERNAL_LIST_HAS_9_TEMPLATE_PARAMS . . . . .	582
7.6.1.100 GMOCK_INTERNAL_LIST_TYPE_AND_0_VALUE_PARAMS . . . . .	582
7.6.1.101 GMOCK_INTERNAL_LIST_TYPE_AND_10_VALUE_PARAMS . . . . .	582
7.6.1.102 GMOCK_INTERNAL_LIST_TYPE_AND_1_VALUE_PARAMS . . . . .	582
7.6.1.103 GMOCK_INTERNAL_LIST_TYPE_AND_2_VALUE_PARAMS . . . . .	583
7.6.1.104 GMOCK_INTERNAL_LIST_TYPE_AND_3_VALUE_PARAMS . . . . .	583
7.6.1.105 GMOCK_INTERNAL_LIST_TYPE_AND_4_VALUE_PARAMS . . . . .	583
7.6.1.106 GMOCK_INTERNAL_LIST_TYPE_AND_5_VALUE_PARAMS . . . . .	583
7.6.1.107 GMOCK_INTERNAL_LIST_TYPE_AND_6_VALUE_PARAMS . . . . .	583
7.6.1.108 GMOCK_INTERNAL_LIST_TYPE_AND_7_VALUE_PARAMS . . . . .	584
7.6.1.109 GMOCK_INTERNAL_LIST_TYPE_AND_8_VALUE_PARAMS . . . . .	584
7.6.1.110 GMOCK_INTERNAL_LIST_TYPE_AND_9_VALUE_PARAMS . . . . .	584
7.7 build/_deps/googletest-src/googlemock/include/gmock/gmock-more-matchers.h File Reference . . . . .	585
7.8 build/_deps/googletest-src/googlemock/include/gmock/gmock-nice-strict.h File Reference . . . . .	586
7.8.1 Macro Definition Documentation . . . . .	587
7.8.1.1 GTEST_INTERNAL_EMPTY_BASE_CLASS . . . . .	587
7.9 build/_deps/googletest-src/googlemock/include/gmock/gmock-spec-builders.h File Reference . . . . .	587
7.9.1 Macro Definition Documentation . . . . .	588
7.9.1.1 EXPECT_CALL . . . . .	588
7.9.1.2 GMOCK_ON_CALL_IMPL_ . . . . .	589
7.9.1.3 ON_CALL . . . . .	589
7.9.2 Function Documentation . . . . .	589
7.9.2.1 GTEST_DISABLE_MSC_WARNINGS_PUSH_() . . . . .	589
7.10 build/_deps/googletest-src/googlemock/include/gmock/gmock.h File Reference . . . . .	589

---

7.10.1 Function Documentation . . . . .	590
7.10.1.1 GMOCK_DECLARE_bool_() . . . . .	590
7.10.1.2 GMOCK_DECLARE_int32_() . . . . .	590
7.10.1.3 GMOCK_DECLARE_string_() . . . . .	591
7.11 build/_deps/googletest-src/googlemock/include/gmock/internal/custom/gmock-generated-actions.h File Reference . . . . .	591
7.12 build/_deps/googletest-src/googlemock/include/gmock/internal/custom/gmock-port.h File Reference . . . . .	592
7.13 build/_deps/googletest-src/googlemock/include/gmock/internal/gmock-port.h File Reference . . . . .	592
7.13.1 Macro Definition Documentation . . . . .	593
7.13.1.1 GMOCK_DECLARE_bool_ . . . . .	593
7.13.1.2 GMOCK_DECLARE_int32_ . . . . .	594
7.13.1.3 GMOCK_DECLARE_string_ . . . . .	594
7.13.1.4 GMOCK_DEFINE_bool_ . . . . .	594
7.13.1.5 GMOCK_DEFINE_int32_ . . . . .	594
7.13.1.6 GMOCK_DEFINE_string_ . . . . .	595
7.13.1.7 GMOCK_FLAG . . . . .	595
7.13.1.8 GMOCK_FLAG_GET . . . . .	595
7.13.1.9 GMOCK_FLAG_NAME_ . . . . .	595
7.13.1.10 GMOCK_FLAG_SET . . . . .	595
7.14 build/_deps/googletest-src/googlemock/include/gmock/internal/gmock-internal-utils.h File Reference . . . . .	596
7.14.1 Macro Definition Documentation . . . . .	598
7.14.1.1 GMOCK_DECLARE_KIND_ . . . . .	598
7.14.1.2 GMOCK_INTERNAL_WARNING_CLANG . . . . .	599
7.14.1.3 GMOCK_INTERNAL_WARNING_POP . . . . .	599
7.14.1.4 GMOCK_INTERNAL_WARNING_PUSH . . . . .	599
7.14.1.5 GMOCK_KIND_OF_ . . . . .	599
7.14.1.6 GMOCK_WCHAR_T_IS_NATIVE . . . . .	599
7.15 build/_deps/googletest-src/googlemock/include/gmock/internal/gmock-pp.h File Reference . . . . .	600
7.15.1 Macro Definition Documentation . . . . .	602
7.15.1.1 GMOCK_PP_CAT . . . . .	602
7.15.1.2 GMOCK_PP_COMMA . . . . .	602
7.15.1.3 GMOCK_PP_COMMA_IF . . . . .	602
7.15.1.4 GMOCK_PP_EMPTY . . . . .	603
7.15.1.5 GMOCK_PP_FOR_EACH . . . . .	603
7.15.1.6 GMOCK_PP_GENERIC_IF . . . . .	603
7.15.1.7 GMOCK_PP_HAS_COMMA . . . . .	603
7.15.1.8 GMOCK_PP_HEAD . . . . .	603
7.15.1.9 GMOCK_PP_IDENTITY . . . . .	603
7.15.1.10 GMOCK_PP_IF . . . . .	604
7.15.1.11 GMOCK_PP_INC . . . . .	604
7.15.1.12 GMOCK_PP_INTENRAL_EMPTY_TUPLE . . . . .	604
7.15.1.13 GMOCK_PP_INTERNAL_16TH . . . . .	604

---

7.15.1.14 GMOCK_PP_INTERNAL_CALL_MACRO . . . . .	604
7.15.1.15 GMOCK_PP_INTERNAL_CAT . . . . .	604
7.15.1.16 GMOCK_PP_INTERNAL_CAT_5 . . . . .	605
7.15.1.17 GMOCK_PP_INTERNAL_COMMA_IF_0 . . . . .	605
7.15.1.18 GMOCK_PP_INTERNAL_COMMA_IF_1 . . . . .	605
7.15.1.19 GMOCK_PP_INTERNAL_COMMA_IF_10 . . . . .	605
7.15.1.20 GMOCK_PP_INTERNAL_COMMA_IF_11 . . . . .	605
7.15.1.21 GMOCK_PP_INTERNAL_COMMA_IF_12 . . . . .	605
7.15.1.22 GMOCK_PP_INTERNAL_COMMA_IF_13 . . . . .	605
7.15.1.23 GMOCK_PP_INTERNAL_COMMA_IF_14 . . . . .	606
7.15.1.24 GMOCK_PP_INTERNAL_COMMA_IF_15 . . . . .	606
7.15.1.25 GMOCK_PP_INTERNAL_COMMA_IF_2 . . . . .	606
7.15.1.26 GMOCK_PP_INTERNAL_COMMA_IF_3 . . . . .	606
7.15.1.27 GMOCK_PP_INTERNAL_COMMA_IF_4 . . . . .	606
7.15.1.28 GMOCK_PP_INTERNAL_COMMA_IF_5 . . . . .	606
7.15.1.29 GMOCK_PP_INTERNAL_COMMA_IF_6 . . . . .	606
7.15.1.30 GMOCK_PP_INTERNAL_COMMA_IF_7 . . . . .	606
7.15.1.31 GMOCK_PP_INTERNAL_COMMA_IF_8 . . . . .	607
7.15.1.32 GMOCK_PP_INTERNAL_COMMA_IF_9 . . . . .	607
7.15.1.33 GMOCK_PP_INTERNAL_FOR_EACH_IMPL_0 . . . . .	607
7.15.1.34 GMOCK_PP_INTERNAL_FOR_EACH_IMPL_1 . . . . .	607
7.15.1.35 GMOCK_PP_INTERNAL_FOR_EACH_IMPL_10 . . . . .	607
7.15.1.36 GMOCK_PP_INTERNAL_FOR_EACH_IMPL_11 . . . . .	608
7.15.1.37 GMOCK_PP_INTERNAL_FOR_EACH_IMPL_12 . . . . .	608
7.15.1.38 GMOCK_PP_INTERNAL_FOR_EACH_IMPL_13 . . . . .	608
7.15.1.39 GMOCK_PP_INTERNAL_FOR_EACH_IMPL_14 . . . . .	608
7.15.1.40 GMOCK_PP_INTERNAL_FOR_EACH_IMPL_15 . . . . .	609
7.15.1.41 GMOCK_PP_INTERNAL_FOR_EACH_IMPL_2 . . . . .	609
7.15.1.42 GMOCK_PP_INTERNAL_FOR_EACH_IMPL_3 . . . . .	609
7.15.1.43 GMOCK_PP_INTERNAL_FOR_EACH_IMPL_4 . . . . .	609
7.15.1.44 GMOCK_PP_INTERNAL_FOR_EACH_IMPL_5 . . . . .	610
7.15.1.45 GMOCK_PP_INTERNAL_FOR_EACH_IMPL_6 . . . . .	610
7.15.1.46 GMOCK_PP_INTERNAL_FOR_EACH_IMPL_7 . . . . .	610
7.15.1.47 GMOCK_PP_INTERNAL_FOR_EACH_IMPL_8 . . . . .	610
7.15.1.48 GMOCK_PP_INTERNAL_FOR_EACH_IMPL_9 . . . . .	611
7.15.1.49 GMOCK_PP_INTERNAL_HEAD . . . . .	611
7.15.1.50 GMOCK_PP_INTERNAL_IBP_IS_VARIADIC_C . . . . .	611
7.15.1.51 GMOCK_PP_INTERNAL_IBP_IS_VARIADIC_R_1 . . . . .	611
7.15.1.52 GMOCK_PP_INTERNAL_IBP_IS_VARIADIC_R_GMOCK_PP_INTERNAL_IBP_IS_VARIADIC_C611	
7.15.1.53 GMOCK_PP_INTERNAL_IF_0 . . . . .	611
7.15.1.54 GMOCK_PP_INTERNAL_IF_1 . . . . .	612
7.15.1.55 GMOCK_PP_INTERNAL_INC_0 . . . . .	612

---

---

7.15.1.56 GMOCK_PP_INTERNAL_INC_1 . . . . .	612
7.15.1.57 GMOCK_PP_INTERNAL_INC_10 . . . . .	612
7.15.1.58 GMOCK_PP_INTERNAL_INC_11 . . . . .	612
7.15.1.59 GMOCK_PP_INTERNAL_INC_12 . . . . .	612
7.15.1.60 GMOCK_PP_INTERNAL_INC_13 . . . . .	612
7.15.1.61 GMOCK_PP_INTERNAL_INC_14 . . . . .	613
7.15.1.62 GMOCK_PP_INTERNAL_INC_15 . . . . .	613
7.15.1.63 GMOCK_PP_INTERNAL_INC_2 . . . . .	613
7.15.1.64 GMOCK_PP_INTERNAL_INC_3 . . . . .	613
7.15.1.65 GMOCK_PP_INTERNAL_INC_4 . . . . .	613
7.15.1.66 GMOCK_PP_INTERNAL_INC_5 . . . . .	613
7.15.1.67 GMOCK_PP_INTERNAL_INC_6 . . . . .	613
7.15.1.68 GMOCK_PP_INTERNAL_INC_7 . . . . .	613
7.15.1.69 GMOCK_PP_INTERNAL_INC_8 . . . . .	614
7.15.1.70 GMOCK_PP_INTERNAL_INC_9 . . . . .	614
7.15.1.71 GMOCK_PP_INTERNAL_INTERNAL_16TH . . . . .	614
7.15.1.72 GMOCK_PP_INTERNAL_INTERNAL_HEAD . . . . .	614
7.15.1.73 GMOCK_PP_INTERNAL_INTERNAL_TAIL . . . . .	614
7.15.1.74 GMOCK_PP_INTERNAL_IS_EMPTY . . . . .	615
7.15.1.75 GMOCK_PP_INTERNAL_IS_EMPTY_CASE_0001 . . . . .	615
7.15.1.76 GMOCK_PP_INTERNAL_REMOVE_PARENS . . . . .	615
7.15.1.77 GMOCK_PP_INTERNAL_STRINGIZE . . . . .	615
7.15.1.78 GMOCK_PP_INTERNAL_TAIL . . . . .	615
7.15.1.79 GMOCK_PP_IS_BEGIN_PARENS . . . . .	615
7.15.1.80 GMOCK_PP_IS_EMPTY . . . . .	616
7.15.1.81 GMOCK_PP_IS_ENCLOSING_PARENS . . . . .	616
7.15.1.82 GMOCK_PP_NARG . . . . .	616
7.15.1.83 GMOCK_PP_NARG0 . . . . .	616
7.15.1.84 GMOCK_PP_REMOVE_PARENS . . . . .	616
7.15.1.85 GMOCK_PP_REPEAT . . . . .	617
7.15.1.86 GMOCK_PP_STRINGIZE . . . . .	617
7.15.1.87 GMOCK_PP_TAIL . . . . .	617
7.15.1.88 GMOCK_PP_VARIADIC_CALL . . . . .	617
7.16 build/_deps/googletest-src/googlemock/test/gmock-matchers_test.h File Reference . . . . .	617
7.16.1 Macro Definition Documentation . . . . .	619
7.16.1.1 INSTANTIATE_GTEST_MATCHER_TEST_P . . . . .	619
7.17 build/_deps/googletest-src/googlemock/test/gmock_link_test.h File Reference . . . . .	619
7.17.1 Function Documentation . . . . .	620
7.17.1.1 TEST() [1/47] . . . . .	620
7.17.1.2 TEST() [2/47] . . . . .	621
7.17.1.3 TEST() [3/47] . . . . .	621
7.17.1.4 TEST() [4/47] . . . . .	621

---

7.17.1.5 TEST() [5/47]	621
7.17.1.6 TEST() [6/47]	621
7.17.1.7 TEST() [7/47]	621
7.17.1.8 TEST() [8/47]	622
7.17.1.9 TEST() [9/47]	622
7.17.1.10 TEST() [10/47]	622
7.17.1.11 TEST() [11/47]	622
7.17.1.12 TEST() [12/47]	622
7.17.1.13 TEST() [13/47]	622
7.17.1.14 TEST() [14/47]	623
7.17.1.15 TEST() [15/47]	623
7.17.1.16 TEST() [16/47]	623
7.17.1.17 TEST() [17/47]	623
7.17.1.18 TEST() [18/47]	623
7.17.1.19 TEST() [19/47]	623
7.17.1.20 TEST() [20/47]	624
7.17.1.21 TEST() [21/47]	624
7.17.1.22 TEST() [22/47]	624
7.17.1.23 TEST() [23/47]	624
7.17.1.24 TEST() [24/47]	624
7.17.1.25 TEST() [25/47]	624
7.17.1.26 TEST() [26/47]	625
7.17.1.27 TEST() [27/47]	625
7.17.1.28 TEST() [28/47]	625
7.17.1.29 TEST() [29/47]	625
7.17.1.30 TEST() [30/47]	625
7.17.1.31 TEST() [31/47]	625
7.17.1.32 TEST() [32/47]	626
7.17.1.33 TEST() [33/47]	626
7.17.1.34 TEST() [34/47]	626
7.17.1.35 TEST() [35/47]	626
7.17.1.36 TEST() [36/47]	626
7.17.1.37 TEST() [37/47]	626
7.17.1.38 TEST() [38/47]	627
7.17.1.39 TEST() [39/47]	627
7.17.1.40 TEST() [40/47]	627
7.17.1.41 TEST() [41/47]	627
7.17.1.42 TEST() [42/47]	627
7.17.1.43 TEST() [43/47]	627
7.17.1.44 TEST() [44/47]	628
7.17.1.45 TEST() [45/47]	628
7.17.1.46 TEST() [46/47]	628

---

7.17.1.47 TEST() [47/47] . . . . .	628
7.18 build/_deps/googletest-src/googletest/include/gtest/gtest-assertion-result.h File Reference . . . . .	628
7.18.1 Function Documentation . . . . .	629
7.18.1.1 GTEST_DISABLE_MSC_WARNINGS_PUSH_() . . . . .	629
7.19 build/_deps/googletest-src/googletest/include/gtest/gtest-death-test.h File Reference . . . . .	629
7.19.1 Macro Definition Documentation . . . . .	630
7.19.1.1 ASSERT_DEATH_IF_SUPPORTED . . . . .	630
7.19.1.2 EXPECT_DEATH_IF_SUPPORTED . . . . .	630
7.19.1.3 GTEST_UNSUPPORTED_DEATH_TEST . . . . .	631
7.19.2 Function Documentation . . . . .	631
7.19.2.1 GTEST_DECLARE_string_() . . . . .	631
7.20 build/_deps/googletest-src/googletest/include/gtest/gtest-matchers.h File Reference . . . . .	631
7.20.1 Macro Definition Documentation . . . . .	632
7.20.1.1 GTEST_MAYBE_5046_ . . . . .	632
7.20.2 Function Documentation . . . . .	632
7.20.2.1 GTEST_DISABLE_MSC_WARNINGS_PUSH_() . . . . .	632
7.21 build/_deps/googletest-src/googletest/include/gtest/gtest-message.h File Reference . . . . .	633
7.22 build/_deps/googletest-src/googletest/include/gtest/gtest-param-test.h File Reference . . . . .	634
7.22.1 Macro Definition Documentation . . . . .	635
7.22.1.1 GTEST_ALLOW_UNINSTANTIATED_PARAMETERIZED_TEST . . . . .	635
7.22.1.2 GTEST_EXPAND_ . . . . .	635
7.22.1.3 GTEST_GET_FIRST_ . . . . .	635
7.22.1.4 GTEST_GET_SECOND_ . . . . .	636
7.22.1.5 INSTANTIATE_TEST_CASE_P . . . . .	636
7.22.1.6 INSTANTIATE_TEST_SUITE_P . . . . .	636
7.22.1.7 TEST_P . . . . .	636
7.23 build/_deps/googletest-src/googletest/include/gtest/gtest-printers.h File Reference . . . . .	637
7.23.1 Macro Definition Documentation . . . . .	640
7.23.1.1 GTEST_IMPL_FORMAT_C_STRING_AS_POINTER_ . . . . .	640
7.23.1.2 GTEST_IMPL_FORMAT_C_STRING_AS_STRING_ . . . . .	641
7.24 build/_deps/googletest-src/googletest/include/gtest/internal/custom/gtest-printers.h File Reference . . . . .	641
7.25 build/_deps/googletest-src/googletest/include/gtest/gtest-spi.h File Reference . . . . .	641
7.25.1 Macro Definition Documentation . . . . .	642
7.25.1.1 EXPECT_FATAL_FAILURE . . . . .	642
7.25.1.2 EXPECT_FATAL_FAILURE_ON_ALL_THREADS . . . . .	643
7.25.1.3 EXPECT_NONFATAL_FAILURE . . . . .	643
7.25.1.4 EXPECT_NONFATAL_FAILURE_ON_ALL_THREADS . . . . .	643
7.25.2 Function Documentation . . . . .	644
7.25.2.1 GTEST_DISABLE_MSC_WARNINGS_PUSH_() . . . . .	644
7.26 build/_deps/googletest-src/googletest/include/gtest/gtest-test-part.h File Reference . . . . .	644
7.26.1 Function Documentation . . . . .	645
7.26.1.1 GTEST_DISABLE_MSC_WARNINGS_PUSH_() . . . . .	645

---

7.27 build/_deps/googletest-src/googletest/include/gtest/gtest-typed-test.h File Reference . . . . .	645
7.27.1 Macro Definition Documentation . . . . .	646
7.27.1.1 GTEST_NAME_GENERATOR_ . . . . .	646
7.27.1.2 GTEST_REGISTERED_TEST_NAMES_ . . . . .	646
7.27.1.3 GTEST_SUITE_NAMESPACE_ . . . . .	646
7.27.1.4 GTEST_TYPE_PARAMS_ . . . . .	646
7.27.1.5 GTEST_TYPED_TEST_SUITE_P_STATE_ . . . . .	647
7.27.1.6 INSTANTIATE_TYPED_TEST_CASE_P . . . . .	647
7.27.1.7 INSTANTIATE_TYPED_TEST_SUITE_P . . . . .	647
7.27.1.8 REGISTER_TYPED_TEST_CASE_P . . . . .	647
7.27.1.9 REGISTER_TYPED_TEST_SUITE_P . . . . .	648
7.27.1.10 TYPED_TEST . . . . .	648
7.27.1.11 TYPED_TEST_CASE . . . . .	648
7.27.1.12 TYPED_TEST_CASE_P . . . . .	649
7.27.1.13 TYPED_TEST_P . . . . .	649
7.27.1.14 TYPED_TEST_SUITE . . . . .	649
7.27.1.15 TYPED_TEST_SUITE_P . . . . .	649
7.28 build/_deps/googletest-src/googletest/include/gtest/gtest.h File Reference . . . . .	650
7.28.1 Macro Definition Documentation . . . . .	654
7.28.1.1 ADD_FAILURE . . . . .	654
7.28.1.2 ADD_FAILURE_AT . . . . .	655
7.28.1.3 ASSERT_ANY_THROW . . . . .	655
7.28.1.4 ASSERT_DOUBLE_EQ . . . . .	655
7.28.1.5 ASSERT_EQ . . . . .	655
7.28.1.6 ASSERT_FALSE . . . . .	655
7.28.1.7 ASSERT_FLOAT_EQ . . . . .	656
7.28.1.8 ASSERT_GE . . . . .	656
7.28.1.9 ASSERT_GT . . . . .	656
7.28.1.10 ASSERT_LE . . . . .	656
7.28.1.11 ASSERT_LT . . . . .	656
7.28.1.12 ASSERT_NE . . . . .	656
7.28.1.13 ASSERT_NEAR . . . . .	657
7.28.1.14 ASSERT_NO_FATAL_FAILURE . . . . .	657
7.28.1.15 ASSERT_NO_THROW . . . . .	657
7.28.1.16 ASSERT_STRCASEEQ . . . . .	657
7.28.1.17 ASSERT_STRCASENE . . . . .	657
7.28.1.18 ASSERT_STREQ . . . . .	657
7.28.1.19 ASSERT_STRNE . . . . .	658
7.28.1.20 ASSERT_THROW . . . . .	658
7.28.1.21 ASSERT_TRUE . . . . .	658
7.28.1.22 EXPECT_ANY_THROW . . . . .	658
7.28.1.23 EXPECT_DOUBLE_EQ . . . . .	658

---

7.28.1.24 EXPECT_EQ . . . . .	658
7.28.1.25 EXPECT_FALSE . . . . .	659
7.28.1.26 EXPECT_FLOAT_EQ . . . . .	659
7.28.1.27 EXPECT_GE . . . . .	659
7.28.1.28 EXPECT_GT . . . . .	659
7.28.1.29 EXPECT_LE . . . . .	659
7.28.1.30 EXPECT_LT . . . . .	659
7.28.1.31 EXPECT_NE . . . . .	660
7.28.1.32 EXPECT_NEAR . . . . .	660
7.28.1.33 EXPECT_NO_FATAL_FAILURE . . . . .	660
7.28.1.34 EXPECT_NO_THROW . . . . .	660
7.28.1.35 EXPECT_STRCASEEQ . . . . .	660
7.28.1.36 EXPECT_STRCASENE . . . . .	660
7.28.1.37 EXPECT_STREQ . . . . .	661
7.28.1.38 EXPECT_STRNE . . . . .	661
7.28.1.39 EXPECT_THROW . . . . .	661
7.28.1.40 EXPECT_TRUE . . . . .	661
7.28.1.41 FAIL . . . . .	661
7.28.1.42 GTEST_ASSERT_EQ . . . . .	661
7.28.1.43 GTEST_ASSERT_FALSE . . . . .	662
7.28.1.44 GTEST_ASSERT_GE . . . . .	662
7.28.1.45 GTEST_ASSERT_GT . . . . .	662
7.28.1.46 GTEST_ASSERT_LE . . . . .	662
7.28.1.47 GTEST_ASSERT_LT . . . . .	662
7.28.1.48 GTEST_ASSERT_NE . . . . .	662
7.28.1.49 GTEST_ASSERT_TRUE . . . . .	663
7.28.1.50 GTEST_EXPECT_FALSE . . . . .	663
7.28.1.51 GTEST_EXPECT_TRUE . . . . .	663
7.28.1.52 GTEST_FAIL . . . . .	663
7.28.1.53 GTEST_FAIL_AT . . . . .	663
7.28.1.54 GTEST_IMPL_CMP_HELPER_ . . . . .	664
7.28.1.55 GTEST_SKIP . . . . .	664
7.28.1.56 GTEST_SUCCEEDED . . . . .	664
7.28.1.57 GTEST_TEST . . . . .	664
7.28.1.58 GTEST_TEST_F . . . . .	664
7.28.1.59 SCOPED_TRACE . . . . .	665
7.28.1.60 SUCCEED . . . . .	665
7.28.1.61 TEST . . . . .	665
7.28.1.62 TEST_F . . . . .	665
7.28.2 Function Documentation . . . . .	665
7.28.2.1 GTEST_DECLARE_bool_() [1/12] . . . . .	665
7.28.2.2 GTEST_DECLARE_bool_() [2/12] . . . . .	665

---

7.28.2.3 GTEST_DECLARE_bool_() [3/12] . . . . .	666
7.28.2.4 GTEST_DECLARE_bool_() [4/12] . . . . .	666
7.28.2.5 GTEST_DECLARE_bool_() [5/12] . . . . .	666
7.28.2.6 GTEST_DECLARE_bool_() [6/12] . . . . .	666
7.28.2.7 GTEST_DECLARE_bool_() [7/12] . . . . .	666
7.28.2.8 GTEST_DECLARE_bool_() [8/12] . . . . .	666
7.28.2.9 GTEST_DECLARE_bool_() [9/12] . . . . .	666
7.28.2.10 GTEST_DECLARE_bool_() [10/12] . . . . .	667
7.28.2.11 GTEST_DECLARE_bool_() [11/12] . . . . .	667
7.28.2.12 GTEST_DECLARE_bool_() [12/12] . . . . .	667
7.28.2.13 GTEST_DECLARE_int32_() [1/3] . . . . .	667
7.28.2.14 GTEST_DECLARE_int32_() [2/3] . . . . .	667
7.28.2.15 GTEST_DECLARE_int32_() [3/3] . . . . .	667
7.28.2.16 GTEST_DECLARE_string_() [1/4] . . . . .	667
7.28.2.17 GTEST_DECLARE_string_() [2/4] . . . . .	668
7.28.2.18 GTEST_DECLARE_string_() [3/4] . . . . .	668
7.28.2.19 GTEST_DECLARE_string_() [4/4] . . . . .	668
7.28.2.20 GTEST_DISABLE_MSC_WARNINGS_PUSH_() . . . . .	668
7.28.2.21 RUN_ALL_TESTS() . . . . .	668
7.29 build/_deps/googletest-src/googletest/include/gtest/internal/custom/gtest.h File Reference . . . . .	668
7.30 build/_deps/googletest-src/googletest/include/gtest/gtest_pred_impl.h File Reference . . . . .	668
7.30.1 Macro Definition Documentation . . . . .	670
7.30.1.1 ASSERT_PRED1 . . . . .	671
7.30.1.2 ASSERT_PRED2 . . . . .	671
7.30.1.3 ASSERT_PRED3 . . . . .	671
7.30.1.4 ASSERT_PRED4 . . . . .	671
7.30.1.5 ASSERT_PRED5 . . . . .	671
7.30.1.6 ASSERT_PRED_FORMAT1 . . . . .	672
7.30.1.7 ASSERT_PRED_FORMAT2 . . . . .	672
7.30.1.8 ASSERT_PRED_FORMAT3 . . . . .	672
7.30.1.9 ASSERT_PRED_FORMAT4 . . . . .	672
7.30.1.10 ASSERT_PRED_FORMAT5 . . . . .	672
7.30.1.11 EXPECT_PRED1 . . . . .	673
7.30.1.12 EXPECT_PRED2 . . . . .	673
7.30.1.13 EXPECT_PRED3 . . . . .	673
7.30.1.14 EXPECT_PRED4 . . . . .	673
7.30.1.15 EXPECT_PRED5 . . . . .	673
7.30.1.16 EXPECT_PRED_FORMAT1 . . . . .	674
7.30.1.17 EXPECT_PRED_FORMAT2 . . . . .	674
7.30.1.18 EXPECT_PRED_FORMAT3 . . . . .	674
7.30.1.19 EXPECT_PRED_FORMAT4 . . . . .	674
7.30.1.20 EXPECT_PRED_FORMAT5 . . . . .	674

7.30.1.21 GTEST_ASSERT_ . . . . .	675
7.30.1.22 GTEST_PRED1_ . . . . .	675
7.30.1.23 GTEST_PRED2_ . . . . .	675
7.30.1.24 GTEST_PRED3_ . . . . .	675
7.30.1.25 GTEST_PRED4_ . . . . .	676
7.30.1.26 GTEST_PRED5_ . . . . .	676
7.30.1.27 GTEST_PRED_FORMAT1_ . . . . .	676
7.30.1.28 GTEST_PRED_FORMAT2_ . . . . .	676
7.30.1.29 GTEST_PRED_FORMAT3_ . . . . .	677
7.30.1.30 GTEST_PRED_FORMAT4_ . . . . .	677
7.30.1.31 GTEST_PRED_FORMAT5_ . . . . .	677
7.31 build/_deps/googletest-src/googletest/include/gtest/gtest_prod.h File Reference . . . . .	677
7.31.1 Macro Definition Documentation . . . . .	678
7.31.1.1 FRIEND_TEST . . . . .	678
7.32 build/_deps/googletest-src/googletest/include/gtest/internal/custom/gtest-port.h File Reference . . . . .	678
7.33 build/_deps/googletest-src/googletest/include/gtest/internal/gtest-port.h File Reference . . . . .	679
7.33.1 Macro Definition Documentation . . . . .	683
7.33.1.1 GTEST_AMBIGUOUS_ELSE_BLOCKER_ . . . . .	683
7.33.1.2 GTEST_API_ . . . . .	683
7.33.1.3 GTEST_ATTRIBUTE_NO_SANITIZE_ADDRESS_ . . . . .	683
7.33.1.4 GTEST_ATTRIBUTE_NO_SANITIZE_HWADDRESS_ . . . . .	683
7.33.1.5 GTEST_ATTRIBUTE_NO_SANITIZE_MEMORY_ . . . . .	683
7.33.1.6 GTEST_ATTRIBUTE_NO_SANITIZE_THREAD_ . . . . .	683
7.33.1.7 GTEST_ATTRIBUTE_PRINTF_ . . . . .	684
7.33.1.8 GTEST_ATTRIBUTE_UNUSED_ . . . . .	684
7.33.1.9 GTEST_CHECK_ . . . . .	684
7.33.1.10 GTEST_CHECK_POSIX_SUCCESS_ . . . . .	684
7.33.1.11 GTEST_DECLARE_bool_ . . . . .	684
7.33.1.12 GTEST_DECLARE_int32_ . . . . .	685
7.33.1.13 GTEST_DECLARE_STATIC_MUTEX_ . . . . .	685
7.33.1.14 GTEST_DECLARE_string_ . . . . .	685
7.33.1.15 GTEST_DEFAULT_DEATH_TEST_STYLE . . . . .	685
7.33.1.16 GTEST_DEFINE_bool_ . . . . .	685
7.33.1.17 GTEST_DEFINE_int32_ . . . . .	686
7.33.1.18 GTEST_DEFINE_STATIC_MUTEX_ . . . . .	686
7.33.1.19 GTEST_DEFINE_string_ . . . . .	686
7.33.1.20 GTEST_DEV_EMAIL_ . . . . .	686
7.33.1.21 GTEST_DISABLE_MSC_DEPRECATED_POP_ . . . . .	686
7.33.1.22 GTEST_DISABLE_MSC_DEPRECATED_PUSH_ . . . . .	686
7.33.1.23 GTEST_DISABLE_MSC_WARNINGS_POP_ . . . . .	687
7.33.1.24 GTEST_DISABLE_MSC_WARNINGS_PUSH_ . . . . .	687
7.33.1.25 GTEST_EXCLUSIVE_LOCK_REQUIRED_ . . . . .	687

---

7.33.1.26 GTEST_FLAG . . . . .	687
7.33.1.27 GTEST_FLAG_GET . . . . .	687
7.33.1.28 GTEST_FLAG_NAME_ . . . . .	687
7.33.1.29 GTEST_FLAG_PREFIX_ . . . . .	687
7.33.1.30 GTEST_FLAG_PREFIX_DASH_ . . . . .	688
7.33.1.31 GTEST_FLAG_PREFIX_UPPER_ . . . . .	688
7.33.1.32 GTEST_FLAG_SAVER_ . . . . .	688
7.33.1.33 GTEST_FLAG_SET . . . . .	688
7.33.1.34 GTEST_HAS_ALT_PATH_SEP_ . . . . .	688
7.33.1.35 GTEST_HAS_CLONE . . . . .	688
7.33.1.36 GTEST_HAS_CXXABI_H_ . . . . .	688
7.33.1.37 GTEST_HAS_EXCEPTIONS . . . . .	689
7.33.1.38 GTEST_HAS_FILE_SYSTEM . . . . .	689
7.33.1.39 GTEST_HAS_POSIX_RE . . . . .	689
7.33.1.40 GTEST_HAS_PTHREAD . . . . .	689
7.33.1.41 GTEST_HAS_RTTI . . . . .	689
7.33.1.42 GTEST_HAS_SEH . . . . .	689
7.33.1.43 GTEST_HAS_STD_WSTRING . . . . .	689
7.33.1.44 GTEST_HAS_STREAM_REDIRECTION . . . . .	690
7.33.1.45 GTEST_HAVE_ATTRIBUTE_ . . . . .	690
7.33.1.46 GTEST_HAVE_FEATURE_ . . . . .	690
7.33.1.47 GTEST_INIT_GOOGLE_TEST_NAME_ . . . . .	690
7.33.1.48 GTEST_INTENTIONAL_CONST_COND_POP_ . . . . .	690
7.33.1.49 GTEST_INTENTIONAL_CONST_COND_PUSH_ . . . . .	690
7.33.1.50 GTEST_INTERNAL_DEPRECATED . . . . .	690
7.33.1.51 GTEST_IS_THREADSAFE . . . . .	691
7.33.1.52 GTEST_LOCK_EXCLUDED_ . . . . .	691
7.33.1.53 GTEST_LOG_ . . . . .	691
7.33.1.54 GTEST_MUST_USE_RESULT_ . . . . .	691
7.33.1.55 GTEST_NAME_ . . . . .	691
7.33.1.56 GTEST_NO_INLINE_ . . . . .	691
7.33.1.57 GTEST_NO_TAIL_CALL_ . . . . .	692
7.33.1.58 GTEST_PATH_SEP_ . . . . .	692
7.33.1.59 GTEST_PROJECT_URL_ . . . . .	692
7.33.1.60 GTEST_REFERENCE_TO_CONST_ . . . . .	692
7.33.1.61 GTEST_SNPRINTF_ . . . . .	692
7.33.1.62 GTEST_USE_OWN_FLAGFILE_FLAG_ . . . . .	692
7.33.1.63 GTESTUSES_POSIX_RE . . . . .	692
7.33.1.64 GTEST_WIDE_STRING_USES_UTF16_ . . . . .	692
7.34 build/_deps/googletest-src/googletest/include/gtest/internal/gtest-death-test-internal.h File Reference	693
7.34.1 Function Documentation . . . . .	694
7.34.1.1 GTEST_DECLARE_string_() . . . . .	694

7.35 build/_deps/googletest-src/googletest/include/gtest/internal/gtest-filename.h File Reference . . . . .	694
7.36 build/_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h File Reference . . . . .	695
7.36.1 Macro Definition Documentation . . . . .	699
7.36.1.1 GTEST_CONCAT_TOKEN_ . . . . .	699
7.36.1.2 GTEST_CONCAT_TOKEN_IMPL_ . . . . .	699
7.36.1.3 GTEST_FATAL_FAILURE_ . . . . .	699
7.36.1.4 GTEST_MESSAGE_ . . . . .	700
7.36.1.5 GTEST_MESSAGE_AT_ . . . . .	700
7.36.1.6 GTEST_NONFATAL_FAILURE_ . . . . .	700
7.36.1.7 GTEST_REMOVE_REFERENCE_AND_CONST_ . . . . .	700
7.36.1.8 GTEST_SKIP_ . . . . .	700
7.36.1.9 GTEST_STRINGIFY_ . . . . .	700
7.36.1.10 GTEST_STRINGIFY_HELPER_ . . . . .	701
7.36.1.11 GTEST_SUCCESS_ . . . . .	701
7.36.1.12 GTEST_SUPPRESS_UNREACHABLE_CODE_WARNING_BELOW_ . . . . .	701
7.36.1.13 GTEST_TEST_ . . . . .	701
7.36.1.14 GTEST_TEST_ANY_THROW_ . . . . .	701
7.36.1.15 GTEST_TEST_BOOLEAN_ . . . . .	702
7.36.1.16 GTEST_TEST_CLASS_NAME_ . . . . .	702
7.36.1.17 GTEST_TEST_NO_FATAL_FAILURE_ . . . . .	702
7.36.1.18 GTEST_TEST_NO_THROW_ . . . . .	703
7.36.1.19 GTEST_TEST_NO_THROW_CATCH_STD_EXCEPTION_ . . . . .	703
7.36.1.20 GTEST_TEST_THROW_ . . . . .	703
7.36.1.21 GTEST_TEST_THROW_CATCH_STD_EXCEPTION_ . . . . .	704
7.37 build/_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h File Reference . . . . .	704
7.38 build/_deps/googletest-src/googletest/include/gtest/internal/gtest-port-arch.h File Reference . . . . .	706
7.39 build/_deps/googletest-src/googletest/include/gtest/internal/gtest-string.h File Reference . . . . .	706
7.40 build/_deps/googletest-src/googletest/include/gtest/internal/gtest-type-util.h File Reference . . . . .	707
7.40.1 Macro Definition Documentation . . . . .	709
7.40.1.1 GTEST_BIND_ . . . . .	709
7.40.1.2 GTEST_TEMPLATE_ . . . . .	709
7.41 build/_deps/googletest-src/googletest/samples/prime_tables.h File Reference . . . . .	709
7.42 build/_deps/googletest-src/googletest/samples/sample1.h File Reference . . . . .	710
7.42.1 Function Documentation . . . . .	710
7.42.1.1 Factorial() . . . . .	710
7.42.1.2 IsPrime() . . . . .	710
7.43 build/_deps/googletest-src/googletest/samples/sample2.h File Reference . . . . .	710
7.44 build/_deps/googletest-src/googletest/samples/sample3-inl.h File Reference . . . . .	711
7.45 build/_deps/googletest-src/googletest/samples/sample4.h File Reference . . . . .	711
7.46 build/_deps/googletest-src/googletest/src/gtest-internal-inl.h File Reference . . . . .	711
7.46.1 Function Documentation . . . . .	713
7.46.1.1 GTEST_DISABLE_MSC_WARNINGS_PUSH_() . . . . .	713

---

7.47 build/_deps/googletest-src/googletest/test/gtest-param-test-test.h File Reference . . . . .	713
7.48 build/_deps/googletest-src/googletest/test/gtest-typed-test_test.h File Reference . . . . .	714
7.48.1 Function Documentation . . . . .	714
7.48.1.1 REGISTER_TYPED_TEST_SUITE_P() . . . . .	714
7.48.1.2 TYPED_TEST_P() [1/2] . . . . .	715
7.48.1.3 TYPED_TEST_P() [2/2] . . . . .	715
7.48.1.4 TYPED_TEST_SUITE_P() . . . . .	715
7.49 build/_deps/googletest-src/googletest/test/production.h File Reference . . . . .	715
7.50 src/conway/include/matrix.h File Reference . . . . .	716
7.51 src/conway/include/world.h File Reference . . . . .	717
7.52 src/conway/matrix.cpp File Reference . . . . .	718
7.52.1 Detailed Description . . . . .	718
7.53 src/conway/world.cpp File Reference . . . . .	718
7.53.1 Detailed Description . . . . .	719
7.54 src/prof_count_neighbours.cpp File Reference . . . . .	719
7.54.1 Function Documentation . . . . .	720
7.54.1.1 main() . . . . .	720
7.55 src/prof_simulation.cpp File Reference . . . . .	720
7.55.1 Function Documentation . . . . .	721
7.55.1.1 main() . . . . .	721
7.56 src/run_dd1.cpp File Reference . . . . .	721
7.56.1 Function Documentation . . . . .	721
7.56.1.1 main() . . . . .	722
7.57 src/run_dd2.cpp File Reference . . . . .	722
7.57.1 Function Documentation . . . . .	722
7.57.1.1 main() . . . . .	723
7.58 src/run_hybrid.cpp File Reference . . . . .	723
7.58.1 Function Documentation . . . . .	723
7.58.1.1 evolve_omp() . . . . .	724
7.58.1.2 main() . . . . .	724
7.58.1.3 update_boundary_omp() . . . . .	724
7.59 src/run_omp.cpp File Reference . . . . .	724
7.59.1 Function Documentation . . . . .	725
7.59.1.1 evolve_omp() . . . . .	725
7.59.1.2 main() . . . . .	725
7.59.1.3 update_boundary_omp() . . . . .	725
7.60 src/run_single.cpp File Reference . . . . .	726
7.60.1 Detailed Description . . . . .	726
7.60.2 Function Documentation . . . . .	726
7.60.2.1 main() . . . . .	726
7.61 src/time_count_neighbours.cpp File Reference . . . . .	727
7.61.1 Function Documentation . . . . .	727

---

7.61.1.1 main()	727
7.61.1.2 time_count_neighbours()	727
7.62 src/time_dd1.cpp File Reference	728
7.62.1 Detailed Description	728
7.62.2 Function Documentation	728
7.62.2.1 main()	728
7.63 src/time_dd2.cpp File Reference	729
7.63.1 Detailed Description	729
7.63.2 Function Documentation	729
7.63.2.1 main()	729
7.64 src/time_hybrid.cpp File Reference	730
7.64.1 Detailed Description	730
7.64.2 Function Documentation	730
7.64.2.1 evolve_omp()	730
7.64.2.2 main()	731
7.64.2.3 update_boundary_omp()	731
7.65 src/time_single.cpp File Reference	731
7.65.1 Detailed Description	731
7.65.2 Function Documentation	732
7.65.2.1 main()	732
7.65.2.2 time_simulation()	732
7.66 src/timing/include/timing.h File Reference	732
7.67 src/timing/timing.cpp File Reference	733
7.67.1 Variable Documentation	733
7.67.1.1 time_point	733
7.68 test/test_dd1.cpp File Reference	733
7.68.1 Detailed Description	734
7.68.2 Function Documentation	734
7.68.2.1 main()	734
7.69 test/test_dd2.cpp File Reference	735
7.69.1 Detailed Description	735
7.69.2 Function Documentation	735
7.69.2.1 main()	735
7.70 test/test_hybrid.cpp File Reference	736
7.70.1 Detailed Description	736
7.70.2 Function Documentation	736
7.70.2.1 evolve_omp()	736
7.70.2.2 main()	737
7.70.2.3 update_boundary_omp()	737
7.71 test/test_matrix.cpp File Reference	737
7.71.1 Detailed Description	738
7.71.2 Function Documentation	738

---

7.71.2.1 populate_matrix()	738
7.71.2.2 TEST() [1/11]	738
7.71.2.3 TEST() [2/11]	738
7.71.2.4 TEST() [3/11]	738
7.71.2.5 TEST() [4/11]	738
7.71.2.6 TEST() [5/11]	739
7.71.2.7 TEST() [6/11]	739
7.71.2.8 TEST() [7/11]	739
7.71.2.9 TEST() [8/11]	739
7.71.2.10 TEST() [9/11]	739
7.71.2.11 TEST() [10/11]	739
7.71.2.12 TEST() [11/11]	740
7.71.3 Variable Documentation	740
7.71.3.1 STR_FILE	740
7.72 test/test_omp.cpp File Reference	740
7.72.1 Detailed Description	741
7.72.2 Function Documentation	741
7.72.2.1 evolve_omp()	741
7.72.2.2 main()	741
7.72.2.3 update_boundary_omp()	741
7.73 test/test_world.cpp File Reference	741
7.73.1 Detailed Description	742
7.73.2 Function Documentation	742
7.73.2.1 TEST() [1/6]	742
7.73.2.2 TEST() [2/6]	742
7.73.2.3 TEST() [3/6]	742
7.73.2.4 TEST() [4/6]	742
7.73.2.5 TEST() [5/6]	743
7.73.2.6 TEST() [6/6]	743
Index	745

# Chapter 1

## Namespace Index

### 1.1 Namespace List

Here is a list of all namespaces with brief descriptions:

conway . . . . .	17
matrix . . . . .	18
proto2 . . . . .	20
std . . . . .	20
testing . . . . .	21
testing::gmock_matchers_test . . . . .	38
testing::internal . . . . .	39
testing::internal::edit_distance . . . . .	96
testing::internal::internal_stream_operator_without_lexical_name_lookup . . . . .	98
testing::internal::posix . . . . .	99
timing . . . . .	103



# Chapter 2

## Hierarchical Index

### 2.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

testing::Action< F >	105
testing::Action< OriginalFunction >	105
testing::Action< R(Args...) >	105
testing::Action< R(Args...) >::ActionAdapter	109
testing::internal::ActionImpl< F, Impl >	110
testing::ActionInterface< F >	112
testing::PolymorphicAction< Impl >::MonomorphicImpl< F >	271
testing::internal::IgnoreResultAction< A >::Impl< F >	212
testing::internal::ReturnRefAction< T >::Impl< F >	216
testing::internal::ReturnRefOfCopyAction< T >::Impl< F >	218
testing::internal::AssertHelper	115
testing::internal::AssertHelper::AssertHelperData	117
testing::internal::AssignAction< T1, T2 >	118
testing::internal::TemplateSel< Tmpl >::Bind< T >	120
testing::internal::BuiltInDefaultValue< T >	120
testing::internal::BuiltInDefaultValue< const T >	121
testing::internal::BuiltInDefaultValue< T * >	121
testing::internal::BuiltInDefaultValueGetter< T, kDefaultConstructible >	122
testing::internal::BuiltInDefaultValueGetter< T, false >	123
testing::internal::ByMoveWrapper< T >	123
testing::OnceAction< Result(Args...) >::StdFunctionAdaptor< Callable >::CallableTag	124
testing::internal::CartesianProductHolder< Gen >	127
testing::internal::CodeLocation	128
testing::internal::ConstCharPtr	132
testing::internal::ConstRef< T >	133
testing::internal::ConstRef< T & >	134
testing::gmock_matchers_test::ContainerHelper	134
testing::internal::ContainerPrinter	135
testing::internal::ConvertibleToIntegerPrinter	136
testing::internal::ConvertibleToStringViewPrinter	137
Counter	137
testing::internal::DefaultNameGenerator	140
testing::DefaultValue< T >	143
testing::DefaultValue< T & >	145
testing::DefaultValue< void >	147

testing::internal::DeleteArgAction< k > . . . . .	148
testing::internal::DoAllAction< Actions > . . . . .	151
testing::internal::DoAllAction< FinalAction > . . . . .	151
testing::internal::DoAllAction< OtherActions... > . . . . .	151
testing::internal::DoAllAction< InitialAction, OtherActions... > . . . . .	153
testing::internal::DoDefaultAction . . . . .	156
testing::internal::DoubleSequence< plus_one, T, sizeofT > . . . . .	156
testing::internal::DoubleSequence< false, IndexSequence< I... >, sizeofT > . . . . .	156
testing::internal::DoubleSequence< true, IndexSequence< I... >, sizeofT > . . . . .	157
testing::internal::ElemFromList< N, T > . . . . .	157
testing::internal::ElemFromList< I, T... > . . . . .	157
testing::internal::ElemFromListImpl< typename > . . . . .	158
testing::internal::ElemFromListImpl< IndexSequence< I... > > . . . . .	158
testing::Environment . . . . .	163
testing::internal::EqHelper . . . . .	164
testing::internal::ExcessiveArg . . . . .	165
testing::internal::FailureReporterInterface . . . . .	168
testing::internal::faketype . . . . .	169
testing::internal::FallbackPrinter . . . . .	169
std::false_type	
testing::internal::IsRecursiveContainerImpl< C, false > . . . . .	241
testing::internal::disjunction<... > . . . . .	148
testing::internal::is_callable_r_impl< Void, R, F, Args > . . . . .	232
testing::internal::is_proxy_type_list< typename > . . . . .	236
FieldHelper . . . . .	170
testing::internal::FindFirstPrinter< T, E, Printer, Printers > . . . . .	171
testing::internal::FindFirstPrinter< T, decltype(Printer::PrintValue(std::declval< const T & >(), nullptr)), Printer, Printers... > . . . . .	171
testing::internal::FlatTupleBase< Derived, Idx > . . . . .	175
testing::internal::FlatTupleBase< FlatTuple< T... >, MakeIndexSequence< sizeof...(T)>::type > . . . . .	175
testing::internal::FlatTuple< Params... > . . . . .	174
testing::internal::FlatTuple< Ts... > . . . . .	174
testing::internal::FlatTuple< T > . . . . .	174
testing::internal::FlatTupleConstructTag . . . . .	178
testing::internal::FlatTupleElemBase< Derived, I > . . . . .	179
testing::internal::FlatTupleElemBase< FlatTuple< T... >, I > . . . . .	179
testing::internal::FlatTupleElemBase< FlatTuple< T... >, Idx > . . . . .	179
testing::internal::FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > > . . . . .	176
testing::internal::FloatingPoint< RawType > . . . . .	181
testing::internal::FloatingPoint< RawType >::FloatingPointUnion . . . . .	186
testing::internal::FormatForComparison< ToPrint, OtherOperand > . . . . .	187
testing::internal::FormatForComparison< ToPrint[N], OtherOperand > . . . . .	188
testing::internal::Function< T > . . . . .	188
testing::internal::Function< R(Args...)> . . . . .	188
testing::internal::FunctionPointerPrinter . . . . .	190
testing::internal::GenerateTypeList< T > . . . . .	191
testing::internal::GTestFlagSaver . . . . .	194
testing::gmock_matchers_test::GtestGreaterThanOrMatcher< T > . . . . .	198
testing::internal::GTestLog . . . . .	199
testing::internal::GTestMutexLock . . . . .	203
testing::internal::GTestNonCopyable . . . . .	203
testing::internal::HasDebugStringAndShortDebugString< T > . . . . .	204
testing::internal::ImplBase< Impl >::Holder . . . . .	206
testing::internal::Ignore< size_t > . . . . .	207
testing::Action< R(Args...)>::IgnoreArgs< FunctionImpl > . . . . .	208
testing::internal::IgnoredValue . . . . .	209
testing::OnceAction< Result(Args...)>::IgnoreIncomingArguments< Callable > . . . . .	209

testing::internal::IgnoreResultAction< A > . . . . .	210
testing::internal::ReturnAction< R >::Impl< U > . . . . .	214
testing::internal::ImplBase< Impl > . . . . .	220
testing::internal::IndexSequence< Is > . . . . .	221
testing::internal::IndexSequence<> . . . . .	221
testing::internal::MakeIndexSequenceImpl< 0 > . . . . .	260
testing::internal::ParameterizedTestSuiteInfo< TestSuite >::InstantiationInfo . . . . .	221
std::integral_constant	
std::tuple_size< testing::internal::FlatTuple< Ts... > > . . . . .	438
testing::internal::negation< P > . . . . .	284
Interface . . . . .	224
Mock . . . . .	268
testing::internal::InvokeArgumentAction< index, Params > . . . . .	227
InvokeHelper . . . . .	228
testing::internal::InvokeMethodAction< Class, MethodPtr > . . . . .	229
testing::internal::InvokeMethodWithoutArgsAction< Class, MethodPtr > . . . . .	230
testing::internal::InvokeWithoutArgsAction< FunctionImpl > . . . . .	231
testing::internal::is_implicitly_convertible< From, To > . . . . .	234
testing::internal::IsEmptyMatcher . . . . .	237
testing::internal::IsHashTable< T > . . . . .	239
testing::internal::IsRecursiveContainerImpl< C, bool > . . . . .	241
testing::internal::IsRecursiveContainerImpl< C, true > . . . . .	242
testing::internal::CartesianProductGenerator< T >::IteratorImpl< I > . . . . .	254
testing::internal::KindOf< T > . . . . .	258
testing::internal::internal_stream_operator_without_lexical_name_lookup::LookupBlocker . . . . .	259
testing::internal::MarkAsIgnored . . . . .	261
testing::Matcher< typename > . . . . .	262
MatcherInterface	
testing::gmock_matchers_test::GreaterThanMatcher< T > . . . . .	192
Matrix . . . . .	262
testing::Message . . . . .	265
MockClass	
testing::NaggyMock< MockClass > . . . . .	277
testing::NiceMock< MockClass > . . . . .	284
testing::StrictMock< MockClass > . . . . .	373
testing::internal::Mutex . . . . .	273
MyString . . . . .	274
testing::internal::NaggyMockImpl< Base > . . . . .	279
testing::internal::NaggyMockImpl< MockClass > . . . . .	279
testing::NaggyMock< MockClass > . . . . .	277
testing::internal::NameGeneratorSelector< Provided > . . . . .	280
testing::internal::NativeArray< Element > . . . . .	280
testing::internal::NiceMockImpl< Base > . . . . .	287
testing::internal::NiceMockImpl< MockClass > . . . . .	287
testing::NiceMock< MockClass > . . . . .	284
testing::internal::None . . . . .	287
testing::OnceAction< F > . . . . .	287
testing::OnceAction< Result(Args...) > . . . . .	288
testing::internal::OsStackTraceGetterInterface	
testing::internal::OsStackTraceGetter . . . . .	292
P1	
testing::internal::conjunction< P1 > . . . . .	130
testing::internal::disjunction< P1 > . . . . .	149
testing::internal::ParamConverterGenerator< Gen > . . . . .	296
testing::internal::ParameterizedTestSuiteInfoBase . . . . .	305
testing::internal::ParameterizedTestSuiteInfo< TestSuite > . . . . .	300
testing::internal::ParameterizedTestSuiteRegistry . . . . .	307

testing::internal::ParamGenerator< T > . . . . .	310
testing::internal::ParamGenerator< From > . . . . .	310
testing::internal::ParamGenerator< Gen > . . . . .	310
testing::internal::ParamGeneratorInterface< T > . . . . .	314
testing::internal::RangeGenerator< T, IncrementT > . . . . .	338
testing::internal::ValuesInIteratorRangeGenerator< T > . . . . .	488
testing::internal::ParamGeneratorInterface< ParamType > . . . . .	314
testing::internal::ParamGeneratorInterface< To > . . . . .	314
testing::internal::ParamGeneratorConverter< From, To > . . . . .	312
testing::internal::ParamGeneratorInterface<::std::tuple< T... >> . . . . .	314
testing::internal::CartesianProductGenerator< T > . . . . .	124
testing::internal::ParamIterator< T > . . . . .	315
testing::internal::ParamIterator< From > . . . . .	315
testing::internal::ParamIteratorInterface< T > . . . . .	319
testing::internal::RangeGenerator< T, IncrementT >::Iterator . . . . .	246
testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator . . . . .	250
testing::internal::ParamIteratorInterface< ParamType > . . . . .	319
testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... >> . . . . .	254
testing::internal::ParamIteratorInterface< To > . . . . .	319
testing::internal::ParamGeneratorConverter< From, To >::Iterator . . . . .	243
testing::internal::PointerPrinter . . . . .	321
testing::PolymorphicAction< Impl > . . . . .	321
PrimeTable . . . . .	325
OnTheFlyPrimeTable . . . . .	290
PreCalculatedPrimeTable . . . . .	323
testing::PrintToStringParamName . . . . .	326
PrivateCode . . . . .	327
testing::internal::ProtobufPrinter . . . . .	328
testing::internal::ProxyTypeList< Ts > . . . . .	329
Queue< E > . . . . .	330
QueueNode< E > . . . . .	333
testing::internal::Random . . . . .	336
testing::internal::RawBytesPrinter . . . . .	341
testing::internal::RE . . . . .	341
testing::internal::RelationToSourceCopy . . . . .	344
testing::internal::RelationToSourceReference . . . . .	344
testing::internal::RemoveConstFromKey< T > . . . . .	345
testing::internal::RemoveConstFromKey< std::pair< const K, V > > . . . . .	345
testing::internal::ReturnAction< R > . . . . .	346
testing::internal::ReturnAction< ByMoveWrapper< T > > . . . . .	347
testing::internal::ReturnArgAction< k > . . . . .	348
testing::internal::ReturnNewAction< T, Params > . . . . .	349
testing::internal::ReturnNullAction . . . . .	350
testing::internal::ReturnPointeeAction< Ptr > . . . . .	350
testing::internal::ReturnRefAction< T > . . . . .	351
testing::internal::ReturnRefOfCopyAction< T > . . . . .	352
testing::internal::ReturnRoundRobinAction< T > . . . . .	353
testing::internal::ReturnVoidAction . . . . .	355
testing::internal::SaveArgAction< k, Ptr > . . . . .	355
testing::internal::SaveArgPointeeAction< k, Ptr > . . . . .	356
testing::internal::ScopedTrace . . . . .	357
testing::internal::SetArgRefereeAction< k, T > . . . . .	359
testing::internal::SetArgumentPointeeAction< N, A, typename > . . . . .	360
testing::internal::SetArrayArgumentAction< k, I1, I2 > . . . . .	361
testing::internal::SetErrnoAndReturnAction< T > . . . . .	362
testing::Environment::Setup_should_be_spelled_SetUp . . . . .	363

testing::Test::Setup_should_be_spelled_SetUp . . . . .	363
testing::internal::IgnoredValue::Sink . . . . .	363
testing::internal::ReturnAction< R >::Impl< U >::State . . . . .	364
testing::internal::ReturnAction< ByMoveWrapper< T > >::State . . . . .	365
testing::internal::ReturnRoundRobinAction< T >::State . . . . .	366
testing::OnceAction< Result(Arg...)>::StdFunctionAdaptor< Callable > . . . . .	367
testing::internal::StlContainerView< RawContainer > . . . . .	368
testing::internal::StlContainerView< ::std::tuple< ElementPointer, Size > > . . . . .	369
testing::internal::StlContainerView< Element[N]> . . . . .	371
testing::internal::internal_stream_operator_without_lexical_name_lookup::StreamPrinter . . . . .	372
testing::internal::StrictMockImpl< Base > . . . . .	375
testing::internal::StrictMockImpl< MockClass > . . . . .	375
testing::StrictMock< MockClass > . . . . .	373
testing::internal::String . . . . .	376
T	
testing::internal::SuiteApiResolver< T > . . . . .	379
testing::internal::Templates< Head_, Tail_ > . . . . .	380
testing::internal::Templates< Head_ > . . . . .	381
testing::internal::TemplateSel< Tmpl > . . . . .	382
testing::Test . . . . .	382
testing::TestWithParam< int > . . . . .	432
ExternalInstantiationTest . . . . .	165
InstantiationInMultipleTranslationUnitsTest . . . . .	223
testing::TestWithParam< bool > . . . . .	432
testing::gmock_matchers_test::GTestMatcherTestP . . . . .	201
ContainerTest< T > . . . . .	135
testing::TestWithParam< T > . . . . .	432
testing::TestEventListener . . . . .	387
testing::EmptyTestEventListener . . . . .	159
testing::TestEventListeners . . . . .	391
testing::internal::TestFactoryBase . . . . .	396
testing::internal::ParameterizedTestFactory< TestClass > . . . . .	297
testing::internal::TestFactoryImpl< TestClass > . . . . .	397
testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfo . . . . .	399
testing::TestInfo . . . . .	400
testing::internal::TestMetaFactoryBase< ParamType > . . . . .	409
testing::internal::TestMetaFactoryBase< TestSuite::ParamType > . . . . .	409
testing::internal::TestMetaFactory< TestSuite > . . . . .	407
testing::TestParamInfo< ParamType > . . . . .	410
TestPartResultReporterInterface	
testing::internal::DefaultGlobalTestPartResultReporter . . . . .	138
testing::internal::DefaultPerThreadTestPartResultReporter . . . . .	141
testing::TestProperty . . . . .	411
testing::internal::TestPropertyKeyls . . . . .	413
testing::TestResult . . . . .	414
testing::internal::TestResultAccessor . . . . .	421
testing::TestSuite . . . . .	422
testing::internal::ThisRefAdjuster< Pattern > . . . . .	433
testing::internal::ThreadLocal< T > . . . . .	434
testing::internal::ThreadLocal< std::vector< testing::internal::TraceInfo > > . . . . .	434
testing::internal::ThreadLocal< TestPartResultReporterInterface * > . . . . .	434
testing::internal::TraceInfo . . . . .	435
std::true_type	
testing::internal::conjunction<... > . . . . .	129
testing::internal::is_proxy_type_list< ProxyTypeList< Ts... > > . . . . .	237
testing::internal::TrueWithString . . . . .	436
DoubleSequence::type	

testing::internal::MakeIndexSequenceImpl< N > . . . . .	259
ImplBase::type	
testing::internal::ActionImpl< R(Args...), Impl > . . . . .	110
IsRecursiveContainerImpl::type	
testing::internal::IsRecursiveContainer< C > . . . . .	240
std::conditional::type	
testing::internal::conjunction< P1, Ps... > . . . . .	131
std::conditional::type	
testing::internal::is_callable_r_impl< void_t< call_result_t< F, Args... > >, R, F, Args... > . . . . .	233
std::conditional::type	
testing::internal::disjunction< P1, Ps... > . . . . .	150
testing::internal::TypeIdHelper< T > . . . . .	438
testing::internal::TypeParameterizedTest< Fixture, TestSel, Types > . . . . .	439
testing::internal::TypeParameterizedTest< Fixture, TestSel, internal::None > . . . . .	440
testing::internal::TypeParameterizedTestSuite< Fixture, Tests, Types > . . . . .	440
testing::internal::TypeParameterizedTestSuite< Fixture, internal::None, Types > . . . . .	441
testing::internal::TypeParameterizedTestSuiteRegistry::TypeParameterizedTestSuiteInfo . . . . .	442
testing::internal::TypeParameterizedTestSuiteRegistry . . . . .	443
testing::internal::Types< Head_, Tail_ > . . . . .	444
testing::internal::Types< Head_ > . . . . .	445
testing::internal::TypeWithSize< size > . . . . .	445
testing::internal::TypeWithSize< 4 > . . . . .	446
testing::internal::TypeWithSize< 8 > . . . . .	447
testing::internal::TypeWithSize< sizeof(RawType) > . . . . .	445
testing::UnitTest . . . . .	447
testing::internal::UnitTestImpl . . . . .	457
testing::internal::UnitTestOptions . . . . .	473
testing::internal::UniversalPrinter< T > . . . . .	474
testing::internal::UniversalPrinter< const T > . . . . .	475
testing::internal::UniversalPrinter< T & > . . . . .	475
testing::internal::UniversalPrinter< T[N] > . . . . .	476
testing::internal::UniversalTersePrinter< T > . . . . .	477
testing::internal::UniversalTersePrinter< const char * > . . . . .	480
testing::internal::UniversalTersePrinter< char * > . . . . .	477
testing::internal::UniversalTersePrinter< const char16_t * > . . . . .	481
testing::internal::UniversalTersePrinter< char16_t * > . . . . .	478
testing::internal::UniversalTersePrinter< const char32_t * > . . . . .	482
testing::internal::UniversalTersePrinter< char32_t * > . . . . .	479
testing::internal::UniversalTersePrinter< std::reference_wrapper< T > > . . . . .	483
testing::internal::UniversalTersePrinter< T & > . . . . .	483
testing::internal::UniversalTersePrinter< T[N] > . . . . .	484
testing::internal::UniversalTersePrinter< wchar_t * > . . . . .	484
testing::internal::DoAllAction< FinalAction >::UserConstructorTag . . . . .	485
testing::internal::DoAllAction< InitialAction, OtherActions... >::UserConstructorTag . . . . .	485
testing::internal::ValueArray< Ts > . . . . .	485
testing::DefaultValue< T >::ValueProducer . . . . .	487
testing::DefaultValue< T >::FactoryValueProducer . . . . .	166
testing::DefaultValue< T >::FixedValueProducer . . . . .	172
testing::internal::WithArgsAction< InnerAction, I > . . . . .	491
testing::internal::WithoutMatchers . . . . .	492
testing::WithParamInterface< T > . . . . .	493
testing::TestWithParam< int > . . . . .	432
testing::TestWithParam< bool > . . . . .	432
testing::TestWithParam< T > . . . . .	432
World . . . . .	496

# Chapter 3

## Class Index

### 3.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

testing::Action< F >	105
testing::Action< R(Args...)>	105
testing::Action< R(Args...)>::ActionAdapter	109
testing::internal::ActionImpl< F, Impl >	110
testing::internal::ActionImpl< R(Args...), Impl >	110
testing::ActionInterface< F >	112
testing::internal::AssertHelper	115
testing::internal::AssertHelper::AssertHelperData	117
testing::internal::AssignAction< T1, T2 >	118
testing::internal::TemplateSel< Tmpl >::Bind< T >	120
testing::internal::BuiltInDefaultValue< T >	120
testing::internal::BuiltInDefaultValue< const T >	121
testing::internal::BuiltInDefaultValue< T * >	121
testing::internal::BuiltInDefaultValueGetter< T, kDefaultConstructible >	122
testing::internal::BuiltInDefaultValueGetter< T, false >	123
testing::internal::ByMoveWrapper< T >	123
testing::OnceAction< Result(Args...)>::StdFunctionAdaptor< Callable >::CallableTag	124
testing::internal::CartesianProductGenerator< T >	124
testing::internal::CartesianProductHolder< Gen >	127
testing::internal::CodeLocation	128
testing::internal::conjunction<... >	129
testing::internal::conjunction< P1 >	130
testing::internal::conjunction< P1, Ps... >	131
testing::internal::ConstCharPtr	132
testing::internal::ConstRef< T >	133
testing::internal::ConstRef< T & >	134
testing::gmock_matchers_test::ContainerHelper	134
testing::internal::ContainerPrinter	135
ContainerTest< T >	135
testing::internal::ConvertibleToIntegerPrinter	136
testing::internal::ConvertibleToStringViewPrinter	137
Counter	137
testing::internal::DefaultGlobalTestPartResultReporter	138
testing::internal::DefaultNameGenerator	140
testing::internal::DefaultPerThreadTestPartResultReporter	141

testing::DefaultValue< T >	143
testing::DefaultValue< T & >	145
testing::DefaultValue< void >	147
testing::internal::DeleteArgAction< k >	148
testing::internal::disjunction<... >	148
testing::internal::disjunction< P1 >	149
testing::internal::disjunction< P1, Ps... >	150
testing::internal::DoAllAction< Actions >	151
testing::internal::DoAllAction< FinalAction >	151
testing::internal::DoAllAction< InitialAction, OtherActions... >	153
testing::internal::DoDefaultAction	156
testing::internal::DoubleSequence< plus_one, T, sizeofT >	156
testing::internal::DoubleSequence< false, IndexSequence< I... >, sizeofT >	156
testing::internal::DoubleSequence< true, IndexSequence< I... >, sizeofT >	157
testing::internal::ElemFromList< N, T >	157
testing::internal::ElemFromListImpl< typename >	158
testing::internal::ElemFromListImpl< IndexSequence< I... > >	158
testing::EmptyTestEventListener	159
testing::Environment	163
testing::internal::EqHelper	164
testing::internal::ExcessiveArg	165
ExternalInstantiationTest	165
testing::DefaultValue< T >::FactoryValueProducer	166
testing::internal::FailureReporterInterface	168
testing::internal::faketype	169
testing::internal::FallbackPrinter	169
FieldHelper	170
testing::internal::FindFirstPrinter< T, E, Printer, Printers >	171
testing::internal::FindFirstPrinter< T, decltype(Printer::PrintValue(std::declval< const T & >()), nullptr), Printer, Printers... >	171
testing::internal::DefaultValue< T >::FixedValueProducer	172
testing::internal::FlatTuple< T >	174
testing::internal::FlatTupleBase< Derived, Idx >	175
testing::internal::FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > >	176
testing::internal::FlatTupleConstructTag	178
testing::internal::FlatTupleElemBase< Derived, I >	179
testing::internal::FlatTupleElemBase< FlatTuple< T... >, I >	179
testing::internal::FloatingPoint< RawType >	181
testing::internal::FloatingPoint< RawType >::FloatingPointUnion	186
testing::internal::FormatForComparison< ToPrint, OtherOperand >	187
testing::internal::FormatForComparison< ToPrint[N], OtherOperand >	188
testing::internal::Function< T >	188
testing::internal::Function< R(Args...) >	188
testing::internal::FunctionPointerPrinter	190
testing::internal::GenerateTypeList< T >	191
testing::gmock_matchers_test::GreaterThanOrEqual< T >	192
testing::internal::GTestFlagSaver	194
testing::gmock_matchers_test::GtestGreaterThanOrEqual< T >	198
testing::internal::GTestLog	199
testing::gmock_matchers_test::GTestMatcherTestP	201
testing::internal::GTestMutexLock	203
testing::internal::GTestNonCopyable	203
testing::internal::HasDebugStringAndShortDebugString< T >	204
testing::internal::ImplBase< Impl >::Holder	206
testing::internal::Ignore< size_t >	207
testing::Action< R(Args...) >::IgnoreArgs< FunctionImpl >	208
testing::internal::IgnoredValue	209
testing::OnceAction< Result(Args...) >::IgnoreIncomingArguments< Callable >	209

testing::internal::IgnoreResultAction< A > . . . . .	210
testing::internal::IgnoreResultAction< A >::Impl< F > . . . . .	212
testing::internal::ReturnAction< R >::Impl< U > . . . . .	214
testing::internal::ReturnRefAction< T >::Impl< F > . . . . .	216
testing::internal::ReturnRefOfCopyAction< T >::Impl< F > . . . . .	218
testing::internal::ImplBase< Impl > . . . . .	220
testing::internal::IndexSequence< Is > . . . . .	221
testing::internal::ParameterizedTestSuiteInfo< TestSuite >::InstantiationInfo . . . . .	221
InstantiationInMultipleTranslationUnitsTest . . . . .	223
Interface . . . . .	224
testing::internal::InvokeArgumentAction< index, Params > . . . . .	227
InvokeHelper . . . . .	228
testing::internal::InvokeMethodAction< Class, MethodPtr > . . . . .	229
testing::internal::InvokeMethodWithoutArgsAction< Class, MethodPtr > . . . . .	230
testing::internal::InvokeWithoutArgsAction< FunctionImpl > . . . . .	231
testing::internal::is_callable_r_impl< Void, R, F, Args > . . . . .	232
testing::internal::is_callable_r_impl< void_t< call_result_t< F, Args... > >, R, F, Args... > . . . . .	233
testing::internal::is_implicitly_convertible< From, To > . . . . .	234
testing::internal::is_proxy_type_list< typename > . . . . .	236
testing::internal::is_proxy_type_list< ProxyTypeList< Ts... > > . . . . .	237
testing::internal::IsEmptyMatcher . . . . .	237
testing::internal::IsHashTable< T > . . . . .	239
testing::internal::IsRecursiveContainer< C > . . . . .	240
testing::internal::IsRecursiveContainerImpl< C, bool > . . . . .	241
testing::internal::IsRecursiveContainerImpl< C, false > . . . . .	241
testing::internal::IsRecursiveContainerImpl< C, true > . . . . .	242
testing::internal::ParamGeneratorConverter< From, To >::Iterator . . . . .	243
testing::internal::RangeGenerator< T, IncrementT >::Iterator . . . . .	246
testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator . . . . .	250
testing::internal::CartesianProductGenerator< T >::IteratorImpl< I > . . . . .	254
testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > > . . . . .	254
testing::internal::KindOf< T > . . . . .	258
testing::internal::internal_stream_operator_without_lexical_name_lookup::LookupBlocker . . . . .	259
testing::internal::MakeIndexSequenceImpl< N > . . . . .	259
testing::internal::MakeIndexSequenceImpl< 0 > . . . . .	260
testing::internal::MarkAsIgnored . . . . .	261
testing::Matcher< typename > . . . . .	262
Matrix	
Library for matrix functions contained in the namespace "matrix" . . . . .	262
testing::Message . . . . .	265
Mock	
testing::PolymorphicAction< Impl >::MonomorphicImpl< F > . . . . .	271
testing::internal::Mutex . . . . .	273
MyString . . . . .	274
testing::NaggyMock< MockClass > . . . . .	277
testing::internal::NaggyMockImpl< Base > . . . . .	279
testing::internal::NameGeneratorSelector< Provided > . . . . .	280
testing::internal::NativeArray< Element > . . . . .	280
testing::internal::negation< P > . . . . .	284
testing::NiceMock< MockClass > . . . . .	284
testing::internal::NiceMockImpl< Base > . . . . .	287
testing::internal::None . . . . .	287
testing::OnceAction< F > . . . . .	287
testing::OnceAction< Result(Args...) > . . . . .	288
OnTheFlyPrimeTable . . . . .	290
testing::internal::OsStackTraceGetter . . . . .	292
testing::internal::OsStackTraceGetterInterface . . . . .	294
testing::internal::ParamConverterGenerator< Gen > . . . . .	296

testing::internal::ParameterizedTestFactory< TestClass >	297
testing::internal::ParameterizedTestSuiteInfo< TestSuite >	300
testing::internal::ParameterizedTestSuiteInfoBase	305
testing::internal::ParameterizedTestSuiteRegistry	307
testing::internal::ParamGenerator< T >	310
testing::internal::ParamGeneratorConverter< From, To >	312
testing::internal::ParamGeneratorInterface< T >	314
testing::internal::ParamIterator< T >	315
testing::internal::ParamIteratorInterface< T >	319
testing::internal::PointerPrinter	321
testing::PolymorphicAction< Impl >	321
PreCalculatedPrimeTable	323
PrimeTable	325
testing::PrintToStringParamName	326
PrivateCode	327
testing::internal::ProtobufPrinter	328
testing::internal::ProxyTypeList< Ts >	329
Queue< E >	330
QueueNode< E >	333
testing::internal::Random	336
testing::internal::RangeGenerator< T, IncrementT >	338
testing::internal::RawBytesPrinter	341
testing::internal::RE	341
testing::internal::RelationToSourceCopy	344
testing::internal::RelationToSourceReference	344
testing::internal::RemoveConstFromKey< T >	345
testing::internal::RemoveConstFromKey< std::pair< const K, V > >	345
testing::internal::ReturnAction< R >	346
testing::internal::ReturnAction< ByMoveWrapper< T > >	347
testing::internal::ReturnArgAction< k >	348
testing::internal::ReturnNewAction< T, Params >	349
testing::internal::ReturnNullAction	350
testing::internal::ReturnPointeeAction< Ptr >	350
testing::internal::ReturnRefAction< T >	351
testing::internal::ReturnRefOfCopyAction< T >	352
testing::internal::ReturnRoundRobinAction< T >	353
testing::internal::ReturnVoidAction	355
testing::internal::SaveArgAction< k, Ptr >	355
testing::internal::SaveArgPointeeAction< k, Ptr >	356
testing::ScopedTrace	357
testing::internal::SetArgRefereeAction< k, T >	359
testing::internal::SetArgumentPointeeAction< N, A, typename >	360
testing::internal::SetArrayArgumentAction< k, I1, I2 >	361
testing::internal::SetErrnoAndReturnAction< T >	362
testing::Environment::Setup_should_be_spelled_SetUp	363
testing::Test::Setup_should_be_spelled_SetUp	363
testing::internal::IgnoredValue::Sink	363
testing::internal::ReturnAction< R >::Impl< U >::State	364
testing::internal::ReturnAction< ByMoveWrapper< T > >::State	365
testing::internal::ReturnRoundRobinAction< T >::State	366
testing::OnceAction< Result(Args...)>::StdFunctionAdaptor< Callable >	367
testing::internal::StlContainerView< RawContainer >	368
testing::internal::StlContainerView< ::std::tuple< ElementPointer, Size > >	369
testing::internal::StlContainerView< Element[N]>	371
testing::internal::internal_stream_operator_without_lexical_name_lookup::StreamPrinter	372
testing::StrictMock< MockClass >	373
testing::internal::StrictMockImpl< Base >	375
testing::internal::String	376

testing::internal::SuiteApiResolver< T >	379
testing::internal::Templates< Head_, Tail_ >	380
testing::internal::Templates< Head_ >	381
testing::internal::TemplateSel< Tmpl >	382
testing::Test	382
testing::TestEventListener	387
testing::TestEventListeners	391
testing::internal::TestFactoryBase	396
testing::internal::TestFactoryImpl< TestClass >	397
testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfo	399
testing::TestInfo	400
testing::internal::TestMetaFactory< TestSuite >	407
testing::internal::TestMetaFactoryBase< ParamType >	409
testing::TestParamInfo< ParamType >	410
testing::TestProperty	411
testing::internal::TestPropertyKeyls	413
testing::TestResult	414
testing::internal::TestResultAccessor	421
testing::TestSuite	422
testing::TestWithParam< T >	432
testing::internal::ThisRefAdjuster< Pattern >	433
testing::internal::ThreadLocal< T >	434
testing::internal::TraceInfo	435
testing::internal::TrueWithString	436
std::tuple_size< testing::internal::FlatTuple< Ts... > >	438
testing::internal::TypeIdHelper< T >	438
testing::internal::TypeParameterizedTest< Fixture, TestSel, Types >	439
testing::internal::TypeParameterizedTest< Fixture, TestSel, internal::None >	440
testing::internal::TypeParameterizedTestSuite< Fixture, Tests, Types >	440
testing::internal::TypeParameterizedTestSuite< Fixture, internal::None, Types >	441
testing::internal::TypeParameterizedTestSuiteRegistry::TypeParameterizedTestSuiteInfo	442
testing::internal::TypeParameterizedTestSuiteRegistry	443
testing::internal::Types< Head_, Tail_ >	444
testing::internal::Types< Head_ >	445
testing::internal::TypeWithSize< size >	445
testing::internal::TypeWithSize< 4 >	446
testing::internal::TypeWithSize< 8 >	447
testing::UnitTest	447
testing::internal::UnitTestImpl	457
testing::internal::UnitTestOptions	473
testing::internal::UniversalPrinter< T >	474
testing::internal::UniversalPrinter< const T >	475
testing::internal::UniversalPrinter< T & >	475
testing::internal::UniversalPrinter< T[N]>	476
testing::internal::UniversalTersePrinter< T >	477
testing::internal::UniversalTersePrinter< char * >	477
testing::internal::UniversalTersePrinter< char16_t * >	478
testing::internal::UniversalTersePrinter< char32_t * >	479
testing::internal::UniversalTersePrinter< const char * >	480
testing::internal::UniversalTersePrinter< const char16_t * >	481
testing::internal::UniversalTersePrinter< const char32_t * >	482
testing::internal::UniversalTersePrinter< std::reference_wrapper< T > >	483
testing::internal::UniversalTersePrinter< T & >	483
testing::internal::UniversalTersePrinter< T[N]>	484
testing::internal::UniversalTersePrinter< wchar_t * >	484
testing::internal::DoAllAction< FinalAction >::UserConstructorTag	485
testing::internal::DoAllAction< InitialAction, OtherActions... >::UserConstructorTag	485
testing::internal::ValueArray< Ts >	485

testing::DefaultValue< T >::ValueProducer . . . . .	487
testing::internal::ValuesInIteratorRangeGenerator< T > . . . . .	488
testing::internal::WithArgsAction< InnerAction, I > . . . . .	491
testing::internal::WithoutMatchers . . . . .	492
testing::WithParamInterface< T > . . . . .	493
World Library for the functions involved in simulating a Game of Life world . . . . .	496

# Chapter 4

## File Index

### 4.1 File List

Here is a list of all files with brief descriptions:

build/_deps/googletest-src/googlemock/include/gmock/ <a href="#">gmock-actions.h</a> . . . . .	501
build/_deps/googletest-src/googlemock/include/gmock/ <a href="#">gmock-cardinalities.h</a> . . . . .	512
build/_deps/googletest-src/googlemock/include/gmock/ <a href="#">gmock-function-mocker.h</a> . . . . .	513
build/_deps/googletest-src/googlemock/include/gmock/ <a href="#">gmock-matchers.h</a> . . . . .	543
build/_deps/googletest-src/googlemock/include/gmock/ <a href="#">gmock-more-actions.h</a> . . . . .	552
build/_deps/googletest-src/googlemock/include/gmock/ <a href="#">gmock-more-matchers.h</a> . . . . .	585
build/_deps/googletest-src/googlemock/include/gmock/ <a href="#">gmock-nice-strict.h</a> . . . . .	586
build/_deps/googletest-src/googlemock/include/gmock/ <a href="#">gmock-spec-builders.h</a> . . . . .	587
build/_deps/googletest-src/googlemock/include/gmock/ <a href="#">gmock.h</a> . . . . .	589
build/_deps/googletest-src/googlemock/include/gmock/internal/gmock-internal-utils.h . . . . .	596
build/_deps/googletest-src/googlemock/include/gmock/internal/gmock-port.h . . . . .	592
build/_deps/googletest-src/googlemock/include/gmock/internal/gmock-pp.h . . . . .	600
build/_deps/googletest-src/googlemock/include/gmock/internal/custom/gmock-generated-actions.h . . . . .	591
build/_deps/googletest-src/googlemock/include/gmock/internal/custom/gmock-matchers.h . . . . .	552
build/_deps/googletest-src/googlemock/include/gmock/internal/custom/gmock-port.h . . . . .	592
build/_deps/googletest-src/googlemock/test/ <a href="#">gmock-matchers_test.h</a> . . . . .	617
build/_deps/googletest-src/googlemock/test/ <a href="#">gmock_link_test.h</a> . . . . .	619
build/_deps/googletest-src/gtest/include/gtest/gtest-assertion-result.h . . . . .	628
build/_deps/googletest-src/gtest/include/gtest/gtest-death-test.h . . . . .	629
build/_deps/googletest-src/gtest/include/gtest/gtest-matchers.h . . . . .	631
build/_deps/googletest-src/gtest/include/gtest/gtest-message.h . . . . .	633
build/_deps/googletest-src/gtest/include/gtest/gtest-param-test.h . . . . .	634
build/_deps/googletest-src/gtest/include/gtest/gtest-printers.h . . . . .	637
build/_deps/googletest-src/gtest/include/gtest/gtest-spi.h . . . . .	641
build/_deps/googletest-src/gtest/include/gtest/gtest-test-part.h . . . . .	644
build/_deps/googletest-src/gtest/include/gtest/gtest-typed-test.h . . . . .	645
build/_deps/googletest-src/gtest/include/gtest/gtest.h . . . . .	650
build/_deps/googletest-src/gtest/include/gtest/gtest_pred_impl.h . . . . .	668
build/_deps/googletest-src/gtest/include/gtest/gtest_prod.h . . . . .	677
build/_deps/googletest-src/gtest/include/gtest/internal/gtest-death-test-internal.h . . . . .	693
build/_deps/googletest-src/gtest/include/gtest/internal/gtest-filepath.h . . . . .	694
build/_deps/googletest-src/gtest/include/gtest/internal/gtest-internal.h . . . . .	695
build/_deps/googletest-src/gtest/include/gtest/internal/gtest-param-util.h . . . . .	704
build/_deps/googletest-src/gtest/include/gtest/internal/gtest-port-arch.h . . . . .	706
build/_deps/googletest-src/gtest/include/gtest/internal/gtest-port.h . . . . .	679

build/_deps/googletest-src/googletest/include/gtest/internal/gtest-string.h . . . . .	706
build/_deps/googletest-src/googletest/include/gtest/internal/gtest-type-util.h . . . . .	707
build/_deps/googletest-src/googletest/include/gtest/internal/custom/gtest-port.h . . . . .	678
build/_deps/googletest-src/googletest/include/gtest/internal/custom/gtest-printers.h . . . . .	641
build/_deps/googletest-src/googletest/include/gtest/internal/custom/gtest.h . . . . .	668
build/_deps/googletest-src/googletest/samples/prime_tables.h . . . . .	709
build/_deps/googletest-src/googletest/samples/sample1.h . . . . .	710
build/_deps/googletest-src/googletest/samples/sample2.h . . . . .	710
build/_deps/googletest-src/googletest/samples/sample3-inl.h . . . . .	711
build/_deps/googletest-src/googletest/samples/sample4.h . . . . .	711
build/_deps/googletest-src/googletest/src/gtest-internal-inl.h . . . . .	711
build/_deps/googletest-src/googletest/test/googletest-param-test-test.h . . . . .	713
build/_deps/googletest-src/googletest/test/gtest-typed-test_test.h . . . . .	714
build/_deps/googletest-src/googletest/test/production.h . . . . .	715
src/prof_count_neighbours.cpp . . . . .	719
src/prof_simulation.cpp . . . . .	720
src/run_dd1.cpp . . . . .	721
src/run_dd2.cpp . . . . .	722
src/run_hybrid.cpp . . . . .	723
src/run_omp.cpp . . . . .	724
src/run_single.cpp . . . . .	726
src/time_count_neighbours.cpp . . . . .	727
src/time_dd1.cpp . . . . .	728
src/time_dd2.cpp . . . . .	729
src/time_hybrid.cpp . . . . .	730
src/time_single.cpp . . . . .	731
src/conway/matrix.cpp . . . . .	718
src/conway/world.cpp . . . . .	718
src/conway/include/matrix.h . . . . .	716
src/conway/include/world.h . . . . .	717
src/timing/timing.cpp . . . . .	733
src/timing/include/timing.h . . . . .	732
test/test_dd1.cpp . . . . .	733
test/test_dd2.cpp . . . . .	735
test/test_hybrid.cpp . . . . .	736
test/test_matrix.cpp . . . . .	737
test/test_omp.cpp . . . . .	740
test/test_world.cpp . . . . .	741

# Chapter 5

## Namespace Documentation

### 5.1 conway Namespace Reference

#### Functions

- int `evaluate_rules` (`Matrix &Cells_count`, `Matrix &Cells_current`, `Matrix &Cells_next`)
- int `update_boundary` (`Matrix &Cells`)
- `std::tuple< int, int > divide_rows` (int `rows`, int `size`, int `rank`)

#### 5.1.1 Function Documentation

##### 5.1.1.1 `divide_rows()`

```
std::tuple< int, int > conway::divide_rows (
    int rows,
    int size,
    int rank )
```

Routine used to divide rows (or columns) across a number of ranks evenly that isn't necessarily a divisor.

This has been adapted from the `divide_rows` routine found in [https://gitlab.developers.cam.ac.uk/phy/data-intensive-science-mphil/c2\\_advanced\\_research\\_computing/-/tree/main/Snippets/MPI?ref\\_type=heads](https://gitlab.developers.cam.ac.uk/phy/data-intensive-science-mphil/c2_advanced_research_computing/-/tree/main/Snippets/MPI?ref_type=heads)

#### Parameters

<code>rows</code>	The total number of rows to be distributed
<code>size</code>	The number of ranks
<code>rank</code>	The index of the specific rank to be allocated

**Returns**

```
std::make_tuple Tuple of indices of the first and last row to be allocated to the rank.
```

**5.1.1.2 evaluate\_rules()**

```
int conway::evaluate_rules (
    Matrix & Cells_count,
    Matrix & Cells_current,
    Matrix & Cells_next )
```

Evaluates the update of cell states according to Game of Life rules.

**Parameters**

<i>Cells_count</i>	<a href="#">Matrix</a> giving the relevant neighbouring cell counts for each entry, including each cell's own value
<i>Cells_current</i>	<a href="#">Matrix</a> giving the current cell states
<i>Cells_next</i>	<a href="#">Matrix</a> giving the updated cell states, altered in-place

**5.1.1.3 update\_boundary()**

```
int conway::update_boundary (
    Matrix & Cells )
```

Updates the ghost cells on the perimeter according to the periodic boundary condition.

**Parameters**

<i>Cells_current</i>	<a href="#">Matrix</a> to be updated, in-place.
----------------------	---

**5.2 matrix Namespace Reference****Functions**

- `std::string read_file (std::string filename)`
- `Matrix read_matrix_str (std::string matrix_string)`
- `std::string write_matrix_str (Matrix A)`
- `Matrix count_neighbours (Matrix &A)`
- `Matrix generate_matrix (int n_rows, int n_cols)`

**5.2.1 Function Documentation**

### 5.2.1.1 count\_neighbours()

```
Matrix matrix::count_neighbours (
    Matrix & A )
```

Used to evaluate the result of a convolution between a matrix and the box blur kernel (scaled up by a factor of 9).

#### Parameters

A	The matrix to be convolved
---	----------------------------

#### Returns

C The resulting matrix

### 5.2.1.2 generate\_matrix()

```
Matrix matrix::generate_matrix (
    int n_rows,
    int n_cols )
```

Generates a random binary matrix of a given size.

#### Parameters

n_rows	Number of rows of the generated matrix
n_cols	Number of columns of the generated matrix

#### Returns

A The generated matrix

### 5.2.1.3 read\_file()

```
std::string matrix::read_file (
    std::string filename )
```

Used to read in a .txt file as a string.

#### Parameters

filename	Name of the file to be read, including the extension.
----------	---

**Returns**

`file_string` string of contents of the specified file.

**5.2.1.4 `read_matrix_str()`**

```
Matrix matrix::read_matrix_str (
    std::string matrix_string )
```

Used to convert a string to a matrix.

The string should be a sequence of integers with spaces or new lines separating them. The first two integers specify the number of rows and columns respectively.

**Parameters**

<code>matrix_string</code>	The string specifying the matrix entries
----------------------------	--

**Returns**

`A` The formed matrix

**5.2.1.5 `write_matrix_str()`**

```
std::string matrix::write_matrix_str (
    Matrix A )
```

Converts a `Matrix` to a string, with each row on a new line.

**Parameters**

<code>A</code>	The matrix to be converted
----------------	----------------------------

**Returns**

`output_string` The string of the matrix entries

**5.3 proto2 Namespace Reference****5.4 std Namespace Reference****Classes**

- struct `tuple_size< testing::internal::FlatTuple< Ts... > >`

## 5.5 testing Namespace Reference

### Namespaces

- `gmock_matchers_test`
- `internal`

### Classes

- class `OnceAction`
- class `OnceAction< Result(Args...)>`
- class `DefaultValue`
- class `DefaultValue< T & >`
- class `DefaultValue< void >`
- class `ActionInterface`
- class `Action`
- class `Action< R(Args...)>`
- class `PolymorphicAction`
- class `NiceMock`
- class `NaggyMock`
- class `StrictMock`
- class `Matcher`
- class `Message`
- class `Test`
- class `TestProperty`
- class `TestResult`
- class `TestInfo`
- class `TestSuite`
- class `Environment`
- class `TestEventListener`
- class `EmptyTestEventListener`
- class `TestEventListeners`
- class `UnitTest`
- class `WithParamInterface`
- class `TestWithParam`
- class `ScopedTrace`
- struct `TestParamInfo`
- struct `PrintToStringParamName`

### Typedefs

- `typedef internal::IgnoredValue Unused`
- `using TestCase = TestSuite`
- `typedef internal::TimeInMillis TimeInMillis`
- `template<typename... Ts>`  
`using Types = internal::ProxyTypeList< Ts... >`

## Functions

- template<typename F >  
`Action< F > MakeAction (ActionInterface< F > *impl)`
- template<typename Impl >  
`PolymorphicAction< Impl > MakePolymorphicAction (const Impl &impl)`
- template<typename... Action>  
`internal::DoAllAction< typename std::decay< Action >::type... > DoAll (Action &&... action)`
- template<size\_t k, typename InnerAction >  
`internal::WithArgsAction< typename std::decay< InnerAction >::type, k > WithArg (InnerAction &&action)`
- template<size\_t k, size\_t... ks, typename InnerAction >  
`internal::WithArgsAction< typename std::decay< InnerAction >::type, k, ks... > WithArgs (InnerAction &&action)`
- template<typename InnerAction >  
`internal::WithArgsAction< typename std::decay< InnerAction >::type > WithoutArgs (InnerAction &&action)`
- template<typename R >  
`internal::ReturnAction< R > Return (R value)`
- `PolymorphicAction< internal::ReturnNullAction > ReturnNull ()`
- `PolymorphicAction< internal::ReturnVoidAction > Return ()`
- template<typename R >  
`internal::ReturnRefAction< R > ReturnRef (R &x)`
- template<typename R , R \* = nullptr>  
`internal::ReturnRefAction< R > ReturnRef (R &&)=delete`
- template<typename R >  
`internal::ReturnRefOfCopyAction< R > ReturnRefOfCopy (const R &x)`
- template<typename R >  
`internal::ByMoveWrapper< R > ByMove (R x)`
- template<typename T >  
`internal::ReturnRoundRobinAction< T > ReturnRoundRobin (std::vector< T > vals)`
- template<typename T >  
`internal::ReturnRoundRobinAction< T > ReturnRoundRobin (std::initializer_list< T > vals)`
- `internal::DoDefaultAction DoDefault ()`
- template<size\_t N, typename T >  
`internal::SetArgumentPointeeAction< N, T > SetArgPointee (T value)`
- template<size\_t N, typename T >  
`internal::SetArgumentPointeeAction< N, T > SetArgumentPointee (T value)`
- template<typename T1 , typename T2 >  
`PolymorphicAction< internal::AssignAction< T1, T2 > > Assign (T1 *ptr, T2 val)`
- template<typename T >  
`PolymorphicAction< internal::SetErrnoAndReturnAction< T > > SetErrnoAndReturn (int errval, T result)`
- template<typename FunctionImpl >  
`std::decay< FunctionImpl >::type Invoke (FunctionImpl &&function_impl)`
- template<class Class , typename MethodPtr >  
`internal::InvokeMethodAction< Class, MethodPtr > Invoke (Class *obj_ptr, MethodPtr method_ptr)`
- template<typename FunctionImpl >  
`internal::InvokeWithoutArgsAction< typename std::decay< FunctionImpl >::type > InvokeWithoutArgs (FunctionImpl function_impl)`
- template<class Class , typename MethodPtr >  
`internal::InvokeMethodWithoutArgsAction< Class, MethodPtr > InvokeWithoutArgs (Class *obj_ptr, MethodPtr method_ptr)`
- template<typename A >  
`internal::IgnoreResultAction< A > IgnoreResult (const A &an_action)`
- template<typename T >  
`inline ::std::reference_wrapper< T > ByRef (T &l_value)`
- template<typename T , typename... Params>  
`internal::ReturnNewAction< T, typename std::decay< Params >::type... > ReturnNew (Params &&... params)`

- template<size\_t k>  
`internal::ReturnArgAction<k> ReturnArg ()`
- template<size\_t k, typename Ptr >  
`internal::SaveArgAction<k, Ptr> SaveArg (Ptr pointer)`
- template<size\_t k, typename Ptr >  
`internal::SaveArgPointeeAction<k, Ptr> SaveArgPointee (Ptr pointer)`
- template<size\_t k, typename T >  
`internal::SetArgRefereeAction<k, typename std::decay<T>::type> SetArgReferee (T &&value)`
- template<size\_t k, typename I1 , typename I2 >  
`internal::SetArrayArgumentAction<k, I1, I2> SetArrayArgument (I1 first, I2 last)`
- template<size\_t k>  
`internal::DeleteArgAction<k> DeleteArg ()`
- template<typename Ptr >  
`internal::ReturnPointeeAction<Ptr> ReturnPointee (Ptr pointer)`
- template<std::size\_t index, typename... Params>  
`internal::InvokeArgumentAction<index, typename std::decay<Params>::type...> InvokeArgument (Params &... params)`
- PolymorphicMatcher<`internal::IsEmptyMatcher`> `IsEmpty ()`
- MATCHER (IsTrue, negation ? "is false" :"is true")
- MATCHER (IsFalse, negation ? "is true" :"is false")
- `GTEST_API_ void InitGoogleMock (int *argc, char **argv)`
- `GTEST_API_ void InitGoogleMock (int *argc, wchar_t **argv)`
- `GTEST_API_ void InitGoogleMock ()`
- `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 std::iterator_traits<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 >  
`internal::ParamConverterGenerator<T> ConvertGenerator (internal::ParamGenerator<T> gen)`
- 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 >  
  `constexpr bool StaticAssertTypeEq () noexcept`
- `GTEST_API_ std::string TempDir ()`
- `GTEST_API_ std::string SrcDir ()`
- 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

- const int `kMaxStackTraceDepth = 100`

### 5.5.1 Typedef Documentation

#### 5.5.1.1 TestCase

```
using testing::TestCase = typedef TestSuite
```

#### 5.5.1.2 TimeInMillis

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

### 5.5.1.3 Types

```
template<typename... Ts>
using testing::Types = decltype(internal::ProxyTypeList<Ts...>)
```

### 5.5.1.4 Unused

```
typedef internal::IgnoredValue testing::Unused
```

## 5.5.2 Function Documentation

### 5.5.2.1 AddGlobalTestEnvironment()

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

### 5.5.2.2 AssertPred1Helper()

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

### 5.5.2.3 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 )
```

#### 5.5.2.4 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 )
```

#### 5.5.2.5 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 )
```

#### 5.5.2.6 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 )
```

### 5.5.2.7 Assign()

```
template<typename T1 , typename T2 >
PolymorphicAction<internal::AssignAction<T1, T2>> testing::Assign (
    T1 * ptr,
    T2 val )
```

### 5.5.2.8 Bool()

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

### 5.5.2.9 ByMove()

```
template<typename R >
internal::ByMoveWrapper<R> testing::ByMove (
    R x )
```

### 5.5.2.10 ByRef()

```
template<typename T >
inline ::std::reference_wrapper<T> testing::ByRef (
    T & l_value )
```

### 5.5.2.11 Combine()

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

### 5.5.2.12 ConvertGenerator()

```
template<typename T >
internal::ParamConverterGenerator<T> testing::ConvertGenerator (
    internal::ParamGenerator< T > gen )
```

### 5.5.2.13 DeleteArg()

```
template<size_t k>
internal::DeleteArgAction<k> testing::DeleteArg ( )
```

### 5.5.2.14 DoAll()

```
template<typename... Action>
internal::DoAllAction<typename std::decay<Action>::type...> testing::DoAll (
    Action &&... action )
```

### 5.5.2.15 DoDefault()

```
internal::DoDefaultAction testing::DoDefault ( ) [inline]
```

### 5.5.2.16 DoubleLE()

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

### 5.5.2.17 FloatLE()

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

### 5.5.2.18 IgnoreResult()

```
template<typename A >
internal::IgnoreResultAction<A> testing::IgnoreResult (
    const A & an_action ) [inline]
```

**5.5.2.19 InitGoogleMock() [1/3]**

```
GTEST_API_ void testing::InitGoogleMock ( )
```

**5.5.2.20 InitGoogleMock() [2/3]**

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

**5.5.2.21 InitGoogleMock() [3/3]**

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

**5.5.2.22 InitGoogleTest() [1/3]**

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

**5.5.2.23 InitGoogleTest() [2/3]**

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

**5.5.2.24 InitGoogleTest() [3/3]**

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

### 5.5.2.25 `Invoke()` [1/2]

```
template<class Class , typename MethodPtr >
internal::InvokeMethodAction<Class, MethodPtr> testing::Invoke (
    Class * obj_ptr,
    MethodPtr method_ptr )
```

### 5.5.2.26 `Invoke()` [2/2]

```
template<typename FunctionImpl >
std::decay<FunctionImpl>::type testing::Invoke (
    FunctionImpl && function_impl )
```

### 5.5.2.27 `InvokeArgument()`

```
template<std::size_t index, typename... Params>
internal::InvokeArgumentAction<index, typename std::decay<Params>::type...> testing::Invoke<->
Argument (
    Params &&... params )
```

### 5.5.2.28 `InvokeWithoutArgs()` [1/2]

```
template<class Class , typename MethodPtr >
internal::InvokeMethodWithoutArgsAction<Class, MethodPtr> testing::InvokeWithoutArgs (
    Class * obj_ptr,
    MethodPtr method_ptr )
```

### 5.5.2.29 `InvokeWithoutArgs()` [2/2]

```
template<typename FunctionImpl >
internal::InvokeWithoutArgsAction<typename std::decay<FunctionImpl>::type> testing::Invoke<->
WithoutArgs (
    FunctionImpl function_impl )
```

### 5.5.2.30 `IsEmpty()`

```
PolymorphicMatcher<internal::IsEmptyMatcher> testing::IsEmpty ( ) [inline]
```

**5.5.2.31 IsNotSubstring() [1/3]**

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

**5.5.2.32 IsNotSubstring() [2/3]**

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

**5.5.2.33 IsNotSubstring() [3/3]**

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

**5.5.2.34 IsSubstring() [1/3]**

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

**5.5.2.35 IsSubstring() [2/3]**

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

### 5.5.2.36 `IsSubstring()` [3/3]

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

### 5.5.2.37 `MakeAction()`

```
template<typename F >
Action<F> testing::MakeAction (
    ActionInterface< F > * impl )
```

### 5.5.2.38 `MakePolymorphicAction()`

```
template<typename Impl >
PolymorphicAction<Impl> testing::MakePolymorphicAction (
    const Impl & impl ) [inline]
```

### 5.5.2.39 `MATCHER()` [1/2]

```
testing::MATCHER (
    IsFalse ,
    negation ? "is true" :"is false" )
```

### 5.5.2.40 `MATCHER()` [2/2]

```
testing::MATCHER (
    IsTrue ,
    negation ? "is false" :"is true" )
```

### 5.5.2.41 `operator<<()`

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

### 5.5.2.42 PrintToString()

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

### 5.5.2.43 Range() [1/2]

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

### 5.5.2.44 Range() [2/2]

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

### 5.5.2.45 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 )
```

### 5.5.2.46 Return() [1/2]

```
PolymorphicAction<internal::ReturnVoidAction> testing::Return ( ) [inline]
```

### 5.5.2.47 Return() [2/2]

```
template<typename R >
internal::ReturnAction<R> testing::Return (
    R value )
```

### 5.5.2.48 ReturnArg()

```
template<size_t k>
internal::ReturnArgAction<k> testing::ReturnArg ( )
```

### 5.5.2.49 ReturnNew()

```
template<typename T , typename... Params>
internal::ReturnNewAction<T, typename std::decay<Params>::type...> testing::ReturnNew (
    Params &&... params )
```

### 5.5.2.50 ReturnNull()

```
PolymorphicAction<internal::ReturnNullAction> testing::ReturnNull ( ) [inline]
```

### 5.5.2.51 ReturnPointee()

```
template<typename Ptr >
internal::ReturnPointeeAction<Ptr> testing::ReturnPointee (
    Ptr pointer )
```

### 5.5.2.52 ReturnRef() [1/2]

```
template<typename R , R * = nullptr>
internal::ReturnRefAction<R> testing::ReturnRef (
    R && ) [delete]
```

**5.5.2.53 ReturnRef() [2/2]**

```
template<typename R >
internal::ReturnRefAction<R> testing::ReturnRef (
    R & x )  [inline]
```

**5.5.2.54 ReturnRefOfCopy()**

```
template<typename R >
internal::ReturnRefOfCopyAction<R> testing::ReturnRefOfCopy (
    const R & x )  [inline]
```

**5.5.2.55 ReturnRoundRobin() [1/2]**

```
template<typename T >
internal::ReturnRoundRobinAction<T> testing::ReturnRoundRobin (
    std::initializer_list< T > vals )
```

**5.5.2.56 ReturnRoundRobin() [2/2]**

```
template<typename T >
internal::ReturnRoundRobinAction<T> testing::ReturnRoundRobin (
    std::vector< T > vals )
```

**5.5.2.57 SaveArg()**

```
template<size_t k, typename Ptr >
internal::SaveArgAction<k, Ptr> testing::SaveArg (
    Ptr pointer )
```

**5.5.2.58 SaveArgPointee()**

```
template<size_t k, typename Ptr >
internal::SaveArgPointeeAction<k, Ptr> testing::SaveArgPointee (
    Ptr pointer )
```

### 5.5.2.59 SetArgPointee()

```
template<size_t N, typename T >
internal::SetArgumentPointeeAction<N, T> testing::SetArgPointee (
    T value )
```

### 5.5.2.60 SetArgReferee()

```
template<size_t k, typename T >
internal::SetArgRefereeAction<k, typename std::decay<T>::type> testing::SetArgReferee (
    T && value )
```

### 5.5.2.61 SetArgumentPointee()

```
template<size_t N, typename T >
internal::SetArgumentPointeeAction<N, T> testing::SetArgumentPointee (
    T value )
```

### 5.5.2.62 SetArrayArgument()

```
template<size_t k, typename I1 , typename I2 >
internal::SetArrayArgumentAction<k, I1, I2> testing::SetArrayArgument (
    I1 first,
    I2 last )
```

### 5.5.2.63 SetErrnoAndReturn()

```
template<typename T >
PolymorphicAction<internal::SetErrnoAndReturnAction<T> > testing::SetErrnoAndReturn (
    int errval,
    T result )
```

### 5.5.2.64 SrcDir()

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

**5.5.2.65 StaticAssertTypeEq()**

```
template<typename T1 , typename T2 >
constexpr bool testing::StaticAssertTypeEq ( ) [constexpr], [noexcept]
```

**5.5.2.66 TempDir()**

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

**5.5.2.67 Values()**

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

**5.5.2.68 ValuesIn() [1/3]**

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

**5.5.2.69 ValuesIn() [2/3]**

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

**5.5.2.70 ValuesIn() [3/3]**

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

### 5.5.2.71 WithArg()

```
template<size_t k, typename InnerAction >
internal::WithArgsAction<typename std::decay<InnerAction>::type, k> testing::WithArg (
    InnerAction && action )
```

### 5.5.2.72 WithArgs()

```
template<size_t k, size_t... ks, typename InnerAction >
internal::WithArgsAction<typename std::decay<InnerAction>::type, k, ks...> testing::WithArgs (
    InnerAction && action )
```

### 5.5.2.73 WithoutArgs()

```
template<typename InnerAction >
internal::WithArgsAction<typename std::decay<InnerAction>::type> testing::WithoutArgs (
    InnerAction && action )
```

## 5.5.3 Variable Documentation

### 5.5.3.1 kMaxStackTraceDepth

```
const int testing::kMaxStackTraceDepth = 100
```

## 5.6 testing::gmock\_matchers\_test Namespace Reference

### Classes

- struct [ContainerHelper](#)
- struct [GtestGreaterThanOrMatcher](#)
- class [GreaterThanOrMatcher](#)
- class [GTestMatcherTestP](#)

### Functions

- template<typename T >  
[GtestGreaterThanOrMatcher](#)< typename std::decay< T >::type > [GtestGreaterThanOr](#) (T &&rhs)
- template<typename T >  
std::string [Describe](#) (const [Matcher](#)< T > &m)
- template<typename T >  
std::string [DescribeNegation](#) (const [Matcher](#)< T > &m)
- template<typename MatcherType , typename Value >  
std::string [Explain](#) (const MatcherType &m, const Value &x)

## 5.6.1 Function Documentation

### 5.6.1.1 Describe()

```
template<typename T >
std::string testing::gmock_matchers_test::Describe (
    const Matcher< T > & m )
```

### 5.6.1.2 DescribeNegation()

```
template<typename T >
std::string testing::gmock_matchers_test::DescribeNegation (
    const Matcher< T > & m )
```

### 5.6.1.3 Explain()

```
template<typename MatcherType , typename Value >
std::string testing::gmock_matchers_test::Explain (
    const MatcherType & m,
    const Value & x )
```

### 5.6.1.4 GtestGreaterThan()

```
template<typename T >
GtestGreaterThanOrMatcher<typename std::decay<T>::type> testing::gmock_matchers_test::GtestGreaterThanOrMatcher (
    T && rhs )
```

## 5.7 testing::internal Namespace Reference

### Namespaces

- [edit\\_distance](#)
- [internal\\_stream\\_operator\\_without\\_lexical\\_name\\_lookup](#)
- [posix](#)

## Classes

- struct `BuiltInDefaultValueGetter`
- struct `BuiltInDefaultValueGetter< T, false >`
- class `BuiltInDefaultValue`
- class `BuiltInDefaultValue< const T >`
- class `BuiltInDefaultValue< T * >`
- struct `negation`
- struct `conjunction`
- struct `conjunction< P1 >`
- struct `conjunction< P1, Ps... >`
- struct `disjunction`
- struct `disjunction< P1 >`
- struct `disjunction< P1, Ps... >`
- struct `is_implicitly_convertible`
- struct `is_callable_r_impl`
- struct `is_callable_r_impl< void_t< call_result_t< F, Args... > >, R, F, Args... >`
- struct `ByMoveWrapper`
- class `ReturnAction`
- class `ReturnAction< ByMoveWrapper< T > >`
- class `ReturnNullAction`
- class `ReturnVoidAction`
- class `ReturnRefAction`
- class `ReturnRefOfCopyAction`
- class `ReturnRoundRobinAction`
- class `DoDefaultAction`
- class `AssignAction`
- class `SetErrnoAndReturnAction`
- struct `SetArgumentPointeeAction`
- struct `InvokeMethodAction`
- struct `InvokeWithoutArgsAction`
- struct `InvokeMethodWithoutArgsAction`
- class `IgnoreResultAction`
- struct `WithArgsAction`
- class `DoAllAction`
- class `DoAllAction< FinalAction >`
- class `DoAllAction< InitialAction, OtherActions... >`
- struct `ReturnNewAction`
- struct `ReturnArgAction`
- struct `SaveArgAction`
- struct `SaveArgPointeeAction`
- struct `SetArgRefereeAction`
- struct `SetArrayArgumentAction`
- struct `DeleteArgAction`
- struct `ReturnPointeeAction`
- struct `ExcessiveArg`
- struct `ActionImpl`
- struct `ImplBase`
- struct `ActionImpl< R(Args...), Impl >`
- struct `ThisRefAdjuster`
- struct `InvokeArgumentAction`
- class `IsEmptyMatcher`
- class `NiceMockImpl`
- class `NaggyMockImpl`
- class `StrictMockImpl`

- struct [KindOf](#)
- class [FailureReporterInterface](#)
- class [WithoutMatchers](#)
- class [StlContainerView](#)
- class [StlContainerView< Element\[N\]>](#)
- class [StlContainerView< ::std::tuple< ElementPointer, Size > >](#)
- struct [RemoveConstFromKey](#)
- struct [RemoveConstFromKey< std::pair< const K, V > >](#)
- struct [Function](#)
- struct [Function< R\(Args...\)>](#)
- struct [ContainerPrinter](#)
- struct [FunctionPointerPrinter](#)
- struct [PointerPrinter](#)
- struct [ProtobufPrinter](#)
- struct [ConvertibleToIntegerPrinter](#)
- struct [ConvertibleToStringViewPrinter](#)
- struct [RawBytesPrinter](#)
- struct [FallbackPrinter](#)
- struct [FindFirstPrinter](#)
- struct [FindFirstPrinter< T, decltype\(Printer::PrintValue\(std::declval< const T & >\(\)\), nullptr\), Printer, Printers... >](#)
- class [FormatForComparison](#)
- class [FormatForComparison< ToPrint\[N\], OtherOperand >](#)
- class [UniversalPrinter](#)
- class [UniversalPrinter< const T >](#)
- class [UniversalPrinter< T\[N\]>](#)
- class [UniversalPrinter< T & >](#)
- class [UniversalTersePrinter](#)
- class [UniversalTersePrinter< T & >](#)
- class [UniversalTersePrinter< std::reference\\_wrapper< T > >](#)
- class [UniversalTersePrinter< T\[N\]>](#)
- class [UniversalTersePrinter< const char \\* >](#)
- class [UniversalTersePrinter< char \\* >](#)
- class [UniversalTersePrinter< const char16\\_t \\* >](#)
- class [UniversalTersePrinter< char16\\_t \\* >](#)
- class [UniversalTersePrinter< const char32\\_t \\* >](#)
- class [UniversalTersePrinter< char32\\_t \\* >](#)
- class [UniversalTersePrinter< wchar\\_t \\* >](#)
- class [GTestNonCopyable](#)
- struct [faketype](#)
- class [EqHelper](#)
- class [AssertHelper](#)
- class [IgnoredValue](#)
- class [FloatingPoint](#)
- class [TypeidHelper](#)
- class [TestFactoryBase](#)
- class [TestFactoryImpl](#)
- struct [CodeLocation](#)
- struct [SuiteApiResolver](#)
- struct [DefaultNameGenerator](#)
- struct [NameGeneratorSelector](#)
- class [TypeParameterizedTest](#)
- class [TypeParameterizedTest< Fixture, TestSel, internal::None >](#)
- class [TypeParameterizedTestSuite](#)
- class [TypeParameterizedTestSuite< Fixture, internal::None, Types >](#)
- struct [ConstCharPtr](#)

- struct [TrueWithString](#)
- class [Random](#)
- class [HasDebugStringAndShortDebugString](#)
- struct [IsHashTable](#)
- struct [IsRecursiveContainerImpl](#)
- struct [IsRecursiveContainerImpl< C, false >](#)
- struct [IsRecursiveContainerImpl< C, true >](#)
- struct [IsRecursiveContainer](#)
- struct [RelationToSourceReference](#)
- struct [RelationToSourceCopy](#)
- class [NativeArray](#)
- struct [IndexSequence](#)
- struct [DoubleSequence](#)
- struct [DoubleSequence< true, IndexSequence< I... >, sizeofT >](#)
- struct [DoubleSequence< false, IndexSequence< I... >, sizeofT >](#)
- struct [MakeIndexSequenceImpl](#)
- struct [MakeIndexSequenceImpl< 0 >](#)
- struct [Ignore](#)
- struct [ElemFromListImpl](#)
- struct [ElemFromListImpl< IndexSequence< I... > >](#)
- struct [ElemFromList](#)
- struct [FlatTupleConstructTag](#)
- class [FlatTuple](#)
- struct [FlatTupleElemBase](#)
- struct [FlatTupleElemBase< FlatTuple< T... >, I >](#)
- struct [FlatTupleBase](#)
- struct [FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > >](#)
- class [ParamGeneratorInterface](#)
- class [ParamGenerator](#)
- class [ParamIteratorInterface](#)
- class [ParamIterator](#)
- class [RangeGenerator](#)
- class [ValuesInIteratorRangeGenerator](#)
- class [ParameterizedTestFactory](#)
- class [TestMetaFactoryBase](#)
- class [TestMetaFactory](#)
- class [ParameterizedTestSuiteInfoBase](#)
- struct [MarkAsIgnored](#)
- class [ParameterizedTestSuiteInfo](#)
- class [ParameterizedTestSuiteRegistry](#)
- class [TypeParameterizedTestSuiteRegistry](#)
- class [ValueArray](#)
- class [CartesianProductGenerator](#)
- class [CartesianProductHolder](#)
- class [ParamGeneratorConverter](#)
- class [ParamConverterGenerator](#)
- class [RE](#)
- class [GTestLog](#)
- struct [ConstRef](#)
- struct [ConstRef< T & >](#)
- class [Mutex](#)
- class [GTestMutexLock](#)
- class [ThreadLocal](#)
- class [TypeWithSize](#)
- class [TypeWithSize< 4 >](#)

- class `TypeWithSize< 8 >`
- class `String`
- struct `None`
- struct `TemplateSel`
- struct `Templates`
- struct `Templates< Head_ >`
- struct `Types`
- struct `Types< Head_ >`
- struct `ProxyTypeList`
- struct `is_proxy_type_list`
- struct `is_proxy_type_list< ProxyTypeList< Ts... > >`
- struct `GenerateTypeList`
- class `GTestFlagSaver`
- class `TestPropertyKeyIs`
- class `UnitTestOptions`
- class `OsStackTraceGetterInterface`
- class `OsStackTraceGetter`
- struct `TraceInfo`
- class `DefaultGlobalTestPartResultReporter`
- class `DefaultPerThreadTestPartResultReporter`
- class `UnitTestImpl`
- class `TestResultAccessor`

## Typedefs

- template<typename... >  
using `void_t` = void
- template<typename F , typename... Args>  
using `call_result_t` = decltype(std::declval< F >()(std::declval< Args >(...)))
- template<typename R , typename F , typename... Args>  
using `is_callable_r` = `is_callable_r_impl< void, R, F, Args... >`
- template<typename T >  
using `identity_t` = T
- template<TypeKind kFromKind, typename From , TypeKind kToKind, typename To >  
using `LosslessArithmeticConvertibleImpl` = std::integral\_constant< bool,(kFromKind==`kBool`) ? true :(kFromKind != kToKind) ? false :(kFromKind==`kInteger` &&((sizeof(From)< sizeof(To)) &&!(std::is\_signed< From >::value &&std::is\_signed< To >::value))||(sizeof(From)==sizeof(To)) &&(std::is\_signed< From >::value==std::is\_signed< To >::value))) ? true :(kFromKind==`kFloatingPoint` &&(sizeof(From)<=sizeof(To))) ? true :false >
- template<typename From , typename To >  
using `LosslessArithmeticConvertible` = `LosslessArithmeticConvertibleImpl< GMOCK_KIND_OF_(From), From, GMOCK_KIND_OF_(To), To >`
- template<size\_t I, typename T >  
using `TupleElement` = typename std::tuple\_element< I, T >::type
- typedef ::std::vector<::std::string > `Strings`
- typedef `FloatingPoint< float >` `Float`
- typedef `FloatingPoint< double >` `Double`
- typedef const void \* `Typeld`
- using `SetUpTestSuiteFunc` = void(\*)()
- using `TearDownTestSuiteFunc` = void(\*)()
- using `SetUpTearDownSuiteFuncType` = void(\*)()
- using `TypedTestCasePState` = TypedTestSuitePState
- typedef int `IsContainer`
- typedef char `IsNotContainer`

- template<size\_t N>  
using **MakeIndexSequence** = typename **MakeIndexSequenceImpl**< N >::type
- template<typename... T>  
using **IndexSequenceFor** = typename **MakeIndexSequence**< sizeof...(T)>::type
- template<class TestCase>  
using **ParameterizedTestCaseInfo** = **ParameterizedTestSuiteInfo**< TestCase >
- typedef **GTestMutexLock** MutexLock
- using **BiggestInt** = long long
- using **TimeInMillis** = int64\_t

## Enumerations

- enum **TypeKind** { kBool , kInteger , kFloatingPoint , kOther }
- enum **LogSeverity** { kInfo = 0 , kWaring = 1 }
- enum **GTestLogSeverity** { GTEST\_INFO , GTEST\_WARNING , GTEST\_ERROR , GTEST\_FATAL }

## Functions

- **GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_** (void.)
- **GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_** (::std::string, "")
- **GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_** (bool, false)
- **GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_** (unsigned char, '\0')
- **GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_** (signed char, '\0')
- **GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_** (char, '\0')
- **GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_** (unsigned short, 0U)
- **GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_** (signed short, 0)
- **GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_** (unsigned int, 0U)
- **GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_** (signed int, 0)
- **GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_** (unsigned long, 0UL)
- **GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_** (signed long, 0L)
- **GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_** (unsigned long long, 0)
- **GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_** (signed long long, 0)
- **GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_** (float, 0)
- **GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_** (double, 0)
- template<typename T >  
std::add\_const< T >::type & **as\_const** (T &t)
- template<typename F , typename Impl >  
::testing::Action< F > **MakeAction** ()
- template<typename F , typename Impl >  
::testing::Action< F > **MakeAction** (std::shared\_ptr< Impl > impl)
- constexpr bool **PrefixOf** (const char \*a, const char \*b)
- template<int N, int M>  
constexpr bool **StartsWith** (const char(&prefix)[N], const char(&str)[M])
- template<int N, int M>  
constexpr bool **EndsWith** (const char(&suffix)[N], const char(&str)[M])
- template<int N, int M>  
constexpr bool **Equals** (const char(&a)[N], const char(&b)[M])
- template<int N>  
constexpr bool **ValidateSpec** (const char(&spec)[N])
- template<typename F , typename... Args>  
auto **InvokeArgument** (F f, Args... args) -> decltype(f(args...))
- template<typename T >  
std::true\_type **StrictnessModifierProbe** (const **NiceMock**< T > &)

- template<typename T >  
std::true\_type StrictnessModifierProbe (const **NaggyMock**< T > &)
- template<typename T >  
std::true\_type StrictnessModifierProbe (const **StrictMock**< T > &)
- std::false\_type StrictnessModifierProbe (...)
- template<typename T >  
constexpr bool HasStrictnessModifier ()
- **GTEST\_API\_** std::string JoinAsKeyValueTuple (const std::vector< const char \* > &names, const **Strings** &values)
- **GTEST\_API\_** std::string ConvertIdentifierNameToWords (const char \*id\_name)
- template<typename Pointer >  
const Pointer::element\_type \* GetRawPointer (const Pointer &p)
- template<typename Element >  
const Element \* GetRawPointer (const std::reference\_wrapper< Element > &r)
- template<typename Element >  
Element \* GetRawPointer (Element \*p)
- **GMOCK\_DECLARE\_KIND\_** (bool, **kBool**)
- **GMOCK\_DECLARE\_KIND\_** (char, **kInteger**)
- **GMOCK\_DECLARE\_KIND\_** (signed char, **kInteger**)
- **GMOCK\_DECLARE\_KIND\_** (unsigned char, **kInteger**)
- **GMOCK\_DECLARE\_KIND\_** (short, **kInteger**)
- **GMOCK\_DECLARE\_KIND\_** (unsigned short, **kInteger**)
- **GMOCK\_DECLARE\_KIND\_** (int, **kInteger**)
- **GMOCK\_DECLARE\_KIND\_** (unsigned int, **kInteger**)
- **GMOCK\_DECLARE\_KIND\_** (long, **kInteger**)
- **GMOCK\_DECLARE\_KIND\_** (unsigned long, **kInteger**)
- **GMOCK\_DECLARE\_KIND\_** (long long, **kInteger**)
- **GMOCK\_DECLARE\_KIND\_** (unsigned long long, **kInteger**)
- **GMOCK\_DECLARE\_KIND\_** (wchar\_t, **kInteger**)
- **GMOCK\_DECLARE\_KIND\_** (float, **kFloatingPoint**)
- **GMOCK\_DECLARE\_KIND\_** (double, **kFloatingPoint**)
- **GMOCK\_DECLARE\_KIND\_** (long double, **kFloatingPoint**)
- **GTEST\_API\_** FailureReporterInterface \* GetFailureReporter ()
- void **Assert** (bool condition, const char \*file, int line, const std::string &msg)
- void **Assert** (bool condition, const char \*file, int line)
- void **Expect** (bool condition, const char \*file, int line, const std::string &msg)
- void **Expect** (bool condition, const char \*file, int line)
- **GTEST\_API\_** bool LogIsVisible (**LogSeverity** severity)
- **GTEST\_API\_** void Log (**LogSeverity** severity, const std::string &message, int stack\_frames\_to\_skip)
- **GTEST\_API\_** WithoutMatchers GetWithoutMatchers ()
- template<typename T >  
T Invalid ()
- **GTEST\_API\_** void IllegalDoDefault (const char \*file, int line)
- template<typename F , typename Tuple , size\_t... Idx>  
auto **ApplyImpl** (F &&f, Tuple &&args, **IndexSequence**< Idx... >) -> decltype(std::forward< F >(f)(std::get< Idx >(std::forward< Tuple >(args)...)))
- template<typename F , typename Tuple >  
auto **Apply** (F &&f, Tuple &&args) -> decltype(**ApplyImpl**(std::forward< F >(f), std::forward< Tuple >(args), **MakeIndexSequence**< std::tuple\_size< typename std::remove\_reference< Tuple >::type >::value >()))
- bool **Base64Unescape** (const std::string &encoded, std::string \*decoded)
- template<typename T >  
std::string **StreamableToString** (const T &streamable)
- template<typename T >  
void **UniversalPrint** (const T &value, ::std::ostream \*os)
- **GTEST\_API\_** void PrintBytesInObjectTo (const unsigned char \*obj\_bytes, size\_t count, ::std::ostream \*os)

- template<typename T >  
void **PrintWithFallback** (const T &value, ::std::ostream \*os)
- **GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_POINTER\_** (char)
- **GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_POINTER\_** (wchar\_t)
- **GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_POINTER\_** (char16\_t)
- **GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_POINTER\_** (char32\_t)
- **GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_STRING\_** (char, ::std::string)
- **GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_STRING\_** (char16\_t, ::std::u16string)
- **GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_STRING\_** (char32\_t, ::std::u32string)
- template<typename T1 , typename T2 >  
std::string **FormatForComparisonFailureMessage** (const T1 &value, const T2 &)
- 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** (char32\_t c, ::std::ostream \*os)
- void **PrintTo** (char16\_t c, ::std::ostream \*os)
- template<typename FloatType >  
int **AppropriateResolution** (FloatType val)
- void **PrintTo** (float f, ::std::ostream \*os)
- void **PrintTo** (double d, ::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 char16\_t \*s, ::std::ostream \*os)
- void **PrintTo** (char16\_t \*s, ::std::ostream \*os)
- **GTEST\_API\_ void PrintTo** (const char32\_t \*s, ::std::ostream \*os)
- void **PrintTo** (char32\_t \*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)
- **GTEST\_API\_ void PrintU16StringTo** (const ::std::u16string &s, ::std::ostream \*os)
- void **PrintTo** (const ::std::u16string &s, ::std::ostream \*os)
- **GTEST\_API\_ void PrintU32StringTo** (const ::std::u32string &s, ::std::ostream \*os)
- void **PrintTo** (const ::std::u32string &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)
- const void \* **VoidifyPointer** (const void \*p)
- const void \* **VoidifyPointer** (volatile const void \*p)
- template<typename T , typename Ptr >  
void **PrintSmartPointer** (const Ptr &ptr, std::ostream \*os, char)
- template<typename T , typename Ptr , typename = typename std::enable\_if<!std::is\_void<T>::value && !std::is\_array<T>::value><>  
void **PrintSmartPointer** (const Ptr &ptr, std::ostream \*os, int)

- template<typename T , typename D >  
void **PrintTo** (const std::unique\_ptr< T, D > &ptr, std::ostream \*os)
- template<typename T >  
void **PrintTo** (const std::shared\_ptr< T > &ptr, 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 \*)
- 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 char16\_t \*begin, size\_t len, ::std::ostream \*os)
- **GTEST\_API\_** void **UniversalPrintArray** (const char32\_t \*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)
- class **UnitTestImpl** \* **GetUnitTestImpl** ()
- void **ReportFailureInUnknownLocation** (TestPartResult::Type result\_type, const std::string &message)
- std::set< std::string > \* **GetIgnoredParameterizedTestSuites** ()
- 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)
- template<typename T1 , typename T2 >  
AssertionResult **CmpHelperOpFailure** (const char \*expr1, const char \*expr2, const T1 &val1, const T2 &val2, const char \*op)
- **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_ std::string AppendUserMessage (const std::string &gtest_msg, const Message &user_msg)`
- `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_DISABLE_MSC_WARNINGS_PUSH_ (4251) class GTEST_API_ TypedTestSuitePState`
- `GTEST_DISABLE_MSC_WARNINGS_POP_ () inline const char *SkipComma(const char *str)`
- `std::string GetPrefixUntilComma (const char *str)`
- `void SplitString (const ::std::string &str, char delimiter, ::std::vector<::std::string > *dest)`
- template<typename NameGenerator >  
`void GenerateNamesRecursively (internal::None, std::vector< std::string > *, int)`
- template<typename NameGenerator , typename Types >  
`void GenerateNamesRecursively (Types, std::vector< std::string > *result, int i)`
- template<typename NameGenerator , typename Types >  
`std::vector< std::string > GenerateNames ()`
- `GTEST_API_ void RegisterTypeParameterizedTestSuite (const char *test_suite_name, CodeLocation code_location)`
- `GTEST_API_ void RegisterTypeParameterizedTestSuiteInstantiation (const char *case_name)`
- `GTEST_API_ std::string GetCurrentOsStackTraceExceptTop (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_TEST_CASE_P is deprecated, please use ""INSTANTIATE_TEST_SUITE_P") const expr bool InstantiateTestCase_P_IsDeprecated()`
- `GTEST_INTERNAL_DEPRECATED ("TYPED_TEST_CASE_P is deprecated, please use ""TYPED_TEST_SUITE_P") const expr bool TypedTestCase_P_IsDeprecated()`

- `GTEST_INTERNAL_DEPRECATED` ("TYPED\_TEST\_CASE is deprecated, please use " "`TYPED_TEST_SUITE`")  
const expr bool TypedTestCasesIsDeprecated()
- `GTEST_INTERNAL_DEPRECATED` ("REGISTER\_TYPED\_TEST\_CASE\_P is deprecated, please use " "`REGISTER_TYPED_TEST_SUITE_P`") const expr bool RegisterTypedTestCase\_P\_IsDeprecated()
- `GTEST_INTERNAL_DEPRECATED` ("INSTANTIATE\_TYPED\_TEST\_CASE\_P is deprecated, please use " "`INSTANTIATE_TYPED_TEST_SUITE_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_ void InsertSyntheticTestCase` (const std::string &name, `CodeLocation` location, bool has\_← test\_p)
- `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 > GetArgs` ()
- `GTEST_API_ size_t GetThreadCount` ()
- bool `IsAlpha` (char ch)
- bool `IsAINum` (char ch)
- bool `IsDigit` (char ch)
- bool `IsLower` (char ch)
- bool `IsSpace` (char ch)
- bool `IsUpper` (char ch)
- bool `IsXDigit` (char ch)
- bool `IsXDigit` (char16\_t ch)
- bool `IsXDigit` (char32\_t ch)
- bool `IsXDigit` (wchar\_t ch)
- char `ToLower` (char ch)
- char `ToUpper` (char ch)
- std::string `StripTrailingSpaces` (std::string str)
- `GTEST_API_ bool ParseInt32` (const `Message` &src\_text, const char \*str, int32\_t \*value)
- bool `BoolFromGTestEnv` (const char \*flag, bool default\_val)
- `GTEST_API_ int32_t Int32FromGTestEnv` (const char \*flag, int32\_t 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** ()
- **GTEST\_API\_** TimeInMillis **GetTimeInMillis** ()
- **GTEST\_API\_** bool **ShouldUseColor** (bool **stdout\_is\_tty**)
- **GTEST\_API\_** std::string **FormatTimeInMillisAsSeconds** (TimeInMillis ms)
- **GTEST\_API\_** std::string **FormatEpochTimeInMillisAsIso8601** (TimeInMillis ms)
- **GTEST\_API\_** bool **ParseFlag** (const char \*str, const char \*flag, int32\_t \*value)
- int **GetRandomSeedFromFlag** (int32\_t random\_seed\_flag)
- int **GetNextRandomSeed** (int seed)
- **GTEST\_API\_** std::string **CodePointToUtf8** (uint32\_t code\_point)
- **GTEST\_API\_** std::string **WideStringToUtf8** (const wchar\_t \*str, int num\_chars)
- void **WriteToShardStatusFileIfNeeded** ()
- **GTEST\_API\_** bool **ShouldShard** (const char \*total\_shards\_str, const char \*shard\_index\_str, bool in\_subprocess\_for\_death\_test)
- **GTEST\_API\_** int32\_t **Int32FromEnvOrDie** (const char \*env\_var, int32\_t default\_val)
- **GTEST\_API\_** bool **ShouldRunTestOnShard** (int total\_shards, int shard\_index, int test\_id)
- template<class Container , typename Predicate >  
int **CountIf** (const Container &c, Predicate predicate)
- template<class Container , typename Functor >  
void **ForEach** (const Container &c, Functor functor)
- template<typename E >  
E **GetElementOr** (const std::vector< E > &v, int i, E default\_value)
- template<typename E >  
void **ShuffleRange** (internal::Random \*random, int begin, int end, std::vector< E > \*v)
- template<typename E >  
void **Shuffle** (internal::Random \*random, std::vector< E > \*v)
- template<typename T >  
static void **Delete** (T \*x)
- **GTEST\_API\_** void **ParseGoogleTestFlagsOnly** (int \*argc, char \*\*argv)
- **GTEST\_API\_** void **ParseGoogleTestFlagsOnly** (int \*argc, wchar\_t \*\*argv)

## Variables

- const char **kInfoVerbosity** [] = "info"
- const char **kWarningVerbosity** [] = "warning"
- const char **kErrorVerbosity** [] = "error"
- 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** []
- constexpr BiggestInt **kMaxBiggestInt** = (std::numeric\_limits< BiggestInt >::max)()
- **GTEST\_API\_** const Typeld **kTestTypeldInGoogleTest**
- const int **kMaxRandomSeed** = 99999
- **GTEST\_API\_** bool **g\_help\_flag**

### 5.7.1 Typedef Documentation

#### 5.7.1.1 BiggestInt

```
using testing::internal::BiggestInt = typedef long long
```

### 5.7.1.2 call\_result\_t

```
template<typename F , typename... Args>
using testing::internal::call_result_t = decltype(std::declval<F>()(std::declval<Args>()...))
```

### 5.7.1.3 Double

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

### 5.7.1.4 Float

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

### 5.7.1.5 identity\_t

```
template<typename T >
using testing::internal::identity_t = decltype(T
```

### 5.7.1.6 IndexSequenceFor

```
template<typename... T>
using testing::internal::IndexSequenceFor = decltype(typename MakeIndexSequence<sizeof...(T)>::type
```

### 5.7.1.7 is\_callable\_r

```
template<typename R , typename F , typename... Args>
using testing::internal::is_callable_r = decltype(is_callable_r_impl<void, R, F, Args...>
```

### 5.7.1.8 IsContainer

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

### 5.7.1.9 IsNotContainer

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

### 5.7.1.10 LosslessArithmeticConvertible

```
template<typename From , typename To >
using testing::internal::LosslessArithmeticConvertible = typedef LosslessArithmeticConvertibleImpl<GMOCK_KIND_<From, GMOCK_KIND_OF_(To), To>
```

### 5.7.1.11 LosslessArithmeticConvertibleImpl

```
template<TypeKind kFromKind, typename From , TypeKind kToKind, typename To >
using testing::internal::LosslessArithmeticConvertibleImpl = typedef std::integral_constant<
bool, (kFromKind == kBool) ? true : (kFromKind != kToKind) ? false : (kFromKind == kInteger
&& ((sizeof(From) < sizeof(To)) && !(std::is_signed<From>::value && !std::is_signed<To>::value)) ||
((sizeof(From) == sizeof(To)) && (std::is_signed<From>::value == std::is_signed<To>::value))) ) ? true :
(kFromKind == kFloatingPoint && (sizeof(From) <= sizeof(To))) ? true
: false >
```

### 5.7.1.12 MakeIndexSequence

```
template<size_t N>
using testing::internal::MakeIndexSequence = typedef typename MakeIndexSequenceImpl<N>::type
```

### 5.7.1.13 MutexLock

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

### 5.7.1.14 ParameterizedTestCaseInfo

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

### 5.7.1.15 SetUpTearDownSuiteFuncType

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

### 5.7.1.16 SetUpTestSuiteFunc

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

### 5.7.1.17 Strings

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

### 5.7.1.18 TearDownTestSuiteFunc

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

### 5.7.1.19 TimeInMillis

```
using testing::internal::TimeInMillis = typedef int64_t
```

### 5.7.1.20 TupleElement

```
template<size_t I, typename T >
using testing::internal::TupleElement = typedef typename std::tuple_element<I, T>::type
```

### 5.7.1.21 TypedTestCasePState

```
using testing::internal::TypedTestCasePState = typedef TypedTestSuitePState
```

### 5.7.1.22 `TypeId`

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

### 5.7.1.23 `void_t`

```
template<typename... >
using testing::internal::void_t = typedef void
```

## 5.7.2 Enumeration Type Documentation

### 5.7.2.1 `GTestLogSeverity`

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

#### Enumerator

GTEST_INFO	
GTEST_WARNING	
GTEST_ERROR	
GTEST_FATAL	

### 5.7.2.2 `LogSeverity`

```
enum testing::internal::LogSeverity
```

#### Enumerator

kInfo	
kWarning	

### 5.7.2.3 `TypeKind`

```
enum testing::internal::TypeKind
```

**Enumerator**

kBool	
kInteger	
kFloatingPoint	
kOther	

### 5.7.3 Function Documentation

#### 5.7.3.1 AlwaysFalse()

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

#### 5.7.3.2 AlwaysTrue()

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

#### 5.7.3.3 AppendUserMessage()

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

#### 5.7.3.4 Apply()

```
template<typename F , typename Tuple >
auto testing::internal::Apply (
    F && f,
    Tuple && args ) -> decltype(ApplyImpl( std::forward<F>(f), std::forward<Tuple>(args),
MakeIndexSequence<std::tuple_size< typename std::remove_reference<Tuple>::type>::value>()))
```

### 5.7.3.5 ApplyImpl()

```
template<typename F , typename Tuple , size_t... Idx>
auto testing::internal::ApplyImpl (
    F && f,
    Tuple && args,
    IndexSequence<Idx...> -> decltype(std::forward<F>(f)( std::get<Idx>(std::forward<Tuple>(args))... ))
```

### 5.7.3.6 AppropriateResolution()

```
template<typename FloatType >
int testing::internal::AppropriateResolution (
    FloatType val )
```

### 5.7.3.7 ArrayAwareFind()

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

### 5.7.3.8 ArrayEq() [1/3]

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

### 5.7.3.9 ArrayEq() [2/3]

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

### 5.7.3.10 `ArrayEq()` [3/3]

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

### 5.7.3.11 `as_const()`

```
template<typename T >
std::add_const<T>::type& testing::internal::as_const (
    T & t )
```

### 5.7.3.12 `Assert()` [1/2]

```
void testing::internal::Assert (
    bool condition,
    const char * file,
    int line ) [inline]
```

### 5.7.3.13 `Assert()` [2/2]

```
void testing::internal::Assert (
    bool condition,
    const char * file,
    int line,
    const std::string & msg ) [inline]
```

### 5.7.3.14 `Base64Unescape()`

```
bool testing::internal::Base64Unescape (
    const std::string & encoded,
    std::string * decoded )
```

### 5.7.3.15 `BoolFromGTestEnv()`

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

### 5.7.3.16 CanonicalizeForStdLibVersioning()

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

### 5.7.3.17 CaptureStderr()

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

### 5.7.3.18 CaptureStdout()

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

### 5.7.3.19 CheckedDowncastToActualType()

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

### 5.7.3.20 CmpHelperEQ()

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

### 5.7.3.21 CmpHelperEQFailure()

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

### 5.7.3.22 CmpHelperFloatingPointEQ()

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

### 5.7.3.23 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 )
```

### 5.7.3.24 CmpHelperSTRCASEEQ()

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

### 5.7.3.25 CmpHelperSTRCASENE()

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

### 5.7.3.26 CmpHelperSTREQ() [1/2]

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

### 5.7.3.27 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 )
```

### 5.7.3.28 CmpHelperSTRNE() [1/2]

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

### 5.7.3.29 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 )
```

### 5.7.3.30 CodePointToUtf8()

```
GTEST_API_ std::string testing::internal::CodePointToUtf8 (
    uint32_t code_point )
```

### 5.7.3.31 ConvertIdentifierNameToWords()

```
GTEST_API_ std::string testing::internal::ConvertIdentifierNameToWords (
    const char * id_name )
```

### 5.7.3.32 CopyArray() [1/3]

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

### 5.7.3.33 CopyArray() [2/3]

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

### 5.7.3.34 CopyArray() [3/3]

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

### 5.7.3.35 CountIf()

```
template<class Container , typename Predicate >
int testing::internal::CountIf (
    const Container & c,
    Predicate predicate ) [inline]
```

### 5.7.3.36 DefaultParamName()

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

### 5.7.3.37 Delete()

```
template<typename T >
static void testing::internal::Delete (
    T * x ) [static]
```

### 5.7.3.38 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 )
```

### 5.7.3.39 DownCast\_()

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

### 5.7.3.40 EndsWith()

```
template<int N, int M>
constexpr bool testing::internal::EndsWith (
    const char(&) suffix[N],
    const char(&) str[M] ) [constexpr]
```

### 5.7.3.41 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 )
```

### 5.7.3.42 Equals()

```
template<int N, int M>
constexpr bool testing::internal::Equals (
    const char(&) a[N],
    const char(&) b[M] ) [constexpr]
```

### 5.7.3.43 Expect() [1/2]

```
void testing::internal::Expect (
    bool condition,
    const char * file,
    int line ) [inline]
```

### 5.7.3.44 Expect() [2/2]

```
void testing::internal::Expect (
    bool condition,
    const char * file,
    int line,
    const std::string & msg ) [inline]
```

### 5.7.3.45 FlushInfoLog()

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

### 5.7.3.46 ForEach()

```
template<class Container , typename Functor >
void testing::internal::ForEach (
    const Container & c,
    Functor functor )
```

### 5.7.3.47 FormatCompilerIndependentFileLocation()

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

### 5.7.3.48 FormatEpochTimeInMillisAsIso8601()

```
GTEST_API_ std::string testing::internal::FormatEpochTimeInMillisAsIso8601 (
    TimeInMillis ms )
```

### 5.7.3.49 FormatFileLocation()

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

### 5.7.3.50 FormatForComparisonFailureMessage()

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

### 5.7.3.51 FormatTimeInMillisAsSeconds()

```
GTEST_API_ std::string testing::internal::FormatTimeInMillisAsSeconds (
    TimeInMillis ms )
```

### 5.7.3.52 GenerateNames()

```
template<typename NameGenerator , typename Types >
std::vector<std::string> testing::internal::GenerateNames ( )
```

### 5.7.3.53 GenerateNamesRecursively() [1/2]

```
template<typename NameGenerator >
void testing::internal::GenerateNamesRecursively (
    internal::None ,
    std::vector< std::string > * ,
    int )
```

### 5.7.3.54 GenerateNamesRecursively() [2/2]

```
template<typename NameGenerator , typename Types >
void testing::internal::GenerateNamesRecursively (
    Types ,
    std::vector< std::string > * result,
    int i )
```

### 5.7.3.55 GetArgs()

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

### 5.7.3.56 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 )
```

### 5.7.3.57 GetCapturedStderr()

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

### 5.7.3.58 GetCapturedStdout()

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

### 5.7.3.59 GetCurrentOsStackTraceExceptTop()

```
GTEST_API_ std::string testing::internal::GetCurrentOsStackTraceExceptTop ( int skip_count )
```

### 5.7.3.60 GetElementOr()

```
template<typename E >
E testing::internal::GetElementOr ( const std::vector< E > & v, int i, E default_value ) [inline]
```

### 5.7.3.61 GetFailureReporter()

```
GTEST_API_ FailureReporterInterface* testing::internal::GetFailureReporter ( )
```

### 5.7.3.62 GetFileSize()

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

### 5.7.3.63 GetIgnoredParameterizedTestSuites()

```
std::set<std::string>* testing::internal::GetIgnoredParameterizedTestSuites ( )
```

### 5.7.3.64 GetNextRandomSeed()

```
int testing::internal::GetNextRandomSeed (
    int seed ) [inline]
```

### 5.7.3.65 GetNotNullOrDefault()

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

### 5.7.3.66 GetPrefixUntilComma()

```
std::string testing::internal::GetPrefixUntilComma (
    const char * str ) [inline]
```

### 5.7.3.67 GetRandomSeedFromFlag()

```
int testing::internal::GetRandomSeedFromFlag (
    int32_t random_seed_flag ) [inline]
```

**5.7.3.68 GetRawPointer() [1/3]**

```
template<typename Pointer >
const Pointer::element_type* testing::internal::GetRawPointer (
    const Pointer & p )  [inline]
```

**5.7.3.69 GetRawPointer() [2/3]**

```
template<typename Element >
const Element* testing::internal::GetRawPointer (
    const std::reference_wrapper< Element > & r )  [inline]
```

**5.7.3.70 GetRawPointer() [3/3]**

```
template<typename Element >
Element* testing::internal::GetRawPointer (
    Element * p )  [inline]
```

**5.7.3.71 GetTestTypeId()**

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

**5.7.3.72 GetThreadCount()**

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

**5.7.3.73 GetTimeInMillis()**

```
GTEST_API_ TimeInMillis testing::internal::GetTimeInMillis ( )
```

**5.7.3.74 GetTypeId()**

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

### 5.7.3.75 GetTypeName()

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

### 5.7.3.76 GetUnitTestImpl()

```
UnitTestImpl * testing::internal::GetUnitTestImpl ( ) [inline]
```

### 5.7.3.77 GetWithoutMatchers()

```
GTEST_API_ WithoutMatchers testing::internal::GetWithoutMatchers ( )
```

### 5.7.3.78 GMOCK\_DECLARE\_KIND\_() [1/16]

```
testing::internal::GMOCK_DECLARE_KIND_ (
    bool ,
    kBool   )
```

### 5.7.3.79 GMOCK\_DECLARE\_KIND\_() [2/16]

```
testing::internal::GMOCK_DECLARE_KIND_ (
    char ,
    kInteger   )
```

### 5.7.3.80 GMOCK\_DECLARE\_KIND\_() [3/16]

```
testing::internal::GMOCK_DECLARE_KIND_ (
    double ,
    kFloatingPoint   )
```

### 5.7.3.81 GMOCK\_DECLARE\_KIND\_() [4/16]

```
testing::internal::GMOCK_DECLARE_KIND_ (
    float ,
    kFloatingPoint   )
```

**5.7.3.82 GMOCK\_DECLARE\_KIND\_() [5/16]**

```
testing::internal::GMOCK_DECLARE_KIND_ (
    int ,
    kInteger   )
```

**5.7.3.83 GMOCK\_DECLARE\_KIND\_() [6/16]**

```
testing::internal::GMOCK_DECLARE_KIND_ (
    long double ,
    kFloatingPoint   )
```

**5.7.3.84 GMOCK\_DECLARE\_KIND\_() [7/16]**

```
testing::internal::GMOCK_DECLARE_KIND_ (
    long long ,
    kInteger   )
```

**5.7.3.85 GMOCK\_DECLARE\_KIND\_() [8/16]**

```
testing::internal::GMOCK_DECLARE_KIND_ (
    long ,
    kInteger   )
```

**5.7.3.86 GMOCK\_DECLARE\_KIND\_() [9/16]**

```
testing::internal::GMOCK_DECLARE_KIND_ (
    short ,
    kInteger   )
```

**5.7.3.87 GMOCK\_DECLARE\_KIND\_() [10/16]**

```
testing::internal::GMOCK_DECLARE_KIND_ (
    signed char ,
    kInteger   )
```

### 5.7.3.88 GMOCK\_DECLARE\_KIND\_() [11/16]

```
testing::internal::GMOCK_DECLARE_KIND_ (
    unsigned char ,
    kInteger   )
```

### 5.7.3.89 GMOCK\_DECLARE\_KIND\_() [12/16]

```
testing::internal::GMOCK_DECLARE_KIND_ (
    unsigned int ,
    kInteger   )
```

### 5.7.3.90 GMOCK\_DECLARE\_KIND\_() [13/16]

```
testing::internal::GMOCK_DECLARE_KIND_ (
    unsigned long long ,
    kInteger   )
```

### 5.7.3.91 GMOCK\_DECLARE\_KIND\_() [14/16]

```
testing::internal::GMOCK_DECLARE_KIND_ (
    unsigned long ,
    kInteger   )
```

### 5.7.3.92 GMOCK\_DECLARE\_KIND\_() [15/16]

```
testing::internal::GMOCK_DECLARE_KIND_ (
    unsigned short ,
    kInteger   )
```

### 5.7.3.93 GMOCK\_DECLARE\_KIND\_() [16/16]

```
testing::internal::GMOCK_DECLARE_KIND_ (
    wchar_t ,
    kInteger   )
```

**5.7.3.94 GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_() [1/16]**

```
testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_ (
    ::std::string ,
    "" )
```

**5.7.3.95 GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_() [2/16]**

```
testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_ (
    bool ,
    false )
```

**5.7.3.96 GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_() [3/16]**

```
testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_ (
    char ,
    '\0' )
```

**5.7.3.97 GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_() [4/16]**

```
testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_ (
    double ,
    0 )
```

**5.7.3.98 GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_() [5/16]**

```
testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_ (
    float ,
    0 )
```

**5.7.3.99 GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_() [6/16]**

```
testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_ (
    signed char ,
    '\0' )
```

**5.7.3.100 GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_() [7/16]**

```
testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_ (
    signed int ,
    0 )
```

**5.7.3.101 GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_() [8/16]**

```
testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_ (
    signed long long ,
    0 )
```

**5.7.3.102 GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_() [9/16]**

```
testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_ (
    signed long ,
    0L )
```

**5.7.3.103 GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_() [10/16]**

```
testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_ (
    signed short ,
    0 )
```

**5.7.3.104 GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_() [11/16]**

```
testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_ (
    unsigned char ,
    '\0' )
```

**5.7.3.105 GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_() [12/16]**

```
testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_ (
    unsigned int ,
    0U )
```

**5.7.3.106 GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_() [13/16]**

```
testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_ (
    unsigned long long ,
    0 )
```

**5.7.3.107 GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_() [14/16]**

```
testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_ (
    unsigned long ,
    OUL )
```

**5.7.3.108 GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_() [15/16]**

```
testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_ (
    unsigned short ,
    OU )
```

**5.7.3.109 GTEST\_DISABLE\_MSC\_WARNINGS\_POP\_() [16/16]**

```
testing::internal::GTEST_DISABLE_MSC_WARNINGS_POP_ (
    void )
```

**5.7.3.110 GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_()**

```
testing::internal::GTEST_DISABLE_MSC_WARNINGS_POP_ ( ) const
```

**5.7.3.111 GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_()**

```
testing::internal::GTEST_DISABLE_MSC_WARNINGS_PUSH_ (
    4251 )
```

**5.7.3.112 GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_POINTER\_() [1/4]**

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

### 5.7.3.113 GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_POINTER\_() [2/4]

```
testing::internal::GTEST_IMPL_FORMAT_C_STRING_AS_POINTER_ (
    char16_t  )
```

### 5.7.3.114 GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_POINTER\_() [3/4]

```
testing::internal::GTEST_IMPL_FORMAT_C_STRING_AS_POINTER_ (
    char32_t  )
```

### 5.7.3.115 GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_POINTER\_() [4/4]

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

### 5.7.3.116 GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_STRING\_() [1/3]

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

### 5.7.3.117 GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_STRING\_() [2/3]

```
testing::internal::GTEST_IMPL_FORMAT_C_STRING_AS_STRING_ (
    char16_t ,
    ::std::u16string  )
```

### 5.7.3.118 GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_STRING\_() [3/3]

```
testing::internal::GTEST_IMPL_FORMAT_C_STRING_AS_STRING_ (
    char32_t ,
    ::std::u32string  )
```

**5.7.3.119 GTEST\_INTERNAL\_DEPRECATED() [1/5]**

```
testing::internal::GTEST_INTERNAL_DEPRECATED (
    "INSTANTIATE_TEST_CASE_P is deprecated,
     please use \"INSTANTIATE\_TEST\_SUITE\_P\" ) const
```

**5.7.3.120 GTEST\_INTERNAL\_DEPRECATED() [2/5]**

```
testing::internal::GTEST_INTERNAL_DEPRECATED (
    "INSTANTIATE_TYPED_TEST_CASE_P is deprecated,
     please use \"INSTANTIATE\_TYPED\_TEST\_SUITE\_P\" ) const
```

**5.7.3.121 GTEST\_INTERNAL\_DEPRECATED() [3/5]**

```
testing::internal::GTEST_INTERNAL_DEPRECATED (
    "REGISTER_TYPED_TEST_CASE_P is deprecated,
     please use \"REGISTER\_TYPED\_TEST\_SUITE\_P\" ) const
```

**5.7.3.122 GTEST\_INTERNAL\_DEPRECATED() [4/5]**

```
testing::internal::GTEST_INTERNAL_DEPRECATED (
    "TYPED_TEST_CASE is deprecated,
     please use \"TYPED\_TEST\_SUITE\" ) const
```

**5.7.3.123 GTEST\_INTERNAL\_DEPRECATED() [5/5]**

```
testing::internal::GTEST_INTERNAL_DEPRECATED (
    "TYPED_TEST_CASE_P is deprecated,
     please use \"TYPED\_TEST\_SUITE\_P\" ) const
```

**5.7.3.124 HasStrictnessModifier()**

```
template<typename T >
constexpr bool testing::internal::HasStrictnessModifier ( ) [constexpr]
```

### 5.7.3.125 `IllegalDoDefault()`

```
GTEST_API_ void testing::internal::IllegalDoDefault (
    const char * file,
    int line )
```

### 5.7.3.126 `ImplicitCast_()`

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

### 5.7.3.127 `InsertSyntheticTestCase()`

```
GTEST_API_ void testing::internal::InsertSyntheticTestCase (
    const std::string & name,
    CodeLocation location,
    bool has_test_p )
```

### 5.7.3.128 `Int32FromEnvOrDie()`

```
GTEST_API_ int32_t testing::internal::Int32FromEnvOrDie (
    const char * env_var,
    int32_t default_val )
```

### 5.7.3.129 `Int32FromGTestEnv()`

```
GTEST_API_ int32_t testing::internal::Int32FromGTestEnv (
    const char * flag,
    int32_t default_val )
```

### 5.7.3.130 `Invalid()`

```
template<typename T >
T testing::internal::Invalid ( ) [inline]
```

### 5.7.3.131 `InvokeArgument()`

```
template<typename F , typename... Args>
auto testing::internal::InvokeArgument (
    F f,
    Args... args ) -> decltype(f(args...))
```

### 5.7.3.132 `IsAlNum()`

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

### 5.7.3.133 `IsAlpha()`

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

### 5.7.3.134 `IsContainerTest() [1/2]`

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

### 5.7.3.135 `IsContainerTest() [2/2]`

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

### 5.7.3.136 `IsDigit()`

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

### 5.7.3.137 IsLower()

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

### 5.7.3.138 IsSpace()

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

### 5.7.3.139 IsTrue()

```
GTEST_API_ bool testing::internal::IsTrue (
    bool condition )
```

### 5.7.3.140 IsUpper()

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

### 5.7.3.141 IsXDigit() [1/4]

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

### 5.7.3.142 IsXDigit() [2/4]

```
bool testing::internal::IsXDigit (
    char16_t ch ) [inline]
```

### 5.7.3.143 IsXDigit() [3/4]

```
bool testing::internal::IsXDigit (
    char32_t ch ) [inline]
```

**5.7.3.144 IsXDigit() [4/4]**

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

**5.7.3.145 JoinAsKeyValueTuple()**

```
GTEST_API_ std::string testing::internal::JoinAsKeyValueTuple (
    const std::vector< const char * > & names,
    const Strings & values )
```

**5.7.3.146 Log()**

```
GTEST_API_ void testing::internal::Log (
    LogSeverity severity,
    const std::string & message,
    int stack_frames_to_skip )
```

**5.7.3.147 LogIsVisible()**

```
GTEST_API_ bool testing::internal::LogIsVisible (
    LogSeverity severity )
```

**5.7.3.148 LogToStderr()**

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

**5.7.3.149 MakeAction() [1/2]**

```
template<typename F , typename Impl >
::testing::Action<F> testing::internal::MakeAction ( )
```

### 5.7.3.150 `MakeAction()` [2/2]

```
template<typename F , typename Impl >
::testing::Action<F> testing::internal::MakeAction (
    std::shared_ptr<Impl> impl )
```

### 5.7.3.151 `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 )
```

### 5.7.3.152 `operator"!=()`

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

### 5.7.3.153 `operator==( )`

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

### 5.7.3.154 `OutputFlagAlsoCheckEnvVar()`

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

### 5.7.3.155 `ParseFlag()`

```
GTEST_API_ bool testing::internal::ParseFlag (
    const char * str,
    const char * flag,
    int32_t * value )
```

**5.7.3.156 ParseGoogleTestFlagsOnly() [1/2]**

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

**5.7.3.157 ParseGoogleTestFlagsOnly() [2/2]**

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

**5.7.3.158 ParseInt32()**

```
GTEST_API_ bool testing::internal::ParseInt32 (
    const Message & src_text,
    const char * str,
    int32_t * value )
```

**5.7.3.159 PrefixOf()**

```
constexpr bool testing::internal::PrefixOf (
    const char * a,
    const char * b ) [constexpr]
```

**5.7.3.160 PrintBytesInObjectTo()**

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

**5.7.3.161 PrintRawArrayTo()**

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

### 5.7.3.162 PrintSmartPointer() [1/2]

```
template<typename T , typename Ptr >
void testing::internal::PrintSmartPointer (
    const Ptr & ptr,
    std::ostream * os,
    char )
```

### 5.7.3.163 PrintSmartPointer() [2/2]

```
template<typename T , typename Ptr , typename = typename std::enable_if<!std::is_void<T><→
::value && !std::is_array<T>::value>::type>
void testing::internal::PrintSmartPointer (
    const Ptr & ptr,
    std::ostream * os,
    int )
```

### 5.7.3.164 PrintStringTo()

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

### 5.7.3.165 PrintTo() [1/31]

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

### 5.7.3.166 PrintTo() [2/31]

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

### 5.7.3.167 PrintTo() [3/31]

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

**5.7.3.168 PrintTo() [4/31]**

```
void testing::internal::PrintTo (
    char16_t * s,
    ::std::ostream * os )  [inline]
```

**5.7.3.169 PrintTo() [5/31]**

```
void testing::internal::PrintTo (
    char16_t c,
    ::std::ostream * os )  [inline]
```

**5.7.3.170 PrintTo() [6/31]**

```
void testing::internal::PrintTo (
    char32_t * s,
    ::std::ostream * os )  [inline]
```

**5.7.3.171 PrintTo() [7/31]**

```
GTEST_API_ void testing::internal::PrintTo (
    char32_t c,
    ::std::ostream * os )
```

**5.7.3.172 PrintTo() [8/31]**

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

**5.7.3.173 PrintTo() [9/31]**

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

### 5.7.3.174 PrintTo() [10/31]

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

### 5.7.3.175 PrintTo() [11/31]

```
void testing::internal::PrintTo (
    const ::std::u16string & s,
    ::std::ostream * os ) [inline]
```

### 5.7.3.176 PrintTo() [12/31]

```
void testing::internal::PrintTo (
    const ::std::u32string & s,
    ::std::ostream * os ) [inline]
```

### 5.7.3.177 PrintTo() [13/31]

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

### 5.7.3.178 PrintTo() [14/31]

```
GTEST_API_ void testing::internal::PrintTo (
    const char16_t * s,
    ::std::ostream * os )
```

### 5.7.3.179 PrintTo() [15/31]

```
GTEST_API_ void testing::internal::PrintTo (
    const char32_t * s,
    ::std::ostream * os )
```

**5.7.3.180 PrintTo() [16/31]**

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

**5.7.3.181 PrintTo() [17/31]**

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

**5.7.3.182 PrintTo() [18/31]**

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

**5.7.3.183 PrintTo() [19/31]**

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

**5.7.3.184 PrintTo() [20/31]**

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

**5.7.3.185 PrintTo() [21/31]**

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

### 5.7.3.186 PrintTo() [22/31]

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

### 5.7.3.187 PrintTo() [23/31]

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

### 5.7.3.188 PrintTo() [24/31]

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

### 5.7.3.189 PrintTo() [25/31]

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

### 5.7.3.190 PrintTo() [26/31]

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

### 5.7.3.191 PrintTo() [27/31]

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

**5.7.3.192 PrintTo() [28/31]**

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

**5.7.3.193 PrintTo() [29/31]**

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

**5.7.3.194 PrintTo() [30/31]**

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

**5.7.3.195 PrintTo() [31/31]**

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

**5.7.3.196 PrintTupleTo() [1/2]**

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

**5.7.3.197 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 )
```

### 5.7.3.198 PrintU16StringTo()

```
GTEST_API_ void testing::internal::PrintU16StringTo (
    const ::std::u16string & s,
    ::std::ostream * os )
```

### 5.7.3.199 PrintU32StringTo()

```
GTEST_API_ void testing::internal::PrintU32StringTo (
    const ::std::u32string & s,
    ::std::ostream * os )
```

### 5.7.3.200 PrintWithFallback()

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

### 5.7.3.201 ReadEntireFile()

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

### 5.7.3.202 RegisterTypeParameterizedTestSuite()

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

### 5.7.3.203 RegisterTypeParameterizedTestSuiteInstantiation()

```
GTEST_API_ void testing::internal::RegisterTypeParameterizedTestSuiteInstantiation (
    const char * case_name )
```

**5.7.3.204 ReportFailureInUnknownLocation()**

```
void testing::internal::ReportFailureInUnknownLocation (
    TestPartResult::Type result_type,
    const std::string & message )
```

**5.7.3.205 ReportInvalidTestSuiteType()**

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

**5.7.3.206 ShouldRunTestOnShard()**

```
GTEST_API_ bool testing::internal::ShouldRunTestOnShard (
    int total_shards,
    int shard_index,
    int test_id )
```

**5.7.3.207 ShouldShard()**

```
GTEST_API_ bool testing::internal::ShouldShard (
    const char * total_shards_str,
    const char * shard_index_str,
    bool in_subprocess_for_death_test )
```

**5.7.3.208 ShouldUseColor()**

```
GTEST_API_ bool testing::internal::ShouldUseColor (
    bool stdout_is_tty )
```

**5.7.3.209 Shuffle()**

```
template<typename E >
void testing::internal::Shuffle (
    internal::Random * random,
    std::vector< E > * v ) [inline]
```

### 5.7.3.210 ShuffleRange()

```
template<typename E >
void testing::internal::ShuffleRange (
    internal::Random * random,
    int begin,
    int end,
    std::vector< E > * v )
```

### 5.7.3.211 SkipPrefix()

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

### 5.7.3.212 SplitString()

```
void testing::internal::SplitString (
    const ::std::string & str,
    char delimiter,
    ::std::vector<::std::string > * dest )
```

### 5.7.3.213 StartsWith()

```
template<int N, int M>
constexpr bool testing::internal::StartsWith (
    const char(&) prefix[N],
    const char(&) str[M] ) [constexpr]
```

### 5.7.3.214 StreamableToString()

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

### 5.7.3.215 StrictnessModifierProbe() [1/4]

```
std::false_type testing::internal::StrictnessModifierProbe (
    ... )
```

**5.7.3.216 StrictnessModifierProbe() [2/4]**

```
template<typename T >
std::true_type testing::internal::StrictnessModifierProbe (
    const NaggyMock< T > & )
```

**5.7.3.217 StrictnessModifierProbe() [3/4]**

```
template<typename T >
std::true_type testing::internal::StrictnessModifierProbe (
    const NiceMock< T > & )
```

**5.7.3.218 StrictnessModifierProbe() [4/4]**

```
template<typename T >
std::true_type testing::internal::StrictnessModifierProbe (
    const StrictMock< T > & )
```

**5.7.3.219 StringFromGTestEnv()**

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

**5.7.3.220 StringStreamToString()**

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

**5.7.3.221 StripTrailingSpaces()**

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

### 5.7.3.222 TersePrintPrefixToStrings() [1/2]

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

### 5.7.3.223 TersePrintPrefixToStrings() [2/2]

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

### 5.7.3.224 TestNotEmpty() [1/2]

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

### 5.7.3.225 TestNotEmpty() [2/2]

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

### 5.7.3.226 ToLower()

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

### 5.7.3.227 ToUpper()

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

### 5.7.3.228 UniversalPrint()

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

### 5.7.3.229 UniversalPrintArray() [1/5]

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

### 5.7.3.230 UniversalPrintArray() [2/5]

```
GTEST_API_ void testing::internal::UniversalPrintArray (
    const char16_t * begin,
    size_t len,
    ::std::ostream * os )
```

### 5.7.3.231 UniversalPrintArray() [3/5]

```
GTEST_API_ void testing::internal::UniversalPrintArray (
    const char32_t * begin,
    size_t len,
    ::std::ostream * os )
```

### 5.7.3.232 UniversalPrintArray() [4/5]

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

### 5.7.3.233 UniversalPrintArray() [5/5]

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

### 5.7.3.234 UniversalTersePrint()

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

### 5.7.3.235 UniversalTersePrintTupleFieldsToStrings()

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

### 5.7.3.236 ValidateSpec()

```
template<int N>
constexpr bool testing::internal::ValidateSpec (
    const char(&) spec[N] ) [constexpr]
```

### 5.7.3.237 VoidifyPointer() [1/2]

```
const void* testing::internal::VoidifyPointer (
    const void * p ) [inline]
```

### 5.7.3.238 VoidifyPointer() [2/2]

```
const void* testing::internal::VoidifyPointer (
    volatile const void * p ) [inline]
```

### 5.7.3.239 WideStringToUtf8()

```
GTEST_API_ std::string testing::internal::WideStringToUtf8 (
    const wchar_t * str,
    int num_chars )
```

### 5.7.3.240 WriteToShardStatusFileIfNeeded()

```
void testing::internal::WriteToShardStatusFileIfNeeded ( )
```

## 5.7.4 Variable Documentation

### 5.7.4.1 g\_help\_flag

```
GTEST_API_ bool testing::internal::g_help_flag [extern]
```

### 5.7.4.2 kDeathTestStyleFlag

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

### 5.7.4.3 kDeathTestUseFork

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

### 5.7.4.4 kErrorVerbosity

```
const char testing::internal::kErrorVerbosity[ ] = "error"
```

### 5.7.4.5 kInfoVerbosity

```
const char testing::internal::kInfoVerbosity[ ] = "info"
```

#### 5.7.4.6 **kInternalRunDeathTestFlag**

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

#### 5.7.4.7 **kMaxBiggestInt**

```
constexpr BiggestInt testing::internal::kMaxBiggestInt = (std::numeric_limits<BiggestInt>::max)() [constexpr]
```

#### 5.7.4.8 **kMaxRandomSeed**

```
const int testing::internal::kMaxRandomSeed = 99999
```

#### 5.7.4.9 **kStackTraceMarker**

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

#### 5.7.4.10 **kTestIdInGoogleTest**

```
GTEST_API_ const TypeId testing::internal::kTestIdInGoogleTest [extern]
```

#### 5.7.4.11 **kWarningVerbosity**

```
const char testing::internal::kWarningVerbosity[] = "warning"
```

## 5.8 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)`

### 5.8.1 Enumeration Type Documentation

#### 5.8.1.1 EditType

```
enum testing::internal::edit_distance::EditType
```

### Enumerator

kMatch	
kAdd	
kRemove	
kReplace	

## 5.8.2 Function Documentation

### 5.8.2.1 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 )
```

### 5.8.2.2 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 )
```

### 5.8.2.3 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 )
```

## 5.9 testing::internal::internal\_stream\_operator\_without\_lexical\_name\_lookup Namespace Reference

### Classes

- struct [LookupBlocker](#)
- struct [StreamPrinter](#)

### Functions

- void [operator<< \(LookupBlocker, LookupBlocker\)](#)

## 5.9.1 Function Documentation

### 5.9.1.1 operator<<()

```
void testing::internal::internal_stream_operator_without_lexical_name_lookup::operator<< (
    LookupBlocker ,
    LookupBlocker )
```

## 5.10 testing::internal::posix Namespace Reference

### Typedefs

- [typedef struct stat StatStruct](#)

### Functions

- [int FileNo \(FILE \\*file\)](#)
- [int Stat \(const char \\*path, StatStruct \\*buf\)](#)
- [int RmDir \(const char \\*dir\)](#)
- [bool IsDir \(const StatStruct &st\)](#)
- [int DolsATTY \(int fd\)](#)
- [int StrCaseCmp \(const char \\*s1, const char \\*s2\)](#)
- [char \\* StrDup \(const char \\*src\)](#)
- [int IsATTY \(int fd\)](#)
- [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 \(\)](#)

### 5.10.1 Typedef Documentation

#### 5.10.1.1 StatStruct

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

## 5.10.2 Function Documentation

### 5.10.2.1 Abort()

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

### 5.10.2.2 ChDir()

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

### 5.10.2.3 Close()

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

### 5.10.2.4 DoIsATTY()

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

### 5.10.2.5 FClose()

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

### 5.10.2.6 FDOpen()

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

### 5.10.2.7 FileNo()

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

### 5.10.2.8 FOpen()

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

### 5.10.2.9 FReopen()

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

### 5.10.2.10 GetEnv()

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

### 5.10.2.11 IsATTY()

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

### 5.10.2.12 IsDir()

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

### 5.10.2.13 Read()

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

### 5.10.2.14 RmDir()

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

### 5.10.2.15 Stat()

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

### 5.10.2.16 StrCaseCmp()

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

### 5.10.2.17 StrDup()

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

### 5.10.2.18 StrError()

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

### 5.10.2.19 Write()

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

## 5.11 timing Namespace Reference

### Functions

- void [start\\_clock \(\)](#)
- double [get\\_split \(\)](#)

### 5.11.1 Function Documentation

#### 5.11.1.1 [get\\_split\(\)](#)

```
double timing::get_split ( )
```

#### 5.11.1.2 [start\\_clock\(\)](#)

```
void timing::start_clock ( )
```



# Chapter 6

## Class Documentation

### 6.1 testing::Action< F > Class Template Reference

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

### 6.2 testing::Action< R(Args...) > Class Template Reference

```
#include <gmock-actions.h>
```

#### Classes

- struct [ActionAdapter](#)
- struct [IgnoreArgs](#)

#### Public Types

- [typedef internal::Function< F >::Result Result](#)
- [typedef internal::Function< F >::ArgumentTuple ArgumentTuple](#)

#### Public Member Functions

- [Action \(\)](#)
- template<typename G , typename = typename std::enable\_if<internal::disjunction< IsCompatibleFunctor<G>, std::is\_constructible<std::function<Result()>, G>>::value>::type> [Action \(G &&fun\)](#)
- [Action \(ActionInterface< F > \\*impl\)](#)
- template<typename Func > [Action \(const Action< Func > &action\)](#)
- bool [IsDoDefault \(\) const](#)
- [Result Perform \(ArgumentTuple args\) const](#)
- operator [OnceAction< F > \(\) const](#)

## Private Types

- using `F = R(Args...)`
- template<typename G >  
using `IsCompatibleFunctor` = std::is\_constructible<std::function<F>, G >

## Private Member Functions

- template<typename G >  
void `Init` (G &&g, ::std::true\_type)
- template<typename G >  
void `Init` (G &&g, ::std::false\_type)

## Private Attributes

- ::std::function<F> `fun_`

## Friends

- template<typename G >  
class `Action`

### 6.2.1 Member Typedef Documentation

#### 6.2.1.1 ArgumentTuple

```
template<typename R , typename... Args>
typedef internal::Function<F>::ArgumentTuple testing::Action< R(Args...)>::ArgumentTuple
```

#### 6.2.1.2 F

```
template<typename R , typename... Args>
using testing::Action< R(Args...)>::F = R(Args...) [private]
```

#### 6.2.1.3 IsCompatibleFunctor

```
template<typename R , typename... Args>
template<typename G >
using testing::Action< R(Args...)>::IsCompatibleFunctor = std::is_constructible<std::function<F>, G> [private]
```

#### 6.2.1.4 Result

```
template<typename R , typename... Args>
typedef internal::Function<F>::Result testing::Action< R(Args...)>::Result
```

### 6.2.2 Constructor & Destructor Documentation

#### 6.2.2.1 Action() [1/4]

```
template<typename R , typename... Args>
testing::Action< R(Args...)>::Action () [inline]
```

#### 6.2.2.2 Action() [2/4]

```
template<typename R , typename... Args>
template<typename G , typename = typename std::enable_if<internal::disjunction< IsCompatible< Functo
```

r<G>, std::is\_constructible<std::function<Result(), G>>::value>::type>

```
testing::Action< R(Args...)>::Action (
    G && fun ) [inline]
```

#### 6.2.2.3 Action() [3/4]

```
template<typename R , typename... Args>
testing::Action< R(Args...)>::Action (
    ActionInterface< F > * impl ) [inline], [explicit]
```

#### 6.2.2.4 Action() [4/4]

```
template<typename R , typename... Args>
template<typename Func >
testing::Action< R(Args...)>::Action (
    const Action< Func > & action ) [inline]
```

### 6.2.3 Member Function Documentation

### 6.2.3.1 `Init()` [1/2]

```
template<typename R , typename... Args>
template<typename G >
void testing::Action< R(Args...)>::Init (
    G && g,
    ::std::false_type ) [inline], [private]
```

### 6.2.3.2 `Init()` [2/2]

```
template<typename R , typename... Args>
template<typename G >
void testing::Action< R(Args...)>::Init (
    G && g,
    ::std::true_type ) [inline], [private]
```

### 6.2.3.3 `IsDoDefault()`

```
template<typename R , typename... Args>
bool testing::Action< R(Args...)>::IsDoDefault ( ) const [inline]
```

### 6.2.3.4 `operator OnceAction< F >()`

```
template<typename R , typename... Args>
testing::Action< R(Args...)>::operator OnceAction< F > ( ) const [inline]
```

### 6.2.3.5 `Perform()`

```
template<typename R , typename... Args>
Result testing::Action< R(Args...)>::Perform (
    ArgumentTuple args ) const [inline]
```

## 6.2.4 Friends And Related Function Documentation

### 6.2.4.1 `Action`

```
template<typename R , typename... Args>
template<typename G >
friend class Action [friend]
```

## 6.2.5 Member Data Documentation

### 6.2.5.1 fun\_

```
template<typename R , typename... Args>
::std::function<F> testing::Action< R(Args...)>::fun_ [private]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.3 testing::Action< R(Args...)>::ActionAdapter Struct Reference

### Public Member Functions

- template<typename... InArgs>  
internal::Function< F >::Result operator() (InArgs &&... args)

### Public Attributes

- ::std::shared\_ptr< ActionInterface< F > > impl\_

## 6.3.1 Member Function Documentation

### 6.3.1.1 operator()()

```
template<typename R , typename... Args>
template<typename... InArgs>
internal::Function<F>::Result testing::Action< R(Args...)>::ActionAdapter::operator() (
    InArgs &&... args ) [inline]
```

## 6.3.2 Member Data Documentation

### 6.3.2.1 impl\_

```
template<typename R , typename... Args>
::std::shared_ptr<ActionInterface<F> > testing::Action< R(Args...)>::ActionAdapter::impl_
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.4 testing::internal::ActionImpl< F, Impl > Struct Template Reference

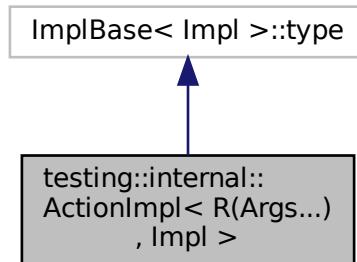
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

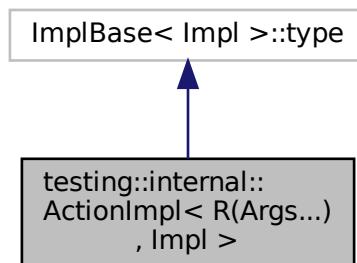
## 6.5 testing::internal::ActionImpl< R(Args...), Impl > Struct Template Reference

```
#include <gmock-actions.h>
```

Inheritance diagram for testing::internal::ActionImpl< R(Args...), Impl >:



Collaboration diagram for testing::internal::ActionImpl< R(Args...), Impl >:



### Public Types

- using `Base` = typename `ImplBase< Impl >::type`
- using `function_type` = `R(Args...)`
- using `args_type` = `std::tuple< Args... >`

## Public Member Functions

- `ActionImpl ()=default`
- `ActionImpl (std::shared_ptr< Impl > impl)`
- `R operator() (Args &&... arg) const`
- template<std::size\_t... arg\_id, std::size\_t... excess\_id>  
`R Apply (IndexSequence< arg_id... >, IndexSequence< excess_id... >, const args_type &args) const`

### 6.5.1 Member Typedef Documentation

#### 6.5.1.1 args\_type

```
template<typename R , typename... Args, typename Impl >
using testing::internal::ActionImpl< R(Args...), Impl >::args_type = std::tuple<Args...>
```

#### 6.5.1.2 Base

```
template<typename R , typename... Args, typename Impl >
using testing::internal::ActionImpl< R(Args...), Impl >::Base = typename ImplBase<Impl>::type
```

#### 6.5.1.3 function\_type

```
template<typename R , typename... Args, typename Impl >
using testing::internal::ActionImpl< R(Args...), Impl >::function_type = R(Args...)
```

### 6.5.2 Constructor & Destructor Documentation

#### 6.5.2.1 ActionImpl() [1/2]

```
template<typename R , typename... Args, typename Impl >
testing::internal::ActionImpl< R(Args...), Impl >::ActionImpl ( ) [default]
```

#### 6.5.2.2 ActionImpl() [2/2]

```
template<typename R , typename... Args, typename Impl >
testing::internal::ActionImpl< R(Args...), Impl >::ActionImpl (
    std::shared_ptr< Impl > impl ) [inline], [explicit]
```

### 6.5.3 Member Function Documentation

#### 6.5.3.1 Apply()

```
template<typename R , typename... Args, typename Impl >
template<std::size_t... arg_id, std::size_t... excess_id>
R testing::internal::ActionImpl< R(Args...), Impl >::Apply (
    IndexSequence< arg_id... > ,
    IndexSequence< excess_id... > ,
    const args_type & args ) const [inline]
```

#### 6.5.3.2 operator()()

```
template<typename R , typename... Args, typename Impl >
R testing::internal::ActionImpl< R(Args...), Impl >::operator() (
    Args &&... arg ) const [inline]
```

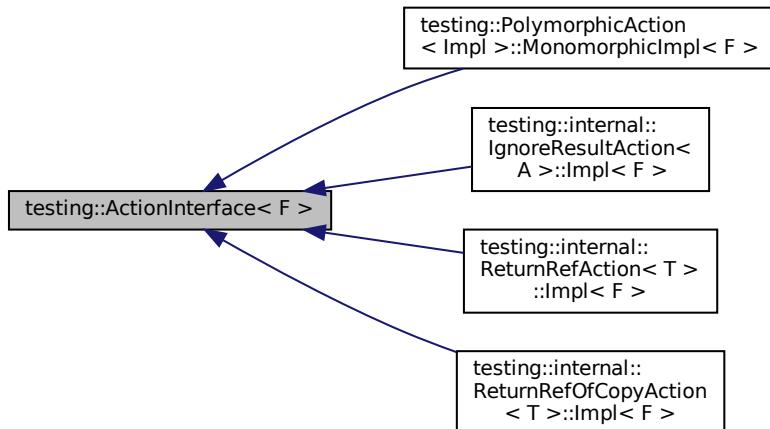
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.6 testing::ActionInterface< F > Class Template Reference

```
#include <gmock-actions.h>
```

Inheritance diagram for testing::ActionInterface< F >:



## Public Types

- `typedef internal::Function< F >::Result Result`
- `typedef internal::Function< F >::ArgumentTuple ArgumentTuple`

## Public Member Functions

- `ActionInterface ()`
- `virtual ~ActionInterface ()`
- `virtual Result Perform (const ArgumentTuple &args)=0`

## Private Member Functions

- `ActionInterface (const ActionInterface &)=delete`
- `ActionInterface & operator= (const ActionInterface &)=delete`

### 6.6.1 Member Typedef Documentation

#### 6.6.1.1 ArgumentTuple

```
template<typename F >
typedef internal::Function<F>::ArgumentTuple testing::ActionInterface< F >::ArgumentTuple
```

#### 6.6.1.2 Result

```
template<typename F >
typedef internal::Function<F>::Result testing::ActionInterface< F >::Result
```

### 6.6.2 Constructor & Destructor Documentation

#### 6.6.2.1 ActionInterface() [1/2]

```
template<typename F >
testing::ActionInterface< F >::ActionInterface ( ) [inline]
```

### 6.6.2.2 ~ActionInterface()

```
template<typename F >
virtual testing::ActionInterface< F >::~ActionInterface ( ) [inline], [virtual]
```

### 6.6.2.3 ActionInterface() [2/2]

```
template<typename F >
testing::ActionInterface< F >::ActionInterface (
    const ActionInterface< F > & ) [private], [delete]
```

## 6.6.3 Member Function Documentation

### 6.6.3.1 operator=()

```
template<typename F >
ActionInterface& testing::ActionInterface< F >::operator= (
    const ActionInterface< F > & ) [private], [delete]
```

### 6.6.3.2 Perform()

```
template<typename F >
virtual Result testing::ActionInterface< F >::Perform (
    const ArgumentTuple & args ) [pure virtual]
```

Implemented in [testing::internal::IgnoreResultAction< A >::Impl< F >](#), [testing::PolymorphicAction< Impl >::MonomorphicImpl< F >](#), [testing::internal::ReturnRefOfCopyAction< T >::Impl< F >](#), and [testing::internal::ReturnRefAction< T >::Impl< F >](#).

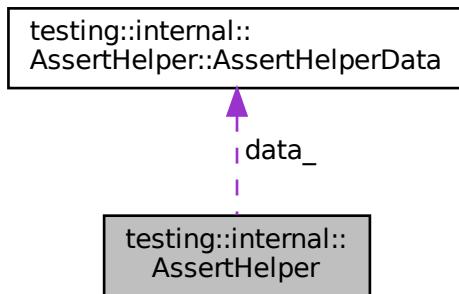
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googmock/include/gmock/[gmock-actions.h](#)

## 6.7 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

- [AssertHelper](#) (const [AssertHelper](#) &)=delete
- [AssertHelper](#) & [operator=](#) (const [AssertHelper](#) &)=delete

### Private Attributes

- [AssertHelperData](#) \*const [data\\_](#)

#### 6.7.1 Constructor & Destructor Documentation

### 6.7.1.1 `AssertHelper()` [1/2]

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

### 6.7.1.2 `~AssertHelper()`

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

### 6.7.1.3 `AssertHelper()` [2/2]

```
testing::internal::AssertHelper::AssertHelper (
    const AssertHelper & ) [private], [delete]
```

## 6.7.2 Member Function Documentation

### 6.7.2.1 `operator=()` [1/2]

```
AssertHelper& testing::internal::AssertHelper::operator= (
    const AssertHelper & ) [private], [delete]
```

### 6.7.2.2 `operator=()` [2/2]

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

## 6.7.3 Member Data Documentation

### 6.7.3.1 `data_`

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

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

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

## 6.8 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

- `AssertHelperData (const AssertHelperData &)=delete`
- `AssertHelperData & operator= (const AssertHelperData &)=delete`

#### 6.8.1 Constructor & Destructor Documentation

##### 6.8.1.1 `AssertHelperData()` [1/2]

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

##### 6.8.1.2 `AssertHelperData()` [2/2]

```
testing::internal::AssertHelper::AssertHelperData::AssertHelperData (
    const AssertHelperData & )  [private], [delete]
```

#### 6.8.2 Member Function Documentation

##### 6.8.2.1 `operator=()`

```
AssertHelperData& testing::internal::AssertHelper::AssertHelperData::operator= (
    const AssertHelperData & )  [private], [delete]
```

### 6.8.3 Member Data Documentation

#### 6.8.3.1 file

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

#### 6.8.3.2 line

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

#### 6.8.3.3 message

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

#### 6.8.3.4 type

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

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

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

## 6.9 testing::internal::AssignAction< T1, T2 > Class Template Reference

```
#include <gmock-actions.h>
```

### Public Member Functions

- [AssignAction](#) (T1 \*ptr, T2 value)
- template<typename Result , typename ArgumentTuple >  
void [Perform](#) (const ArgumentTuple &) const

### Private Attributes

- T1 \*const [ptr\\_](#)
- const T2 [value\\_](#)

## 6.9.1 Constructor & Destructor Documentation

### 6.9.1.1 AssignAction()

```
template<typename T1 , typename T2 >
testing::internal::AssignAction< T1, T2 >::AssignAction (
    T1 * ptr,
    T2 value ) [inline]
```

## 6.9.2 Member Function Documentation

### 6.9.2.1 Perform()

```
template<typename T1 , typename T2 >
template<typename Result , typename ArgumentTuple >
void testing::internal::AssignAction< T1, T2 >::Perform (
    const ArgumentTuple & ) const [inline]
```

## 6.9.3 Member Data Documentation

### 6.9.3.1 ptr\_

```
template<typename T1 , typename T2 >
T1* const testing::internal::AssignAction< T1, T2 >::ptr_ [private]
```

### 6.9.3.2 value\_

```
template<typename T1 , typename T2 >
const T2 testing::internal::AssignAction< T1, T2 >::value_ [private]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

## 6.10 testing::internal::TemplateSel< Tmpl >::Bind< T > Struct Template Reference

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

### Public Types

- `typedef Tmpl< T > type`

#### 6.10.1 Member Typedef Documentation

##### 6.10.1.1 type

```
template<GTTEST_TEMPLATE_ Tmpl>
template<typename T >
typedef Tmpl<T> testing::internal::TemplateSel< Tmpl >::Bind< T >::type
```

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

- `build/_deps/googletest-src/googletest/include/gtest/internal/gtest-type-util.h`

## 6.11 testing::internal::BuiltInDefaultValue< T > Class Template Reference

```
#include <gmock-actions.h>
```

### Static Public Member Functions

- `static bool Exists ()`
- `static T Get ()`

#### 6.11.1 Member Function Documentation

##### 6.11.1.1 Exists()

```
template<typename T >
static bool testing::internal::BuiltInDefaultValue< T >::Exists ( ) [inline], [static]
```

### 6.11.1.2 Get()

```
template<typename T >
static T testing::internal::BuiltInDefaultValue< T >::Get ( ) [inline], [static]
```

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

- build/\_deps/googletest-src/googletest/include/gmock/gmock-actions.h

## 6.12 testing::internal::BuiltInDefaultValue< const T > Class Template Reference

```
#include <gmock-actions.h>
```

### Static Public Member Functions

- static bool [Exists \(\)](#)
- static T [Get \(\)](#)

#### 6.12.1 Member Function Documentation

##### 6.12.1.1 Exists()

```
template<typename T >
static bool testing::internal::BuiltInDefaultValue< const T >::Exists ( ) [inline], [static]
```

##### 6.12.1.2 Get()

```
template<typename T >
static T testing::internal::BuiltInDefaultValue< const T >::Get ( ) [inline], [static]
```

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

- build/\_deps/googletest-src/googletest/include/gmock/gmock-actions.h

## 6.13 testing::internal::BuiltInDefaultValue< T \* > Class Template Reference

```
#include <gmock-actions.h>
```

## Static Public Member Functions

- static bool [Exists \(\)](#)
- static T \* [Get \(\)](#)

### 6.13.1 Member Function Documentation

#### 6.13.1.1 Exists()

```
template<typename T >
static bool testing::internal::BuiltInDefaultValue< T * >::Exists ( ) [inline], [static]
```

#### 6.13.1.2 Get()

```
template<typename T >
static T* testing::internal::BuiltInDefaultValue< T * >::Get ( ) [inline], [static]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/[gmock-actions.h](#)

## 6.14 testing::internal::BuiltInDefaultValueGetter< T, kDefaultConstructible > Struct Template Reference

```
#include <gmock-actions.h>
```

## Static Public Member Functions

- static T [Get \(\)](#)

### 6.14.1 Member Function Documentation

#### 6.14.1.1 Get()

```
template<typename T , bool kDefaultConstructible>
static T testing::internal::BuiltInDefaultValueGetter< T, kDefaultConstructible >::Get ( )
[inline], [static]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/[gmock-actions.h](#)

## 6.15 testing::internal::BuiltInDefaultValueGetter< T, false > Struct Template Reference

```
#include <gmock-actions.h>
```

### Static Public Member Functions

- static T [Get \(\)](#)

#### 6.15.1 Member Function Documentation

##### 6.15.1.1 [Get\(\)](#)

```
template<typename T >
static T testing::internal::BuiltInDefaultValueGetter< T, false >::Get \(\) [inline], [static]
```

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

- build/\_deps/googletest-src/googletest/include/gmock/[gmock-actions.h](#)

## 6.16 testing::internal::ByMoveWrapper< T > Struct Template Reference

```
#include <gmock-actions.h>
```

### Public Member Functions

- [ByMoveWrapper \(T value\)](#)

### Public Attributes

- T [payload](#)

#### 6.16.1 Constructor & Destructor Documentation

##### 6.16.1.1 [ByMoveWrapper\(\)](#)

```
template<typename T >
testing::internal::ByMoveWrapper< T >::ByMoveWrapper (
    T value ) [inline], [explicit]
```

## 6.16.2 Member Data Documentation

### 6.16.2.1 payload

```
template<typename T >
T testing::internal::ByMoveWrapper< T >::payload
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.17 testing::OnceAction< Result(Args...) >::StdFunctionAdaptor< Callable >::CallableTag Struct Reference

```
#include <gmock-actions.h>
```

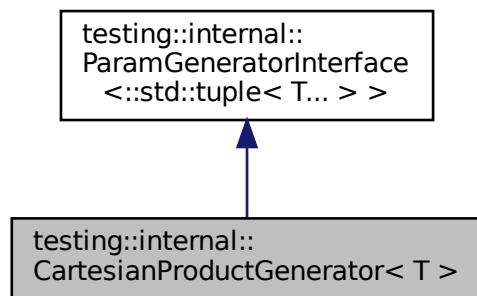
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

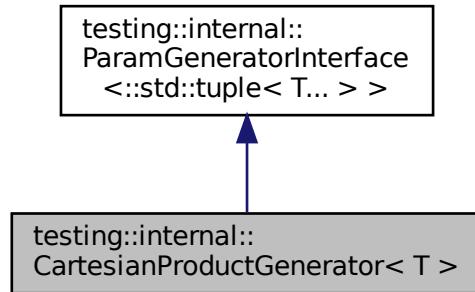
## 6.18 testing::internal::CartesianProductGenerator< T > Class Template Reference

```
#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_`

### 6.18.1 Member Typedef Documentation

### 6.18.1.1 Iterator

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

### 6.18.1.2 ParamType

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

## 6.18.2 Constructor & Destructor Documentation

### 6.18.2.1 CartesianProductGenerator()

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

### 6.18.2.2 ~CartesianProductGenerator()

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

## 6.18.3 Member Function Documentation

### 6.18.3.1 Begin()

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

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

### 6.18.3.2 End()

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

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

## 6.18.4 Member Data Documentation

### 6.18.4.1 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:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.19 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\\_](#)

## 6.19.1 Constructor & Destructor Documentation

### 6.19.1.1 CartesianProductHolder()

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

## 6.19.2 Member Function Documentation

### 6.19.2.1 operator ParamGenerator<::std::tuple< T... >>()

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

## 6.19.3 Member Data Documentation

### 6.19.3.1 generators\_

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

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.20 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](#)

### 6.20.1 Constructor & Destructor Documentation

### 6.20.1.1 CodeLocation()

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

## 6.20.2 Member Data Documentation

### 6.20.2.1 file

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

### 6.20.2.2 line

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

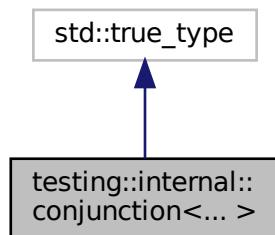
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

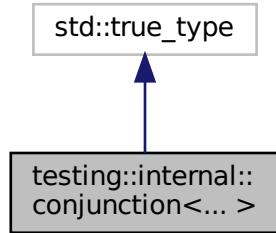
## 6.21 testing::internal::conjunction<... > Struct Template Reference

```
#include <gmock-actions.h>
```

Inheritance diagram for testing::internal::conjunction<... >:



Collaboration diagram for testing::internal::conjunction<... >:



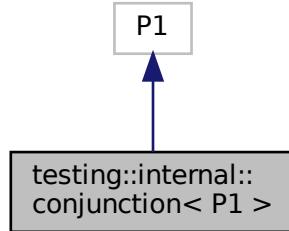
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gmock/gmock-actions.h

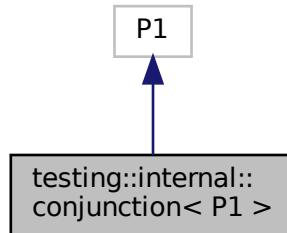
## 6.22 testing::internal::conjunction< P1 > Struct Template Reference

```
#include <gmock-actions.h>
```

Inheritance diagram for testing::internal::conjunction< P1 >:



Collaboration diagram for testing::internal::conjunction< P1 >:



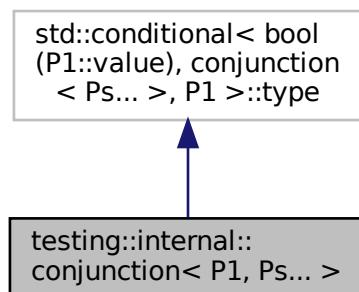
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gmock/gmock-actions.h

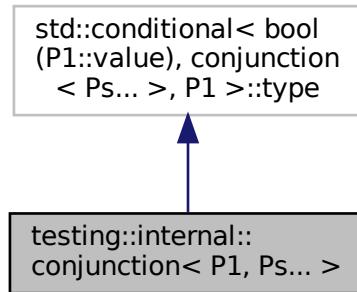
## 6.23 testing::internal::conjunction< P1, Ps... > Struct Template Reference

```
#include <gmock-actions.h>
```

Inheritance diagram for testing::internal::conjunction< P1, Ps... >:



Collaboration diagram for testing::internal::conjunction< P1, Ps... >:



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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gmock-actions.h

## 6.24 testing::internal::ConstCharPtr Struct Reference

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

### Public Member Functions

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

### Public Attributes

- const char \* [value](#)

#### 6.24.1 Constructor & Destructor Documentation

##### 6.24.1.1 ConstCharPtr()

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

## 6.24.2 Member Function Documentation

### 6.24.2.1 operator bool()

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

## 6.24.3 Member Data Documentation

### 6.24.3.1 value

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

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.25 testing::internal::ConstRef< T > Struct Template Reference

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

### Public Types

- `typedef const T & type`

## 6.25.1 Member Typedef Documentation

### 6.25.1.1 type

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

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-port.h

## 6.26 testing::internal::ConstRef< T & > Struct Template Reference

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

### Public Types

- `typedef T & type`

#### 6.26.1 Member Typedef Documentation

##### 6.26.1.1 type

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

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

- `build/_deps/googletest-src/googletest/include/gtest/internal/gtest-port.h`

## 6.27 testing::gmock\_matchers\_test::ContainerHelper Struct Reference

```
#include <gmock-matchers-test.h>
```

### Public Member Functions

- `MOCK_METHOD1 (Call, void(std::vector< std::unique_ptr< int >>))`

#### 6.27.1 Member Function Documentation

##### 6.27.1.1 MOCK\_METHOD1()

```
testing::gmock_matchers_test::ContainerHelper::MOCK_METHOD1 (
    Call ,
    void(std::vector< std::unique_ptr< int >>))
```

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

- `build/_deps/googletest-src/googlemock/test/gmock-matchers-test.h`

## 6.28 testing::internal::ContainerPrinter Struct Reference

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

### Static Public Member Functions

- template<typename T , typename = typename std::enable\_if< (sizeof(IsContainerTest<T>(0)) == sizeof(IsContainer)) && !IsRecursiveContainer<T>::value>::type>  
static void [PrintValue](#) (const T &container, std::ostream \*os)

#### 6.28.1 Member Function Documentation

##### 6.28.1.1 [PrintValue\(\)](#)

```
template<typename T , typename = typename std::enable_if< (sizeof(IsContainerTest<T>(0)) ==  
sizeof(IsContainer)) && !IsRecursiveContainer<T>::value>::type>  
static void testing::internal::ContainerPrinter::PrintValue (   
    const T & container,  
    std::ostream * os ) [inline], [static]
```

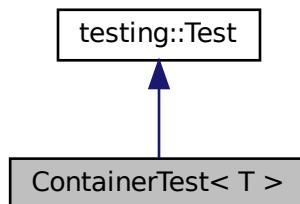
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/[gtest-printers.h](#)

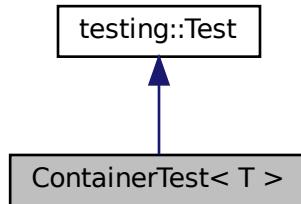
## 6.29 ContainerTest< T > Class Template Reference

```
#include <gtest-typed-test_test.h>
```

Inheritance diagram for ContainerTest< T >:



Collaboration diagram for ContainerTest< T >:



## Additional Inherited Members

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

- build/\_deps/googletest-src/googletest/test/[gtest-typed-test\\_test.h](#)

## 6.30 testing::internal::ConvertibleToIntegerPrinter Struct Reference

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

### Static Public Member Functions

- static void [PrintValue](#) ([internal::BiggestInt](#) value, ::std::ostream \*os)

#### 6.30.1 Member Function Documentation

##### 6.30.1.1 PrintValue()

```
static void testing::internal::ConvertibleToIntegerPrinter::PrintValue (
    internal::BiggestInt value,
    ::std::ostream * os ) [inline], [static]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/[gtest-printers.h](#)

## 6.31 testing::internal::ConvertibleToStringViewPrinter Struct Reference

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

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

- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

## 6.32 Counter Class Reference

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

### Public Member Functions

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

### Private Attributes

- int [counter\\_](#)

#### 6.32.1 Constructor & Destructor Documentation

##### 6.32.1.1 Counter()

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

#### 6.32.2 Member Function Documentation

##### 6.32.2.1 Decrement()

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

### 6.32.2.2 Increment()

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

### 6.32.2.3 Print()

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

## 6.32.3 Member Data Documentation

### 6.32.3.1 counter\_

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

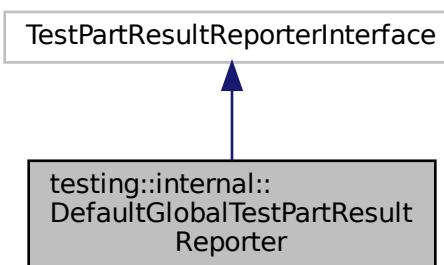
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/samples/[sample4.h](#)

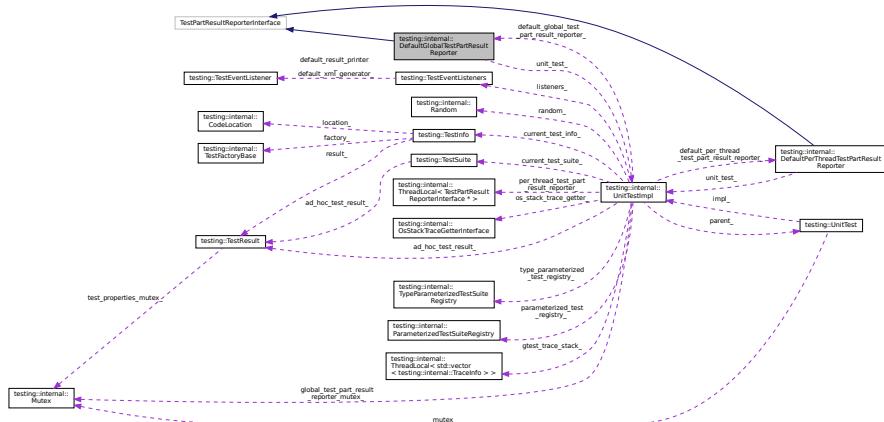
## 6.33 testing::internal::DefaultGlobalTestPartResultReporter Class Reference

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

Inheritance diagram for testing::internal::DefaultGlobalTestPartResultReporter:



## Collaboration diagram for testing::internal::DefaultGlobalTestPartResultReporter:



## Public Member Functions

- `DefaultGlobalTestPartResultReporter` (`UnitTestImpl *unit_test`)
  - void `ReportTestPartResult` (`const TestPartResult &result`) override

## Private Member Functions

- `DefaultGlobalTestPartResultReporter` (const `DefaultGlobalTestPartResultReporter` &)=delete
  - `DefaultGlobalTestPartResultReporter` & operator= (const `DefaultGlobalTestPartResultReporter` &)=delete

## Private Attributes

- `UnitTestImpl *const unit_test_`

### 6.33.1 Constructor & Destructor Documentation

### 6.33.1.1 DefaultGlobalTestPartResultReporter() [1/2]

```
testing::internal::DefaultGlobalTestPartResultReporter::DefaultGlobalTestPartResultReporter (
```

### 6.33.1.2 DefaultGlobalTestPartResultReporter() [2/2]

```
testing::internal::DefaultGlobalTestPartResultReporter::DefaultGlobalTestPartResultReporter (
```

## 6.33.2 Member Function Documentation

### 6.33.2.1 operator=()

```
DefaultGlobalTestPartResultReporter& testing::internal::DefaultGlobalTestPartResultReporter<-
::operator= (
    const DefaultGlobalTestPartResultReporter & ) [private], [delete]
```

### 6.33.2.2 ReportTestPartResult()

```
void testing::internal::DefaultGlobalTestPartResultReporter::ReportTestPartResult (
    const TestPartResult & result ) [override]
```

## 6.33.3 Member Data Documentation

### 6.33.3.1 unit\_test\_

```
UnitTestImpl* const testing::internal::DefaultGlobalTestPartResultReporter::unit_test_ [private]
```

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

- build/\_deps/googletest-src/googletest/src/[gtest-internal-inl.h](#)

## 6.34 testing::internal::DefaultNameGenerator Struct Reference

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

### Static Public Member Functions

- template<typename T >  
static std::string [GetName](#) (int i)

### 6.34.1 Member Function Documentation

### 6.34.1.1 GetName()

```
template<typename T >
static std::string testing::internal::DefaultNameGenerator::GetName (
    int i ) [inline], [static]
```

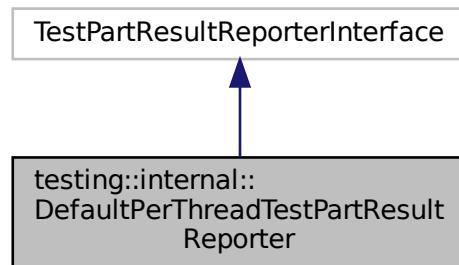
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

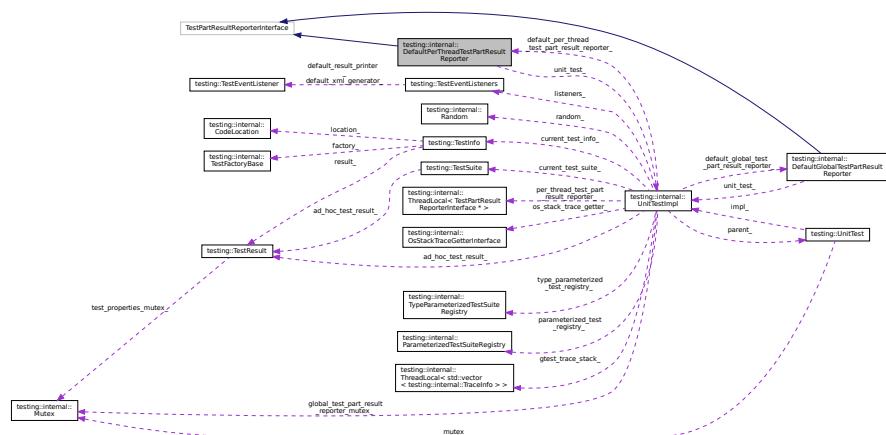
## 6.35 testing::internal::DefaultPerThreadTestPartResultReporter Class Reference

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

Inheritance diagram for testing::internal::DefaultPerThreadTestPartResultReporter:



Collaboration diagram for testing::internal::DefaultPerThreadTestPartResultReporter:



## Public Member Functions

- `DefaultPerThreadTestPartResultReporter (UnitTestImpl *unit_test)`
- `void ReportTestPartResult (const TestPartResult &result) override`

## Private Member Functions

- `DefaultPerThreadTestPartResultReporter (const DefaultPerThreadTestPartResultReporter &) = delete`
- `DefaultPerThreadTestPartResultReporter & operator= (const DefaultPerThreadTestPartResultReporter &) = delete`

## Private Attributes

- `UnitTestImpl *const unit_test_`

### 6.35.1 Constructor & Destructor Documentation

#### 6.35.1.1 DefaultPerThreadTestPartResultReporter() [1/2]

```
testing::internal::DefaultPerThreadTestPartResultReporter::DefaultPerThreadTestPartResultReporter (const DefaultPerThreadTestPartResultReporter &)
    UnitTestImpl * unit_test ) [explicit]
```

#### 6.35.1.2 DefaultPerThreadTestPartResultReporter() [2/2]

```
testing::internal::DefaultPerThreadTestPartResultReporter::DefaultPerThreadTestPartResultReporter (const DefaultPerThreadTestPartResultReporter &)
    const DefaultPerThreadTestPartResultReporter & ) [private], [delete]
```

### 6.35.2 Member Function Documentation

#### 6.35.2.1 operator=()

```
DefaultPerThreadTestPartResultReporter& testing::internal::DefaultPerThreadTestPartResultReporter::operator= (const DefaultPerThreadTestPartResultReporter &)
    const DefaultPerThreadTestPartResultReporter & ) [private], [delete]
```

### 6.35.2.2 ReportTestPartResult()

```
void testing::internal::DefaultPerThreadTestPartResultReporter::ReportTestPartResult (
    const TestPartResult & result ) [override]
```

### 6.35.3 Member Data Documentation

#### 6.35.3.1 unit\_test\_

```
UnitTestImpl* const testing::internal::DefaultPerThreadTestPartResultReporter::unit_test_<-->
[private]
```

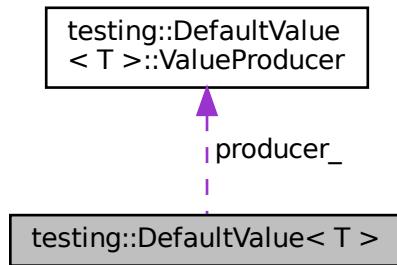
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/src/gtest-internal-inl.h

## 6.36 testing::DefaultValue< T > Class Template Reference

```
#include <gmock-actions.h>
```

Collaboration diagram for testing::DefaultValue< T >:



## Classes

- class [FactoryValueProducer](#)
- class [FixedValueProducer](#)
- class [ValueProducer](#)

## Public Types

- `typedef T(* FactoryFunction) ()`

## Static Public Member Functions

- `static void Set (T x)`
- `static void SetFactory (FactoryFunction factory)`
- `static void Clear ()`
- `static bool IsSet ()`
- `static bool Exists ()`
- `static T Get ()`

## Static Private Attributes

- `static ValueProducer * producer_ = nullptr`

### 6.36.1 Member Typedef Documentation

#### 6.36.1.1 FactoryFunction

```
template<typename T >
typedef T(* testing::DefaultValue< T >::FactoryFunction) ()
```

### 6.36.2 Member Function Documentation

#### 6.36.2.1 Clear()

```
template<typename T >
static void testing::DefaultValue< T >::Clear ( ) [inline], [static]
```

#### 6.36.2.2 Exists()

```
template<typename T >
static bool testing::DefaultValue< T >::Exists ( ) [inline], [static]
```

### 6.36.2.3 Get()

```
template<typename T >
static T testing::DefaultValue< T >::Get ( ) [inline], [static]
```

### 6.36.2.4 IsSet()

```
template<typename T >
static bool testing::DefaultValue< T >::IsSet ( ) [inline], [static]
```

### 6.36.2.5 Set()

```
template<typename T >
static void testing::DefaultValue< T >::Set (
    T x ) [inline], [static]
```

### 6.36.2.6 SetFactory()

```
template<typename T >
static void testing::DefaultValue< T >::SetFactory (
    FactoryFunction factory ) [inline], [static]
```

## 6.36.3 Member Data Documentation

### 6.36.3.1 producer\_

```
template<typename T >
DefaultValue< T >::ValueProducer * testing::DefaultValue< T >::producer_ = nullptr [static],
[private]
```

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

- build/\_deps/googletest-src/googmock/include/gmock/gmock-actions.h

## 6.37 testing::DefaultValue< T & > Class Template Reference

```
#include <gmock-actions.h>
```

## Static Public Member Functions

- static void `Set` (T &x)
- static void `Clear` ()
- static bool `IsSet` ()
- static bool `Exists` ()
- static T & `Get` ()

## Static Private Attributes

- static T \* `address_` = nullptr

### 6.37.1 Member Function Documentation

#### 6.37.1.1 `Clear()`

```
template<typename T >
static void testing::DefaultValue< T & >::Clear ( ) [inline], [static]
```

#### 6.37.1.2 `Exists()`

```
template<typename T >
static bool testing::DefaultValue< T & >::Exists ( ) [inline], [static]
```

#### 6.37.1.3 `Get()`

```
template<typename T >
static T& testing::DefaultValue< T & >::Get ( ) [inline], [static]
```

#### 6.37.1.4 `IsSet()`

```
template<typename T >
static bool testing::DefaultValue< T & >::IsSet ( ) [inline], [static]
```

### 6.37.1.5 Set()

```
template<typename T >
static void testing::DefaultValue< T & >::Set (
    T & x )  [inline], [static]
```

## 6.37.2 Member Data Documentation

### 6.37.2.1 address\_

```
template<typename T >
T * testing::DefaultValue< T & >::address_ = nullptr [static], [private]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.38 testing::DefaultValue< void > Class Reference

```
#include <gmock-actions.h>
```

### Static Public Member Functions

- static bool [Exists \(\)](#)
- static void [Get \(\)](#)

## 6.38.1 Member Function Documentation

### 6.38.1.1 Exists()

```
static bool testing::DefaultValue< void >::Exists ( ) [inline], [static]
```

### 6.38.1.2 Get()

```
static void testing::DefaultValue< void >::Get ( ) [inline], [static]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.39 testing::internal::DeleteArgAction< k > Struct Template Reference

```
#include <gmock-actions.h>
```

### Public Member Functions

- template<typename... Args>  
void [operator\(\)](#) (const Args &... args) const

#### 6.39.1 Member Function Documentation

##### 6.39.1.1 operator()()

```
template<size_t k>
template<typename... Args>
void testing::internal::DeleteArgAction< k >::operator\(\) (
    const Args &... args ) const [inline]
```

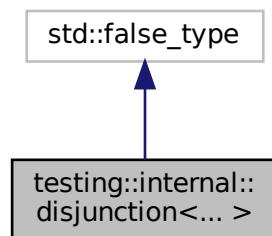
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googlemock/include/gmock/[gmock-actions.h](#)

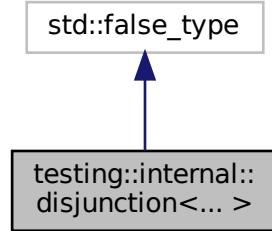
## 6.40 testing::internal::disjunction<... > Struct Template Reference

```
#include <gmock-actions.h>
```

Inheritance diagram for testing::internal::disjunction<... >:



Collaboration diagram for testing::internal::disjunction<...>:



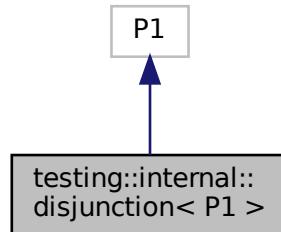
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gmock/gmock-actions.h

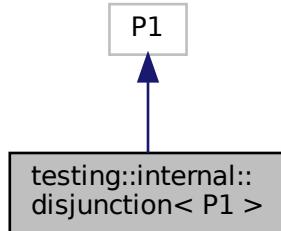
## 6.41 testing::internal::disjunction< P1 > Struct Template Reference

```
#include <gmock-actions.h>
```

Inheritance diagram for testing::internal::disjunction< P1 >:



Collaboration diagram for testing::internal::disjunction< P1 >:



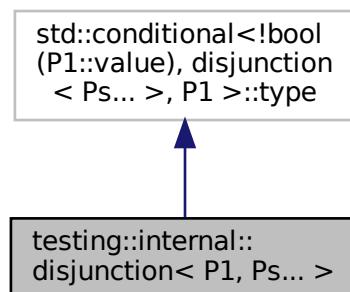
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googmock/include/gmock/gmock-actions.h

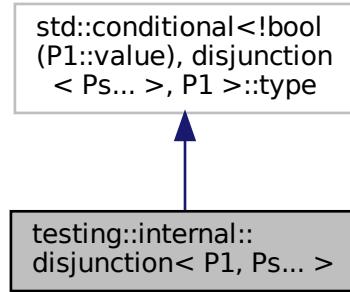
## 6.42 testing::internal::disjunction< P1, Ps... > Struct Template Reference

```
#include <gmock-actions.h>
```

Inheritance diagram for testing::internal::disjunction< P1, Ps... >:



Collaboration diagram for testing::internal::disjunction< P1, Ps... >:



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

- build/\_deps/googletest-src/googletest/include/gtest/gmock-actions.h

## 6.43 testing::internal::DoAllAction< Actions > Class Template Reference

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

- build/\_deps/googletest-src/googletest/include/gtest/gmock-actions.h

## 6.44 testing::internal::DoAllAction< FinalAction > Class Template Reference

```
#include <gmock-actions.h>
```

### Classes

- struct [UserConstructorTag](#)

### Public Member Functions

- template<typename T >  
[DoAllAction](#) (UserConstructorTag, T &&action)
- template<typename R , typename... Args, typename std::enable\_if< std::is\_convertible< FinalAction, OnceAction< R(Args...)>>><br/>::value, int >::type = 0>  
[operator OnceAction< R \(Args...\)>\(\)](#) &&
- template<typename R , typename... Args, typename std::enable\_if< std::is\_convertible< const FinalAction &, Action< R(<br/>Args...)>>><br/>::value, int >::type = 0>  
[operator Action< R \(Args...\)>\(\)](#) const

## Private Attributes

- FinalAction `final_action_`

### 6.44.1 Constructor & Destructor Documentation

#### 6.44.1.1 `DoAllAction()`

```
template<typename FinalAction >
template<typename T >
testing::internal::DoAllAction< FinalAction >::DoAllAction (
    UserConstructorTag ,
    T && action ) [inline], [explicit]
```

### 6.44.2 Member Function Documentation

#### 6.44.2.1 `operator Action< R()`

```
template<typename FinalAction >
template<typename R , typename... Args, typename std::enable_if< std::is_convertible< const
FinalAction &, Action< R(Args...)>>::value, int >::type = 0>
testing::internal::DoAllAction< FinalAction >::operator Action< R (
    Args... ) const [inline]
```

#### 6.44.2.2 `operator OnceAction< R()`

```
template<typename FinalAction >
template<typename R , typename... Args, typename std::enable_if< std::is_convertible< FinalAction,
OnceAction< R(Args...)>>::value, int >::type = 0>
testing::internal::DoAllAction< FinalAction >::operator OnceAction< R (
    Args... ) && [inline]
```

### 6.44.3 Member Data Documentation

### 6.44.3.1 final\_action\_

```
template<typename FinalAction >
FinalAction testing::internal::DoAllAction< FinalAction >::final_action_ [private]
```

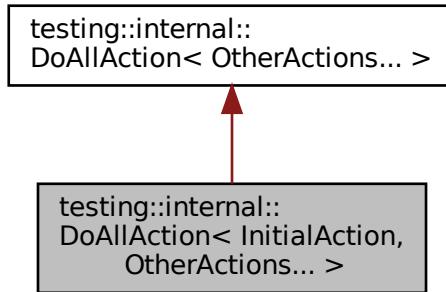
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

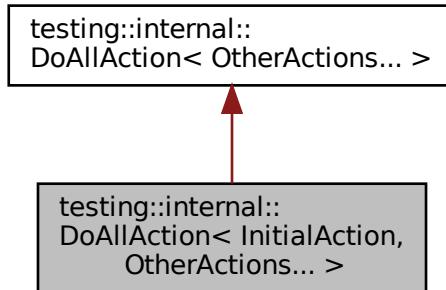
## 6.45 testing::internal::DoAllAction< InitialAction, OtherActions... > Class Template Reference

```
#include <gmock-actions.h>
```

Inheritance diagram for testing::internal::DoAllAction< InitialAction, OtherActions... >:



Collaboration diagram for testing::internal::DoAllAction< InitialAction, OtherActions... >:



## Classes

- struct [UserConstructorTag](#)

## Public Member Functions

- template<typename T , typename... U>  
[DoAllAction](#) (UserConstructorTag, T &&initial\_action, U &&... other\_actions)
- template<typename R , typename... Args, typename std::enable\_if< conjunction< std::is\_convertible< InitialAction, OnceAction< void(InitialActionArgType< Args >...)>, std::is\_convertible< Base, OnceAction< R(Args...)> >>::value , int , ::type = 0> operator OnceAction< R (Args...)>() &&
- template<typename R , typename... Args, typename std::enable\_if< conjunction< std::is\_convertible< const InitialAction &, Action< void(InitialActionArgType< Args >...)>, std::is\_convertible< const Base &, Action< R(Args...)> >>::value , int , ::type = 0> operator Action< R (Args...)>() const

## Private Types

- using [Base = DoAllAction< OtherActions... >](#)
- template<typename T >  
using [InitialActionArgType](#) = typename std::conditional< std::is\_scalar< T >::value, T, const T & >::type

## Private Attributes

- InitialAction [initial\\_action\\_](#)

### 6.45.1 Member Typedef Documentation

#### 6.45.1.1 Base

```
template<typename InitialAction , typename... OtherActions>
using testing::internal::DoAllAction< InitialAction, OtherActions... >::Base = DoAllAction<OtherActions...> [private]
```

#### 6.45.1.2 InitialActionArgType

```
template<typename InitialAction , typename... OtherActions>
template<typename T >
using testing::internal::DoAllAction< InitialAction, OtherActions... >::InitialActionArgType
= typename std::conditional<std::is_scalar<T>::value, T, const T& >::type [private]
```

### 6.45.2 Constructor & Destructor Documentation

### 6.45.2.1 DoAllAction()

```
template<typename InitialAction , typename... OtherActions>
template<typename T , typename... U>
testing::internal::DoAllAction< InitialAction, OtherActions... >::DoAllAction (
    UserConstructorTag ,
    T && initial_action,
    U &&... other_actions ) [inline], [explicit]
```

## 6.45.3 Member Function Documentation

### 6.45.3.1 operator Action< R()

```
template<typename InitialAction , typename... OtherActions>
template<typename R , typename... Args, typename std::enable_if< conjunction< std::is_convertible< const InitialAction &, Action< void(InitialActionArgType< Args >...)>>, std::is_convertible< const Base &, Action< R(Args...)>>>::value , int , ::type = 0>
testing::internal::DoAllAction< InitialAction, OtherActions... >::operator Action< R (
    Args...      ) const [inline]
```

### 6.45.3.2 operator OnceAction< R()

```
template<typename InitialAction , typename... OtherActions>
template<typename R , typename... Args, typename std::enable_if< conjunction< std::is_convertible< InitialAction, OnceAction< void(InitialActionArgType< Args >...)>>, std::is_convertible< Base, OnceAction< R(Args...)>>>::value , int , ::type = 0>
testing::internal::DoAllAction< InitialAction, OtherActions... >::operator OnceAction< R (
    Args...      ) && [inline]
```

## 6.45.4 Member Data Documentation

### 6.45.4.1 initial\_action\_

```
template<typename InitialAction , typename... OtherActions>
InitialAction testing::internal::DoAllAction< InitialAction, OtherActions... >::initial_action_ [private]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.46 testing::internal::DoDefaultAction Class Reference

```
#include <gmock-actions.h>
```

### Public Member Functions

- template<typename F>  
operator [Action< F >](#) () const

#### 6.46.1 Member Function Documentation

##### 6.46.1.1 operator Action< F >()

```
template<typename F>
testing::internal::DoDefaultAction::operator Action< F > () const [inline]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/[gtest-internal.h](#)

## 6.47 testing::internal::DoubleSequence< plus\_one, T, sizeofT > Struct Template Reference

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/[gtest-internal.h](#)

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

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

### Public Types

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

#### 6.48.1 Member Typedef Documentation

### 6.48.1.1 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:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.49 testing::internal::DoubleSequence< true, IndexSequence< I... >, sizeofT > Struct Template Reference

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

### Public Types

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

### 6.49.1 Member Typedef Documentation

#### 6.49.1.1 type

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

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.50 testing::internal::ElemFromList< N, T > Struct Template Reference

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

### Public Types

- using `type = decltype(ElemFromListImpl< typename MakeIndexSequence< N >::type >::Apply(static_cast< T(*)()>(nullptr)))`

### 6.50.1 Member Typedef Documentation

#### 6.50.1.1 type

```
template<size_t N, typename... T>
using testing::internal::ElemFromList< N, T >::type = decltype(ElemFromListImpl<typename
MakeIndexSequence<N>::type>::Apply( static_cast<T (*)()>(nullptr)...))
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.51 testing::internal::ElemFromListImpl< typename > Struct Template Reference

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.52 testing::internal::ElemFromListImpl< IndexSequence< I... > > Struct Template Reference

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

### Static Public Member Functions

- template<typename R >
 static R [Apply](#) ([Ignore](#)< 0 \*I >..., R(\*)(),...)

### 6.52.1 Member Function Documentation

#### 6.52.1.1 Apply()

```
template<size_t... I>
template<typename R >
static R testing::internal::ElemFromListImpl< IndexSequence< I... > >::Apply (
    Ignore< 0 *I > ...,
    R(*)(),
    ... ) [static]
```

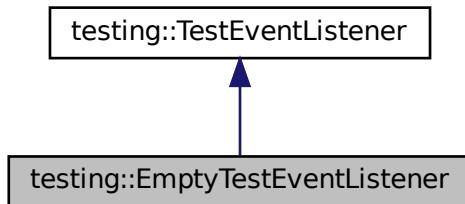
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

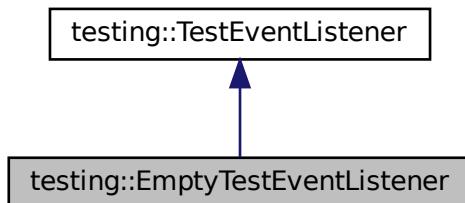
## 6.53 testing::EmptyTestEventListener Class Reference

```
#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 [OnTestDisabled](#) (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

## 6.53.1 Member Function Documentation

### 6.53.1.1 OnEnvironmentsSetUpEnd()

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

Implements [testing::TestEventListener](#).

### 6.53.1.2 OnEnvironmentsSetUpStart()

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

Implements [testing::TestEventListener](#).

### 6.53.1.3 OnEnvironmentsTearDownEnd()

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

Implements [testing::TestEventListener](#).

### 6.53.1.4 OnEnvironmentsTearDownStart()

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

Implements [testing::TestEventListener](#).

### 6.53.1.5 OnTestCaseEnd()

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

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

### 6.53.1.6 OnTestCaseStart()

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

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

### 6.53.1.7 OnTestDisabled()

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

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

### 6.53.1.8 OnTestEnd()

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

Implements [testing::TestEventListener](#).

### 6.53.1.9 OnTestIterationEnd()

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

Implements [testing::TestEventListener](#).

### 6.53.1.10 OnTestIterationStart()

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

Implements [testing::TestEventListener](#).

### 6.53.1.11 OnTestPartResult()

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

Implements [testing::TestEventListener](#).

### 6.53.1.12 OnTestProgramEnd()

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

Implements [testing::TestEventListener](#).

### 6.53.1.13 OnTestProgramStart()

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

Implements [testing::TestEventListener](#).

### 6.53.1.14 OnTestStart()

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

Implements [testing::TestEventListener](#).

### 6.53.1.15 OnTestSuiteEnd()

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

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

### 6.53.1.16 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:

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

## 6.54 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](#) ()

### 6.54.1 Constructor & Destructor Documentation

#### 6.54.1.1 [~Environment\(\)](#)

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

### 6.54.2 Member Function Documentation

### 6.54.2.1 SetUp()

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

### 6.54.2.2 Setup()

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

### 6.54.2.3 TearDown()

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

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

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

## 6.55 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)

### 6.55.1 Member Function Documentation

#### 6.55.1.1 Compare() [1/3]

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

### 6.55.1.2 Compare() [2/3]

```
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]
```

### 6.55.1.3 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:

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

## 6.56 testing::internal::ExcessiveArg Struct Reference

```
#include <gmock-actions.h>
```

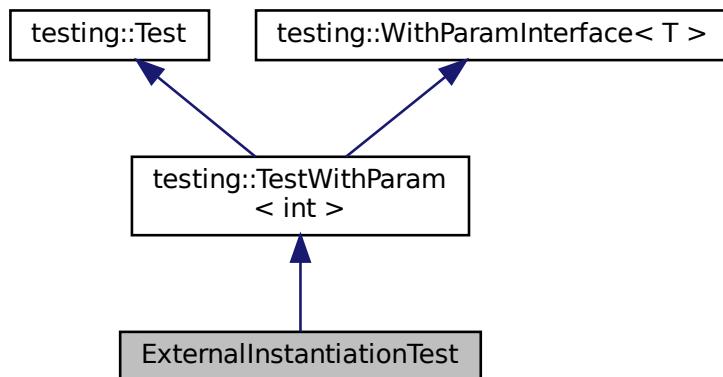
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/gmock/include/gmock/gmock-actions.h

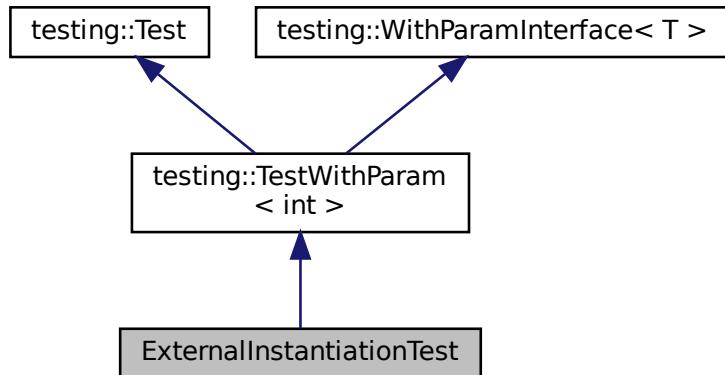
## 6.57 ExternalInstantiationTest Class Reference

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

Inheritance diagram for ExternalInstantiationTest:



Collaboration diagram for ExternalInstantiationTest:



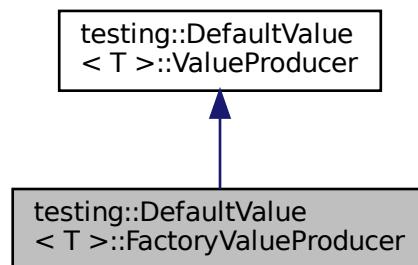
### Additional Inherited Members

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

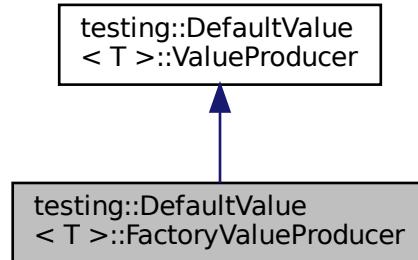
- build/\_deps/googletest-src/googletest/test/[googletest-param-test-test.h](#)

## 6.58 testing::DefaultValue< T >::FactoryValueProducer Class Reference

Inheritance diagram for testing::DefaultValue< T >::FactoryValueProducer:



Collaboration diagram for testing::DefaultValue< T >::FactoryValueProducer:



## Public Member Functions

- `FactoryValueProducer (FactoryFunction factory)`
- `T Produce () override`

## Private Member Functions

- `FactoryValueProducer (const FactoryValueProducer &)=delete`
- `FactoryValueProducer & operator= (const FactoryValueProducer &)=delete`

## Private Attributes

- `const FactoryFunction factory_`

### 6.58.1 Constructor & Destructor Documentation

#### 6.58.1.1 FactoryValueProducer() [1/2]

```

template<typename T >
testing::DefaultValue< T >::FactoryValueProducer::FactoryValueProducer (
    FactoryFunction factory ) [inline], [explicit]
  
```

#### 6.58.1.2 FactoryValueProducer() [2/2]

```

template<typename T >
testing::DefaultValue< T >::FactoryValueProducer::FactoryValueProducer (
    const FactoryValueProducer & ) [private], [delete]
  
```

## 6.58.2 Member Function Documentation

### 6.58.2.1 operator=()

```
template<typename T >
FactoryValueProducer& testing::DefaultValue< T >::FactoryValueProducer::operator= (
    const FactoryValueProducer & ) [private], [delete]
```

### 6.58.2.2 Produce()

```
template<typename T >
T testing::DefaultValue< T >::FactoryValueProducer::Produce ( ) [inline], [override], [virtual]
Implements testing::DefaultValue< T >::ValueProducer.
```

## 6.58.3 Member Data Documentation

### 6.58.3.1 factory\_

```
template<typename T >
const FactoryFunction testing::DefaultValue< T >::FactoryValueProducer::factory_ [private]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.59 testing::internal::FailureReporterInterface Class Reference

```
#include <gmock-internal-utils.h>
```

### Public Types

- enum FailureType { kNonfatal , kFatal }

### Public Member Functions

- virtual ~FailureReporterInterface ()
- virtual void ReportFailure (FailureType type, const char \*file, int line, const std::string &message)=0

## 6.59.1 Member Enumeration Documentation

### 6.59.1.1 FailureType

```
enum testing::internal::FailureReporterInterface::FailureType
```

Enumerator

kNonfatal	
kFatal	

## 6.59.2 Constructor & Destructor Documentation

### 6.59.2.1 ~FailureReporterInterface()

```
virtual testing::internal::FailureReporterInterface::~FailureReporterInterface() [inline],  
[virtual]
```

## 6.59.3 Member Function Documentation

### 6.59.3.1 ReportFailure()

```
virtual void testing::internal::FailureReporterInterface::ReportFailure (  
    FailureType type,  
    const char * file,  
    int line,  
    const std::string & message ) [pure virtual]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/internal/gmock-internal-utils.h

## 6.60 testing::internal::faketype Struct Reference

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

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

- build/\_deps/googletest-src/gtest/include/gtest/gtest.h

## 6.61 testing::internal::FallbackPrinter Struct Reference

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

## Static Public Member Functions

- template<typename T >  
static void [PrintValue](#) (const T &, ::std::ostream \*os)

### 6.61.1 Member Function Documentation

#### 6.61.1.1 PrintValue()

```
template<typename T >
static void testing::internal::FallbackPrinter::PrintValue (
    const T & ,
    ::std::ostream * os ) [inline], [static]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/[gtest-printers.h](#)

## 6.62 FieldHelper Class Reference

```
#include <gmock_link_test.h>
```

### Public Member Functions

- [FieldHelper](#) (int a\_field)
- int [field \(\)](#) const

### Public Attributes

- int [field\\_](#)

### 6.62.1 Constructor & Destructor Documentation

#### 6.62.1.1 FieldHelper()

```
FieldHelper::FieldHelper (
    int a_field ) [inline], [explicit]
```

## 6.62.2 Member Function Documentation

### 6.62.2.1 field()

```
int FieldHelper::field ( ) const [inline]
```

## 6.62.3 Member Data Documentation

### 6.62.3.1 field\_

```
int FieldHelper::field_
```

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

- build/\_deps/googletest-src/gmock/test/gmock\_link\_test.h

## 6.63 testing::internal::FindFirstPrinter< T, E, Printer, Printers > Struct Template Reference

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

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

- build/\_deps/googletest-src/gtest/include/gtest/gtest-printers.h

## 6.64 testing::internal::FindFirstPrinter< T, decltype(Printer::PrintValue(std::declval< const T & >()), nullptr), Printer, Printers... > Struct Template Reference

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

### Public Types

- using `type` = Printer

## 6.64.1 Member Typedef Documentation

### 6.64.1.1 type

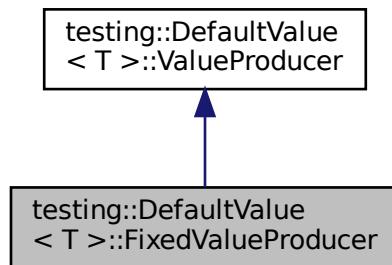
```
template<typename T , typename Printer , typename... Printers>
using testing::internal::FindFirstPrinter< T, decltype(Printer::PrintValue(std::declval< const
T & >(), nullptr)), Printer, Printers... >::type = Printer
```

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

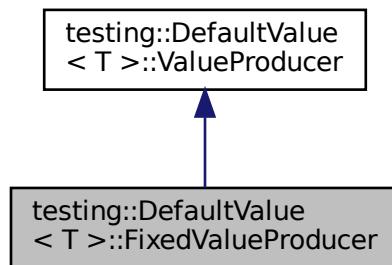
- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

## 6.65 testing::DefaultValue< T >::FixedValueProducer Class Reference

Inheritance diagram for testing::DefaultValue< T >::FixedValueProducer:



Collaboration diagram for testing::DefaultValue< T >::FixedValueProducer:



### Public Member Functions

- [FixedValueProducer \(T value\)](#)
- [T Produce \(\) override](#)

## Private Member Functions

- `FixedValueProducer (const FixedValueProducer &)=delete`
- `FixedValueProducer & operator= (const FixedValueProducer &)=delete`

## Private Attributes

- `const T value_`

### 6.65.1 Constructor & Destructor Documentation

#### 6.65.1.1 FixedValueProducer() [1/2]

```
template<typename T >
testing::DefaultValue< T >::FixedValueProducer::FixedValueProducer (
    T value )  [inline], [explicit]
```

#### 6.65.1.2 FixedValueProducer() [2/2]

```
template<typename T >
testing::DefaultValue< T >::FixedValueProducer::FixedValueProducer (
    const FixedValueProducer & )  [private], [delete]
```

### 6.65.2 Member Function Documentation

#### 6.65.2.1 operator=()

```
template<typename T >
FixedValueProducer& testing::DefaultValue< T >::FixedValueProducer::operator= (
    const FixedValueProducer & )  [private], [delete]
```

#### 6.65.2.2 Produce()

```
template<typename T >
T testing::DefaultValue< T >::FixedValueProducer::Produce ( )  [inline], [override], [virtual]
```

Implements `testing::DefaultValue< T >::ValueProducer`.

### 6.65.3 Member Data Documentation

#### 6.65.3.1 value\_

```
template<typename T >
const T testing::DefaultValue< T >::FixedValueProducer::value_ [private]
```

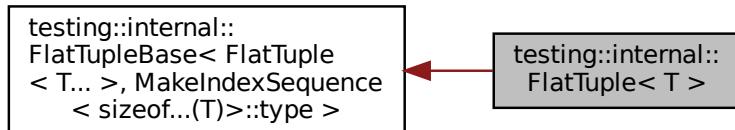
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/gmock/include/gmock/gmock-actions.h

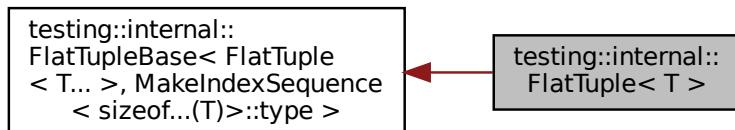
## 6.66 testing::internal::FlatTuple< T > Class Template Reference

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

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



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



## Public Member Functions

- [FlatTuple \(\)=default](#)
- template<typename... Args>  
[FlatTuple \(FlatTupleConstructTag tag, Args &&... args\)](#)

## Private Types

- using `Indices` = typename `FlatTupleBase< FlatTuple< T... >, typename MakeIndexSequence< sizeof...(T)>::type >::Indices`

### 6.66.1 Member Typedef Documentation

#### 6.66.1.1 Indices

```
template<typename... T>
using testing::internal::FlatTuple< T >::Indices = typename FlatTupleBase< FlatTuple<T...>, typename MakeIndexSequence<sizeof...(T)>::type>::Indices [private]
```

### 6.66.2 Constructor & Destructor Documentation

#### 6.66.2.1 FlatTuple() [1/2]

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

#### 6.66.2.2 FlatTuple() [2/2]

```
template<typename... T>
template<typename... Args>
testing::internal::FlatTuple< T >::FlatTuple (
    FlatTupleConstructTag tag,
    Args &&... args ) [inline], [explicit]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

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

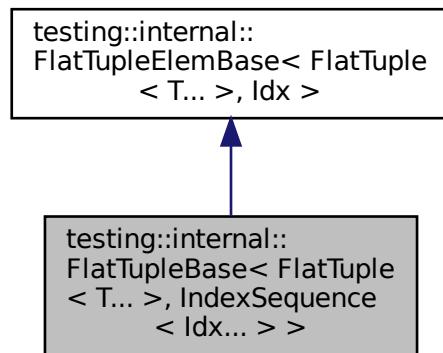
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

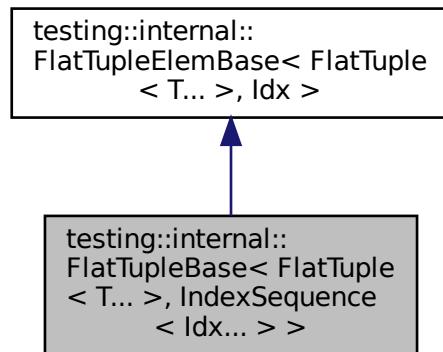
## 6.68 testing::internal::FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > > Struct Template Reference

```
#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`
- template<typename... Args>  
  `FlatTupleBase (FlatTupleConstructTag, Args &&... args)`
- template<size\_t I>  
  `const ElemFromList< I, T... >::type & Get () const`
- template<size\_t I>  
  `ElemFromList< I, T... >::type & Get ()`
- template<typename F >  
  `auto Apply (F &&f) -> decltype(std::forward< F >(f)(this->Get< Idx >(...)))`
- template<typename F >  
  `auto Apply (F &&f) const -> decltype(std::forward< F >(f)(this->Get< Idx >(...)))`

### 6.68.1 Member Typedef Documentation

#### 6.68.1.1 Indices

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

### 6.68.2 Constructor & Destructor Documentation

#### 6.68.2.1 FlatTupleBase() [1/2]

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

#### 6.68.2.2 FlatTupleBase() [2/2]

```
template<size_t... Idx, typename... T>
template<typename... Args>
testing::internal::FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > >::FlatTupleBase(
(
    FlatTupleConstructTag ,
    Args &&... args ) [inline], [explicit]
```

### 6.68.3 Member Function Documentation

### 6.68.3.1 Apply() [1/2]

```
template<size_t... Idx, typename... T>
template<typename F >
auto testing::internal::FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > >::Apply
(
    F && f ) -> decltype(std::forward<F>(f)(this->Get<Idx>()...))      [inline]
```

### 6.68.3.2 Apply() [2/2]

```
template<size_t... Idx, typename... T>
template<typename F >
auto testing::internal::FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > >::Apply
(
    F && f ) const -> decltype(std::forward<F>(f)(this->Get<Idx>()...))      [inline]
```

### 6.68.3.3 Get() [1/2]

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

### 6.68.3.4 Get() [2/2]

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

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.69 testing::internal::FlatTupleConstructTag Struct Reference

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

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

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

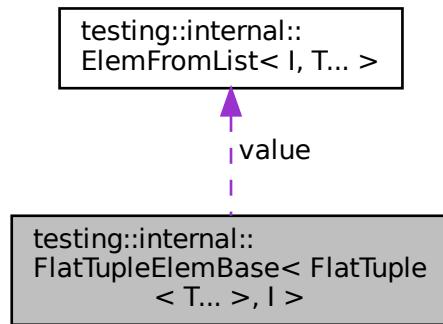
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.71 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, T... >::type`

### Public Member Functions

- `FlatTupleElemBase ()=default`
- template<typename Arg>  
  `FlatTupleElemBase (FlatTupleConstructTag, Arg &&t)`

### Public Attributes

- `value_type value`

## 6.71.1 Member Typedef Documentation

### 6.71.1.1 value\_type

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

## 6.71.2 Constructor & Destructor Documentation

### 6.71.2.1 FlatTupleElemBase() [1/2]

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

### 6.71.2.2 FlatTupleElemBase() [2/2]

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

## 6.71.3 Member Data Documentation

### 6.71.3.1 value

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

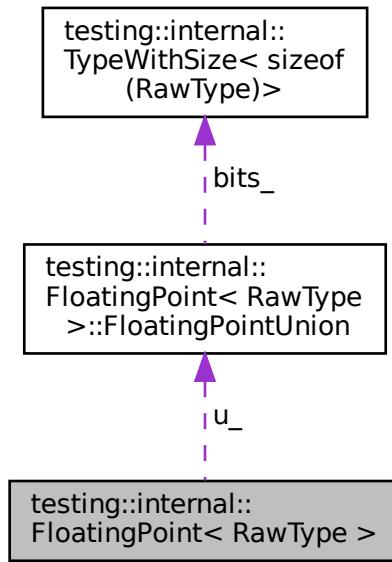
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.72 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
- float [Max](#) ()
- 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 uint32\_t `kMaxUlps` = 4

## Static Private Member Functions

- static Bits `SignAndMagnitudeToBiased` (const Bits &sam)
- static Bits `DistanceBetweenSignAndMagnitudeNumbers` (const Bits &sam1, const Bits &sam2)

## Private Attributes

- FloatingPointUnion `u_`

### 6.72.1 Member Typedef Documentation

#### 6.72.1.1 Bits

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

### 6.72.2 Constructor & Destructor Documentation

#### 6.72.2.1 FloatingPoint()

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

### 6.72.3 Member Function Documentation

#### 6.72.3.1 AlmostEquals()

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

#### 6.72.3.2 bits()

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

#### 6.72.3.3 DistanceBetweenSignAndMagnitudeNumbers()

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

#### 6.72.3.4 exponent\_bits()

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

#### 6.72.3.5 fraction\_bits()

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

#### 6.72.3.6 Infinity()

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

### 6.72.3.7 `is_nan()`

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

### 6.72.3.8 `Max() [1/3]`

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

### 6.72.3.9 `Max() [2/3]`

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

### 6.72.3.10 `Max() [3/3]`

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

### 6.72.3.11 `ReinterpretBits()`

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

### 6.72.3.12 `sign_bit()`

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

### 6.72.3.13 `SignAndMagnitudeToBiased()`

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

## 6.72.4 Member Data Documentation

### 6.72.4.1 kBitCount

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

### 6.72.4.2 kExponentBitCount

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

### 6.72.4.3 kExponentBitMask

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

### 6.72.4.4 kFractionBitCount

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

#### Initial value:

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

### 6.72.4.5 kFractionBitMask

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

#### Initial value:

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

#### 6.72.4.6 kMaxUlps

```
template<typename RawType >
const uint32_t testing::internal::FloatingPoint< RawType >::kMaxUlps = 4 [static]
```

#### 6.72.4.7 kSignBitMask

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

#### 6.72.4.8 u\_

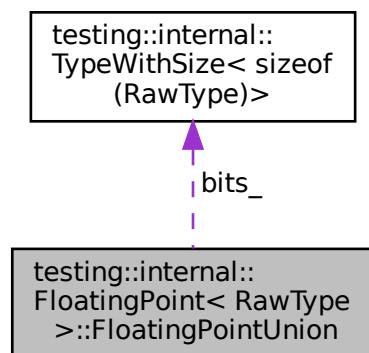
```
template<typename RawType >
FloatingPointUnion testing::internal::FloatingPoint< RawType >::u_ [private]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

### 6.73 testing::internal::FloatingPoint< RawType >::FloatingPointUnion Union Reference

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



## Public Attributes

- RawType `value_`
- Bits `bits_`

### 6.73.1 Member Data Documentation

#### 6.73.1.1 `bits_`

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

#### 6.73.1.2 `value_`

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

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

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

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

### Static Public Member Functions

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

### 6.74.1 Member Function Documentation

#### 6.74.1.1 `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:

- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

## 6.75 testing::internal::FormatForComparison< ToPrint[N], OtherOperand > Class Template Reference

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

### Static Public Member Functions

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

#### 6.75.1 Member Function Documentation

##### 6.75.1.1 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:

- build/\_deps/googletest-src/googletest/include/gtest/[gtest-printers.h](#)

## 6.76 testing::internal::Function< T > Struct Template Reference

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

- build/\_deps/googletest-src/gmock/include/gmock/internal/[gmock-internal-utils.h](#)

## 6.77 testing::internal::Function< R(Args...) > Struct Template Reference

```
#include <gmock-internal-utils.h>
```

### Public Types

- using [Result](#) = R
- template<size\_t I>
 using [Arg](#) = [ElemFromList](#)< I, Args... >
- using [ArgumentTuple](#) = std::tuple< Args... >
- using [ArgumentMatcherTuple](#) = std::tuple< [Matcher](#)< Args >... >
- using [MakeResultVoid](#) = void(Args...)
- using [MakeResultIgnoredValue](#) = [IgnoredValue](#)(Args...)

## Static Public Attributes

- static constexpr size\_t `ArgumentCount` = `sizeof...(Args)`

### 6.77.1 Member Typedef Documentation

#### 6.77.1.1 Arg

```
template<typename R , typename... Args>
template<size_t I>
using testing::internal::Function< R(Args...) >::Arg = ElemFromList<I, Args...>
```

#### 6.77.1.2 ArgumentMatcherTuple

```
template<typename R , typename... Args>
using testing::internal::Function< R(Args...) >::ArgumentMatcherTuple = std::tuple<Matcher<Args>...>
```

#### 6.77.1.3 ArgumentTuple

```
template<typename R , typename... Args>
using testing::internal::Function< R(Args...) >::ArgumentTuple = std::tuple<Args...>
```

#### 6.77.1.4 MakeResultIgnoredValue

```
template<typename R , typename... Args>
using testing::internal::Function< R(Args...) >::MakeResultIgnoredValue = IgnoredValue(Args...)
```

#### 6.77.1.5 MakeResultVoid

```
template<typename R , typename... Args>
using testing::internal::Function< R(Args...) >::MakeResultVoid = void(Args...)
```

### 6.77.1.6 Result

```
template<typename R , typename... Args>
using testing::internal::Function< R(Args...)>::Result = R
```

## 6.77.2 Member Data Documentation

### 6.77.2.1 ArgumentCount

```
template<typename R , typename... Args>
constexpr size_t testing::internal::Function< R(Args...)>::ArgumentCount = sizeof...(Args)
[static], [constexpr]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/internal/gmock-internal-utils.h

## 6.78 testing::internal::FunctionPointerPrinter Struct Reference

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

### Static Public Member Functions

- template<typename T , typename = typename std::enable\_if< std::is\_function<T>::value>::type>
static void [PrintValue](#) (T \*p, ::std::ostream \*os)

### 6.78.1 Member Function Documentation

#### 6.78.1.1 [PrintValue\(\)](#)

```
template<typename T , typename = typename std::enable_if< std::is_function<T>::value>::type>
static void testing::internal::FunctionPointerPrinter::PrintValue (
    T * p,
    ::std::ostream * os ) [inline], [static]
```

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

- build/\_deps/googletest-src/gtest/include/gtest/gtest-printers.h

## 6.79 testing::internal::GenerateTypeList< T > Struct Template Reference

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

### Public Types

- using `type` = typename proxy::type

### Private Types

- using `proxy` = typename std::conditional< `is_proxy_type_list< T >`::value, T, `ProxyTypeList< T >` >::type

#### 6.79.1 Member Typedef Documentation

##### 6.79.1.1 proxy

```
template<typename T >
using testing::internal::GenerateTypeList< T >::proxy = typename std::conditional<is_proxy_type_list<T><::value, T, ProxyTypeList<T> >::type [private]
```

##### 6.79.1.2 type

```
template<typename T >
using testing::internal::GenerateTypeList< T >::type = typename proxy::type
```

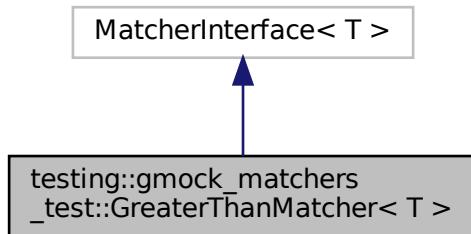
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-type-util.h

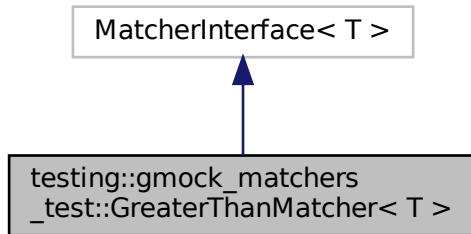
## 6.80 testing::gmock\_matchers\_test::GreaterThanOrEqualMatcher< T > Class Template Reference

```
#include <gmock-matchers-test.h>
```

Inheritance diagram for testing::gmock\_matchers\_test::GreaterThanOrEqualMatcher< T >:



Collaboration diagram for testing::gmock\_matchers\_test::GreaterThanOrEqualMatcher< T >:



### Public Member Functions

- [GreaterThanOrEqualMatcher](#) (T rhs)
- void [DescribeTo](#) (ostream \*os) const override
- void [DescribeNegationTo](#) (ostream \*os) const override
- bool [MatchAndExplain](#) (T lhs, MatchResultListener \*listener) const override

### Private Attributes

- const [GtestGreaterThanOrEqualMatcher](#)< T > `impl_`

## 6.80.1 Constructor & Destructor Documentation

### 6.80.1.1 GreaterThanOrEqual()

```
template<typename T >
testing::gmock_matchers_test::GreaterThanOrEqual< T >::GreaterThanOrEqual (
    T rhs )  [inline], [explicit]
```

## 6.80.2 Member Function Documentation

### 6.80.2.1 DescribeNegationTo()

```
template<typename T >
void testing::gmock_matchers_test::GreaterThanOrEqual< T >::DescribeNegationTo (
    ostream * os ) const  [inline], [override]
```

### 6.80.2.2 DescribeTo()

```
template<typename T >
void testing::gmock_matchers_test::GreaterThanOrEqual< T >::DescribeTo (
    ostream * os ) const  [inline], [override]
```

### 6.80.2.3 MatchAndExplain()

```
template<typename T >
bool testing::gmock_matchers_test::GreaterThanOrEqual< T >::MatchAndExplain (
    T lhs,
    MatchResultListener * listener ) const  [inline], [override]
```

## 6.80.3 Member Data Documentation

### 6.80.3.1 `impl_`

```
template<typename T >
const GtestGreaterThanMatcher<T> testing::gmock_matchers_test::GreaterThanMatcher< T >↔
::impl_ [private]
```

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

- build/\_deps/googletest-src/googlemock/test/gmock-matchers\_test.h

## 6.81 testing::internal::GTestFlagSaver Class Reference

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

### Public Member Functions

- `GTestFlagSaver ()`
- `~GTestFlagSaver ()`

### Private Attributes

- bool `also_run_disabled_tests_`
- bool `break_on_failure_`
- bool `catch_exceptions_`
- std::string `color_`
- std::string `death_test_style_`
- bool `death_test_use_fork_`
- bool `fail_fast_`
- std::string `filter_`
- std::string `internal_run_death_test_`
- bool `list_tests_`
- std::string `output_`
- bool `brief_`
- bool `print_time_`
- bool `print_utf8_`
- int32\_t `random_seed_`
- int32\_t `repeat_`
- bool `recreate_environments_when_repeating_`
- bool `shuffle_`
- int32\_t `stack_trace_depth_`
- std::string `stream_result_to_`
- bool `throw_on_failure_`

### 6.81.1 Constructor & Destructor Documentation

### 6.81.1.1 GTestFlagSaver()

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

### 6.81.1.2 ~GTestFlagSaver()

```
testing::internal::GTestFlagSaver::~GTestFlagSaver ( ) [inline]
```

## 6.81.2 Member Data Documentation

### 6.81.2.1 also\_run\_disabled\_tests\_

```
bool testing::internal::GTestFlagSaver::also_run_disabled_tests_ [private]
```

### 6.81.2.2 break\_on\_failure\_

```
bool testing::internal::GTestFlagSaver::break_on_failure_ [private]
```

### 6.81.2.3 brief\_

```
bool testing::internal::GTestFlagSaver::brief_ [private]
```

### 6.81.2.4 catch\_exceptions\_

```
bool testing::internal::GTestFlagSaver::catch_exceptions_ [private]
```

### 6.81.2.5 color\_

```
std::string testing::internal::GTestFlagSaver::color_ [private]
```

### 6.81.2.6 `death_test_style_`

```
std::string testing::internal::GTestFlagSaver::death_test_style_ [private]
```

### 6.81.2.7 `death_test_use_fork_`

```
bool testing::internal::GTestFlagSaver::death_test_use_fork_ [private]
```

### 6.81.2.8 `fail_fast_`

```
bool testing::internal::GTestFlagSaver::fail_fast_ [private]
```

### 6.81.2.9 `filter_`

```
std::string testing::internal::GTestFlagSaver::filter_ [private]
```

### 6.81.2.10 `internal_run_death_test_`

```
std::string testing::internal::GTestFlagSaver::internal_run_death_test_ [private]
```

### 6.81.2.11 `list_tests_`

```
bool testing::internal::GTestFlagSaver::list_tests_ [private]
```

### 6.81.2.12 `output_`

```
std::string testing::internal::GTestFlagSaver::output_ [private]
```

### 6.81.2.13 `print_time_`

```
bool testing::internal::GTestFlagSaver::print_time_ [private]
```

**6.81.2.14 print\_utf8\_**

```
bool testing::internal::GTestFlagSaver::print_utf8_ [private]
```

**6.81.2.15 random\_seed\_**

```
int32_t testing::internal::GTestFlagSaver::random_seed_ [private]
```

**6.81.2.16 recreate\_environments\_when\_repeating\_**

```
bool testing::internal::GTestFlagSaver::recreate_environments_when_repeating_ [private]
```

**6.81.2.17 repeat\_**

```
int32_t testing::internal::GTestFlagSaver::repeat_ [private]
```

**6.81.2.18 shuffle\_**

```
bool testing::internal::GTestFlagSaver::shuffle_ [private]
```

**6.81.2.19 stack\_trace\_depth\_**

```
int32_t testing::internal::GTestFlagSaver::stack_trace_depth_ [private]
```

**6.81.2.20 stream\_result\_to\_**

```
std::string testing::internal::GTestFlagSaver::stream_result_to_ [private]
```

### 6.81.2.21 `throw_on_failure_`

```
bool testing::internal::GTestFlagSaver::throw_on_failure_ [private]
```

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

- build/\_deps/googletest-src/googletest/src/gtest-internal-inl.h

## 6.82 `testing::gmock_matchers_test::GtestGreaterThanMatcher< T >` Struct Template Reference

```
#include <gmock-matchers-test.h>
```

### Public Types

- using `is_gtest_matcher` = void

### Public Member Functions

- void `DescribeTo` (ostream \*os) const
- void `DescribeNegationTo` (ostream \*os) const
- bool `MatchAndExplain` (T lhs, MatchResultListener \*listener) const

### Public Attributes

- T `rhs`

### 6.82.1 Member Typedef Documentation

#### 6.82.1.1 `is_gtest_matcher`

```
template<typename T >
using testing::gmock_matchers_test::GtestGreaterThanMatcher< T >::is_gtest_matcher = void
```

### 6.82.2 Member Function Documentation

### 6.82.2.1 DescribeNegationTo()

```
template<typename T >
void testing::gmock_matchers_test::GtestGreaterThanMatcher< T >::DescribeNegationTo (
    ostream * os ) const [inline]
```

### 6.82.2.2 DescribeTo()

```
template<typename T >
void testing::gmock_matchers_test::GtestGreaterThanMatcher< T >::DescribeTo (
    ostream * os ) const [inline]
```

### 6.82.2.3 MatchAndExplain()

```
template<typename T >
bool testing::gmock_matchers_test::GtestGreaterThanMatcher< T >::MatchAndExplain (
    T lhs,
    MatchResultListener * listener ) const [inline]
```

## 6.82.3 Member Data Documentation

### 6.82.3.1 rhs

```
template<typename T >
T testing::gmock_matchers_test::GtestGreaterThanMatcher< T >::rhs
```

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

- build/\_deps/googletest-src/googlemock/test/gmock-matchers\_test.h

## 6.83 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

- `GTestLog (const GTestLog &)=delete`
- `GTestLog & operator= (const GTestLog &)=delete`

## Private Attributes

- `const GTestLogSeverity severity_`

### 6.83.1 Constructor & Destructor Documentation

#### 6.83.1.1 `GTestLog()` [1/2]

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

#### 6.83.1.2 `~GTestLog()`

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

#### 6.83.1.3 `GTestLog()` [2/2]

```
testing::internal::GTestLog::GTestLog (
    const GTestLog & )  [private], [delete]
```

### 6.83.2 Member Function Documentation

#### 6.83.2.1 `GetStream()`

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

### 6.83.2.2 operator=( )

```
GTestLog& testing::internal::GTestLog::operator= (
    const GTestLog & ) [private], [delete]
```

## 6.83.3 Member Data Documentation

### 6.83.3.1 severity\_

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

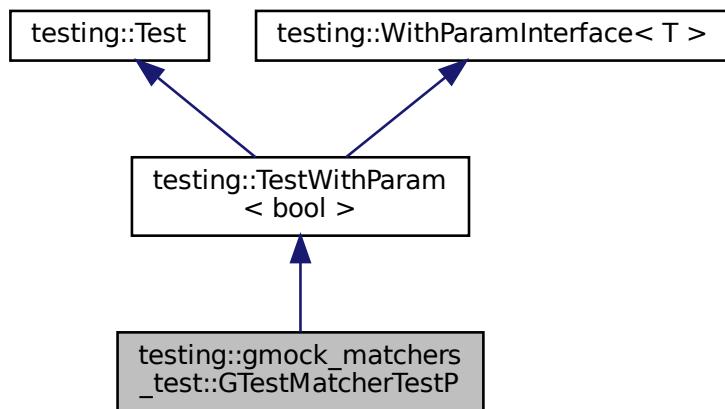
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-port.h

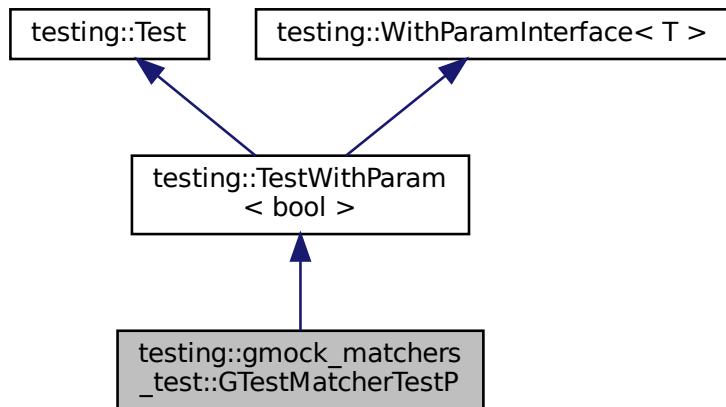
## 6.84 testing::gmock\_matchers\_test::GTestMatcherTestP Class Reference

```
#include <gmock-matchers-test.h>
```

Inheritance diagram for testing::gmock\_matchers\_test::GTestMatcherTestP:



Collaboration diagram for testing::gmock\_matchers\_test::GTestMatcherTestP:



## Public Member Functions

- template<typename T >  
`Matcher< T > GreaterThan (T n)`

## Public Attributes

- const bool `use_gtest_matcher_ = GetParam()`

## Additional Inherited Members

### 6.84.1 Member Function Documentation

#### 6.84.1.1 GreaterThan()

```
template<typename T >
Matcher<T> testing::gmock_matchers_test::GTestMatcherTestP::GreaterThan (
    T n ) [inline]
```

### 6.84.2 Member Data Documentation

#### 6.84.2.1 use\_gtest\_matcher\_

```
const bool testing::gmock_matchers_test::GTestMatcherTestP::use_gtest_matcher_ = GetParam()
```

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

- build/\_deps/googletest-src/gmock/test/gmock-matchers\_test.h

## 6.85 testing::internal::GTestMutexLock Class Reference

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

### Public Member Functions

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

#### 6.85.1 Constructor & Destructor Documentation

##### 6.85.1.1 GTestMutexLock()

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

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

- build/\_deps/googletest-src/gtest/include/gtest/internal/gtest-port.h

## 6.86 testing::internal::GTestNonCopyable Class Reference

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

### Public Member Functions

- [GTestNonCopyable \(\)=default](#)
- [GTestNonCopyable \(const GTestNonCopyable &\)=delete](#)
- [GTestNonCopyable & operator= \(const GTestNonCopyable &\)=delete](#)
- [~GTestNonCopyable \(\)=default](#)

#### 6.86.1 Constructor & Destructor Documentation

### 6.86.1.1 GTestNonCopyable() [1/2]

```
testing::internal::GTestNonCopyable::GTestNonCopyable ( ) [default]
```

### 6.86.1.2 GTestNonCopyable() [2/2]

```
testing::internal::GTestNonCopyable::GTestNonCopyable (
    const GTestNonCopyable & ) [delete]
```

### 6.86.1.3 ~GTestNonCopyable()

```
testing::internal::GTestNonCopyable::~GTestNonCopyable ( ) [default]
```

## 6.86.2 Member Function Documentation

### 6.86.2.1 operator=()

```
GTestNonCopyable& testing::internal::GTestNonCopyable::operator= (
    const GTestNonCopyable & ) [delete]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

## 6.87 testing::internal::HasDebugStringAndShortDebugString< T > Class Template Reference

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

### Static Public Attributes

- static constexpr bool value

### Private Types

- using HasDebugStringType = decltype(CheckDebugString< T >(nullptr))
- using HasShortDebugStringType = decltype(CheckShortDebugString< T >(nullptr))

## Static Private Member Functions

- template<typename C >  
static auto **CheckDebugString** (C \*) -> typename std::is\_same< std::string, decltype(std::declval< const C >().DebugString())>::type
- template<typename >  
static std::false\_type **CheckDebugString** (...)
- template<typename C >  
static auto **CheckShortDebugString** (C \*) -> typename std::is\_same< std::string, decltype(std::declval< const C >().ShortDebugString())>::type
- template<typename >  
static std::false\_type **CheckShortDebugString** (...)

### 6.87.1 Member Typedef Documentation

#### 6.87.1.1 HasDebugStringType

```
template<typename T >
using testing::internal::HasDebugStringAndShortDebugString< T >::HasDebugStringType = decltype(CheckDebugString
[private]
```

#### 6.87.1.2 HasShortDebugStringType

```
template<typename T >
using testing::internal::HasDebugStringAndShortDebugString< T >::HasShortDebugStringType =
decltype(CheckShortDebugString<T>(nullptr)) [private]
```

### 6.87.2 Member Function Documentation

#### 6.87.2.1 CheckDebugString() [1/2]

```
template<typename T >
template<typename >
static std::false_type testing::internal::HasDebugStringAndShortDebugString< T >::CheckDebugString (
    ... ) [static], [private]
```

### 6.87.2.2 CheckDebugString() [2/2]

```
template<typename T >
template<typename C >
static auto testing::internal::HasDebugStringAndShortDebugString< T >::CheckDebugString (
    C * ) -> typename std::is_same< std::string, decltype(std::declval< const C
>().DebugString())>::type [static], [private]
```

### 6.87.2.3 CheckShortDebugString() [1/2]

```
template<typename T >
template<typename >
static std::false_type testing::internal::HasDebugStringAndShortDebugString< T >::CheckShortDebugString (
    ... ) [static], [private]
```

### 6.87.2.4 CheckShortDebugString() [2/2]

```
template<typename T >
template<typename C >
static auto testing::internal::HasDebugStringAndShortDebugString< T >::CheckShortDebugString (
    C * ) -> typename std::is_same< std::string, decltype(std::declval< const C
>().ShortDebugString())>::type [static], [private]
```

## 6.87.3 Member Data Documentation

### 6.87.3.1 value

```
template<typename T >
constexpr bool testing::internal::HasDebugStringAndShortDebugString< T >::value [static],
[constexpr]
```

#### Initial value:

```
= HasDebugStringType::value && HasShortDebugStringType::value
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.88 testing::internal::ImplBase< Impl >::Holder Struct Reference

```
#include <gmock-actions.h>
```

## Public Member Functions

- `operator const Impl & () const`

## Public Attributes

- `std::shared_ptr< Impl > ptr`

### 6.88.1 Member Function Documentation

#### 6.88.1.1 `operator const Impl &()`

```
template<typename Impl >
testing::internal::ImplBase< Impl >::Holder::operator const Impl & () const [inline], [explicit]
```

### 6.88.2 Member Data Documentation

#### 6.88.2.1 `ptr`

```
template<typename Impl >
std::shared_ptr<Impl> testing::internal::ImplBase< Impl >::Holder::ptr
```

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

- `build/_deps/googletest-src/googletest/include/gtest/internal/gtest.h`

## 6.89 testing::internal::Ignore< size\_t > Struct Template Reference

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

## Public Member Functions

- `Ignore (...)`

### 6.89.1 Constructor & Destructor Documentation

### 6.89.1.1 Ignore()

```
template<size_t >
testing::internal::Ignore< size_t >::Ignore (
    ... )
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.90 testing::Action< R(Args...) >::IgnoreArgs< FunctionImpl > Struct Template Reference

### Public Member Functions

- template<typename... InArgs>  
[Result operator\(\)](#) (const InArgs &...) const

### Public Attributes

- FunctionImpl [function\\_impl](#)

### 6.90.1 Member Function Documentation

#### 6.90.1.1 operator()()

```
template<typename R , typename... Args>
template<typename FunctionImpl >
template<typename... InArgs>
Result testing::Action< R\(Args...\) >::IgnoreArgs< FunctionImpl >::operator\(\) (
    const InArgs & ... ) const [inline]
```

### 6.90.2 Member Data Documentation

#### 6.90.2.1 function\_impl

```
template<typename R , typename... Args>
template<typename FunctionImpl >
FunctionImpl testing::Action< R\(Args...\) >::IgnoreArgs< FunctionImpl >::function\_impl
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.91 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 &)

#### 6.91.1 Constructor & Destructor Documentation

##### 6.91.1.1 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:

- build/\_deps/googletest-src/googletest/include/gtest/internal/[gtest-internal.h](#)

## 6.92 testing::OnceAction< Result(Args...)>::IgnoreIncomingArguments< Callable > Struct Template Reference

### Public Member Functions

- [internal::call\\_result\\_t](#)< Callable > [operator\(\)](#) (Args &&...)

### Public Attributes

- Callable [callable](#)

#### 6.92.1 Member Function Documentation

### 6.92.1.1 operator()()

```
template<typename Result , typename... Args>
template<typename Callable >
internal::call_result_t<Callable> testing::OnceAction< Result(Args...)>::IgnoreIncoming<-
Arguments< Callable >::operator() (
    Args && ... ) [inline]
```

## 6.92.2 Member Data Documentation

### 6.92.2.1 callable

```
template<typename Result , typename... Args>
template<typename Callable >
Callable testing::OnceAction< Result(Args...)>::IgnoreIncomingArguments< Callable >::callable
```

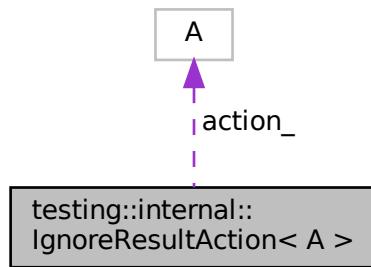
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gmock/gmock-actions.h

## 6.93 testing::internal::IgnoreResultAction< A > Class Template Reference

```
#include <gmock-actions.h>
```

Collaboration diagram for testing::internal::IgnoreResultAction< A >:



## Classes

- class [Impl](#)

## Public Member Functions

- [IgnoreResultAction](#) (const A &action)
- template<typename F >  
[operator Action< F >](#) () const

## Private Attributes

- const A [action\\_](#)

### 6.93.1 Constructor & Destructor Documentation

#### 6.93.1.1 IgnoreResultAction()

```
template<typename A >
testing::internal::IgnoreResultAction< A >::IgnoreResultAction (
    const A & action ) [inline], [explicit]
```

### 6.93.2 Member Function Documentation

#### 6.93.2.1 operator Action< F >()

```
template<typename A >
template<typename F >
testing::internal::IgnoreResultAction< A >::operator Action< F > ( ) const [inline]
```

### 6.93.3 Member Data Documentation

#### 6.93.3.1 action\_

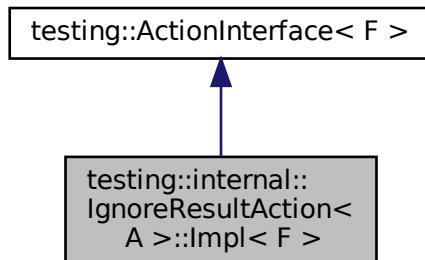
```
template<typename A >
const A testing::internal::IgnoreResultAction< A >::action\_ [private]
```

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

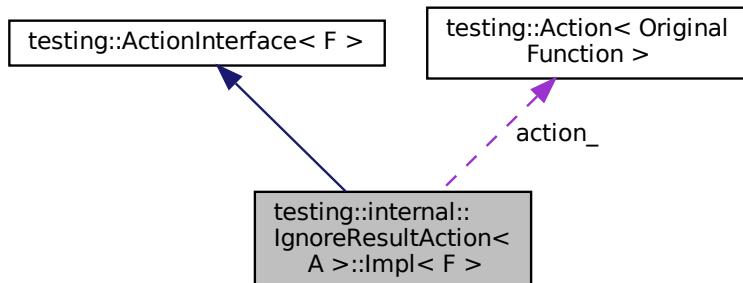
- build/\_deps/googletest-src/googletest/include/gtest/[gtest-actions.h](#)

## 6.94 testing::internal::IgnoreResultAction< A >::Impl< F > Class Template Reference

Inheritance diagram for testing::internal::IgnoreResultAction< A >::Impl< F >:



Collaboration diagram for testing::internal::IgnoreResultAction< A >::Impl< F >:



### Public Types

- [typedef internal::Function< F >::Result Result](#)
- [typedef internal::Function< F >::ArgumentTuple ArgumentTuple](#)

### Public Member Functions

- [Impl \(const A &action\)](#)
- [void Perform \(const ArgumentTuple &args\) override](#)

### Private Types

- [typedef internal::Function< F >::MakeResultIgnoredValue OriginalFunction](#)

## Private Attributes

- const `Action< OriginalFunction > action_`

### 6.94.1 Member Typedef Documentation

#### 6.94.1.1 ArgumentTuple

```
template<typename A >
template<typename F >
typedef internal::Function<F>::ArgumentTuple testing::internal::IgnoreResultAction< A >::Impl< F >::ArgumentTuple
```

#### 6.94.1.2 OriginalFunction

```
template<typename A >
template<typename F >
typedef internal::Function<F>::MakeResultIgnoredValue testing::internal::IgnoreResultAction< A >::Impl< F >::OriginalFunction [private]
```

#### 6.94.1.3 Result

```
template<typename A >
template<typename F >
typedef internal::Function<F>::Result testing::internal::IgnoreResultAction< A >::Impl< F >::Result
```

### 6.94.2 Constructor & Destructor Documentation

#### 6.94.2.1 Impl()

```
template<typename A >
template<typename F >
testing::internal::IgnoreResultAction< A >::Impl< F >::Impl (
    const A & action ) [inline], [explicit]
```

### 6.94.3 Member Function Documentation

### 6.94.3.1 Perform()

```
template<typename A >
template<typename F >
void testing::internal::IgnoreResultAction< A >::Impl< F >::Perform (
    const ArgumentTuple & args ) [inline], [override], [virtual]
```

Implements [testing::ActionInterface< F >](#).

## 6.94.4 Member Data Documentation

### 6.94.4.1 action\_

```
template<typename A >
template<typename F >
const Action<OriginalFunction> testing::internal::IgnoreResultAction< A >::Impl< F >::action_ [private]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest.h

## 6.95 testing::internal::ReturnAction< R >::Impl< U > Class Template Reference

### Classes

- struct [State](#)

### Public Member Functions

- [Impl](#) (R &&input\_value)
- [Impl](#) (const R &input\_value)
- U [operator\(\)](#) () &&
- U [operator\(\)](#) () const &

### Private Attributes

- const std::shared\_ptr< [State](#) > [state\\_](#)

## 6.95.1 Constructor & Destructor Documentation

### 6.95.1.1 Impl() [1/2]

```
template<typename R >
template<typename U >
testing::internal::ReturnAction< R >::Impl< U >::Impl (
    R && input_value ) [inline], [explicit]
```

### 6.95.1.2 Impl() [2/2]

```
template<typename R >
template<typename U >
testing::internal::ReturnAction< R >::Impl< U >::Impl (
    const R & input_value ) [inline], [explicit]
```

## 6.95.2 Member Function Documentation

### 6.95.2.1 operator()() [1/2]

```
template<typename R >
template<typename U >
U testing::internal::ReturnAction< R >::Impl< U >::operator() ( ) && [inline]
```

### 6.95.2.2 operator()() [2/2]

```
template<typename R >
template<typename U >
U testing::internal::ReturnAction< R >::Impl< U >::operator() ( ) const & [inline]
```

### **6.95.3 Member Data Documentation**

### 6.95.3.1 state\_

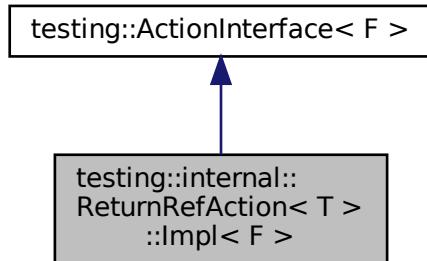
```
template<typename R >
template<typename U >
const std::shared_ptr<State> testing::internal::ReturnAction< R >::Impl< U >::state_ [private]
```

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

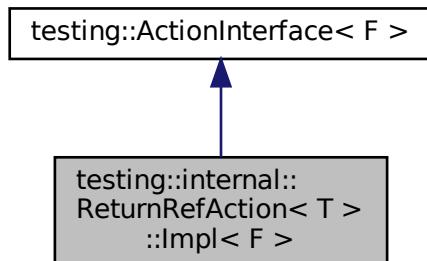
- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.96 testing::internal::ReturnRefAction< T >::Impl< F > Class Template Reference

Inheritance diagram for testing::internal::ReturnRefAction< T >::Impl< F >:



Collaboration diagram for testing::internal::ReturnRefAction< T >::Impl< F >:



### Public Types

- [typedef Function< F >::Result Result](#)
- [typedef Function< F >::ArgumentTuple ArgumentTuple](#)

### Public Member Functions

- [Impl \(T &ref\)](#)
- [Result Perform \(const ArgumentTuple &\) override](#)

### Private Attributes

- T & [ref\\_](#)

## 6.96.1 Member Typedef Documentation

### 6.96.1.1 ArgumentTuple

```
template<typename T >
template<typename F >
typedef Function<F>::ArgumentTuple testing::internal::ReturnRefAction< T >::Impl< F >::ArgumentTuple
```

### 6.96.1.2 Result

```
template<typename T >
template<typename F >
typedef Function<F>::Result testing::internal::ReturnRefAction< T >::Impl< F >::Result
```

## 6.96.2 Constructor & Destructor Documentation

### 6.96.2.1 Impl()

```
template<typename T >
template<typename F >
testing::internal::ReturnRefAction< T >::Impl< F >::Impl (
    T & ref ) [inline], [explicit]
```

## 6.96.3 Member Function Documentation

### 6.96.3.1 Perform()

```
template<typename T >
template<typename F >
Result testing::internal::ReturnRefAction< T >::Impl< F >::Perform (
    const ArgumentTuple & ) [inline], [override], [virtual]
```

Implements [testing::ActionInterface< F >](#).

## 6.96.4 Member Data Documentation

#### 6.96.4.1 ref\_

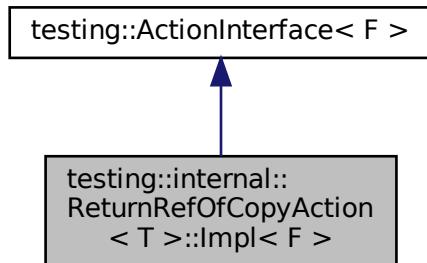
```
template<typename T>
template<typename F>
T& testing::internal::ReturnRefAction<T>::Impl<F>::ref_ [private]
```

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

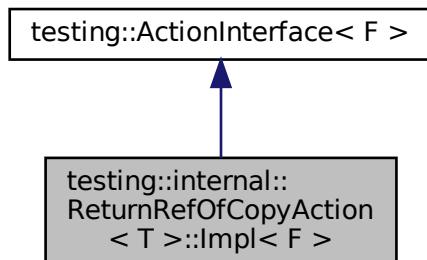
- build/\_deps/googletest-src/googletest/include/gtest/gmock-actions.h

## 6.97 testing::internal::ReturnRefOfCopyAction< T >::Impl< F > Class Template Reference

Inheritance diagram for testing::internal::ReturnRefOfCopyAction< T >::Impl< F >:



Collaboration diagram for testing::internal::ReturnRefOfCopyAction< T >::Impl< F >:



## Public Types

- `typedef Function< F >::Result Result`
  - `typedef Function< F >::ArgumentTuple ArgumentTuple`

## Public Member Functions

- `Impl` (`const T &value`)
  - `Result Perform` (`const ArgumentTuple &`) override

## Private Attributes

- T value

## 6.97.1 Member Typedef Documentation

### 6.97.1.1 ArgumentTuple

```
template<typename T >
template<typename F >
typedef Function<F>::ArgumentTuple testing::internal::ReturnRefOfCopyAction< T >::Impl< F
>::ArgumentTuple
```

### **6.97.1.2 Result**

```
template<typename T >
template<typename F >
typedef Function<F>::Result testing::internal::ReturnRefOfCopyAction< T >::Impl< F >::Result
```

## 6.97.2 Constructor & Destructor Documentation

### 6.97.2.1 `Impl()`

```
template<typename T >
template<typename F >
testing::internal::ReturnRefOfCopyAction< T >::Impl< F >::Impl (
    const T & value ) [inline], [explicit]
```

### 6.97.3 Member Function Documentation

#### 6.97.3.1 Perform()

```
template<typename T >
template<typename F >
Result testing::internal::ReturnRefOfCopyAction< T >::Impl< F >::Perform (
    const ArgumentTuple & ) [inline], [override], [virtual]
```

Implements [testing::ActionInterface< F >](#).

### 6.97.4 Member Data Documentation

#### 6.97.4.1 value\_

```
template<typename T >
template<typename F >
T testing::internal::ReturnRefOfCopyAction< T >::Impl< F >::value_ [private]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gmock-actions.h

## 6.98 testing::internal::ImplBase< Impl > Struct Template Reference

```
#include <gmock-actions.h>
```

### Classes

- struct [Holder](#)

### Public Types

- using [type](#) = typename std::conditional< std::is\_constructible< Impl >::value, Impl, [Holder](#) >::[type](#)

### 6.98.1 Member Typedef Documentation

### 6.98.1.1 type

```
template<typename Impl>
using testing::internal::ImplBase<Impl>::type = typename std::conditional<std::is_constructible<Impl><::value, Impl, Holder>::type
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.99 testing::internal::IndexSequence< Is > Struct Template Reference

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

### Public Types

- using `type` = `IndexSequence`

### 6.99.1 Member Typedef Documentation

#### 6.99.1.1 type

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

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

- build/\_deps/googletest-src/gtest/include/gtest/internal/gtest-internal.h

## 6.100 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`

## 6.100.1 Constructor & Destructor Documentation

### 6.100.1.1 InstantiationInfo()

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

## 6.100.2 Member Data Documentation

### 6.100.2.1 file

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

### 6.100.2.2 generator

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

### 6.100.2.3 line

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

### 6.100.2.4 name

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

### 6.100.2.5 name\_func

```
template<class TestSuite >
ParamNameGeneratorFunc* testing::internal::ParameterizedTestSuiteInfo< TestSuite >::Instantiation<-
Info::name_func
```

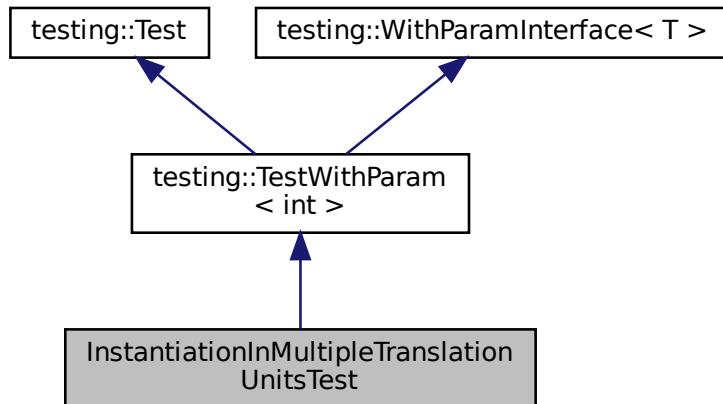
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

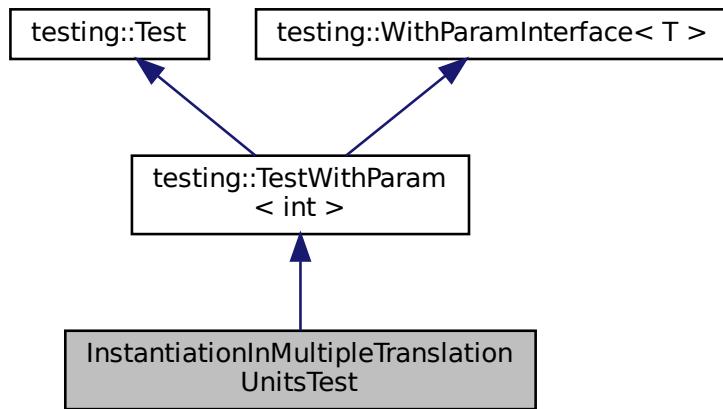
## 6.101 InstantiationInMultipleTranslationUnitsTest Class Reference

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

Inheritance diagram for InstantiationInMultipleTranslationUnitsTest:



Collaboration diagram for InstantiationInMultipleTranslationUnitsTest:



### Additional Inherited Members

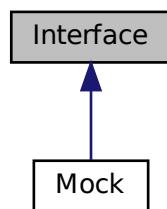
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/test/[googletest-param-test-test.h](#)

## 6.102 Interface Class Reference

```
#include <gmock_link_test.h>
```

Inheritance diagram for Interface:



## Public Member Functions

- virtual `~Interface ()`
- virtual void `VoidFromString (char *str)=0`
- virtual char \* `StringFromString (char *str)=0`
- virtual int `IntFromString (char *str)=0`
- virtual int & `IntRefFromString (char *str)=0`
- virtual void `VoidFromFunc (void(*func)(char *str))=0`
- virtual void `VoidFromIntRef (int &n)=0`
- virtual void `VoidFromFloat (float n)=0`
- virtual void `VoidFromDouble (double n)=0`
- virtual void `VoidFromVector (const std::vector< int > &v)=0`

### 6.102.1 Constructor & Destructor Documentation

#### 6.102.1.1 `~Interface()`

```
virtual Interface::~Interface ( ) [inline], [virtual]
```

### 6.102.2 Member Function Documentation

#### 6.102.2.1 `IntFromString()`

```
virtual int Interface::IntFromString (
    char * str ) [pure virtual]
```

#### 6.102.2.2 `IntRefFromString()`

```
virtual int& Interface::IntRefFromString (
    char * str ) [pure virtual]
```

#### 6.102.2.3 `StringFromString()`

```
virtual char* Interface::StringFromString (
    char * str ) [pure virtual]
```

#### 6.102.2.4 VoidFromDouble()

```
virtual void Interface::VoidFromDouble (
    double n ) [pure virtual]
```

#### 6.102.2.5 VoidFromFloat()

```
virtual void Interface::VoidFromFloat (
    float n ) [pure virtual]
```

#### 6.102.2.6 VoidFromFunc()

```
virtual void Interface::VoidFromFunc (
    void(*)(char *str) func ) [pure virtual]
```

#### 6.102.2.7 VoidFromIntRef()

```
virtual void Interface::VoidFromIntRef (
    int & n ) [pure virtual]
```

#### 6.102.2.8 VoidFromString()

```
virtual void Interface::VoidFromString (
    char * str ) [pure virtual]
```

#### 6.102.2.9 VoidFromVector()

```
virtual void Interface::VoidFromVector (
    const std::vector< int > & v ) [pure virtual]
```

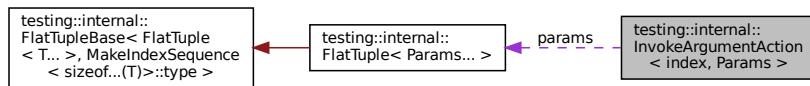
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/test/gmock\_link\_test.h

## 6.103 testing::internal::InvokeArgumentAction< index, Params > Struct Template Reference

```
#include <gmock-more-actions.h>
```

Collaboration diagram for testing::internal::InvokeArgumentAction< index, Params >:



### Public Member Functions

- template<typename... Args, typename = typename std::enable\_if<(index < sizeof...(Args))>::type>  
auto [operator\(\)](#) (Args &&... args) const -> decltype([internal::InvokeArgument](#)(std::get< index >(std::forward\_as\_tuple(std::forward< Args >(args)...)), std::declval< const Params & >(...)))

### Public Attributes

- [internal::FlatTuple< Params... > params](#)

#### 6.103.1 Member Function Documentation

##### 6.103.1.1 [operator\(\)](#)

```
template<std::size_t index, typename... Params>
template<typename... Args, typename = typename std::enable_if<(index < sizeof...(Args))>::type>
auto testing::internal::InvokeArgumentAction< index, Params >::operator() (
    Args &&... args) const -> decltype(internal::InvokeArgument( std::get<index>(std::forward_as_tuple(std::forward<Args>(args)...)), std::declval<const Params&>(...))) [inline]
```

#### 6.103.2 Member Data Documentation

##### 6.103.2.1 [params](#)

```
template<std::size_t index, typename... Params>
internal::FlatTuple<Params...> testing::internal::InvokeArgumentAction< index, Params >::params
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/[gmock-more-actions.h](#)

## 6.104 InvokeHelper Class Reference

```
#include <gmock_link_test.h>
```

### Public Member Functions

- void [VoidFromVoid \(\)](#)
- void [VoidFromString \(char \\*\)](#)

### Static Public Member Functions

- static void [StaticVoidFromVoid \(\)](#)
- static void [StaticVoidFromString \(char \\*\)](#)
- static int [StaticIntFromString \(char \\*\)](#)
- static bool [StaticBoolFromString \(const char \\*\)](#)

#### 6.104.1 Member Function Documentation

##### 6.104.1.1 StaticBoolFromString()

```
static bool InvokeHelper::StaticBoolFromString (
    const char * ) [inline], [static]
```

##### 6.104.1.2 StaticIntFromString()

```
static int InvokeHelper::StaticIntFromString (
    char * ) [inline], [static]
```

##### 6.104.1.3 StaticVoidFromString()

```
static void InvokeHelper::StaticVoidFromString (
    char * ) [inline], [static]
```

##### 6.104.1.4 StaticVoidFromVoid()

```
static void InvokeHelper::StaticVoidFromVoid ( ) [inline], [static]
```

### 6.104.1.5 VoidFromString()

```
void InvokeHelper::VoidFromString (
    char * ) [inline]
```

### 6.104.1.6 VoidFromVoid()

```
void InvokeHelper::VoidFromVoid () [inline]
```

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

- build/\_deps/googletest-src/gmock/test/gmock\_link\_test.h

## 6.105 testing::internal::InvokeMethodAction< Class, MethodPtr > Struct Template Reference

```
#include <gmock-actions.h>
```

### Public Member Functions

- template<typename... Args>  
auto [operator\(\)](#) (Args &&... args) const -> decltype(([obj\\_ptr](#)->\*[method\\_ptr](#))(std::forward<Args>(args)...))

### Public Attributes

- Class \*const [obj\\_ptr](#)
- const MethodPtr [method\\_ptr](#)

## 6.105.1 Member Function Documentation

### 6.105.1.1 operator()()

```
template<class Class , typename MethodPtr >
template<typename... Args>
auto testing::internal::InvokeMethodAction< Class, MethodPtr >::operator() (
    Args &&... args ) const -> decltype((obj\_ptr->*method\_ptr)(std::forward<Args>(args)...))
[inline]
```

## 6.105.2 Member Data Documentation

### 6.105.2.1 method\_ptr

```
template<class Class , typename MethodPtr >
const MethodPtr testing::internal::InvokeMethodAction< Class, MethodPtr >::method_ptr
```

### 6.105.2.2 obj\_ptr

```
template<class Class , typename MethodPtr >
Class* const testing::internal::InvokeMethodAction< Class, MethodPtr >::obj_ptr
```

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

- build/\_deps/googletest-src/googletest/include/gmock/gmock-actions.h

## 6.106 testing::internal::InvokeMethodWithoutArgsAction< Class, MethodPtr > Struct Template Reference

```
#include <gmock-actions.h>
```

### Public Types

- using `ReturnType` = decltype((std::declval< Class \* >() -> \*std::declval< MethodPtr >())())

### Public Member Functions

- template<typename... Args>  
`ReturnType operator()` (const Args &...) const

### Public Attributes

- `Class *const obj_ptr`
- `const MethodPtr method_ptr`

## 6.106.1 Member Typedef Documentation

### 6.106.1.1 ReturnType

```
template<class Class , typename MethodPtr >
using testing::internal::InvokeMethodWithoutArgsAction< Class, MethodPtr >::ReturnType =
decltype((std::declval<Class*>() -> *std::declval<MethodPtr>())())
```

## 6.106.2 Member Function Documentation

### 6.106.2.1 operator()()

```
template<class Class , typename MethodPtr >
template<typename... Args>
ReturnType testing::internal::InvokeMethodWithoutArgsAction< Class, MethodPtr >::operator() (
    const Args & ... ) const [inline]
```

## 6.106.3 Member Data Documentation

### 6.106.3.1 method\_ptr

```
template<class Class , typename MethodPtr >
const MethodPtr testing::internal::InvokeMethodWithoutArgsAction< Class, MethodPtr >::method_ptr
```

### 6.106.3.2 obj\_ptr

```
template<class Class , typename MethodPtr >
Class* const testing::internal::InvokeMethodWithoutArgsAction< Class, MethodPtr >::obj_ptr
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest.h

## 6.107 testing::internal::InvokeWithoutArgsAction< FunctionImpl > Struct Template Reference

```
#include <gmock-actions.h>
```

### Public Member Functions

- template<typename... Args>  
auto **operator()** (const Args &...) -> decltype(**function\_impl()**)

### Public Attributes

- FunctionImpl **function\_impl**

## 6.107.1 Member Function Documentation

### 6.107.1.1 operator()()

```
template<typename FunctionImpl >
template<typename... Args>
auto testing::internal::InvokeWithoutArgsAction< FunctionImpl >::operator() (
    const Args & ... ) -> decltype(function_impl()) [inline]
```

## 6.107.2 Member Data Documentation

### 6.107.2.1 function\_impl

```
template<typename FunctionImpl >
FunctionImpl testing::internal::InvokeWithoutArgsAction< FunctionImpl >::function_impl
```

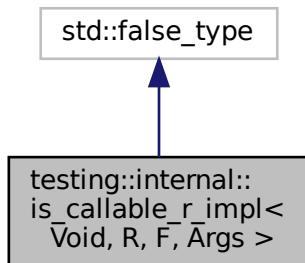
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

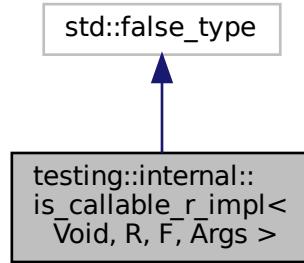
## 6.108 testing::internal::is\_callable\_r\_impl< Void, R, F, Args > Struct Template Reference

```
#include <gmock-actions.h>
```

Inheritance diagram for testing::internal::is\_callable\_r\_impl< Void, R, F, Args >:



Collaboration diagram for testing::internal::is\_callable\_r\_impl< Void, R, F, Args >:



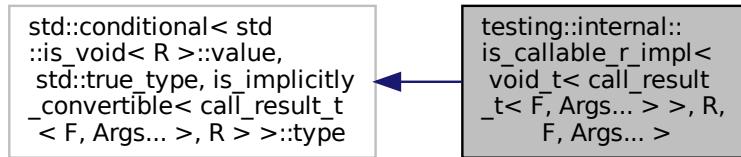
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gmock/gmock-actions.h

## **6.109 testing::internal::is\_callable\_r\_impl< void\_t< call\_result\_t< F, Args... >>, R, F, Args... > Struct Template Reference**

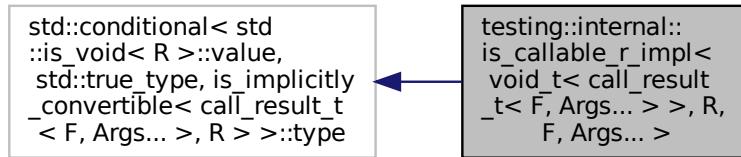
```
#include <gmock-actions.h>
```

Inheritance diagram for testing::internal::is\_callable\_r\_impl< void\_t< call\_result\_t< F, Args... >>, R, F, Args... >:



Collaboration diagram for testing::internal::is\_callable\_r\_impl< void\_t< call\_result\_t< F, Args... >>, R, F, Args... >:

>:



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

- build/\_deps/googletest-src/googletest/include/gmock/[gmock-actions.h](#)

## 6.110 `testing::internal::is_implicitly_convertible< From, To >` Struct Template Reference

```
#include <gmock-actions.h>
```

### Public Types

- using `type` = decltype(`TestImplicitConversion< From >(0)`)

### Static Public Attributes

- static constexpr bool `value` = `type::value`

### Static Private Member Functions

- template<typename T >  
static void `Accept` (T)
- template<typename T >  
static T `Make` ()
- template<typename T , typename = decltype(Accept<To>(Make<T>()))>  
static std::true\_type `TestImplicitConversion` (int)
- template<typename T >  
static std::false\_type `TestImplicitConversion` (...)

#### 6.110.1 Member Typedef Documentation

### 6.110.1.1 type

```
template<typename From , typename To >
using testing::internal::is_implicitly_convertible< From, To >::type = decltype(TestImplicitConversion<From>
```

## 6.110.2 Member Function Documentation

### 6.110.2.1 Accept()

```
template<typename From , typename To >
template<typename T >
static void testing::internal::is_implicitly_convertible< From, To >::Accept (
    T ) [static], [private]
```

### 6.110.2.2 Make()

```
template<typename From , typename To >
template<typename T >
static T testing::internal::is_implicitly_convertible< From, To >::Make () [static], [private]
```

### 6.110.2.3 TestImplicitConversion() [1/2]

```
template<typename From , typename To >
template<typename T >
static std::false_type testing::internal::is_implicitly_convertible< From, To >::TestImplicit↔
Conversion (
    ... ) [static], [private]
```

### 6.110.2.4 TestImplicitConversion() [2/2]

```
template<typename From , typename To >
template<typename T , typename = decltype(Accept<To>(Make<T>()))>
static std::true_type testing::internal::is_implicitly_convertible< From, To >::TestImplicit↔
Conversion (
    int ) [static], [private]
```

## 6.110.3 Member Data Documentation

### 6.110.3.1 value

```
template<typename From , typename To >
constexpr bool testing::internal::is_implicitly_convertible< From, To >::value = type::value
[static], [constexpr]
```

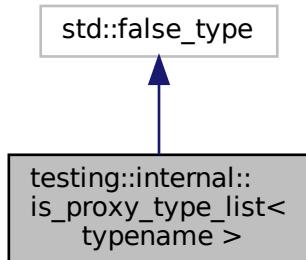
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-type-util.h

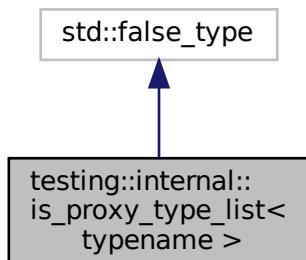
## 6.111 testing::internal::is\_proxy\_type\_list< typename > Struct Template Reference

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

Inheritance diagram for testing::internal::is\_proxy\_type\_list< typename >:



Collaboration diagram for testing::internal::is\_proxy\_type\_list< typename >:



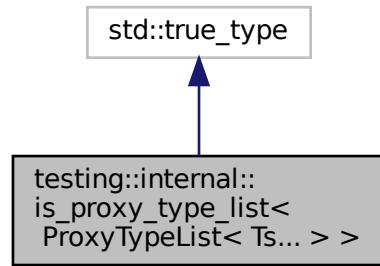
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-type-util.h

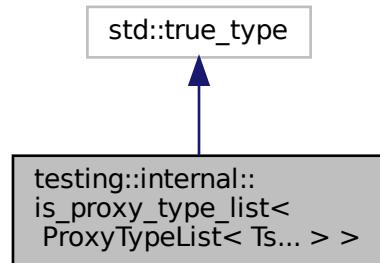
## 6.112 testing::internal::is\_proxy\_type\_list< ProxyTypeList< Ts... > > Struct Template Reference

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

Inheritance diagram for testing::internal::is\_proxy\_type\_list< ProxyTypeList< Ts... > >:



Collaboration diagram for testing::internal::is\_proxy\_type\_list< ProxyTypeList< Ts... > >:



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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-type-util.h

## 6.113 testing::internal::IsEmptyMatcher Class Reference

```
#include <gmock-more-matchers.h>
```

## Public Member Functions

- template<typename MatcheeContainerType >  
    bool [MatchAndExplain](#) (const MatcheeContainerType &c, MatchResultListener \*listener) const
- bool [MatchAndExplain](#) (const char \*s, MatchResultListener \*listener) const
- void [DescribeTo](#) (std::ostream \*os) const
- void [DescribeNegationTo](#) (std::ostream \*os) const

### 6.113.1 Member Function Documentation

#### 6.113.1.1 [DescribeNegationTo\(\)](#)

```
void testing::internal::IsEmptyMatcher::DescribeNegationTo (
    std::ostream * os ) const [inline]
```

#### 6.113.1.2 [DescribeTo\(\)](#)

```
void testing::internal::IsEmptyMatcher::DescribeTo (
    std::ostream * os ) const [inline]
```

#### 6.113.1.3 [MatchAndExplain\(\) \[1/2\]](#)

```
bool testing::internal::IsEmptyMatcher::MatchAndExplain (
    const char * s,
    MatchResultListener * listener ) const [inline]
```

#### 6.113.1.4 [MatchAndExplain\(\) \[2/2\]](#)

```
template<typename MatcheeContainerType >
bool testing::internal::IsEmptyMatcher::MatchAndExplain (
    const MatcheeContainerType & c,
    MatchResultListener * listener ) const [inline]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/[gmock-more-matchers.h](#)

## 6.114 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** (...)

#### 6.114.1 Member Function Documentation

##### 6.114.1.1 **test()** [1/3]

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

##### 6.114.1.2 **test()** [2/3]

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

##### 6.114.1.3 **test()** [3/3]

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

## 6.114.2 Member Data Documentation

### 6.114.2.1 value

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

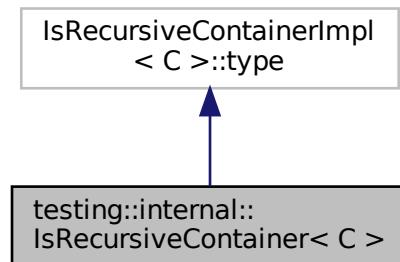
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

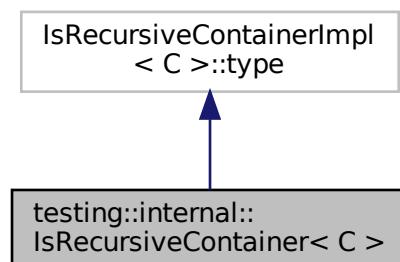
## 6.115 testing::internal::IsRecursiveContainer< C > Struct Template Reference

```
#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:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

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

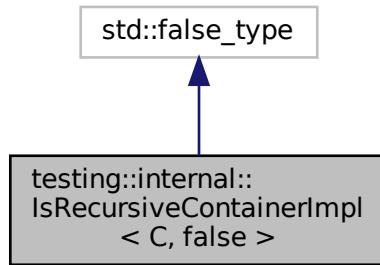
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

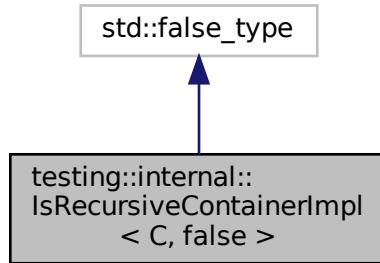
## 6.117 testing::internal::IsRecursiveContainerImpl< C, false > Struct Template Reference

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

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



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



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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.118 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` = std::is\_same< typename std::remove\_const< typename std::remove\_reference< `value_type`>::type, C >

#### 6.118.1 Member Typedef Documentation

##### 6.118.1.1 `type`

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

##### 6.118.1.2 `value_type`

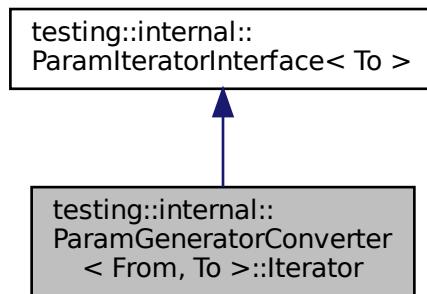
```
template<typename C >
using testing::internal::IsRecursiveContainerImpl< C, true >::value_type = decltype(*std::de-
clval<typename C::const_iterator>())
```

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

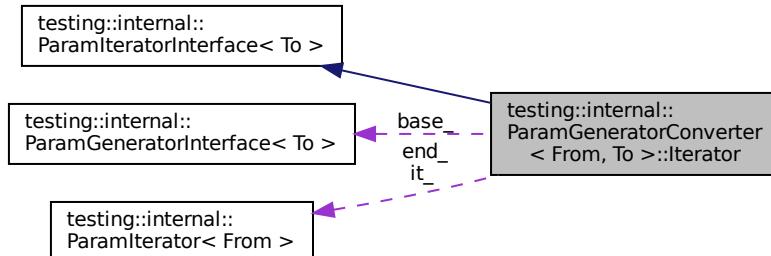
- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.119 testing::internal::ParamGeneratorConverter< From, To >::Iterator Class Reference

Inheritance diagram for testing::internal::ParamGeneratorConverter< From, To >::Iterator:



Collaboration diagram for testing::internal::ParamGeneratorConverter< From, To >::Iterator:



### Public Member Functions

- `Iterator (const ParamGeneratorInterface< To > *base, ParamIterator< From > it, ParamIterator< From > end)`
- `~Iterator () override`
- `const ParamGeneratorInterface< To > * BaseGenerator () const override`
- `void Advance () override`
- `ParamIteratorInterface< To > * Clone () const override`
- `const To * Current () const override`
- `bool Equals (const ParamIteratorInterface< To > &other) const override`

### Private Member Functions

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

## Private Attributes

- const `ParamGeneratorInterface< To > *const base_`
- `ParamIterator< From > it_`
- `ParamIterator< From > end_`
- `std::shared_ptr< To > value_`

### 6.119.1 Constructor & Destructor Documentation

#### 6.119.1.1 `Iterator()` [1/2]

```
template<typename From , typename To >
testing::internal::ParamGeneratorConverter< From, To >::Iterator::Iterator (
    const ParamGeneratorInterface< To > * base,
    ParamIterator< From > it,
    ParamIterator< From > end )  [inline]
```

#### 6.119.1.2 `~Iterator()`

```
template<typename From , typename To >
testing::internal::ParamGeneratorConverter< From, To >::Iterator::~Iterator ( )  [inline],
[override]
```

#### 6.119.1.3 `Iterator()` [2/2]

```
template<typename From , typename To >
testing::internal::ParamGeneratorConverter< From, To >::Iterator::Iterator (
    const Iterator & other )  [private], [default]
```

### 6.119.2 Member Function Documentation

#### 6.119.2.1 `Advance()`

```
template<typename From , typename To >
void testing::internal::ParamGeneratorConverter< From, To >::Iterator::Advance ( )  [inline],
[override], [virtual]
```

Implements `testing::internal::ParamIteratorInterface< To >`.

### 6.119.2.2 BaseGenerator()

```
template<typename From , typename To >
const ParamGeneratorInterface<To>* testing::internal::ParamGeneratorConverter< From, To >::Iterator::BaseGenerator ( ) const [inline], [override], [virtual]
```

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

### 6.119.2.3 Clone()

```
template<typename From , typename To >
ParamIteratorInterface<To>* testing::internal::ParamGeneratorConverter< From, To >::Iterator::Clone ( ) const [inline], [override], [virtual]
```

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

### 6.119.2.4 Current()

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

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

### 6.119.2.5 Equals()

```
template<typename From , typename To >
bool testing::internal::ParamGeneratorConverter< From, To >::Iterator::Equals (
    const ParamIteratorInterface< To > & other ) const [inline], [override]
```

## 6.119.3 Member Data Documentation

### 6.119.3.1 base\_

```
template<typename From , typename To >
const ParamGeneratorInterface<To>* const testing::internal::ParamGeneratorConverter< From, To >::Iterator::base_ [private]
```

### 6.119.3.2 end\_

```
template<typename From , typename To >
ParamIterator<From> testing::internal::ParamGeneratorConverter< From, To >::Iterator::end_<-
[private]
```

### 6.119.3.3 it\_

```
template<typename From , typename To >
ParamIterator<From> testing::internal::ParamGeneratorConverter< From, To >::Iterator::it_<-
[private]
```

### 6.119.3.4 value\_

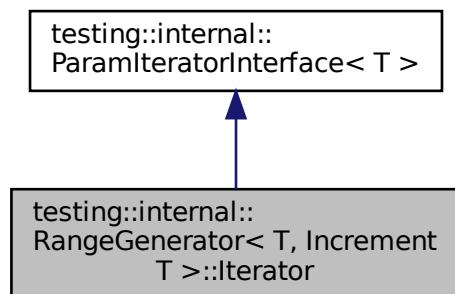
```
template<typename From , typename To >
std::shared_ptr<To> testing::internal::ParamGeneratorConverter< From, To >::Iterator::value<-
[private]
```

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

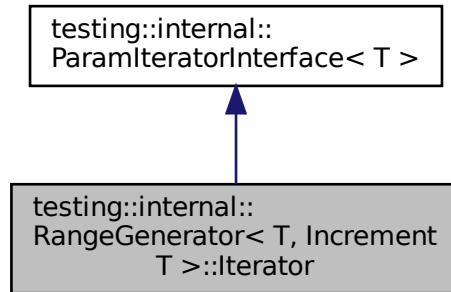
- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.120 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_`

### 6.120.1 Constructor & Destructor Documentation

### 6.120.1.1 `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]
```

### 6.120.1.2 `~Iterator()`

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

### 6.120.1.3 `Iterator()` [2/2]

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

## 6.120.2 Member Function Documentation

### 6.120.2.1 `Advance()`

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

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

### 6.120.2.2 `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 >](#).

### 6.120.2.3 Clone()

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

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

### 6.120.2.4 Current()

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

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

### 6.120.2.5 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 >](#).

### 6.120.2.6 operator=( )

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

## 6.120.3 Member Data Documentation

### 6.120.3.1 base\_

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

### 6.120.3.2 index\_

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

### 6.120.3.3 step\_

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

### 6.120.3.4 value\_

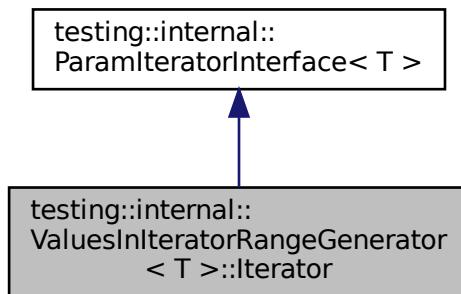
```
template<typename T , typename IncrementT >
T testing::internal::RangeGenerator< T, IncrementT >::Iterator::value_ [private]
```

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

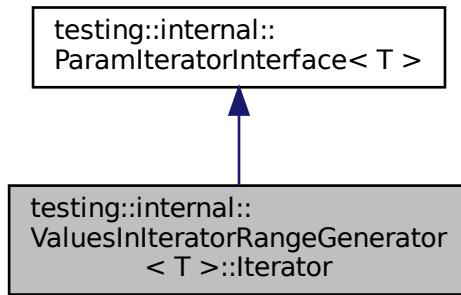
- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.121 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_`

## 6.121.1 Constructor & Destructor Documentation

### 6.121.1.1 Iterator() [1/2]

```

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

```

### 6.121.1.2 ~Iterator()

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

### 6.121.1.3 Iterator() [2/2]

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

## 6.121.2 Member Function Documentation

### 6.121.2.1 Advance()

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

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

### 6.121.2.2 BaseGenerator()

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

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

### 6.121.2.3 Clone()

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

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

### 6.121.2.4 Current()

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

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

### 6.121.2.5 Equals()

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

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

## 6.121.3 Member Data Documentation

### 6.121.3.1 base\_

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

### 6.121.3.2 iterator\_

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

### 6.121.3.3 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:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

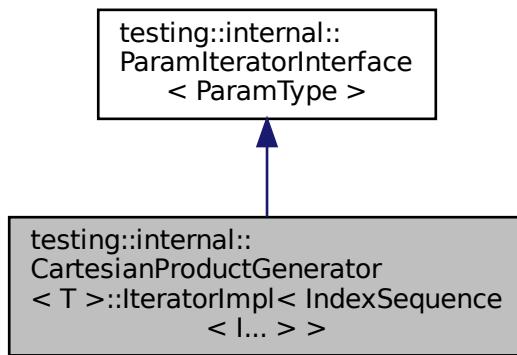
## 6.122 testing::internal::CartesianProductGenerator< T >::IteratorImpl< I > Class Template Reference

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

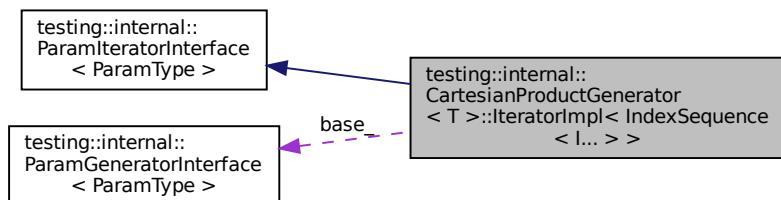
- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.123 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_`

### 6.123.1 Constructor & Destructor Documentation

#### 6.123.1.1 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]
```

#### 6.123.1.2 ~IteratorImpl()

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

## 6.123.2 Member Function Documentation

### 6.123.2.1 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 >](#).

### 6.123.2.2 AdvanceIfEnd()

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

### 6.123.2.3 AtEnd()

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

### 6.123.2.4 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 >](#).

### 6.123.2.5 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 >](#).

### 6.123.2.6 ComputeCurrentValue()

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

### 6.123.2.7 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 >](#).

### 6.123.2.8 Equals()

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

## 6.123.3 Member Data Documentation

### 6.123.3.1 base\_

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

### 6.123.3.2 begin\_

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

### 6.123.3.3 current\_

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

### 6.123.3.4 current\_value\_

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

### 6.123.3.5 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:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.124 testing::internal::KindOf< T > Struct Template Reference

```
#include <gmock-internal-utils.h>
```

### Public Types

- enum { **value** = kOther }

### 6.124.1 Member Enumeration Documentation

#### 6.124.1.1 anonymous enum

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

Enumerator

value	<input type="button" value=""/>
-------	---------------------------------

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## **6.125 testing::internal::internal\_stream\_operator\_without\_lexical\_name\_lookup::LookupBlocker Struct Reference**

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

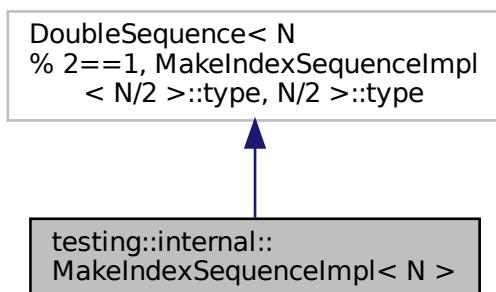
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/gtest-internal.h

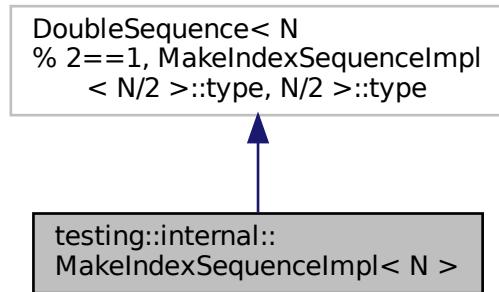
## **6.126 testing::internal::MakeIndexSequenceImpl< N > Struct Template Reference**

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

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



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



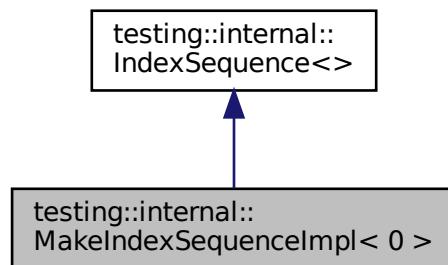
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

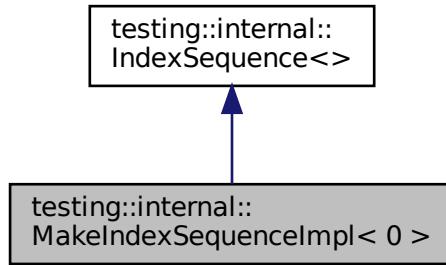
## 6.127 testing::internal::MakeIndexSequenceImpl< 0 > Struct Reference

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

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



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



## Additional Inherited Members

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.128 testing::internal::MarkAsIgnored Struct Reference

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

### Public Member Functions

- [MarkAsIgnored](#) (const char \*test\_suite)

#### 6.128.1 Constructor & Destructor Documentation

##### 6.128.1.1 MarkAsIgnored()

```
testing::internal::MarkAsIgnored::MarkAsIgnored (
    const char * test_suite ) [explicit]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.129 testing::Matcher< typename > Class Template Reference

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

- build/\_deps/googletest-src/googlemock/include/gmock/internal/gmock-internal-utils.h

## 6.130 Matrix Class Reference

Library for matrix functions contained in the namespace "matrix".

```
#include <matrix.h>
```

### Public Member Functions

- `Matrix (int n_rows, int n_cols)`
- `int & operator() (int i, int j)`
- `~Matrix ()`
- `Matrix (const Matrix &old_matrix)`
- `Matrix & operator= (Matrix &old_matrix)`
- `bool operator== (Matrix &matrix_other)`
- `int zero ()`
- `int write_sub_matrix (Matrix &sub_matrix)`
- `Matrix read_sub_matrix ()`

### Public Attributes

- `int n_rows`
- `int n_cols`

### Private Attributes

- `int * data`

#### 6.130.1 Detailed Description

Library for matrix functions contained in the namespace "matrix".

#### 6.130.2 Constructor & Destructor Documentation

##### 6.130.2.1 Matrix() [1/2]

```
Matrix::Matrix (
    int n_rows,
    int n_cols )
```

Initialises `Matrix` class object.

**Parameters**

<code>n_rows</code>	Number of rows of the matrix.
<code>n_cols</code>	Number of columns of the matrix.

**6.130.2.2 ~Matrix()**

```
Matrix::~Matrix ( )
```

**6.130.2.3 Matrix() [2/2]**

```
Matrix::Matrix (
    const Matrix & old_matrix )
```

**6.130.3 Member Function Documentation****6.130.3.1 operator()()**

```
int & Matrix::operator() (
    int i,
    int j )
```

**6.130.3.2 operator=(())**

```
Matrix & Matrix::operator= (
    Matrix & old_matrix )
```

**6.130.3.3 operator==(())**

```
bool Matrix::operator== (
    Matrix & matrix_other )
```

Overloaded equality operator for `Matrix` class.

Only returns true if the matrix has identical size and entries.

**Parameters**

<i>matrix_other</i>	matrix to be compared to
---------------------	--------------------------

**Returns**

bool Evaluation of comparison

**6.130.3.4 `read_sub_matrix()`**

```
Matrix Matrix::read_sub_matrix ( )
```

Used to access all entries of a matrix except the outer edges.

**Returns**

sub\_matrix matrix containing the inner matrix values.

**6.130.3.5 `write_sub_matrix()`**

```
int Matrix::write_sub_matrix (
    Matrix & sub_matrix )
```

Method used to replace all matrix entries except the outer edges.

**Parameters**

<i>sub_matrix</i>	matrix which should be smaller by 2 in both dimensions, used to replace entries.
-------------------	--

**6.130.3.6 `zero()`**

```
int Matrix::zero ( )
```

Method used to set all matrix entries to zero.

**6.130.4 Member Data Documentation**

#### 6.130.4.1 data

```
int* Matrix::data [private]
```

#### 6.130.4.2 n\_cols

```
int Matrix::n_cols
```

#### 6.130.4.3 n\_rows

```
int Matrix::n_rows
```

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

- src/conway/include/matrix.h
- src/conway/matrix.cpp

## 6.131 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\\_](#)

### 6.131.1 Member Typedef Documentation

#### 6.131.1.1 BasicNarrowIoManip

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

### 6.131.2 Constructor & Destructor Documentation

#### 6.131.2.1 Message() [1/3]

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

#### 6.131.2.2 Message() [2/3]

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

#### 6.131.2.3 Message() [3/3]

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

### 6.131.3 Member Function Documentation

#### 6.131.3.1 GetString()

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

**6.131.3.2 operator<<() [1/6]**

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

**6.131.3.3 operator<<() [2/6]**

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

**6.131.3.4 operator<<() [3/6]**

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

**6.131.3.5 operator<<() [4/6]**

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

**6.131.3.6 operator<<() [5/6]**

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

**6.131.3.7 operator<<() [6/6]**

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

**6.131.3.8 operator=()**

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

### 6.131.4 Member Data Documentation

#### 6.131.4.1 ss\_

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

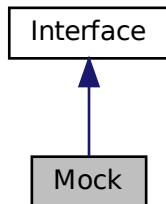
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/gtest-message.h

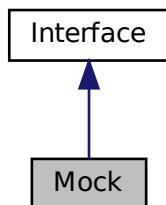
## 6.132 Mock Class Reference

```
#include <gmock_link_test.h>
```

Inheritance diagram for Mock:



Collaboration diagram for Mock:



## Public Member Functions

- `Mock ()`
- `MOCK_METHOD1 (VoidFromString, void(char *str))`
- `MOCK_METHOD1 (StringFromString, char *(char *str))`
- `MOCK_METHOD1 (IntFromString, int(char *str))`
- `MOCK_METHOD1 (IntRefFromString, int &(char *str))`
- `MOCK_METHOD1 (VoidFromFunc, void(void(*func)(char *str)))`
- `MOCK_METHOD1 (VoidFromIntRef, void(int &n))`
- `MOCK_METHOD1 (VoidFromFloat, void(float n))`
- `MOCK_METHOD1 (VoidFromDouble, void(double n))`
- `MOCK_METHOD1 (VoidFromVector, void(const std::vector< int > &v))`

## Private Member Functions

- `Mock (const Mock &) = delete`
- `Mock & operator= (const Mock &) = delete`

### 6.132.1 Constructor & Destructor Documentation

#### 6.132.1.1 Mock() [1/2]

```
Mock::Mock ( ) [inline]
```

#### 6.132.1.2 Mock() [2/2]

```
Mock::Mock (
    const Mock & ) [private], [delete]
```

### 6.132.2 Member Function Documentation

#### 6.132.2.1 MOCK\_METHOD1() [1/9]

```
Mock::MOCK_METHOD1 (
    IntFromString ,
    int(char *str) )
```

**6.132.2.2 MOCK\_METHOD1() [2/9]**

```
Mock::MOCK_METHOD1 (
    IntRefFromString ,
    int & char *str )
```

**6.132.2.3 MOCK\_METHOD1() [3/9]**

```
Mock::MOCK_METHOD1 (
    StringFromString ,
    char * char *str )
```

**6.132.2.4 MOCK\_METHOD1() [4/9]**

```
Mock::MOCK_METHOD1 (
    VoidFromDouble ,
    void(double n)  )
```

**6.132.2.5 MOCK\_METHOD1() [5/9]**

```
Mock::MOCK_METHOD1 (
    VoidFromFloat ,
    void(float n)  )
```

**6.132.2.6 MOCK\_METHOD1() [6/9]**

```
Mock::MOCK_METHOD1 (
    VoidFromFunc ,
    void(void(*func)(char *str))  )
```

**6.132.2.7 MOCK\_METHOD1() [7/9]**

```
Mock::MOCK_METHOD1 (
    VoidFromIntRef ,
    void(int &n)  )
```

### 6.132.2.8 MOCK\_METHOD1() [8/9]

```
Mock::MOCK_METHOD1 (
    VoidFromString ,
    void(char *str) )
```

### 6.132.2.9 MOCK\_METHOD1() [9/9]

```
Mock::MOCK_METHOD1 (
    VoidFromVector ,
    void(const std::vector< int > &v) )
```

### 6.132.2.10 operator=()

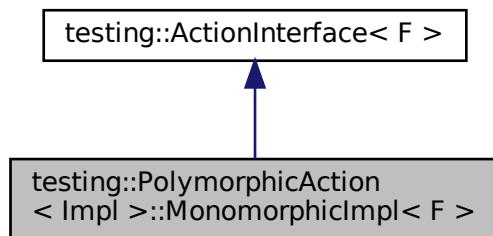
```
Mock& Mock::operator= (
    const Mock & ) [private], [delete]
```

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

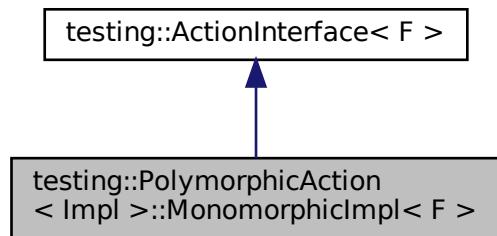
- build/\_deps/googletest-src/googlemock/test/gmock\_link\_test.h

## 6.133 testing::PolymorphicAction< Impl >::MonomorphicImpl< F > Class Template Reference

Inheritance diagram for testing::PolymorphicAction< Impl >::MonomorphicImpl< F >:



Collaboration diagram for testing::PolymorphicAction< Impl >::MonomorphicImpl< F >:



## Public Types

- `typedef internal::Function< F >::Result Result`
- `typedef internal::Function< F >::ArgumentTuple ArgumentTuple`

## Public Member Functions

- `MonomorphicImpl (const Impl &impl)`
- `Result Perform (const ArgumentTuple &args) override`

## Private Attributes

- `Impl impl_`

### 6.133.1 Member Typedef Documentation

#### 6.133.1.1 ArgumentTuple

```

template<typename Impl >
template<typename F >
typedef internal::Function<F>::ArgumentTuple testing::PolymorphicAction< Impl >::MonomorphicImpl< F >::ArgumentTuple
  
```

#### 6.133.1.2 Result

```

template<typename Impl >
template<typename F >
typedef internal::Function<F>::Result testing::PolymorphicAction< Impl >::MonomorphicImpl< F >::Result
  
```

## 6.133.2 Constructor & Destructor Documentation

### 6.133.2.1 MonomorphicImpl()

```
template<typename Impl>
template<typename F>
testing::PolymorphicAction<Impl>::MonomorphicImpl<F>::MonomorphicImpl(
    const Impl & impl) [inline], [explicit]
```

## 6.133.3 Member Function Documentation

### 6.133.3.1 Perform()

```
template<typename Impl>
template<typename F>
Result testing::PolymorphicAction<Impl>::MonomorphicImpl<F>::Perform(
    const ArgumentTuple & args) [inline], [override], [virtual]
```

Implements [testing::ActionInterface<F>](#).

## 6.133.4 Member Data Documentation

### 6.133.4.1 impl\_

```
template<typename Impl>
template<typename F>
Impl testing::PolymorphicAction<Impl>::MonomorphicImpl<F>::impl_ [private]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.134 testing::internal::Mutex Class Reference

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

## Public Member Functions

- `Mutex ()`
- `void Lock ()`
- `void Unlock ()`
- `void AssertHeld () const`

### 6.134.1 Constructor & Destructor Documentation

#### 6.134.1.1 Mutex()

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

### 6.134.2 Member Function Documentation

#### 6.134.2.1 AssertHeld()

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

#### 6.134.2.2 Lock()

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

#### 6.134.2.3 Unlock()

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

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

- `build/_deps/googletest-src/googletest/include/gtest/internal/gtest-port.h`

## 6.135 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_`

### 6.135.1 Constructor & Destructor Documentation

#### 6.135.1.1 MyString() [1/3]

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

#### 6.135.1.2 MyString() [2/3]

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

#### 6.135.1.3 MyString() [3/3]

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

#### 6.135.1.4 ~MyString()

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

### 6.135.2 Member Function Documentation

#### 6.135.2.1 c\_string()

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

#### 6.135.2.2 CloneCString()

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

#### 6.135.2.3 Length()

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

#### 6.135.2.4 operator=()

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

#### 6.135.2.5 Set()

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

### 6.135.3 Member Data Documentation

### 6.135.3.1 c\_string\_

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

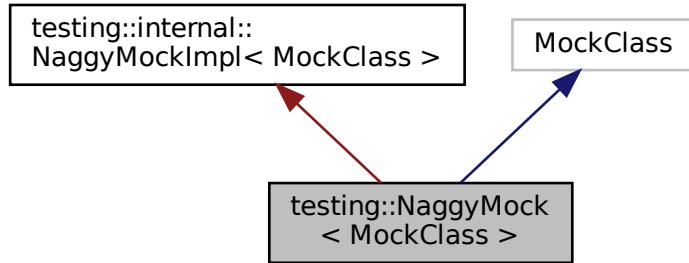
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/samples/[sample2.h](#)

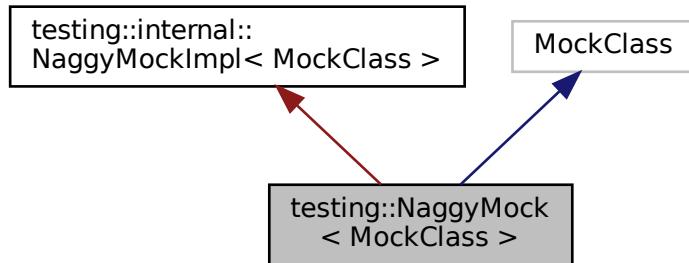
## 6.136 testing::NaggyMock< MockClass > Class Template Reference

```
#include <gmock-nice-strict.h>
```

Inheritance diagram for testing::NaggyMock< MockClass >:



Collaboration diagram for testing::NaggyMock< MockClass >:



## Public Member Functions

- `NaggyMock ()`
- `template<typename A >`  
`NaggyMock (A &&arg)`
- `template<typename TArg1 , typename TArg2 , typename... An>`  
`NaggyMock (TArg1 &&arg1, TArg2 &&arg2, An &&... args)`

## Private Member Functions

- `NaggyMock (const NaggyMock &)=delete`
- `NaggyMock & operator= (const NaggyMock &)=delete`

### 6.136.1 Constructor & Destructor Documentation

#### 6.136.1.1 `NaggyMock()` [1/4]

```
template<class MockClass >
testing::NaggyMock< MockClass >::NaggyMock ( ) [inline]
```

#### 6.136.1.2 `NaggyMock()` [2/4]

```
template<class MockClass >
template<typename A >
testing::NaggyMock< MockClass >::NaggyMock (
    A && arg ) [inline], [explicit]
```

#### 6.136.1.3 `NaggyMock()` [3/4]

```
template<class MockClass >
template<typename TArg1 , typename TArg2 , typename... An>
testing::NaggyMock< MockClass >::NaggyMock (
    TArg1 && arg1,
    TArg2 && arg2,
    An &&... args ) [inline]
```

#### 6.136.1.4 `NaggyMock()` [4/4]

```
template<class MockClass >
testing::NaggyMock< MockClass >::NaggyMock (
    const NaggyMock< MockClass > & ) [private], [delete]
```

## 6.136.2 Member Function Documentation

### 6.136.2.1 operator=()

```
template<class MockClass >
NaggyMock& testing::NaggyMock< MockClass >::operator= (
    const NaggyMock< MockClass > & ) [private], [delete]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-nice-strict.h

## 6.137 testing::internal::NaggyMockImpl< Base > Class Template Reference

```
#include <gmock-nice-strict.h>
```

### Public Member Functions

- NaggyMockImpl ()
- ~NaggyMockImpl ()

### 6.137.1 Constructor & Destructor Documentation

#### 6.137.1.1 NaggyMockImpl()

```
template<typename Base >
testing::internal::NaggyMockImpl< Base >::NaggyMockImpl ( ) [inline]
```

#### 6.137.1.2 ~NaggyMockImpl()

```
template<typename Base >
testing::internal::NaggyMockImpl< Base >::~NaggyMockImpl ( ) [inline]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-nice-strict.h

## 6.138 testing::internal::NameGeneratorSelector< Provided > Struct Reference

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

### Public Types

- `typedef Provided type`

#### 6.138.1 Member Typedef Documentation

##### 6.138.1.1 type

```
template<typename Provided = DefaultNameGenerator>
typedef Provided testing::internal::NameGeneratorSelector< Provided >::type
```

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

- `build/_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h`

## 6.139 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 Member Functions

- void [InitCopy](#) (const Element \*array, size\_t a\_size)
- void [InitRef](#) (const Element \*array, size\_t a\_size)

## Private Attributes

- const Element \* [array\\_](#)
- size\_t [size\\_](#)
- void([NativeArray](#)::\* [clone\\_](#)) (const Element \*, size\_t)

### 6.139.1 Member Typedef Documentation

#### 6.139.1.1 [const\\_iterator](#)

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

#### 6.139.1.2 [iterator](#)

```
template<typename Element >
typedef Element* testing::internal::NativeArray< Element >::iterator
```

#### 6.139.1.3 [value\\_type](#)

```
template<typename Element >
typedef Element testing::internal::NativeArray< Element >::value\_type
```

### 6.139.2 Constructor & Destructor Documentation

#### 6.139.2.1 [NativeArray\(\)](#) [1/3]

```
template<typename Element >
testing::internal::NativeArray< Element >::NativeArray (
    const Element * array,
    size_t count,
    RelationToSourceReference ) [inline]
```

### 6.139.2.2 NativeArray() [2/3]

```
template<typename Element >
testing::internal::NativeArray< Element >::NativeArray (
    const Element * array,
    size_t count,
    RelationToSourceCopy ) [inline]
```

### 6.139.2.3 NativeArray() [3/3]

```
template<typename Element >
testing::internal::NativeArray< Element >::NativeArray (
    const NativeArray< Element > & rhs ) [inline]
```

### 6.139.2.4 ~NativeArray()

```
template<typename Element >
testing::internal::NativeArray< Element >::~NativeArray ( ) [inline]
```

## 6.139.3 Member Function Documentation

### 6.139.3.1 begin()

```
template<typename Element >
const_iterator testing::internal::NativeArray< Element >::begin ( ) const [inline]
```

### 6.139.3.2 end()

```
template<typename Element >
const_iterator testing::internal::NativeArray< Element >::end ( ) const [inline]
```

### 6.139.3.3 InitCopy()

```
template<typename Element >
void testing::internal::NativeArray< Element >::InitCopy (
    const Element * array,
    size_t a_size ) [inline], [private]
```

#### 6.139.3.4 InitRef()

```
template<typename Element >
void testing::internal::NativeArray< Element >::InitRef (
    const Element * array,
    size_t a_size ) [inline], [private]
```

#### 6.139.3.5 operator==( )

```
template<typename Element >
bool testing::internal::NativeArray< Element >::operator== (
    const NativeArray< Element > & rhs ) const [inline]
```

#### 6.139.3.6 size()

```
template<typename Element >
size_t testing::internal::NativeArray< Element >::size ( ) const [inline]
```

### 6.139.4 Member Data Documentation

#### 6.139.4.1 array\_

```
template<typename Element >
const Element* testing::internal::NativeArray< Element >::array_ [private]
```

#### 6.139.4.2 clone\_

```
template<typename Element >
void(NativeArray::* testing::internal::NativeArray< Element >::clone_) (const Element *, size_t) [private]
```

#### 6.139.4.3 size\_

```
template<typename Element >
size_t testing::internal::NativeArray< Element >::size_ [private]
```

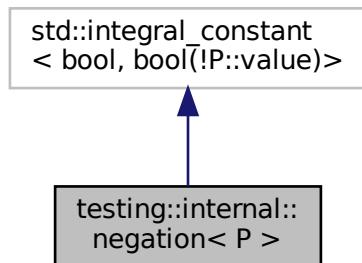
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

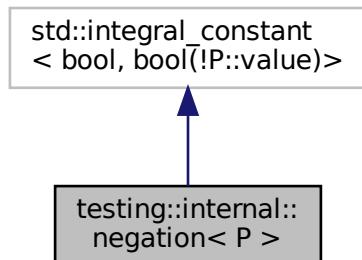
## 6.140 testing::internal::negation< P > Struct Template Reference

```
#include <gmock-actions.h>
```

Inheritance diagram for testing::internal::negation< P >:



Collaboration diagram for testing::internal::negation< P >:



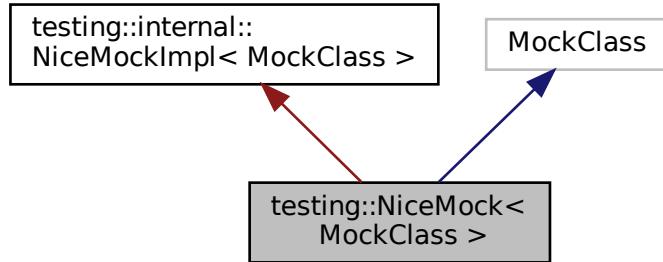
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gmock/gmock-actions.h

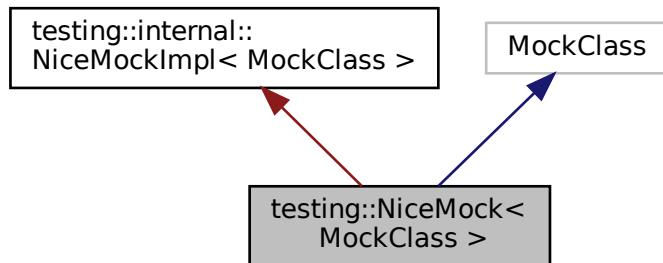
## 6.141 testing::NiceMock< MockClass > Class Template Reference

```
#include <gmock-nice-strict.h>
```

Inheritance diagram for testing::NiceMock< MockClass >:



Collaboration diagram for testing::NiceMock< MockClass >:



## Public Member Functions

- [NiceMock \(\)](#)
- template<typename A >  
[NiceMock \(A &&arg\)](#)
- template<typename TArg1 , typename TArg2 , typename... An>  
[NiceMock \(TArg1 &&arg1, TArg2 &&arg2, An &&... args\)](#)

## Private Member Functions

- [NiceMock \(const NiceMock &\)=delete](#)
- [NiceMock & operator= \(const NiceMock &\)=delete](#)

### 6.141.1 Constructor & Destructor Documentation

### 6.141.1.1 NiceMock() [1/4]

```
template<class MockClass >
testing::NiceMock< MockClass >::NiceMock ( )  [inline]
```

### 6.141.1.2 NiceMock() [2/4]

```
template<class MockClass >
template<typename A >
testing::NiceMock< MockClass >::NiceMock (
    A && arg )  [inline], [explicit]
```

### 6.141.1.3 NiceMock() [3/4]

```
template<class MockClass >
template<typename TArg1 , typename TArg2 , typename... An>
testing::NiceMock< MockClass >::NiceMock (
    TArg1 && arg1,
    TArg2 && arg2,
    An &&... args )  [inline]
```

### 6.141.1.4 NiceMock() [4/4]

```
template<class MockClass >
testing::NiceMock< MockClass >::NiceMock (
    const NiceMock< MockClass > & )  [private], [delete]
```

## 6.141.2 Member Function Documentation

### 6.141.2.1 operator=()

```
template<class MockClass >
NiceMock& testing::NiceMock< MockClass >::operator= (
    const NiceMock< MockClass > & )  [private], [delete]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-nice-strict.h

## 6.142 testing::internal::NiceMockImpl< Base > Class Template Reference

```
#include <gmock-nice-strict.h>
```

### Public Member Functions

- [NiceMockImpl \(\)](#)
- [~NiceMockImpl \(\)](#)

#### 6.142.1 Constructor & Destructor Documentation

##### 6.142.1.1 NiceMockImpl()

```
template<typename Base >
testing::internal::NiceMockImpl< Base >::NiceMockImpl ( ) [inline]
```

##### 6.142.1.2 ~NiceMockImpl()

```
template<typename Base >
testing::internal::NiceMockImpl< Base >::~NiceMockImpl ( ) [inline]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/[gmock-nice-strict.h](#)

## 6.143 testing::internal::None Struct Reference

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

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/[gtest-type-util.h](#)

## 6.144 testing::OnceAction< F > Class Template Reference

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

- build/\_deps/googletest-src/googlemock/include/gmock/[gmock-actions.h](#)

## 6.145 testing::OnceAction< Result(Args...)> Class Template Reference

```
#include <gmock-actions.h>
```

### Classes

- struct [IgnoreIncomingArguments](#)
- class [StdFunctionAdaptor](#)

### Public Member Functions

- template<typename Callable , typename std::enable\_if< internal::conjunction< internal::negation< std::is\_same< OnceAction, typename std::decay< Callable >::type >>, IsDirectlyCompatible< Callable >> ::value, int >::type = 0> [OnceAction](#) (Callable &&callable)
- template<typename Callable , typename std::enable\_if< internal::conjunction< internal::negation< std::is\_same< OnceAction, typename std::decay< Callable >::type >>, internal::negation< IsDirectlyCompatible< Callable >>, IsCompatibleAfterIgnoringArguments< Callable >> ::value, int >::type = 0> [OnceAction](#) (Callable &&callable)
- [OnceAction](#) (const [OnceAction](#) &)=delete
- [OnceAction](#) & [operator=](#) (const [OnceAction](#) &)=delete
- [OnceAction](#) ([OnceAction](#) &&)=default
- Result [Call](#) (Args... args) &&

### Private Types

- template<typename Callable >
 

```
using IsDirectlyCompatible = internal::conjunction< std::is_constructible< typename std::decay< Callable >::type, Callable >, internal::is_callable_r< Result, typename std::decay< Callable >::type, Args... > >
```
- template<typename Callable >
 

```
using IsCompatibleAfterIgnoringArguments = internal::conjunction< std::is_constructible< typename std::decay< Callable >::type, Callable >, internal::is_callable_r< Result, typename std::decay< Callable >::type > >
```

### Private Attributes

- std::function< Result(Args...)> [function\\_](#)

#### 6.145.1 Member Typedef Documentation

##### 6.145.1.1 IsCompatibleAfterIgnoringArguments

```
template<typename Result , typename... Args>
template<typename Callable >
using testing::OnceAction< Result(Args...)>::IsCompatibleAfterIgnoringArguments = internal::conjunction<
std::is_constructible<typename std::decay<Callable>::type, Callable>, internal::is_callable_r<Result,
typename std::decay<Callable>::type> > [private]
```

### 6.145.1.2 IsDirectlyCompatible

```
template<typename Result , typename... Args>
template<typename Callable >
using testing::OnceAction< Result(Args...)>::IsDirectlyCompatible = internal::conjunction<
std::is_constructible<typename std::decay<Callable>::type, Callable>, internal::is_callable_r<Result,
typename std::decay<Callable>::type, Args...> > [private]
```

## 6.145.2 Constructor & Destructor Documentation

### 6.145.2.1 OnceAction() [1/4]

```
template<typename Result , typename... Args>
template<typename Callable , typename std::enable_if< internal::conjunction< internal::negation<
std::is_same< OnceAction, typename std::decay< Callable >::type >>, IsDirectlyCompatible<
Callable >> ::value, int >::type = 0>
testing::OnceAction< Result(Args...)>::OnceAction (
    Callable && callable ) [inline]
```

### 6.145.2.2 OnceAction() [2/4]

```
template<typename Result , typename... Args>
template<typename Callable , typename std::enable_if< internal::conjunction< internal::negation<
std::is_same< OnceAction, typename std::decay< Callable >::type >>, internal::negation< Is←
DirectlyCompatible< Callable >>, IsCompatibleAfterIgnoringArguments< Callable >>::value, int
>::type = 0>
testing::OnceAction< Result(Args...)>::OnceAction (
    Callable && callable ) [inline]
```

### 6.145.2.3 OnceAction() [3/4]

```
template<typename Result , typename... Args>
testing::OnceAction< Result(Args...)>::OnceAction (
    const OnceAction< Result(Args...)> & ) [delete]
```

### 6.145.2.4 OnceAction() [4/4]

```
template<typename Result , typename... Args>
testing::OnceAction< Result(Args...)>::OnceAction (
    OnceAction< Result(Args...)> && ) [default]
```

### 6.145.3 Member Function Documentation

#### 6.145.3.1 Call()

```
template<typename Result , typename... Args>
Result testing::OnceAction< Result(Args...)>::Call (
    Args... args ) && [inline]
```

#### 6.145.3.2 operator=( )

```
template<typename Result , typename... Args>
OnceAction& testing::OnceAction< Result(Args...)>::operator= (
    const OnceAction< Result(Args...)> & ) [delete]
```

### 6.145.4 Member Data Documentation

#### 6.145.4.1 function\_

```
template<typename Result , typename... Args>
std::function<Result(Args...)> testing::OnceAction< Result(Args...)>::function_ [private]
```

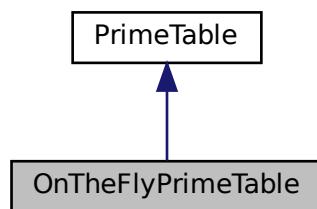
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

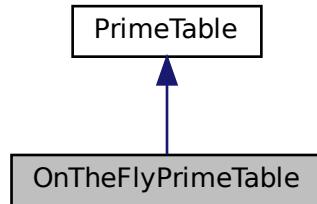
## 6.146 OnTheFlyPrimeTable Class Reference

```
#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

### 6.146.1 Member Function Documentation

#### 6.146.1.1 [GetNextPrime\(\)](#)

```
int OnTheFlyPrimeTable::GetNextPrime (
    int p ) const [inline], [override], [virtual]
```

Implements [PrimeTable](#).

#### 6.146.1.2 [IsPrime\(\)](#)

```
bool OnTheFlyPrimeTable::IsPrime (
    int n ) const [inline], [override], [virtual]
```

Implements [PrimeTable](#).

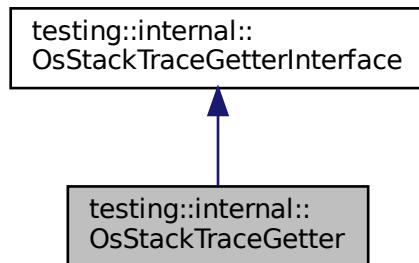
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/samples/[prime\\_tables.h](#)

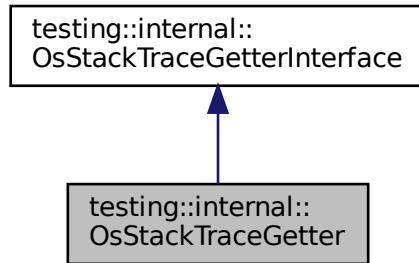
## 6.147 testing::internal::OsStackTraceGetter Class Reference

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

Inheritance diagram for testing::internal::OsStackTraceGetter:



Collaboration diagram for testing::internal::OsStackTraceGetter:



### Public Member Functions

- [OsStackTraceGetter \(\)](#)
- std::string [CurrentStackTrace](#) (int max\_depth, int skip\_count) override
- void [UponLeavingGTest \(\)](#) override

### Private Member Functions

- [OsStackTraceGetter \(const OsStackTraceGetter &\)=delete](#)
- [OsStackTraceGetter & operator= \(const OsStackTraceGetter &\)=delete](#)

## Additional Inherited Members

### 6.147.1 Constructor & Destructor Documentation

#### 6.147.1.1 OsStackTraceGetter() [1/2]

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

#### 6.147.1.2 OsStackTraceGetter() [2/2]

```
testing::internal::OsStackTraceGetter::OsStackTraceGetter (
    const OsStackTraceGetter & ) [private], [delete]
```

### 6.147.2 Member Function Documentation

#### 6.147.2.1 CurrentStackTrace()

```
std::string testing::internal::OsStackTraceGetter::CurrentStackTrace (
    int max_depth,
    int skip_count ) [override], [virtual]
```

Implements [testing::internal::OsStackTraceGetterInterface](#).

#### 6.147.2.2 operator=(\*)

```
OsStackTraceGetter& testing::internal::OsStackTraceGetter::operator= (
    const OsStackTraceGetter & ) [private], [delete]
```

#### 6.147.2.3 UponLeavingGTest()

```
void testing::internal::OsStackTraceGetter::UponLeavingGTest ( ) [override], [virtual]
```

Implements [testing::internal::OsStackTraceGetterInterface](#).

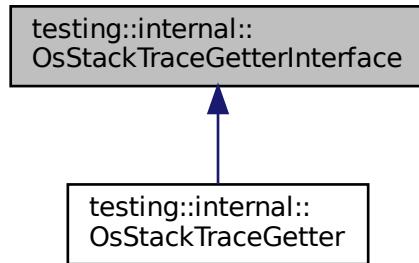
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/src/[gtest-internal-inl.h](#)

## 6.148 testing::internal::OsStackTraceGetterInterface Class Reference

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

Inheritance diagram for testing::internal::OsStackTraceGetterInterface:



### Public Member Functions

- `OsStackTraceInterface ()`
- virtual `~OsStackTraceInterface ()`
- virtual std::string `CurrentStackTrace` (int max\_depth, int skip\_count)=0
- virtual void `UponLeavingGTest ()=0`

### Static Public Attributes

- static const char \*const `kElidedFramesMarker`

### Private Member Functions

- `OsStackTraceInterface (const OsStackTraceInterface &)=delete`
- `OsStackTraceInterface & operator= (const OsStackTraceInterface &)=delete`

### 6.148.1 Constructor & Destructor Documentation

#### 6.148.1.1 OsStackTraceInterface() [1/2]

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

### 6.148.1.2 ~OsStackTraceGetterInterface()

```
virtual testing::internal::OsStackTraceGetterInterface::~OsStackTraceGetterInterface ( ) [inline],  
[virtual]
```

### 6.148.1.3 OsStackTraceGetterInterface() [2/2]

```
testing::internal::OsStackTraceGetterInterface::OsStackTraceGetterInterface (   
    const OsStackTraceInterface & ) [private], [delete]
```

## 6.148.2 Member Function Documentation

### 6.148.2.1 CurrentStackTrace()

```
virtual std::string testing::internal::OsStackTraceGetterInterface::CurrentStackTrace (   
    int max_depth,  
    int skip_count ) [pure virtual]
```

Implemented in [testing::internal::OsStackTraceGetter](#).

### 6.148.2.2 operator=( )

```
OsStackTraceInterface& testing::internal::OsStackTraceGetterInterface::operator= (   
    const OsStackTraceInterface & ) [private], [delete]
```

### 6.148.2.3 UponLeavingGTest()

```
virtual void testing::internal::OsStackTraceGetterInterface::UponLeavingGTest ( ) [pure virtual]
```

Implemented in [testing::internal::OsStackTraceGetter](#).

## 6.148.3 Member Data Documentation

### 6.148.3.1 kElidedFramesMarker

```
const char* const testing::internal::OsStackTraceGetterInterface::kElidedFramesMarker [static]
```

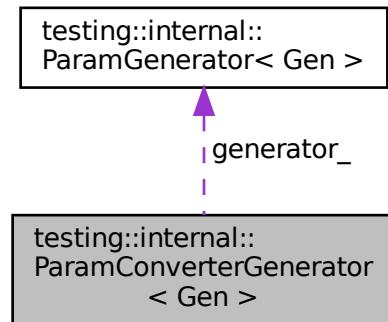
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/src/[gtest-internal-inl.h](#)

## 6.149 testing::internal::ParamConverterGenerator< Gen > Class Template Reference

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

Collaboration diagram for testing::internal::ParamConverterGenerator< Gen >:



### Public Member Functions

- [ParamConverterGenerator \(ParamGenerator< Gen > g\)](#)
- template<typename T >  
  [operator ParamGenerator< T > \(\) const](#)

### Private Attributes

- [ParamGenerator< Gen > generator\\_](#)

### 6.149.1 Constructor & Destructor Documentation

### 6.149.1.1 ParamConverterGenerator()

```
template<class Gen >
testing::internal::ParamConverterGenerator< Gen >::ParamConverterGenerator (
    ParamGenerator< Gen > g) [inline]
```

## 6.149.2 Member Function Documentation

### 6.149.2.1 operator ParamGenerator< T >()

```
template<class Gen >
template<typename T >
testing::internal::ParamConverterGenerator< Gen >::operator ParamGenerator< T > ( ) const
[inline]
```

## 6.149.3 Member Data Documentation

### 6.149.3.1 generator\_

```
template<class Gen >
ParamGenerator<Gen> testing::internal::ParamConverterGenerator< Gen >::generator_ [private]
```

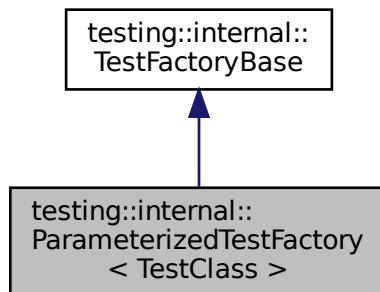
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

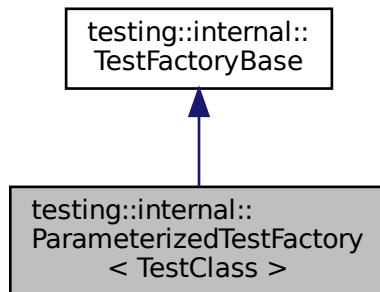
## 6.150 testing::internal::ParameterizedTestFactory< TestClass > Class Template Reference

```
#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

- `ParameterizedTestFactory (const ParameterizedTestFactory &) = delete`
- `ParameterizedTestFactory & operator= (const ParameterizedTestFactory &) = delete`

## Private Attributes

- `const ParamType parameter_`

## Additional Inherited Members

### 6.150.1 Member Typedef Documentation

#### 6.150.1.1 ParamType

```

template<class TestClass >
typedef TestClass::ParamType testing::internal::ParameterizedTestFactory< TestClass >::ParamType
  
```

## 6.150.2 Constructor & Destructor Documentation

### 6.150.2.1 ParameterizedTestFactory() [1/2]

```
template<class TestClass >
testing::internal::ParameterizedTestFactory< TestClass >::ParameterizedTestFactory (
    ParamType parameter )  [inline], [explicit]
```

### 6.150.2.2 ParameterizedTestFactory() [2/2]

```
template<class TestClass >
testing::internal::ParameterizedTestFactory< TestClass >::ParameterizedTestFactory (
    const ParameterizedTestFactory< TestClass > & )  [private], [delete]
```

## 6.150.3 Member Function Documentation

### 6.150.3.1 CreateTest()

```
template<class TestClass >
Test* testing::internal::ParameterizedTestFactory< TestClass >::CreateTest ( )  [inline],
[override], [virtual]
```

Implements [testing::internal::TestFactoryBase](#).

### 6.150.3.2 operator=()

```
template<class TestClass >
ParameterizedTestFactory& testing::internal::ParameterizedTestFactory< TestClass >::operator=
(
    const ParameterizedTestFactory< TestClass > & )  [private], [delete]
```

## 6.150.4 Member Data Documentation

#### 6.150.4.1 `parameter_`

```
template<class TestClass >
const ParamType testing::internal::ParameterizedTestFactory< TestClass >::parameter_ [private]
```

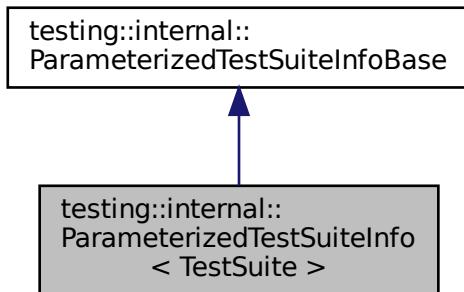
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

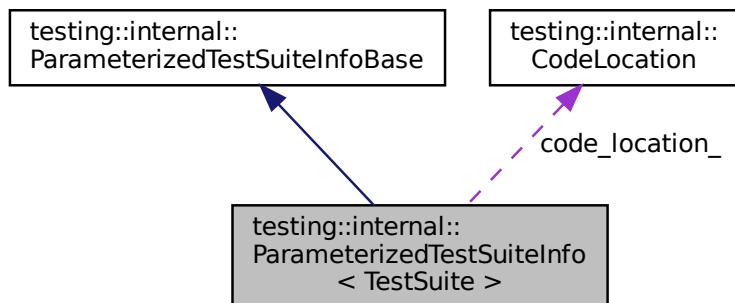
### 6.151 `testing::internal::ParameterizedTestSuiteInfo< TestSuite >` Class Template Reference

```
#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
- [Typeld](#) [GetTestSuiteTypeld](#) () const override
- void [AddTestPattern](#) (const char \*test\_suite\_name, const char \*test\_base\_name, [TestMetaFactoryBase](#)< ParamType > \*meta\_factory, [CodeLocation](#) code\_location)
- 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

- [ParameterizedTestSuiteInfo](#) (const [ParameterizedTestSuiteInfo](#) &) = delete
- [ParameterizedTestSuiteInfo](#) & [operator=](#) (const [ParameterizedTestSuiteInfo](#) &) = delete

## 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

### 6.151.1 Member Typedef Documentation

### 6.151.1.1 InstantiationContainer

```
template<class TestSuite >
typedef ::std::vector<InstantiationInfo> testing::internal::ParameterizedTestSuiteInfo< TestSuite
>::InstantiationContainer [private]
```

### 6.151.1.2 ParamNameGeneratorFunc

```
template<class TestSuite >
using testing::internal::ParameterizedTestSuiteInfo< TestSuite >::ParamNameGeneratorFunc =
std::string(const TestParamInfo<ParamType>&)
```

### 6.151.1.3 ParamType

```
template<class TestSuite >
using testing::internal::ParameterizedTestSuiteInfo< TestSuite >::ParamType = typename TestSuite::ParamType
```

### 6.151.1.4 TestInfoContainer

```
template<class TestSuite >
using testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfoContainer = ::std::vector<std::shared_ptr<TestInfo> > [private]
```

## 6.151.2 Constructor & Destructor Documentation

### 6.151.2.1 ParameterizedTestSuiteInfo() [1/2]

```
template<class TestSuite >
testing::internal::ParameterizedTestSuiteInfo< TestSuite >::ParameterizedTestSuiteInfo (
    const char * name,
    CodeLocation code_location ) [inline], [explicit]
```

### 6.151.2.2 ParameterizedTestSuiteInfo() [2/2]

```
template<class TestSuite >
testing::internal::ParameterizedTestSuiteInfo< TestSuite >::ParameterizedTestSuiteInfo (
    const ParameterizedTestSuiteInfo< TestSuite > & ) [private], [delete]
```

### 6.151.3 Member Function Documentation

#### 6.151.3.1 AddTestPattern()

```
template<class TestSuite >
void testing::internal::ParameterizedTestSuiteInfo< TestSuite >::AddTestPattern (
    const char * test_suite_name,
    const char * test_base_name,
    TestMetaFactoryBase< ParamType > * meta_factory,
    CodeLocation code_location ) [inline]
```

#### 6.151.3.2 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]
```

#### 6.151.3.3 GetTestSuiteName()

```
template<class TestSuite >
const std::string& testing::internal::ParameterizedTestSuiteInfo< TestSuite >::GetTestSuiteName ( ) const [inline], [override], [virtual]
```

Implements [testing::internal::ParameterizedTestSuiteInfoBase](#).

#### 6.151.3.4 GetTestSuiteTypeId()

```
template<class TestSuite >
TypeId testing::internal::ParameterizedTestSuiteInfo< TestSuite >::GetTestSuiteTypeId ( ) const [inline], [override], [virtual]
```

Implements [testing::internal::ParameterizedTestSuiteInfoBase](#).

### 6.151.3.5 IsValidParamName()

```
template<class TestSuite >
static bool testing::internal::ParameterizedTestSuiteInfo< TestSuite >::IsValidParamName (
    const std::string & name ) [inline], [static], [private]
```

### 6.151.3.6 operator=( )

```
template<class TestSuite >
ParameterizedTestSuiteInfo& testing::internal::ParameterizedTestSuiteInfo< TestSuite >::operator=
(
    const ParameterizedTestSuiteInfo< TestSuite > & ) [private], [delete]
```

### 6.151.3.7 ParamGenerator()

```
template<class TestSuite >
typedef testing::internal::ParameterizedTestSuiteInfo< TestSuite >::ParamGenerator (
    GeneratorCreationFunc )
```

### 6.151.3.8 RegisterTests()

```
template<class TestSuite >
void testing::internal::ParameterizedTestSuiteInfo< TestSuite >::RegisterTests ( ) [inline],
[override], [virtual]
```

Implements [testing::internal::ParameterizedTestSuiteInfoBase](#).

## 6.151.4 Member Data Documentation

### 6.151.4.1 code\_location\_

```
template<class TestSuite >
CodeLocation testing::internal::ParameterizedTestSuiteInfo< TestSuite >::code_location_ ←
[private]
```

#### 6.151.4.2 instantiations\_

```
template<class TestSuite >
InstantiationContainer testing::internal::ParameterizedTestSuiteInfo< TestSuite >::instantiations_<-
- [private]
```

#### 6.151.4.3 test\_suite\_name\_

```
template<class TestSuite >
const std::string testing::internal::ParameterizedTestSuiteInfo< TestSuite >::test_suite_name_<-
name_ [private]
```

#### 6.151.4.4 tests\_

```
template<class TestSuite >
TestInfoContainer testing::internal::ParameterizedTestSuiteInfo< TestSuite >::tests_ [private]
```

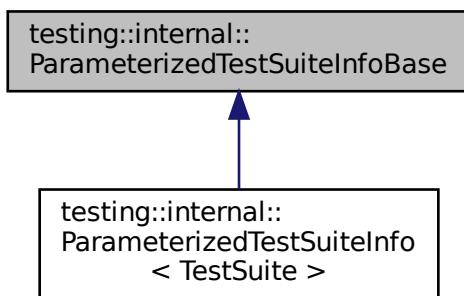
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.152 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

- ParameterizedTestSuiteInfoBase (const ParameterizedTestSuiteInfoBase &)=delete
- ParameterizedTestSuiteInfoBase & operator= (const ParameterizedTestSuiteInfoBase &)=delete

### 6.152.1 Constructor & Destructor Documentation

#### 6.152.1.1 ~ParameterizedTestSuiteInfoBase()

```
virtual testing::internal::ParameterizedTestSuiteInfoBase::~ParameterizedTestSuiteInfoBase ( )  
[inline], [virtual]
```

#### 6.152.1.2 ParameterizedTestSuiteInfoBase() [1/2]

```
testing::internal::ParameterizedTestSuiteInfoBase::ParameterizedTestSuiteInfoBase ( ) [inline],  
[protected]
```

#### 6.152.1.3 ParameterizedTestSuiteInfoBase() [2/2]

```
testing::internal::ParameterizedTestSuiteInfoBase::ParameterizedTestSuiteInfoBase (   
    const ParameterizedTestSuiteInfoBase & ) [private], [delete]
```

### 6.152.2 Member Function Documentation

### 6.152.2.1 GetTestSuiteName()

```
virtual const std::string& testing::internal::ParameterizedTestSuiteInfoBase::GetTestSuiteName()
( ) const [pure virtual]
```

Implemented in [testing::internal::ParameterizedTestSuiteInfo< TestSuite >](#).

### 6.152.2.2 GetTestSuiteTypeId()

```
virtual TypeId testing::internal::ParameterizedTestSuiteInfoBase::GetTestSuiteTypeId ( ) const
[pure virtual]
```

Implemented in [testing::internal::ParameterizedTestSuiteInfo< TestSuite >](#).

### 6.152.2.3 operator=()

```
ParameterizedTestSuiteInfoBase& testing::internal::ParameterizedTestSuiteInfoBase::operator=
( const ParameterizedTestSuiteInfoBase & ) [private], [delete]
```

### 6.152.2.4 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:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.153 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

- `ParameterizedTestSuiteRegistry` (const `ParameterizedTestSuiteRegistry` &)=`delete`
- `ParameterizedTestSuiteRegistry` & `operator=` (const `ParameterizedTestSuiteRegistry` &)=`delete`

## Private Attributes

- `TestSuiteInfoContainer test_suite_infos`

### 6.153.1 Member Typedef Documentation

#### 6.153.1.1 TestSuiteInfoContainer

```
using testing::internal::ParameterizedTestSuiteRegistry::TestSuiteInfoContainer = ::std::vector<ParameterizedTestSuiteInfoBase*> [private]
```

### 6.153.2 Constructor & Destructor Documentation

#### 6.153.2.1 ParameterizedTestSuiteRegistry() [1/2]

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

#### 6.153.2.2 ~ParameterizedTestSuiteRegistry()

```
testing::internal::ParameterizedTestSuiteRegistry::~ParameterizedTestSuiteRegistry() [inline]
```

#### 6.153.2.3 ParameterizedTestSuiteRegistry() [2/2]

```
testing::internal::ParameterizedTestSuiteRegistry::ParameterizedTestSuiteRegistry(
    const ParameterizedTestSuiteRegistry &) [private], [delete]
```

### 6.153.3 Member Function Documentation

#### 6.153.3.1 GetTestCasePatternHolder()

```
template<class TestCase >
ParameterizedTestCaseInfo<TestCase>* testing::internal::ParameterizedTestSuiteRegistry::Get<-
TestCasePatternHolder (
    const char * test_case_name,
    CodeLocation code_location ) [inline]
```

#### 6.153.3.2 GetTestSuitePatternHolder()

```
template<class TestSuite >
ParameterizedTestSuiteInfo<TestSuite>* testing::internal::ParameterizedTestSuiteRegistry::<-
GetTestSuitePatternHolder (
    const char * test_suite_name,
    CodeLocation code_location ) [inline]
```

#### 6.153.3.3 operator=()

```
ParameterizedTestSuiteRegistry& testing::internal::ParameterizedTestSuiteRegistry::operator= (
    const ParameterizedTestSuiteRegistry & ) [private], [delete]
```

#### 6.153.3.4 RegisterTests()

```
void testing::internal::ParameterizedTestSuiteRegistry::RegisterTests ( ) [inline]
```

### 6.153.4 Member Data Documentation

#### 6.153.4.1 test\_suite\_infos\_

```
TestSuiteInfoContainer testing::internal::ParameterizedTestSuiteRegistry::test_suite_infos_<-
[private]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.154 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_`

#### 6.154.1 Member Typedef Documentation

##### 6.154.1.1 iterator

```
template<typename T >
typedef ParamIterator<T> testing::internal::ParamGenerator< T >::iterator
```

#### 6.154.2 Constructor & Destructor Documentation

##### 6.154.2.1 ParamGenerator() [1/2]

```
template<typename T >
testing::internal::ParamGenerator< T >::ParamGenerator (
    ParamGeneratorInterface< T > * impl ) [inline], [explicit]
```

##### 6.154.2.2 ParamGenerator() [2/2]

```
template<typename T >
testing::internal::ParamGenerator< T >::ParamGenerator (
    const ParamGenerator< T > & other ) [inline]
```

## 6.154.3 Member Function Documentation

### 6.154.3.1 begin()

```
template<typename T >
iterator testing::internal::ParamGenerator< T >::begin ( ) const [inline]
```

### 6.154.3.2 end()

```
template<typename T >
iterator testing::internal::ParamGenerator< T >::end ( ) const [inline]
```

### 6.154.3.3 operator=( )

```
template<typename T >
ParamGenerator& testing::internal::ParamGenerator< T >::operator= (
    const ParamGenerator< T > & other ) [inline]
```

## 6.154.4 Member Data Documentation

### 6.154.4.1 impl\_

```
template<typename T >
std::shared_ptr<const ParamGeneratorInterface<T> > testing::internal::ParamGenerator< T >::impl_ [private]
```

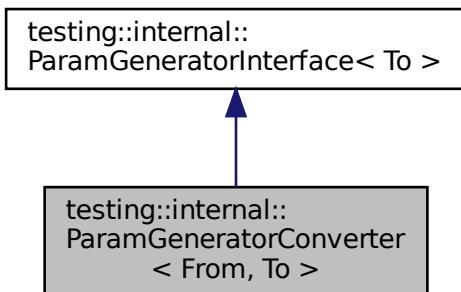
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

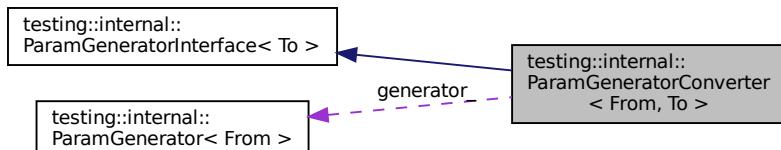
## 6.155 testing::internal::ParamGeneratorConverter< From, To > Class Template Reference

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

Inheritance diagram for testing::internal::ParamGeneratorConverter< From, To >:



Collaboration diagram for testing::internal::ParamGeneratorConverter< From, To >:



### Classes

- class [Iterator](#)

### Public Member Functions

- [ParamGeneratorConverter \(ParamGenerator< From > gen\)](#)
- [ParamIteratorInterface< To > \\* Begin \(\) const override](#)
- [ParamIteratorInterface< To > \\* End \(\) const override](#)

### Private Attributes

- [ParamGenerator< From > generator\\_](#)

## Additional Inherited Members

### 6.155.1 Constructor & Destructor Documentation

#### 6.155.1.1 ParamGeneratorConverter()

```
template<typename From , typename To >
testing::internal::ParamGeneratorConverter< From, To >::ParamGeneratorConverter (
    ParamGenerator< From > gen ) [inline]
```

### 6.155.2 Member Function Documentation

#### 6.155.2.1 Begin()

```
template<typename From , typename To >
ParamIteratorInterface<To>* testing::internal::ParamGeneratorConverter< From, To >::Begin ( )
const [inline], [override], [virtual]
```

Implements [testing::internal::ParamGeneratorInterface< To >](#).

#### 6.155.2.2 End()

```
template<typename From , typename To >
ParamIteratorInterface<To>* testing::internal::ParamGeneratorConverter< From, To >::End ( )
const [inline], [override], [virtual]
```

Implements [testing::internal::ParamGeneratorInterface< To >](#).

### 6.155.3 Member Data Documentation

#### 6.155.3.1 generator\_

```
template<typename From , typename To >
ParamGenerator<From> testing::internal::ParamGeneratorConverter< From, To >::generator_ [private]
```

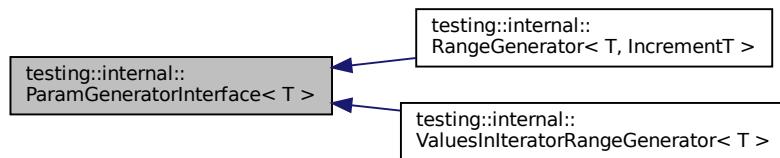
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.156 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`

#### 6.156.1 Member Typedef Documentation

##### 6.156.1.1 ParamType

```
template<typename T >
typedef T testing::internal::ParamGeneratorInterface< T >::ParamType
```

#### 6.156.2 Constructor & Destructor Documentation

##### 6.156.2.1 ~ParamGeneratorInterface()

```
template<typename T >
virtual testing::internal::ParamGeneratorInterface< T >::~ParamGeneratorInterface ( ) [inline],
[virtual]
```

### 6.156.3 Member Function Documentation

#### 6.156.3.1 Begin()

```
template<typename T >
virtual ParamIteratorInterface<T>* testing::internal::ParamGeneratorInterface< T >::Begin ( )
const [pure virtual]
```

Implemented in [testing::internal::ParamGeneratorConverter< From, To >](#), [testing::internal::CartesianProductGenerator< T >](#), [testing::internal::ValuesInIteratorRangeGenerator< T >](#), and [testing::internal::RangeGenerator< T, IncrementT >](#).

#### 6.156.3.2 End()

```
template<typename T >
virtual ParamIteratorInterface<T>* testing::internal::ParamGeneratorInterface< T >::End ( )
const [pure virtual]
```

Implemented in [testing::internal::ParamGeneratorConverter< From, To >](#), [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:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.157 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 >`

### 6.157.1 Member Typedef Documentation

#### 6.157.1.1 difference\_type

```
template<typename T >
typedef ptrdiff_t testing::internal::ParamIterator< T >::difference_type
```

#### 6.157.1.2 reference

```
template<typename T >
typedef const T& testing::internal::ParamIterator< T >::reference
```

#### 6.157.1.3 value\_type

```
template<typename T >
typedef T testing::internal::ParamIterator< T >::value_type
```

### 6.157.2 Constructor & Destructor Documentation

#### 6.157.2.1 ParamIterator() [1/2]

```
template<typename T >
testing::internal::ParamIterator< T >::ParamIterator (
    const ParamIterator< T > & other ) [inline]
```

### 6.157.2.2 ParamIterator() [2/2]

```
template<typename T >
testing::internal::ParamIterator< T >::ParamIterator (
    ParamIteratorInterface< T > * impl ) [inline], [explicit], [private]
```

## 6.157.3 Member Function Documentation

### 6.157.3.1 operator"!=()

```
template<typename T >
bool testing::internal::ParamIterator< T >::operator!= (
    const ParamIterator< T > & other ) const [inline]
```

### 6.157.3.2 operator\*()

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

### 6.157.3.3 operator++() [1/2]

```
template<typename T >
ParamIterator& testing::internal::ParamIterator< T >::operator++ ( ) [inline]
```

### 6.157.3.4 operator++() [2/2]

```
template<typename T >
ParamIterator testing::internal::ParamIterator< T >::operator++ (
    int ) [inline]
```

### 6.157.3.5 operator->()

```
template<typename T >
const T* testing::internal::ParamIterator< T >::operator-> ( ) const [inline]
```

### 6.157.3.6 operator=( )

```
template<typename T >
ParamIterator& testing::internal::ParamIterator< T >::operator= (
    const ParamIterator< T > & other ) [inline]
```

### 6.157.3.7 operator==( )

```
template<typename T >
bool testing::internal::ParamIterator< T >::operator== (
    const ParamIterator< T > & other ) const [inline]
```

## 6.157.4 Friends And Related Function Documentation

### 6.157.4.1 ParamGenerator< T >

```
template<typename T >
friend class ParamGenerator< T > [friend]
```

## 6.157.5 Member Data Documentation

### 6.157.5.1 impl\_

```
template<typename T >
std::unique_ptr<ParamIteratorInterface<T>> testing::internal::ParamIterator< T >::impl_ [private]
```

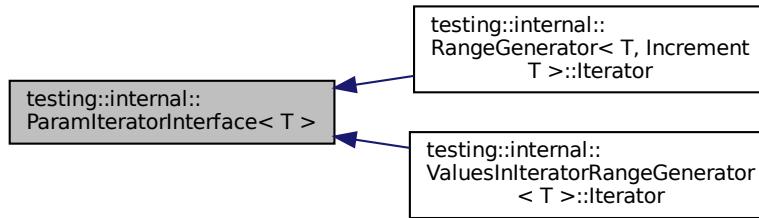
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.158 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](#)

#### 6.158.1 Constructor & Destructor Documentation

##### 6.158.1.1 ~ParamIteratorInterface()

```
template<typename T >
virtual testing::internal::ParamIteratorInterface< T >::~ParamIteratorInterface \( \) \[inline\],
\[virtual\]
```

#### 6.158.2 Member Function Documentation

### 6.158.2.1 Advance()

```
template<typename T >
virtual void testing::internal::ParamIteratorInterface< T >::Advance ( ) [pure virtual]
```

Implemented in `testing::internal::ParamGeneratorConverter< From, To >::Iterator`, `testing::internal::CartesianProductGenerator< T >::Iterator`, `testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator`, and `testing::internal::RangeGenerator< T, IncrementT >::Iterator`.

### 6.158.2.2 BaseGenerator()

```
template<typename T >
virtual const ParamGeneratorInterface<T>* testing::internal::ParamIteratorInterface< T >::BaseGenerator ( ) const [pure virtual]
```

Implemented in `testing::internal::ParamGeneratorConverter< From, To >::Iterator`, `testing::internal::CartesianProductGenerator< T >::Iterator`, `testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator`, and `testing::internal::RangeGenerator< T, IncrementT >::Iterator`.

### 6.158.2.3 Clone()

```
template<typename T >
virtual ParamIteratorInterface* testing::internal::ParamIteratorInterface< T >::Clone ( ) const [pure virtual]
```

Implemented in `testing::internal::ParamGeneratorConverter< From, To >::Iterator`, `testing::internal::CartesianProductGenerator< T >::Iterator`, `testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator`, and `testing::internal::RangeGenerator< T, IncrementT >::Iterator`.

### 6.158.2.4 Current()

```
template<typename T >
virtual const T* testing::internal::ParamIteratorInterface< T >::Current ( ) const [pure virtual]
```

Implemented in `testing::internal::ParamGeneratorConverter< From, To >::Iterator`, `testing::internal::CartesianProductGenerator< T >::Iterator`, `testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator`, and `testing::internal::RangeGenerator< T, IncrementT >::Iterator`.

### 6.158.2.5 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:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.159 testing::internal::PointerPrinter Struct Reference

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

### Static Public Member Functions

- template<typename T >  
static void [PrintValue](#) (T \*p, ::std::ostream \*os)

#### 6.159.1 Member Function Documentation

##### 6.159.1.1 [PrintValue\(\)](#)

```
template<typename T >
static void testing::internal::PointerPrinter::PrintValue (
    T * p,
    ::std::ostream * os ) [inline], [static]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/[gtest-printers.h](#)

## 6.160 testing::PolymorphicAction< Impl > Class Template Reference

```
#include <gmock-actions.h>
```

### Classes

- class [MonomorphicImpl](#)

### Public Member Functions

- [PolymorphicAction](#) (const Impl &impl)
- template<typename F >  
[operator Action< F >](#) () const

### Private Attributes

- Impl [impl\\_](#)

## 6.160.1 Constructor & Destructor Documentation

### 6.160.1.1 PolymorphicAction()

```
template<typename Impl >
testing::PolymorphicAction< Impl >::PolymorphicAction (
    const Impl & impl) [inline], [explicit]
```

## 6.160.2 Member Function Documentation

### 6.160.2.1 operator Action< F >()

```
template<typename Impl >
template<typename F >
testing::PolymorphicAction< Impl >::operator Action< F > ( ) const [inline]
```

## 6.160.3 Member Data Documentation

### 6.160.3.1 impl\_

```
template<typename Impl >
Impl testing::PolymorphicAction< Impl >::impl_ [private]
```

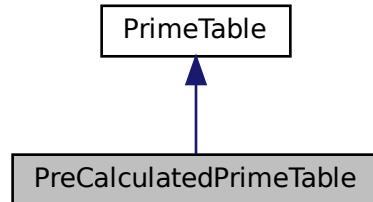
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

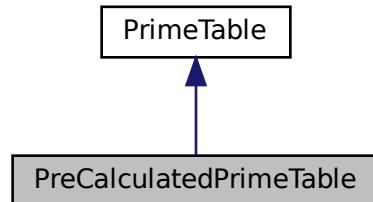
## 6.161 PreCalculatedPrimeTable Class Reference

```
#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_`

## 6.161.1 Constructor & Destructor Documentation

### 6.161.1.1 PreCalculatedPrimeTable()

```
PreCalculatedPrimeTable::PreCalculatedPrimeTable (
    int max ) [inline], [explicit]
```

### 6.161.1.2 ~PreCalculatedPrimeTable()

```
PreCalculatedPrimeTable::~PreCalculatedPrimeTable () [inline], [override]
```

## 6.161.2 Member Function Documentation

### 6.161.2.1 CalculatePrimesUpTo()

```
void PreCalculatedPrimeTable::CalculatePrimesUpTo (
    int max ) [inline], [private]
```

### 6.161.2.2 GetNextPrime()

```
int PreCalculatedPrimeTable::GetNextPrime (
    int p ) const [inline], [override], [virtual]
```

Implements [PrimeTable](#).

### 6.161.2.3 IsPrime()

```
bool PreCalculatedPrimeTable::IsPrime (
    int n ) const [inline], [override], [virtual]
```

Implements [PrimeTable](#).

#### 6.161.2.4 operator=()

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

### 6.161.3 Member Data Documentation

#### 6.161.3.1 is\_prime\_

```
bool* const PreCalculatedPrimeTable::is_prime_ [private]
```

#### 6.161.3.2 is\_prime\_size\_

```
const int PreCalculatedPrimeTable::is_prime_size_ [private]
```

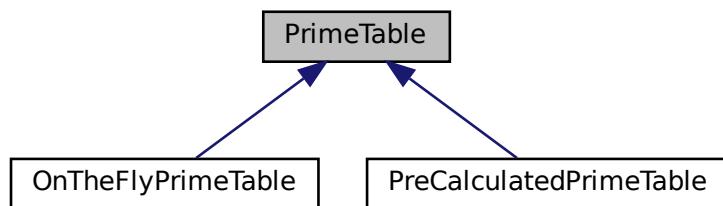
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/samples/[prime\\_tables.h](#)

## 6.162 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](#)

## 6.162.1 Constructor & Destructor Documentation

### 6.162.1.1 ~PrimeTable()

```
virtual PrimeTable::~PrimeTable ( ) [inline], [virtual]
```

## 6.162.2 Member Function Documentation

### 6.162.2.1 GetNextPrime()

```
virtual int PrimeTable::GetNextPrime (
    int p ) const [pure virtual]
```

Implemented in [PreCalculatedPrimeTable](#), and [OnTheFlyPrimeTable](#).

### 6.162.2.2 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:

- build/\_deps/googletest-src/googletest/samples/[prime\\_tables.h](#)

## 6.163 testing::PrintToStringParamName Struct Reference

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

### Public Member Functions

- template<class ParamType >  
std::string [operator\(\)](#) (const [TestParamInfo](#)< ParamType > &info) const

## 6.163.1 Member Function Documentation

### 6.163.1.1 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:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.164 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\\_](#)

### 6.164.1 Constructor & Destructor Documentation

#### 6.164.1.1 PrivateCode()

```
PrivateCode::PrivateCode ( )
```

### 6.164.2 Member Function Documentation

#### 6.164.2.1 FRIEND\_TEST() [1/2]

```
PrivateCode::FRIEND_TEST (
    PrivateCodeFixtureTest ,
    CanAccessPrivateMembers )
```

#### 6.164.2.2 FRIEND\_TEST() [2/2]

```
PrivateCode::FRIEND_TEST (
    PrivateCodeTest ,
    CanAccessPrivateMembers )
```

#### 6.164.2.3 set\_x()

```
void PrivateCode::set_x (
    int an_x ) [inline], [private]
```

#### 6.164.2.4 x()

```
int PrivateCode::x ( ) const [inline]
```

### 6.164.3 Member Data Documentation

#### 6.164.3.1 x\_

```
int PrivateCode::x_ [private]
```

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

- build/\_deps/googletest-src/googletest/test/[production.h](#)

## 6.165 testing::internal::ProtobufPrinter Struct Reference

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

## Static Public Member Functions

- template<typename T , typename = typename std::enable\_if< internal::HasDebugStringAndShortDebugString<T>::value>::type>  
static void [PrintValue](#) (const T &value, ::std::ostream \*os)

## Static Public Attributes

- static const size\_t [kProtobufOneLinerMaxLength](#) = 50

### 6.165.1 Member Function Documentation

#### 6.165.1.1 [PrintValue\(\)](#)

```
template<typename T , typename = typename std::enable_if< internal::HasDebugStringAndShortDebugString<T>::value>::type>
static void testing::internal::ProtobufPrinter::PrintValue (
    const T & value,
    ::std::ostream * os ) [inline], [static]
```

### 6.165.2 Member Data Documentation

#### 6.165.2.1 [kProtobufOneLinerMaxLength](#)

```
const size_t testing::internal::ProtobufPrinter::kProtobufOneLinerMaxLength = 50 [static]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/[gtest-printers.h](#)

## 6.166 testing::internal::ProxyTypeList< Ts > Struct Template Reference

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

## Public Types

- using [type = Types< Ts... >](#)

### 6.166.1 Member Typedef Documentation

### 6.166.1.1 type

```
template<typename... Ts>
using testing::internal::ProxyTypeList< Ts >::type = Types<Ts...>
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-type-util.h

## 6.167 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\\_](#)

### 6.167.1 Constructor & Destructor Documentation

### 6.167.1.1 Queue() [1/2]

```
template<typename E >
Queue< E >::Queue ( ) [inline]
```

### 6.167.1.2 ~Queue()

```
template<typename E >
Queue< E >::~Queue ( ) [inline]
```

### 6.167.1.3 Queue() [2/2]

```
template<typename E >
Queue< E >::Queue (
    const Queue< E > & ) [private]
```

## 6.167.2 Member Function Documentation

### 6.167.2.1 Clear()

```
template<typename E >
void Queue< E >::Clear ( ) [inline]
```

### 6.167.2.2 Dequeue()

```
template<typename E >
E* Queue< E >::Dequeue ( ) [inline]
```

### 6.167.2.3 Enqueue()

```
template<typename E >
void Queue< E >::Enqueue (
    const E & element ) [inline]
```

**6.167.2.4 Head() [1/2]**

```
template<typename E >
QueueNode<E>* Queue< E >::Head ( ) [inline]
```

**6.167.2.5 Head() [2/2]**

```
template<typename E >
const QueueNode<E>* Queue< E >::Head ( ) const [inline]
```

**6.167.2.6 Last() [1/2]**

```
template<typename E >
QueueNode<E>* Queue< E >::Last ( ) [inline]
```

**6.167.2.7 Last() [2/2]**

```
template<typename E >
const QueueNode<E>* Queue< E >::Last ( ) const [inline]
```

**6.167.2.8 Map()**

```
template<typename E >
template<typename F >
Queue* Queue< E >::Map (
    F function ) const [inline]
```

**6.167.2.9 operator=()**

```
template<typename E >
const Queue& Queue< E >::operator= (
    const Queue< E > & ) [private]
```

**6.167.2.10 Size()**

```
template<typename E >
size_t Queue< E >::Size ( ) const [inline]
```

### 6.167.3 Member Data Documentation

#### 6.167.3.1 head\_

```
template<typename E >
QueueNode<E>*< Queue< E >::head_ [private]
```

#### 6.167.3.2 last\_

```
template<typename E >
QueueNode<E>*< Queue< E >::last_ [private]
```

#### 6.167.3.3 size\_

```
template<typename E >
size_t Queue< E >::size_ [private]
```

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

- build/\_deps/googletest-src/googletest/samples/sample3-inl.h

## 6.168 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 >`

### 6.168.1 Constructor & Destructor Documentation

#### 6.168.1.1 QueueNode() [1/2]

```
template<typename E >
QueueNode< E >::QueueNode (
    const E & an_element )  [inline], [explicit], [private]
```

#### 6.168.1.2 QueueNode() [2/2]

```
template<typename E >
QueueNode< E >::QueueNode (
    const QueueNode< E > & )  [private]
```

### 6.168.2 Member Function Documentation

#### 6.168.2.1 element()

```
template<typename E >
const E& QueueNode< E >::element ( ) const  [inline]
```

### 6.168.2.2 next() [1/2]

```
template<typename E >
QueueNode* QueueNode< E >::next ( ) [inline]
```

### 6.168.2.3 next() [2/2]

```
template<typename E >
const QueueNode* QueueNode< E >::next ( ) const [inline]
```

### 6.168.2.4 operator=()

```
template<typename E >
const QueueNode& QueueNode< E >::operator= (
    const QueueNode< E > & ) [private]
```

## 6.168.3 Friends And Related Function Documentation

### 6.168.3.1 Queue< E >

```
template<typename E >
friend class Queue< E > [friend]
```

## 6.168.4 Member Data Documentation

### 6.168.4.1 element\_

```
template<typename E >
E QueueNode< E >::element_ [private]
```

### 6.168.4.2 next\_

```
template<typename E >
QueueNode* QueueNode< E >::next_ [private]
```

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

- build/\_deps/googletest-src/googletest/samples/sample3-inl.h

## 6.169 testing::internal::Random Class Reference

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

### Public Member Functions

- `Random (uint32_t seed)`
- `void Reseed (uint32_t seed)`
- `uint32_t Generate (uint32_t range)`

### Static Public Attributes

- `static const uint32_t kMaxRange = 1u << 31`

### Private Member Functions

- `Random (const Random &) = delete`
- `Random & operator= (const Random &) = delete`

### Private Attributes

- `uint32_t state_`

## 6.169.1 Constructor & Destructor Documentation

### 6.169.1.1 Random() [1/2]

```
testing::internal::Random::Random (
    uint32_t seed ) [inline], [explicit]
```

### 6.169.1.2 Random() [2/2]

```
testing::internal::Random::Random (
    const Random & ) [private], [delete]
```

## 6.169.2 Member Function Documentation

### 6.169.2.1 Generate()

```
uint32_t testing::internal::Random::Generate (
    uint32_t range )
```

### 6.169.2.2 operator=()

```
Random& testing::internal::Random::operator= (
    const Random & ) [private], [delete]
```

### 6.169.2.3 Reseed()

```
void testing::internal::Random::Reseed (
    uint32_t seed ) [inline]
```

## 6.169.3 Member Data Documentation

### 6.169.3.1 kMaxRange

```
const uint32_t testing::internal::Random::kMaxRange = 1u << 31 [static]
```

### 6.169.3.2 state\_

```
uint32_t testing::internal::Random::state_ [private]
```

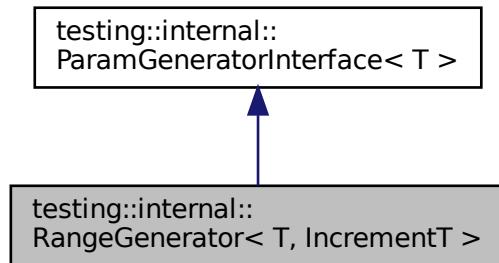
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

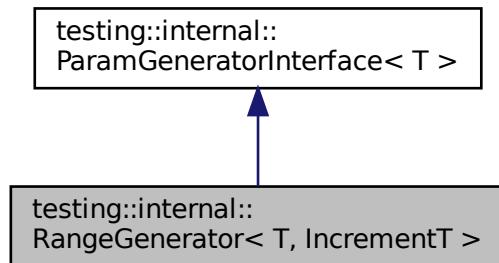
## 6.170 testing::internal::RangeGenerator< T, IncrementT > Class Template Reference

```
#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

### 6.170.1 Constructor & Destructor Documentation

#### 6.170.1.1 RangeGenerator()

```
template<typename T , typename IncrementT >
testing::internal::RangeGenerator< T, IncrementT >::RangeGenerator (
    T begin,
    T end,
    IncrementT step ) [inline]
```

#### 6.170.1.2 ~RangeGenerator()

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

### 6.170.2 Member Function Documentation

#### 6.170.2.1 Begin()

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

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

### 6.170.2.2 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]
```

### 6.170.2.3 End()

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

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

### 6.170.2.4 operator=( )

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

## 6.170.3 Member Data Documentation

### 6.170.3.1 begin\_

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

### 6.170.3.2 end\_

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

### 6.170.3.3 end\_index\_

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

### 6.170.3.4 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:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.171 testing::internal::RawBytesPrinter Struct Reference

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

### Static Public Member Functions

- template<typename T , size\_t = sizeof(T)>  
static void [PrintValue](#) (const T &value, ::std::ostream \*os)

#### 6.171.1 Member Function Documentation

##### 6.171.1.1 [PrintValue\(\)](#)

```
template<typename T , size_t = sizeof(T)>
static void testing::internal::RawBytesPrinter::PrintValue (
    const T & value,
    ::std::ostream * os ) [inline], [static]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

## 6.172 testing::internal::RE Class Reference

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

### Public Member Functions

- [RE](#) (const [RE](#) &other)
- [RE](#) (const ::std::string &regex)
- [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)

## Private Attributes

- const char \* `pattern_`
- bool `is_valid_`
- regex\_t `full_regex_`
- regex\_t `partial_regex_`

### 6.172.1 Constructor & Destructor Documentation

#### 6.172.1.1 `RE()` [1/3]

```
testing::internal::RE::RE (
    const RE & other )  [inline]
```

#### 6.172.1.2 `RE()` [2/3]

```
testing::internal::RE::RE (
    const ::std::string & regex )  [inline]
```

#### 6.172.1.3 `RE()` [3/3]

```
testing::internal::RE::RE (
    const char * regex )  [inline]
```

#### 6.172.1.4 `~RE()`

```
testing::internal::RE::~RE ( )
```

## 6.172.2 Member Function Documentation

### 6.172.2.1 FullMatch() [1/2]

```
static bool testing::internal::RE::FullMatch (
    const ::std::string & str,
    const RE & re ) [inline], [static]
```

### 6.172.2.2 FullMatch() [2/2]

```
static bool testing::internal::RE::FullMatch (
    const char * str,
    const RE & re ) [static]
```

### 6.172.2.3 Init()

```
void testing::internal::RE::Init (
    const char * regex ) [private]
```

### 6.172.2.4 PartialMatch() [1/2]

```
static bool testing::internal::RE::PartialMatch (
    const ::std::string & str,
    const RE & re ) [inline], [static]
```

### 6.172.2.5 PartialMatch() [2/2]

```
static bool testing::internal::RE::PartialMatch (
    const char * str,
    const RE & re ) [static]
```

### 6.172.2.6 pattern()

```
const char* testing::internal::RE::pattern ( ) const [inline]
```

### 6.172.3 Member Data Documentation

#### 6.172.3.1 full\_regex\_

```
regex_t testing::internal::RE::full_regex_ [private]
```

#### 6.172.3.2 is\_valid\_

```
bool testing::internal::RE::is_valid_ [private]
```

#### 6.172.3.3 partial\_regex\_

```
regex_t testing::internal::RE::partial_regex_ [private]
```

#### 6.172.3.4 pattern\_

```
const char* testing::internal::RE::pattern_ [private]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-port.h

## 6.173 testing::internal::RelationToSourceCopy Struct Reference

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

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.174 testing::internal::RelationToSourceReference Struct Reference

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

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.175 testing::internal::RemoveConstFromKey< T > Struct Template Reference

```
#include <gmock-internal-utils.h>
```

### Public Types

- `typedef T type`

#### 6.175.1 Member Typedef Documentation

##### 6.175.1.1 type

```
template<typename T >
typedef T testing::internal::RemoveConstFromKey< T >::type
```

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

- `build/_deps/googletest-src/googlemock/include/gmock/internal/gmock-internal-utils.h`

## 6.176 testing::internal::RemoveConstFromKey< std::pair< const K, V > > Struct Template Reference

```
#include <gmock-internal-utils.h>
```

### Public Types

- `typedef std::pair< K, V > type`

#### 6.176.1 Member Typedef Documentation

##### 6.176.1.1 type

```
template<typename K , typename V >
typedef std::pair<K, V> testing::internal::RemoveConstFromKey< std::pair< const K, V > >::type
```

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

- `build/_deps/googletest-src/googlemock/include/gmock/internal/gmock-internal-utils.h`

## 6.177 testing::internal::ReturnAction< R > Class Template Reference

```
#include <gmock-actions.h>
```

### Classes

- class [Impl](#)

### Public Member Functions

- [ReturnAction \(R value\)](#)
- template<typename U , typename... Args, typename = typename std::enable\_if<conjunction< negation<std::is\_same<void, U>>, negation<std::is\_reference<U>>, std::is\_convertible<R, U>, std::is\_move\_constructible<U>>::value>::type> operator [OnceAction< U \(Args...\)>\(\)](#) &&
- template<typename U , typename... Args, typename = typename std::enable\_if<conjunction< negation<std::is\_same<void, U>>, negation<std::is\_reference<U>>, std::is\_convertible<const R&, U>, std::is\_copy\_constructible<U>>::value>::type> operator [Action< U \(Args...\)>\(\)](#) const

### Private Attributes

- R [value\\_](#)

#### 6.177.1 Constructor & Destructor Documentation

##### 6.177.1.1 [ReturnAction\(\)](#)

```
template<typename R >
testing::internal::ReturnAction< R >::ReturnAction (
    R value ) [inline], [explicit]
```

#### 6.177.2 Member Function Documentation

##### 6.177.2.1 [operator Action< U\(\)](#)

```
template<typename R >
template<typename U , typename... Args, typename = typename std::enable_if<conjunction< negation<std::is_same<void, U>>, negation<std::is_reference<U>>, std::is_convertible<const R&, U>, std::is_copy_constructible<U>>::value>::type>
testing::internal::ReturnAction< R >::operator Action< U \(
    Args... ) const [inline]
```

### 6.177.2.2 operator OnceAction< U()

```
template<typename R >
template<typename U , typename... Args, typename = typename std::enable_if<conjunction<
negation<std::is_same<void, U>>, negation<std::is_reference<U>>, std::is_convertible<R, U>,
std::is_move_constructible<U>>::value>::type>
testing::internal::ReturnAction< R >::operator OnceAction< U (
    Args...      )  && [inline]
```

### 6.177.3 Member Data Documentation

#### 6.177.3.1 value\_

```
template<typename R >
R testing::internal::ReturnAction< R >::value_ [private]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest.h

## 6.178 testing::internal::ReturnAction< ByMoveWrapper< T > > Class Template Reference

```
#include <gmock-actions.h>
```

### Classes

- struct [State](#)

### Public Member Functions

- [ReturnAction \(ByMoveWrapper< T > wrapper\)](#)
- [T operator\(\) \(\) const](#)

### Private Attributes

- [const std::shared\\_ptr< State > state\\_](#)

### 6.178.1 Constructor & Destructor Documentation

### 6.178.1.1 ReturnAction()

```
template<typename T >
testing::internal::ReturnAction< ByMoveWrapper< T > >::ReturnAction (
    ByMoveWrapper< T > wrapper ) [inline], [explicit]
```

## 6.178.2 Member Function Documentation

### 6.178.2.1 operator()()

```
template<typename T >
T testing::internal::ReturnAction< ByMoveWrapper< T > >::operator() ( ) const [inline]
```

## 6.178.3 Member Data Documentation

### 6.178.3.1 state\_

```
template<typename T >
const std::shared_ptr<State> testing::internal::ReturnAction< ByMoveWrapper< T > >::state_
[private]
```

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

- build/\_deps/googletest-src/googmock/include/gmock/gmock-actions.h

## 6.179 testing::internal::ReturnArgAction< k > Struct Template Reference

```
#include <gmock-actions.h>
```

### Public Member Functions

- template<typename... Args, typename = typename std::enable\_if<(k < sizeof...(Args))>::type>
auto [operator\(\)](#) (Args &&... args) const -> decltype(std::get< k >(std::forward\_as\_tuple(std::forward< Args >(args)...)))

### 6.179.1 Member Function Documentation

### 6.179.1.1 operator()()

```
template<size_t k>
template<typename... Args, typename = typename std::enable_if<(k < sizeof...(Args))>::type>
auto testing::internal::ReturnArgAction<k>::operator()(
    Args &&... args) const -> decltype(std::get<k>(std::forward_as_tuple(std::forward<Args>(args)...))) [inline]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.180 testing::internal::ReturnNewAction< T, Params > Struct Template Reference

```
#include <gmock-actions.h>
```

### Public Member Functions

- T \* **operator()** () const

### Public Attributes

- std::tuple<Params...> **params**

### 6.180.1 Member Function Documentation

#### 6.180.1.1 operator()()

```
template<typename T, typename... Params>
T* testing::internal::ReturnNewAction<T, Params>::operator()() const [inline]
```

### 6.180.2 Member Data Documentation

#### 6.180.2.1 params

```
template<typename T, typename... Params>
std::tuple<Params...> testing::internal::ReturnNewAction<T, Params>::params
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.181 testing::internal::ReturnNullAction Class Reference

```
#include <gmock-actions.h>
```

### Static Public Member Functions

- template<typename Result , typename ArgumentTuple >  
static Result [Perform](#) (const ArgumentTuple &)

#### 6.181.1 Member Function Documentation

##### 6.181.1.1 [Perform\(\)](#)

```
template<typename Result , typename ArgumentTuple >
static Result testing::internal::ReturnNullAction::Perform (
    const ArgumentTuple & ) [inline], [static]
```

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

- build/\_deps/googletest-src/googletest/include/gmock/[gmock-actions.h](#)

## 6.182 testing::internal::ReturnPointeeAction< Ptr > Struct Template Reference

```
#include <gmock-actions.h>
```

### Public Member Functions

- template<typename... Args>  
auto [operator\(\)](#) (const Args &...) const -> decltype(\*[pointer](#))

### Public Attributes

- Ptr [pointer](#)

#### 6.182.1 Member Function Documentation

### 6.182.1.1 operator()()

```
template<typename Ptr >
template<typename... Args>
auto testing::internal::ReturnPointeeAction< Ptr >::operator() (
    const Args & ... ) const -> decltype(*pointer) [inline]
```

## 6.182.2 Member Data Documentation

### 6.182.2.1 pointer

```
template<typename Ptr >
Ptr testing::internal::ReturnPointeeAction< Ptr >::pointer
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.183 testing::internal::ReturnRefAction< T > Class Template Reference

```
#include <gmock-actions.h>
```

### Classes

- class [Impl](#)

### Public Member Functions

- [ReturnRefAction \(T &ref\)](#)
- template<typename F >  
[operator Action< F > \(\) const](#)

### Private Attributes

- T & [ref\\_](#)

## 6.183.1 Constructor & Destructor Documentation

### 6.183.1.1 `ReturnRefAction()`

```
template<typename T >
testing::internal::ReturnRefAction< T >::ReturnRefAction (
    T & ref ) [inline], [explicit]
```

## 6.183.2 Member Function Documentation

### 6.183.2.1 `operator Action< F >()`

```
template<typename T >
template<typename F >
testing::internal::ReturnRefAction< T >::operator Action< F > ( ) const [inline]
```

## 6.183.3 Member Data Documentation

### 6.183.3.1 `ref_`

```
template<typename T >
T& testing::internal::ReturnRefAction< T >::ref_ [private]
```

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

- build/\_deps/googletest-src/googletest/include/gmock/gmock-actions.h

## 6.184 `testing::internal::ReturnRefOfCopyAction< T >` Class Template Reference

```
#include <gmock-actions.h>
```

### Classes

- class [Impl](#)

### Public Member Functions

- `ReturnRefOfCopyAction (const T &value)`
- template<typename F >  
`operator Action< F > () const`

## Private Attributes

- const T value\_

### 6.184.1 Constructor & Destructor Documentation

#### 6.184.1.1 ReturnRefOfCopyAction()

```
template<typename T >
testing::internal::ReturnRefOfCopyAction< T >::ReturnRefOfCopyAction (
    const T & value )  [inline], [explicit]
```

### 6.184.2 Member Function Documentation

#### 6.184.2.1 operator Action< F >()

```
template<typename T >
template<typename F >
testing::internal::ReturnRefOfCopyAction< T >::operator Action< F > ( ) const  [inline]
```

### 6.184.3 Member Data Documentation

#### 6.184.3.1 value\_

```
template<typename T >
const T testing::internal::ReturnRefOfCopyAction< T >::value_  [private]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.185 testing::internal::ReturnRoundRobinAction< T > Class Template Reference

```
#include <gmock-actions.h>
```

## Classes

- struct [State](#)

## Public Member Functions

- [ReturnRoundRobinAction](#) (std::vector< T > values)
- template<typename... Args>  
    T [operator\(\)](#) (Args &&...) const

## Private Attributes

- std::shared\_ptr< [State](#) > [state\\_](#) = std::make\_shared<[State](#)>()

### 6.185.1 Constructor & Destructor Documentation

#### 6.185.1.1 [ReturnRoundRobinAction\(\)](#)

```
template<typename T >
testing::internal::ReturnRoundRobinAction< T >::ReturnRoundRobinAction (
    std::vector< T > values ) [inline], [explicit]
```

### 6.185.2 Member Function Documentation

#### 6.185.2.1 [operator\(\)\(\)](#)

```
template<typename T >
template<typename... Args>
T testing::internal::ReturnRoundRobinAction< T >::operator() (
    Args && ... ) const [inline]
```

### 6.185.3 Member Data Documentation

#### 6.185.3.1 [state\\_](#)

```
template<typename T >
std::shared_ptr<State> testing::internal::ReturnRoundRobinAction< T >::state_ = std::make_shared<State>() [private]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/[gmock-actions.h](#)

## 6.186 testing::internal::ReturnVoidAction Class Reference

```
#include <gmock-actions.h>
```

### Static Public Member Functions

- template<typename Result , typename ArgumentTuple >  
static void [Perform](#)(const ArgumentTuple &)

#### 6.186.1 Member Function Documentation

##### 6.186.1.1 [Perform\(\)](#)

```
template<typename Result , typename ArgumentTuple >
static void testing::internal::ReturnVoidAction::Perform (
    const ArgumentTuple & ) [inline], [static]
```

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

- build/\_deps/googletest-src/googletest/include/gmock/[gmock-actions.h](#)

## 6.187 testing::internal::SaveArgAction< k, Ptr > Struct Template Reference

```
#include <gmock-actions.h>
```

### Public Member Functions

- template<typename... Args>  
void [operator\(\)](#)(const Args &... args) const

### Public Attributes

- Ptr [pointer](#)

#### 6.187.1 Member Function Documentation

### 6.187.1.1 operator()()

```
template<size_t k, typename Ptr >
template<typename... Args>
void testing::internal::SaveArgAction< k, Ptr >::operator() (
    const Args &... args ) const [inline]
```

## 6.187.2 Member Data Documentation

### 6.187.2.1 pointer

```
template<size_t k, typename Ptr >
Ptr testing::internal::SaveArgAction< k, Ptr >::pointer
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.188 testing::internal::SaveArgPointeeAction< k, Ptr > Struct Template Reference

```
#include <gmock-actions.h>
```

### Public Member Functions

- template<typename... Args>  
void [operator\(\)](#) (const Args &... args) const

### Public Attributes

- Ptr [pointer](#)

## 6.188.1 Member Function Documentation

### 6.188.1.1 operator()()

```
template<size_t k, typename Ptr >
template<typename... Args>
void testing::internal::SaveArgPointeeAction< k, Ptr >::operator() (
    const Args &... args ) const [inline]
```

## 6.188.2 Member Data Documentation

### 6.188.2.1 pointer

```
template<size_t k, typename Ptr >
Ptr testing::internal::SaveArgPointeeAction< k, Ptr >::pointer
```

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

- build/\_deps/googletest-src/gmock/include/gmock/gmock-actions.h

## 6.189 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)
- [ScopedTrace](#) (const [ScopedTrace](#) &)=delete
- [ScopedTrace & operator=](#) (const [ScopedTrace](#) &)=delete

## 6.189.1 Constructor & Destructor Documentation

### 6.189.1.1 [ScopedTrace\(\)](#) [1/4]

```
template<typename T >
testing::ScopedTrace::ScopedTrace (
    const char * file,
    int line,
    const T & message )  [inline]
```

### 6.189.1.2 **ScopedTrace()** [2/4]

```
testing::ScopedTrace::ScopedTrace (
    const char * file,
    int line,
    const char * message ) [inline]
```

### 6.189.1.3 **ScopedTrace()** [3/4]

```
testing::ScopedTrace::ScopedTrace (
    const char * file,
    int line,
    const std::string & message ) [inline]
```

### 6.189.1.4 **~ScopedTrace()**

```
testing::ScopedTrace::~ScopedTrace ( )
```

### 6.189.1.5 **ScopedTrace()** [4/4]

```
testing::ScopedTrace::ScopedTrace (
    const ScopedTrace & ) [private], [delete]
```

## 6.189.2 Member Function Documentation

### 6.189.2.1 **operator=()**

```
ScopedTrace& testing::ScopedTrace::operator= (
    const ScopedTrace & ) [private], [delete]
```

### 6.189.2.2 **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:

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

## 6.190 testing::internal::SetArgRefereeAction< k, T > Struct Template Reference

```
#include <gmock-actions.h>
```

### Public Member Functions

- template<typename... Args>  
void [operator\(\)](#) (Args &&... args) const

### Public Attributes

- T [value](#)

#### 6.190.1 Member Function Documentation

##### 6.190.1.1 [operator\(\)\(\)](#)

```
template<size_t k, typename T >
template<typename... Args>
void testing::internal::SetArgRefereeAction< k, T >::operator\(\) (
    Args &&... args) const [inline]
```

#### 6.190.2 Member Data Documentation

##### 6.190.2.1 [value](#)

```
template<size_t k, typename T >
T testing::internal::SetArgRefereeAction< k, T >::value
```

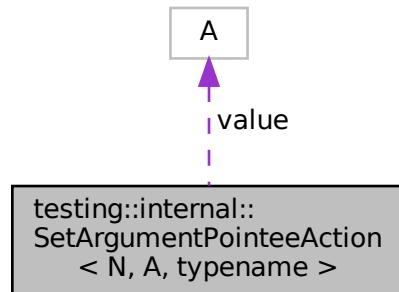
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gmock/[gmock-actions.h](#)

## 6.191 testing::internal::SetArgumentPointeeAction< N, A, typename > Struct Template Reference

```
#include <gmock-actions.h>
```

Collaboration diagram for testing::internal::SetArgumentPointeeAction< N, A, typename >:



### Public Member Functions

- template<typename... Args>  
void [operator\(\)](#) (const Args &... args) const

### Public Attributes

- A [value](#)

#### 6.191.1 Member Function Documentation

##### 6.191.1.1 [operator\(\)\(\)](#)

```
template<size_t N, typename A , typename = void>
template<typename... Args>
void testing::internal::SetArgumentPointeeAction< N, A, typename >::operator\(\) (
    const Args &... args ) const [inline]
```

#### 6.191.2 Member Data Documentation

### 6.191.2.1 value

```
template<size_t N, typename A , typename = void>
A testing::internal::SetArgumentPointeeAction< N, A, typename >::value
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.192 testing::internal::SetArrayArgumentAction< k, I1, I2 > Struct Template Reference

```
#include <gmock-actions.h>
```

### Public Member Functions

- template<typename... Args>  
void [operator\(\)](#) (const Args &... args) const

### Public Attributes

- I1 [first](#)
- I2 [last](#)

### 6.192.1 Member Function Documentation

#### 6.192.1.1 operator()()

```
template<size_t k, typename I1 , typename I2 >
template<typename... Args>
void testing::internal::SetArrayArgumentAction< k, I1, I2 >::operator() (
    const Args &... args ) const [inline]
```

### 6.192.2 Member Data Documentation

#### 6.192.2.1 first

```
template<size_t k, typename I1 , typename I2 >
I1 testing::internal::SetArrayArgumentAction< k, I1, I2 >::first
```

### 6.192.2.2 last

```
template<size_t k, typename I1 , typename I2 >
I2 testing::internal::SetArrayArgumentAction< k, I1, I2 >::last
```

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

- build/\_deps/googletest-src/googmock/include/gmock/gmock-actions.h

## 6.193 testing::internal::SetErrnoAndReturnAction< T > Class Template Reference

```
#include <gmock-actions.h>
```

### Public Member Functions

- [SetErrnoAndReturnAction](#) (int errno\_value, T result)
- template<typename Result , typename ArgumentTuple >  
Result [Perform](#) (const ArgumentTuple &) const

### Private Attributes

- const int [errno\\_](#)
- const T [result\\_](#)

### 6.193.1 Constructor & Destructor Documentation

#### 6.193.1.1 SetErrnoAndReturnAction()

```
template<typename T >
testing::internal::SetErrnoAndReturnAction< T >::SetErrnoAndReturnAction (
    int errno_value,
    T result ) [inline]
```

### 6.193.2 Member Function Documentation

#### 6.193.2.1 Perform()

```
template<typename T >
template<typename Result , typename ArgumentTuple >
Result testing::internal::SetErrnoAndReturnAction< T >::Perform (
    const ArgumentTuple & ) const [inline]
```

### 6.193.3 Member Data Documentation

#### 6.193.3.1 errno\_

```
template<typename T >
const int testing::internal::SetErrnoAndReturnAction< T >::errno_ [private]
```

#### 6.193.3.2 result\_

```
template<typename T >
const T testing::internal::SetErrnoAndReturnAction< T >::result_ [private]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/gmock-actions.h

## 6.194 testing::Environment::Setup\_should\_be\_spelled\_SetUp Struct Reference

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

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

## 6.195 testing::Test::Setup\_should\_be\_spelled\_SetUp Struct Reference

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

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

## 6.196 testing::internal::IgnoredValue::Sink Struct Reference

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.197 testing::internal::ReturnAction< R >::Impl< U >::State Struct Reference

### Public Member Functions

- `State (const R &input_value_in)`
- `State (R &&input_value_in)`

### Public Attributes

- R `input_value`
- U `value`

#### 6.197.1 Constructor & Destructor Documentation

##### 6.197.1.1 `State()` [1/2]

```
template<typename R >
template<typename U >
testing::internal::ReturnAction< R >::Impl< U >::State::State (
    const R & input_value_in )  [inline], [explicit]
```

##### 6.197.1.2 `State()` [2/2]

```
template<typename R >
template<typename U >
testing::internal::ReturnAction< R >::Impl< U >::State::State (
    R && input_value_in )  [inline], [explicit]
```

#### 6.197.2 Member Data Documentation

##### 6.197.2.1 `input_value`

```
template<typename R >
template<typename U >
R testing::internal::ReturnAction< R >::Impl< U >::State::input_value
```

### 6.197.2.2 value

```
template<typename R >
template<typename U >
U testing::internal::ReturnAction< R >::Impl< U >::State::value
```

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

- build/\_deps/googletest-src/gmock/include/gmock/gmock-actions.h

## 6.198 testing::internal::ReturnAction< ByMoveWrapper< T > >::State Struct Reference

### Public Member Functions

- [State \(T &&value\\_in\)](#)

### Public Attributes

- T [value](#)
- bool [called](#) = false

#### 6.198.1 Constructor & Destructor Documentation

##### 6.198.1.1 State()

```
template<typename T >
testing::internal::ReturnAction< ByMoveWrapper< T > >::State::State (
    T && value_in ) [inline], [explicit]
```

#### 6.198.2 Member Data Documentation

##### 6.198.2.1 called

```
template<typename T >
bool testing::internal::ReturnAction< ByMoveWrapper< T > >::State::called = false
```

### 6.198.2.2 value

```
template<typename T >
T testing::internal::ReturnAction< ByMoveWrapper< T > >::State::value
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.199 testing::internal::ReturnRoundRobinAction< T >::State Struct Reference

### Public Member Functions

- T [Next \(\)](#)

### Public Attributes

- std::vector< T > [values](#)
- size\_t [i](#) = 0

### 6.199.1 Member Function Documentation

#### 6.199.1.1 [Next\(\)](#)

```
template<typename T >
T testing::internal::ReturnRoundRobinAction< T >::State::Next ( ) [inline]
```

### 6.199.2 Member Data Documentation

#### 6.199.2.1 [i](#)

```
template<typename T >
size_t testing::internal::ReturnRoundRobinAction< T >::State::i = 0
```

### 6.199.2.2 values

```
template<typename T >
std::vector<T> testing::internal::ReturnRoundRobinAction< T >::State::values
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

## 6.200 testing::OnceAction< Result(Args...)>::StdFunctionAdaptor< Callable > Class Template Reference

### Classes

- struct [CallableTag](#)

### Public Member Functions

- template<typename F >  
[StdFunctionAdaptor](#) (CallableTag, F &&callable)
- template<typename... ArgRefs>  
[internal::call\\_result\\_t](#)< Callable, ArgRefs... > [operator\(\)](#) (ArgRefs &&... args) const

### Private Attributes

- std::shared\_ptr< Callable > [callable\\_](#)

## 6.200.1 Constructor & Destructor Documentation

### 6.200.1.1 StdFunctionAdaptor()

```
template<typename Result , typename... Args>
template<typename Callable >
template<typename F >
testing::OnceAction< Result(Args...)>::StdFunctionAdaptor< Callable >::StdFunctionAdaptor (
    CallableTag ,
    F && callable ) [inline], [explicit]
```

## 6.200.2 Member Function Documentation

### 6.200.2.1 operator()()

```
template<typename Result , typename... Args>
template<typename Callable >
template<typename... ArgRefs>
internal::call_result_t<Callable, ArgRefs...> testing::OnceAction< Result(Args...)>::StdFunctionAdaptor<
Callable >::operator() (
    ArgRefs &&... args ) const [inline]
```

### 6.200.3 Member Data Documentation

#### 6.200.3.1 callable\_

```
template<typename Result , typename... Args>
template<typename Callable >
std::shared_ptr<Callable> testing::OnceAction< Result(Args...)>::StdFunctionAdaptor< Callable
>::callable_ [private]
```

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

- build/\_deps/googletest-src/googletest/include/gmock/gmock-actions.h

## 6.201 testing::internal::StlContainerView< RawContainer > Class Template Reference

```
#include <gmock-internal-utils.h>
```

### Public Types

- typedef RawContainer **type**
- typedef const **type** & **const\_reference**

### Static Public Member Functions

- static **const\_reference ConstReference** (const RawContainer &container)
- static **type Copy** (const RawContainer &container)

### 6.201.1 Member Typedef Documentation

### 6.201.1.1 const\_reference

```
template<class RawContainer >
typedef const type& testing::internal::StlContainerView< RawContainer >::const_reference
```

### 6.201.1.2 type

```
template<class RawContainer >
typedef RawContainer testing::internal::StlContainerView< RawContainer >::type
```

## 6.201.2 Member Function Documentation

### 6.201.2.1 ConstReference()

```
template<class RawContainer >
static const_reference testing::internal::StlContainerView< RawContainer >::ConstReference (
    const RawContainer & container ) [inline], [static]
```

### 6.201.2.2 Copy()

```
template<class RawContainer >
static type testing::internal::StlContainerView< RawContainer >::Copy (
    const RawContainer & container ) [inline], [static]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.202 testing::internal::StlContainerView< ::std::tuple< ElementPointer, Size > > Class Template Reference

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

### Public Types

- typedef std::remove\_const< typename std::pointer\_traits< ElementPointer >::element\_type >::type RawElement
- typedef internal::NativeArray< RawElement > type
- typedef const type const\_reference

## Static Public Member Functions

- static `const_reference ConstReference` (const ::std::tuple< ElementPointer, Size > &array)
- static `type Copy` (const ::std::tuple< ElementPointer, Size > &array)

### 6.202.1 Member Typedef Documentation

#### 6.202.1.1 `const_reference`

```
template<typename ElementPointer , typename Size >
typedef const type testing::internal::StlContainerView< ::std::tuple< ElementPointer, Size >
>::const_reference
```

#### 6.202.1.2 `RawElement`

```
template<typename ElementPointer , typename Size >
typedef std::remove_const< typename std::pointer_traits<ElementPointer>::element_type>::type
testing::internal::StlContainerView< ::std::tuple< ElementPointer, Size > >::RawElement
```

#### 6.202.1.3 `type`

```
template<typename ElementPointer , typename Size >
typedef internal::NativeArray<RawElement> testing::internal::StlContainerView< ::std::tuple<
ElementPointer, Size > >::type
```

### 6.202.2 Member Function Documentation

#### 6.202.2.1 `ConstReference()`

```
template<typename ElementPointer , typename Size >
static const_reference testing::internal::StlContainerView< ::std::tuple< ElementPointer, Size
> >::ConstReference (
    const ::std::tuple< ElementPointer, Size > & array ) [inline], [static]
```

### 6.202.2.2 Copy()

```
template<typename ElementPointer , typename Size >
static type testing::internal::StlContainerView< ::std::tuple< ElementPointer, Size > >::Copy
(
    const ::std::tuple< ElementPointer, Size > & array ) [inline], [static]
```

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

- build/\_deps/googletest-src/gmock/include/gmock/internal/gmock-internal-utils.h

## 6.203 testing::internal::StlContainerView< Element[N]> Class Template Reference

```
#include <gmock-internal-utils.h>
```

### Public Types

- `typedef std::remove_const< Element >::type RawElement`
- `typedef internal::NativeArray< RawElement > type`
- `typedef const type const_reference`

### Static Public Member Functions

- `static const_reference ConstReference (const Element(&array)[N])`
- `static type Copy (const Element(&array)[N])`

#### 6.203.1 Member Typedef Documentation

##### 6.203.1.1 const\_reference

```
template<typename Element , size_t N>
typedef const type testing::internal::StlContainerView< Element[N]>::const_reference
```

##### 6.203.1.2 RawElement

```
template<typename Element , size_t N>
typedef std::remove_const<Element>::type testing::internal::StlContainerView< Element[N]>::RawElement
```

### 6.203.1.3 type

```
template<typename Element , size_t N>
typedef internal::NativeArray<RawElement> testing::internal::StlContainerView< Element[N]>::type
```

## 6.203.2 Member Function Documentation

### 6.203.2.1 ConstReference()

```
template<typename Element , size_t N>
static const_reference testing::internal::StlContainerView< Element[N]>::ConstReference (
    const Element(&) array[N] ) [inline], [static]
```

### 6.203.2.2 Copy()

```
template<typename Element , size_t N>
static type testing::internal::StlContainerView< Element[N]>::Copy (
    const Element(&) array[N] ) [inline], [static]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.204 testing::internal::internal\_stream\_operator\_without\_lexical\_name\_lookup::StreamPrinter Struct Reference

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

### Static Public Member Functions

- template<typename T , typename = typename std::enable\_if< !std::is\_member\_pointer<T>::value>::type, typename = decltype(std::declval<std::ostream&>() << std::declval<const T&>())>
static void [PrintValue](#) (const T &value, std::ostream \*os)

### 6.204.1 Member Function Documentation

### 6.204.1.1 PrintValue()

```
template<typename T , typename = typename std::enable_if< !std::is_member_pointer<T>::value>>::type, typename = decltype(std::declval<std::ostream&>() << std::declval<const T&>())>
static void testing::internal::internal_stream_operator_without_lexical_name_lookup::Stream←
Printer::PrintValue (
    const T & value,
    ::std::ostream * os ) [inline], [static]
```

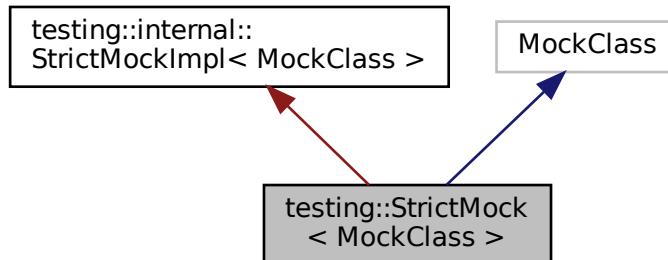
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

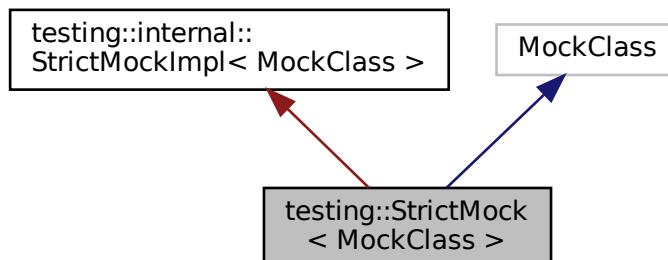
## 6.205 testing::StrictMock< MockClass > Class Template Reference

```
#include <gmock-nice-strict.h>
```

Inheritance diagram for testing::StrictMock< MockClass >:



Collaboration diagram for testing::StrictMock< MockClass >:



## Public Member Functions

- `StrictMock ()`
- template<typename A >  
    `StrictMock (A &&arg)`
- template<typename TArg1 , typename TArg2 , typename... An>  
    `StrictMock (TArg1 &&arg1, TArg2 &&arg2, An &&... args)`

## Private Member Functions

- `StrictMock (const StrictMock &)=delete`
- `StrictMock & operator= (const StrictMock &)=delete`

### 6.205.1 Constructor & Destructor Documentation

#### 6.205.1.1 StrictMock() [1/4]

```
template<class MockClass >
testing::StrictMock< MockClass >::StrictMock ( )  [inline]
```

#### 6.205.1.2 StrictMock() [2/4]

```
template<class MockClass >
template<typename A >
testing::StrictMock< MockClass >::StrictMock (
    A && arg )  [inline], [explicit]
```

#### 6.205.1.3 StrictMock() [3/4]

```
template<class MockClass >
template<typename TArg1 , typename TArg2 , typename... An>
testing::StrictMock< MockClass >::StrictMock (
    TArg1 && arg1,
    TArg2 && arg2,
    An &&... args )  [inline]
```

#### 6.205.1.4 StrictMock() [4/4]

```
template<class MockClass >
testing::StrictMock< MockClass >::StrictMock (
    const StrictMock< MockClass > & )  [private], [delete]
```

## 6.205.2 Member Function Documentation

### 6.205.2.1 operator=()

```
template<class MockClass >
StrictMock< testing::StrictMock< MockClass >>::operator= (
    const StrictMock< MockClass > & ) [private], [delete]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-nice-strict.h

## 6.206 testing::internal::StrictMockImpl< Base > Class Template Reference

```
#include <gmock-nice-strict.h>
```

### Public Member Functions

- StrictMockImpl ()
- ~StrictMockImpl ()

### 6.206.1 Constructor & Destructor Documentation

#### 6.206.1.1 StrictMockImpl()

```
template<typename Base >
testing::internal::StrictMockImpl< Base >::StrictMockImpl ( ) [inline]
```

#### 6.206.1.2 ~StrictMockImpl()

```
template<typename Base >
testing::internal::StrictMockImpl< Base >::~StrictMockImpl ( ) [inline]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-nice-strict.h

## 6.207 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 [FormatIntWidthN](#) (int value, int width)
- static std::string [FormatHexInt](#) (int value)
- static std::string [FormatHexUInt32](#) (uint32\_t value)
- static std::string [FormatByte](#) (unsigned char value)

### Private Member Functions

- [String](#) ()

#### 6.207.1 Constructor & Destructor Documentation

##### 6.207.1.1 [String\(\)](#)

```
testing::internal::String::String ( ) [private]
```

#### 6.207.2 Member Function Documentation

##### 6.207.2.1 [CaseInsensitiveCStringEquals\(\)](#)

```
static bool testing::internal::String::CaseInsensitiveCStringEquals (
    const char * lhs,
    const char * rhs ) [static]
```

### 6.207.2.2 CaseInsensitiveWideCStringEquals()

```
static bool testing::internal::String::CaseInsensitiveWideCStringEquals (
    const wchar_t * lhs,
    const wchar_t * rhs ) [static]
```

### 6.207.2.3 CloneCString()

```
static const char* testing::internal::String::CloneCString (
    const char * c_str ) [static]
```

### 6.207.2.4 CStringEquals()

```
static bool testing::internal::String::CStringEquals (
    const char * lhs,
    const char * rhs ) [static]
```

### 6.207.2.5 EndsWithCaseInsensitive()

```
static bool testing::internal::String::EndsWithCaseInsensitive (
    const std::string & str,
    const std::string & suffix ) [static]
```

### 6.207.2.6 FormatByte()

```
static std::string testing::internal::String::FormatByte (
    unsigned char value ) [static]
```

### 6.207.2.7 FormatHexInt()

```
static std::string testing::internal::String::FormatHexInt (
    int value ) [static]
```

### 6.207.2.8 FormatHexUInt32()

```
static std::string testing::internal::String::FormatHexUInt32 (
    uint32_t value) [static]
```

### 6.207.2.9 FormatIntWidth2()

```
static std::string testing::internal::String::FormatIntWidth2 (
    int value) [static]
```

### 6.207.2.10 FormatIntWidthN()

```
static std::string testing::internal::String::FormatIntWidthN (
    int value,
    int width) [static]
```

### 6.207.2.11 ShowWideCString()

```
static std::string testing::internal::String::ShowWideCString (
    const wchar_t * wide_c_str) [static]
```

### 6.207.2.12 WideCStringEquals()

```
static bool testing::internal::String::WideCStringEquals (
    const wchar_t * lhs,
    const wchar_t * rhs) [static]
```

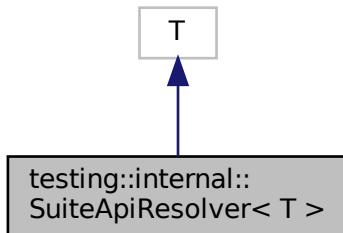
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-string.h

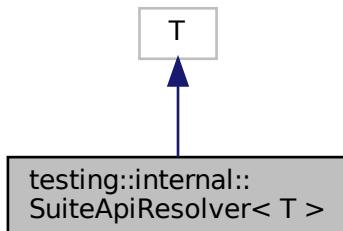
## 6.208 testing::internal::SuiteApiResolver< T > Struct Template Reference

```
#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)

#### 6.208.1 Member Typedef Documentation

### 6.208.1.1 Test

```
template<typename T >
using testing::internal::SuiteApiResolver< T >::Test = typename std::conditional<sizeof(T) != 0, ::testing::Test, void>::type
```

## 6.208.2 Member Function Documentation

### 6.208.2.1 GetSetUpCaseOrSuite()

```
template<typename T >
static SetUpTearDownSuiteFuncType testing::internal::SuiteApiResolver< T >::GetSetUpCaseOrSuite (
    const char * filename,
    int line_num ) [inline], [static]
```

### 6.208.2.2 GetTearDownCaseOrSuite()

```
template<typename T >
static SetUpTearDownSuiteFuncType testing::internal::SuiteApiResolver< T >::GetTearDownCaseOrSuite (
    const char * filename,
    int line_num ) [inline], [static]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.209 testing::internal::Templates< Head\_, Tail\_ > Struct Template Reference

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

### Public Types

- using Head = TemplateSel< Head\_ >
- using Tail = Templates< Tail\_... >

### 6.209.1 Member Typedef Documentation

### 6.209.1.1 Head

```
template<GTEST_TEMPLATE_ Head_, GTEST_TEMPLATE_... Tail_>
using testing::internal::Templates< Head_, Tail_ >::Head = TemplateSel<Head_>
```

### 6.209.1.2 Tail

```
template<GTEST_TEMPLATE_ Head_, GTEST_TEMPLATE_... Tail_>
using testing::internal::Templates< Head_, Tail_ >::Tail = Templates<Tail_...>
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-type-util.h

## 6.210 testing::internal::Templates< Head\_ > Struct Template Reference

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

### Public Types

- using Head = TemplateSel< Head\_ >
- using Tail = None

### 6.210.1 Member Typedef Documentation

#### 6.210.1.1 Head

```
template<GTEST_TEMPLATE_ Head_>
using testing::internal::Templates< Head_ >::Head = TemplateSel<Head_>
```

#### 6.210.1.2 Tail

```
template<GTEST_TEMPLATE_ Head_>
using testing::internal::Templates< Head_ >::Tail = None
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-type-util.h

## 6.211 testing::internal::TemplateSel< Tmpl > Struct Template Reference

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

### Classes

- struct [Bind](#)

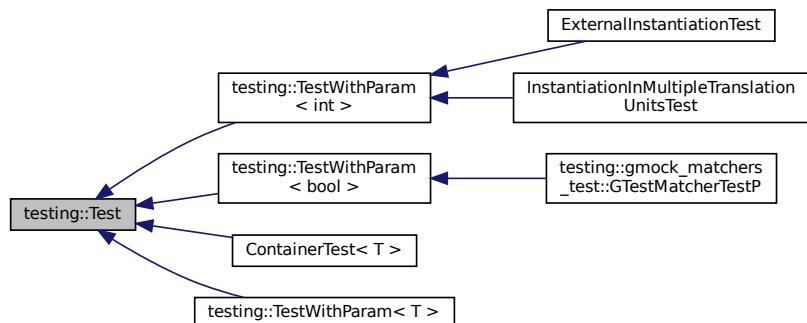
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/[gtest-type-util.h](#)

## 6.212 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 \(const std::string &key, int64\\_t value\)](#)

## 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 \(\)](#)
- [Test \(const Test &\)=delete](#)
- [Test & operator= \(const Test &\)=delete](#)

## Static Private Member Functions

- static bool [HasSameFixtureClass \(\)](#)

## Private Attributes

- const std::unique\_ptr<[GTEST\\_FLAG\\_SAVER\\_](#)> [gtest\\_flag\\_saver\\_](#)

## Friends

- class [TestInfo](#)

## 6.212.1 Constructor & Destructor Documentation

### 6.212.1.1 ~Test()

```
virtual testing::Test::~Test () [virtual]
```

### 6.212.1.2 Test() [1/2]

```
testing::Test::Test () [protected]
```

### 6.212.1.3 Test() [2/2]

```
testing::Test::Test (
    const Test & ) [private], [delete]
```

## 6.212.2 Member Function Documentation

### 6.212.2.1 DeleteSelf\_()

```
void testing::Test::DeleteSelf_ () [inline], [private]
```

### 6.212.2.2 HasFailure()

```
static bool testing::Test::HasFailure () [inline], [static]
```

### 6.212.2.3 HasFatalFailure()

```
static bool testing::Test::HasFatalFailure () [static]
```

### 6.212.2.4 HasNonfatalFailure()

```
static bool testing::Test::HasNonfatalFailure () [static]
```

**6.212.2.5 HasSameFixtureClass()**

```
static bool testing::Test::HasSameFixtureClass ( ) [static], [private]
```

**6.212.2.6 IsSkipped()**

```
static bool testing::Test::IsSkipped ( ) [static]
```

**6.212.2.7 operator=( )**

```
Test& testing::Test::operator= (
    const Test & ) [private], [delete]
```

**6.212.2.8 RecordProperty() [1/2]**

```
static void testing::Test::RecordProperty (
    const std::string & key,
    const std::string & value ) [static]
```

**6.212.2.9 RecordProperty() [2/2]**

```
static void testing::Test::RecordProperty (
    const std::string & key,
    int64_t value ) [static]
```

**6.212.2.10 Run()**

```
void testing::Test::Run ( ) [private]
```

**6.212.2.11 SetUp()**

```
virtual void testing::Test::SetUp ( ) [protected], [virtual]
```

### 6.212.2.12 **Setup()**

```
virtual Setup_should_be_spelled_SetUp* testing::Test::Setup ( ) [inline], [private], [virtual]
```

### 6.212.2.13 **SetUpTestCase()**

```
static void testing::Test::SetUpTestCase ( ) [inline], [static]
```

### 6.212.2.14 **SetUpTestSuite()**

```
static void testing::Test::SetUpTestSuite ( ) [inline], [static]
```

### 6.212.2.15 **TearDown()**

```
virtual void testing::Test::TearDown ( ) [protected], [virtual]
```

### 6.212.2.16 **TearDownTestCase()**

```
static void testing::Test::TearDownTestCase ( ) [inline], [static]
```

### 6.212.2.17 **TearDownTestSuite()**

```
static void testing::Test::TearDownTestSuite ( ) [inline], [static]
```

### 6.212.2.18 **TestBody()**

```
virtual void testing::Test::TestBody ( ) [private], [pure virtual]
```

## 6.212.3 Friends And Related Function Documentation

### 6.212.3.1 TestInfo

```
friend class TestInfo [friend]
```

## 6.212.4 Member Data Documentation

### 6.212.4.1 gtest\_flag\_saver\_

```
const std::unique_ptr<GTEST\_FLAG\_SAVER\_> testing::Test::gtest_flag_saver_ [private]
```

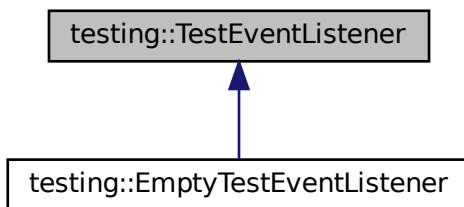
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/[gtest.h](#)

## 6.213 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 [OnTestDisabled](#) (const [TestInfo](#) &)
- 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

## 6.213.1 Constructor & Destructor Documentation

### 6.213.1.1 ~TestEventListener()

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

## 6.213.2 Member Function Documentation

### 6.213.2.1 OnEnvironmentsSetUpEnd()

```
virtual void testing::TestEventListener::OnEnvironmentsSetUpEnd (
    const UnitTest & unit_test ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

### 6.213.2.2 OnEnvironmentsSetUpStart()

```
virtual void testing::TestEventListener::OnEnvironmentsSetUpStart (
    const UnitTest & unit_test ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

### 6.213.2.3 OnEnvironmentsTearDownEnd()

```
virtual void testing::TestEventListener::OnEnvironmentsTearDownEnd (
    const UnitTest & unit_test ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

### 6.213.2.4 OnEnvironmentsTearDownStart()

```
virtual void testing::TestEventListener::OnEnvironmentsTearDownStart (
    const UnitTest & unit_test ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

### 6.213.2.5 OnTestCaseEnd()

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

Reimplemented in [testing::EmptyTestEventListener](#).

### 6.213.2.6 OnTestCaseStart()

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

Reimplemented in [testing::EmptyTestEventListener](#).

### 6.213.2.7 OnTestDisabled()

```
virtual void testing::TestEventListener::OnTestDisabled (
    const TestInfo & ) [inline], [virtual]
```

Reimplemented in [testing::EmptyTestEventListener](#).

### 6.213.2.8 OnTestEnd()

```
virtual void testing::TestEventListener::OnTestEnd (
    const TestInfo & test_info ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

### 6.213.2.9 OnTestIterationEnd()

```
virtual void testing::TestEventListener::OnTestIterationEnd (
    const UnitTest & unit_test,
    int iteration ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

### 6.213.2.10 OnTestIterationStart()

```
virtual void testing::TestEventListener::OnTestIterationStart (
    const UnitTest & unit_test,
    int iteration ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

### 6.213.2.11 OnTestPartResult()

```
virtual void testing::TestEventListener::OnTestPartResult (
    const TestPartResult & test_part_result ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

### 6.213.2.12 OnTestProgramEnd()

```
virtual void testing::TestEventListener::OnTestProgramEnd (
    const UnitTest & unit_test ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

### 6.213.2.13 OnTestProgramStart()

```
virtual void testing::TestEventListener::OnTestProgramStart (
    const UnitTest & unit_test ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

### 6.213.2.14 OnTestStart()

```
virtual void testing::TestEventListener::OnTestStart (
    const TestInfo & test_info ) [pure virtual]
```

Implemented in [testing::EmptyTestEventListener](#).

### 6.213.2.15 OnTestSuiteEnd()

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

Reimplemented in [testing::EmptyTestEventListener](#).

### 6.213.2.16 OnTestSuiteStart()

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

Reimplemented in [testing::EmptyTestEventListener](#).

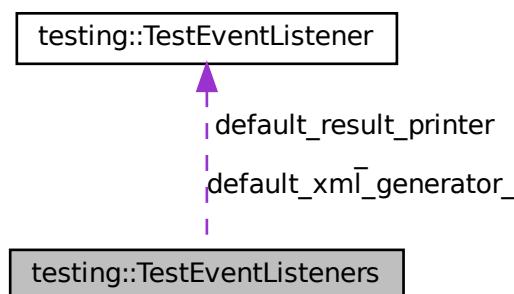
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

## 6.214 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 ()`
- `TestEventListeners (const TestEventListeners &)=delete`
- `TestEventListeners & operator= (const TestEventListeners &)=delete`

## 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`

## 6.214.1 Constructor & Destructor Documentation

### 6.214.1.1 `TestEventListeners()` [1/2]

```
testing:::TestEventListeners:::TestEventListeners ( )
```

### 6.214.1.2 `~TestEventListeners()`

```
testing:::TestEventListeners:::~TestEventListeners ( )
```

### 6.214.1.3 `TestEventListeners()` [2/2]

```
testing:::TestEventListeners:::TestEventListeners (
    const TestEventListeners & ) [private], [delete]
```

## 6.214.2 Member Function Documentation

### 6.214.2.1 Append()

```
void testing::TestEventListeners::Append (
    TestEventListener * listener )
```

### 6.214.2.2 default\_result\_printer()

```
TestEventListener* testing::TestEventListeners::default_result_printer () const [inline]
```

### 6.214.2.3 default\_xml\_generator()

```
TestEventListener* testing::TestEventListeners::default_xml_generator () const [inline]
```

### 6.214.2.4 EventForwardingEnabled()

```
bool testing::TestEventListeners::EventForwardingEnabled () const [private]
```

### 6.214.2.5 operator=()

```
TestEventListeners& testing::TestEventListeners::operator= (
    const TestEventListeners & ) [private], [delete]
```

### 6.214.2.6 Release()

```
TestEventListener* testing::TestEventListeners::Release (
    TestEventListener * listener )
```

### 6.214.2.7 repeater()

```
TestEventListener* testing::TestEventListeners::repeater ( ) [private]
```

### 6.214.2.8 SetDefaultResultPrinter()

```
void testing::TestEventListeners::SetDefaultResultPrinter (
    TestEventListener * listener ) [private]
```

### 6.214.2.9 SetDefaultXmlGenerator()

```
void testing::TestEventListeners::SetDefaultXmlGenerator (
    TestEventListener * listener ) [private]
```

### 6.214.2.10 SuppressEventForwarding()

```
void testing::TestEventListeners::SuppressEventForwarding ( ) [private]
```

## 6.214.3 Friends And Related Function Documentation

### 6.214.3.1 internal::DefaultGlobalTestPartResultReporter

```
friend class internal::DefaultGlobalTestPartResultReporter [friend]
```

### 6.214.3.2 internal::NoExecDeathTest

```
friend class internal::NoExecDeathTest [friend]
```

### 6.214.3.3 internal::TestEventListenersAccessor

```
friend class internal::TestEventListenersAccessor [friend]
```

#### 6.214.3.4 internal::UnitTestImpl

```
friend class internal::UnitTestImpl [friend]
```

#### 6.214.3.5 TestInfo

```
friend class TestInfo [friend]
```

#### 6.214.3.6 TestSuite

```
friend class TestSuite [friend]
```

### 6.214.4 Member Data Documentation

#### 6.214.4.1 default\_result\_printer\_

```
TestEventListener* testing::TestEventListeners::default_result_printer_ [private]
```

#### 6.214.4.2 default\_xml\_generator\_

```
TestEventListener* testing::TestEventListeners::default_xml_generator_ [private]
```

#### 6.214.4.3 repeater\_

```
internal::TestEventRepeater* testing::TestEventListeners::repeater_ [private]
```

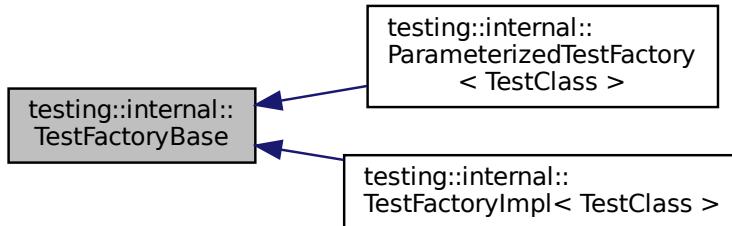
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

## 6.215 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

- [TestFactoryBase \(const TestFactoryBase &\)=delete](#)
- [TestFactoryBase & operator=\(const TestFactoryBase &\)=delete](#)

## 6.215.1 Constructor & Destructor Documentation

### 6.215.1.1 ~TestFactoryBase()

```
virtual testing::internal::TestFactoryBase::~TestFactoryBase ( ) [inline], [virtual]
```

### 6.215.1.2 TestFactoryBase() [1/2]

```
testing::internal::TestFactoryBase::TestFactoryBase ( ) [inline], [protected]
```

### 6.215.1.3 TestFactoryBase() [2/2]

```
testing::internal::TestFactoryBase::TestFactoryBase (
    const TestFactoryBase & ) [private], [delete]
```

## 6.215.2 Member Function Documentation

### 6.215.2.1 CreateTest()

```
virtual Test* testing::internal::TestFactoryBase::CreateTest ( ) [pure virtual]
```

Implemented in [testing::internal::ParameterizedTestFactory< TestClass >](#), and [testing::internal::TestFactoryImpl< TestClass >](#).

### 6.215.2.2 operator=()

```
TestFactoryBase& testing::internal::TestFactoryBase::operator=
    const TestFactoryBase & ) [private], [delete]
```

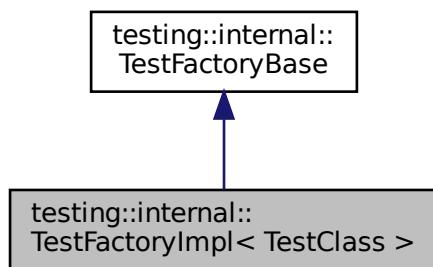
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

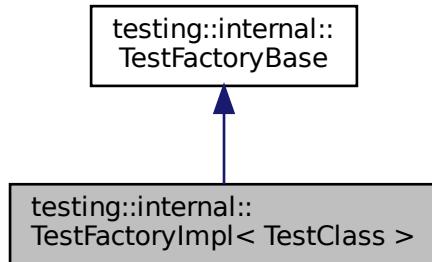
## 6.216 testing::internal::TestFactoryImpl< TestClass > Class Template Reference

```
#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

### 6.216.1 Member Function Documentation

#### 6.216.1.1 CreateTest()

```
template<class TestClass >
Test* testing::internal::TestFactoryImpl< TestClass >::CreateTest ( ) [inline], [override],
[virtual]
```

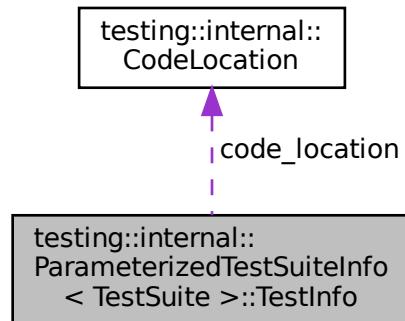
Implements [testing::internal::TestFactoryBase](#).

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.217 testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfo Struct Reference

Collaboration diagram for testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfo:



### Public Member Functions

- `TestInfo (const char *a_test_suite_base_name, const char *a_test_base_name, TestMetaFactoryBase< ParamType > *a_test_meta_factory, CodeLocation a_code_location)`

### Public Attributes

- `const std::string test_suite_base_name`
- `const std::string test_base_name`
- `const std::unique_ptr< TestMetaFactoryBase< ParamType > > test_meta_factory`
- `const CodeLocation code_location`

#### 6.217.1 Constructor & Destructor Documentation

##### 6.217.1.1 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,
    CodeLocation a_code_location ) [inline]
  
```

## 6.217.2 Member Data Documentation

### 6.217.2.1 code\_location

```
template<class TestSuite >
const CodeLocation testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfo::code_location
```

### 6.217.2.2 test\_base\_name

```
template<class TestSuite >
const std::string testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfo::test_base_name
```

### 6.217.2.3 test\_meta\_factory

```
template<class TestSuite >
const std::unique_ptr<TestMetaFactoryBase<ParamType> > testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfo::test_meta_factory
```

### 6.217.2.4 test\_suite\_base\_name

```
template<class TestSuite >
const std::string testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfo::test_suite_base_name
```

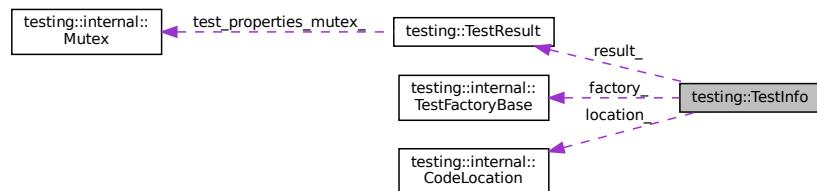
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.218 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 ()`
- `void Skip ()`
- `TestInfo (const TestInfo &)=delete`
- `TestInfo & operator= (const TestInfo &)=delete`

## 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::UnitTestFixture`
- `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)`

## 6.218.1 Constructor & Destructor Documentation

### 6.218.1.1 ~TestInfo()

```
testing::TestInfo::~TestInfo ( )
```

### 6.218.1.2 TestInfo() [1/2]

```
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]
```

### 6.218.1.3 TestInfo() [2/2]

```
testing::TestInfo::TestInfo (
    const TestInfo & ) [private], [delete]
```

## 6.218.2 Member Function Documentation

### 6.218.2.1 ClearTestResult()

```
static void testing::TestInfo::ClearTestResult (
    TestInfo * test_info ) [inline], [static], [private]
```

### 6.218.2.2 file()

```
const char* testing::TestInfo::file ( ) const [inline]
```

**6.218.2.3 increment\_death\_test\_count()**

```
int testing::TestInfo::increment_death_test_count ( ) [inline], [private]
```

**6.218.2.4 is\_in\_another\_shard()**

```
bool testing::TestInfo::is_in_another_shard ( ) const [inline]
```

**6.218.2.5 is\_reportable()**

```
bool testing::TestInfo::is_reportable ( ) const [inline]
```

**6.218.2.6 line()**

```
int testing::TestInfo::line ( ) const [inline]
```

**6.218.2.7 name()**

```
const char* testing::TestInfo::name ( ) const [inline]
```

**6.218.2.8 operator=( )**

```
TestInfo& testing::TestInfo::operator= (
    const TestInfo & ) [private], [delete]
```

**6.218.2.9 result()**

```
const TestResult* testing::TestInfo::result ( ) const [inline]
```

**6.218.2.10 Run()**

```
void testing::TestInfo::Run ( ) [private]
```

**6.218.2.11 should\_run()**

```
bool testing::TestInfo::should_run ( ) const [inline]
```

**6.218.2.12 Skip()**

```
void testing::TestInfo::Skip ( ) [private]
```

**6.218.2.13 test\_case\_name()**

```
const char* testing::TestInfo::test_case_name ( ) const [inline]
```

**6.218.2.14 test\_suite\_name()**

```
const char* testing::TestInfo::test_suite_name ( ) const [inline]
```

**6.218.2.15 type\_param()**

```
const char* testing::TestInfo::type_param ( ) const [inline]
```

**6.218.2.16 value\_param()**

```
const char* testing::TestInfo::value_param ( ) const [inline]
```

**6.218.3 Friends And Related Function Documentation**

### 6.218.3.1 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]
```

### 6.218.3.2 internal::StreamingListenerTest

```
friend class internal::StreamingListenerTest [friend]
```

### 6.218.3.3 internal::UnitTestImpl

```
friend class internal::UnitTestImpl [friend]
```

### 6.218.3.4 Test

```
friend class Test [friend]
```

### 6.218.3.5 TestSuite

```
friend class TestSuite [friend]
```

## 6.218.4 Member Data Documentation

### 6.218.4.1 factory\_

```
internal::TestFactoryBase* const testing::TestInfo::factory_ [private]
```

#### 6.218.4.2 `fixture_class_id_`

```
const internal::TypeID testing::TestInfo::fixture_class_id_ [private]
```

#### 6.218.4.3 `is_disabled_`

```
bool testing::TestInfo::is_disabled_ [private]
```

#### 6.218.4.4 `is_in_another_shard_`

```
bool testing::TestInfo::is_in_another_shard_ [private]
```

#### 6.218.4.5 `location_`

```
internal::CodeLocation testing::TestInfo::location_ [private]
```

#### 6.218.4.6 `matches_filter_`

```
bool testing::TestInfo::matches_filter_ [private]
```

#### 6.218.4.7 `name_`

```
const std::string testing::TestInfo::name_ [private]
```

#### 6.218.4.8 `result_`

```
TestResult testing::TestInfo::result_ [private]
```

#### 6.218.4.9 `should_run_`

```
bool testing::TestInfo::should_run_ [private]
```

#### 6.218.4.10 test\_suite\_name\_

```
const std::string testing::TestInfo::test_suite_name_ [private]
```

#### 6.218.4.11 type\_param\_

```
const std::unique_ptr<const ::std::string> testing::TestInfo::type_param_ [private]
```

#### 6.218.4.12 value\_param\_

```
const std::unique_ptr<const ::std::string> testing::TestInfo::value_param_ [private]
```

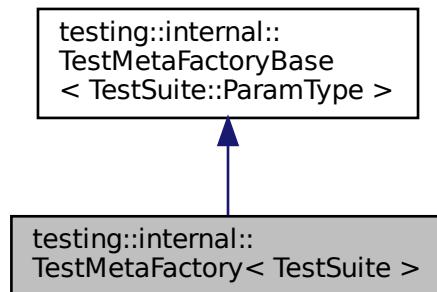
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

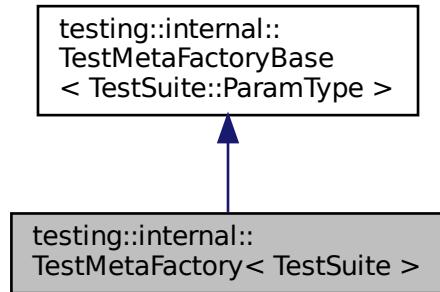
## 6.219 testing::internal::TestMetaFactory< TestSuite > Class Template Reference

```
#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

- `TestMetaFactory (const TestMetaFactory &) = delete`
- `TestMetaFactory & operator= (const TestMetaFactory &) = delete`

### 6.219.1 Member Typedef Documentation

#### 6.219.1.1 ParamType

```

template<class TestSuite >
using testing::internal::TestMetaFactory< TestSuite >::ParamType = typename TestSuite::ParamType
  
```

### 6.219.2 Constructor & Destructor Documentation

### 6.219.2.1 TestMetaFactory() [1/2]

```
template<class TestSuite >
testing::internal::TestMetaFactory< TestSuite >::TestMetaFactory ( ) [inline]
```

### 6.219.2.2 TestMetaFactory() [2/2]

```
template<class TestSuite >
testing::internal::TestMetaFactory< TestSuite >::TestMetaFactory (
    const TestMetaFactory< TestSuite > & ) [private], [delete]
```

## 6.219.3 Member Function Documentation

### 6.219.3.1 CreateTestFactory()

```
template<class TestSuite >
TestFactoryBase* testing::internal::TestMetaFactory< TestSuite >::CreateTestFactory (
    ParamType parameter ) [inline], [override], [virtual]
```

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

### 6.219.3.2 operator=()

```
template<class TestSuite >
TestMetaFactory& testing::internal::TestMetaFactory< TestSuite >::operator= (
    const TestMetaFactory< TestSuite > & ) [private], [delete]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.220 testing::internal::TestMetaFactoryBase< ParamType > Class Template Reference

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

### Public Member Functions

- virtual ~[TestMetaFactoryBase](#) ()
- virtual [TestFactoryBase \\* CreateTestFactory](#) (ParamType parameter)=0

## 6.220.1 Constructor & Destructor Documentation

### 6.220.1.1 ~TestMetaFactoryBase()

```
template<class ParamType >
virtual testing::internal::TestMetaFactoryBase< ParamType >::~TestMetaFactoryBase ( ) [inline],  
[virtual]
```

## 6.220.2 Member Function Documentation

### 6.220.2.1 CreateTestFactory()

```
template<class ParamType >
virtual TestFactoryBase* testing::internal::TestMetaFactoryBase< ParamType >::CreateTest←
Factory (
    ParamType parameter ) [pure virtual]
```

Implemented in [testing::internal::TestMetaFactory< TestSuite >](#).

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.221 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](#)

## 6.221.1 Constructor & Destructor Documentation

### 6.221.1.1 TestParamInfo()

```
template<class ParamType >
testing::TestParamInfo< ParamType >::TestParamInfo (
    const ParamType & a_param,
    size_t an_index ) [inline]
```

## 6.221.2 Member Data Documentation

### 6.221.2.1 index

```
template<class ParamType >
size_t testing::TestParamInfo< ParamType >::index
```

### 6.221.2.2 param

```
template<class ParamType >
ParamType testing::TestParamInfo< ParamType >::param
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.222 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\\_](#)

## 6.222.1 Constructor & Destructor Documentation

### 6.222.1.1 TestProperty()

```
testing::TestProperty::TestProperty (
    const std::string & a_key,
    const std::string & a_value ) [inline]
```

## 6.222.2 Member Function Documentation

### 6.222.2.1 key()

```
const char* testing::TestProperty::key ( ) const [inline]
```

### 6.222.2.2 SetValue()

```
void testing::TestProperty::SetValue (
    const std::string & new_value ) [inline]
```

### 6.222.2.3 value()

```
const char* testing::TestProperty::value ( ) const [inline]
```

## 6.222.3 Member Data Documentation

### 6.222.3.1 key\_

```
std::string testing::TestProperty::key_ [private]
```

### 6.222.3.2 value\_

```
std::string testing::TestProperty::value_ [private]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

## 6.223 testing::internal::TestPropertyKeyIs Class Reference

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

### Public Member Functions

- [TestPropertyKeyIs](#) (const std::string &key)
- bool [operator\(\)](#) (const [TestProperty](#) &test\_property) const

### Private Attributes

- std::string [key\\_](#)

#### 6.223.1 Constructor & Destructor Documentation

##### 6.223.1.1 [TestPropertyKeyIs\(\)](#)

```
testing::internal::TestPropertyKeyIs::TestPropertyKeyIs (
    const std::string & key ) [inline], [explicit]
```

#### 6.223.2 Member Function Documentation

##### 6.223.2.1 [operator\(\)\(\)](#)

```
bool testing::internal::TestPropertyKeyIs::operator() (
    const TestProperty & test_property ) const [inline]
```

#### 6.223.3 Member Data Documentation

### 6.223.3.1 key\_

```
std::string testing::internal::TestPropertyKeyIs::key_ [private]
```

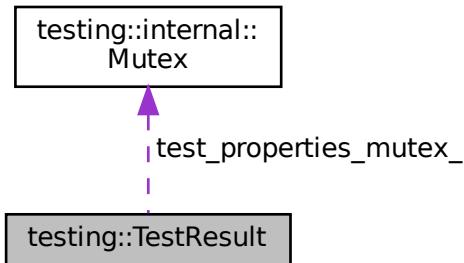
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/src/[gtest-internal-inl.h](#)

## 6.224 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](#)
- [TimeInMillis start\\_timestamp \(\) 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_start_timestamp(TimelnMillis start)`
- void `set_elapsed_time(TimelnMillis 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()`
- `TestResult(const TestResult &) = delete`
- `TestResult & operator=(const TestResult &) = delete`

## Static Private Member Functions

- static bool `ValidateTestProperty(const std::string &xml_element, const TestProperty &test_property)`

## Private Attributes

- `internal::Mutex test_properties_mutex_`
- `std::vector< TestPartResult > test_part_results_`
- `std::vector< TestProperty > test_properties_`
- int `death_test_count_`
- `TimelnMillis start_timestamp_`
- `TimelnMillis elapsed_time_`

## Friends

- class `TestInfo`
- class `TestSuite`
- class `UnitTest`
- class `internal::DefaultGlobalTestPartResultReporter`
- class `internal::ExecDeathTest`
- class `internal::TestResultAccessor`
- class `internal::UnitTestFixture`
- class `internal::WindowsDeathTest`
- class `internal::FuchsiaDeathTest`

## 6.224.1 Constructor & Destructor Documentation

### 6.224.1.1 `TestResult()` [1/2]

```
testing::TestResult::TestResult( )
```

### 6.224.1.2 ~TestResult()

```
testing::TestResult::~TestResult ( )
```

### 6.224.1.3 TestResult() [2/2]

```
testing::TestResult::TestResult (
    const TestResult & ) [private], [delete]
```

## 6.224.2 Member Function Documentation

### 6.224.2.1 AddTestPartResult()

```
void testing::TestResult::AddTestPartResult (
    const TestPartResult & test_part_result ) [private]
```

### 6.224.2.2 Clear()

```
void testing::TestResult::Clear ( ) [private]
```

### 6.224.2.3 ClearTestPartResults()

```
void testing::TestResult::ClearTestPartResults ( ) [private]
```

### 6.224.2.4 death\_test\_count()

```
int testing::TestResult::death_test_count ( ) const [inline], [private]
```

### 6.224.2.5 elapsed\_time()

```
TimeInMillis testing::TestResult::elapsed_time ( ) const [inline]
```

### 6.224.2.6 Failed()

```
bool testing::TestResult::Failed() const
```

### 6.224.2.7 GetTestPartResult()

```
const TestPartResult& testing::TestResult::GetTestPartResult(
    int i) const
```

### 6.224.2.8 GetTestProperty()

```
const TestProperty& testing::TestResult::GetTestProperty(
    int i) const
```

### 6.224.2.9 HasFatalFailure()

```
bool testing::TestResult::HasFatalFailure() const
```

### 6.224.2.10 HasNonfatalFailure()

```
bool testing::TestResult::HasNonfatalFailure() const
```

### 6.224.2.11 increment\_death\_test\_count()

```
int testing::TestResult::increment_death_test_count() [inline], [private]
```

### 6.224.2.12 operator=( )

```
TestResult& testing::TestResult::operator=(const TestResult&) [private], [delete]
```

**6.224.2.13 Passed()**

```
bool testing::TestResult::Passed ( ) const [inline]
```

**6.224.2.14 RecordProperty()**

```
void testing::TestResult::RecordProperty (
    const std::string & xml_element,
    const TestProperty & test_property ) [private]
```

**6.224.2.15 set\_elapsed\_time()**

```
void testing::TestResult::set_elapsed_time (
    TimeInMillis elapsed ) [inline], [private]
```

**6.224.2.16 set\_start\_timestamp()**

```
void testing::TestResult::set_start_timestamp (
    TimeInMillis start ) [inline], [private]
```

**6.224.2.17 Skipped()**

```
bool testing::TestResult::Skipped ( ) const
```

**6.224.2.18 start\_timestamp()**

```
TimeInMillis testing::TestResult::start_timestamp ( ) const [inline]
```

**6.224.2.19 test\_part\_results()**

```
const std::vector<TestPartResult>& testing::TestResult::test_part_results ( ) const [inline],
[private]
```

**6.224.2.20 test\_properties()**

```
const std::vector<TestProperty>& testing::TestResult::test_properties () const [inline],  
[private]
```

**6.224.2.21 test\_property\_count()**

```
int testing::TestResult::test_property_count () const
```

**6.224.2.22 total\_part\_count()**

```
int testing::TestResult::total_part_count () const
```

**6.224.2.23 ValidateTestProperty()**

```
static bool testing::TestResult::ValidateTestProperty (  
    const std::string & xml_element,  
    const TestProperty & test_property ) [static], [private]
```

### 6.224.3 Friends And Related Function Documentation

**6.224.3.1 internal::DefaultGlobalTestPartResultReporter**

```
friend class internal::DefaultGlobalTestPartResultReporter [friend]
```

**6.224.3.2 internal::ExecDeathTest**

```
friend class internal::ExecDeathTest [friend]
```

**6.224.3.3 internal::FuchsiaDeathTest**

```
friend class internal::FuchsiaDeathTest [friend]
```

#### 6.224.3.4 `internal::TestResultAccessor`

```
friend class internal::TestResultAccessor [friend]
```

#### 6.224.3.5 `internal::UnitTestImpl`

```
friend class internal::UnitTestImpl [friend]
```

#### 6.224.3.6 `internal::WindowsDeathTest`

```
friend class internal::WindowsDeathTest [friend]
```

#### 6.224.3.7 `TestInfo`

```
friend class TestInfo [friend]
```

#### 6.224.3.8 `TestSuite`

```
friend class TestSuite [friend]
```

#### 6.224.3.9 `UnitTest`

```
friend class UnitTest [friend]
```

### 6.224.4 Member Data Documentation

#### 6.224.4.1 `death_test_count_`

```
int testing::TestResult::death_test_count_ [private]
```

#### 6.224.4.2 elapsed\_time\_

```
TimeInMillis testing::TestResult::elapsed_time_ [private]
```

#### 6.224.4.3 start\_timestamp\_

```
TimeInMillis testing::TestResult::start_timestamp_ [private]
```

#### 6.224.4.4 test\_part\_results\_

```
std::vector<TestPartResult> testing::TestResult::test_part_results_ [private]
```

#### 6.224.4.5 test\_properties\_

```
std::vector<TestProperty> testing::TestResult::test_properties_ [private]
```

#### 6.224.4.6 test\_properties\_mutex\_

```
internal::Mutex testing::TestResult::test_properties_mutex_ [private]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

## 6.225 testing::internal::TestResultAccessor Class Reference

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

### Static Public Member Functions

- static void RecordProperty (TestResult \*test\_result, const std::string &xml\_element, const TestProperty &property)
- static void ClearTestPartResults (TestResult \*test\_result)
- static const std::vector<testing::TestPartResult> & test\_part\_results (const TestResult &test\_result)

## 6.225.1 Member Function Documentation

### 6.225.1.1 ClearTestPartResults()

```
static void testing::internal::TestResultAccessor::ClearTestPartResults (
    TestResult * test_result ) [inline], [static]
```

### 6.225.1.2 RecordProperty()

```
static void testing::internal::TestResultAccessor::RecordProperty (
    TestResult * test_result,
    const std::string & xml_element,
    const TestProperty & property ) [inline], [static]
```

### 6.225.1.3 test\_part\_results()

```
static const std::vector<testing::TestPartResult>& testing::internal::TestResultAccessor::test_part_results (
    const TestResult & test_result ) [inline], [static]
```

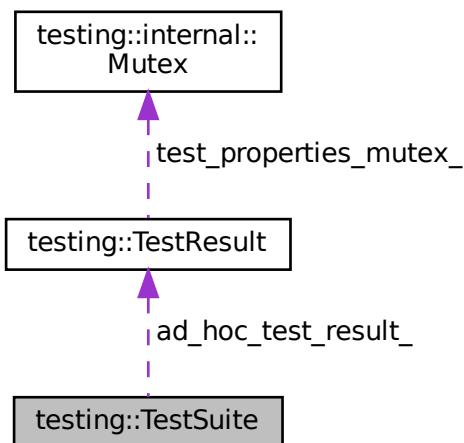
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/src/gtest-internal-inl.h

## 6.226 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`
- `TimelnMillis elapsed_time () const`
- `TimelnMillis start_timestamp () 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 Skip ()`
- `void RunSetUpTestSuite ()`
- `void RunTearDownTestSuite ()`
- `void ShuffleTests (internal::Random *random)`
- `void UnshuffleTests ()`
- `TestSuite (const TestSuite &)=delete`
- `TestSuite & operator= (const TestSuite &)=delete`

## 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` `start_timestamp_`
- `TimeInMillis` `elapsed_time_`
- `TestResult` `ad_hoc_test_result_`

## Friends

- class `Test`
- class `internal::UnitTestImpl`

### 6.226.1 Constructor & Destructor Documentation

#### 6.226.1.1 `TestSuite()` [1/2]

```
testing::TestSuite::TestSuite (
    const char * name,
    const char * a_type_param,
    internal::SetUpTestSuiteFunc set_up_tc,
    internal::TearDownTestSuiteFunc tear_down_tc )
```

#### 6.226.1.2 `~TestSuite()`

```
virtual testing::TestSuite::~TestSuite ( ) [virtual]
```

#### 6.226.1.3 `TestSuite()` [2/2]

```
testing::TestSuite::TestSuite (
    const TestSuite & ) [private], [delete]
```

### 6.226.2 Member Function Documentation

### 6.226.2.1 ad\_hoc\_test\_result()

```
const TestResult& testing::TestSuite::ad_hoc_test_result ( ) const [inline]
```

### 6.226.2.2 AddTestInfo()

```
void testing::TestSuite::AddTestInfo (
    TestInfo * test_info ) [private]
```

### 6.226.2.3 ClearResult()

```
void testing::TestSuite::ClearResult ( ) [private]
```

### 6.226.2.4 ClearTestSuiteResult()

```
static void testing::TestSuite::ClearTestSuiteResult (
    TestSuite * test_suite ) [inline], [static], [private]
```

### 6.226.2.5 disabled\_test\_count()

```
int testing::TestSuite::disabled_test_count ( ) const
```

### 6.226.2.6 elapsed\_time()

```
TimeInMillis testing::TestSuite::elapsed_time ( ) const [inline]
```

### 6.226.2.7 Failed()

```
bool testing::TestSuite::Failed ( ) const [inline]
```

**6.226.2.8 failed\_test\_count()**

```
int testing::TestSuite::failed_test_count ( ) const
```

**6.226.2.9 GetMutableTestInfo()**

```
TestInfo* testing::TestSuite::GetMutableTestInfo (
    int i ) [private]
```

**6.226.2.10 GetTestInfo()**

```
const TestInfo* testing::TestSuite::GetTestInfo (
    int i ) const
```

**6.226.2.11 name()**

```
const char* testing::TestSuite::name ( ) const [inline]
```

**6.226.2.12 operator=( )**

```
TestSuite& testing::TestSuite::operator= (
    const TestSuite & ) [private], [delete]
```

**6.226.2.13 Passed()**

```
bool testing::TestSuite::Passed ( ) const [inline]
```

**6.226.2.14 reportable\_disabled\_test\_count()**

```
int testing::TestSuite::reportable_disabled_test_count ( ) const
```

**6.226.2.15 reportable\_test\_count()**

```
int testing::TestSuite::reportable_test_count ( ) const
```

**6.226.2.16 Run()**

```
void testing::TestSuite::Run ( ) [private]
```

**6.226.2.17 RunSetUpTestSuite()**

```
void testing::TestSuite::RunSetUpTestSuite ( ) [inline], [private]
```

**6.226.2.18 RunTearDownTestSuite()**

```
void testing::TestSuite::RunTearDownTestSuite ( ) [inline], [private]
```

**6.226.2.19 set\_should\_run()**

```
void testing::TestSuite::set_should_run (
    bool should ) [inline], [private]
```

**6.226.2.20 should\_run()**

```
bool testing::TestSuite::should_run ( ) const [inline]
```

**6.226.2.21 ShouldRunTest()**

```
static bool testing::TestSuite::ShouldRunTest (
    const TestInfo * test_info ) [inline], [static], [private]
```

**6.226.2.22 ShuffleTests()**

```
void testing::TestSuite::ShuffleTests (
    internal::Random * random ) [private]
```

**6.226.2.23 Skip()**

```
void testing::TestSuite::Skip () [private]
```

**6.226.2.24 skipped\_test\_count()**

```
int testing::TestSuite::skipped_test_count () const
```

**6.226.2.25 start\_timestamp()**

```
TimeInMillis testing::TestSuite::start_timestamp () const [inline]
```

**6.226.2.26 successful\_test\_count()**

```
int testing::TestSuite::successful_test_count () const
```

**6.226.2.27 test\_info\_list() [1/2]**

```
std::vector<TestInfo*>& testing::TestSuite::test_info_list () [inline], [private]
```

**6.226.2.28 test\_info\_list() [2/2]**

```
const std::vector<TestInfo*>& testing::TestSuite::test_info_list () const [inline], [private]
```

**6.226.2.29 test\_to\_run\_count()**

```
int testing::TestSuite::test_to_run_count ( ) const
```

**6.226.2.30 TestDisabled()**

```
static bool testing::TestSuite::TestDisabled (
    const TestInfo * test_info ) [inline], [static], [private]
```

**6.226.2.31 TestFailed()**

```
static bool testing::TestSuite::TestFailed (
    const TestInfo * test_info ) [inline], [static], [private]
```

**6.226.2.32 TestPassed()**

```
static bool testing::TestSuite::TestPassed (
    const TestInfo * test_info ) [inline], [static], [private]
```

**6.226.2.33 TestReportable()**

```
static bool testing::TestSuite::TestReportable (
    const TestInfo * test_info ) [inline], [static], [private]
```

**6.226.2.34 TestReportableDisabled()**

```
static bool testing::TestSuite::TestReportableDisabled (
    const TestInfo * test_info ) [inline], [static], [private]
```

**6.226.2.35 TestSkipped()**

```
static bool testing::TestSuite::TestSkipped (
    const TestInfo * test_info ) [inline], [static], [private]
```

### 6.226.2.36 total\_test\_count()

```
int testing::TestSuite::total_test_count ( ) const
```

### 6.226.2.37 type\_param()

```
const char* testing::TestSuite::type_param ( ) const [inline]
```

### 6.226.2.38 UnshuffleTests()

```
void testing::TestSuite::UnshuffleTests ( ) [private]
```

## 6.226.3 Friends And Related Function Documentation

### 6.226.3.1 internal::UnitTestImpl

```
friend class internal::UnitTestImpl [friend]
```

### 6.226.3.2 Test

```
friend class Test [friend]
```

## 6.226.4 Member Data Documentation

### 6.226.4.1 ad\_hoc\_test\_result\_

```
TestResult testing::TestSuite::ad_hoc_test_result_ [private]
```

### 6.226.4.2 elapsed\_time\_

```
TimeInMillis testing::TestSuite::elapsed_time_ [private]
```

**6.226.4.3 name\_**

```
std::string testing::TestSuite::name_ [private]
```

**6.226.4.4 set\_up\_tc\_**

```
internal::SetUpTestSuiteFunc testing::TestSuite::set_up_tc_ [private]
```

**6.226.4.5 should\_run\_**

```
bool testing::TestSuite::should_run_ [private]
```

**6.226.4.6 start\_timestamp\_**

```
TimeInMillis testing::TestSuite::start_timestamp_ [private]
```

**6.226.4.7 tear\_down\_tc\_**

```
internal::TearDownTestSuiteFunc testing::TestSuite::tear_down_tc_ [private]
```

**6.226.4.8 test\_indices\_**

```
std::vector<int> testing::TestSuite::test_indices_ [private]
```

**6.226.4.9 test\_info\_list\_**

```
std::vector<TestInfo*> testing::TestSuite::test_info_list_ [private]
```

#### 6.226.4.10 type\_param\_

```
const std::unique_ptr<const ::std::string> testing::TestSuite::type_param_ [private]
```

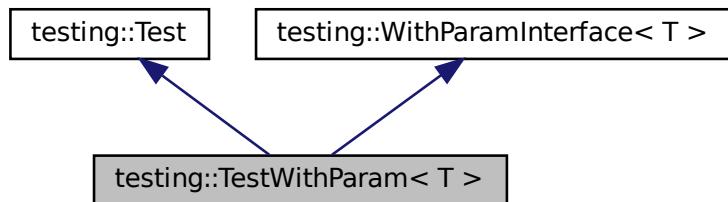
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

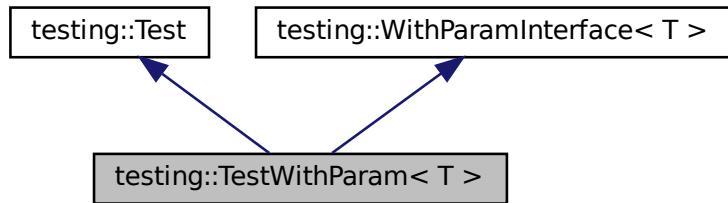
### 6.227 testing::TestWithParam< T > Class Template Reference

```
#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:

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

## 6.228 testing::internal::ThisRefAdjuster< Pattern > Struct Template Reference

```
#include <gmock-function-mocker.h>
```

### Public Types

- template<typename T >  
using **AdjustT** = typename std::conditional< std::is\_const< typename std::remove\_reference< Pattern ><::type >::value, typename std::conditional< std::is\_lvalue\_reference< Pattern ><::value, const T &, const T && ><::type, typename std::conditional< std::is\_lvalue\_reference< Pattern ><::value, T &, T && ><::type ><::type

### Static Public Member Functions

- template<typename MockType >  
static **AdjustT**< MockType > **Adjust** (const MockType &mock)

#### 6.228.1 Member Typedef Documentation

##### 6.228.1.1 AdjustT

```
template<typename Pattern >
template<typename T >
using testing::internal::ThisRefAdjuster< Pattern >::AdjustT = typename std::conditional<
std::is_const<typename std::remove_reference<Pattern><::type>><::value, typename std::conditional<std<::is_lvalue_reference<Pattern><::value, const T&, const T&& ><::type, typename std::conditional<std<::is_lvalue_reference<Pattern><::value, T&, T&& ><::type><::type
```

#### 6.228.2 Member Function Documentation

##### 6.228.2.1 Adjust()

```
template<typename Pattern >
template<typename MockType >
static AdjustT<MockType> testing::internal::ThisRefAdjuster< Pattern >::Adjust (
    const MockType & mock ) [inline], [static]
```

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

- build/\_deps/googletest-src/googlemock/include/gmock/[gmock-function-mocker.h](#)

## 6.229 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_`

#### 6.229.1 Constructor & Destructor Documentation

##### 6.229.1.1 ThreadLocal() [1/2]

```
template<typename T >
testing::internal::ThreadLocal< T >::ThreadLocal ( ) [inline]
```

##### 6.229.1.2 ThreadLocal() [2/2]

```
template<typename T >
testing::internal::ThreadLocal< T >::ThreadLocal (
    const T & value ) [inline], [explicit]
```

#### 6.229.2 Member Function Documentation

##### 6.229.2.1 get()

```
template<typename T >
const T& testing::internal::ThreadLocal< T >::get ( ) const [inline]
```

### 6.229.2.2 pointer() [1/2]

```
template<typename T >
T* testing::internal::ThreadLocal< T >::pointer ( ) [inline]
```

### 6.229.2.3 pointer() [2/2]

```
template<typename T >
const T* testing::internal::ThreadLocal< T >::pointer ( ) const [inline]
```

### 6.229.2.4 set()

```
template<typename T >
void testing::internal::ThreadLocal< T >::set (
    const T & value ) [inline]
```

## 6.229.3 Member Data Documentation

### 6.229.3.1 value\_

```
template<typename T >
T testing::internal::ThreadLocal< T >::value_ [private]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-port.h

## 6.230 testing::internal::TraceInfo Struct Reference

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

### Public Attributes

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

## 6.230.1 Member Data Documentation

### 6.230.1.1 file

```
const char* testing::internal::TraceInfo::file
```

### 6.230.1.2 line

```
int testing::internal::TraceInfo::line
```

### 6.230.1.3 message

```
std::string testing::internal::TraceInfo::message
```

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

- build/\_deps/googletest-src/googletest/src/[gtest-internal-inl.h](#)

## 6.231 testing::internal::TrueWithString Struct Reference

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

### Public Member Functions

- [TrueWithString \(\)=default](#)
- [TrueWithString \(const char \\*str\)](#)
- [TrueWithString \(const std::string &str\)](#)
- [operator bool \(\) const](#)

### Public Attributes

- std::string [value](#)

## 6.231.1 Constructor & Destructor Documentation

### 6.231.1.1 TrueWithString() [1/3]

```
testing::internal::TrueWithString::TrueWithString () [default]
```

### 6.231.1.2 TrueWithString() [2/3]

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

### 6.231.1.3 TrueWithString() [3/3]

```
testing::internal::TrueWithString::TrueWithString (
    const std::string & str ) [inline], [explicit]
```

## 6.231.2 Member Function Documentation

### 6.231.2.1 operator bool()

```
testing::internal::TrueWithString::operator bool () const [inline], [explicit]
```

## 6.231.3 Member Data Documentation

### 6.231.3.1 value

```
std::string testing::internal::TrueWithString::value
```

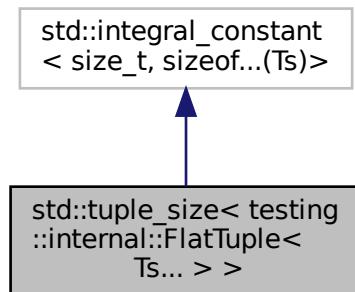
The documentation for this struct was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

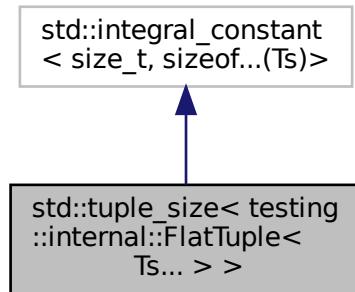
## 6.232 `std::tuple_size< testing::internal::FlatTuple< Ts... > >` Struct Template Reference

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

Inheritance diagram for `std::tuple_size< testing::internal::FlatTuple< Ts... > >`:



Collaboration diagram for `std::tuple_size< testing::internal::FlatTuple< Ts... > >`:



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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.233 `testing::internal::TypeIdHelper< T >` Class Template Reference

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

## Static Public Attributes

- static bool `dummy_` = false

### 6.233.1 Member Data Documentation

#### 6.233.1.1 `dummy_`

```
template<typename T >
bool testing::internal::TypeIdHelper< T >::dummy_ = false [static]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.234 testing::internal::TypeParameterizedTest< Fixture, TestSel, Types > Class Template Reference

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

## Static Public Member Functions

- static bool `Register` (const char \*prefix, const `CodeLocation` &code\_location, const char \*case\_name, const char \*test\_names, int index, const std::vector< std::string > &type\_names=GenerateNames< `DefaultNameGenerator`, `Types` >())

### 6.234.1 Member Function Documentation

#### 6.234.1.1 `Register()`

```
template<GTEST_TEMPLATE_ Fixture, class TestSel , typename Types >
static bool testing::internal::TypeParameterizedTest< Fixture, TestSel, Types >::Register (
    const char * prefix,
    const CodeLocation & code_location,
    const char * case_name,
    const char * test_names,
    int index,
    const std::vector< std::string > & type_names = GenerateNames< DefaultNameGenerator, Types >()
) [inline], [static]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.235 testing::internal::TypeParameterizedTest< Fixture, TestSel, internal::None > Class Template Reference

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

### Static Public Member Functions

- static bool [Register](#) (const char \*, const [CodeLocation](#) &, const char \*, const char \*, int, const std::vector< std::string > &=std::vector< std::string >())

#### 6.235.1 Member Function Documentation

##### 6.235.1.1 Register()

```
template<GTTEST_TEMPLATE_ Fixture, class TestSel >
static bool testing::internal::TypeParameterizedTest< Fixture, TestSel, internal::None >::Register (
    const char * ,
    const CodeLocation & ,
    const char * ,
    const char * ,
    int ,
    const std::vector< std::string > & = std::vector< std::string >() ) [inline],
[static]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.236 testing::internal::TypeParameterizedTestSuite< Fixture, Tests, Types > Class Template Reference

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

### Static Public Member Functions

- static bool [Register](#) (const char \*prefix, [CodeLocation](#) code\_location, const [TypedTestSuitePState](#) \*state, const char \*case\_name, const char \*test\_names, const std::vector< std::string > &type\_names=[GenerateNames](#)< [DefaultNameGenerator](#), [Types](#) >())

#### 6.236.1 Member Function Documentation

### 6.236.1.1 Register()

```
template<GTEST_TEMPLATE_ Fixture, typename Tests , typename Types >
static bool testing::internal::TypeParameterizedTestSuite< Fixture, Tests, Types >::Register (
    const char * prefix,
    CodeLocation code_location,
    const TypedTestSuitePState * state,
    const char * case_name,
    const char * test_names,
    const std::vector< std::string > & type_names = GenerateNames<DefaultNameGenerator, Types>()
) [inline], [static]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.237 testing::internal::TypeParameterizedTestSuite< Fixture, internal::None, Types > Class Template Reference

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

### Static Public Member Functions

- static bool [Register](#) (const char \*, const [CodeLocation](#) &, const [TypedTestSuitePState](#) \*, const char \*, const char \*, const std::vector< std::string > &=std::vector< std::string >())

### 6.237.1 Member Function Documentation

#### 6.237.1.1 Register()

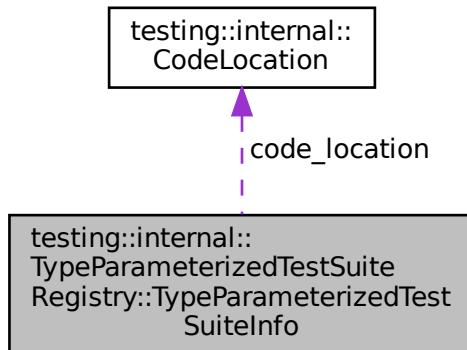
```
template<GTEST_TEMPLATE_ Fixture, typename Types >
static bool testing::internal::TypeParameterizedTestSuite< Fixture, internal::None, Types >::Register (
    const char * ,
    const CodeLocation & ,
    const TypedTestSuitePState * ,
    const char * ,
    const char * ,
    const std::vector< std::string > & = std::vector< std::string >() ) [inline],
[static]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h

## 6.238 testing::internal::TypeParameterizedTestSuiteRegistry::TypeParameterizedTestSuiteInfo Struct Reference

Collaboration diagram for testing::internal::TypeParameterizedTestSuiteRegistry::TypeParameterizedTestSuiteInfo:



### Public Member Functions

- [TypeParameterizedTestSuiteInfo \(CodeLocation c\)](#)

### Public Attributes

- [CodeLocation code\\_location](#)
- [bool instantiated](#)

#### 6.238.1 Constructor & Destructor Documentation

##### 6.238.1.1 TypeParameterizedTestSuiteInfo()

```
testing::internal::TypeParameterizedTestSuiteRegistry::TypeParameterizedTestSuiteInfo::TypeParameterizedTestSuiteInfo (
    CodeLocation c ) [inline], [explicit]
```

#### 6.238.2 Member Data Documentation

### 6.238.2.1 code\_location

```
CodeLocation testing::internal::TypeParameterizedTestSuiteRegistry::TypeParameterizedTestSuiteInfo::code_location
```

### 6.238.2.2 instantiated

```
bool testing::internal::TypeParameterizedTestSuiteRegistry::TypeParameterizedTestSuiteInfo::instantiated
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.239 testing::internal::TypeParameterizedTestSuiteRegistry Class Reference

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

### Classes

- struct [TypeParameterizedTestSuiteInfo](#)

### Public Member Functions

- void [RegisterTestSuite](#) (const char \*test\_suite\_name, [CodeLocation](#) code\_location)
- void [RegisterInstantiation](#) (const char \*test\_suite\_name)
- void [CheckForInstantiations](#) ()

### Private Attributes

- std::map< std::string, [TypeParameterizedTestSuiteInfo](#) > suites\_

### 6.239.1 Member Function Documentation

#### 6.239.1.1 CheckForInstantiations()

```
void testing::internal::TypeParameterizedTestSuiteRegistry::CheckForInstantiations ( )
```

### 6.239.1.2 RegisterInstantiation()

```
void testing::internal::TypeParameterizedTestSuiteRegistry::RegisterInstantiation (
    const char * test_suite_name )
```

### 6.239.1.3 RegisterTestSuite()

```
void testing::internal::TypeParameterizedTestSuiteRegistry::RegisterTestSuite (
    const char * test_suite_name,
    CodeLocation code_location )
```

## 6.239.2 Member Data Documentation

### 6.239.2.1 suites\_

```
std::map<std::string, TypeParameterizedTestSuiteInfo> testing::internal::TypeParameterizedTestSuiteRegistry::suites_ [private]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.240 testing::internal::Types< Head\_, Tail\_ > Struct Template Reference

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

### Public Types

- using `Head` = `Head_`
- using `Tail` = `Types< Tail_... >`

### 6.240.1 Member Typedef Documentation

#### 6.240.1.1 Head

```
template<typename Head_ , typename... Tail_>
using testing::internal::Types< Head_, Tail_ >::Head = Head_
```

### 6.240.1.2 Tail

```
template<typename Head_ , typename... Tail_>
using testing::internal::Types< Head_ , Tail_ >::Tail = Types<Tail_...>
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-type-util.h

## 6.241 testing::internal::Types< Head\_ > Struct Template Reference

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

### Public Types

- using Head = Head\_
- using Tail = None

### 6.241.1 Member Typedef Documentation

#### 6.241.1.1 Head

```
template<typename Head_ >
using testing::internal::Types< Head_ >::Head = Head_
```

#### 6.241.1.2 Tail

```
template<typename Head_ >
using testing::internal::Types< Head_ >::Tail = None
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-type-util.h

## 6.242 testing::internal::TypeWithSize< size > Class Template Reference

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

## Public Types

- using `UInt` = void

### 6.242.1 Member Typedef Documentation

#### 6.242.1.1 UInt

```
template<size_t size>
using testing::internal::TypeWithSize< size >::UInt = void
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-port.h

## 6.243 testing::internal::TypeWithSize< 4 > Class Reference

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

## Public Types

- using `Int` = std::int32\_t
- using `UInt` = std::uint32\_t

### 6.243.1 Member Typedef Documentation

#### 6.243.1.1 Int

```
using testing::internal::TypeWithSize< 4 >::Int = std::int32_t
```

#### 6.243.1.2 UInt

```
using testing::internal::TypeWithSize< 4 >::UInt = std::uint32_t
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-port.h

6.244 testing::internal::TypeWithSize< 8 > Class Reference

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

# Public Types

- using `Int` = `std::int64_t`
  - using `UInt` = `std::uint64_t`

## 6.244.1 Member Typedef Documentation

## 6.244.1.1 Int

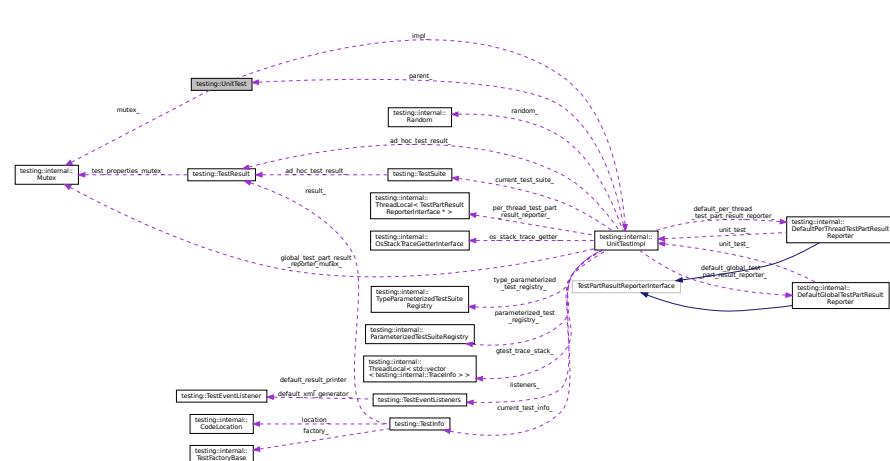
```
using testing::internal::TypeWithSize< 8 >::Int = std::int64_t;
```

## 6.244.1.2 UInt

```
using testing::internal::TypeWithSize< 8 >::UInt = std::uint64_t
```

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

2.245 - Author: M. H. T. and S. S. - Page 24



## 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_)`
- `UnitTest (const UnitTest &) = delete`
- `UnitTest & operator= (const UnitTest &) = delete`

## 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)`
- `std::set< std::string > * internal::GetIgnoredParameterizedTestSuites ()`
- `internal::UnitTestImpl * internal::GetUnitTestImpl ()`
- void `internal::ReportFailureInUnknownLocation (TestPartResult::Type result_type, const std::string &message)`

## 6.245.1 Constructor & Destructor Documentation

### 6.245.1.1 UnitTest() [1/2]

```
testing::UnitTest::UnitTest ( )  [private]
```

### 6.245.1.2 ~UnitTest()

```
virtual testing::UnitTest::~UnitTest ( )  [private], [virtual]
```

### 6.245.1.3 UnitTest() [2/2]

```
testing::UnitTest::UnitTest (
    const UnitTest & )  [private], [delete]
```

## 6.245.2 Member Function Documentation

### 6.245.2.1 ad\_hoc\_test\_result()

```
const TestResult& testing::UnitTest::ad_hoc_test_result ( ) const
```

### 6.245.2.2 AddEnvironment()

```
Environment* testing::UnitTest::AddEnvironment (
    Environment * env ) [private]
```

### 6.245.2.3 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]
```

### 6.245.2.4 current\_test\_case()

```
const TestCase* testing::UnitTest::current_test_case ( ) const
```

### 6.245.2.5 current\_test\_info()

```
const TestInfo* testing::UnitTest::current_test_info ( ) const
```

### 6.245.2.6 current\_test\_suite()

```
const TestSuite* testing::UnitTest::current_test_suite ( ) const
```

### 6.245.2.7 disabled\_test\_count()

```
int testing::UnitTest::disabled_test_count ( ) const
```

**6.245.2.8 elapsed\_time()**

```
TimeInMillis testing::UnitTest::elapsed_time () const
```

**6.245.2.9 Failed()**

```
bool testing::UnitTest::Failed () const
```

**6.245.2.10 failed\_test\_case\_count()**

```
int testing::UnitTest::failed_test_case_count () const
```

**6.245.2.11 failed\_test\_count()**

```
int testing::UnitTest::failed_test_count () const
```

**6.245.2.12 failed\_test\_suite\_count()**

```
int testing::UnitTest::failed_test_suite_count () const
```

**6.245.2.13 GetInstance()**

```
static UnitTest* testing::UnitTest::GetInstance () [static]
```

**6.245.2.14 GetMutableTestSuite()**

```
TestSuite* testing::UnitTest::GetMutableTestSuite (
    int i ) [private]
```

**6.245.2.15 GetTestCase()**

```
const TestCase* testing::UnitTest::GetTestCase (
    int i ) const
```

**6.245.2.16 GetTestSuite()**

```
const TestSuite* testing::UnitTest::GetTestSuite (
    int i ) const
```

**6.245.2.17 impl() [1/2]**

```
internal::UnitTestImpl* testing::UnitTest::impl ( ) [inline], [private]
```

**6.245.2.18 impl() [2/2]**

```
const internal::UnitTestImpl* testing::UnitTest::impl ( ) const [inline], [private]
```

**6.245.2.19 listeners()**

```
TestEventListeners& testing::UnitTest::listeners ( )
```

**6.245.2.20 operator=( )**

```
UnitTest& testing::UnitTest::operator= (
    const UnitTest & ) [private], [delete]
```

**6.245.2.21 original\_working\_dir()**

```
const char* testing::UnitTest::original_working_dir ( ) const
```

**6.245.2.22 parameterized\_test\_registry()**

```
internal::ParameterizedTestSuiteRegistry& testing::UnitTest::parameterized_test_registry ( )
```

**6.245.2.23 Passed()**

```
bool testing::UnitTest::Passed ( ) const
```

**6.245.2.24 PopGTestTrace()**

```
void testing::UnitTest::PopGTestTrace ( ) [private]
```

**6.245.2.25 PushGTestTrace()**

```
void testing::UnitTest::PushGTestTrace (
    const internal::TraceInfo & trace ) [private]
```

**6.245.2.26 random\_seed()**

```
int testing::UnitTest::random_seed ( ) const
```

**6.245.2.27 RecordProperty()**

```
void testing::UnitTest::RecordProperty (
    const std::string & key,
    const std::string & value ) [private]
```

**6.245.2.28 reportable\_disabled\_test\_count()**

```
int testing::UnitTest::reportable_disabled_test_count ( ) const
```

**6.245.2.29 reportable\_test\_count()**

```
int testing::UnitTest::reportable_test_count ( ) const
```

**6.245.2.30 Run()**

```
int testing::UnitTest::Run ( )
```

**6.245.2.31 skipped\_test\_count()**

```
int testing::UnitTest::skipped_test_count ( ) const
```

**6.245.2.32 start\_timestamp()**

```
TimeInMillis testing::UnitTest::start_timestamp ( ) const
```

**6.245.2.33 successful\_test\_case\_count()**

```
int testing::UnitTest::successful_test_case_count ( ) const
```

**6.245.2.34 successful\_test\_count()**

```
int testing::UnitTest::successful_test_count ( ) const
```

**6.245.2.35 successful\_test\_suite\_count()**

```
int testing::UnitTest::successful_test_suite_count ( ) const
```

**6.245.2.36 test\_case\_to\_run\_count()**

```
int testing::UnitTest::test_case_to_run_count ( ) const
```

**6.245.2.37 test\_suite\_to\_run\_count()**

```
int testing::UnitTest::test_suite_to_run_count ( ) const
```

**6.245.2.38 test\_to\_run\_count()**

```
int testing::UnitTest::test_to_run_count ( ) const
```

**6.245.2.39 total\_test\_case\_count()**

```
int testing::UnitTest::total_test_case_count ( ) const
```

**6.245.2.40 total\_test\_count()**

```
int testing::UnitTest::total_test_count ( ) const
```

**6.245.2.41 total\_test\_suite\_count()**

```
int testing::UnitTest::total_test_suite_count ( ) const
```

**6.245.3 Friends And Related Function Documentation****6.245.3.1 AddGlobalTestEnvironment**

```
Environment* AddGlobalTestEnvironment (
    Environment * env ) [friend]
```

**6.245.3.2 internal::AssertHelper**

```
friend class internal::AssertHelper [friend]
```

### 6.245.3.3 **internal::GetIgnoredParameterizedTestSuites**

```
std::set<std::string>* internal::GetIgnoredParameterizedTestSuites () [friend]
```

### 6.245.3.4 **internal::GetUnitTestImpl**

```
internal::UnitTestImpl* internal::GetUnitTestImpl () [friend]
```

### 6.245.3.5 **internal::ReportFailureInUnknownLocation**

```
void internal::ReportFailureInUnknownLocation (
    TestPartResult::Type result_type,
    const std::string & message ) [friend]
```

### 6.245.3.6 **internal::StreamingListenerTest**

```
friend class internal::StreamingListenerTest [friend]
```

### 6.245.3.7 **internal::UnitTestRecordPropertyTestHelper**

```
friend class internal::UnitTestRecordPropertyTestHelper [friend]
```

### 6.245.3.8 **ScopedTrace**

```
friend class ScopedTrace [friend]
```

### 6.245.3.9 **Test**

```
friend class Test [friend]
```

## 6.245.4 Member Data Documentation

### 6.245.4.1 impl\_

```
internal::UnitTestImpl* testing::UnitTest::impl_ [private]
```

### 6.245.4.2 mutex\_

```
internal::Mutex testing::UnitTest::mutex_ [mutable], [private]
```

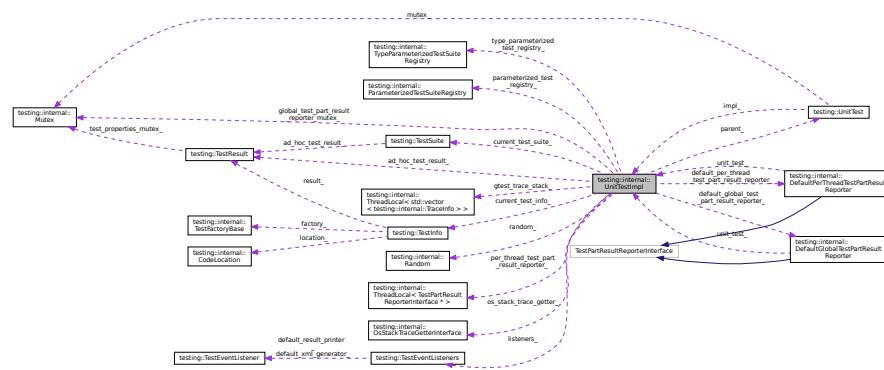
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

## 6.246 testing::internal::UnitTestImpl Class Reference

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

Collaboration diagram for testing::internal::UnitTestImpl:



## Public Types

- enum `ReactionToSharding` { `HONOR_SHARDING_PROTOCOL` , `IGNORE_SHARDING_PROTOCOL` }

## Public Member Functions

- `UnitTestImpl (UnitTest *parent)`
- `virtual ~UnitTestImpl ()`
- `TestPartResultReporterInterface * GetGlobalTestPartResultReporter ()`
- `void SetGlobalTestPartResultReporter (TestPartResultReporterInterface *reporter)`
- `TestPartResultReporterInterface * GetTestPartResultReporterForCurrentThread ()`
- `void SetTestPartResultReporterForCurrentThread (TestPartResultReporterInterface *reporter)`
- `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_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`
- `TestSuite * GetMutableSuiteCase (int i)`
- `TestEventListeners * listeners ()`
- `TestResult * current_test_result ()`
- `const TestResult * ad_hoc_test_result () const`
- `void set_os_stack_trace_getter (OsStackTraceGetterInterface *getter)`
- `OsStackTraceGetterInterface * os_stack_trace_getter ()`
- `std::string CurrentOsStackTraceExceptTop (int skip_count) GTEST_NO_INLINE_GTEST_NO_TAIL_CALL_`
- `TestSuite * GetTestSuite (const char *test_suite_name, const char *type_param, internal::SetUpTestSuiteFunc set_up_tc, internal::TearDownTestSuiteFunc tear_down_tc)`
- `TestCase * GetTestCase (const char *test_case_name, const char *type_param, internal::SetUpTestSuiteFunc set_up_tc, internal::TearDownTestSuiteFunc tear_down_tc)`
- `void AddTestInfo (internal::SetUpTestSuiteFunc set_up_tc, internal::TearDownTestSuiteFunc tear_down_tc, TestInfo *test_info)`
- `internal::ParameterizedTestSuiteRegistry & parameterized_test_registry ()`
- `std::set< std::string > * ignored_parameterized_test_suites ()`
- `internal::TypeParameterizedTestSuiteRegistry & type_parameterized_test_registry ()`
- `void set_current_test_suite (TestSuite *a_current_test_suite)`
- `void set_current_test_info (TestInfo *a_current_test_info)`
- `void RegisterParameterizedTests ()`
- `bool RunAllTests ()`
- `void ClearNonAdHocTestResult ()`
- `void ClearAdHocTestResult ()`
- `void RecordProperty (const TestProperty &test_property)`
- `int FilterTests (ReactionToSharding shard_tests)`
- `void ListTestsMatchingFilter ()`
- `const TestSuite * current_test_suite () const`
- `TestInfo * current_test_info ()`
- `const TestInfo * current_test_info () const`
- `std::vector< Environment * > & environments ()`

- std::vector< [TraceInfo](#) > & [gtest\\_trace\\_stack](#) ()
- const std::vector< [TraceInfo](#) > & [gtest\\_trace\\_stack](#) () const
- void [ConfigureXmlOutput](#) ()
- void [PostFlagParsingInit](#) ()
- int [random\\_seed](#) () const
- [internal::Random](#) \* [random](#) ()
- void [ShuffleTests](#) ()
- void [UnshuffleTests](#) ()
- bool [catch\\_exceptions](#) () const

## Private Member Functions

- void [set\\_catch\\_exceptions](#) (bool value)
- [UnitTestImpl](#) (const [UnitTestImpl](#) &) = delete
- [UnitTestImpl](#) & [operator=](#) (const [UnitTestImpl](#) &) = delete

## Private Attributes

- [UnitTest](#) \*const [parent\\_](#)
- [DefaultGlobalTestPartResultReporter](#) [default\\_global\\_test\\_part\\_result\\_reporter\\_](#)
- [DefaultPerThreadTestPartResultReporter](#) [default\\_per\\_thread\\_test\\_part\\_result\\_reporter\\_](#)
- [TestPartResultReporterInterface](#) \* [global\\_test\\_part\\_result\\_reporter\\_](#)
- [internal::Mutex](#) [global\\_test\\_part\\_result\\_reporter\\_mutex\\_](#)
- [internal::ThreadLocal](#)< [TestPartResultReporterInterface](#) \* > [per\\_thread\\_test\\_part\\_result\\_reporter\\_](#)
- std::vector< [Environment](#) \* > [environments\\_](#)
- std::vector< [TestSuite](#) \* > [test\\_suites\\_](#)
- std::vector< int > [test\\_suite\\_indices\\_](#)
- [internal::ParameterizedTestSuiteRegistry](#) [parameterized\\_test\\_registry\\_](#)
- [internal::TypeParameterizedTestSuiteRegistry](#) [type\\_parameterized\\_test\\_registry\\_](#)
- std::set< std::string > [ignored\\_parameterized\\_test\\_suites\\_](#)
- bool [parameterized\\_tests\\_registered\\_](#)
- int [last\\_death\\_test\\_suite\\_](#)
- [TestSuite](#) \* [current\\_test\\_suite\\_](#)
- [TestInfo](#) \* [current\\_test\\_info\\_](#)
- [TestResult](#) [ad\\_hoc\\_test\\_result\\_](#)
- [TestEventListeners](#) [listeners\\_](#)
- [OsStackTraceGetterInterface](#) \* [os\\_stack\\_trace\\_getter\\_](#)
- bool [post\\_flag\\_parse\\_init\\_performed\\_](#)
- int [random\\_seed\\_](#)
- [internal::Random](#) [random\\_](#)
- [TimeInMillis](#) [start\\_timestamp\\_](#)
- [TimeInMillis](#) [elapsed\\_time\\_](#)
- [internal::ThreadLocal](#)< std::vector< [TraceInfo](#) > > [gtest\\_trace\\_stack\\_](#)
- bool [catch\\_exceptions\\_](#)

## Friends

- class [::testing::UnitTest](#)

## 6.246.1 Member Enumeration Documentation

### 6.246.1.1 ReactionToSharding

```
enum testing::internal::UnitTestImpl::ReactionToSharding
```

## Enumerator

HONOR_SHARDING_PROTOCOL	
IGNORE_SHARDING_PROTOCOL	

**6.246.2 Constructor & Destructor Documentation****6.246.2.1 UnitTestImpl() [1/2]**

```
testing::internal::UnitTestImpl::UnitTestImpl (
    UnitTest * parent )  [explicit]
```

**6.246.2.2 ~UnitTestImpl()**

```
virtual testing::internal::UnitTestImpl::~UnitTestImpl ( )  [virtual]
```

**6.246.2.3 UnitTestImpl() [2/2]**

```
testing::internal::UnitTestImpl::UnitTestImpl (
    const UnitTestImpl & )  [private], [delete]
```

**6.246.3 Member Function Documentation****6.246.3.1 ad\_hoc\_test\_result()**

```
const TestResult* testing::internal::UnitTestImpl::ad_hoc_test_result ( ) const  [inline]
```

**6.246.3.2 AddTestInfo()**

```
void testing::internal::UnitTestImpl::AddTestInfo (
    internal::SetUpTestSuiteFunc set_up_tc,
    internal::TearDownTestSuiteFunc tear_down_tc,
    TestInfo * test_info )  [inline]
```

**6.246.3.3 catch\_exceptions()**

```
bool testing::internal::UnitTestImpl::catch_exceptions ( ) const [inline]
```

**6.246.3.4 ClearAdHocTestResult()**

```
void testing::internal::UnitTestImpl::ClearAdHocTestResult ( ) [inline]
```

**6.246.3.5 ClearNonAdHocTestResult()**

```
void testing::internal::UnitTestImpl::ClearNonAdHocTestResult ( ) [inline]
```

**6.246.3.6 ConfigureXmlOutput()**

```
void testing::internal::UnitTestImpl::ConfigureXmlOutput ( )
```

**6.246.3.7 current\_test\_info() [1/2]**

```
TestInfo* testing::internal::UnitTestImpl::current_test_info ( ) [inline]
```

**6.246.3.8 current\_test\_info() [2/2]**

```
const TestInfo* testing::internal::UnitTestImpl::current_test_info ( ) const [inline]
```

**6.246.3.9 current\_test\_result()**

```
TestResult* testing::internal::UnitTestImpl::current_test_result ( )
```

**6.246.3.10 current\_test\_suite()**

```
const TestSuite* testing::internal::UnitTestImpl::current_test_suite ( ) const [inline]
```

**6.246.3.11 CurrentOsStackTraceExceptTop()**

```
std::string testing::internal::UnitTestImpl::CurrentOsStackTraceExceptTop (   
    int skip_count )
```

**6.246.3.12 disabled\_test\_count()**

```
int testing::internal::UnitTestImpl::disabled_test_count ( ) const
```

**6.246.3.13 elapsed\_time()**

```
TimeInMillis testing::internal::UnitTestImpl::elapsed_time ( ) const [inline]
```

**6.246.3.14 environments()**

```
std::vector<Environment*>& testing::internal::UnitTestImpl::environments ( ) [inline]
```

**6.246.3.15 Failed()**

```
bool testing::internal::UnitTestImpl::Failed ( ) const [inline]
```

**6.246.3.16 failed\_test\_count()**

```
int testing::internal::UnitTestImpl::failed_test_count ( ) const
```

**6.246.3.17 failed\_test\_suite\_count()**

```
int testing::internal::UnitTestImpl::failed_test_suite_count ( ) const
```

**6.246.3.18 FilterTests()**

```
int testing::internal::UnitTestImpl::FilterTests (
    ReactionToSharding shard_tests )
```

**6.246.3.19 GetGlobalTestPartResultReporter()**

```
TestPartResultReporterInterface* testing::internal::UnitTestImpl::GetGlobalTestPartResultReporter ( )
```

**6.246.3.20 GetMutableSuiteCase()**

```
TestSuite* testing::internal::UnitTestImpl::GetMutableSuiteCase (
    int i ) [inline]
```

**6.246.3.21 GetTestCase() [1/2]**

```
TestCase* testing::internal::UnitTestImpl::GetTestCase (
    const char * test_case_name,
    const char * type_param,
    internal::SetUpTestSuiteFunc set_up_tc,
    internal::TearDownTestSuiteFunc tear_down_tc ) [inline]
```

**6.246.3.22 GetTestCase() [2/2]**

```
const TestCase* testing::internal::UnitTestImpl::GetTestCase (
    int i ) const [inline]
```

**6.246.3.23 GetTestPartResultReporterForCurrentThread()**

```
TestPartResultReporterInterface* testing::internal::UnitTestImpl::GetTestPartResultReporterForCurrentThread ( )
```

**6.246.3.24 GetTestSuite() [1/2]**

```
TestSuite* testing::internal::UnitTestImpl::GetTestSuite (
    const char * test_suite_name,
    const char * type_param,
    internal::SetUpTestSuiteFunc set_up_tc,
    internal::TearDownTestSuiteFunc tear_down_tc )
```

**6.246.3.25 GetTestSuite() [2/2]**

```
const TestSuite* testing::internal::UnitTestImpl::GetTestSuite (
    int i ) const [inline]
```

**6.246.3.26 gtest\_trace\_stack() [1/2]**

```
std::vector<TraceInfo>& testing::internal::UnitTestImpl::gtest_trace_stack ( ) [inline]
```

**6.246.3.27 gtest\_trace\_stack() [2/2]**

```
const std::vector<TraceInfo>& testing::internal::UnitTestImpl::gtest_trace_stack ( ) const
[inline]
```

**6.246.3.28 ignored\_parameterized\_test\_suites()**

```
std::set<std::string>* testing::internal::UnitTestImpl::ignored_parameterized_test_suites ( )
[inline]
```

**6.246.3.29 listeners()**

```
TestEventListeners* testing::internal::UnitTestImpl::listeners ( ) [inline]
```

**6.246.3.30 ListTestsMatchingFilter()**

```
void testing::internal::UnitTestImpl::ListTestsMatchingFilter ( )
```

**6.246.3.31 operator=( )**

```
UnitTestImpl& testing::internal::UnitTestImpl::operator= (
    const UnitTestImpl & ) [private], [delete]
```

**6.246.3.32 os\_stack\_trace\_getter()**

```
OsStackTraceInterface* testing::internal::UnitTestImpl::os_stack_trace_getter ( )
```

**6.246.3.33 parameterized\_test\_registry()**

```
internal::ParameterizedTestSuiteRegistry& testing::internal::UnitTestImpl::parameterized_<-
test_registry ( ) [inline]
```

**6.246.3.34 Passed()**

```
bool testing::internal::UnitTestImpl::Passed ( ) const [inline]
```

**6.246.3.35 PostFlagParsingInit()**

```
void testing::internal::UnitTestImpl::PostFlagParsingInit ( )
```

**6.246.3.36 random()**

```
internal::Random* testing::internal::UnitTestImpl::random ( ) [inline]
```

**6.246.3.37 random\_seed()**

```
int testing::internal::UnitTestImpl::random_seed ( ) const [inline]
```

**6.246.3.38 RecordProperty()**

```
void testing::internal::UnitTestImpl::RecordProperty (
    const TestProperty & test_property )
```

**6.246.3.39 RegisterParameterizedTests()**

```
void testing::internal::UnitTestImpl::RegisterParameterizedTests ( )
```

**6.246.3.40 reportable\_disabled\_test\_count()**

```
int testing::internal::UnitTestImpl::reportable_disabled_test_count ( ) const
```

**6.246.3.41 reportable\_test\_count()**

```
int testing::internal::UnitTestImpl::reportable_test_count ( ) const
```

**6.246.3.42 RunAllTests()**

```
bool testing::internal::UnitTestImpl::RunAllTests ( )
```

**6.246.3.43 set\_catch\_exceptions()**

```
void testing::internal::UnitTestImpl::set_catch_exceptions (
    bool value ) [inline], [private]
```

**6.246.3.44 set\_current\_test\_info()**

```
void testing::internal::UnitTestImpl::set_current_test_info (
    TestInfo * a_current_test_info ) [inline]
```

**6.246.3.45 set\_current\_test\_suite()**

```
void testing::internal::UnitTestImpl::set_current_test_suite (
    TestSuite * a_current_test_suite ) [inline]
```

**6.246.3.46 set\_os\_stack\_trace\_getter()**

```
void testing::internal::UnitTestImpl::set_os_stack_trace_getter (
    OsStackTraceInterface * getter )
```

**6.246.3.47 SetGlobalTestPartResultReporter()**

```
void testing::internal::UnitTestImpl::SetGlobalTestPartResultReporter (
    TestPartResultReporterInterface * reporter )
```

**6.246.3.48 SetTestPartResultReporterForCurrentThread()**

```
void testing::internal::UnitTestImpl::SetTestPartResultReporterForCurrentThread (
    TestPartResultReporterInterface * reporter )
```

**6.246.3.49 ShuffleTests()**

```
void testing::internal::UnitTestImpl::ShuffleTests ( )
```

**6.246.3.50 skipped\_test\_count()**

```
int testing::internal::UnitTestImpl::skipped_test_count ( ) const
```

**6.246.3.51 start\_timestamp()**

```
TimeInMillis testing::internal::UnitTestImpl::start_timestamp ( ) const [inline]
```

### **6.246.3.52 successful\_test\_count()**

```
int testing::internal::UnitTestImpl::successful_test_count() const
```

### **6.246.3.53 successful\_test\_suite\_count()**

```
int testing::internal::UnitTestImpl::successful_test_suite_count () const
```

#### **6.246.3.54 test\_suite\_to\_run\_count()**

```
int testing::internal::UnitTestImpl::test_suite_to_run_count () const
```

### 6.246.3.55 test\_to\_run\_count()

```
int testing::internal::UnitTestImpl::test_to_run_count () const
```

### **6.246.3.56 total\_test\_count()**

```
int testing::internal::UnitTestImpl::total_test_count () const
```

### **6.246.3.57 total\_test\_suite\_count()**

```
int testing::internal::UnitTestImpl::total_test_suite_count () const
```

### **6.246.3.58 type\_parameterized\_test\_registry()**

```
internal::TypeParameterizedTestSuiteRegistry& testing::internal::UnitTestImpl::type_parameterized<->  
_test_registry () [inline]
```

### 6.246.3.59 UnshuffleTests()

```
void testing::internal::UnitTestImpl::UnshuffleTests( )
```

## 6.246.4 Friends And Related Function Documentation

### 6.246.4.1 ::testing::UnitTest

```
friend class ::testing::UnitTest [friend]
```

## 6.246.5 Member Data Documentation

### 6.246.5.1 ad\_hoc\_test\_result\_

```
TestResult testing::internal::UnitTestImpl::ad_hoc_test_result_ [private]
```

### 6.246.5.2 catch\_exceptions\_

```
bool testing::internal::UnitTestImpl::catch_exceptions_ [private]
```

### 6.246.5.3 current\_test\_info\_

```
TestInfo* testing::internal::UnitTestImpl::current_test_info_ [private]
```

### 6.246.5.4 current\_test\_suite\_

```
TestSuite* testing::internal::UnitTestImpl::current_test_suite_ [private]
```

### 6.246.5.5 default\_global\_test\_part\_result\_reporter\_

```
DefaultGlobalTestPartResultReporter testing::internal::UnitTestImpl::default_global_test_part_result_reporter_ [private]
```

### 6.246.5.6 default\_per\_thread\_test\_part\_result\_reporter\_

```
DefaultPerThreadTestPartResultReporter testing::internal::UnitTestImpl::default_per_thread_←  
test_part_result_reporter_ [private]
```

### 6.246.5.7 elapsed\_time\_

```
TimeInMillis testing::internal::UnitTestImpl::elapsed_time_ [private]
```

### 6.246.5.8 environments\_

```
std::vector<Environment*> testing::internal::UnitTestImpl::environments_ [private]
```

### 6.246.5.9 global\_test\_part\_result\_reporter\_

```
TestPartResultReporterInterface* testing::internal::UnitTestImpl::global_test_part_result_←  
reporter_ [private]
```

### 6.246.5.10 global\_test\_part\_result\_reporter\_mutex\_

```
internal::Mutex testing::internal::UnitTestImpl::global_test_part_result_reporter_mutex_←  
[private]
```

### 6.246.5.11 gtest\_trace\_stack\_

```
internal::ThreadLocal<std::vector<TraceInfo>> testing::internal::UnitTestImpl::gtest_trace←  
_stack_ [private]
```

### 6.246.5.12 ignored\_parameterized\_test\_suites\_

```
std::set<std::string> testing::internal::UnitTestImpl::ignored_parameterized_test_suites_←  
[private]
```

**6.246.5.13 last\_death\_test\_suite\_**

```
int testing::internal::UnitTestImpl::last_death_test_suite_ [private]
```

**6.246.5.14 listeners\_**

```
TestEventListeners testing::internal::UnitTestImpl::listeners_ [private]
```

**6.246.5.15 os\_stack\_trace\_getter\_**

```
OsStackTraceGetterInterface* testing::internal::UnitTestImpl::os_stack_trace_getter_ [private]
```

**6.246.5.16 parameterized\_test\_registry\_**

```
internal::ParameterizedTestSuiteRegistry testing::internal::UnitTestImpl::parameterized_test_registry_ [private]
```

**6.246.5.17 parameterized\_tests\_registered\_**

```
bool testing::internal::UnitTestImpl::parameterized_tests_registered_ [private]
```

**6.246.5.18 parent\_**

```
UnitTest* const testing::internal::UnitTestImpl::parent_ [private]
```

**6.246.5.19 per\_thread\_test\_part\_result\_reporter\_**

```
internal::ThreadLocal<TestPartResultReporterInterface*> testing::internal::UnitTestImpl::per_thread_test_part_result_reporter_ [private]
```

**6.246.5.20 post\_flag\_parse\_init\_performed\_**

```
bool testing::internal::UnitTestImpl::post_flag_parse_init_performed_ [private]
```

**6.246.5.21 random\_**

```
internal::Random testing::internal::UnitTestImpl::random_ [private]
```

**6.246.5.22 random\_seed\_**

```
int testing::internal::UnitTestImpl::random_seed_ [private]
```

**6.246.5.23 start\_timestamp\_**

```
TimeInMillis testing::internal::UnitTestImpl::start_timestamp_ [private]
```

**6.246.5.24 test\_suite\_indices\_**

```
std::vector<int> testing::internal::UnitTestImpl::test_suite_indices_ [private]
```

**6.246.5.25 test\_suites\_**

```
std::vector<TestSuite*> testing::internal::UnitTestImpl::test_suites_ [private]
```

**6.246.5.26 type\_parameterized\_test\_registry\_**

```
internal::TypeParameterizedTestSuiteRegistry testing::internal::UnitTestImpl::type_parameterized→
 _test_registry_ [private]
```

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

- build/\_deps/googletest-src/googletest/src/gtest-internal-inl.h

## 6.247 testing::internal::UnitTestOptions Class Reference

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

### Static Public Member Functions

- static std::string [GetOutputFormat\(\)](#)
- static std::string [GetAbsolutePathToOutputFile\(\)](#)
- static bool [FilterMatchesTest](#)(const std::string &test\_suite\_name, const std::string &test\_name)
- static bool [MatchesFilter](#)(const std::string &name, const char \*filter)

#### 6.247.1 Member Function Documentation

##### 6.247.1.1 [FilterMatchesTest\(\)](#)

```
static bool testing::internal::UnitTestOptions::FilterMatchesTest (
    const std::string & test_suite_name,
    const std::string & test_name ) [static]
```

##### 6.247.1.2 [GetAbsolutePathToOutputFile\(\)](#)

```
static std::string testing::internal::UnitTestOptions::GetAbsolutePathToOutputFile () [static]
```

##### 6.247.1.3 [GetOutputFormat\(\)](#)

```
static std::string testing::internal::UnitTestOptions::GetOutputFormat () [static]
```

##### 6.247.1.4 [MatchesFilter\(\)](#)

```
static bool testing::internal::UnitTestOptions::MatchesFilter (
    const std::string & name,
    const char * filter ) [static]
```

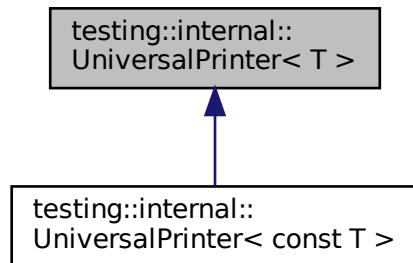
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/src/[gtest-internal-inl.h](#)

## 6.248 testing::internal::UniversalPrinter< T > Class Template Reference

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

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



### Static Public Member Functions

- static void [Print](#) (const T &value, ::std::ostream \*os)

#### 6.248.1 Member Function Documentation

##### 6.248.1.1 Print()

```
template<typename T >
static void testing::internal::UniversalPrinter< T >::Print (
    const T & value,
    ::std::ostream * os ) [inline], [static]
```

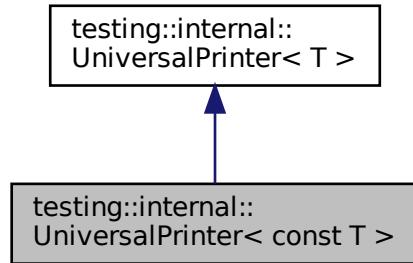
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

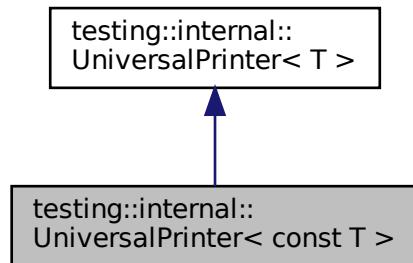
## 6.249 testing::internal::UniversalPrinter< const T > Class Template Reference

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

Inheritance diagram for testing::internal::UniversalPrinter< const T >:



Collaboration diagram for testing::internal::UniversalPrinter< const T >:



### Additional Inherited Members

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

- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

## 6.250 testing::internal::UniversalPrinter< T & > Class Template Reference

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

## Static Public Member Functions

- static void [Print](#) (const T &value, ::std::ostream \*os)

### 6.250.1 Member Function Documentation

#### 6.250.1.1 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:

- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

## 6.251 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)

### 6.251.1 Member Function Documentation

#### 6.251.1.1 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:

- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

## 6.252 testing::internal::UniversalTersePrinter< T > Class Template Reference

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

### Static Public Member Functions

- static void [Print](#) (const T &value, ::std::ostream \*os)

#### 6.252.1 Member Function Documentation

##### 6.252.1.1 Print()

```
template<typename T >
static void testing::internal::UniversalTersePrinter< T >::Print (
    const T & value,
    ::std::ostream * os ) [inline], [static]
```

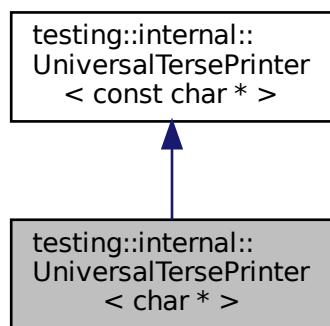
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

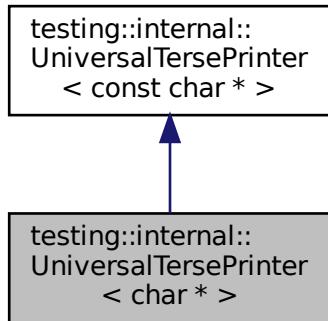
## 6.253 testing::internal::UniversalTersePrinter< char \* > Class Reference

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

Inheritance diagram for testing::internal::UniversalTersePrinter< char \* >:



Collaboration diagram for testing::internal::UniversalTersePrinter< char \* >:



## Additional Inherited Members

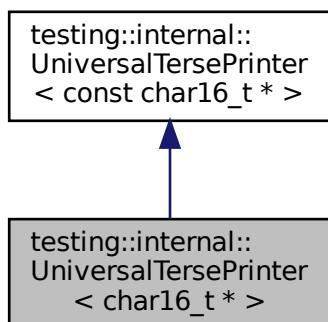
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

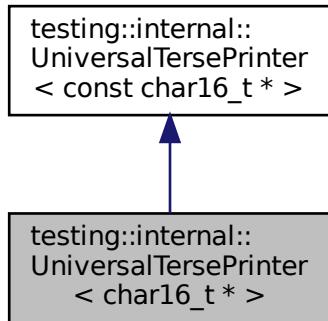
## 6.254 testing::internal::UniversalTersePrinter< char16\_t \* > Class Reference

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

Inheritance diagram for testing::internal::UniversalTersePrinter< char16\_t \* >:



Collaboration diagram for testing::internal::UniversalTersePrinter< char16\_t \* >:



## Additional Inherited Members

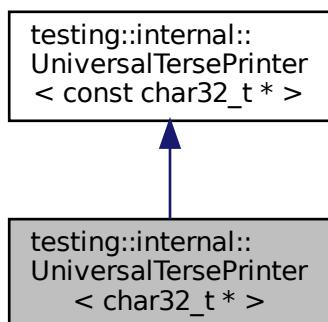
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

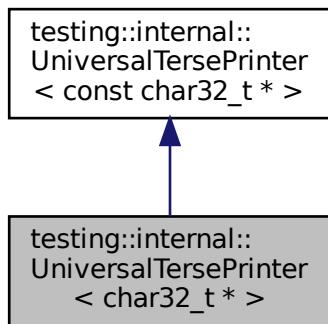
## 6.255 testing::internal::UniversalTersePrinter< char32\_t \* > Class Reference

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

Inheritance diagram for testing::internal::UniversalTersePrinter< char32\_t \* >:



Collaboration diagram for testing::internal::UniversalTersePrinter< char32\_t \* >:



## Additional Inherited Members

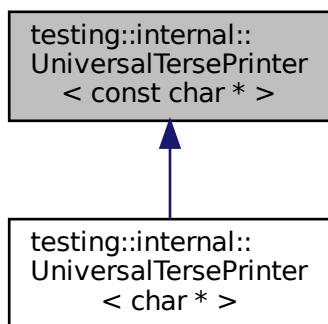
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

## 6.256 testing::internal::UniversalTersePrinter< const char \* > Class Reference

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

Inheritance diagram for testing::internal::UniversalTersePrinter< const char \* >:



## Static Public Member Functions

- static void [Print](#) (const char \*str, ::std::ostream \*os)

### 6.256.1 Member Function Documentation

#### 6.256.1.1 Print()

```
static void testing::internal::UniversalTersePrinter< const char * >::Print (
```

```
    const char * str,
```

```
    ::std::ostream * os ) [inline], [static]
```

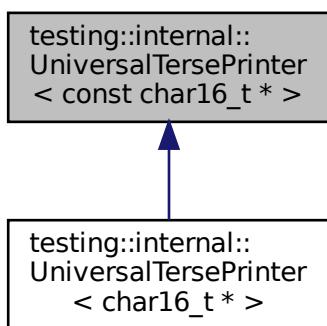
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

## 6.257 testing::internal::UniversalTersePrinter< const char16\_t \* > Class Reference

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

Inheritance diagram for testing::internal::UniversalTersePrinter< const char16\_t \* >:



## Static Public Member Functions

- static void [Print](#) (const char16\_t \*str, ::std::ostream \*os)

## 6.257.1 Member Function Documentation

### 6.257.1.1 Print()

```
static void testing::internal::UniversalTersePrinter< const char16_t * >::Print (
    const char16_t * str,
    ::std::ostream * os ) [inline], [static]
```

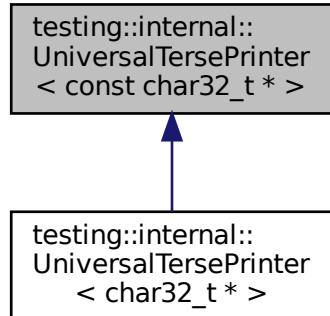
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

## 6.258 testing::internal::UniversalTersePrinter< const char32\_t \* > Class Reference

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

Inheritance diagram for testing::internal::UniversalTersePrinter< const char32\_t \* >:



### Static Public Member Functions

- static void [Print](#) (const char32\_t \*str, ::std::ostream \*os)

## 6.258.1 Member Function Documentation

### 6.258.1.1 Print()

```
static void testing::internal::UniversalTersePrinter< const char32_t * >::Print (
```

```
    const char32_t * str,
```

```
    ::std::ostream * os ) [inline], [static]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

## 6.259 testing::internal::UniversalTersePrinter< std::reference\_wrapper< T > > Class Template Reference

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

### Static Public Member Functions

- static void [Print](#) (std::reference\_wrapper< T > value, ::std::ostream \*os)

### 6.259.1 Member Function Documentation

#### 6.259.1.1 Print()

```
template<typename T >
```

```
static void testing::internal::UniversalTersePrinter< std::reference_wrapper< T > >::Print (
```

```
    std::reference_wrapper< T > value,
```

```
    ::std::ostream * os ) [inline], [static]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

## 6.260 testing::internal::UniversalTersePrinter< T & > Class Template Reference

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

### Static Public Member Functions

- static void [Print](#) (const T &value, ::std::ostream \*os)

## 6.260.1 Member Function Documentation

### 6.260.1.1 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:

- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

## 6.261 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)

## 6.261.1 Member Function Documentation

### 6.261.1.1 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:

- build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h

## 6.262 testing::internal::UniversalTersePrinter< wchar\_t \* > Class Reference

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

## Static Public Member Functions

- static void [Print](#) (wchar\_t \*str, ::std::ostream \*os)

### 6.262.1 Member Function Documentation

#### 6.262.1.1 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:

- build/\_deps/googletest-src/googletest/include/gtest/[gtest-printers.h](#)

## 6.263 testing::internal::DoAllAction< FinalAction >::UserConstructorTag Struct Reference

```
#include <gmock-actions.h>
```

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

- build/\_deps/googletest-src/googletest/include/gtest/[gtest-printers.h](#)

## 6.264 testing::internal::DoAllAction< InitialAction, OtherActions... >::UserConstructorTag Struct Reference

```
#include <gmock-actions.h>
```

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

- build/\_deps/googletest-src/googletest/include/gtest/[gtest-printers.h](#)

## 6.265 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_`

### 6.265.1 Constructor & Destructor Documentation

#### 6.265.1.1 ValueArray()

```
template<typename... Ts>
testing::internal::ValueArray< Ts >::ValueArray (
    Ts... v ) [inline], [explicit]
```

### 6.265.2 Member Function Documentation

#### 6.265.2.1 MakeVector()

```
template<typename... Ts>
template<typename T , size_t... I>
std::vector<T> testing::internal::ValueArray< Ts >::MakeVector (
    IndexSequence< I... > ) const [inline], [private]
```

#### 6.265.2.2 operator ParamGenerator< T >()

```
template<typename... Ts>
template<typename T >
testing::internal::ValueArray< Ts >::operator ParamGenerator< T > ( ) const [inline]
```

### 6.265.3 Member Data Documentation

#### 6.265.3.1 v\_

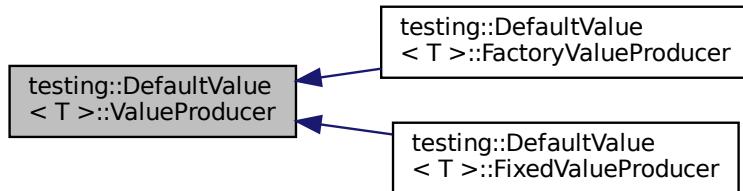
```
template<typename... Ts>
FlatTuple<Ts...> testing::internal::ValueArray< Ts >::v_ [private]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.266 testing::DefaultValue< T >::ValueProducer Class Reference

Inheritance diagram for testing::DefaultValue< T >::ValueProducer:



### Public Member Functions

- virtual ~ValueProducer ()
- virtual T Produce ()=0

### 6.266.1 Constructor & Destructor Documentation

#### 6.266.1.1 ~ValueProducer()

```
template<typename T >
virtual testing::DefaultValue< T >::ValueProducer::~ValueProducer ( ) [inline], [virtual]
```

## 6.266.2 Member Function Documentation

### 6.266.2.1 Produce()

```
template<typename T >
virtual T testing::DefaultValue< T >::ValueProducer::Produce( ) [pure virtual]
```

Implemented in [testing::DefaultValue< T >::FactoryValueProducer](#), and [testing::DefaultValue< T >::FixedValueProducer](#).

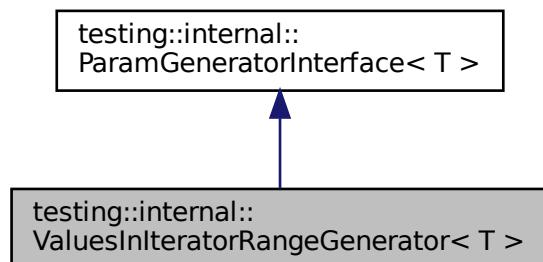
The documentation for this class was generated from the following file:

- build/\_deps/googletest-src/googlemock/include/gmock/gmock-actions.h

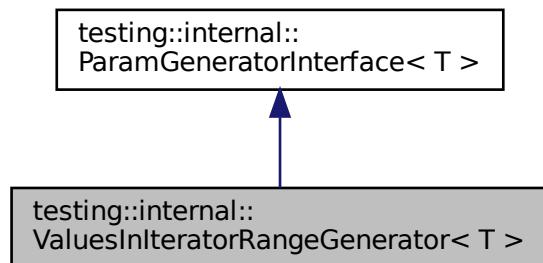
## 6.267 testing::internal::ValuesInIteratorRangeGenerator< T > Class Template Reference

```
#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

### 6.267.1 Member Typedef Documentation

#### 6.267.1.1 ContainerType

```
template<typename T >
typedef ::std::vector<T> testing::internal::ValuesInIteratorRangeGenerator< T >::ContainerType
[private]
```

### 6.267.2 Constructor & Destructor Documentation

### 6.267.2.1 ValuesInIteratorRangeGenerator()

```
template<typename T >
template<typename ForwardIterator >
testing::internal::ValuesInIteratorRangeGenerator< T >::ValuesInIteratorRangeGenerator (
    ForwardIterator begin,
    ForwardIterator end ) [inline]
```

### 6.267.2.2 ~ValuesInIteratorRangeGenerator()

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

## 6.267.3 Member Function Documentation

### 6.267.3.1 Begin()

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

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

### 6.267.3.2 End()

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

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

### 6.267.3.3 operator=(())

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

## 6.267.4 Member Data Documentation

### 6.267.4.1 container\_

```
template<typename T >
const ContainerType testing::internal::ValuesInIteratorRangeGenerator< T >::container_ [private]
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h

## 6.268 testing::internal::WithArgsAction< InnerAction, I > Struct Template Reference

```
#include <gmock-actions.h>
```

### Public Types

- template<typename R , typename... Args>  
using [InnerSignature](#) = R(typename std::tuple\_element< I, std::tuple< Args... >>::type...)

### Public Member Functions

- template<typename R , typename... Args, typename std::enable\_if< std::is\_convertible< InnerAction, OnceAction< R(internal)::TupleElement< I, std::tuple< Args... >>::value, int >::type = 0>> operator OnceAction< R (Args...)>() &&
- template<typename R , typename... Args, typename std::enable\_if< std::is\_convertible< const InnerAction &, Action< R(internal)::TupleElement< I, std::tuple< Args... >>::value, int >::type = 0>> operator Action< R (Args...)>() const

### Public Attributes

- InnerAction [inner\\_action](#)

## 6.268.1 Member Typedef Documentation

### 6.268.1.1 InnerSignature

```
template<typename InnerAction , size_t... I>
template<typename R , typename... Args>
using testing::internal::WithArgsAction< InnerAction, I >::InnerSignature = R(typename std::tuple_element< I, std::tuple< Args... >>::type...)
```

## 6.268.2 Member Function Documentation

### 6.268.2.1 operator Action< R()

```
template<typename InnerAction , size_t... I>
template<typename R , typename... Args, typename std::enable_if< std::is_convertible< const
InnerAction &, Action< R(internal::TupleElement< I, std::tuple< Args... >>...)>>::value,
int >::type = 0>
testing::internal::WithArgsAction< InnerAction, I >::operator Action< R (
    Args...      ) const [inline]
```

### 6.268.2.2 operator OnceAction< R()

```
template<typename InnerAction , size_t... I>
template<typename R , typename... Args, typename std::enable_if< std::is_convertible< InnerAction,
OnceAction< R(internal::TupleElement< I, std::tuple< Args... >>...)>>::value, int
>::type = 0>
testing::internal::WithArgsAction< InnerAction, I >::operator OnceAction< R (
    Args...      ) && [inline]
```

## 6.268.3 Member Data Documentation

### 6.268.3.1 inner\_action

```
template<typename InnerAction , size_t... I>
InnerAction testing::internal::WithArgsAction< InnerAction, I >::inner_action
```

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

- build/\_deps/googletest-src/googletest/include/gtest/internal/gtest.h

## 6.269 testing::internal::WithoutMatchers Class Reference

```
#include <gmock-internal-utils.h>
```

### Private Member Functions

- [WithoutMatchers \(\)](#)

## Friends

- [GTEST\\_API\\_ WithoutMatchers GetWithoutMatchers \(\)](#)

### 6.269.1 Constructor & Destructor Documentation

#### 6.269.1.1 WithoutMatchers()

```
testing::internal::WithoutMatchers::WithoutMatchers ( ) [inline], [private]
```

### 6.269.2 Friends And Related Function Documentation

#### 6.269.2.1 GetWithoutMatchers

```
GTEST_API_ WithoutMatchers GetWithoutMatchers ( ) [friend]
```

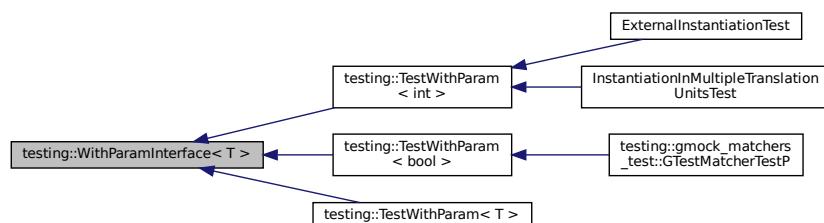
The documentation for this class was generated from the following file:

- [build/\\_deps/googletest-src/googlemock/include/gmock/internal/gmock-internal-utils.h](#)

## 6.270 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`

### 6.270.1 Member Typedef Documentation

#### 6.270.1.1 ParamType

```
template<typename T >
typedef T testing::WithParamInterface< T >::ParamType
```

### 6.270.2 Constructor & Destructor Documentation

#### 6.270.2.1 ~WithParamInterface()

```
template<typename T >
virtual testing::WithParamInterface< T >::~WithParamInterface ( ) [inline], [virtual]
```

### 6.270.3 Member Function Documentation

### 6.270.3.1 GetParam()

```
template<typename T >
static const ParamType& testing::WithParamInterface< T >::GetParam () [inline], [static]
```

### 6.270.3.2 SetParam()

```
template<typename T >
static void testing::WithParamInterface< T >::SetParam (
    const ParamType * parameter ) [inline], [static], [private]
```

## 6.270.4 Friends And Related Function Documentation

### 6.270.4.1 internal::ParameterizedTestFactory

```
template<typename T >
template<class TestClass >
friend class internal::ParameterizedTestFactory [friend]
```

## 6.270.5 Member Data Documentation

### 6.270.5.1 parameter\_

```
template<typename T >
const T * testing::WithParamInterface< T >::parameter_ = nullptr [static], [private]
```

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

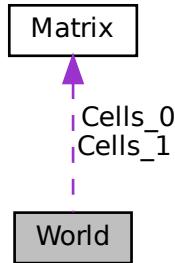
- build/\_deps/googletest-src/googletest/include/gtest/gtest.h

## 6.271 World Class Reference

Library for the functions involved in simulating a Game of Life world.

```
#include <world.h>
```

Collaboration diagram for World:



### Public Member Functions

- [World \(Matrix seed\)](#)  
*Constructor for the World class.*
- [int evaluate\\_rules \(\)](#)
- [int update\\_boundary \(\)](#)
- [int display\\_world \(\)](#)
- [int random\\_seed \(\)](#)
- [Matrix output\\_cells \(\)](#)
- [int write\\_edge\\_1d \(int \\*edge, int loc\)](#)
- [int read\\_edge\\_1d \(int \\*edge, int loc\)](#)
- [int write\\_edge\\_2d \(int \\*edge, int loc\)](#)
- [int read\\_edge\\_2d \(int \\*edge, int loc\)](#)
- [int write\\_vertex\\_2d \(int vertex, int loc\)](#)
- [int read\\_vertex\\_2d \(int loc\)](#)

### Public Attributes

- [int n\\_rows](#)
- [int n\\_cols](#)
- [Matrix Cells\\_0](#)
- [Matrix Cells\\_1](#)
- [int age](#)
- [int side](#)

### 6.271.1 Detailed Description

Library for the functions involved in simulating a Game of Life world.

## 6.271.2 Constructor & Destructor Documentation

### 6.271.2.1 World()

```
World::World (  
    Matrix seed )
```

Constructor for the [World](#) class.

Creates two matrix members of the size of the seed parameter plus a halo each. Fills the inner entries of one of these members with the seed entries. Stores an age attribute to keep track of the progress of the simulation, to keep track of which of the two member matrices holds the current cell values.

#### Parameters

<code>seed</code>	The seed of values used to initialise the cell states.
-------------------	--

## 6.271.3 Member Function Documentation

### 6.271.3.1 display\_world()

```
int World::display_world ( )
```

Reports key information on the current simulation state, including the current age and cell states.

### 6.271.3.2 evaluate\_rules()

```
int World::evaluate_rules ( )
```

Updates the current cell values, aging the simulation by 1 tick.

Assumes that the ghost cells at the edge of the cells matrix has been updated according to the desired boundary condition.

### 6.271.3.3 output\_cells()

```
Matrix World::output_cells ( )
```

Converts the current cell states to a string.

#### Returns

`std::string` the string of current cell states, formatted.

### 6.271.3.4 random\_seed()

```
int World::random_seed ( )
```

### 6.271.3.5 read\_edge\_1d()

```
int World::read_edge_1d (
    int * edge,
    int loc )
```

Used to read edges (including vertices) during 1D domain decomposition.

#### Parameters

<i>edge</i>	Edge buffer, which is updated in-place
<i>loc</i>	Integer specifying the location of the edge, with 0 meaning top and 1 meaning bottom.

### 6.271.3.6 read\_edge\_2d()

```
int World::read_edge_2d (
    int * edge,
    int loc )
```

Used to read edges (excluding vertices) during 2D domain decomposition.

#### Parameters

<i>edge</i>	Edge buffer, updated in-place
<i>loc</i>	Integer specifying the location of the edge, where 0=top, 1=left, 2=bottom, 3=right

### 6.271.3.7 read\_vertex\_2d()

```
int World::read_vertex_2d (
    int loc )
```

Used to update vertices during 2D domain decomposition.

#### Parameters

<i>loc</i>	Integer specifying the location of the vertex, where 0=top-left, 1=bottom-left, 2=bottom-right, 3=top-right
------------	---

**Returns**

vertex Vertex value

**6.271.3.8 update\_boundary()**

```
int World::update_boundary ( )
```

Invokes the matrix::update\_boundary routine on the correct cell matrix according to the parity of age.

**6.271.3.9 write\_edge\_1d()**

```
int World::write_edge_1d (
    int * edge,
    int loc )
```

Used to update edges (including vertices) during 1D domain decomposition.

**Parameters**

<i>edge</i>	Edge buffer
<i>loc</i>	Integer specifying the location of the edge, with 0 meaning top and 1 meaning bottom.

**6.271.3.10 write\_edge\_2d()**

```
int World::write_edge_2d (
    int * edge,
    int loc )
```

Used to update edges (excluding vertices) during 2D domain decomposition.

**Parameters**

<i>edge</i>	Edge buffer
<i>loc</i>	Integer specifying the location of the edge, where 0=top, 1=left, 2=bottom, 3=right

**6.271.3.11 write\_vertex\_2d()**

```
int World::write_vertex_2d (
    int vertex,
    int loc )
```

Used to update vertices during 2D domain decomposition.

**Parameters**

<i>vertex</i>	Vertex value to be written
<i>loc</i>	Integer specifying the location of the vertex, where 0=top-left, 1=bottom-left, 2=bottom-right, 3=top-right

## 6.271.4 Member Data Documentation

### 6.271.4.1 `age`

```
int World::age
```

### 6.271.4.2 `Cells_0`

```
Matrix World::Cells_0
```

### 6.271.4.3 `Cells_1`

```
Matrix World::Cells_1
```

### 6.271.4.4 `n_cols`

```
int World::n_cols
```

### 6.271.4.5 `n_rows`

```
int World::n_rows
```

### 6.271.4.6 `side`

```
int World::side
```

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

- src/conway/include/[world.h](#)
- src/conway/[world.cpp](#)

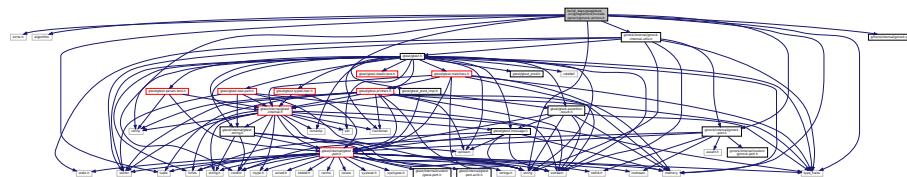
## Chapter 7

# File Documentation

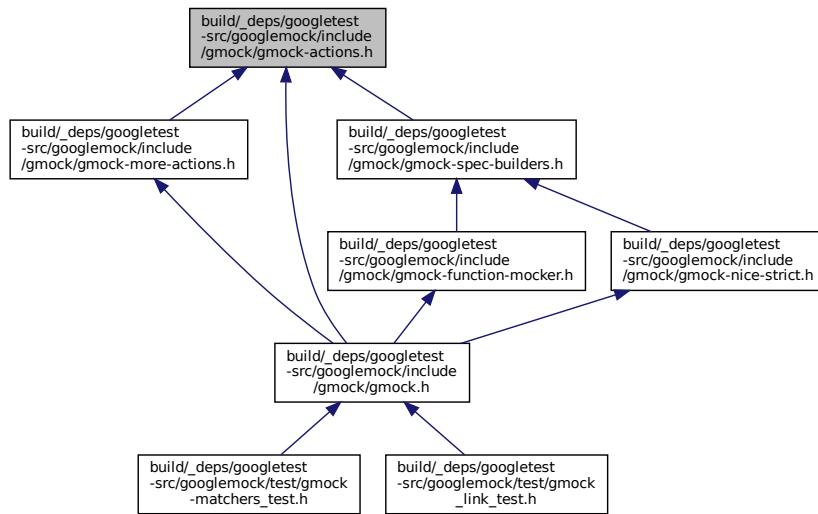
### 7.1 build/\_deps/googletest-src/googletest/include/gmock/gmock-actions.h File Reference

```
#include <errno.h>
#include <algorithm>
#include <functional>
#include <memory>
#include <string>
#include <tuple>
#include <type_traits>
#include <utility>
#include "gmock/internal/gmock-internal-utils.h"
#include "gmock/internal/gmock-port.h"
#include "gmock/internal/gmock-pp.h"
```

Include dependency graph for gmock-actions.h:



This graph shows which files directly or indirectly include this file:



## Classes

- struct [testing::internal::BuiltInDefaultValueGetter< T, kDefaultConstructible >](#)
- struct [testing::internal::BuiltInDefaultValueGetter< T, false >](#)
- class [testing::internal::BuiltInDefaultValue< T >](#)
- class [testing::internal::BuiltInDefaultValue< const T >](#)
- class [testing::internal::BuiltInDefaultValue< T \\* >](#)
- struct [testing::internal::negation< P >](#)
- struct [testing::internal::conjunction<... >](#)
- struct [testing::internal::conjunction< P1 >](#)
- struct [testing::internal::conjunction< P1, Ps... >](#)
- struct [testing::internal::disjunction<... >](#)
- struct [testing::internal::disjunction< P1 >](#)
- struct [testing::internal::disjunction< P1, Ps... >](#)
- struct [testing::internal::is\\_implicitly\\_convertible< From, To >](#)
- struct [testing::internal::is\\_callable\\_r\\_impl< Void, R, F, Args >](#)
- struct [testing::internal::is\\_callable\\_r\\_impl< void\\_t< call\\_result\\_t< F, Args... >>, R, F, Args... >](#)
- class [testing::OnceAction< Result\(Args...\)>](#)
- class [testing::OnceAction< Result\(Args...\)>::StdFunctionAdaptor< Callable >](#)
- struct [testing::OnceAction< Result\(Args...\)>::StdFunctionAdaptor< Callable >::CallableTag](#)
- struct [testing::OnceAction< Result\(Args...\)>::IgnoreIncomingArguments< Callable >](#)
- class [testing::DefaultValue< T >](#)
- class [testing::DefaultValue< T >::ValueProducer](#)
- class [testing::DefaultValue< T >::FixedValueProducer](#)
- class [testing::DefaultValue< T >::FactoryValueProducer](#)
- class [testing::DefaultValue< T & >](#)
- class [testing::DefaultValue< void >](#)
- class [testing::ActionInterface< F >](#)
- class [testing::Action< R\(Args...\)>](#)
- struct [testing::Action< R\(Args...\)>::ActionAdapter](#)
- struct [testing::Action< R\(Args...\)>::IgnoreArgs< FunctionImpl >](#)

- class `testing::PolymorphicAction< Impl >`
- class `testing::PolymorphicAction< Impl >::MonomorphicImpl< F >`
- struct `testing::internal::ByMoveWrapper< T >`
- class `testing::internal::ReturnAction< R >`
- class `testing::internal::ReturnAction< R >::Impl< U >`
- struct `testing::internal::ReturnAction< R >::Impl< U >::State`
- class `testing::internal::ReturnAction< ByMoveWrapper< T > >`
- struct `testing::internal::ReturnAction< ByMoveWrapper< T > >::State`
- class `testing::internal::ReturnNullAction`
- class `testing::internal::ReturnVoidAction`
- class `testing::internal::ReturnRefAction< T >`
- class `testing::internal::ReturnRefAction< T >::Impl< F >`
- class `testing::internal::ReturnRefOfCopyAction< T >`
- class `testing::internal::ReturnRefOfCopyAction< T >::Impl< F >`
- class `testing::internal::ReturnRoundRobinAction< T >`
- struct `testing::internal::ReturnRoundRobinAction< T >::State`
- class `testing::internal::DoDefaultAction`
- class `testing::internal::AssignAction< T1, T2 >`
- class `testing::internal::SetErrnoAndReturnAction< T >`
- struct `testing::internal::SetArgumentPointeeAction< N, A, typename >`
- struct `testing::internal::InvokeMethodAction< Class, MethodPtr >`
- struct `testing::internal::InvokeWithoutArgsAction< FunctionImpl >`
- struct `testing::internal::InvokeMethodWithoutArgsAction< Class, MethodPtr >`
- class `testing::internal::IgnoreResultAction< A >`
- class `testing::internal::IgnoreResultAction< A >::Impl< F >`
- struct `testing::internal::WithArgsAction< InnerAction, I >`
- class `testing::internal::DoAllAction< FinalAction >`
- struct `testing::internal::DoAllAction< FinalAction >::UserConstructorTag`
- class `testing::internal::DoAllAction< InitialAction, OtherActions... >`
- struct `testing::internal::DoAllAction< InitialAction, OtherActions... >::UserConstructorTag`
- struct `testing::internal::ReturnNewAction< T, Params >`
- struct `testing::internal::ReturnArgAction< k >`
- struct `testing::internal::SaveArgAction< k, Ptr >`
- struct `testing::internal::SaveArgPointeeAction< k, Ptr >`
- struct `testing::internal::SetArgRefereeAction< k, T >`
- struct `testing::internal::SetArrayArgumentAction< k, I1, I2 >`
- struct `testing::internal::DeleteArgAction< k >`
- struct `testing::internal::ReturnPointeeAction< Ptr >`
- struct `testing::internal::ExcessiveArg`
- struct `testing::internal::ImplBase< Impl >`
- struct `testing::internal::ImplBase< Impl >::Holder`
- struct `testing::internal::ActionImpl< R(Args...), Impl >`

## Namespaces

- `testing`
- `testing::internal`

## Macros

- `#define GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_(type, value)`
- `#define GMOCK_INTERNAL_ARG_UNUSED(i, data, el) , const arg##i##_type& arg##i GTEST_ATTRIBUTE_UNUSED_`
- `#define GMOCK_ACTION_ARG_TYPES_AND_NAMES_UNUSED_`
- `#define GMOCK_INTERNAL_ARG(i, data, el) , const arg##i##_type& arg##i`
- `#define GMOCK_ACTION_ARG_TYPES_AND_NAMES_ const args_type& args GMOCK_PP_REPEAT(GMOCK_INTERNAL_, 10)`
- `#define GMOCK_INTERNAL_TEMPLATE_ARG(i, data, el) , typename arg##i##_type`
- `#define GMOCK_ACTION_TEMPLATE_ARGS_NAMES_ GMOCK_PP_TAIL(GMOCK_PP_REPEAT(GMOCK_INTERNAL_TEMPLATE_, 10))`
- `#define GMOCK_INTERNAL_TYPENAME_PARAM(i, data, param) , typename param##i##_type`
- `#define GMOCK_ACTION_TYPENAME_PARAMS_(params) GMOCK_PP_TAIL(GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_, params))`
- `#define GMOCK_INTERNAL_TYPE_PARAM(i, data, param) , param##i##_type`
- `#define GMOCK_ACTION_TYPE_PARAMS_(params) GMOCK_PP_TAIL(GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_, params))`
- `#define GMOCK_INTERNAL_TYPE_GVALUE_PARAM(i, data, param) , param##i##_type gmock_p##i`
- `#define GMOCK_ACTION_TYPE_GVALUE_PARAMS_(params) GMOCK_PP_TAIL(GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_, params))`
- `#define GMOCK_INTERNAL_GVALUE_PARAM(i, data, param) , std::forward<param##i##_type>(gmock_<- p##i)`
- `#define GMOCK_ACTION_GVALUE_PARAMS_(params) GMOCK_PP_TAIL(GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_, params))`
- `#define GMOCK_INTERNAL_INIT_PARAM(i, data, param) , param##i##_type param(:std::forward<param##i##_type>(gmock_p##i))`
- `#define GMOCK_ACTION_INIT_PARAMS_(params) GMOCK_PP_TAIL(GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_INIT_, params))`
- `#define GMOCK_INTERNAL_FIELD_PARAM(i, data, param) param##i##_type param;`
- `#define GMOCK_ACTION_FIELD_PARAMS_(params) GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_FIELD_PARAM, params)`
- `#define GMOCK_INTERNAL_ACTION(name, full_name, params)`
- `#define ACTION(name)`
- `#define ACTION_P(name, ...) GMOCK_INTERNAL_ACTION(name, name##ActionP, (_VA_ARGS_))`
- `#define ACTION_P2(name, ...) GMOCK_INTERNAL_ACTION(name, name##ActionP2, (_VA_ARGS_))`
- `#define ACTION_P3(name, ...) GMOCK_INTERNAL_ACTION(name, name##ActionP3, (_VA_ARGS_))`
- `#define ACTION_P4(name, ...) GMOCK_INTERNAL_ACTION(name, name##ActionP4, (_VA_ARGS_))`
- `#define ACTION_P5(name, ...) GMOCK_INTERNAL_ACTION(name, name##ActionP5, (_VA_ARGS_))`
- `#define ACTION_P6(name, ...) GMOCK_INTERNAL_ACTION(name, name##ActionP6, (_VA_ARGS_))`
- `#define ACTION_P7(name, ...) GMOCK_INTERNAL_ACTION(name, name##ActionP7, (_VA_ARGS_))`
- `#define ACTION_P8(name, ...) GMOCK_INTERNAL_ACTION(name, name##ActionP8, (_VA_ARGS_))`
- `#define ACTION_P9(name, ...) GMOCK_INTERNAL_ACTION(name, name##ActionP9, (_VA_ARGS_))`
- `#define ACTION_P10(name, ...) GMOCK_INTERNAL_ACTION(name, name##ActionP10, (_VA_ARGS_<- __))`

## Typedefs

- `template<typename... >  
using testing::internal::void_t = void`
- `template<typename F , typename... Args>  
using testing::internal::call_result_t = decltype(std::declval< F >()(std::declval< Args >(...)))`
- `template<typename R , typename F , typename... Args>  
using testing::internal::is_callable_r = is_callable_r_impl< void, R, F, Args... >`
- `typedef internal::ignoredValue testing::Unused`

## Functions

- `testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_(void,)`
- `testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_(:std::string, "")`
- `testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_(bool, false)`
- `testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_(unsigned char, '\0')`
- `testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_(signed char, '\0')`
- `testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_(char, '\0')`
- `testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_(unsigned short, 0U)`
- `testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_(signed short, 0)`
- `testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_(unsigned int, 0U)`
- `testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_(signed int, 0)`
- `testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_(unsigned long, 0UL)`
- `testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_(signed long, 0L)`
- `testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_(unsigned long long, 0)`
- `testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_(signed long long, 0)`
- `testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_(float, 0)`
- `testing::internal::GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_(double, 0)`
- template<typename T>  
  `std::add_const< T >::type & testing::internal::as_const(T &t)`
- template<typename F>  
  `Action< F > testing::MakeAction(ActionInterface< F > *impl)`
- template<typename Impl>  
  `PolymorphicAction< Impl > testing::MakePolymorphicAction(const Impl &impl)`
- template<typename... Action>  
  `internal::DoAllAction< typename std::decay< Action >::type... > testing::DoAll(Action &&... action)`
- template<size\_t k, typename InnerAction>  
  `internal::WithArgsAction< typename std::decay< InnerAction >::type, k > testing::WithArg(InnerAction &&action)`
- template<size\_t k, size\_t... ks, typename InnerAction>  
  `internal::WithArgsAction< typename std::decay< InnerAction >::type, k, ks... > testing::WithArgs(InnerAction &&action)`
- template<typename InnerAction>  
  `internal::WithArgsAction< typename std::decay< InnerAction >::type > testing::WithoutArgs(InnerAction &&action)`
- template<typename R>  
  `internal::ReturnAction< R > testing::Return(R value)`
- `PolymorphicAction< internal::ReturnNullAction > testing::ReturnNull()`
- `PolymorphicAction< internal::ReturnVoidAction > testing::Return()`
- template<typename R>  
  `internal::ReturnRefAction< R > testing::ReturnRef(R &x)`
- template<typename R, R \* = nullptr>  
  `internal::ReturnRefAction< R > testing::ReturnRef(R &&) = delete`
- template<typename R>  
  `internal::ReturnRefOfCopyAction< R > testing::ReturnRefOfCopy(const R &x)`
- template<typename R>  
  `internal::ByMoveWrapper< R > testing::ByMove(R x)`
- template<typename T>  
  `internal::ReturnRoundRobinAction< T > testing::ReturnRoundRobin(std::vector< T > vals)`
- template<typename T>  
  `internal::ReturnRoundRobinAction< T > testing::ReturnRoundRobin(std::initializer_list< T > vals)`
- `internal::DoDefaultAction testing::DoDefault()`
- template<size\_t N, typename T>  
  `internal::SetArgumentPointeeAction< N, T > testing::SetArgPointee(T value)`
- template<size\_t N, typename T>  
  `internal::SetArgumentPointeeAction< N, T > testing::SetArgumentPointee(T value)`

- template<typename T1 , typename T2 >  
PolymorphicAction< internal::AssignAction< T1, T2 > > [testing::Assign](#) (T1 \*ptr, T2 val)
- template<typename T >  
PolymorphicAction< internal::SetErrnoAndReturnAction< T > > [testing::SetErrnoAndReturn](#) (int errval, T result)
- template<typename FunctionImpl >  
std::decay< FunctionImpl >::type [testing::Invoke](#) (FunctionImpl &&function\_impl)
- template<class Class , typename MethodPtr >  
internal::InvokeMethodAction< Class, MethodPtr > [testing::Invoke](#) (Class \*obj\_ptr, MethodPtr method\_ptr)
- template<typename FunctionImpl >  
internal::InvokeWithoutArgsAction< typename std::decay< FunctionImpl >::type > [testing::InvokeWithoutArgs](#) (FunctionImpl function\_impl)
- template<class Class , typename MethodPtr >  
internal::InvokeMethodWithoutArgsAction< Class, MethodPtr > [testing::InvokeWithoutArgs](#) (Class \*obj\_ptr, MethodPtr method\_ptr)
- template<typename A >  
internal::IgnoreResultAction< A > [testing::IgnoreResult](#) (const A &an\_action)
- template<typename T >  
inline ::std::reference\_wrapper< T > [testing::ByRef](#) (T &I\_value)
- template<typename T , typename... Params>  
internal::ReturnNewAction< T, typename std::decay< Params >::type... > [testing::ReturnNew](#) (Params &&... params)
- template<size\_t k>  
internal::ReturnArgAction< k > [testing::ReturnArg](#) ()
- template<size\_t k, typename Ptr >  
internal::SaveArgAction< k, Ptr > [testing::SaveArg](#) (Ptr pointer)
- template<size\_t k, typename Ptr >  
internal::SaveArgPointeeAction< k, Ptr > [testing::SaveArgPointee](#) (Ptr pointer)
- template<size\_t k, typename T >  
internal::SetArgRefereeAction< k, typename std::decay< T >::type > [testing::SetArgReferee](#) (T &&value)
- template<size\_t k, typename I1 , typename I2 >  
internal::SetArrayArgumentAction< k, I1, I2 > [testing::SetArrayArgument](#) (I1 first, I2 last)
- template<size\_t k>  
internal::DeleteArgAction< k > [testing::DeleteArg](#) ()
- template<typename Ptr >  
internal::ReturnPointeeAction< Ptr > [testing::ReturnPointee](#) (Ptr pointer)
- template<typename F , typename Impl >  
::testing::Action< F > [testing::internal::MakeAction](#) ()
- template<typename F , typename Impl >  
::testing::Action< F > [testing::internal::MakeAction](#) (std::shared\_ptr< Impl > impl)

## 7.1.1 Macro Definition Documentation

### 7.1.1.1 ACTION

```
#define ACTION(
    name )
```

#### Value:

```
class name##Action {
public:
    explicit name##Action() noexcept {}
```

```

name##Action(const name##Action&) noexcept {}
template <typename F>
operator ::testing::Action<F>() const {
    return ::testing::internal::MakeAction<F, gmock_Impl>();
}

private:
    class gmock_Impl {
public:
    template <typename function_type, typename return_type,
              typename args_type, GMOCK_ACTION_TEMPLATE_ARGS_NAMES_>
    return_type gmock_PerformImpl(GMOCK_ACTION_ARG_TYPES_AND_NAMES_) const; \
};

inline name##Action name() GTEST_MUST_USE_RESULT;
inline name##Action name() { return name##Action(); }
template <typename function_type, typename return_type, typename args_type, \
GMOCK_ACTION_TEMPLATE_ARGS_NAMES_>
return_type name##Action::gmock_Impl::gmock_PerformImpl( \
GMOCK_ACTION_ARG_TYPES_AND_NAMES_UNUSED_) const

```

### 7.1.1.2 ACTION\_P

```
#define ACTION_P(
    name,
    ... )    GMOCK_INTERNAL_ACTION(name, name##ActionP, (__VA_ARGS__))
```

### 7.1.1.3 ACTION\_P10

```
#define ACTION_P10(
    name,
    ... )   GMOCK_INTERNAL_ACTION(name, name##ActionP10, (__VA_ARGS__))
```

### 7.1.1.4 ACTION\_P2

```
#define ACTION_P2(
    name,
    ... )   GMOCK_INTERNAL_ACTION(name, name##ActionP2, (__VA_ARGS__))
```

### 7.1.1.5 ACTION\_P3

```
#define ACTION_P3(
    name,
    ... )   GMOCK_INTERNAL_ACTION(name, name##ActionP3, (__VA_ARGS__))
```

### 7.1.1.6 ACTION\_P4

```
#define ACTION_P4(
    name,
    ... )    GMOCK_INTERNAL_ACTION(name, name##ActionP4, (__VA_ARGS__))
```

### 7.1.1.7 ACTION\_P5

```
#define ACTION_P5(
    name,
    ... )    GMOCK_INTERNAL_ACTION(name, name##ActionP5, (__VA_ARGS__))
```

### 7.1.1.8 ACTION\_P6

```
#define ACTION_P6(
    name,
    ... )    GMOCK_INTERNAL_ACTION(name, name##ActionP6, (__VA_ARGS__))
```

### 7.1.1.9 ACTION\_P7

```
#define ACTION_P7(
    name,
    ... )    GMOCK_INTERNAL_ACTION(name, name##ActionP7, (__VA_ARGS__))
```

### 7.1.1.10 ACTION\_P8

```
#define ACTION_P8(
    name,
    ... )    GMOCK_INTERNAL_ACTION(name, name##ActionP8, (__VA_ARGS__))
```

### 7.1.1.11 ACTION\_P9

```
#define ACTION_P9(
    name,
    ... )    GMOCK_INTERNAL_ACTION(name, name##ActionP9, (__VA_ARGS__))
```

### 7.1.1.12 GMOCK\_ACTION\_ARG\_TYPES\_AND\_NAMES\_

```
#define GMOCK_ACTION_ARG_TYPES_AND_NAMES_ const args_type& args GMOCK_PP_REPEAT(GMOCK_INTERNAL_ARG,  
, 10)
```

### 7.1.1.13 GMOCK\_ACTION\_ARG\_TYPES\_AND\_NAMES\_UNUSED\_

```
#define GMOCK_ACTION_ARG_TYPES_AND_NAMES_UNUSED_
```

**Value:**

```
const args_type& args GTEST_ATTRIBUTE_UNUSED_ GMOCK_PP_REPEAT( \  
GMOCK_INTERNAL_ARG_UNUSED, , 10)
```

### 7.1.1.14 GMOCK\_ACTION\_FIELD\_PARAMS\_

```
#define GMOCK_ACTION_FIELD_PARAMS_(  
    params ) GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_FIELD_PARAM, , params)
```

### 7.1.1.15 GMOCK\_ACTION\_GVALUE\_PARAMS\_

```
#define GMOCK_ACTION_GVALUE_PARAMS_(  
    params ) GMOCK_PP_TAIL(GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_GVALUE_PARAM, , params))
```

### 7.1.1.16 GMOCK\_ACTION\_INIT\_PARAMS\_

```
#define GMOCK_ACTION_INIT_PARAMS_(  
    params ) GMOCK_PP_TAIL(GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_INIT_PARAM, , params))
```

### 7.1.1.17 GMOCK\_ACTION\_TEMPLATE\_ARGS\_NAMES\_

```
#define GMOCK_ACTION_TEMPLATE_ARGS_NAMES_ GMOCK_PP_TAIL(GMOCK_PP_REPEAT(GMOCK_INTERNAL_TEMPLATE_ARG,  
, 10))
```

### 7.1.1.18 GMOCK\_ACTION\_TYPE\_GVALUE\_PARAMS\_

```
#define GMOCK_ACTION_TYPE_GVALUE_PARAMS_(
    params )  GMOCK_PP_TAIL(GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_TYPE_GVALUE_PARAM, ,
params))
```

### 7.1.1.19 GMOCK\_ACTION\_TYPE\_PARAMS\_

```
#define GMOCK_ACTION_TYPE_PARAMS_(
    params )  GMOCK_PP_TAIL(GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_TYPE_PARAM, , params))
```

### 7.1.1.20 GMOCK\_ACTION\_TYPENAME\_PARAMS\_

```
#define GMOCK_ACTION_TYPENAME_PARAMS_(
    params )  GMOCK_PP_TAIL(GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_TYPENAME_PARAM, , params))
```

### 7.1.1.21 GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_

```
#define GMOCK_DEFINE_DEFAULT_ACTION_FOR_RETURN_TYPE_(
    type,
    value )
```

**Value:**

```
template <>
class BuiltInDefaultValue<type> {
public:
    \
    static bool Exists() { return true; }
    static type Get() { return value; }
}
```

### 7.1.1.22 GMOCK\_INTERNAL\_ACTION

```
#define GMOCK_INTERNAL_ACTION(
    name,
    full_name,
    params )
```

### 7.1.1.23 GMOCK\_INTERNAL\_ARG

```
#define GMOCK_INTERNAL_ARG(  
    i,  
    data,  
    el ) , const arg##i##_type& arg##i
```

### 7.1.1.24 GMOCK\_INTERNAL\_ARG\_UNUSED

```
#define GMOCK_INTERNAL_ARG_UNUSED(  
    i,  
    data,  
    el ) , const arg##i##_type& arg##i GTEST\_ATTRIBUTE\_UNUSED\_
```

### 7.1.1.25 GMOCK\_INTERNAL\_FIELD\_PARAM

```
#define GMOCK_INTERNAL_FIELD_PARAM(  
    i,  
    data,  
    param ) param##_type param;
```

### 7.1.1.26 GMOCK\_INTERNAL\_GVALUE\_PARAM

```
#define GMOCK_INTERNAL_GVALUE_PARAM(  
    i,  
    data,  
    param ) std::forward<param##_type>(gmock_p##i)
```

### 7.1.1.27 GMOCK\_INTERNAL\_INIT\_PARAM

```
#define GMOCK_INTERNAL_INIT_PARAM(  
    i,  
    data,  
    param ) , param(::std::forward<param##_type>(gmock_p##i))
```

### 7.1.1.28 GMOCK\_INTERNAL\_TEMPLATE\_ARG

```
#define GMOCK_INTERNAL_TEMPLATE_ARG(  
    i,  
    data,  
    el ) , typename arg##i##_type
```

### 7.1.1.29 GMOCK\_INTERNAL\_TYPE\_GVALUE\_PARAM

```
#define GMOCK_INTERNAL_TYPE_GVALUE_PARAM(
    i,
    data,
    param ) , param##_type gmock_p##i
```

### 7.1.1.30 GMOCK\_INTERNAL\_TYPE\_PARAM

```
#define GMOCK_INTERNAL_TYPE_PARAM(
    i,
    data,
    param ) , param##_type
```

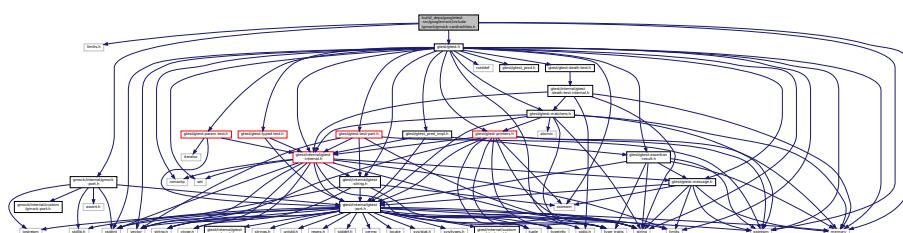
### 7.1.1.31 GMOCK\_INTERNAL\_TYPENAME\_PARAM

```
#define GMOCK_INTERNAL_TYPENAME_PARAM(
    i,
    data,
    param ) , typename param##_type
```

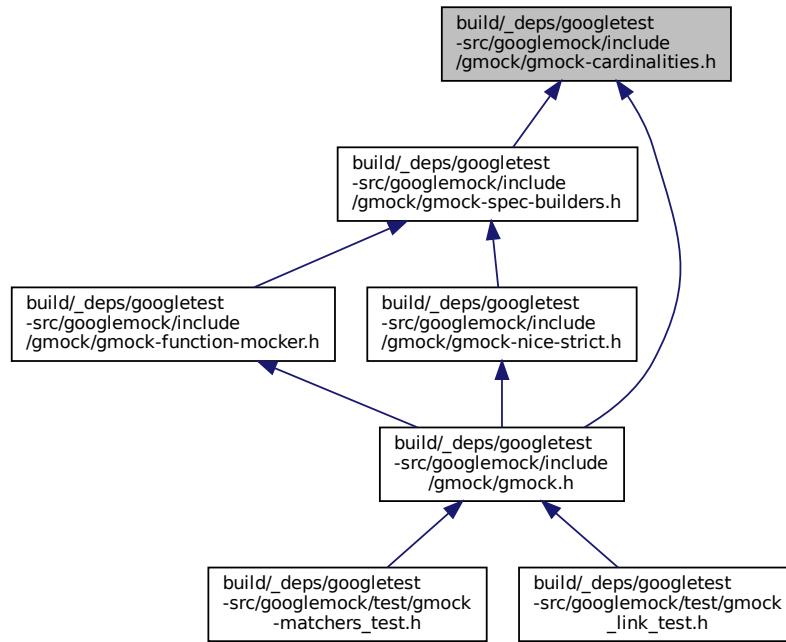
## 7.2 build/\_deps/googletest-src/googlemock/include/gmock/gmock-cardinalities.h File Reference

```
#include <limits.h>
#include <memory>
#include <iostream>
#include "gmock/internal/gmock-port.h"
#include "gtest/gtest.h"
```

Include dependency graph for gmock-cardinalities.h:



This graph shows which files directly or indirectly include this file:



## Functions

- [GTEST\\_DISABLE\\_MSC\\_WARNINGS\\_PUSH\\_\(4251\)](#) namespace testing

### 7.2.1 Function Documentation

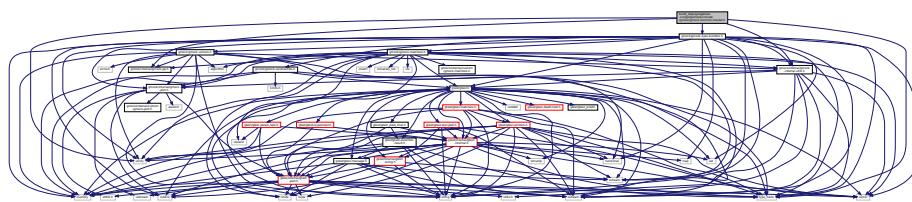
#### 7.2.1.1 GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_()

```
GTEST_DISABLE_MSC_WARNINGS_PUSH_(
    4251 )
```

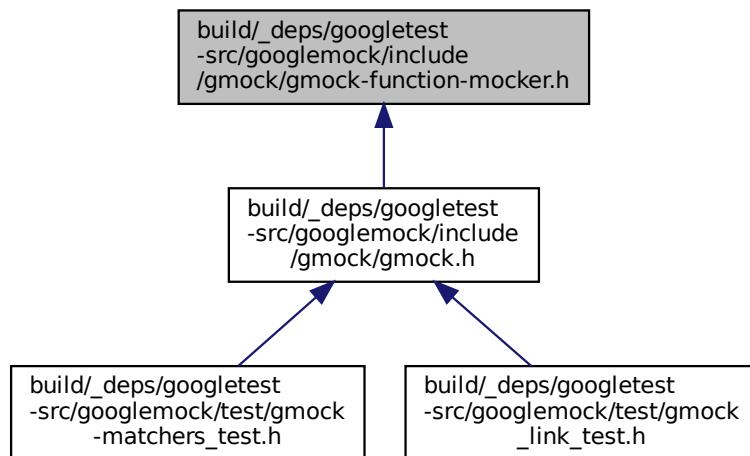
## 7.3 build/\_deps/googletest-src/googlemock/include/gmock/gmock-function-mocker.h File Reference

```
#include <type_traits>
#include <utility>
#include "gmock/gmock-spec-builders.h"
#include "gmock/internal/gmock-internal-utils.h"
```

```
#include "gmock/internal/gmock-pp.h"
Include dependency graph for gmock-function-mocker.h:
```



This graph shows which files directly or indirectly include this file:



## Classes

- struct [testing::internal::ThisRefAdjuster< Pattern >](#)

## Namespaces

- [testing](#)
- [testing::internal](#)

## Macros

- `#define MOCK_METHOD(...)`
- `#define GMOCK_INTERNAL_MOCK_METHOD_ARG_1(...) GMOCK_INTERNAL_WRONG_ARITY(__VA_ARGS__)`
- `#define GMOCK_INTERNAL_MOCK_METHOD_ARG_2(...) GMOCK_INTERNAL_WRONG_ARITY(__VA_ARGS__)`

- #define GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_3(\_Ret, \_MethodName, \_Args) GMOCK\_INTERNAL\_MOCK\_METHOD(\_Ret, \_MethodName, \_Args, ())
- #define GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_4(\_Ret, \_MethodName, \_Args, \_Spec)
- #define GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_5(...) GMOCK\_INTERNAL\_WRONG\_ARITY(\_\_VA\_ARGS\_\_)
- #define GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_6(...) GMOCK\_INTERNAL\_WRONG\_ARITY(\_\_VA\_ARGS\_\_)
- #define GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_7(...) GMOCK\_INTERNAL\_WRONG\_ARITY(\_\_VA\_ARGS\_\_)
- #define GMOCK\_INTERNAL\_WRONG\_ARITY(...)
- #define GMOCK\_INTERNAL\_ASSERT\_PARENTHESIS(\_Tuple)
- #define GMOCK\_INTERNAL\_ASSERT\_VALID\_SIGNATURE(\_N, ...)
- #define GMOCK\_INTERNAL\_ASSERT\_VALID\_SPEC(\_Spec) GMOCK\_PP\_FOR\_EACH(GMOCK\_INTERNAL\_ASSERT\_VALID,\_~, \_Spec)
- #define GMOCK\_INTERNAL\_MOCK\_METHOD\_IMPL(\_N, \_MethodName, \_Constness, \_Override, \_Final, \_NoexceptSpec, \_CallType, \_RefSpec, \_Signature)
- #define GMOCK\_INTERNAL\_EXPAND(...) \_\_VA\_ARGS\_\_
- #define GMOCK\_INTERNAL\_HAS\_CONST(\_Tuple) GMOCK\_PP\_HAS\_COMMA(GMOCK\_PP\_FOR\_EACH(GMOCK\_INTERNAL\_HAS\_CONST,\_~, \_Tuple))
- #define GMOCK\_INTERNAL\_HAS\_OVERRIDE(\_Tuple)
- #define GMOCK\_INTERNAL\_HAS\_FINAL(\_Tuple) GMOCK\_PP\_HAS\_COMMA(GMOCK\_PP\_FOR\_EACH(GMOCK\_INTERNAL\_HAS\_FINAL,\_~, \_Tuple))
- #define GMOCK\_INTERNAL\_GET\_NOEXCEPT\_SPEC(\_Tuple) GMOCK\_PP\_FOR\_EACH(GMOCK\_INTERNAL\_NOEXCEPT\_SPEC,\_~, \_Tuple)
- #define GMOCK\_INTERNAL\_NOEXCEPT\_SPEC\_IF\_NOEXCEPT(\_i, \_, \_elem)
- #define GMOCK\_INTERNAL\_GET\_CALLTYPE\_SPEC(\_Tuple) GMOCK\_PP\_FOR\_EACH(GMOCK\_INTERNAL\_CALLTYPE\_SPEC,\_~, \_Tuple)
- #define GMOCK\_INTERNAL\_CALLTYPE\_SPEC\_IF\_CALLTYPE(\_i, \_, \_elem)
- #define GMOCK\_INTERNAL\_GET\_REF\_SPEC(\_Tuple) GMOCK\_PP\_FOR\_EACH(GMOCK\_INTERNAL\_REF\_SPEC\_IF\_REF,\_~, \_Tuple)
- #define GMOCK\_INTERNAL\_REF\_SPEC\_IF\_REF(\_i, \_, \_elem)
- #define GMOCK\_INTERNAL\_ASSERT\_VALID\_SPEC\_ELEMENT(\_i, \_, \_elem)
- #define GMOCK\_INTERNAL\_DETECT\_CONST(\_i, \_, \_elem) GMOCK\_PP\_CAT(GMOCK\_INTERNAL\_DETECT\_CONST\_I\_, \_elem)
- #define GMOCK\_INTERNAL\_DETECT\_CONST\_I\_const ,
- #define GMOCK\_INTERNAL\_DETECT\_OVERRIDE(\_i, \_, \_elem) GMOCK\_PP\_CAT(GMOCK\_INTERNAL\_DETECT\_OVERRIDE\_I\_, \_elem)
- #define GMOCK\_INTERNAL\_DETECT\_OVERRIDE\_I\_override ,
- #define GMOCK\_INTERNAL\_DETECT\_FINAL(\_i, \_, \_elem) GMOCK\_PP\_CAT(GMOCK\_INTERNAL\_DETECT\_FINAL\_I\_, \_elem)
- #define GMOCK\_INTERNAL\_DETECT\_FINAL\_I\_final ,
- #define GMOCK\_INTERNAL\_DETECT\_NOEXCEPT(\_i, \_, \_elem) GMOCK\_PP\_CAT(GMOCK\_INTERNAL\_DETECT\_NOEXCEPT\_I\_, \_elem)
- #define GMOCK\_INTERNAL\_DETECT\_NOEXCEPT\_I\_noexcept ,
- #define GMOCK\_INTERNAL\_DETECT\_REF(\_i, \_, \_elem) GMOCK\_PP\_CAT(GMOCK\_INTERNAL\_DETECT\_REF\_I\_, \_elem)
- #define GMOCK\_INTERNAL\_DETECT\_REF\_I\_ref ,
- #define GMOCK\_INTERNAL\_UNPACK\_ref(x) x
- #define GMOCK\_INTERNAL\_DETECT\_CALLTYPE(\_i, \_, \_elem) GMOCK\_PP\_CAT(GMOCK\_INTERNAL\_DETECT\_CALLTYPE\_I\_, \_elem)
- #define GMOCK\_INTERNAL\_DETECT\_CALLTYPE\_I\_Calltype ,
- #define GMOCK\_INTERNAL\_UNPACK\_Calltype(...) \_\_VA\_ARGS\_\_
- #define GMOCK\_INTERNAL\_SIGNATURE(\_Ret, \_Args)
- #define GMOCK\_INTERNAL\_GET\_TYPE(\_i, \_, \_elem)
- #define GMOCK\_INTERNAL\_PARAMETER(\_i, \_Signature, \_)
- #define GMOCK\_INTERNAL\_FORWARD\_ARG(\_i, \_Signature, \_)

- #define GMOCK\_INTERNAL\_MATCHER\_PARAMETER(\_i, \_Signature, \_)
- #define GMOCK\_INTERNAL\_MATCHER\_ARGUMENT(\_i, \_1, \_2)
- #define GMOCK\_INTERNAL\_A\_MATCHER\_ARGUMENT(\_i, \_Signature, \_)
- #define GMOCK\_INTERNAL\_ARG\_O(\_i, ...) typename ::testing::internal::Function<\_\_VA\_ARGS\_\_>↔  
  ::template Arg<\_i>::type
- #define GMOCK\_INTERNAL\_MATCHER\_O(\_i, ...)
- #define MOCK\_METHOD0(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(, , m, 0, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD1(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(, , m, 1, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD2(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(, , m, 2, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD3(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(, , m, 3, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD4(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(, , m, 4, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD5(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(, , m, 5, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD6(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(, , m, 6, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD7(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(, , m, 7, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD8(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(, , m, 8, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD9(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(, , m, 9, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD10(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(, , m, 10, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD0(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, , m, 0, \_\_VA↔\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD1(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, , m, 1, \_\_VA↔\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD2(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, , m, 2, \_\_VA↔\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD3(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, , m, 3, \_\_VA↔\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD4(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, , m, 4, \_\_VA↔\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD5(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, , m, 5, \_\_VA↔\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD6(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, , m, 6, \_\_VA↔\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD7(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, , m, 7, \_\_VA↔\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD8(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, , m, 8, \_\_VA↔\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD9(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, , m, 9, \_\_VA↔\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD10(m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, , m, 10, \_\_↔\_VA\_ARGS\_\_)
- #define MOCK\_METHOD0\_T(m, ...) MOCK\_METHOD0(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD1\_T(m, ...) MOCK\_METHOD1(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD2\_T(m, ...) MOCK\_METHOD2(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD3\_T(m, ...) MOCK\_METHOD3(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD4\_T(m, ...) MOCK\_METHOD4(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD5\_T(m, ...) MOCK\_METHOD5(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD6\_T(m, ...) MOCK\_METHOD6(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD7\_T(m, ...) MOCK\_METHOD7(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD8\_T(m, ...) MOCK\_METHOD8(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD9\_T(m, ...) MOCK\_METHOD9(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD10\_T(m, ...) MOCK\_METHOD10(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD0\_T(m, ...) MOCK\_CONST\_METHOD0(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD1\_T(m, ...) MOCK\_CONST\_METHOD1(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD2\_T(m, ...) MOCK\_CONST\_METHOD2(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD3\_T(m, ...) MOCK\_CONST\_METHOD3(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD4\_T(m, ...) MOCK\_CONST\_METHOD4(m, \_\_VA\_ARGS\_\_)

- #define MOCK\_CONST\_METHOD5\_T(m, ...) MOCK\_CONST\_METHOD5(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD6\_T(m, ...) MOCK\_CONST\_METHOD6(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD7\_T(m, ...) MOCK\_CONST\_METHOD7(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD8\_T(m, ...) MOCK\_CONST\_METHOD8(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD9\_T(m, ...) MOCK\_CONST\_METHOD9(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD10\_T(m, ...) MOCK\_CONST\_METHOD10(m, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD0\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(ct, m, 0, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD1\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(ct, m, 1, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD2\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(ct, m, 2, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD3\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(ct, m, 3, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD4\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(ct, m, 4, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD5\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(ct, m, 5, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD6\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(ct, m, 6, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD7\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(ct, m, 7, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD8\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(ct, m, 8, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD9\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(ct, m, 9, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD10\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(ct, m, 10, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD0\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, ct, m, 0, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD1\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, ct, m, 1, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD2\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, ct, m, 2, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD3\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, ct, m, 3, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD4\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, ct, m, 4, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD5\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, ct, m, 5, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD6\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, ct, m, 6, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD7\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, ct, m, 7, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD8\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, ct, m, 8, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD9\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, ct, m, 9, \_\_VA\_ARGS\_\_)
- #define MOCK\_CONST\_METHOD10\_WITH\_CALLTYPE(ct, m, ...) GMOCK\_INTERNAL MOCK\_METHODN(const, ct, m, 10, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD0\_T\_WITH\_CALLTYPE(ct, m, ...) MOCK\_METHOD0\_WITH\_CALLTYPE(ct, m, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD1\_T\_WITH\_CALLTYPE(ct, m, ...) MOCK\_METHOD1\_WITH\_CALLTYPE(ct, m, \_\_VA\_ARGS\_\_)
- #define MOCK\_METHOD2\_T\_WITH\_CALLTYPE(ct, m, ...) MOCK\_METHOD2\_WITH\_CALLTYPE(ct, m, \_\_VA\_ARGS\_\_)

- `#define MOCK_METHOD3_T_WITH_CALLTYPE(ct, m, ...) MOCK_METHOD3_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define MOCK_METHOD4_T_WITH_CALLTYPE(ct, m, ...) MOCK_METHOD4_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define MOCK_METHOD5_T_WITH_CALLTYPE(ct, m, ...) MOCK_METHOD5_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define MOCK_METHOD6_T_WITH_CALLTYPE(ct, m, ...) MOCK_METHOD6_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define MOCK_METHOD7_T_WITH_CALLTYPE(ct, m, ...) MOCK_METHOD7_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define MOCK_METHOD8_T_WITH_CALLTYPE(ct, m, ...) MOCK_METHOD8_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define MOCK_METHOD9_T_WITH_CALLTYPE(ct, m, ...) MOCK_METHOD9_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define MOCK_METHOD10_T_WITH_CALLTYPE(ct, m, ...) MOCK_METHOD10_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define MOCK_CONST_METHOD0_T_WITH_CALLTYPE(ct, m, ...) MOCK_CONST_METHOD0_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define MOCK_CONST_METHOD1_T_WITH_CALLTYPE(ct, m, ...) MOCK_CONST_METHOD1_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define MOCK_CONST_METHOD2_T_WITH_CALLTYPE(ct, m, ...) MOCK_CONST_METHOD2_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define MOCK_CONST_METHOD3_T_WITH_CALLTYPE(ct, m, ...) MOCK_CONST_METHOD3_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define MOCK_CONST_METHOD4_T_WITH_CALLTYPE(ct, m, ...) MOCK_CONST_METHOD4_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define MOCK_CONST_METHOD5_T_WITH_CALLTYPE(ct, m, ...) MOCK_CONST_METHOD5_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define MOCK_CONST_METHOD6_T_WITH_CALLTYPE(ct, m, ...) MOCK_CONST_METHOD6_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define MOCK_CONST_METHOD7_T_WITH_CALLTYPE(ct, m, ...) MOCK_CONST_METHOD7_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define MOCK_CONST_METHOD8_T_WITH_CALLTYPE(ct, m, ...) MOCK_CONST_METHOD8_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define MOCK_CONST_METHOD9_T_WITH_CALLTYPE(ct, m, ...) MOCK_CONST_METHOD9_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define MOCK_CONST_METHOD10_T_WITH_CALLTYPE(ct, m, ...) MOCK_CONST_METHOD10_WITH_CALLTYPE(ct, m, __VA_ARGS__)`
- `#define GMOCK_INTERNAL_MOCK_METHODN(constness, ct, Method, args_num, ...)`
- `#define GMOCK_MOCKER_(arity, constness, Method) GTEST_CONCAT_TOKEN_(gmock##constness##arity##↔_##Method##_, __LINE__)`

## Typedefs

- `template<typename T >  
using testing::internal::identity_t = T`

## Functions

- `constexpr bool testing::internal::PrefixOf (const char *a, const char *b)`
- `template<int N, int M>  
constexpr bool testing::internal::StartsWith (const char(&prefix)[N], const char(&str)[M])`
- `template<int N, int M>  
constexpr bool testing::internal::EndsWith (const char(&suffix)[N], const char(&str)[M])`
- `template<int N, int M>  
constexpr bool testing::internal::Equals (const char(&a)[N], const char(&b)[M])`
- `template<int N>  
constexpr bool testing::internal::ValidateSpec (const char(&spec)[N])`

### 7.3.1 Macro Definition Documentation

#### 7.3.1.1 GMOCK\_INTERNAL\_A\_MATCHER\_ARGUMENT

```
#define GMOCK_INTERNAL_A_MATCHER_ARGUMENT (
    _i,
    _Signature,
    _ )

```

**Value:**

```
GMOCK_PP_COMMA_IF(_i) \
::testing::A<GMOCK_INTERNAL_ARG_O(_i, GMOCK_PP_REMOVE_PARENS(_Signature))>()
```

#### 7.3.1.2 GMOCK\_INTERNAL\_ARG\_O

```
#define GMOCK_INTERNAL_ARG_O (
    _i,
    ... )  typename ::testing::internal::Function<__VA_ARGS__>::template Arg<_<-
i>::type
```

#### 7.3.1.3 GMOCK\_INTERNAL\_ASSERT\_PARENTHESIS

```
#define GMOCK_INTERNAL_ASSERT_PARENTHESIS (
    _Tuple )
```

**Value:**

```
static_assert(
    GMOCK_PP_IS_ENCLOSED_PARENS(_Tuple), \
    GMOCK_PP_STRINGIZE(_Tuple) " should be enclosed in parentheses.")
```

#### 7.3.1.4 GMOCK\_INTERNAL\_ASSERT\_VALID\_SIGNATURE

```
#define GMOCK_INTERNAL_ASSERT_VALID_SIGNATURE (
    _N,
    ... )
```

**Value:**

```
static_assert(
    std::is_function<__VA_ARGS__>::value,
    "Signature must be a function type, maybe return type contains \" \
    \"unprotected comma.\"");
static_assert(
    ::testing::tuple_size<typename ::testing::internal::Function<
        __VA_ARGS__>::ArgumentTuple>::value == _N,
    "This method does not take " GMOCK_PP_STRINGIZE(
        _N) " arguments. Parenthesize all types with unprotected commas.")
```

### 7.3.1.5 GMOCK\_INTERNAL\_ASSERT\_VALID\_SPEC

```
#define GMOCK_INTERNAL_ASSERT_VALID_SPEC( _Spec )  GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_ASSERT_VALID_SPEC_ELEMENT, ~, _Spec)
```

### 7.3.1.6 GMOCK\_INTERNAL\_ASSERT\_VALID\_SPEC\_ELEMENT

```
#define GMOCK_INTERNAL_ASSERT_VALID_SPEC_ELEMENT( _i, _~, _elem )
```

**Value:**

```
static_assert( (GMOCK_PP_HAS_COMMA(GMOCK_INTERNAL_DETECT_CONST(_i, _, _elem)) + \
GMOCK_PP_HAS_COMMA(GMOCK_INTERNAL_DETECT_OVERRIDE(_i, _, _elem)) + \
GMOCK_PP_HAS_COMMA(GMOCK_INTERNAL_DETECT_FINAL(_i, _, _elem)) + \
GMOCK_PP_HAS_COMMA(GMOCK_INTERNAL_DETECT_NOEXCEPT(_i, _, _elem)) + \
GMOCK_PP_HAS_COMMA(GMOCK_INTERNAL_DETECT_REF(_i, _, _elem)) + \
GMOCK_PP_HAS_COMMA(GMOCK_INTERNAL_DETECT_CALLTYPE(_i, _, _elem))) == 1, \
GMOCK_PP_STRINGIZE(_elem) " cannot be recognized as a valid specification modifier.");
```

### 7.3.1.7 GMOCK\_INTERNAL\_CALLTYPE\_SPEC\_IF\_CALLTYPE

```
#define GMOCK_INTERNAL_CALLTYPE_SPEC_IF_CALLTYPE( _i, _~, _elem )
```

**Value:**

```
GMOCK_PP_IF( GMOCK_PP_HAS_COMMA(GMOCK_INTERNAL_DETECT_CALLTYPE(_i, _, _elem)), \
GMOCK_PP_CAT(GMOCK_INTERNAL_UNPACK_, _elem), )
```

### 7.3.1.8 GMOCK\_INTERNAL\_DETECT\_CALLTYPE

```
#define GMOCK_INTERNAL_DETECT_CALLTYPE( _i, _~, _elem )  GMOCK_PP_CAT(GMOCK_INTERNAL_DETECT_CALLTYPE_I_, _elem)
```

### 7.3.1.9 GMOCK\_INTERNAL\_DETECT\_CALLTYPE\_I\_Calltype

```
#define GMOCK_INTERNAL_DETECT_CALLTYPE_I_Calltype ,
```

### 7.3.1.10 GMOCK\_INTERNAL\_DETECT\_CONST

```
#define GMOCK_INTERNAL_DETECT_CONST( _i, _' _elem ) GMOCK_PP_CAT(GMOCK_INTERNAL_DETECT_CONST_I_, _elem)
```

### 7.3.1.11 GMOCK\_INTERNAL\_DETECT\_CONST\_I\_const

```
#define GMOCK_INTERNAL_DETECT_CONST_I_const ,
```

### 7.3.1.12 GMOCK\_INTERNAL\_DETECT\_FINAL

```
#define GMOCK_INTERNAL_DETECT_FINAL( _i, _' _elem ) GMOCK_PP_CAT(GMOCK_INTERNAL_DETECT_FINAL_I_, _elem)
```

### 7.3.1.13 GMOCK\_INTERNAL\_DETECT\_FINAL\_I\_final

```
#define GMOCK_INTERNAL_DETECT_FINAL_I_final ,
```

### 7.3.1.14 GMOCK\_INTERNAL\_DETECT\_NOEXCEPT

```
#define GMOCK_INTERNAL_DETECT_NOEXCEPT( _i, _' _elem ) GMOCK_PP_CAT(GMOCK_INTERNAL_DETECT_NOEXCEPT_I_, _elem)
```

### 7.3.1.15 GMOCK\_INTERNAL\_DETECT\_NOEXCEPT\_I\_noexcept

```
#define GMOCK_INTERNAL_DETECT_NOEXCEPT_I_noexcept ,
```

### 7.3.1.16 GMOCK\_INTERNAL\_DETECT\_OVERRIDE

```
#define GMOCK_INTERNAL_DETECT_OVERRIDE (
    _i,
    _,
    _elem )  GMOCK_PP_CAT(GMOCK_INTERNAL_DETECT_OVERRIDE_I_, _elem)
```

### 7.3.1.17 GMOCK\_INTERNAL\_DETECT\_OVERRIDE\_I\_override

```
#define GMOCK_INTERNAL_DETECT_OVERRIDE_I_override ,
```

### 7.3.1.18 GMOCK\_INTERNAL\_DETECT\_REF

```
#define GMOCK_INTERNAL_DETECT_REF (
    _i,
    _,
    _elem )  GMOCK_PP_CAT(GMOCK_INTERNAL_DETECT_REF_I_, _elem)
```

### 7.3.1.19 GMOCK\_INTERNAL\_DETECT\_REF\_I\_ref

```
#define GMOCK_INTERNAL_DETECT_REF_I_ref ,
```

### 7.3.1.20 GMOCK\_INTERNAL\_EXPAND

```
#define GMOCK_INTERNAL_EXPAND (
    ... ) __VA_ARGS__
```

### 7.3.1.21 GMOCK\_INTERNAL\_FORWARD\_ARG

```
#define GMOCK_INTERNAL_FORWARD_ARG (
    _i,
    _Signature,
    _ )
```

**Value:**

```
GMOCK_PP_COMMA_IF(_i)
::std::forward<GMOCK_INTERNAL_ARG_O(
    _i, GMOCK_PP_REMOVE_PARENS(_Signature))>(gmock_a##_i)
```

### 7.3.1.22 GMOCK\_INTERNAL\_GET\_CALLTYPE\_SPEC

```
#define GMOCK_INTERNAL_GET_CALLTYPE_SPEC(
    _Tuple )  GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_CALLTYPE_SPEC_IF_CALLTYPE, ~, _Tuple)
```

### 7.3.1.23 GMOCK\_INTERNAL\_GET\_NOEXCEPT\_SPEC

```
#define GMOCK_INTERNAL_GET_NOEXCEPT_SPEC(
    _Tuple )  GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_NOEXCEPT_SPEC_IF_NOEXCEPT, ~, _Tuple)
```

### 7.3.1.24 GMOCK\_INTERNAL\_GET\_REF\_SPEC

```
#define GMOCK_INTERNAL_GET_REF_SPEC(
    _Tuple )  GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_REF_SPEC_IF_REF, ~, _Tuple)
```

### 7.3.1.25 GMOCK\_INTERNAL\_GET\_TYPE

```
#define GMOCK_INTERNAL_GET_TYPE(
    _i,
    _,
    _elem )
```

**Value:**

```
GMOCK_PP_COMMA_IF(_i)
GMOCK_PP_IF(GMOCK_PP_IS_BEGIN_PARENS(_elem), GMOCK_PP_REMOVE_PARENS, \
            GMOCK_PP_IDENTITY)
(_elem)
```

### 7.3.1.26 GMOCK\_INTERNAL\_HAS\_CONST

```
#define GMOCK_INTERNAL_HAS_CONST(
    _Tuple )  GMOCK_PP_HAS_COMMA(GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_DETECT_CONST, ~,
    _Tuple))
```

### 7.3.1.27 GMOCK\_INTERNAL\_HAS\_FINAL

```
#define GMOCK_INTERNAL_HAS_FINAL(
    _Tuple )  GMOCK_PP_HAS_COMMA(GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_DETECT_FINAL, ~,
    _Tuple))
```

### 7.3.1.28 GMOCK\_INTERNAL\_HAS\_OVERRIDE

```
#define GMOCK_INTERNAL_HAS_OVERRIDE(
    _Tuple )
```

**Value:**

```
GMOCK_PP_HAS_COMMA( \
    GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_DETECT_OVERRIDE, ~, _Tuple))
```

### 7.3.1.29 GMOCK\_INTERNAL\_MATCHER\_ARGUMENT

```
#define GMOCK_INTERNAL_MATCHER_ARGUMENT(
    _i,
    _1,
    _2 )
```

**Value:**

```
GMOCK_PP_COMMA_IF(_i) \
gmock_a##_i
```

### 7.3.1.30 GMOCK\_INTERNAL\_MATCHER\_O

```
#define GMOCK_INTERNAL_MATCHER_O(
    _i,
    ... )
```

**Value:**

```
const ::testing::Matcher<typename ::testing::internal::Function< \
    __VA_ARGS__>::template Arg<_i>::type>&
```

### 7.3.1.31 GMOCK\_INTERNAL\_MATCHER\_PARAMETER

```
#define GMOCK_INTERNAL_MATCHER_PARAMETER(
    _i,
    _Signature,
    _ )
```

**Value:**

```
GMOCK_PP_COMMA_IF(_i) \
GMOCK_INTERNAL_MATCHER_O(_i, GMOCK_PP_REMOVE_PARENS(_Signature)) \
gmock_a##_i
```

### 7.3.1.32 GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_1

```
#define GMOCK_INTERNAL_MOCK_METHOD_ARG_1(
    ... )    GMOCK_INTERNAL_WRONG_ARITY(__VA_ARGS__)
```

### 7.3.1.33 GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_2

```
#define GMOCK_INTERNAL_MOCK_METHOD_ARG_2 (
    ... )    GMOCK_INTERNAL_WRONG_ARITY(__VA_ARGS__)
```

### 7.3.1.34 GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_3

```
#define GMOCK_INTERNAL_MOCK_METHOD_ARG_3 (
    _Ret,
    _MethodName,
    _Args )    GMOCK_INTERNAL_MOCK_METHOD_ARG_4 (_Ret, _MethodName, _Args, ())
```

### 7.3.1.35 GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_4

```
#define GMOCK_INTERNAL_MOCK_METHOD_ARG_4 (
    _Ret,
    _MethodName,
    _Args,
    _Spec )
```

**Value:**

```
GMOCK_INTERNAL_ASSERT_PARENTHESIS(_Args);                                \
GMOCK_INTERNAL_ASSERT_PARENTHESIS(_Spec);                                \
GMOCK_INTERNAL_ASSERT_VALID_SIGNATURE(                                     \
    GMOCK_PP_NARGO _Args, GMOCK_INTERNAL_SIGNATURE(_Ret, _Args));        \
GMOCK_INTERNAL_ASSERT_VALID_SPEC(_Spec)                                    \
GMOCK_INTERNAL_MOCK_METHOD_IMPL(                                         \
    GMOCK_PP_NARGO _Args, _MethodName, GMOCK_INTERNAL_HAS_CONST(_Spec), \
    GMOCK_INTERNAL_HAS_OVERRIDE(_Spec), GMOCK_INTERNAL_HAS_FINAL(_Spec), \
    GMOCK_INTERNAL_GET_NOEXCEPT_SPEC(_Spec),                            \
    GMOCK_INTERNAL_GET_CALLTYPE_SPEC(_Spec),                            \
    GMOCK_INTERNAL_GET_REF_SPEC(_Spec),                                 \
    (GMOCK_INTERNAL_SIGNATURE(_Ret, _Args)))
```

### 7.3.1.36 GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_5

```
#define GMOCK_INTERNAL_MOCK_METHOD_ARG_5 (
    ... )    GMOCK_INTERNAL_WRONG_ARITY(__VA_ARGS__)
```

### 7.3.1.37 GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_6

```
#define GMOCK_INTERNAL_MOCK_METHOD_ARG_6 (
    ... )    GMOCK_INTERNAL_WRONG_ARITY(__VA_ARGS__)
```

### 7.3.1.38 GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_7

```
#define GMOCK_INTERNAL_MOCK_METHOD_ARG_7( \
    ... )    GMOCK_INTERNAL_WRONG_ARITY(__VA_ARGS__)
```

### 7.3.1.39 GMOCK\_INTERNAL\_MOCK\_METHOD\_IMPL

```
#define GMOCK_INTERNAL_MOCK_METHOD_IMPL( \
    _N, \
    _MethodName, \
    _Constness, \
    _Override, \
    _Final, \
    _NoexceptSpec, \
    _CallType, \
    _RefSpec, \
    _Signature )
```

**Value:**

```
typename ::testing::internal::Function<GMOCK_PP_REMOVE_PARENS( \
    _Signature)>::Result \
GMOCK_INTERNAL_EXPAND(_CallType) \
    _MethodName(GMOCK_PP_REPEAT(GMOCK_INTERNAL_PARAMETER, _Signature, _N)) \
        GMOCK_PP_IF(_Constness, const, ) _RefSpec _NoexceptSpec \
            GMOCK_PP_IF(_Override, override, ) GMOCK_PP_IF(_Final, final, ) { \
                GMOCK_MOCKER(_N, _Constness, _MethodName) \
                    .SetOwnerAndName(this, #_MethodName); \
                return GMOCK_MOCKER(_N, _Constness, _MethodName) \
                    .Invoke(GMOCK_PP_REPEAT(GMOCK_INTERNAL_FORWARD_ARG, _Signature, _N)); \
} \
::testing::MockSpec<GMOCK_PP_REMOVE_PARENS(_Signature)> gmock_##_MethodName( \
    GMOCK_PP_REPEAT(GMOCK_INTERNAL_MATCHER_PARAMETER, _Signature, _N)) \
        GMOCK_PP_IF(_Constness, const, ) _RefSpec { \
            GMOCK_MOCKER(_N, _Constness, _MethodName).RegisterOwner(this); \
            return GMOCK_MOCKER(_N, _Constness, _MethodName) \
                .With(GMOCK_PP_REPEAT(GMOCK_INTERNAL_MATCHER_ARGUMENT, , _N)); \
} \
::testing::MockSpec<GMOCK_PP_REMOVE_PARENS(_Signature)> gmock_##_MethodName( \
    const ::testing::internal::WithoutMatchers&, \
    GMOCK_PP_IF(_Constness, const, )::testing::internal::Function< \
        GMOCK_PP_REMOVE_PARENS(_Signature)>*) const _RefSpec _NoexceptSpec { \
        return ::testing::internal::ThisRefAdjuster<GMOCK_PP_IF( \
            _Constness, const, ) int _RefSpec>::Adjust(*this) \
                .gmock_##_MethodName(GMOCK_PP_REPEAT( \
                    GMOCK_INTERNAL_A_MATCHER_ARGUMENT, _Signature, _N)); \
} \
mutable ::testing::FunctionMocker<GMOCK_PP_REMOVE_PARENS(_Signature)> \
GMOCK_MOCKER(_N, _Constness, _MethodName)
```

### 7.3.1.40 GMOCK\_INTERNAL\_MOCK\_METHODN

```
#define GMOCK_INTERNAL_MOCK_METHODN( \
    constness, \
    ct, \
    Method, \
    args_num, \
    ... )
```

**Value:**

```
GMOCK_INTERNAL_ASSERT_VALID_SIGNATURE( \
    args_num, ::testing::internal::identity_t<__VA_ARGS__>); \
GMOCK_INTERNAL_MOCK_METHOD_IMPL( \
    args_num, Method, GMOCK_PP_NARG0(constness), 0, 0, , ct, , \
    (::testing::internal::identity_t<__VA_ARGS__>))
```

### 7.3.1.41 GMOCK\_INTERNAL\_NOEXCEPT\_SPEC\_IF\_NOEXCEPT

```
#define GMOCK_INTERNAL_NOEXCEPT_SPEC_IF_NOEXCEPT(
    _i,
    _,
    _elem )
```

**Value:**

```
GMOCK_PP_IF(
    GMOCK_PP_HAS_COMMA(GMOCK_INTERNAL_DETECT_NOEXCEPT(_i, _, _elem)), \
    _elem, )
```

### 7.3.1.42 GMOCK\_INTERNAL\_PARAMETER

```
#define GMOCK_INTERNAL_PARAMETER(
    _i,
    _Signature,
    _ )
```

**Value:**

```
GMOCK_PP_COMMA_IF(_i) \
GMOCK_INTERNAL_ARG_O(_i, GMOCK_PP_REMOVE_PARENS(_Signature)) \
gmock_a##_i
```

### 7.3.1.43 GMOCK\_INTERNAL\_REF\_SPEC\_IF\_REF

```
#define GMOCK_INTERNAL_REF_SPEC_IF_REF(
    _i,
    _,
    _elem )
```

**Value:**

```
GMOCK_PP_IF(GMOCK_PP_HAS_COMMA(GMOCK_INTERNAL_DETECT_REF(_i, _, _elem)), \
    GMOCK_PP_CAT(GMOCK_INTERNAL_UNPACK_, _elem), )
```

### 7.3.1.44 GMOCK\_INTERNAL\_SIGNATURE

```
#define GMOCK_INTERNAL_SIGNATURE(
    _Ret,
    _Args )
```

**Value:**

```
::testing::internal::identity_t<GMOCK_PP_IF(GMOCK_PP_IS_BEGIN_PARENS(_Ret), \
    GMOCK_PP_REMOVE_PARENS, \
    GMOCK_PP_IDENTITY) (_Ret)>(
    GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_GET_TYPE, _, _Args))
```

### 7.3.1.45 GMOCK\_INTERNAL\_UNPACK\_Calltype

```
#define GMOCK_INTERNAL_UNPACK_Calltype(
    ... ) __VA_ARGS__
```

### 7.3.1.46 GMOCK\_INTERNAL\_UNPACK\_ref

```
#define GMOCK_INTERNAL_UNPACK_ref(
    x ) x
```

### 7.3.1.47 GMOCK\_INTERNAL\_WRONG\_ARITY

```
#define GMOCK_INTERNAL_WRONG_ARITY(
    ... )
```

**Value:**

```
static_assert(
    false,
    "MOCK_METHOD must be called with 3 or 4 arguments. _Ret, "
    "_MethodName, _Args and optionally _Spec. _Args and _Spec must be "
    "enclosed in parentheses. If _Ret is a type with unprotected commas, "
    "it must also be enclosed in parentheses.")\
```

### 7.3.1.48 GMOCK\_MOCKER\_

```
#define GMOCK_MOCKER_(
    arity,
    constness,
    Method )  GTEST_CONCAT_TOKEN_(gmock##constness##arity##_##Method##_, __LINE__)
```

### 7.3.1.49 MOCK\_CONST\_METHOD0

```
#define MOCK_CONST_METHOD0 (
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(const, , m, 0, __VA_ARGS__)
```

### 7.3.1.50 MOCK\_CONST\_METHOD0\_T

```
#define MOCK_CONST_METHOD0_T (
    m,
    ... )  MOCK_CONST_METHOD0 (m, __VA_ARGS__)
```

**7.3.1.51 MOCK\_CONST\_METHOD0\_T\_WITH\_CALLTYPE**

```
#define MOCK_CONST_METHOD0_T_WITH_CALLTYPE(
    ct,
    m,
    ... )  MOCK_CONST_METHOD0_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

**7.3.1.52 MOCK\_CONST\_METHOD0\_WITH\_CALLTYPE**

```
#define MOCK_CONST_METHOD0_WITH_CALLTYPE(
    ct,
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(const, ct, m, 0, __VA_ARGS__)
```

**7.3.1.53 MOCK\_CONST\_METHOD1**

```
#define MOCK_CONST_METHOD1(
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(const, , m, 1, __VA_ARGS__)
```

**7.3.1.54 MOCK\_CONST\_METHOD10**

```
#define MOCK_CONST_METHOD10(
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(const, , m, 10, __VA_ARGS__)
```

**7.3.1.55 MOCK\_CONST\_METHOD10\_T**

```
#define MOCK_CONST_METHOD10_T(
    m,
    ... )  MOCK_CONST_METHOD10(m, __VA_ARGS__)
```

**7.3.1.56 MOCK\_CONST\_METHOD10\_T\_WITH\_CALLTYPE**

```
#define MOCK_CONST_METHOD10_T_WITH_CALLTYPE(
    ct,
    m,
    ... )  MOCK_CONST_METHOD10_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.57 MOCK\_CONST\_METHOD10\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD10_WITH_CALLTYPE(
    ct,
    m,
    ... )  GMOCK_INTERNAL MOCK_METHODN(const, ct, m, 10, __VA_ARGS__)
```

### 7.3.1.58 MOCK\_CONST\_METHOD1\_T

```
#define MOCK_CONST_METHOD1_T(
    m,
    ... )  MOCK_CONST_METHOD1(m, __VA_ARGS__)
```

### 7.3.1.59 MOCK\_CONST\_METHOD1\_T\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD1_T_WITH_CALLTYPE(
    ct,
    m,
    ... )  MOCK_CONST_METHOD1_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.60 MOCK\_CONST\_METHOD1\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD1_WITH_CALLTYPE(
    ct,
    m,
    ... )  GMOCK_INTERNAL MOCK_METHODN(const, ct, m, 1, __VA_ARGS__)
```

### 7.3.1.61 MOCK\_CONST\_METHOD2

```
#define MOCK_CONST_METHOD2(
    m,
    ... )  GMOCK_INTERNAL MOCK_METHODN(const, , m, 2, __VA_ARGS__)
```

### 7.3.1.62 MOCK\_CONST\_METHOD2\_T

```
#define MOCK_CONST_METHOD2_T(
    m,
    ... )  MOCK_CONST_METHOD2(m, __VA_ARGS__)
```

### 7.3.1.63 MOCK\_CONST\_METHOD2\_T\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD2_T_WITH_CALLTYPE(
    ct,
    m,
    ... )  MOCK_CONST_METHOD2_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.64 MOCK\_CONST\_METHOD2\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD2_WITH_CALLTYPE(
    ct,
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(const, ct, m, 2, __VA_ARGS__)
```

### 7.3.1.65 MOCK\_CONST\_METHOD3

```
#define MOCK_CONST_METHOD3(
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(const, , m, 3, __VA_ARGS__)
```

### 7.3.1.66 MOCK\_CONST\_METHOD3\_T

```
#define MOCK_CONST_METHOD3_T(
    m,
    ... )  MOCK_CONST_METHOD3(m, __VA_ARGS__)
```

### 7.3.1.67 MOCK\_CONST\_METHOD3\_T\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD3_T_WITH_CALLTYPE(
    ct,
    m,
    ... )  MOCK_CONST_METHOD3_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.68 MOCK\_CONST\_METHOD3\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD3_WITH_CALLTYPE(
    ct,
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(const, ct, m, 3, __VA_ARGS__)
```

### 7.3.1.69 MOCK\_CONST\_METHOD4

```
#define MOCK_CONST_METHOD4 (m,  
... )    GMOCK_INTERNAL MOCK_METHODN(const, , m, 4, __VA_ARGS__)
```

### 7.3.1.70 MOCK\_CONST\_METHOD4\_T

```
#define MOCK_CONST_METHOD4_T (m,  
... )  MOCK_CONST_METHOD4(m, __VA_ARGS__)
```

### 7.3.1.71 MOCK\_CONST\_METHOD4\_T\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD4_T_WITH_CALLTYPE (ct,  
m,  
... )  MOCK_CONST_METHOD4_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.72 MOCK\_CONST\_METHOD4\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD4_WITH_CALLTYPE (ct,  
m,  
... )  GMOCK_INTERNAL MOCK_METHODN(const, ct, m, 4, __VA_ARGS__)
```

### 7.3.1.73 MOCK\_CONST\_METHOD5

```
#define MOCK_CONST_METHOD5 (m,  
... )  GMOCK_INTERNAL MOCK_METHODN(const, , m, 5, __VA_ARGS__)
```

### 7.3.1.74 MOCK\_CONST\_METHOD5\_T

```
#define MOCK_CONST_METHOD5_T (m,  
... )  MOCK_CONST_METHOD5(m, __VA_ARGS__)
```

### 7.3.1.75 MOCK\_CONST\_METHOD5\_T\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD5_T_WITH_CALLTYPE(
    ct,
    m,
    ... )  MOCK_CONST_METHOD5_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.76 MOCK\_CONST\_METHOD5\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD5_WITH_CALLTYPE(
    ct,
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(const, ct, m, 5, __VA_ARGS__)
```

### 7.3.1.77 MOCK\_CONST\_METHOD6

```
#define MOCK_CONST_METHOD6(
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(const, , m, 6, __VA_ARGS__)
```

### 7.3.1.78 MOCK\_CONST\_METHOD6\_T

```
#define MOCK_CONST_METHOD6_T(
    m,
    ... )  MOCK_CONST_METHOD6(m, __VA_ARGS__)
```

### 7.3.1.79 MOCK\_CONST\_METHOD6\_T\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD6_T_WITH_CALLTYPE(
    ct,
    m,
    ... )  MOCK_CONST_METHOD6_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.80 MOCK\_CONST\_METHOD6\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD6_WITH_CALLTYPE(
    ct,
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(const, ct, m, 6, __VA_ARGS__)
```

### 7.3.1.81 MOCK\_CONST\_METHOD7

```
#define MOCK_CONST_METHOD7(  
    m,  
    ... )    GMOCK_INTERNAL MOCK_METHODN(const, , m, 7, __VA_ARGS__)
```

### 7.3.1.82 MOCK\_CONST\_METHOD7\_T

```
#define MOCK_CONST_METHOD7_T(  
    m,  
    ... )    MOCK_CONST_METHOD7(m, __VA_ARGS__)
```

### 7.3.1.83 MOCK\_CONST\_METHOD7\_T\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD7_T_WITH_CALLTYPE(  
    ct,  
    m,  
    ... )    MOCK_CONST_METHOD7_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.84 MOCK\_CONST\_METHOD7\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD7_WITH_CALLTYPE(  
    ct,  
    m,  
    ... )    GMOCK_INTERNAL MOCK_METHODN(const, ct, m, 7, __VA_ARGS__)
```

### 7.3.1.85 MOCK\_CONST\_METHOD8

```
#define MOCK_CONST_METHOD8(  
    m,  
    ... )    GMOCK_INTERNAL MOCK_METHODN(const, , m, 8, __VA_ARGS__)
```

### 7.3.1.86 MOCK\_CONST\_METHOD8\_T

```
#define MOCK_CONST_METHOD8_T(  
    m,  
    ... )    MOCK_CONST_METHOD8(m, __VA_ARGS__)
```

### 7.3.1.87 MOCK\_CONST\_METHOD8\_T\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD8_T_WITH_CALLTYPE(
    ct,
    m,
    ... )  MOCK_CONST_METHOD8_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.88 MOCK\_CONST\_METHOD8\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD8_WITH_CALLTYPE(
    ct,
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(const, ct, m, 8, __VA_ARGS__)
```

### 7.3.1.89 MOCK\_CONST\_METHOD9

```
#define MOCK_CONST_METHOD9(
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(const, , m, 9, __VA_ARGS__)
```

### 7.3.1.90 MOCK\_CONST\_METHOD9\_T

```
#define MOCK_CONST_METHOD9_T(
    m,
    ... )  MOCK_CONST_METHOD9(m, __VA_ARGS__)
```

### 7.3.1.91 MOCK\_CONST\_METHOD9\_T\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD9_T_WITH_CALLTYPE(
    ct,
    m,
    ... )  MOCK_CONST_METHOD9_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.92 MOCK\_CONST\_METHOD9\_WITH\_CALLTYPE

```
#define MOCK_CONST_METHOD9_WITH_CALLTYPE(
    ct,
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(const, ct, m, 9, __VA_ARGS__)
```

### 7.3.1.93 MOCK\_METHOD

```
#define MOCK_METHOD(
    ...
)
```

**Value:**

```
GMOCK_INTERNAL_WARNING_PUSH()
GMOCK_INTERNAL_WARNING_CLANG(ignored, "-Wunused-member-function") \
GMOCK_PP_VARIADIC_CALL(GMOCK_INTERNAL_MOCK_METHOD_ARG_, __VA_ARGS__)
GMOCK_INTERNAL_WARNING_POP()
```

### 7.3.1.94 MOCK\_METHOD0

```
#define MOCK_METHOD0(
    m,
    ...
) GMOCK_INTERNAL_MOCK_METHODN(, , m, 0, __VA_ARGS__)
```

### 7.3.1.95 MOCK\_METHOD0\_T

```
#define MOCK_METHOD0_T(
    m,
    ...
) MOCK_METHOD0(m, __VA_ARGS__)
```

### 7.3.1.96 MOCK\_METHOD0\_T\_WITH\_CALLTYPE

```
#define MOCK_METHOD0_T_WITH_CALLTYPE(
    ct,
    m,
    ...
) MOCK_METHOD0_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.97 MOCK\_METHOD0\_WITH\_CALLTYPE

```
#define MOCK_METHOD0_WITH_CALLTYPE(
    ct,
    m,
    ...
) GMOCK_INTERNAL_MOCK_METHODN(, ct, m, 0, __VA_ARGS__)
```

### 7.3.1.98 MOCK\_METHOD1

```
#define MOCK_METHOD1(
    m,
    ...
) GMOCK_INTERNAL_MOCK_METHODN(, , m, 1, __VA_ARGS__)
```

**7.3.1.99 MOCK\_METHOD10**

```
#define MOCK_METHOD10(
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(, , m, 10, __VA_ARGS__)
```

**7.3.1.100 MOCK\_METHOD10\_T**

```
#define MOCK_METHOD10_T(
    m,
    ... )  MOCK_METHOD10(m, __VA_ARGS__)
```

**7.3.1.101 MOCK\_METHOD10\_T\_WITH\_CALLTYPE**

```
#define MOCK_METHOD10_T_WITH_CALLTYPE(
    ct,
    m,
    ... )  MOCK_METHOD10_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

**7.3.1.102 MOCK\_METHOD10\_WITH\_CALLTYPE**

```
#define MOCK_METHOD10_WITH_CALLTYPE(
    ct,
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(, ct, m, 10, __VA_ARGS__)
```

**7.3.1.103 MOCK\_METHOD1\_T**

```
#define MOCK_METHOD1_T(
    m,
    ... )  MOCK_METHOD1(m, __VA_ARGS__)
```

**7.3.1.104 MOCK\_METHOD1\_T\_WITH\_CALLTYPE**

```
#define MOCK_METHOD1_T_WITH_CALLTYPE(
    ct,
    m,
    ... )  MOCK_METHOD1_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.105 MOCK\_METHOD1\_WITH\_CALLTYPE

```
#define MOCK_METHOD1_WITH_CALLTYPE(
    ct,
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(, ct, m, 1, __VA_ARGS__)
```

### 7.3.1.106 MOCK\_METHOD2

```
#define MOCK_METHOD2(
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(, , m, 2, __VA_ARGS__)
```

### 7.3.1.107 MOCK\_METHOD2\_T

```
#define MOCK_METHOD2_T(
    m,
    ... )  MOCK_METHOD2(m, __VA_ARGS__)
```

### 7.3.1.108 MOCK\_METHOD2\_T\_WITH\_CALLTYPE

```
#define MOCK_METHOD2_T_WITH_CALLTYPE(
    ct,
    m,
    ... )  MOCK_METHOD2_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.109 MOCK\_METHOD2\_WITH\_CALLTYPE

```
#define MOCK_METHOD2_WITH_CALLTYPE(
    ct,
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(, ct, m, 2, __VA_ARGS__)
```

### 7.3.1.110 MOCK\_METHOD3

```
#define MOCK_METHOD3(
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(, , m, 3, __VA_ARGS__)
```

**7.3.1.111 MOCK\_METHOD3\_T**

```
#define MOCK_METHOD3_T(
    m,
    ... ) MOCK_METHOD3(m, __VA_ARGS__)
```

**7.3.1.112 MOCK\_METHOD3\_T\_WITH\_CALLTYPE**

```
#define MOCK_METHOD3_T_WITH_CALLTYPE(
    ct,
    m,
    ... ) MOCK_METHOD3_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

**7.3.1.113 MOCK\_METHOD3\_WITH\_CALLTYPE**

```
#define MOCK_METHOD3_WITH_CALLTYPE(
    ct,
    m,
    ... ) GMOCK_INTERNAL_MOCK_METHODN(, ct, m, 3, __VA_ARGS__)
```

**7.3.1.114 MOCK\_METHOD4**

```
#define MOCK_METHOD4(
    m,
    ... ) GMOCK_INTERNAL_MOCK_METHODN(, , m, 4, __VA_ARGS__)
```

**7.3.1.115 MOCK\_METHOD4\_T**

```
#define MOCK_METHOD4_T(
    m,
    ... ) MOCK_METHOD4(m, __VA_ARGS__)
```

**7.3.1.116 MOCK\_METHOD4\_T\_WITH\_CALLTYPE**

```
#define MOCK_METHOD4_T_WITH_CALLTYPE(
    ct,
    m,
    ... ) MOCK_METHOD4_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.117 MOCK\_METHOD4\_WITH\_CALLTYPE

```
#define MOCK_METHOD4_WITH_CALLTYPE(
    ct,
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(, ct, m, 4, __VA_ARGS__)
```

### 7.3.1.118 MOCK\_METHOD5

```
#define MOCK_METHOD5(
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(, , m, 5, __VA_ARGS__)
```

### 7.3.1.119 MOCK\_METHOD5\_T

```
#define MOCK_METHOD5_T(
    m,
    ... )  MOCK_METHOD5(m, __VA_ARGS__)
```

### 7.3.1.120 MOCK\_METHOD5\_T\_WITH\_CALLTYPE

```
#define MOCK_METHOD5_T_WITH_CALLTYPE(
    ct,
    m,
    ... )  MOCK_METHOD5_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.121 MOCK\_METHOD5\_WITH\_CALLTYPE

```
#define MOCK_METHOD5_WITH_CALLTYPE(
    ct,
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(, ct, m, 5, __VA_ARGS__)
```

### 7.3.1.122 MOCK\_METHOD6

```
#define MOCK_METHOD6(
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(, , m, 6, __VA_ARGS__)
```

### 7.3.1.123 MOCK\_METHOD6\_T

```
#define MOCK_METHOD6_T(
    m,
    ... ) MOCK_METHOD6(m, __VA_ARGS__)
```

### 7.3.1.124 MOCK\_METHOD6\_T\_WITH\_CALLTYPE

```
#define MOCK_METHOD6_T_WITH_CALLTYPE(
    ct,
    m,
    ... ) MOCK_METHOD6_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.125 MOCK\_METHOD6\_WITH\_CALLTYPE

```
#define MOCK_METHOD6_WITH_CALLTYPE(
    ct,
    m,
    ... ) GMOCK_INTERNAL_MOCK_METHODN(, ct, m, 6, __VA_ARGS__)
```

### 7.3.1.126 MOCK\_METHOD7

```
#define MOCK_METHOD7(
    m,
    ... ) GMOCK_INTERNAL_MOCK_METHODN(, , m, 7, __VA_ARGS__)
```

### 7.3.1.127 MOCK\_METHOD7\_T

```
#define MOCK_METHOD7_T(
    m,
    ... ) MOCK_METHOD7(m, __VA_ARGS__)
```

### 7.3.1.128 MOCK\_METHOD7\_T\_WITH\_CALLTYPE

```
#define MOCK_METHOD7_T_WITH_CALLTYPE(
    ct,
    m,
    ... ) MOCK_METHOD7_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.129 MOCK\_METHOD7\_WITH\_CALLTYPE

```
#define MOCK_METHOD7_WITH_CALLTYPE(
    ct,
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(, ct, m, 7, __VA_ARGS__)
```

### 7.3.1.130 MOCK\_METHOD8

```
#define MOCK_METHOD8(
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(, , m, 8, __VA_ARGS__)
```

### 7.3.1.131 MOCK\_METHOD8\_T

```
#define MOCK_METHOD8_T(
    m,
    ... )  MOCK_METHOD8(m, __VA_ARGS__)
```

### 7.3.1.132 MOCK\_METHOD8\_T\_WITH\_CALLTYPE

```
#define MOCK_METHOD8_T_WITH_CALLTYPE(
    ct,
    m,
    ... )  MOCK_METHOD8_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.133 MOCK\_METHOD8\_WITH\_CALLTYPE

```
#define MOCK_METHOD8_WITH_CALLTYPE(
    ct,
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(, ct, m, 8, __VA_ARGS__)
```

### 7.3.1.134 MOCK\_METHOD9

```
#define MOCK_METHOD9(
    m,
    ... )  GMOCK_INTERNAL_MOCK_METHODN(, , m, 9, __VA_ARGS__)
```

### 7.3.1.135 MOCK\_METHOD9\_T

```
#define MOCK_METHOD9_T(
    m,
    ...
) MOCK_METHOD9(m, __VA_ARGS__)
```

### 7.3.1.136 MOCK\_METHOD9\_T\_WITH\_CALLTYPE

```
#define MOCK_METHOD9_T_WITH_CALLTYPE(
    ct,
    m,
    ...
) MOCK_METHOD9_WITH_CALLTYPE(ct, m, __VA_ARGS__)
```

### 7.3.1.137 MOCK\_METHOD9\_WITH\_CALLTYPE

```
#define MOCK_METHOD9_WITH_CALLTYPE(
    ct,
    m,
    ...
) GMOCK_INTERNAL_MOCK_METHODN(ct, m, 9, __VA_ARGS__)
```

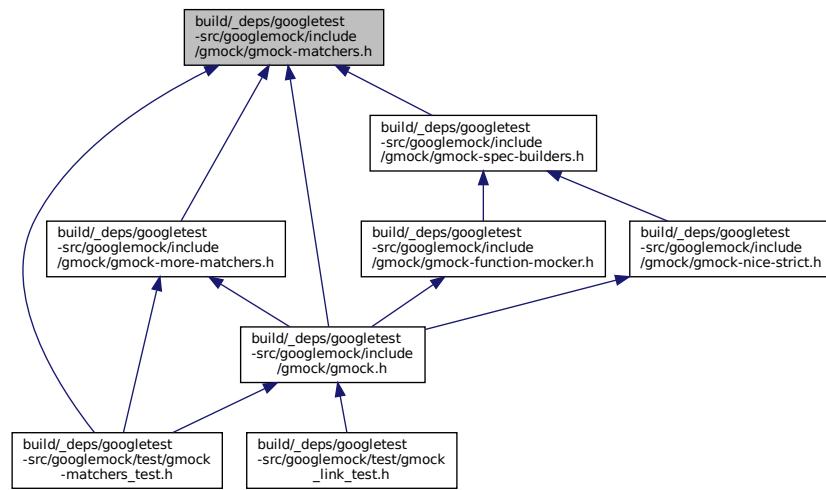
## 7.4 build/\_deps/googletest-src/googlemock/include/gmock/gmock-matchers.h File Reference

```
#include <algorithm>
#include <cmath>
#include <initializer_list>
#include <iostream>
#include <iterator>
#include <limits>
#include <memory>
#include <ostream>
#include <sstream>
#include <string>
#include <type_traits>
#include <utility>
#include <vector>
#include "gmock/internal/gmock-internal-utils.h"
#include "gmock/internal/gmock-port.h"
#include "gmock/internal/gmock-pp.h"
#include "gtest/gtest.h"
#include "gmock/internal/custom/gmock-matchers.h"
```

Include dependency graph for gmock-matchers.h:



This graph shows which files directly or indirectly include this file:



## Macros

- `#define GMOCK_MAYBE_5046_`  
`<< DiffStrings(str, arg);`
- `#define ASSERT_THAT(value, matcher)`
- `#define EXPECT_THAT(value, matcher)`
- `#define MATCHER(name, description)`
- `#define MATCHER_P(name, p0, description) GMOCK_INTERNAL_MATCHER(name, name##MatcherP, de-  
scription, (#p0), (p0))`
- `#define MATCHER_P2(name, p0, p1, description)`
- `#define MATCHER_P3(name, p0, p1, p2, description)`
- `#define MATCHER_P4(name, p0, p1, p2, p3, description)`
- `#define MATCHER_P5(name, p0, p1, p2, p3, p4, description)`
- `#define MATCHER_P6(name, p0, p1, p2, p3, p4, p5, description)`
- `#define MATCHER_P7(name, p0, p1, p2, p3, p4, p5, p6, description)`
- `#define MATCHER_P8(name, p0, p1, p2, p3, p4, p5, p6, p7, description)`
- `#define MATCHER_P9(name, p0, p1, p2, p3, p4, p5, p6, p7, p8, description)`
- `#define MATCHER_P10(name, p0, p1, p2, p3, p4, p5, p6, p7, p8, p9, description)`
- `#define GMOCK_INTERNAL_MATCHER(name, full_name, description, arg_names, args)`
- `#define GMOCK_INTERNAL_MATCHER_TEMPLATE_PARAMS(args)`
- `#define GMOCK_INTERNAL_MATCHER_TEMPLATE_PARAM(i_unused, data_unused, arg) , typename  
arg##_type`
- `#define GMOCK_INTERNAL_MATCHER_TYPE_PARAMS(args) GMOCK_PP_TAIL(GMOCK_PP_FOR_EACH(GMOCK_IN-  
, args))`
- `#define GMOCK_INTERNAL_MATCHER_TYPE_PARAM(i_unused, data_unused, arg) , arg##_type`
- `#define GMOCK_INTERNAL_MATCHER_FUNCTION_ARGS(args)`
- `#define GMOCK_INTERNAL_MATCHER_FUNCTION_ARG(i, data_unused, arg) , arg##_type gmock_p##i`
- `#define GMOCK_INTERNAL_MATCHER_FORWARD_ARGS(args) GMOCK_PP_TAIL(GMOCK_PP_FOR_EACH(GMOCK_IN-  
, args))`
- `#define GMOCK_INTERNAL_MATCHER_FORWARD_ARG(i, data_unused, arg) , arg(::std::forward<arg##_  
_type>(gmock_p##i))`
- `#define GMOCK_INTERNAL_MATCHER_MEMBERS(args) GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_MATCHER_ME-  
, args)`

- #define `GMOCK_INTERNAL_MATCHER_MEMBER`(*i\_unused*, *data\_unused*, *arg*) const *arg##\_type arg*;
- #define `GMOCK_INTERNAL_MATCHER_MEMBERS_USAGE`(*args*) `GMOCK_PP_TAIL(GMOCK_PP_FOR_EACH(GMOCK_, args))`
- #define `GMOCK_INTERNAL_MATCHER_MEMBER_USAGE`(*i\_unused*, *data\_unused*, *arg*) , *arg*
- #define `GMOCK_INTERNAL_MATCHER_ARGS_USAGE`(*args*) `GMOCK_PP_TAIL(GMOCK_PP_FOR_EACH(GMOCK_, args))`
- #define `GMOCK_INTERNAL_MATCHER_ARG_USAGE`(*i*, *data\_unused*, *arg\_unused*) , `gmock_p##i`

## Functions

- `GTEST_DISABLE_MSC_WARNINGS_PUSH_`(4251 `GMOCK_MAYBE_5046_`) namespace testing

### 7.4.1 Macro Definition Documentation

#### 7.4.1.1 ASSERT\_THAT

```
#define ASSERT_THAT(  
    value,  
    matcher )
```

##### Value:

```
ASSERT_PRED_FORMAT1( \\\n    ::testing::internal::MakePredicateFormatterFromMatcher(matcher), value)
```

#### 7.4.1.2 EXPECT\_THAT

```
#define EXPECT_THAT(  
    value,  
    matcher )
```

##### Value:

```
EXPECT_PRED_FORMAT1( \\\n    ::testing::internal::MakePredicateFormatterFromMatcher(matcher), value)
```

#### 7.4.1.3 GMOCK\_INTERNAL\_MATCHER

```
#define GMOCK_INTERNAL_MATCHER(  
    name,  
    full_name,  
    description,  
    arg_names,  
    args )
```

#### 7.4.1.4 GMOCK\_INTERNAL\_MATCHER\_ARG\_USAGE

```
#define GMOCK_INTERNAL_MATCHER_ARG_USAGE (
    i,
    data_unused,
    arg_unused ) , gmock_p##i
```

#### 7.4.1.5 GMOCK\_INTERNAL\_MATCHER\_ARGS\_USAGE

```
#define GMOCK_INTERNAL_MATCHER_ARGS_USAGE (
    args )  GMOCK_PP_TAIL(GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_MATCHER_ARG_USAGE, ,
args))
```

#### 7.4.1.6 GMOCK\_INTERNAL\_MATCHER\_FORWARD\_ARG

```
#define GMOCK_INTERNAL_MATCHER_FORWARD_ARG (
    i,
    data_unused,
    arg ) , arg(::std::forward<arg##_type>(gmock_p##i))
```

#### 7.4.1.7 GMOCK\_INTERNAL\_MATCHER\_FORWARD\_ARGS

```
#define GMOCK_INTERNAL_MATCHER_FORWARD_ARGS (
    args )  GMOCK_PP_TAIL(GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_MATCHER_FORWARD_ARG, ,
args))
```

#### 7.4.1.8 GMOCK\_INTERNAL\_MATCHER\_FUNCTION\_ARG

```
#define GMOCK_INTERNAL_MATCHER_FUNCTION_ARG (
    i,
    data_unused,
    arg ) , arg##_type gmock_p##i
```

#### 7.4.1.9 GMOCK\_INTERNAL\_MATCHER\_FUNCTION\_ARGS

```
#define GMOCK_INTERNAL_MATCHER_FUNCTION_ARGS (
    args )
```

**Value:**

```
GMOCK_PP_TAIL(dummy_first GMOCK_PP_FOR_EACH(      \
GMOCK_INTERNAL_MATCHER_FUNCTION_ARG, , args))
```

#### 7.4.1.10 GMOCK\_INTERNAL\_MATCHER\_MEMBER

```
#define GMOCK_INTERNAL_MATCHER_MEMBER(  
    i_unused,  
    data_unused,  
    arg) const arg##_type arg;
```

#### 7.4.1.11 GMOCK\_INTERNAL\_MATCHER\_MEMBER\_USAGE

```
#define GMOCK_INTERNAL_MATCHER_MEMBER_USAGE(  
    i_unused,  
    data_unused,  
    arg), arg
```

#### 7.4.1.12 GMOCK\_INTERNAL\_MATCHER\_MEMBERS

```
#define GMOCK_INTERNAL_MATCHER_MEMBERS(  
    args) GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_MATCHER_MEMBER, , args)
```

#### 7.4.1.13 GMOCK\_INTERNAL\_MATCHER\_MEMBERS\_USAGE

```
#define GMOCK_INTERNAL_MATCHER_MEMBERS_USAGE(  
    args) GMOCK_PP_TAIL(GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_MATCHER_MEMBER_USAGE, ,  
    args))
```

#### 7.4.1.14 GMOCK\_INTERNAL\_MATCHER\_TEMPLATE\_PARAM

```
#define GMOCK_INTERNAL_MATCHER_TEMPLATE_PARAM(  
    i_unused,  
    data_unused,  
    arg), typename arg##_type
```

#### 7.4.1.15 GMOCK\_INTERNAL\_MATCHER\_TEMPLATE\_PARAMS

```
#define GMOCK_INTERNAL_MATCHER_TEMPLATE_PARAMS(  
    args)
```

##### Value:

```
GMOCK_PP_TAIL(  
    \  
    GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_MATCHER_TEMPLATE_PARAM, , args))
```

#### 7.4.1.16 GMOCK\_INTERNAL\_MATCHER\_TYPE\_PARAM

```
#define GMOCK_INTERNAL_MATCHER_TYPE_PARAM(  
    i_unused,  
    data_unused,  
    arg ) , arg##_type
```

#### 7.4.1.17 GMOCK\_INTERNAL\_MATCHER\_TYPE\_PARAMS

```
#define GMOCK_INTERNAL_MATCHER_TYPE_PARAMS(  
    args )  GMOCK_PP_TAIL(GMOCK_PP_FOR_EACH(GMOCK_INTERNAL_MATCHER_TYPE_PARAM, ,  
args))
```

#### 7.4.1.18 GMOCK\_MAYBE\_5046\_

```
#define GMOCK_MAYBE_5046_  
  
<< DiffStrings(str, arg);
```

#### 7.4.1.19 MATCHER

```
#define MATCHER(  
    name,  
    description )
```

#### 7.4.1.20 MATCHER\_P

```
#define MATCHER_P(  
    name,  
    p0,  
    description )  GMOCK_INTERNAL_MATCHER(name, name##MatcherP, description, (#p0),  
(p0))
```

### 7.4.1.21 MATCHER\_P10

```
#define MATCHER_P10(
    name,
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6,
    p7,
    p8,
    p9,
    description )
```

**Value:**

```
GMOCK_INTERNAL_MATCHER(name, name##MatcherP10, description,
    (#p0, #p1, #p2, #p3, #p4, #p5, #p6, #p7, #p8, #p9), \
    (p0, p1, p2, p3, p4, p5, p6, p7, p8, p9))
```

### 7.4.1.22 MATCHER\_P2

```
#define MATCHER_P2(
    name,
    p0,
    p1,
    description )
```

**Value:**

```
GMOCK_INTERNAL_MATCHER(name, name##MatcherP2, description, (#p0, #p1), \
    (p0, p1))
```

### 7.4.1.23 MATCHER\_P3

```
#define MATCHER_P3(
    name,
    p0,
    p1,
    p2,
    description )
```

**Value:**

```
GMOCK_INTERNAL_MATCHER(name, name##MatcherP3, description, (#p0, #p1, #p2), \
    (p0, p1, p2))
```

#### 7.4.1.24 MATCHER\_P4

```
#define MATCHER_P4 (  
    name,  
    p0,  
    p1,  
    p2,  
    p3,  
    description )
```

**Value:**

```
GMOCK_INTERNAL_MATCHER(name, name##MatcherP4, description, \  
    (#p0, #p1, #p2, #p3), (p0, p1, p2, p3))
```

#### 7.4.1.25 MATCHER\_P5

```
#define MATCHER_P5 (  
    name,  
    p0,  
    p1,  
    p2,  
    p3,  
    p4,  
    description )
```

**Value:**

```
GMOCK_INTERNAL_MATCHER(name, name##MatcherP5, description, \  
    (#p0, #p1, #p2, #p3, #p4), (p0, p1, p2, p3, p4))
```

#### 7.4.1.26 MATCHER\_P6

```
#define MATCHER_P6 (  
    name,  
    p0,  
    p1,  
    p2,  
    p3,  
    p4,  
    p5,  
    description )
```

**Value:**

```
GMOCK_INTERNAL_MATCHER(name, name##MatcherP6, description, \  
    (#p0, #p1, #p2, #p3, #p4, #p5), \  
    (p0, p1, p2, p3, p4, p5))
```

#### 7.4.1.27 MATCHER\_P7

```
#define MATCHER_P7(  
    name,  
    p0,  
    p1,  
    p2,  
    p3,  
    p4,  
    p5,  
    p6,  
    description )
```

**Value:**

```
GMOCK_INTERNAL_MATCHER(name, name##MatcherP7, description,      \  
    (#p0, #p1, #p2, #p3, #p4, #p5, #p6),      \  
    (p0, p1, p2, p3, p4, p5, p6))
```

#### 7.4.1.28 MATCHER\_P8

```
#define MATCHER_P8(  
    name,  
    p0,  
    p1,  
    p2,  
    p3,  
    p4,  
    p5,  
    p6,  
    p7,  
    description )
```

**Value:**

```
GMOCK_INTERNAL_MATCHER(name, name##MatcherP8, description,      \  
    (#p0, #p1, #p2, #p3, #p4, #p5, #p6, #p7),      \  
    (p0, p1, p2, p3, p4, p5, p6, p7))
```

#### 7.4.1.29 MATCHER\_P9

```
#define MATCHER_P9(  
    name,  
    p0,  
    p1,  
    p2,  
    p3,  
    p4,  
    p5,  
    p6,  
    p7,  
    p8,  
    description )
```

**Value:**

```
GMOCK_INTERNAL_MATCHER(name, name##MatcherP9, description,      \  
    (#p0, #p1, #p2, #p3, #p4, #p5, #p6, #p7, #p8),      \  
    (p0, p1, p2, p3, p4, p5, p6, p7, p8))
```

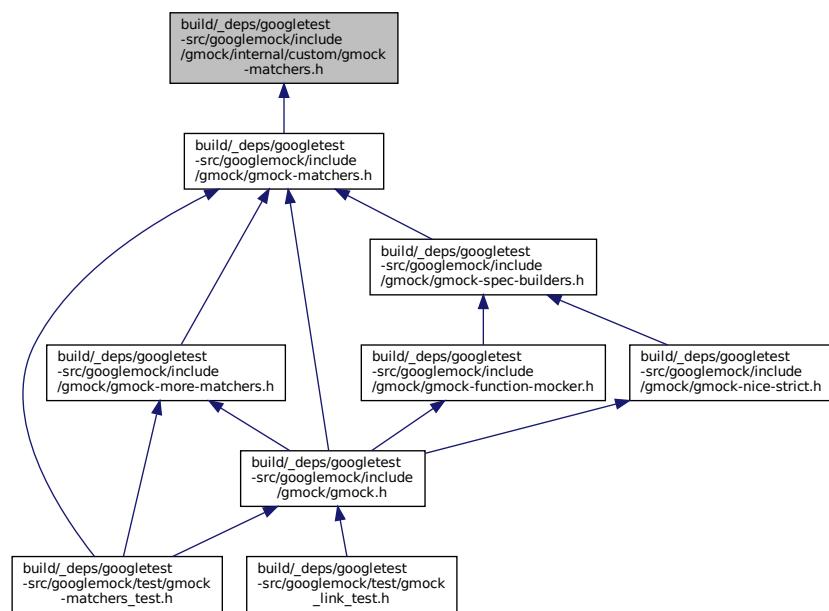
## 7.4.2 Function Documentation

### 7.4.2.1 GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_()

```
GTEST_DISABLE_MSC_WARNINGS_PUSH_
4251 GMOCK_MAYBE_5046_ )
```

## 7.5 build/\_deps/googletest- src/googletest/include/gmock/internal/custom/gmock-matchers.h File Reference

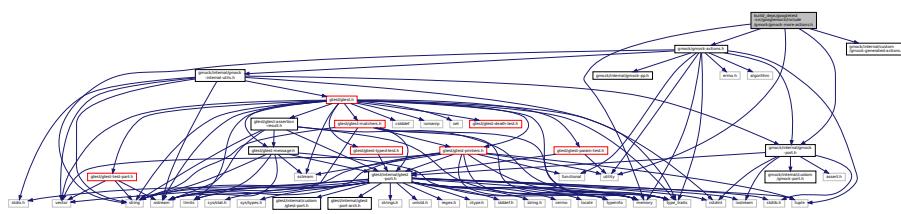
This graph shows which files directly or indirectly include this file:



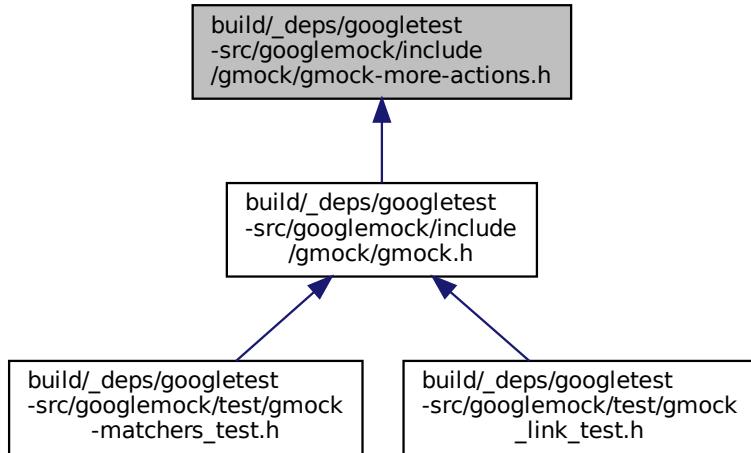
## 7.6 build/\_deps/googletest-src/googletest/include/gmock/gmock-more-actions.h File Reference

```
#include <memory>
#include <utility>
#include "gmock/gmock-actions.h"
#include "gmock/internal/gmock-port.h"
```

```
#include "gmock/internal/custom/gmock-generated-actions.h"
Include dependency graph for gmock-more-actions.h:
```



This graph shows which files directly or indirectly include this file:



## Classes

- struct [testing::internal::InvokeArgumentAction< index, Params >](#)

## Namespaces

- [testing](#)
- [testing::internal](#)

## Macros

- #define [GMOCK\\_INTERNAL\\_DECL\\_HAS\\_1\\_TEMPLATE\\_PARAMS](#)(kind0, name0) kind0 name0
- #define [GMOCK\\_INTERNAL\\_DECL\\_HAS\\_2\\_TEMPLATE\\_PARAMS](#)(kind0, name0, kind1, name1) kind0 name0, kind1 name1
- #define [GMOCK\\_INTERNAL\\_DECL\\_HAS\\_3\\_TEMPLATE\\_PARAMS](#)(kind0, name0, kind1, name1, kind2, name2) kind0 name0, kind1 name1, kind2 name2

- #define `GMOCK_INTERNAL_DECL_HAS_4_TEMPLATE_PARAMS`(kind0, name0, kind1, name1, kind2, name2, kind3, name3) kind0 name0, kind1 name1, kind2 name2, kind3 name3
- #define `GMOCK_INTERNAL_DECL_HAS_5_TEMPLATE_PARAMS`( kind0, name0, kind1, name1, kind2, name2, kind3, name3, kind4, name4) kind0 name0, kind1 name1, kind2 name2, kind3 name3, kind4 name4
- #define `GMOCK_INTERNAL_DECL_HAS_6_TEMPLATE_PARAMS`(kind0, name0, kind1, name1, kind2, name2, kind3, name3, kind4, name4, kind5, name5) kind0 name0, kind1 name1, kind2 name2, kind3 name3, kind4 name4, kind5 name5
- #define `GMOCK_INTERNAL_DECL_HAS_7_TEMPLATE_PARAMS`( kind0, name0, kind1, name1, kind2, name2, kind3, name3, kind4, name4, kind5, name5, kind6, name6)
- #define `GMOCK_INTERNAL_DECL_HAS_8_TEMPLATE_PARAMS`( kind0, name0, kind1, name1, kind2, name2, kind3, name3, kind4, name4, kind5, name5, kind6, name6, kind7, name7)
- #define `GMOCK_INTERNAL_DECL_HAS_9_TEMPLATE_PARAMS`( kind0, name0, kind1, name1, kind2, name2, kind3, name3, kind4, name4, kind5, name5, kind6, name6, kind7, name7, kind8, name8)
- #define `GMOCK_INTERNAL_DECL_HAS_10_TEMPLATE_PARAMS`( kind0, name0, kind1, name1, kind2, name2, kind3, name3, kind4, name4, kind5, name5, kind6, name6, kind7, name7, kind8, name8, kind9, name9)
- #define `GMOCK_INTERNAL_LIST_HAS_1_TEMPLATE_PARAMS`(kind0, name0) name0
- #define `GMOCK_INTERNAL_LIST_HAS_2_TEMPLATE_PARAMS`(kind0, name0, kind1, name1) name0, name1
- #define `GMOCK_INTERNAL_LIST_HAS_3_TEMPLATE_PARAMS`(kind0, name0, kind1, name1, kind2, name2) name0, name1, name2
- #define `GMOCK_INTERNAL_LIST_HAS_4_TEMPLATE_PARAMS`(kind0, name0, kind1, name1, kind2, name2, kind3, name3) name0, name1, name2, name3
- #define `GMOCK_INTERNAL_LIST_HAS_5_TEMPLATE_PARAMS`( kind0, name0, kind1, name1, kind2, name2, kind3, name3, kind4, name4) name0, name1, name2, name3, name4
- #define `GMOCK_INTERNAL_LIST_HAS_6_TEMPLATE_PARAMS`(kind0, name0, kind1, name1, kind2, name2, kind3, name3, kind4, name4, kind5, name5) name0, name1, name2, name3, name4, name5
- #define `GMOCK_INTERNAL_LIST_HAS_7_TEMPLATE_PARAMS`( kind0, name0, kind1, name1, kind2, name2, kind3, name3, kind4, name4, kind5, name5, kind6, name6) name0, name1, name2, name3, name4, name5, name6
- #define `GMOCK_INTERNAL_LIST_HAS_8_TEMPLATE_PARAMS`( kind0, name0, kind1, name1, kind2, name2, kind3, name3, kind4, name4, kind5, name5, kind6, name6, kind7, name7) name0, name1, name2, name3, name4, name5, name6, name7
- #define `GMOCK_INTERNAL_LIST_HAS_9_TEMPLATE_PARAMS`( kind0, name0, kind1, name1, kind2, name2, kind3, name3, kind4, name4, kind5, name5, kind6, name6, kind7, name7, kind8, name8) name0, name1, name2, name3, name4, name5, name6, name7, name8
- #define `GMOCK_INTERNAL_LIST_HAS_10_TEMPLATE_PARAMS`( kind0, name0, kind1, name1, kind2, name2, kind3, name3, kind4, name4, kind5, name5, kind6, name6, kind7, name7, kind8, name8, kind9, name9) name0, name1, name2, name3, name4, name5, name6, name7, name8, name9
- #define `GMOCK_INTERNAL_DECL_TYPE_AND_0_VALUE_PARAMS`()
- #define `GMOCK_INTERNAL_DECL_TYPE_AND_1_VALUE_PARAMS`(p0) , typename p0##\_type
- #define `GMOCK_INTERNAL_DECL_TYPE_AND_2_VALUE_PARAMS`(p0, p1) , typename p0##\_type, type-name p1##\_type
- #define `GMOCK_INTERNAL_DECL_TYPE_AND_3_VALUE_PARAMS`(p0, p1, p2) , typename p0##\_type, typename p1##\_type, typename p2##\_type
- #define `GMOCK_INTERNAL_DECL_TYPE_AND_4_VALUE_PARAMS`(p0, p1, p2, p3)
- #define `GMOCK_INTERNAL_DECL_TYPE_AND_5_VALUE_PARAMS`(p0, p1, p2, p3, p4)
- #define `GMOCK_INTERNAL_DECL_TYPE_AND_6_VALUE_PARAMS`(p0, p1, p2, p3, p4, p5)
- #define `GMOCK_INTERNAL_DECL_TYPE_AND_7_VALUE_PARAMS`(p0, p1, p2, p3, p4, p5, p6)
- #define `GMOCK_INTERNAL_DECL_TYPE_AND_8_VALUE_PARAMS`(p0, p1, p2, p3, p4, p5, p6, p7)
- #define `GMOCK_INTERNAL_DECL_TYPE_AND_9_VALUE_PARAMS`(p0, p1, p2, p3, p4, p5, p6, p7, p8)
- #define `GMOCK_INTERNAL_DECL_TYPE_AND_10_VALUE_PARAMS`(p0, p1, p2, p3, p4, p5, p6, p7, p8, p9)
- #define `GMOCK_INTERNAL_INIT_AND_0_VALUE_PARAMS`() ()
- #define `GMOCK_INTERNAL_INIT_AND_1_VALUE_PARAMS`(p0) (p0##\_type gmock\_p0) : p0(:std::move(gmock\_p0))

- #define GMOCK\_INTERNAL\_INIT\_AND\_2\_VALUE\_PARAMS(p0, p1)
- #define GMOCK\_INTERNAL\_INIT\_AND\_3\_VALUE\_PARAMS(p0, p1, p2)
- #define GMOCK\_INTERNAL\_INIT\_AND\_4\_VALUE\_PARAMS(p0, p1, p2, p3)
- #define GMOCK\_INTERNAL\_INIT\_AND\_5\_VALUE\_PARAMS(p0, p1, p2, p3, p4)
- #define GMOCK\_INTERNAL\_INIT\_AND\_6\_VALUE\_PARAMS(p0, p1, p2, p3, p4, p5)
- #define GMOCK\_INTERNAL\_INIT\_AND\_7\_VALUE\_PARAMS(p0, p1, p2, p3, p4, p5, p6)
- #define GMOCK\_INTERNAL\_INIT\_AND\_8\_VALUE\_PARAMS(p0, p1, p2, p3, p4, p5, p6, p7)
- #define GMOCK\_INTERNAL\_INIT\_AND\_9\_VALUE\_PARAMS(p0, p1, p2, p3, p4, p5, p6, p7, p8)
- #define GMOCK\_INTERNAL\_INIT\_AND\_10\_VALUE\_PARAMS(p0, p1, p2, p3, p4, p5, p6, p7, p8, p9)
- #define GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_0\_VALUE\_PARAMS() {}
- #define GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_1\_VALUE\_PARAMS(...) = default;
- #define GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_2\_VALUE\_PARAMS(...) = default;
- #define GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_3\_VALUE\_PARAMS(...) = default;
- #define GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_4\_VALUE\_PARAMS(...) = default;
- #define GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_5\_VALUE\_PARAMS(...) = default;
- #define GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_6\_VALUE\_PARAMS(...) = default;
- #define GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_7\_VALUE\_PARAMS(...) = default;
- #define GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_8\_VALUE\_PARAMS(...) = default;
- #define GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_9\_VALUE\_PARAMS(...) = default;
- #define GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_10\_VALUE\_PARAMS(...) = default;
- #define GMOCK\_INTERNAL\_DEFN\_AND\_0\_VALUE\_PARAMS()
- #define GMOCK\_INTERNAL\_DEFN\_AND\_1\_VALUE\_PARAMS(p0) p0##\_type p0;
- #define GMOCK\_INTERNAL\_DEFN\_AND\_2\_VALUE\_PARAMS(p0, p1)
- #define GMOCK\_INTERNAL\_DEFN\_AND\_3\_VALUE\_PARAMS(p0, p1, p2)
- #define GMOCK\_INTERNAL\_DEFN\_AND\_4\_VALUE\_PARAMS(p0, p1, p2, p3)
- #define GMOCK\_INTERNAL\_DEFN\_AND\_5\_VALUE\_PARAMS(p0, p1, p2, p3, p4)
- #define GMOCK\_INTERNAL\_DEFN\_AND\_6\_VALUE\_PARAMS(p0, p1, p2, p3, p4, p5)
- #define GMOCK\_INTERNAL\_DEFN\_AND\_7\_VALUE\_PARAMS(p0, p1, p2, p3, p4, p5, p6)
- #define GMOCK\_INTERNAL\_DEFN\_AND\_8\_VALUE\_PARAMS(p0, p1, p2, p3, p4, p5, p6, p7)
- #define GMOCK\_INTERNAL\_DEFN\_AND\_9\_VALUE\_PARAMS(p0, p1, p2, p3, p4, p5, p6, p7, p8)
- #define GMOCK\_INTERNAL\_DEFN\_AND\_10\_VALUE\_PARAMS(p0, p1, p2, p3, p4, p5, p6, p7, p8, p9)
- #define GMOCK\_INTERNAL\_LIST\_AND\_0\_VALUE\_PARAMS()
- #define GMOCK\_INTERNAL\_LIST\_AND\_1\_VALUE\_PARAMS(p0) p0
- #define GMOCK\_INTERNAL\_LIST\_AND\_2\_VALUE\_PARAMS(p0, p1) p0, p1
- #define GMOCK\_INTERNAL\_LIST\_AND\_3\_VALUE\_PARAMS(p0, p1, p2) p0, p1, p2
- #define GMOCK\_INTERNAL\_LIST\_AND\_4\_VALUE\_PARAMS(p0, p1, p2, p3) p0, p1, p2, p3
- #define GMOCK\_INTERNAL\_LIST\_AND\_5\_VALUE\_PARAMS(p0, p1, p2, p3, p4) p0, p1, p2, p3, p4
- #define GMOCK\_INTERNAL\_LIST\_AND\_6\_VALUE\_PARAMS(p0, p1, p2, p3, p4, p5) p0, p1, p2, p3, p4, p5
- #define GMOCK\_INTERNAL\_LIST\_AND\_7\_VALUE\_PARAMS(p0, p1, p2, p3, p4, p5, p6) p0, p1, p2, p3, p4, p5, p6
- #define GMOCK\_INTERNAL\_LIST\_AND\_8\_VALUE\_PARAMS(p0, p1, p2, p3, p4, p5, p6, p7) p0, p1, p2, p3, p4, p5, p6, p7
- #define GMOCK\_INTERNAL\_LIST\_AND\_9\_VALUE\_PARAMS(p0, p1, p2, p3, p4, p5, p6, p7, p8) p0, p1, p2, p3, p4, p5, p6, p7, p8
- #define GMOCK\_INTERNAL\_LIST\_AND\_10\_VALUE\_PARAMS(p0, p1, p2, p3, p4, p5, p6, p7, p8, p9) p0, p1, p2, p3, p4, p5, p6, p7, p8, p9
- #define GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_0\_VALUE\_PARAMS()
- #define GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_1\_VALUE\_PARAMS(p0) , p0##\_type
- #define GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_2\_VALUE\_PARAMS(p0, p1) , p0##\_type, p1##\_type
- #define GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_3\_VALUE\_PARAMS(p0, p1, p2) , p0##\_type, p1##\_type, p2##\_type
- #define GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_4\_VALUE\_PARAMS(p0, p1, p2, p3) , p0##\_type, p1##\_type, p2##\_type, p3##\_type
- #define GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_5\_VALUE\_PARAMS(p0, p1, p2, p3, p4) , p0##\_type, p1##\_type, p2##\_type, p3##\_type, p4##\_type

- `#define GMOCK_INTERNAL_LIST_TYPE_AND_6_VALUE_PARAMS(p0, p1, p2, p3, p4, p5) , p0##_type, p1##_type, p2##_type, p3##_type, p4##_type, p5##_type`
- `#define GMOCK_INTERNAL_LIST_TYPE_AND_7_VALUE_PARAMS(p0, p1, p2, p3, p4, p5, p6) , p0##_type, p1##_type, p2##_type, p3##_type, p4##_type, p5##_type, p6##_type`
- `#define GMOCK_INTERNAL_LIST_TYPE_AND_8_VALUE_PARAMS(p0, p1, p2, p3, p4, p5, p6, p7)`
- `#define GMOCK_INTERNAL_LIST_TYPE_AND_9_VALUE_PARAMS(p0, p1, p2, p3, p4, p5, p6, p7, p8)`
- `#define GMOCK_INTERNAL_LIST_TYPE_AND_10_VALUE_PARAMS(p0, p1, p2, p3, p4, p5, p6, p7, p8, p9)`
- `#define GMOCK_INTERNAL_DECL_AND_0_VALUE_PARAMS()`
- `#define GMOCK_INTERNAL_DECL_AND_1_VALUE_PARAMS(p0) p0##_type p0`
- `#define GMOCK_INTERNAL_DECL_AND_2_VALUE_PARAMS(p0, p1) p0##_type p0, p1##_type p1`
- `#define GMOCK_INTERNAL_DECL_AND_3_VALUE_PARAMS(p0, p1, p2) p0##_type p0, p1##_type p1, p2##_type p2`
- `#define GMOCK_INTERNAL_DECL_AND_4_VALUE_PARAMS(p0, p1, p2, p3) p0##_type p0, p1##_type p1, p2##_type p2, p3##_type p3`
- `#define GMOCK_INTERNAL_DECL_AND_5_VALUE_PARAMS(p0, p1, p2, p3, p4) p0##_type p0, p1##_type p1, p2##_type p2, p3##_type p3, p4##_type p4`
- `#define GMOCK_INTERNAL_DECL_AND_6_VALUE_PARAMS(p0, p1, p2, p3, p4, p5)`
- `#define GMOCK_INTERNAL_DECL_AND_7_VALUE_PARAMS(p0, p1, p2, p3, p4, p5, p6)`
- `#define GMOCK_INTERNAL_DECL_AND_8_VALUE_PARAMS(p0, p1, p2, p3, p4, p5, p6, p7)`
- `#define GMOCK_INTERNAL_DECL_AND_9_VALUE_PARAMS(p0, p1, p2, p3, p4, p5, p6, p7, p8)`
- `#define GMOCK_INTERNAL_DECL_AND_10_VALUE_PARAMS(p0, p1, p2, p3, p4, p5, p6, p7, p8, p9)`
- `#define GMOCK_INTERNAL_COUNT_AND_0_VALUE_PARAMS()`
- `#define GMOCK_INTERNAL_COUNT_AND_1_VALUE_PARAMS(p0) P`
- `#define GMOCK_INTERNAL_COUNT_AND_2_VALUE_PARAMS(p0, p1) P2`
- `#define GMOCK_INTERNAL_COUNT_AND_3_VALUE_PARAMS(p0, p1, p2) P3`
- `#define GMOCK_INTERNAL_COUNT_AND_4_VALUE_PARAMS(p0, p1, p2, p3) P4`
- `#define GMOCK_INTERNAL_COUNT_AND_5_VALUE_PARAMS(p0, p1, p2, p3, p4) P5`
- `#define GMOCK_INTERNAL_COUNT_AND_6_VALUE_PARAMS(p0, p1, p2, p3, p4, p5) P6`
- `#define GMOCK_INTERNAL_COUNT_AND_7_VALUE_PARAMS(p0, p1, p2, p3, p4, p5, p6) P7`
- `#define GMOCK_INTERNAL_COUNT_AND_8_VALUE_PARAMS(p0, p1, p2, p3, p4, p5, p6, p7) P8`
- `#define GMOCK_INTERNAL_COUNT_AND_9_VALUE_PARAMS(p0, p1, p2, p3, p4, p5, p6, p7, p8) P9`
- `#define GMOCK_INTERNAL_COUNT_AND_10_VALUE_PARAMS(p0, p1, p2, p3, p4, p5, p6, p7, p8, p9) P10`
- `#define GMOCK_ACTION_CLASS_(name, value_params) GTEST_CONCAT_TOKEN_(name##Action, GMOCK_INTERNAL_COUNT_##value_params)`
- `#define ACTION_TEMPLATE(name, template_params, value_params)`

## Functions

- `template<typename F , typename... Args>
auto testing::internal::InvokeArgument (F f, Args... args) -> decltype(f(args...))`
- `template<std::size_t index, typename... Params>
internal::InvokeArgumentAction< index, typename std::decay< Params >::type... > testing::InvokeArgument (Params &&... params)`

### 7.6.1 Macro Definition Documentation

### 7.6.1.1 ACTION\_TEMPLATE

```
#define ACTION_TEMPLATE(
    name,
    template_params,
    value_params )
```

### 7.6.1.2 GMOCK\_ACTION\_CLASS\_

```
#define GMOCK_ACTION_CLASS_(
    name,
    value_params )  GTEST_CONCAT_TOKEN_(name##Action, GMOCK_INTERNAL_COUNT_##value_←
params)
```

### 7.6.1.3 GMOCK\_INTERNAL\_COUNT\_AND\_0\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_COUNT_AND_0_VALUE_PARAMS( )
```

### 7.6.1.4 GMOCK\_INTERNAL\_COUNT\_AND\_10\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_COUNT_AND_10_VALUE_PARAMS(
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6,
    p7,
    p8,
    p9 )  P10
```

### 7.6.1.5 GMOCK\_INTERNAL\_COUNT\_AND\_1\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_COUNT_AND_1_VALUE_PARAMS(
    p0 )  P
```

### 7.6.1.6 GMOCK\_INTERNAL\_COUNT\_AND\_2\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_COUNT_AND_2_VALUE_PARAMS (   
    p0,   
    p1 ) P2
```

### 7.6.1.7 GMOCK\_INTERNAL\_COUNT\_AND\_3\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_COUNT_AND_3_VALUE_PARAMS (   
    p0,   
    p1,   
    p2 ) P3
```

### 7.6.1.8 GMOCK\_INTERNAL\_COUNT\_AND\_4\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_COUNT_AND_4_VALUE_PARAMS (   
    p0,   
    p1,   
    p2,   
    p3 ) P4
```

### 7.6.1.9 GMOCK\_INTERNAL\_COUNT\_AND\_5\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_COUNT_AND_5_VALUE_PARAMS (   
    p0,   
    p1,   
    p2,   
    p3,   
    p4 ) P5
```

### 7.6.1.10 GMOCK\_INTERNAL\_COUNT\_AND\_6\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_COUNT_AND_6_VALUE_PARAMS (   
    p0,   
    p1,   
    p2,   
    p3,   
    p4,   
    p5 ) P6
```

### 7.6.1.11 GMOCK\_INTERNAL\_COUNT\_AND\_7\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_COUNT_AND_7_VALUE_PARAMS (  
    p0,  
    p1,  
    p2,  
    p3,  
    p4,  
    p5,  
    p6 ) P7
```

### 7.6.1.12 GMOCK\_INTERNAL\_COUNT\_AND\_8\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_COUNT_AND_8_VALUE_PARAMS (  
    p0,  
    p1,  
    p2,  
    p3,  
    p4,  
    p5,  
    p6,  
    p7 ) P8
```

### 7.6.1.13 GMOCK\_INTERNAL\_COUNT\_AND\_9\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_COUNT_AND_9_VALUE_PARAMS (  
    p0,  
    p1,  
    p2,  
    p3,  
    p4,  
    p5,  
    p6,  
    p7,  
    p8 ) P9
```

### 7.6.1.14 GMOCK\_INTERNAL\_DECL\_AND\_0\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_AND_0_VALUE_PARAMS ( )
```

### 7.6.1.15 GMOCK\_INTERNAL\_DECL\_AND\_10\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_AND_10_VALUE_PARAMS (  
    p0,  
    p1,  
    p2,  
    p3,  
    p4,  
    p5,  
    p6,  
    p7,  
    p8,  
    p9 )
```

**Value:**

```
p0##_type p0, p1##_type p1, p2##_type p2, p3##_type p3, p4##_type p4, \  
p5##_type p5, p6##_type p6, p7##_type p7, p8##_type p8, p9##_type p9
```

### 7.6.1.16 GMOCK\_INTERNAL\_DECL\_AND\_1\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_AND_1_VALUE_PARAMS (  
    p0 ) p0##_type p0
```

### 7.6.1.17 GMOCK\_INTERNAL\_DECL\_AND\_2\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_AND_2_VALUE_PARAMS (  
    p0,  
    p1 ) p0##_type p0, p1##_type p1
```

### 7.6.1.18 GMOCK\_INTERNAL\_DECL\_AND\_3\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_AND_3_VALUE_PARAMS (  
    p0,  
    p1,  
    p2 ) p0##_type p0, p1##_type p1, p2##_type p2
```

### 7.6.1.19 GMOCK\_INTERNAL\_DECL\_AND\_4\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_AND_4_VALUE_PARAMS (  
    p0,  
    p1,  
    p2,  
    p3 ) p0##_type p0, p1##_type p1, p2##_type p2, p3##_type p3
```

### 7.6.1.20 GMOCK\_INTERNAL\_DECL\_AND\_5\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_AND_5_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4 )  p0##_type p0, p1##_type p1, p2##_type p2, p3##_type p3, p4##_type p4
```

### 7.6.1.21 GMOCK\_INTERNAL\_DECL\_AND\_6\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_AND_6_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5 )
```

**Value:**

```
p0##_type p0, p1##_type p1, p2##_type p2, p3##_type p3, p4##_type p4, \
p5##_type p5
```

### 7.6.1.22 GMOCK\_INTERNAL\_DECL\_AND\_7\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_AND_7_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6 )
```

**Value:**

```
p0##_type p0, p1##_type p1, p2##_type p2, p3##_type p3, p4##_type p4, \
p5##_type p5, p6##_type p6
```

### 7.6.1.23 GMOCK\_INTERNAL\_DECL\_AND\_8\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_AND_8_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6,
    p7 )
```

**Value:**

```
p0##_type p0, p1##_type p1, p2##_type p2, p3##_type p3, p4##_type p4, \
p5##_type p5, p6##_type p6, p7##_type p7
```

### 7.6.1.24 GMOCK\_INTERNAL\_DECL\_AND\_9\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_AND_9_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6,
    p7,
    p8 )
```

**Value:**

```
p0##_type p0, p1##_type p1, p2##_type p2, p3##_type p3, p4##_type p4, \
    p5##_type p5, p6##_type p6, p7##_type p7, p8##_type p8 \
```

### 7.6.1.25 GMOCK\_INTERNAL\_DECL\_HAS\_10\_TEMPLATE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_HAS_10_TEMPLATE_PARAMS (
    kind0,
    name0,
    kind1,
    name1,
    kind2,
    name2,
    kind3,
    name3,
    kind4,
    name4,
    kind5,
    name5,
    kind6,
    name6,
    kind7,
    name7,
    kind8,
    name8,
    kind9,
    name9 )
```

**Value:**

```
kind0 name0, kind1 name1, kind2 name2, kind3 name3, kind4 name4, \
    kind5 name5, kind6 name6, kind7 name7, kind8 name8, kind9 name9 \
```

### 7.6.1.26 GMOCK\_INTERNAL\_DECL\_HAS\_1\_TEMPLATE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_HAS_1_TEMPLATE_PARAMS (
    kind0,
    name0 ) kind0 name0
```

**7.6.1.27 GMOCK\_INTERNAL\_DECL\_HAS\_2\_TEMPLATE\_PARAMS**

```
#define GMOCK_INTERNAL_DECL_HAS_2_TEMPLATE_PARAMS (
    kind0,
    name0,
    kind1,
    name1 )  kind0 name0, kind1 name1
```

**7.6.1.28 GMOCK\_INTERNAL\_DECL\_HAS\_3\_TEMPLATE\_PARAMS**

```
#define GMOCK_INTERNAL_DECL_HAS_3_TEMPLATE_PARAMS (
    kind0,
    name0,
    kind1,
    name1,
    kind2,
    name2 )  kind0 name0, kind1 name1, kind2 name2
```

**7.6.1.29 GMOCK\_INTERNAL\_DECL\_HAS\_4\_TEMPLATE\_PARAMS**

```
#define GMOCK_INTERNAL_DECL_HAS_4_TEMPLATE_PARAMS (
    kind0,
    name0,
    kind1,
    name1,
    kind2,
    name2,
    kind3,
    name3 )  kind0 name0, kind1 name1, kind2 name2, kind3 name3
```

**7.6.1.30 GMOCK\_INTERNAL\_DECL\_HAS\_5\_TEMPLATE\_PARAMS**

```
#define GMOCK_INTERNAL_DECL_HAS_5_TEMPLATE_PARAMS (
    kind0,
    name0,
    kind1,
    name1,
    kind2,
    name2,
    kind3,
    name3,
    kind4,
    name4 )  kind0 name0, kind1 name1, kind2 name2, kind3 name3, kind4 name4
```

### 7.6.1.31 GMOCK\_INTERNAL\_DECL\_HAS\_6\_TEMPLATE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_HAS_6_TEMPLATE_PARAMS ( kind0,  
                                                 name0,  
                                                 kind1,  
                                                 name1,  
                                                 kind2,  
                                                 name2,  
                                                 kind3,  
                                                 name3,  
                                                 kind4,  
                                                 name4,  
                                                 kind5,  
                                                 name5 )  kind0 name0, kind1 name1, kind2 name2, kind3 name3, kind4 name4, kind5  
name5
```

### 7.6.1.32 GMOCK\_INTERNAL\_DECL\_HAS\_7\_TEMPLATE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_HAS_7_TEMPLATE_PARAMS ( kind0,  
                                                 name0,  
                                                 kind1,  
                                                 name1,  
                                                 kind2,  
                                                 name2,  
                                                 kind3,  
                                                 name3,  
                                                 kind4,  
                                                 name4,  
                                                 kind5,  
                                                 name5,  
                                                 kind6,  
                                                 name6 )
```

**Value:**

```
kind0 name0, kind1 name1, kind2 name2, kind3 name3, kind4 name4,           \  
      kind5 name5, kind6 name6
```

### 7.6.1.33 GMOCK\_INTERNAL\_DECL\_HAS\_8\_TEMPLATE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_HAS_8_TEMPLATE_PARAMS ( kind0,  
                                                 name0,  
                                                 kind1,  
                                                 name1,  
                                                 kind2,  
                                                 name2,  
                                                 kind3,  
                                                 name3,  
                                                 kind4,
```

```

name4,
kind5,
name5,
kind6,
name6,
kind7,
name7 )

```

**Value:**

```

kind0 name0, kind1 name1, kind2 name2, kind3 name3, kind4 name4,           \
kind5 name5, kind6 name6, kind7 name7

```

**7.6.1.34 GMOCK\_INTERNAL\_DECL\_HAS\_9\_TEMPLATE\_PARAMS**

```
#define GMOCK_INTERNAL_DECL_HAS_9_TEMPLATE_PARAMS (
    kind0,
    name0,
    kind1,
    name1,
    kind2,
    name2,
    kind3,
    name3,
    kind4,
    name4,
    kind5,
    name5,
    kind6,
    name6,
    kind7,
    name7,
    kind8,
    name8 )
```

**Value:**

```

kind0 name0, kind1 name1, kind2 name2, kind3 name3, kind4 name4,           \
kind5 name5, kind6 name6, kind7 name7, kind8 name8

```

**7.6.1.35 GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_0\_VALUE\_PARAMS**

```
#define GMOCK_INTERNAL_DECL_TYPE_AND_0_VALUE_PARAMS( )
```

### 7.6.1.36 GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_10\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_TYPE_AND_10_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6,
    p7,
    p8,
    p9 )
```

**Value:**

```
, typename p0##_type, typename p1##_type, typename p2##_type,
    typename p3##_type, typename p4##_type, typename p5##_type,
    typename p6##_type, typename p7##_type, typename p8##_type,
    typename p9##_type \\\\"
```

### 7.6.1.37 GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_1\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_TYPE_AND_1_VALUE_PARAMS (
    p0 ) , typename p0##_type
```

### 7.6.1.38 GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_2\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_TYPE_AND_2_VALUE_PARAMS (
    p0,
    p1 ) , typename p0##_type, typename p1##_type
```

### 7.6.1.39 GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_3\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_TYPE_AND_3_VALUE_PARAMS (
    p0,
    p1,
    p2 ) , typename p0##_type, typename p1##_type, typename p2##_type
```

### 7.6.1.40 GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_4\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_TYPE_AND_4_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3 )
```

**Value:**

```
, typename p0##_type, typename p1##_type, typename p2##_type,
    typename p3##_type \\\"
```

### 7.6.1.41 GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_5\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_TYPE_AND_5_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4 )
```

**Value:**

```
, typename p0##_type, typename p1##_type, typename p2##_type,
    typename p3##_type, typename p4##_type \\\n
```

### 7.6.1.42 GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_6\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_TYPE_AND_6_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5 )
```

**Value:**

```
, typename p0##_type, typename p1##_type, typename p2##_type,
    typename p3##_type, typename p4##_type, typename p5##_type \\
```

### 7.6.1.43 GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_7\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_TYPE_AND_7_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6 )
```

**Value:**

```
, typename p0##_type, typename p1##_type, typename p2##_type,
    typename p3##_type, typename p4##_type, typename p5##_type,
    typename p6##_type \\
```

#### 7.6.1.44 GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_8\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_TYPE_AND_8_VALUE_PARAMS (  
    p0,  
    p1,  
    p2,  
    p3,  
    p4,  
    p5,  
    p6,  
    p7 )
```

**Value:**

```
, typename p0##_type, typename p1##_type, typename p2##_type,  
    typename p3##_type, typename p4##_type, typename p5##_type,  
    typename p6##_type, typename p7##_type \\\n
```

#### 7.6.1.45 GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_9\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DECL_TYPE_AND_9_VALUE_PARAMS (  
    p0,  
    p1,  
    p2,  
    p3,  
    p4,  
    p5,  
    p6,  
    p7,  
    p8 )
```

**Value:**

```
, typename p0##_type, typename p1##_type, typename p2##_type,  
    typename p3##_type, typename p4##_type, typename p5##_type,  
    typename p6##_type, typename p7##_type, typename p8##_type \\\\n
```

#### 7.6.1.46 GMOCK\_INTERNAL\_DEFN\_AND\_0\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_AND_0_VALUE_PARAMS ( )
```

### 7.6.1.47 GMOCK\_INTERNAL\_DEFN\_AND\_10\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_AND_10_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6,
    p7,
    p8,
    p9 )
```

**Value:**

```
p0##_type p0;
p1##_type p1;
p2##_type p2;
p3##_type p3;
p4##_type p4;
p5##_type p5;
p6##_type p6;
p7##_type p7;
p8##_type p8;
p9##_type p9;
```

```
\ \
\ \
\ \
```

### 7.6.1.48 GMOCK\_INTERNAL\_DEFN\_AND\_1\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_AND_1_VALUE_PARAMS (
    p0 ) p0##_type p0;
```

### 7.6.1.49 GMOCK\_INTERNAL\_DEFN\_AND\_2\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_AND_2_VALUE_PARAMS (
    p0,
    p1 )
```

**Value:**

```
p0##_type p0;
p1##_type p1;
```

```
\
```

### 7.6.1.50 GMOCK\_INTERNAL\_DEFN\_AND\_3\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_AND_3_VALUE_PARAMS (
    p0,
    p1,
    p2 )
```

**Value:**

```
p0##_type p0;
p1##_type p1;
p2##_type p2;
```

```
\
```

```
\
```

### 7.6.1.51 GMOCK\_INTERNAL\_DEFN\_AND\_4\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_AND_4_VALUE_PARAMS (  
    p0,  
    p1,  
    p2,  
    p3 )
```

**Value:**

```
p0##_type p0;  
p1##_type p1;  
p2##_type p2;  
p3##_type p3;
```

### 7.6.1.52 GMOCK\_INTERNAL\_DEFN\_AND\_5\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_AND_5_VALUE_PARAMS (  
    p0,  
    p1,  
    p2,  
    p3,  
    p4 )
```

**Value:**

```
p0##_type p0;  
p1##_type p1;  
p2##_type p2;  
p3##_type p3;  
p4##_type p4;
```

### 7.6.1.53 GMOCK\_INTERNAL\_DEFN\_AND\_6\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_AND_6_VALUE_PARAMS (  
    p0,  
    p1,  
    p2,  
    p3,  
    p4,  
    p5 )
```

**Value:**

```
p0##_type p0;  
p1##_type p1;  
p2##_type p2;  
p3##_type p3;  
p4##_type p4;  
p5##_type p5;
```

### 7.6.1.54 GMOCK\_INTERNAL\_DEFN\_AND\_7\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_AND_7_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6 )
```

**Value:**

```
p0##_type p0;
p1##_type p1;
p2##_type p2;
p3##_type p3;
p4##_type p4;
p5##_type p5;
p6##_type p6;
```

```
\ \
\ \
\ \
```

### 7.6.1.55 GMOCK\_INTERNAL\_DEFN\_AND\_8\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_AND_8_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6,
    p7 )
```

**Value:**

```
p0##_type p0;
p1##_type p1;
p2##_type p2;
p3##_type p3;
p4##_type p4;
p5##_type p5;
p6##_type p6;
p7##_type p7;
```

```
\ \
\ \
\ \
```

### 7.6.1.56 GMOCK\_INTERNAL\_DEFN\_AND\_9\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_AND_9_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6,
    p7,
    p8 )
```

## Value:

```
p0##_type p0;  
p1##_type p1;  
p2##_type p2;  
p3##_type p3;  
p4##_type p4;  
p5##_type p5;  
p6##_type p6;  
p7##_type p7;  
p8##_type p8;
```

— / — / — / — / — /

#### 7.6.1.57 GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_0\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_COPY_AND_0_VALUE_PARAMS( ) { }
```

#### 7.6.1.58 GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_10\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_COPY_AND_10_VALUE_PARAMS(
```

#### 7.6.1.59 GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_1\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_COPY_AND_1_VALUE_PARAMS(
```

#### 7.6.1.60 GMOCK INTERNAL DEFN COPY AND 2 VALUE PARAMS

```
#define GMOCK_INTERNAL_DEFN_COPY_AND_2_VALUE_PARAMS(
```

#### 7.6.1.61 GMOCK INTERNAL DEFN COPY AND 3 VALUE PARAMS

```
#define GMOCK_INTERNAL_DEFN_COPY_AND_3_VALUE_PARAMS (
```

#### 7.6.1.62 GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_4\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_COPY_AND_4_VALUE_PARAMS(
```

### 7.6.1.63 GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_5\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_COPY_AND_5_VALUE_PARAMS (
```

```
... ) = default;
```

### 7.6.1.64 GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_6\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_COPY_AND_6_VALUE_PARAMS (
```

```
... ) = default;
```

### 7.6.1.65 GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_7\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_COPY_AND_7_VALUE_PARAMS (
```

```
... ) = default;
```

### 7.6.1.66 GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_8\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_COPY_AND_8_VALUE_PARAMS (
```

```
... ) = default;
```

### 7.6.1.67 GMOCK\_INTERNAL\_DEFN\_COPY\_AND\_9\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_DEFN_COPY_AND_9_VALUE_PARAMS (
```

```
... ) = default;
```

### 7.6.1.68 GMOCK\_INTERNAL\_INIT\_AND\_0\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_INIT_AND_0_VALUE_PARAMS( ) ()
```

### 7.6.1.69 GMOCK\_INTERNAL\_INIT\_AND\_10\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_INIT_AND_10_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6,
    p7,
    p8,
    p9 )
```

**Value:**

```
(p0##_type gmock_p0, p1##_type gmock_p1, p2##_type gmock_p2,
p3##_type gmock_p3, p4##_type gmock_p4, p5##_type gmock_p5,
p6##_type gmock_p6, p7##_type gmock_p7, p8##_type gmock_p8,
p9##_type gmock_p9)
    : p0(::std::move(gmock_p0)),
    p1(::std::move(gmock_p1)),
    p2(::std::move(gmock_p2)),
    p3(::std::move(gmock_p3)),
    p4(::std::move(gmock_p4)),
    p5(::std::move(gmock_p5)),
    p6(::std::move(gmock_p6)),
    p7(::std::move(gmock_p7)),
    p8(::std::move(gmock_p8)),
    p9(::std::move(gmock_p9))
```



### 7.6.1.70 GMOCK\_INTERNAL\_INIT\_AND\_1\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_INIT_AND_1_VALUE_PARAMS (
    p0 )  (p0##_type gmock_p0) : p0(::std::move(gmock_p0))
```

### 7.6.1.71 GMOCK\_INTERNAL\_INIT\_AND\_2\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_INIT_AND_2_VALUE_PARAMS (
    p0,
    p1 )
```

**Value:**

```
(p0##_type gmock_p0, p1##_type gmock_p1)
    : p0(::std::move(gmock_p0)), p1(::std::move(gmock_p1))
```

### 7.6.1.72 GMOCK\_INTERNAL\_INIT\_AND\_3\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_INIT_AND_3_VALUE_PARAMS (
    p0,
    p1,
    p2 )
```

**Value:**

```
(p0##_type gmock_p0, p1##_type gmock_p1, p2##_type gmock_p2) \
    : p0(::std::move(gmock_p0)),
    p1(::std::move(gmock_p1)),
    p2(::std::move(gmock_p2))
```



### 7.6.1.73 GMOCK\_INTERNAL\_INIT\_AND\_4\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_INIT_AND_4_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3 )
```

**Value:**

```
(p0##_type gmock_p0, p1##_type gmock_p1, p2##_type gmock_p2, \
p3##_type gmock_p3)
    : p0(::std::move(gmock_p0)),
    p1(::std::move(gmock_p1)),
    p2(::std::move(gmock_p2)),
    p3(::std::move(gmock_p3))
```

### 7.6.1.74 GMOCK\_INTERNAL\_INIT\_AND\_5\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_INIT_AND_5_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4 )
```

**Value:**

```
(p0##_type gmock_p0, p1##_type gmock_p1, p2##_type gmock_p2,
p3##_type gmock_p3, p4##_type gmock_p4)
    : p0(::std::move(gmock_p0)),
    p1(::std::move(gmock_p1)),
    p2(::std::move(gmock_p2)),
    p3(::std::move(gmock_p3)),
    p4(::std::move(gmock_p4))
```

### 7.6.1.75 GMOCK\_INTERNAL\_INIT\_AND\_6\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_INIT_AND_6_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5 )
```

**Value:**

```
(p0##_type gmock_p0, p1##_type gmock_p1, p2##_type gmock_p2,
p3##_type gmock_p3, p4##_type gmock_p4, p5##_type gmock_p5)
    : p0(::std::move(gmock_p0)),
    p1(::std::move(gmock_p1)),
    p2(::std::move(gmock_p2)),
    p3(::std::move(gmock_p3)),
    p4(::std::move(gmock_p4)),
    p5(::std::move(gmock_p5))
```

### 7.6.1.76 GMOCK\_INTERNAL\_INIT\_AND\_7\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_INIT_AND_7_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6 )
```

**Value:**

```
(p0##_type gmock_p0, p1##_type gmock_p1, p2##_type gmock_p2,
p3##_type gmock_p3, p4##_type gmock_p4, p5##_type gmock_p5,
p6##_type gmock_p6)
    : p0(:std::move(gmock_p0)),
    p1(:std::move(gmock_p1)),
    p2(:std::move(gmock_p2)),
    p3(:std::move(gmock_p3)),
    p4(:std::move(gmock_p4)),
    p5(:std::move(gmock_p5)),
    p6(:std::move(gmock_p6))
```

### 7.6.1.77 GMOCK\_INTERNAL\_INIT\_AND\_8\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_INIT_AND_8_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6,
    p7 )
```

**Value:**

```
(p0##_type gmock_p0, p1##_type gmock_p1, p2##_type gmock_p2,
p3##_type gmock_p3, p4##_type gmock_p4, p5##_type gmock_p5,
p6##_type gmock_p6, p7##_type gmock_p7)
    : p0(:std::move(gmock_p0)),
    p1(:std::move(gmock_p1)),
    p2(:std::move(gmock_p2)),
    p3(:std::move(gmock_p3)),
    p4(:std::move(gmock_p4)),
    p5(:std::move(gmock_p5)),
    p6(:std::move(gmock_p6)),
    p7(:std::move(gmock_p7))
```

### 7.6.1.78 GMOCK\_INTERNAL\_INIT\_AND\_9\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_INIT_AND_9_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
```

```
p6,
p7,
p8 )
```

**Value:**

```
(p0##_type gmock_p0, p1##_type gmock_p1, p2##_type gmock_p2,
p3##_type gmock_p3, p4##_type gmock_p4, p5##_type gmock_p5,
p6##_type gmock_p6, p7##_type gmock_p7, p8##_type gmock_p8)
: p0(::std::move(gmock_p0)),
p1(::std::move(gmock_p1)),
p2(::std::move(gmock_p2)),
p3(::std::move(gmock_p3)),
p4(::std::move(gmock_p4)),
p5(::std::move(gmock_p5)),
p6(::std::move(gmock_p6)),
p7(::std::move(gmock_p7)),
p8(::std::move(gmock_p8))
```


**7.6.1.79 GMOCK\_INTERNAL\_LIST\_AND\_0\_VALUE\_PARAMS**

```
#define GMOCK_INTERNAL_LIST_AND_0_VALUE_PARAMS( )
```

**7.6.1.80 GMOCK\_INTERNAL\_LIST\_AND\_10\_VALUE\_PARAMS**

```
#define GMOCK_INTERNAL_LIST_AND_10_VALUE_PARAMS(
p0,
p1,
p2,
p3,
p4,
p5,
p6,
p7,
p8,
p9 )  p0, p1, p2, p3, p4, p5, p6, p7, p8, p9
```

**7.6.1.81 GMOCK\_INTERNAL\_LIST\_AND\_1\_VALUE\_PARAMS**

```
#define GMOCK_INTERNAL_LIST_AND_1_VALUE_PARAMS(
p0 ) p0
```

**7.6.1.82 GMOCK\_INTERNAL\_LIST\_AND\_2\_VALUE\_PARAMS**

```
#define GMOCK_INTERNAL_LIST_AND_2_VALUE_PARAMS(
p0,
p1 ) p0, p1
```

### 7.6.1.83 GMOCK\_INTERNAL\_LIST\_AND\_3\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_AND_3_VALUE_PARAMS (  
    p0,  
    p1,  
    p2 ) p0, p1, p2
```

### 7.6.1.84 GMOCK\_INTERNAL\_LIST\_AND\_4\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_AND_4_VALUE_PARAMS (  
    p0,  
    p1,  
    p2,  
    p3 ) p0, p1, p2, p3
```

### 7.6.1.85 GMOCK\_INTERNAL\_LIST\_AND\_5\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_AND_5_VALUE_PARAMS (  
    p0,  
    p1,  
    p2,  
    p3,  
    p4 ) p0, p1, p2, p3, p4
```

### 7.6.1.86 GMOCK\_INTERNAL\_LIST\_AND\_6\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_AND_6_VALUE_PARAMS (  
    p0,  
    p1,  
    p2,  
    p3,  
    p4,  
    p5 ) p0, p1, p2, p3, p4, p5
```

### 7.6.1.87 GMOCK\_INTERNAL\_LIST\_AND\_7\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_AND_7_VALUE_PARAMS (  
    p0,  
    p1,  
    p2,  
    p3,  
    p4,  
    p5,  
    p6 ) p0, p1, p2, p3, p4, p5, p6
```

### 7.6.1.88 GMOCK\_INTERNAL\_LIST\_AND\_8\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_AND_8_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6,
    p7 )  p0, p1, p2, p3, p4, p5, p6, p7
```

### 7.6.1.89 GMOCK\_INTERNAL\_LIST\_AND\_9\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_AND_9_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6,
    p7,
    p8 )  p0, p1, p2, p3, p4, p5, p6, p7, p8
```

### 7.6.1.90 GMOCK\_INTERNAL\_LIST\_HAS\_10\_TEMPLATE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_HAS_10_TEMPLATE_PARAMS (
    kind0,
    name0,
    kind1,
    name1,
    kind2,
    name2,
    kind3,
    name3,
    kind4,
    name4,
    kind5,
    name5,
    kind6,
    name6,
    kind7,
    name7,
    kind8,
    name8,
    kind9,
    name9 )  name0, name1, name2, name3, name4, name5, name6, name7, name8, name9
```

### 7.6.1.91 GMOCK\_INTERNAL\_LIST\_HAS\_1\_TEMPLATE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_HAS_1_TEMPLATE_PARAMS(  
    kind0,  
    name0 ) name0
```

### 7.6.1.92 GMOCK\_INTERNAL\_LIST\_HAS\_2\_TEMPLATE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_HAS_2_TEMPLATE_PARAMS(  
    kind0,  
    name0,  
    kind1,  
    name1 ) name0, name1
```

### 7.6.1.93 GMOCK\_INTERNAL\_LIST\_HAS\_3\_TEMPLATE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_HAS_3_TEMPLATE_PARAMS(  
    kind0,  
    name0,  
    kind1,  
    name1,  
    kind2,  
    name2 ) name0, name1, name2
```

### 7.6.1.94 GMOCK\_INTERNAL\_LIST\_HAS\_4\_TEMPLATE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_HAS_4_TEMPLATE_PARAMS(  
    kind0,  
    name0,  
    kind1,  
    name1,  
    kind2,  
    name2,  
    kind3,  
    name3 ) name0, name1, name2, name3
```

### 7.6.1.95 GMOCK\_INTERNAL\_LIST\_HAS\_5\_TEMPLATE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_HAS_5_TEMPLATE_PARAMS(  
    kind0,  
    name0,  
    kind1,  
    name1,  
    kind2,  
    name2,  
    kind3,  
    name3,  
    kind4,  
    name4 ) name0, name1, name2, name3, name4
```

### 7.6.1.96 GMOCK\_INTERNAL\_LIST\_HAS\_6\_TEMPLATE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_HAS_6_TEMPLATE_PARAMS(
    kind0,
    name0,
    kind1,
    name1,
    kind2,
    name2,
    kind3,
    name3,
    kind4,
    name4,
    kind5,
    name5 )  name0, name1, name2, name3, name4, name5
```

### 7.6.1.97 GMOCK\_INTERNAL\_LIST\_HAS\_7\_TEMPLATE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_HAS_7_TEMPLATE_PARAMS(
    kind0,
    name0,
    kind1,
    name1,
    kind2,
    name2,
    kind3,
    name3,
    kind4,
    name4,
    kind5,
    name5,
    kind6,
    name6 )  name0, name1, name2, name3, name4, name5, name6
```

### 7.6.1.98 GMOCK\_INTERNAL\_LIST\_HAS\_8\_TEMPLATE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_HAS_8_TEMPLATE_PARAMS(
    kind0,
    name0,
    kind1,
    name1,
    kind2,
    name2,
    kind3,
    name3,
    kind4,
    name4,
    kind5,
    name5,
    kind6,
    name6,
    kind7,
    name7 )  name0, name1, name2, name3, name4, name5, name6, name7
```

### 7.6.1.99 GMOCK\_INTERNAL\_LIST\_HAS\_9\_TEMPLATE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_HAS_9_TEMPLATE_PARAMS (
    kind0,
    name0,
    kind1,
    name1,
    kind2,
    name2,
    kind3,
    name3,
    kind4,
    name4,
    kind5,
    name5,
    kind6,
    name6,
    kind7,
    name7,
    kind8,
    name8 )  name0, name1, name2, name3, name4, name5, name6, name7, name8
```

### 7.6.1.100 GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_0\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_TYPE_AND_0_VALUE_PARAMS( )
```

### 7.6.1.101 GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_10\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_TYPE_AND_10_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6,
    p7,
    p8,
    p9 )
```

**Value:**

```
, p0##_type, p1##_type, p2##_type, p3##_type, p4##_type, p5##_type,           \
    p6##_type, p7##_type, p8##_type, p9##_type
```

### 7.6.1.102 GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_1\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_TYPE_AND_1_VALUE_PARAMS (
    p0 ) , p0##_type
```

**7.6.1.103 GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_2\_VALUE\_PARAMS**

```
#define GMOCK_INTERNAL_LIST_TYPE_AND_2_VALUE_PARAMS (
    p0,
    p1 ) , p0##_type, p1##_type
```

**7.6.1.104 GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_3\_VALUE\_PARAMS**

```
#define GMOCK_INTERNAL_LIST_TYPE_AND_3_VALUE_PARAMS (
    p0,
    p1,
    p2 ) , p0##_type, p1##_type, p2##_type
```

**7.6.1.105 GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_4\_VALUE\_PARAMS**

```
#define GMOCK_INTERNAL_LIST_TYPE_AND_4_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3 ) , p0##_type, p1##_type, p2##_type, p3##_type
```

**7.6.1.106 GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_5\_VALUE\_PARAMS**

```
#define GMOCK_INTERNAL_LIST_TYPE_AND_5_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4 ) , p0##_type, p1##_type, p2##_type, p3##_type, p4##_type
```

**7.6.1.107 GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_6\_VALUE\_PARAMS**

```
#define GMOCK_INTERNAL_LIST_TYPE_AND_6_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5 ) , p0##_type, p1##_type, p2##_type, p3##_type, p4##_type, p5##_type
```

### 7.6.1.108 GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_7\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_TYPE_AND_7_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6 ) , p0##_type, p1##_type, p2##_type, p3##_type, p4##_type, p5##_type, p6##_type
type
```

### 7.6.1.109 GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_8\_VALUE\_PARAMS

```
#define GMOCK_INTERNAL_LIST_TYPE_AND_8_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6,
    p7 )
```

**Value:**

```
, p0##_type, p1##_type, p2##_type, p3##_type, p4##_type, p5##_type,
    \p6##_type, p7##_type
```

### 7.6.1.110 GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_9\_VALUE\_PARAMS

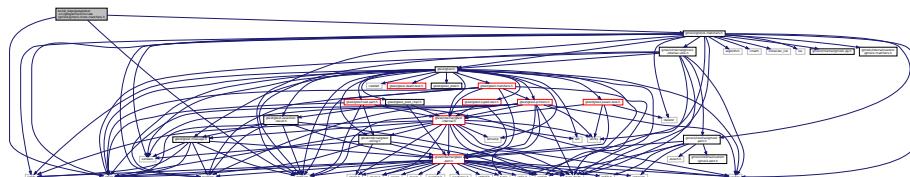
```
#define GMOCK_INTERNAL_LIST_TYPE_AND_9_VALUE_PARAMS (
    p0,
    p1,
    p2,
    p3,
    p4,
    p5,
    p6,
    p7,
    p8 )
```

**Value:**

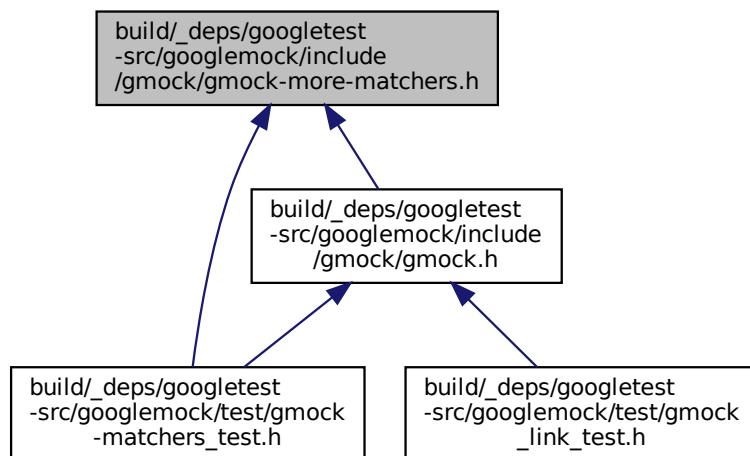
```
, p0##_type, p1##_type, p2##_type, p3##_type, p4##_type, p5##_type,
    \p6##_type, p7##_type, p8##_type
```

## 7.7 build/\_deps/googletest-src/googlemock/include/gmock/gmock-more-matchers.h File Reference

```
#include <iostream>
#include <string>
#include "gmock/gmock-matchers.h"
Include dependency graph for gmock-more-matchers.h:
```



This graph shows which files directly or indirectly include this file:



### Classes

- class [testing::internal::IsEmptyMatcher](#)

### Namespaces

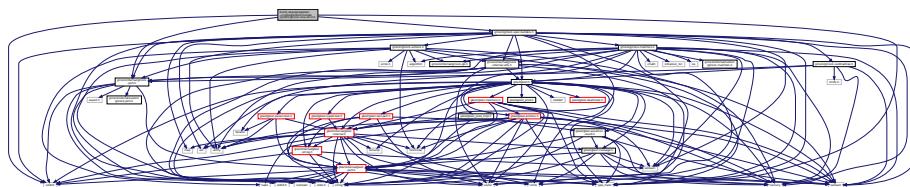
- [testing](#)
- [testing::internal](#)

### Functions

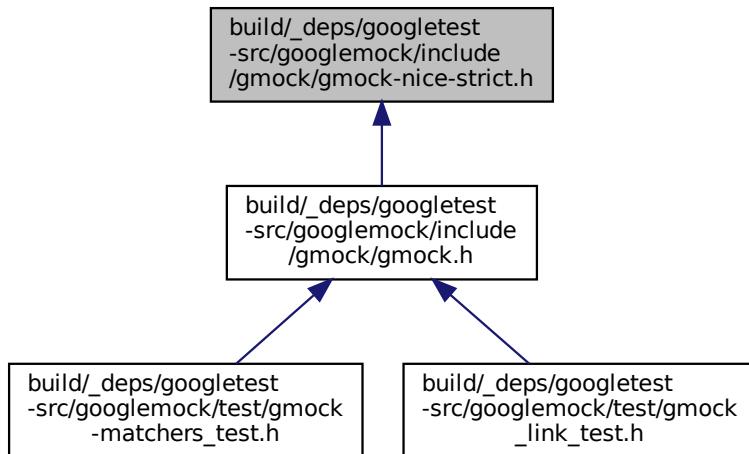
- [PolymorphicMatcher< internal::IsEmptyMatcher > testing::IsEmpty \(\)](#)
- [testing::MATCHER \(IsTrue, negation ? "is false" :"is true"\)](#)
- [testing::MATCHER \(IsFalse, negation ? "is true" :"is false"\)](#)

## 7.8 build/\_deps/googletest-src/googletest/include/gmock/gmock-nice-strict.h File Reference

```
#include <cstdint>
#include <type_traits>
#include "gmock/gmock-spec-builders.h"
#include "gmock/internal/gmock-port.h"
Include dependency graph for gmock-nice-strict.h:
```



This graph shows which files directly or indirectly include this file:



### Classes

- class [testing::internal::NiceMockImpl< Base >](#)
- class [testing::internal::NaggyMockImpl< Base >](#)
- class [testing::internal::StrictMockImpl< Base >](#)
- class [testing::NiceMock< MockClass >](#)
- class [testing::NaggyMock< MockClass >](#)
- class [testing::StrictMock< MockClass >](#)

### Namespaces

- [testing](#)
- [testing::internal](#)

## Macros

- `#define GTEST_INTERNAL_EMPTY_BASE_CLASS`

## Functions

- `template<typename T >`  
`std::true_type testing::internal::StrictnessModifierProbe (const NiceMock< T > &)`
- `template<typename T >`  
`std::true_type testing::internal::StrictnessModifierProbe (const NaggyMock< T > &)`
- `template<typename T >`  
`std::true_type testing::internal::StrictnessModifierProbe (const StrictMock< T > &)`
- `std::false_type testing::internal::StrictnessModifierProbe (...)`
- `template<typename T >`  
`constexpr bool testing::internal::HasStrictnessModifier ()`

### 7.8.1 Macro Definition Documentation

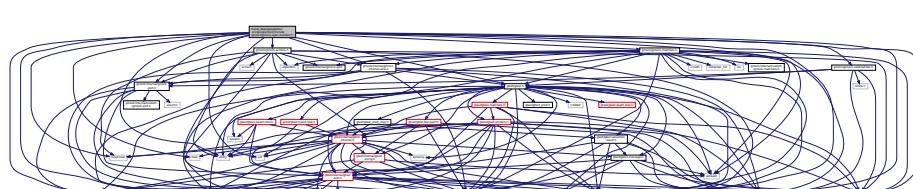
#### 7.8.1.1 GTEST\_INTERNAL\_EMPTY\_BASE\_CLASS

```
#define GTEST_INTERNAL_EMPTY_BASE_CLASS
```

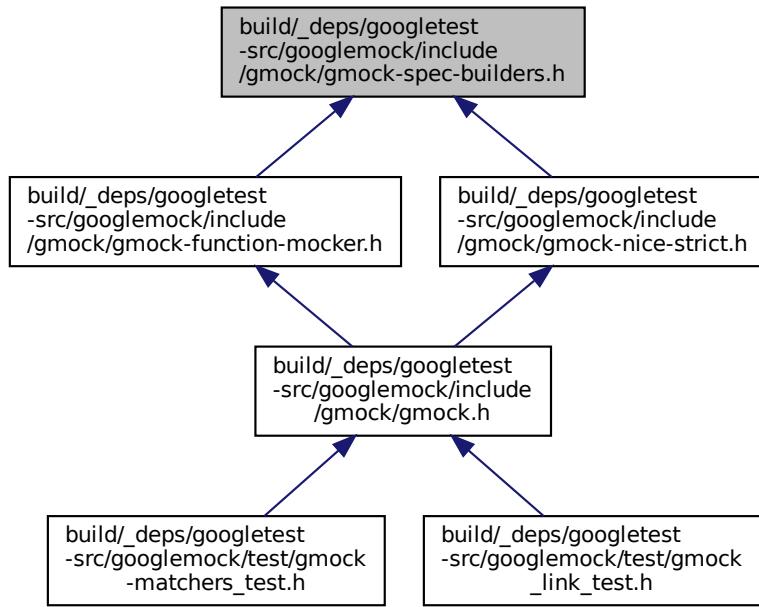
## 7.9 build/\_deps/googletest-src/googlemock/include/gmock/gmock-spec-builders.h File Reference

```
#include <cstdint>
#include <functional>
#include <map>
#include <memory>
#include <iostream>
#include <set>
#include <iostream>
#include <string>
#include <type_traits>
#include <utility>
#include <vector>
#include "gmock/gmock-actions.h"
#include "gmock/gmock-cardinalities.h"
#include "gmock/gmock-matchers.h"
#include "gmock/internal/gmock-internal-utils.h"
#include "gmock/internal/gmock-port.h"
#include "gtest/gtest.h"
```

Include dependency graph for gmock-spec-builders.h:



This graph shows which files directly or indirectly include this file:



## Macros

- `#define GMOCK_ON_CALL_IMPL_(mock_expr, Setter, call)`
- `#define ON_CALL(obj, call) GMOCK_ON_CALL_IMPL_(obj, InternalDefaultActionSetAt, call)`
- `#define EXPECT_CALL(obj, call) GMOCK_ON_CALL_IMPL_(obj, InternalExpectedAt, call)`

## Functions

- `GTEST_DISABLE_MSC_WARNINGS_PUSH_(4251)` namespace testing

### 7.9.1 Macro Definition Documentation

#### 7.9.1.1 EXPECT\_CALL

```
#define EXPECT_CALL(
    obj,
    call )  GMOCK_ON_CALL_IMPL_(obj, InternalExpectedAt, call)
```

### 7.9.1.2 GMOCK\_ON\_CALL\_IMPL\_

```
#define GMOCK_ON_CALL_IMPL_(  
    mock_expr,  
    Setter,  
    call )
```

**Value:**

```
((mock_expr).gmock_##call) (::testing::internal::GetWithoutMatchers(), \  
    nullptr)  
.Setter(__FILE__, __LINE__, #mock_expr, #call)
```

### 7.9.1.3 ON\_CALL

```
#define ON_CALL(  
    obj,  
    call )  GMOCK_ON_CALL_IMPL_(obj, InternalDefaultActionSetAt, call)
```

## 7.9.2 Function Documentation

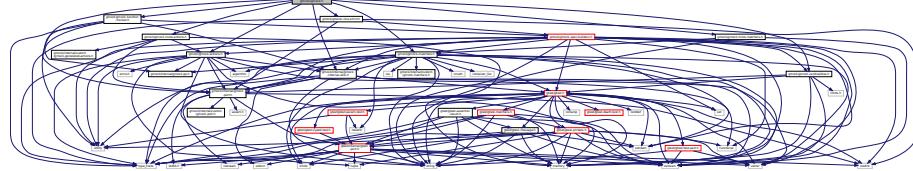
### 7.9.2.1 GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_()

```
GTEST_DISABLE_MSC_WARNINGS_PUSH_ (  
    4251 GTEST_MAYBE_5046_ )
```

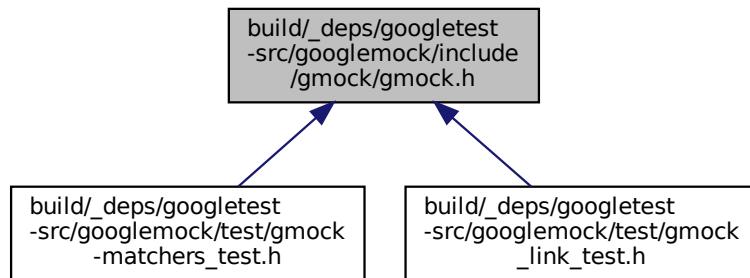
## 7.10 build/\_deps/googletest-src/googletest/include/gmock/gmock.h File Reference

```
#include "gmock/gmock-actions.h"  
#include "gmock/gmock-cardinalities.h"  
#include "gmock/gmock-function-mocker.h"  
#include "gmock/gmock-matchers.h"  
#include "gmock/gmock-more-actions.h"  
#include "gmock/gmock-more-matchers.h"  
#include "gmock/gmock-nice-strict.h"  
#include "gmock/internal/gmock-internal-utils.h"  
#include "gmock/internal/gmock-port.h"
```

Include dependency graph for gmock.h:



This graph shows which files directly or indirectly include this file:



## Namespaces

- [testing](#)

## Functions

- [GMOCK\\_DECLARE\\_bool\\_\(catch\\_leaked\\_mock\)](#)
- [GMOCK\\_DECLARE\\_string\\_\(verbose\)](#)
- [GMOCK\\_DECLARE\\_int32\\_\(default\\_mock\\_behavior\)](#)
- [GTEST\\_API\\_ void testing::InitGoogleMock \(int \\*argc, char \\*\\*argv\)](#)
- [GTEST\\_API\\_ void testing::InitGoogleMock \(int \\*argc, wchar\\_t \\*\\*argv\)](#)
- [GTEST\\_API\\_ void testing::InitGoogleMock \(\)](#)

### 7.10.1 Function Documentation

#### 7.10.1.1 GMOCK\_DECLARE\_bool\_()

```
GMOCK_DECLARE_bool_(
    catch_leaked_mock )
```

#### 7.10.1.2 GMOCK\_DECLARE\_int32\_()

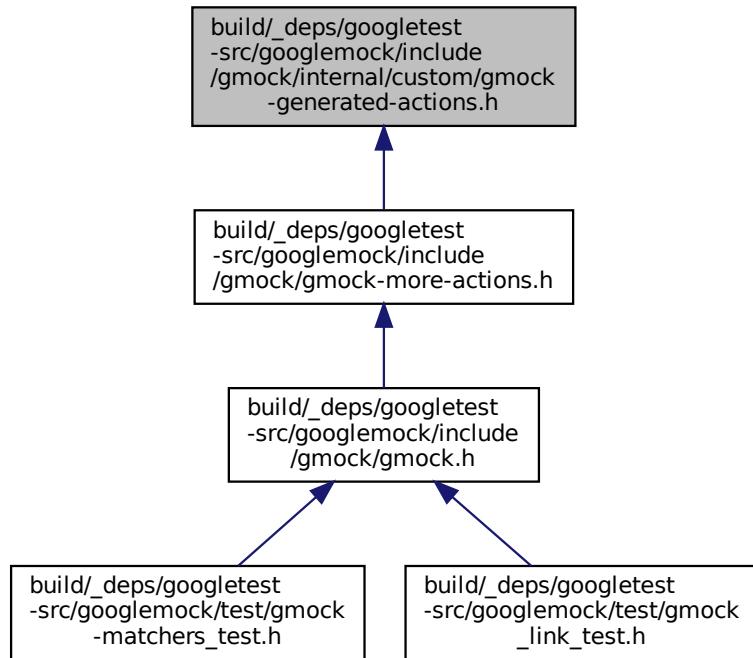
```
GMOCK_DECLARE_int32_(
    default_mock_behavior )
```

#### 7.10.1.3 GMOCK\_DECLARE\_string\_()

```
GMOCK_DECLARE_string_ (
    verbose )
```

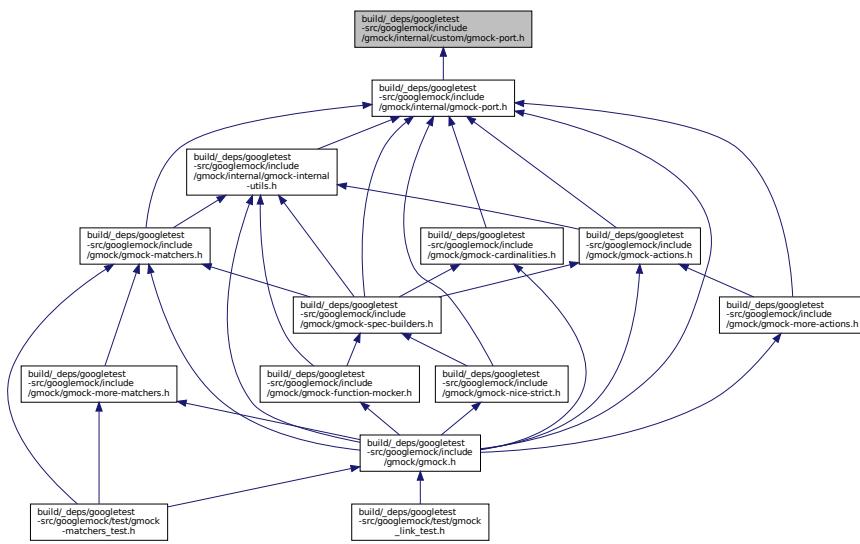
## 7.11 build/\_deps/googletest- src/googletest/include/gmock/internal/custom/gmock-generated- actions.h File Reference

This graph shows which files directly or indirectly include this file:



## 7.12 build/\_deps/googletest- src/googletest/include/gmock/internal/custom/gmock-port.h File Reference

This graph shows which files directly or indirectly include this file:



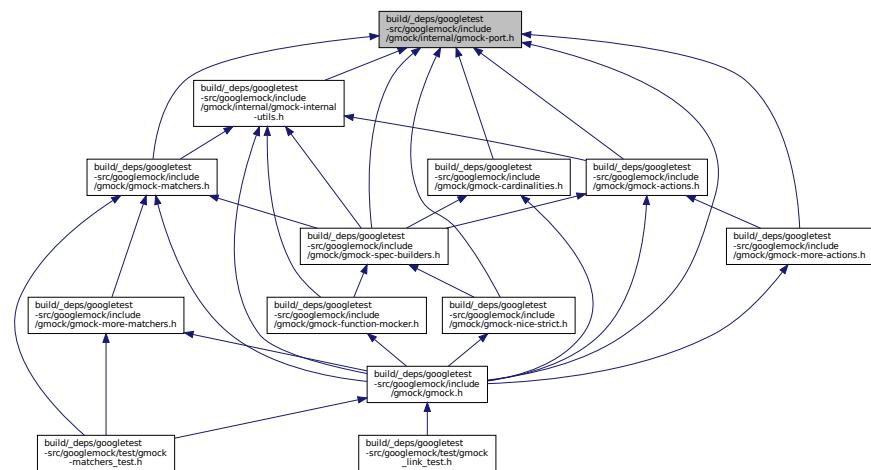
## 7.13 build/\_deps/googletest- src/googletest/include/gmock/internal/gmock-port.h File Reference

```

#include <assert.h>
#include <stdlib.h>
#include <cstdint>
#include <iostream>
#include "gmock/internal/custom/gmock-port.h"
#include "gtest/internal/gtest-port.h"
Include dependency graph for gmock-port.h:
  
```



This graph shows which files directly or indirectly include this file:



## Macros

- #define **GMOCK\_FLAG\_NAME\_(name)** gmock\_##name
- #define **GMOCK\_FLAG(name)** FLAGS\_gmock\_##name
- #define **GMOCK\_DEFINE\_bool\_(name, default\_val, doc)**
- #define **GMOCK\_DEFINE\_int32\_(name, default\_val, doc)**
- #define **GMOCK\_DEFINE\_string\_(name, default\_val, doc)**
- #define **GMOCK\_DECLARE\_bool\_(name)**
- #define **GMOCK\_DECLARE\_int32\_(name)**
- #define **GMOCK\_DECLARE\_string\_(name)**
- #define **GMOCK\_FLAG\_GET(name)** ::testing::GMOCK\_FLAG(name)
- #define **GMOCK\_FLAG\_SET(name, value)** (void)(::testing::GMOCK\_FLAG(name) = value)

### 7.13.1 Macro Definition Documentation

#### 7.13.1.1 GMOCK\_DECLARE\_bool\_

```
#define GMOCK_DECLARE_bool_(
    name )
```

##### Value:

```
namespace testing {
GTEST_API_ extern bool GMOCK_FLAG(name); \
} \
static_assert(true, "no-op to require trailing semicolon")
```

### 7.13.1.2 GMOCK\_DECLARE\_int32\_

```
#define GMOCK_DECLARE_int32_(
    name )
```

**Value:**

```
namespace testing {
GTEST_API_ extern int32_t GMOCK_FLAG(name); \
}
static_assert(true, "no-op to require trailing semicolon")
```

### 7.13.1.3 GMOCK\_DECLARE\_string\_

```
#define GMOCK_DECLARE_string_(
    name )
```

**Value:**

```
namespace testing {
GTEST_API_ extern ::std::string GMOCK_FLAG(name); \
}
static_assert(true, "no-op to require trailing semicolon")
```

### 7.13.1.4 GMOCK\_DEFINE\_bool\_

```
#define GMOCK_DEFINE_bool_(
    name,
    default_val,
    doc )
```

**Value:**

```
namespace testing {
GTEST_API_ bool GMOCK_FLAG(name) = (default_val); \
}
static_assert(true, "no-op to require trailing semicolon")
```

### 7.13.1.5 GMOCK\_DEFINE\_int32\_

```
#define GMOCK_DEFINE_int32_(
    name,
    default_val,
    doc )
```

**Value:**

```
namespace testing {
GTEST_API_ int32_t GMOCK_FLAG(name) = (default_val); \
}
static_assert(true, "no-op to require trailing semicolon")
```

### 7.13.1.6 GMOCK\_DEFINE\_string\_

```
#define GMOCK_DEFINE_string_(name,  
                           default_val,  
                           doc)  
  
Value:  
namespace testing {  
    GTEST_API_ ::std::string GMOCK_FLAG(name) = (default_val); \  
}  
static_assert(true, "no-op to require trailing semicolon")
```

### 7.13.1.7 GMOCK\_FLAG

```
#define GMOCK_FLAG(name) FLAGS_gmock_##name
```

### 7.13.1.8 GMOCK\_FLAG\_GET

```
#define GMOCK_FLAG_GET(name) ::testing::GMOCK_FLAG(name)
```

### 7.13.1.9 GMOCK\_FLAG\_NAME\_

```
#define GMOCK_FLAG_NAME_(name) gmock_##name
```

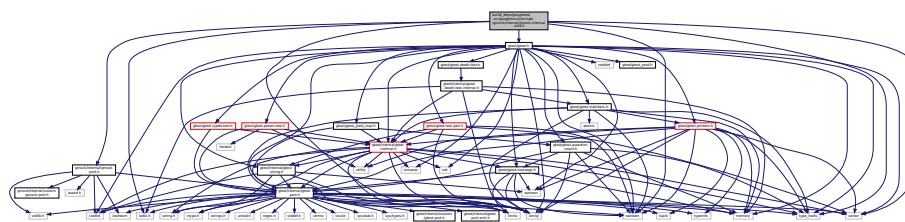
### 7.13.1.10 GMOCK\_FLAG\_SET

```
#define GMOCK_FLAG_SET(name,  
                     value) (void) (::testing::GMOCK_FLAG(name) = value)
```

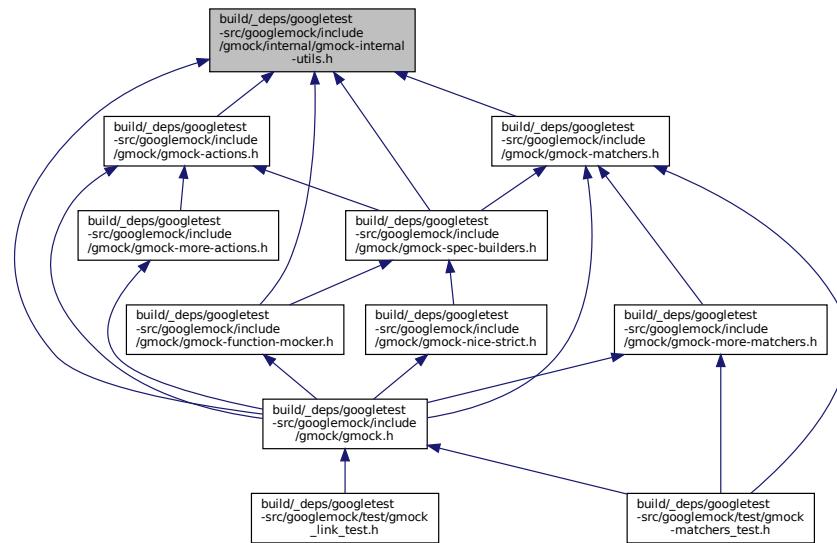
## 7.14 build/\_deps/googletest- src/googletest/include/gmock/internal/gmock-internal-utils.h File Reference

```
#include <stdio.h>
#include <iostream>
#include <string>
#include <type_traits>
#include <vector>
#include "gmock/internal/gmock-port.h"
#include "gtest/gtest.h"

Include dependency graph for gmock-internal-utils.h:
```



This graph shows which files directly or indirectly include this file:



### Classes

- struct [testing::internal::KindOf< T >](#)
- class [testing::internal::FailureReporterInterface](#)
- class [testing::internal::WithoutMatchers](#)
- class [testing::internal::StlContainerView< RawContainer >](#)
- class [testing::internal::StlContainerView< Element\[N\] >](#)
- class [testing::internal::StlContainerView< ::std::tuple< ElementPointer, Size > >](#)
- struct [testing::internal::RemoveConstFromKey< T >](#)
- struct [testing::internal::RemoveConstFromKey< std::pair< const K, V > >](#)
- struct [testing::internal::Function< R\(Args...\) >](#)

## Namespaces

- testing
- testing::internal

## Macros

- #define GMOCK\_INTERNAL\_WARNING\_PUSH()
- #define GMOCK\_INTERNAL\_WARNING\_CLANG(Level, Name)
- #define GMOCK\_INTERNAL\_WARNING\_POP()
- #define GMOCK\_WCHAR\_T\_IS\_NATIVE\_1
- #define GMOCK\_DECLARE\_KIND\_(type, kind)
- #define GMOCK\_KIND\_OF\_(type)

## Typedefs

- template<TypeKind kFromKind, typename From , TypeKind kToKind, typename To >  
using testing::internal::LosslessArithmeticConvertibleImpl = std::integral\_constant< bool,(kFromKind==kFromKind ? true : (kFromKind != kToKind) ? false : (kFromKind==kInteger &&((sizeof(From)< sizeof(To)) &&!(std::is\_signed< From >::value &&!std::is\_signed< To >::value))||(sizeof(From)==sizeof(To)) &&(std::is\_signed< From >::value==std::is\_signed< To >::value))) ? true :(kFromKind==kFloatingPoint &&(sizeof(From)<=sizeof(To))) ? true :false >
- template<typename From , typename To >  
using testing::internal::LosslessArithmeticConvertible = LosslessArithmeticConvertibleImpl< GMock\_KIND\_OF\_(From), From, GMock\_KIND\_OF\_(To), To >
- template<size\_t I, typename T >  
using testing::internal::TupleElement = typename std::tuple\_element< I, T >::type

## Enumerations

- enum testing::internal::TypeKind { testing::internal::kBool , testing::internal::kInteger , testing::internal::kFloatingPoint , testing::internal::kOther }
- enum testing::internal::LogSeverity { testing::internal::kInfo = 0 , testing::internal::kWarning = 1 }

## Functions

- GTEST\_API\_ std::string testing::internal::JoinAsKeyValueTuple (const std::vector< const char \* > &names, const Strings &values)
- GTEST\_API\_ std::string testing::internal::ConvertIdentifierNameToWords (const char \*id\_name)
- template<typename Pointer >  
const Pointer::element\_type \* testing::internal::GetRawPointer (const Pointer &p)
- template<typename Element >  
const Element \* testing::internal::GetRawPointer (const std::reference\_wrapper< Element > &r)
- template<typename Element >  
Element \* testing::internal::GetRawPointer (Element \*p)
- testing::internal::GMOCK\_DECLARE\_KIND\_ (bool, kBool)
- testing::internal::GMOCK\_DECLARE\_KIND\_ (char, kInteger)
- testing::internal::GMOCK\_DECLARE\_KIND\_ (signed char, kInteger)
- testing::internal::GMOCK\_DECLARE\_KIND\_ (unsigned char, kInteger)
- testing::internal::GMOCK\_DECLARE\_KIND\_ (short, kInteger)
- testing::internal::GMOCK\_DECLARE\_KIND\_ (unsigned short, kInteger)
- testing::internal::GMOCK\_DECLARE\_KIND\_ (int, kInteger)

- `testing::internal::GMOCK_DECLARE_KIND_` (unsigned int, kInteger)
- `testing::internal::GMOCK_DECLARE_KIND_` (long, kInteger)
- `testing::internal::GMOCK_DECLARE_KIND_` (unsigned long, kInteger)
- `testing::internal::GMOCK_DECLARE_KIND_` (long long, kInteger)
- `testing::internal::GMOCK_DECLARE_KIND_` (unsigned long long, kInteger)
- `testing::internal::GMOCK_DECLARE_KIND_` (wchar\_t, kInteger)
- `testing::internal::GMOCK_DECLARE_KIND_` (float, kFloatingPoint)
- `testing::internal::GMOCK_DECLARE_KIND_` (double, kFloatingPoint)
- `testing::internal::GMOCK_DECLARE_KIND_` (long double, kFloatingPoint)
- `GTEST_API_` FailureReporterInterface \* `testing::internal::GetFailureReporter ()`
- void `testing::internal::Assert` (bool condition, const char \*file, int line, const std::string &msg)
- void `testing::internal::Assert` (bool condition, const char \*file, int line)
- void `testing::internal::Expect` (bool condition, const char \*file, int line, const std::string &msg)
- void `testing::internal::Expect` (bool condition, const char \*file, int line)
- `GTEST_API_` bool `testing::internal::LogIsVisible` (LogSeverity severity)
- `GTEST_API_` void `testing::internal::Log` (LogSeverity severity, const std::string &message, int stack\_frames←\_to\_skip)
- `GTEST_API_` WithoutMatchers `testing::internal::GetWithoutMatchers ()`
- template<typename T >  
T `testing::internal::Invalid ()`
- `GTEST_API_` void `testing::internal::IllegalDoDefault` (const char \*file, int line)
- template<typename F , typename Tuple , size\_t... Idx>  
auto `testing::internal::ApplyImpl` (F &&f, Tuple &&args, IndexSequence< Idx... >) -> decltype(std::forward< F >(f)(std::get< Idx >(std::forward< Tuple >(args)...)))
- template<typename F , typename Tuple >  
auto `testing::internal::Apply` (F &&f, Tuple &&args) -> decltype(ApplyImpl(std::forward< F >(f), std::forward< Tuple >(args), MakeIndexSequence< std::tuple\_size< typename std::remove\_reference< Tuple >::type >::value >())))
- bool `testing::internal::Base64Unescape` (const std::string &encoded, std::string \*decoded)

## Variables

- const char `testing::internal::kInfoVerbosity` [] = "info"
- const char `testing::internal::kWarningVerbosity` [] = "warning"
- const char `testing::internal::kErrorVerbosity` [] = "error"

### 7.14.1 Macro Definition Documentation

#### 7.14.1.1 GMOCK\_DECLARE\_KIND\_

```
#define GMOCK_DECLARE_KIND_(
    type,
    kind )
```

##### Value:

```
template <>
struct KindOf<type> {
    enum { value = kind };
}
```

#### 7.14.1.2 GMOCK\_INTERNAL\_WARNING\_CLANG

```
#define GMOCK_INTERNAL_WARNING_CLANG( \
    Level, \
    Name )
```

#### 7.14.1.3 GMOCK\_INTERNAL\_WARNING\_POP

```
#define GMOCK_INTERNAL_WARNING_POP( )
```

#### 7.14.1.4 GMOCK\_INTERNAL\_WARNING\_PUSH

```
#define GMOCK_INTERNAL_WARNING_PUSH( )
```

#### 7.14.1.5 GMOCK\_KIND\_OF\_

```
#define GMOCK_KIND_OF_( \
    type )
```

##### Value:

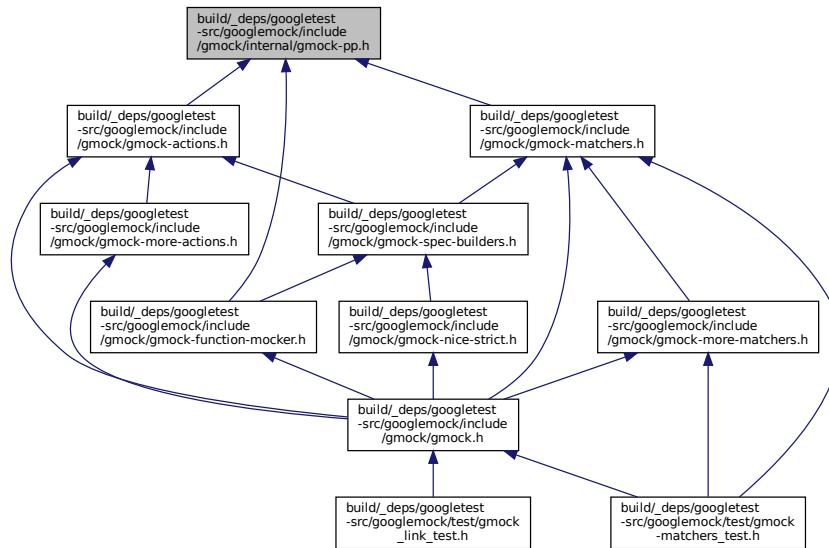
```
static_cast< ::testing::internal::TypeKind>( \  
    ::testing::internal::KindOf<type>::value)
```

#### 7.14.1.6 GMOCK\_WCHAR\_T\_IS\_NATIVE\_

```
#define GMOCK_WCHAR_T_IS_NATIVE_ 1
```

## 7.15 build/\_deps/googletest- src/googletest/include/gmock/internal/gmock-pp.h File Reference

This graph shows which files directly or indirectly include this file:



### Macros

- #define GMOCK\_PP\_CAT(\_1, \_2) GMOCK\_PP\_INTERNAL\_CAT(\_1, \_2)
- #define GMOCK\_PP\_STRINGIZE(...) GMOCK\_PP\_INTERNAL\_STRINGIZE(\_\_VA\_ARGS\_\_)
- #define GMOCK\_PP\_EMPTY(...)
- #define GMOCK\_PP\_COMMA(...),
- #define GMOCK\_PP\_IDENTITY(\_1) \_1
- #define GMOCK\_PP\_NARG(...)
- #define GMOCK\_PP\_HAS\_COMMA(...)
- #define GMOCK\_PP\_HEAD(...) GMOCK\_PP\_INTERNAL\_HEAD((\_\_VA\_ARGS\_\_, unusedArg))
- #define GMOCK\_PP\_TAIL(...) GMOCK\_PP\_INTERNAL\_TAIL((\_\_VA\_ARGS\_\_))
- #define GMOCK\_PP\_VARIADIC\_CALL(\_Macro, ...)
- #define GMOCK\_PP\_IS\_EMPTY(...)
- #define GMOCK\_PP\_IF(\_Cond, \_Then, \_Else) GMOCK\_PP\_CAT(GMOCK\_PP\_INTERNAL\_IF\_, \_Cond)(↔\_Then, \_Else)
- #define GMOCK\_PP\_GENERIC\_IF(\_Cond, \_Then, \_Else) GMOCK\_PP\_REMOVE\_PARENS(GMOCK\_PP\_IF(↔\_Cond, \_Then, \_Else))
- #define GMOCK\_PP\_NARG0(...) GMOCK\_PP\_IF(GMOCK\_PP\_IS\_EMPTY(\_\_VA\_ARGS\_\_), 0, GMOCK\_PP\_NARG(\_\_VA\_ARGS\_\_))
- #define GMOCK\_PP\_IS\_BEGIN\_PARENS(...)
- #define GMOCK\_PP\_IS\_ENCLOSED\_PARENS(...)
- #define GMOCK\_PP\_REMOVE\_PARENS(...) GMOCK\_PP\_INTERNAL\_REMOVE\_PARENS \_\_VA\_ARGS\_\_ ↔
- #define GMOCK\_PP\_FOR\_EACH(\_Macro, \_Data, \_Tuple)
- #define GMOCK\_PP\_REPEAT(\_Macro, \_Data, \_N)
- #define GMOCK\_PP\_INC(\_i) GMOCK\_PP\_CAT(GMOCK\_PP\_INTERNAL\_INC\_, \_i)
- #define GMOCK\_PP\_COMMA\_IF(\_i) GMOCK\_PP\_CAT(GMOCK\_PP\_INTERNAL\_COMMA\_IF\_, \_i)

- #define GMOCK\_PP\_INENRAL\_EMPTY\_TUPLE(,,,,,,,,,,)
- #define GMOCK\_PP\_INTERNAL\_CAT(\_1,\_2)\_1##\_2
- #define GMOCK\_PP\_INTERNAL\_STRINGIZE(...)\_VA\_ARGS\_\_
- #define GMOCK\_PP\_INTERNAL\_CAT\_5(\_1,\_2,\_3,\_4,\_5)\_1##\_2##\_3##\_4##\_5
- #define GMOCK\_PP\_INTERNAL\_IS\_EMPTY(\_1,\_2,\_3,\_4)
- #define GMOCK\_PP\_INTERNAL\_IS\_EMPTY\_CASE\_0001,
- #define GMOCK\_PP\_INTERNAL\_IF\_1(\_Then, \_Else) \_Then
- #define GMOCK\_PP\_INTERNAL\_IF\_0(\_Then, \_Else) \_Else
- #define GMOCK\_PP\_INTERNAL\_INTERNAL\_16TH(\_1, \_2, \_3, \_4, \_5, \_6, \_7, \_8, \_9, \_10, \_11, \_12, \_13, \_14, \_15, \_16, ...) \_16
- #define GMOCK\_PP\_INTERNAL\_16TH(\_Args) GMOCK\_PP\_IDENTITY(GMOCK\_PP\_INTERNAL\_INTERNAL\_16TH \_Args)
- #define GMOCK\_PP\_INTERNAL\_INTERNAL\_HEAD(\_1, ...) \_1
- #define GMOCK\_PP\_INTERNAL\_HEAD(\_Args) GMOCK\_PP\_IDENTITY(GMOCK\_PP\_INTERNAL\_INTERNAL\_HEAD \_Args)
- #define GMOCK\_PP\_INTERNAL\_INTERNAL\_TAIL(\_1, ...) \_VA\_ARGS\_\_
- #define GMOCK\_PP\_INTERNAL\_TAIL(\_Args) GMOCK\_PP\_IDENTITY(GMOCK\_PP\_INTERNAL\_INTERNAL\_TAIL \_Args)
- #define GMOCK\_PP\_INTERNAL\_IBP\_IS\_VARIADIC\_C(...)\_1
- #define GMOCK\_PP\_INTERNAL\_IBP\_IS\_VARIADIC\_R\_1 1,
- #define GMOCK\_PP\_INTERNAL\_IBP\_IS\_VARIADIC\_R\_GMOCK\_PP\_INTERNAL\_IBP\_IS\_VARIADIC\_C 0,
- #define GMOCK\_PP\_INTERNAL\_REMOVE\_PARENS(...) \_VA\_ARGS\_\_
- #define GMOCK\_PP\_INTERNAL\_INC\_0 1
- #define GMOCK\_PP\_INTERNAL\_INC\_1 2
- #define GMOCK\_PP\_INTERNAL\_INC\_2 3
- #define GMOCK\_PP\_INTERNAL\_INC\_3 4
- #define GMOCK\_PP\_INTERNAL\_INC\_4 5
- #define GMOCK\_PP\_INTERNAL\_INC\_5 6
- #define GMOCK\_PP\_INTERNAL\_INC\_6 7
- #define GMOCK\_PP\_INTERNAL\_INC\_7 8
- #define GMOCK\_PP\_INTERNAL\_INC\_8 9
- #define GMOCK\_PP\_INTERNAL\_INC\_9 10
- #define GMOCK\_PP\_INTERNAL\_INC\_10 11
- #define GMOCK\_PP\_INTERNAL\_INC\_11 12
- #define GMOCK\_PP\_INTERNAL\_INC\_12 13
- #define GMOCK\_PP\_INTERNAL\_INC\_13 14
- #define GMOCK\_PP\_INTERNAL\_INC\_14 15
- #define GMOCK\_PP\_INTERNAL\_INC\_15 16
- #define GMOCK\_PP\_INTERNAL\_COMMMA\_IF\_0
- #define GMOCK\_PP\_INTERNAL\_COMMMA\_IF\_1,
- #define GMOCK\_PP\_INTERNAL\_COMMMA\_IF\_2,
- #define GMOCK\_PP\_INTERNAL\_COMMMA\_IF\_3,
- #define GMOCK\_PP\_INTERNAL\_COMMMA\_IF\_4,
- #define GMOCK\_PP\_INTERNAL\_COMMMA\_IF\_5,
- #define GMOCK\_PP\_INTERNAL\_COMMMA\_IF\_6,
- #define GMOCK\_PP\_INTERNAL\_COMMMA\_IF\_7,
- #define GMOCK\_PP\_INTERNAL\_COMMMA\_IF\_8,
- #define GMOCK\_PP\_INTERNAL\_COMMMA\_IF\_9,
- #define GMOCK\_PP\_INTERNAL\_COMMMA\_IF\_10,
- #define GMOCK\_PP\_INTERNAL\_COMMMA\_IF\_11,
- #define GMOCK\_PP\_INTERNAL\_COMMMA\_IF\_12,
- #define GMOCK\_PP\_INTERNAL\_COMMMA\_IF\_13,
- #define GMOCK\_PP\_INTERNAL\_COMMMA\_IF\_14,
- #define GMOCK\_PP\_INTERNAL\_COMMMA\_IF\_15,

- `#define GMOCK_PP_INTERNAL_CALL_MACRO(_Macro, _i, _Data, _element) _Macro(_i, _Data, _← element)`
- `#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_0(_i, _Macro, _Data, _Tuple)`
- `#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_1(_i, _Macro, _Data, _Tuple) GMOCK_PP_INTERNAL_CALL_MACRO(_Macro, _i, _Data, GMOCK_PP_HEAD _Tuple)`
- `#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_2(_i, _Macro, _Data, _Tuple)`
- `#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_3(_i, _Macro, _Data, _Tuple)`
- `#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_4(_i, _Macro, _Data, _Tuple)`
- `#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_5(_i, _Macro, _Data, _Tuple)`
- `#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_6(_i, _Macro, _Data, _Tuple)`
- `#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_7(_i, _Macro, _Data, _Tuple)`
- `#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_8(_i, _Macro, _Data, _Tuple)`
- `#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_9(_i, _Macro, _Data, _Tuple)`
- `#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_10(_i, _Macro, _Data, _Tuple)`
- `#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_11(_i, _Macro, _Data, _Tuple)`
- `#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_12(_i, _Macro, _Data, _Tuple)`
- `#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_13(_i, _Macro, _Data, _Tuple)`
- `#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_14(_i, _Macro, _Data, _Tuple)`
- `#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_15(_i, _Macro, _Data, _Tuple)`

## 7.15.1 Macro Definition Documentation

### 7.15.1.1 GMOCK\_PP\_CAT

```
#define GMOCK_PP_CAT(
    _1,
    _2 ) GMOCK_PP_INTERNAL_CAT(_1, _2)
```

### 7.15.1.2 GMOCK\_PP\_COMMA

```
#define GMOCK_PP_COMMA (
    ... ),
```

### 7.15.1.3 GMOCK\_PP\_COMMA\_IF

```
#define GMOCK_PP_COMMA_IF (
    _i ) GMOCK_PP_CAT(GMOCK_PP_INTERNAL_COMMA_IF_, _i)
```

#### 7.15.1.4 GMOCK\_PP\_EMPTY

```
#define GMOCK_PP_EMPTY(
    ... )
```

#### 7.15.1.5 GMOCK\_PP\_FOR\_EACH

```
#define GMOCK_PP_FOR_EACH(
    _Macro,
    _Data,
    _Tuple )
```

**Value:**

```
GMOCK_PP_CAT(GMOCK_PP_INTERNAL_FOR_EACH_IMPL_, GMOCK_PP_NARGO _Tuple) \
(0, _Macro, _Data, _Tuple)
```

#### 7.15.1.6 GMOCK\_PP\_GENERIC\_IF

```
#define GMOCK_PP_GENERIC_IF(
    _Cond,
    _Then,
    _Else )  GMOCK_PP_REMOVE_PARENS(GMOCK_PP_IF(_Cond, _Then, _Else))
```

#### 7.15.1.7 GMOCK\_PP\_HAS\_COMMA

```
#define GMOCK_PP_HAS_COMMA(
    ... )
```

**Value:**

```
GMOCK_PP_INTERNAL_16TH(
    __VA_ARGS__, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 0, 0))
```

#### 7.15.1.8 GMOCK\_PP\_HEAD

```
#define GMOCK_PP_HEAD(
    ... )  GMOCK_PP_INTERNAL_HEAD((__VA_ARGS__, unusedArg))
```

#### 7.15.1.9 GMOCK\_PP\_IDENTITY

```
#define GMOCK_PP_IDENTITY(
    _1 ) _1
```

### 7.15.1.10 GMOCK\_PP\_IF

```
#define GMOCK_PP_IF(
    _Cond,
    _Then,
    _Else )  GMOCK_PP_CAT(GMOCK_PP_INTERNAL_IF_, _Cond) (_Then, _Else)
```

### 7.15.1.11 GMOCK\_PP\_INC

```
#define GMOCK_PP_INC(
    _i )  GMOCK_PP_CAT(GMOCK_PP_INTERNAL_INC_, _i)
```

### 7.15.1.12 GMOCK\_PP\_INTENRAL\_EMPTY\_TUPLE

```
#define GMOCK_PP_INTENRAL_EMPTY_TUPLE (, , , , , , , , , , , , , , , , )
```

### 7.15.1.13 GMOCK\_PP\_INTERNAL\_16TH

```
#define GMOCK_PP_INTERNAL_16TH(
    _Args )  GMOCK_PP_IDENTITY(GMOCK_PP_INTERNAL_INTERNAL_16TH _Args)
```

### 7.15.1.14 GMOCK\_PP\_INTERNAL\_CALL\_MACRO

```
#define GMOCK_PP_INTERNAL_CALL_MACRO(
    _Macro,
    _i,
    _Data,
    _element )  _Macro(_i, _Data, _element)
```

### 7.15.1.15 GMOCK\_PP\_INTERNAL\_CAT

```
#define GMOCK_PP_INTERNAL_CAT(
    _1,
    _2 )  _1##_2
```

**7.15.1.16 GMOCK\_PP\_INTERNAL\_CAT\_5**

```
#define GMOCK_PP_INTERNAL_CAT_5( _1, _2, _3, _4, _5 ) _1##_2##_3##_4##_5
```

**7.15.1.17 GMOCK\_PP\_INTERNAL\_COMMA\_IF\_0**

```
#define GMOCK_PP_INTERNAL_COMMA_IF_0
```

**7.15.1.18 GMOCK\_PP\_INTERNAL\_COMMA\_IF\_1**

```
#define GMOCK_PP_INTERNAL_COMMA_IF_1 ,
```

**7.15.1.19 GMOCK\_PP\_INTERNAL\_COMMA\_IF\_10**

```
#define GMOCK_PP_INTERNAL_COMMA_IF_10 ,
```

**7.15.1.20 GMOCK\_PP\_INTERNAL\_COMMA\_IF\_11**

```
#define GMOCK_PP_INTERNAL_COMMA_IF_11 ,
```

**7.15.1.21 GMOCK\_PP\_INTERNAL\_COMMA\_IF\_12**

```
#define GMOCK_PP_INTERNAL_COMMA_IF_12 ,
```

**7.15.1.22 GMOCK\_PP\_INTERNAL\_COMMA\_IF\_13**

```
#define GMOCK_PP_INTERNAL_COMMA_IF_13 ,
```

**7.15.1.23 GMOCK\_PP\_INTERNAL\_COMMA\_IF\_14**

```
#define GMOCK_PP_INTERNAL_COMMA_IF_14 ,
```

**7.15.1.24 GMOCK\_PP\_INTERNAL\_COMMA\_IF\_15**

```
#define GMOCK_PP_INTERNAL_COMMA_IF_15 ,
```

**7.15.1.25 GMOCK\_PP\_INTERNAL\_COMMA\_IF\_2**

```
#define GMOCK_PP_INTERNAL_COMMA_IF_2 ,
```

**7.15.1.26 GMOCK\_PP\_INTERNAL\_COMMA\_IF\_3**

```
#define GMOCK_PP_INTERNAL_COMMA_IF_3 ,
```

**7.15.1.27 GMOCK\_PP\_INTERNAL\_COMMA\_IF\_4**

```
#define GMOCK_PP_INTERNAL_COMMA_IF_4 ,
```

**7.15.1.28 GMOCK\_PP\_INTERNAL\_COMMA\_IF\_5**

```
#define GMOCK_PP_INTERNAL_COMMA_IF_5 ,
```

**7.15.1.29 GMOCK\_PP\_INTERNAL\_COMMA\_IF\_6**

```
#define GMOCK_PP_INTERNAL_COMMA_IF_6 ,
```

**7.15.1.30 GMOCK\_PP\_INTERNAL\_COMMA\_IF\_7**

```
#define GMOCK_PP_INTERNAL_COMMA_IF_7 ,
```

### 7.15.1.31 GMOCK\_PP\_INTERNAL\_COMMA\_IF\_8

```
#define GMOCK_PP_INTERNAL_COMMA_IF_8 ,
```

### 7.15.1.32 GMOCK\_PP\_INTERNAL\_COMMA\_IF\_9

```
#define GMOCK_PP_INTERNAL_COMMA_IF_9 ,
```

### 7.15.1.33 GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_0

```
#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_0 (
    _i,
    _Macro,
    _Data,
    _Tuple )
```

### 7.15.1.34 GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_1

```
#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_1 (
    _i,
    _Macro,
    _Data,
    _Tuple )  GMOCK_PP_INTERNAL_CALL_MACRO(_Macro, _i, _Data, GMOCK_PP_HEAD _Tuple)
```

### 7.15.1.35 GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_10

```
#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_10 (
    _i,
    _Macro,
    _Data,
    _Tuple )
```

**Value:**

```
GMOCK_PP_INTERNAL_CALL_MACRO(_Macro, _i, _Data, GMOCK_PP_HEAD _Tuple) \
GMOCK_PP_INTERNAL_FOR_EACH_IMPL_9(GMOCK_PP_INC(_i), _Macro, _Data, \
(GMOCK_PP_TAIL _Tuple))
```

### 7.15.1.36 GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_11

```
#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_11(
    _i,
    _Macro,
    _Data,
    _Tuple )
```

**Value:**

```
GMOCK_PP_INTERNAL_CALL_MACRO(_Macro, _i, _Data, GMOCK_PP_HEAD _Tuple) \
GMOCK_PP_INTERNAL_FOR_EACH_IMPL_10(GMOCK_PP_INC(_i), _Macro, _Data, \
(GMOCK_PP_TAIL _Tuple))
```

### 7.15.1.37 GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_12

```
#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_12(
    _i,
    _Macro,
    _Data,
    _Tuple )
```

**Value:**

```
GMOCK_PP_INTERNAL_CALL_MACRO(_Macro, _i, _Data, GMOCK_PP_HEAD _Tuple) \
GMOCK_PP_INTERNAL_FOR_EACH_IMPL_11(GMOCK_PP_INC(_i), _Macro, _Data, \
(GMOCK_PP_TAIL _Tuple))
```

### 7.15.1.38 GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_13

```
#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_13(
    _i,
    _Macro,
    _Data,
    _Tuple )
```

**Value:**

```
GMOCK_PP_INTERNAL_CALL_MACRO(_Macro, _i, _Data, GMOCK_PP_HEAD _Tuple) \
GMOCK_PP_INTERNAL_FOR_EACH_IMPL_12(GMOCK_PP_INC(_i), _Macro, _Data, \
(GMOCK_PP_TAIL _Tuple))
```

### 7.15.1.39 GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_14

```
#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_14(
    _i,
    _Macro,
    _Data,
    _Tuple )
```

**Value:**

```
GMOCK_PP_INTERNAL_CALL_MACRO(_Macro, _i, _Data, GMOCK_PP_HEAD _Tuple) \
GMOCK_PP_INTERNAL_FOR_EACH_IMPL_13(GMOCK_PP_INC(_i), _Macro, _Data, \
(GMOCK_PP_TAIL _Tuple))
```

### 7.15.1.40 GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_15

```
#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_15(
    _i,
    _Macro,
    _Data,
    _Tuple )
```

**Value:**

```
GMOCK_PP_INTERNAL_CALL_MACRO(_Macro, _i, _Data, GMOCK_PP_HEAD _Tuple) \
GMOCK_PP_INTERNAL_FOR_EACH_IMPL_14(GMOCK_PP_INC(_i), _Macro, _Data, \
                                    (GMOCK_PP_TAIL _Tuple))
```

### 7.15.1.41 GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_2

```
#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_2(
    _i,
    _Macro,
    _Data,
    _Tuple )
```

**Value:**

```
GMOCK_PP_INTERNAL_CALL_MACRO(_Macro, _i, _Data, GMOCK_PP_HEAD _Tuple) \
GMOCK_PP_INTERNAL_FOR_EACH_IMPL_1(GMOCK_PP_INC(_i), _Macro, _Data, \
                                    (GMOCK_PP_TAIL _Tuple))
```

### 7.15.1.42 GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_3

```
#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_3(
    _i,
    _Macro,
    _Data,
    _Tuple )
```

**Value:**

```
GMOCK_PP_INTERNAL_CALL_MACRO(_Macro, _i, _Data, GMOCK_PP_HEAD _Tuple) \
GMOCK_PP_INTERNAL_FOR_EACH_IMPL_2(GMOCK_PP_INC(_i), _Macro, _Data, \
                                    (GMOCK_PP_TAIL _Tuple))
```

### 7.15.1.43 GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_4

```
#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_4(
    _i,
    _Macro,
    _Data,
    _Tuple )
```

**Value:**

```
GMOCK_PP_INTERNAL_CALL_MACRO(_Macro, _i, _Data, GMOCK_PP_HEAD _Tuple) \
GMOCK_PP_INTERNAL_FOR_EACH_IMPL_3(GMOCK_PP_INC(_i), _Macro, _Data, \
                                    (GMOCK_PP_TAIL _Tuple))
```

### 7.15.1.44 GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_5

```
#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_5 (
    _i,
    _Macro,
    _Data,
    _Tuple )
```

**Value:**

```
GMOCK_PP_INTERNAL_CALL_MACRO(_Macro, _i, _Data, GMOCK_PP_HEAD _Tuple) \
GMOCK_PP_INTERNAL_FOR_EACH_IMPL_4(GMOCK_PP_INC(_i), _Macro, _Data, \
(GMOCK_PP_TAIL _Tuple))
```

### 7.15.1.45 GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_6

```
#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_6 (
    _i,
    _Macro,
    _Data,
    _Tuple )
```

**Value:**

```
GMOCK_PP_INTERNAL_CALL_MACRO(_Macro, _i, _Data, GMOCK_PP_HEAD _Tuple) \
GMOCK_PP_INTERNAL_FOR_EACH_IMPL_5(GMOCK_PP_INC(_i), _Macro, _Data, \
(GMOCK_PP_TAIL _Tuple))
```

### 7.15.1.46 GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_7

```
#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_7 (
    _i,
    _Macro,
    _Data,
    _Tuple )
```

**Value:**

```
GMOCK_PP_INTERNAL_CALL_MACRO(_Macro, _i, _Data, GMOCK_PP_HEAD _Tuple) \
GMOCK_PP_INTERNAL_FOR_EACH_IMPL_6(GMOCK_PP_INC(_i), _Macro, _Data, \
(GMOCK_PP_TAIL _Tuple))
```

### 7.15.1.47 GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_8

```
#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_8 (
    _i,
    _Macro,
    _Data,
    _Tuple )
```

**Value:**

```
GMOCK_PP_INTERNAL_CALL_MACRO(_Macro, _i, _Data, GMOCK_PP_HEAD _Tuple) \
GMOCK_PP_INTERNAL_FOR_EACH_IMPL_7(GMOCK_PP_INC(_i), _Macro, _Data, \
(GMOCK_PP_TAIL _Tuple))
```

### 7.15.1.48 GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_9

```
#define GMOCK_PP_INTERNAL_FOR_EACH_IMPL_9 (
    _i,
    _Macro,
    _Data,
    _Tuple )
```

**Value:**

```
GMOCK_PP_INTERNAL_CALL_MACRO(_Macro, _i, _Data, GMOCK_PP_HEAD _Tuple) \
GMOCK_PP_INTERNAL_FOR_EACH_IMPL_8(GMOCK_PP_INC(_i), _Macro, _Data, \
                                    (GMOCK_PP_TAIL _Tuple))
```

### 7.15.1.49 GMOCK\_PP\_INTERNAL\_HEAD

```
#define GMOCK_PP_INTERNAL_HEAD (
    _Args )  GMOCK_PP_IDENTITY(GMOCK_PP_INTERNAL_INTERNAL_HEAD _Args)
```

### 7.15.1.50 GMOCK\_PP\_INTERNAL\_IBP\_IS\_VARIADIC\_C

```
#define GMOCK_PP_INTERNAL_IBP_IS_VARIADIC_C(
    ... ) 1 _
```

### 7.15.1.51 GMOCK\_PP\_INTERNAL\_IBP\_IS\_VARIADIC\_R\_1

```
#define GMOCK_PP_INTERNAL_IBP_IS_VARIADIC_R_1 1,
```

### 7.15.1.52 GMOCK\_PP\_INTERNAL\_IBP\_IS\_VARIADIC\_R\_GMOCK\_PP\_INTERNAL\_IBP\_IS\_VARIADIC\_C

```
#define GMOCK_PP_INTERNAL_IBP_IS_VARIADIC_R_GMOCK_PP_INTERNAL_IBP_IS_VARIADIC_C 0,
```

### 7.15.1.53 GMOCK\_PP\_INTERNAL\_IF\_0

```
#define GMOCK_PP_INTERNAL_IF_0 (
    _Then,
    _Else ) _Else
```

**7.15.1.54 GMOCK\_PP\_INTERNAL\_IF\_1**

```
#define GMOCK_PP_INTERNAL_IF_1( _Then, _Else ) _Then
```

**7.15.1.55 GMOCK\_PP\_INTERNAL\_INC\_0**

```
#define GMOCK_PP_INTERNAL_INC_0 1
```

**7.15.1.56 GMOCK\_PP\_INTERNAL\_INC\_1**

```
#define GMOCK_PP_INTERNAL_INC_1 2
```

**7.15.1.57 GMOCK\_PP\_INTERNAL\_INC\_10**

```
#define GMOCK_PP_INTERNAL_INC_10 11
```

**7.15.1.58 GMOCK\_PP\_INTERNAL\_INC\_11**

```
#define GMOCK_PP_INTERNAL_INC_11 12
```

**7.15.1.59 GMOCK\_PP\_INTERNAL\_INC\_12**

```
#define GMOCK_PP_INTERNAL_INC_12 13
```

**7.15.1.60 GMOCK\_PP\_INTERNAL\_INC\_13**

```
#define GMOCK_PP_INTERNAL_INC_13 14
```

**7.15.1.61 GMOCK\_PP\_INTERNAL\_INC\_14**

```
#define GMOCK_PP_INTERNAL_INC_14 15
```

**7.15.1.62 GMOCK\_PP\_INTERNAL\_INC\_15**

```
#define GMOCK_PP_INTERNAL_INC_15 16
```

**7.15.1.63 GMOCK\_PP\_INTERNAL\_INC\_2**

```
#define GMOCK_PP_INTERNAL_INC_2 3
```

**7.15.1.64 GMOCK\_PP\_INTERNAL\_INC\_3**

```
#define GMOCK_PP_INTERNAL_INC_3 4
```

**7.15.1.65 GMOCK\_PP\_INTERNAL\_INC\_4**

```
#define GMOCK_PP_INTERNAL_INC_4 5
```

**7.15.1.66 GMOCK\_PP\_INTERNAL\_INC\_5**

```
#define GMOCK_PP_INTERNAL_INC_5 6
```

**7.15.1.67 GMOCK\_PP\_INTERNAL\_INC\_6**

```
#define GMOCK_PP_INTERNAL_INC_6 7
```

**7.15.1.68 GMOCK\_PP\_INTERNAL\_INC\_7**

```
#define GMOCK_PP_INTERNAL_INC_7 8
```

### 7.15.1.69 GMOCK\_PP\_INTERNAL\_INC\_8

```
#define GMOCK_PP_INTERNAL_INC_8 9
```

### 7.15.1.70 GMOCK\_PP\_INTERNAL\_INC\_9

```
#define GMOCK_PP_INTERNAL_INC_9 10
```

### 7.15.1.71 GMOCK\_PP\_INTERNAL\_INTERNAL\_16TH

```
#define GMOCK_PP_INTERNAL_INTERNAL_16TH (
    _1,
    _2,
    _3,
    _4,
    _5,
    _6,
    _7,
    _8,
    _9,
    _10,
    _11,
    _12,
    _13,
    _14,
    _15,
    _16,
    ... ) _16
```

### 7.15.1.72 GMOCK\_PP\_INTERNAL\_INTERNAL\_HEAD

```
#define GMOCK_PP_INTERNAL_INTERNAL_HEAD (
    _1,
    ... ) _1
```

### 7.15.1.73 GMOCK\_PP\_INTERNAL\_INTERNAL\_TAIL

```
#define GMOCK_PP_INTERNAL_INTERNAL_TAIL (
    _1,
    ... ) __VA_ARGS__
```

### 7.15.1.74 GMOCK\_PP\_INTERNAL\_IS\_EMPTY

```
#define GMOCK_PP_INTERNAL_IS_EMPTY(
    _1,
    _2,
    _3,
    _4 )
```

**Value:**

```
GMOCK_PP_HAS_COMMA(GMOCK_PP_INTERNAL_CAT_5(GMOCK_PP_INTERNAL_IS_EMPTY_CASE_, \
    _1, _2, _3, _4))
```

### 7.15.1.75 GMOCK\_PP\_INTERNAL\_IS\_EMPTY\_CASE\_0001

```
#define GMOCK_PP_INTERNAL_IS_EMPTY_CASE_0001 ,
```

### 7.15.1.76 GMOCK\_PP\_INTERNAL\_REMOVE\_PARENS

```
#define GMOCK_PP_INTERNAL_REMOVE_PARENS (
    ... ) __VA_ARGS__
```

### 7.15.1.77 GMOCK\_PP\_INTERNAL\_STRINGIZE

```
#define GMOCK_PP_INTERNAL_STRINGIZE(
    ... ) #__VA_ARGS__
```

### 7.15.1.78 GMOCK\_PP\_INTERNAL\_TAIL

```
#define GMOCK_PP_INTERNAL_TAIL(
    _Args ) GMOCK_PP_IDENTITY(GMOCK_PP_INTERNAL_INTERNAL_TAIL _Args)
```

### 7.15.1.79 GMOCK\_PP\_IS\_BEGIN\_PARENS

```
#define GMOCK_PP_IS_BEGIN_PARENS (
    ... )
```

**Value:**

```
GMOCK_PP_HEAD(GMOCK_PP_CAT(GMOCK_PP_INTERNAL_IBP_IS_VARIADIC_R, \
    GMOCK_PP_INTERNAL_IBP_IS_VARIADIC_C __VA_ARGS__))
```

### 7.15.1.80 GMOCK\_PP\_IS\_EMPTY

```
#define GMOCK_PP_IS_EMPTY(
    ... )
```

**Value:**

```
GMOCK_PP_INTERNAL_IS_EMPTY(GMOCK_PP_HAS_COMMAS(VA_ARGS),
    GMOCK_PP_HAS_COMMAS(GMOCK_PP_COMMA(VA_ARGS)), \
    GMOCK_PP_HAS_COMMAS(VA_ARGS()), \
    GMOCK_PP_HAS_COMMAS(GMOCK_PP_COMMA(VA_ARGS())))
```

### 7.15.1.81 GMOCK\_PP\_IS\_ENCLOSED\_PARENS

```
#define GMOCK_PP_IS_ENCLOSED_PARENS(
    ... )
```

**Value:**

```
GMOCK_PP_IF(GMOCK_PP_IS_BEGIN_PARENS(VA_ARGS), \
    GMOCK_PP_IS_EMPTY(GMOCK_PP_EMPTY(VA_ARGS)), 0)
```

### 7.15.1.82 GMOCK\_PP\_NARG

```
#define GMOCK_PP_NARG(
    ... )
```

**Value:**

```
GMOCK_PP_INTERNAL_16TH( \
    VA_ARGS, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0))
```

### 7.15.1.83 GMOCK\_PP\_NARG0

```
#define GMOCK_PP_NARG0(
    ... )    GMOCK_PP_IF(GMOCK_PP_IS_EMPTY(VA_ARGS), 0, GMOCK_PP_NARG(VA_ARGS))
```

### 7.15.1.84 GMOCK\_PP\_REMOVE\_PARENS

```
#define GMOCK_PP_REMOVE_PARENS(
    ... )    GMOCK_PP_INTERNAL_REMOVE_PARENS(VA_ARGS)
```

### 7.15.1.85 GMOCK\_PP\_REPEAT

```
#define GMOCK_PP_REPEAT(
    _Macro,
    _Data,
    _N )
```

**Value:**

```
GMOCK_PP_CAT(GMOCK_PP_INTERNAL_FOR_EACH_IMPL_, _N) \
(0, _Macro, _Data, GMOCK_PP_INTENRAL_EMPTY_TUPLE)
```

### 7.15.1.86 GMOCK\_PP\_STRINGIZE

```
#define GMOCK_PP_STRINGIZE(
    ... ) GMOCK_PP_INTERNAL_STRINGIZE((__VA_ARGS__))
```

### 7.15.1.87 GMOCK\_PP\_TAIL

```
#define GMOCK_PP_TAIL(
    ... ) GMOCK_PP_INTERNAL_TAIL((__VA_ARGS__))
```

### 7.15.1.88 GMOCK\_PP\_VARIADIC\_CALL

```
#define GMOCK_PP_VARIADIC_CALL(
    _Macro,
    ... )
```

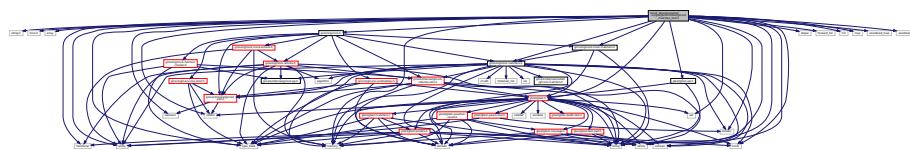
**Value:**

```
GMOCK_PP_IDENTITY(
    GMOCK_PP_CAT(_Macro, GMOCK_PP_NARG(__VA_ARGS__)) __VA_ARGS__ )
```

## 7.16 build/\_deps/googletest-src/googlemock/test/gmock-matchers\_ test.h File Reference

```
#include <string.h>
#include <time.h>
#include <array>
#include <cstdint>
#include <deque>
#include <forward_list>
#include <functional>
#include <iostream>
#include <iterator>
#include <limits>
#include <list>
```

```
#include <map>
#include <memory>
#include <set>
#include <sstream>
#include <string>
#include <type_traits>
#include <unordered_map>
#include <unordered_set>
#include <utility>
#include <vector>
#include "gmock/gmock-matchers.h"
#include "gmock/gmock-more-matchers.h"
#include "gmock/gmock.h"
#include "gtest/gtest-spi.h"
#include "gtest/gtest.h"
Include dependency graph for gmock-matchers_test.h:
```



## Classes

- struct [testing::gmock\\_matchers\\_test::ContainerHelper](#)
- struct [testing::gmock\\_matchers\\_test::GtestGreaterThanMatcher< T >](#)
- class [testing::gmock\\_matchers\\_test::GreaterThanMatcher< T >](#)
- class [testing::gmock\\_matchers\\_test::GTestMatcherTestP](#)

## Namespaces

- [testing](#)
- [testing::gmock\\_matchers\\_test](#)

## Macros

- `#define INSTANTIATE_GTEST_MATCHER_TEST_P(TestSuite)`

## Functions

- template<typename T >  
`GtestGreaterThanMatcher< typename std::decay< T >::type >` [testing::gmock\\_matchers\\_test::GtestGreaterThan](#)  
`(T &&rhs)`
- template<typename T >  
`std::string` [testing::gmock\\_matchers\\_test::Describe](#) (const `Matcher< T > &m)`
- template<typename T >  
`std::string` [testing::gmock\\_matchers\\_test::DescribeNegation](#) (const `Matcher< T > &m)`
- template<typename MatcherType , typename Value >  
`std::string` [testing::gmock\\_matchers\\_test::Explain](#) (const `MatcherType &m`, const `Value &x)`

## 7.16.1 Macro Definition Documentation

### 7.16.1.1 INSTANTIATE\_GTEST\_MATCHER\_TEST\_P

```
#define INSTANTIATE_GTEST_MATCHER_TEST_P(
    TestSuite )
```

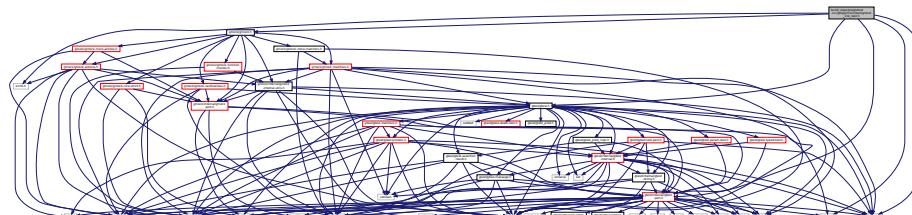
#### Value:

```
using TestSuite##P = GTestMatcherTestP;
INSTANTIATE_TEST_SUITE_P(MatcherInterface, TestSuite##P, Values(false));
INSTANTIATE_TEST_SUITE_P(GtestMatcher, TestSuite##P, Values(true))
```

## 7.17 build/\_deps/googletest-src/googletest/test/gmock\_link\_test.h File Reference

```
#include "gmock/gmock.h"
#include <errno.h>
#include <iostream>
#include <vector>
#include "gtest/gtest.h"
#include "gtest/internal/gtest-port.h"
```

Include dependency graph for gmock\_link\_test.h:



## Classes

- class [Interface](#)
- class [Mock](#)
- class [InvokeHelper](#)
- class [FieldHelper](#)

## Functions

- [TEST \(LinkTest, TestReturnVoid\)](#)
- [TEST \(LinkTest, TestReturn\)](#)
- [TEST \(LinkTest, TestReturnNull\)](#)
- [TEST \(LinkTest, TestReturnRef\)](#)
- [TEST \(LinkTest, TestAssign\)](#)
- [TEST \(LinkTest, TestSetArgPointee\)](#)
- [TEST \(LinkTest, TestSetArrayArgument\)](#)

- [TEST](#) (LinkTest, TestSetErrnoAndReturn)
- [TEST](#) (LinkTest, TestInvoke)
- [TEST](#) (LinkTest, TestInvokeWithoutArgs)
- [TEST](#) (LinkTest, TestInvokeArgument)
- [TEST](#) (LinkTest, TestWithArg)
- [TEST](#) (LinkTest, TestWithArgs)
- [TEST](#) (LinkTest, TestWithoutArgs)
- [TEST](#) (LinkTest, TestDoAll)
- [TEST](#) (LinkTest, TestDoDefault)
- [TEST](#) (LinkTest, TestIgnoreResult)
- [TEST](#) (LinkTest, TestActionMacro)
- [TEST](#) (LinkTest, TestActionPMacro)
- [TEST](#) (LinkTest, TestActionP2Macro)
- [TEST](#) (LinkTest, TestMatcherAnything)
- [TEST](#) (LinkTest, TestMatcherA)
- [TEST](#) (LinkTest, TestMatchersEq)
- [TEST](#) (LinkTest, TestMatchersRelations)
- [TEST](#) (LinkTest, TestMatcherNotNull)
- [TEST](#) (LinkTest, TestMatcherIsNull)
- [TEST](#) (LinkTest, TestMatcherRef)
- [TEST](#) (LinkTest, TestMatcherTypedEq)
- [TEST](#) (LinkTest, TestMatchersFloatingPoint)
- [TEST](#) (LinkTest, TestMatcherContainsRegex)
- [TEST](#) (LinkTest, TestMatcherMatchesRegex)
- [TEST](#) (LinkTest, TestMatchersSubstrings)
- [TEST](#) (LinkTest, TestMatchersStringEquality)
- [TEST](#) (LinkTest, TestMatcherElementsAre)
- [TEST](#) (LinkTest, TestMatcherElementsAreArray)
- [TEST](#) (LinkTest, TestMatcherIsSubsetOf)
- [TEST](#) (LinkTest, TestMatcherIsSupersetOf)
- [TEST](#) (LinkTest, TestMatcherContainerEq)
- [TEST](#) (LinkTest, TestMatcherField)
- [TEST](#) (LinkTest, TestMatcherProperty)
- [TEST](#) (LinkTest, TestMatcherResultOf)
- [TEST](#) (LinkTest, TestMatcherPointee)
- [TEST](#) (LinkTest, TestMatcherTruly)
- [TEST](#) (LinkTest, TestMatcherAllOf)
- [TEST](#) (LinkTest, TestMatcherAnyOf)
- [TEST](#) (LinkTest, TestMatcherNot)
- [TEST](#) (LinkTest, TestMatcherCast)

## 7.17.1 Function Documentation

### 7.17.1.1 TEST() [1/47]

```
TEST (
```

```
    LinkTest ,
```

```
    TestActionMacro )
```

**7.17.1.2 TEST() [2/47]**

```
TEST (
    LinkTest ,
    TestActionP2Macro )
```

**7.17.1.3 TEST() [3/47]**

```
TEST (
    LinkTest ,
    TestActionPMacro )
```

**7.17.1.4 TEST() [4/47]**

```
TEST (
    LinkTest ,
    TestAssign )
```

**7.17.1.5 TEST() [5/47]**

```
TEST (
    LinkTest ,
    TestDoAll )
```

**7.17.1.6 TEST() [6/47]**

```
TEST (
    LinkTest ,
    TestDoDefault )
```

**7.17.1.7 TEST() [7/47]**

```
TEST (
    LinkTest ,
    TestIgnoreResult )
```

**7.17.1.8 TEST() [8/47]**

```
TEST (
    LinkTest ,
    TestInvoke   )
```

**7.17.1.9 TEST() [9/47]**

```
TEST (
    LinkTest ,
    TestInvokeArgument   )
```

**7.17.1.10 TEST() [10/47]**

```
TEST (
    LinkTest ,
    TestInvokeWithoutArgs   )
```

**7.17.1.11 TEST() [11/47]**

```
TEST (
    LinkTest ,
    TestMatcherA   )
```

**7.17.1.12 TEST() [12/47]**

```
TEST (
    LinkTest ,
    TestMatcherAllOf   )
```

**7.17.1.13 TEST() [13/47]**

```
TEST (
    LinkTest ,
    TestMatcherAnyOf   )
```

**7.17.1.14 TEST() [14/47]**

```
TEST (
    LinkTest ,
    TestMatcherAnything )
```

**7.17.1.15 TEST() [15/47]**

```
TEST (
    LinkTest ,
    TestMatcherCast )
```

**7.17.1.16 TEST() [16/47]**

```
TEST (
    LinkTest ,
    TestMatcherContainerEq )
```

**7.17.1.17 TEST() [17/47]**

```
TEST (
    LinkTest ,
    TestMatcherContainsRegex )
```

**7.17.1.18 TEST() [18/47]**

```
TEST (
    LinkTest ,
    TestMatcherElementsAre )
```

**7.17.1.19 TEST() [19/47]**

```
TEST (
    LinkTest ,
    TestMatcherElementsAreArray )
```

**7.17.1.20 TEST() [20/47]**

```
TEST (
    LinkTest ,
    TestMatcherField )
```

**7.17.1.21 TEST() [21/47]**

```
TEST (
    LinkTest ,
    TestMatcherIsNull )
```

**7.17.1.22 TEST() [22/47]**

```
TEST (
    LinkTest ,
    TestMatcherIsSubsetOf )
```

**7.17.1.23 TEST() [23/47]**

```
TEST (
    LinkTest ,
    TestMatcherIsSupersetOf )
```

**7.17.1.24 TEST() [24/47]**

```
TEST (
    LinkTest ,
    TestMatcherMatchesRegex )
```

**7.17.1.25 TEST() [25/47]**

```
TEST (
    LinkTest ,
    TestMatcherNot )
```

**7.17.1.26 TEST() [26/47]**

```
TEST (
    LinkTest ,
    TestMatcherNotNull )
```

**7.17.1.27 TEST() [27/47]**

```
TEST (
    LinkTest ,
    TestMatcherPointee )
```

**7.17.1.28 TEST() [28/47]**

```
TEST (
    LinkTest ,
    TestMatcherProperty )
```

**7.17.1.29 TEST() [29/47]**

```
TEST (
    LinkTest ,
    TestMatcherRef )
```

**7.17.1.30 TEST() [30/47]**

```
TEST (
    LinkTest ,
    TestMatcherResultOf )
```

**7.17.1.31 TEST() [31/47]**

```
TEST (
    LinkTest ,
    TestMatchersEq )
```

**7.17.1.32 TEST() [32/47]**

```
TEST (
    LinkTest ,
    TestMatchersFloatingPoint )
```

**7.17.1.33 TEST() [33/47]**

```
TEST (
    LinkTest ,
    TestMatchersRelations )
```

**7.17.1.34 TEST() [34/47]**

```
TEST (
    LinkTest ,
    TestMatchersStringEquality )
```

**7.17.1.35 TEST() [35/47]**

```
TEST (
    LinkTest ,
    TestMatchersSubstrings )
```

**7.17.1.36 TEST() [36/47]**

```
TEST (
    LinkTest ,
    TestMatcherTruly )
```

**7.17.1.37 TEST() [37/47]**

```
TEST (
    LinkTest ,
    TestMatcherTypedEq )
```

**7.17.1.38 TEST() [38/47]**

```
TEST (
    LinkTest ,
    TestReturn  )
```

**7.17.1.39 TEST() [39/47]**

```
TEST (
    LinkTest ,
    TestReturnNull  )
```

**7.17.1.40 TEST() [40/47]**

```
TEST (
    LinkTest ,
    TestReturnRef  )
```

**7.17.1.41 TEST() [41/47]**

```
TEST (
    LinkTest ,
    TestReturnVoid  )
```

**7.17.1.42 TEST() [42/47]**

```
TEST (
    LinkTest ,
    TestSetArgPointee  )
```

**7.17.1.43 TEST() [43/47]**

```
TEST (
    LinkTest ,
    TestSetArrayArgument  )
```

#### 7.17.1.44 TEST() [44/47]

```
TEST (
    LinkTest ,
    TestSetErrnoAndReturn )
```

#### 7.17.1.45 TEST() [45/47]

```
TEST (
    LinkTest ,
    TestWithArg )
```

#### 7.17.1.46 TEST() [46/47]

```
TEST (
    LinkTest ,
    TestWithArgs )
```

#### 7.17.1.47 TEST() [47/47]

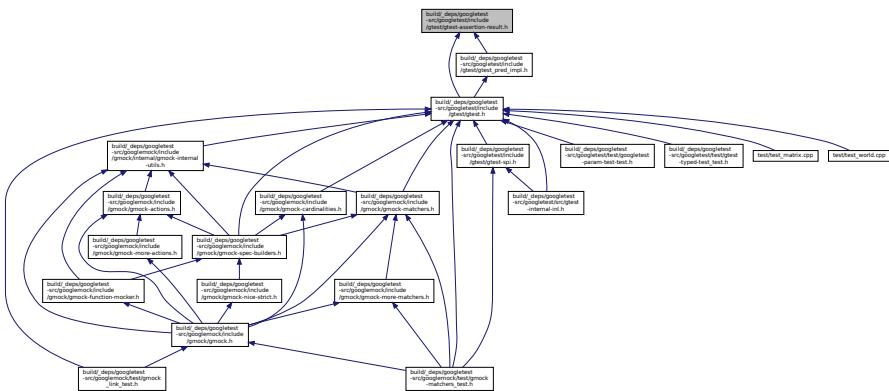
```
TEST (
    LinkTest ,
    TestWithoutArgs )
```

## 7.18 build/\_deps/googletest-src/googletest/include/gtest/gtest-assertion-result.h File Reference

```
#include <memory>
#include <iostream>
#include <string>
#include <type_traits>
#include "gtest/gtest-message.h"
#include "gtest/internal/gtest-port.h"
Include dependency graph for gtest-assertion-result.h:
```



This graph shows which files directly or indirectly include this file:



## Functions

- `GTEST_DISABLE_MSC_WARNINGS_PUSH_`(4251) namespace testing

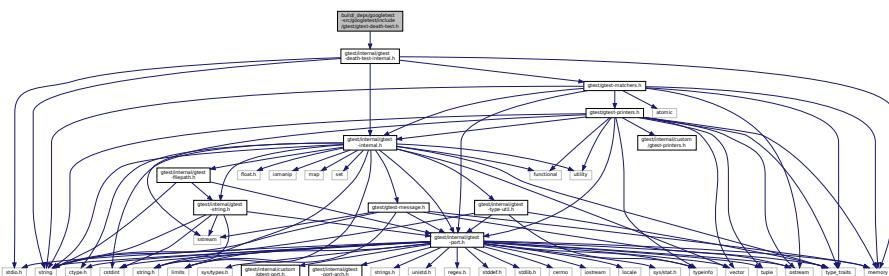
### 7.18.1 Function Documentation

### 7.18.1.1 GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH()

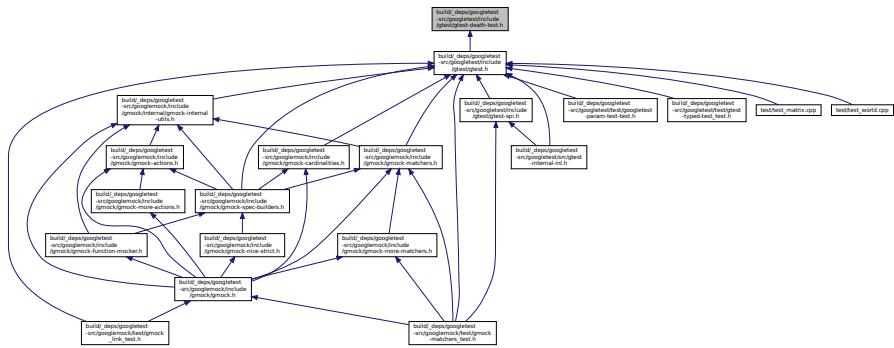
```
GTEST_DISABLE_MSC_WARNINGS_PUSH_ (
```

## 7.19 build/\_deps/googletest-src/googletest/include/gtest/gtest-death-test.h File Reference

```
#include "gtest/internal/gtest-death-test-internal.h"
Include dependency graph for gtest-death-test.h:
```



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

- `GTEST_DECLARE_string_(death_test_style)`

### 7.19.1 Macro Definition Documentation

#### 7.19.1.1 ASSERT DEATH IF SUPPORTED

```
#define ASSERT_DEATH_IF_SUPPORTED(  
    statement,  
    regex )  GTEST_UNSUPPORTED_DEATH_TEST(statement, regex, return)
```

#### **7.19.1.2 EXPECT\_DEATH\_IF\_SUPPORTED**

```
#define EXPECT_DEATH_IF_SUPPORTED(  
    statement,  
    regex )  GTEST_UNSUPPORTED_DEATH_TEST(statement, regex, )
```

### 7.19.1.3 GTEST\_UNSUPPORTED\_DEATH\_TEST

```
#define GTEST_UNSUPPORTED_DEATH_TEST(  
    statement,  
    regex,  
    terminator )
```

**Value:**

```
GTEST_AMBIGUOUS_ELSE_BLOCKER_
if (::testing::internal::AlwaysTrue()) {
    GTEST_LOG_(WARNING) << "Death tests are not supported on this platform.\n"
                           << "Statement '" #statement "' cannot be verified.";
} else if (::testing::internal::AlwaysFalse()) {
    ::testing::internal::RE::PartialMatch(".*", (regex));
    GTEST_SUPPRESS_UNREACHABLE_CODE_WARNING_BELOW_(statement);
    terminator;
} else
    ::testing::Message()
```

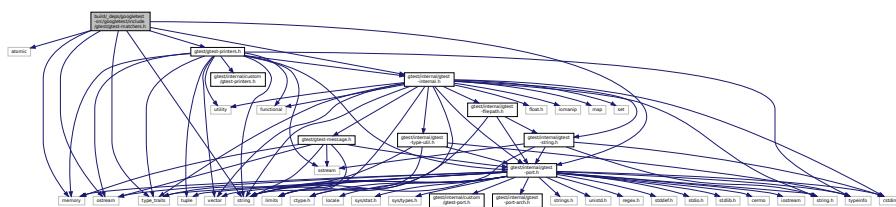
## 7.19.2 Function Documentation

#### 7.19.2.1 GTEST\_DECLARE\_string\_()

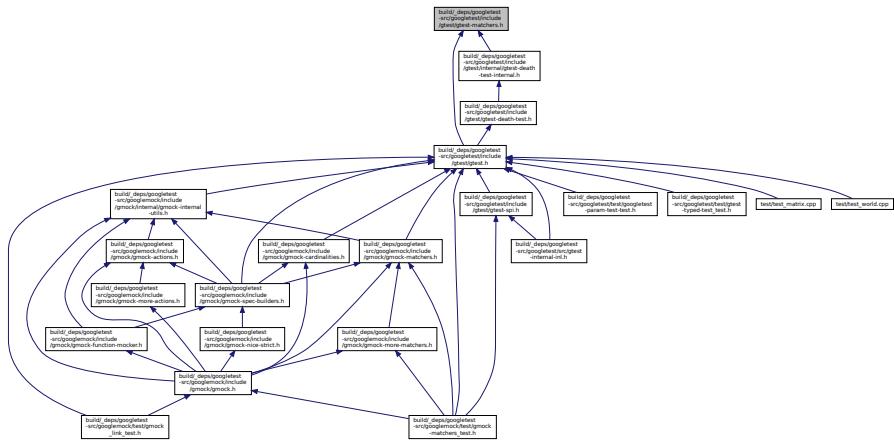
```
GTEST_DECLARE_string_ (  
    death_test_style )
```

## 7.20 build/\_deps/googletest-src/googletest/include/gtest/gtest-matchers.h File Reference

```
#include <atomic>
#include <memory>
#include <iostream>
#include <string>
#include <type_traits>
#include "gtest/gtest-printers.h"
#include "gtest/internal/gtest-internal.h"
#include "gtest/internal/gtest-port.h"
Include dependency graph for gtest-matchers.h:
```



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

### **7.20.1 Macro Definition Documentation**

### 7.20.1.1 GTEST MAYBE 5046

```
#define GTEST_MAYBE_5046_
```

## 7.20.2 Function Documentation

#### 7.20.2.1 GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_()

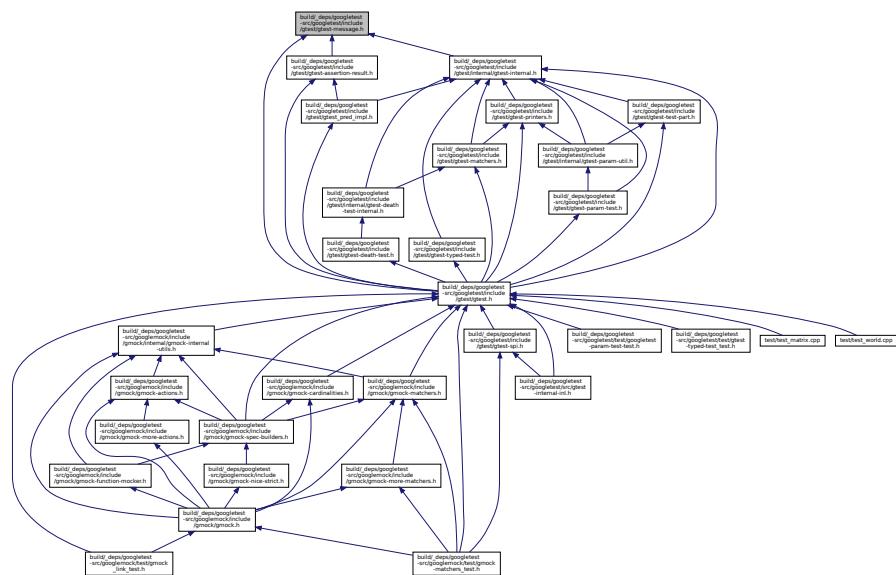
```
GTEST_DISABLE_MSC_WARNINGS_PUSH_ (
```

## 7.21 build/\_deps/googletest-src/googletest/include/gtest/gtest-message.h File Reference

```
#include <limits>
#include <memory>
#include <iostream>
#include <iostream>
#include <sstream>
#include <string>
#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

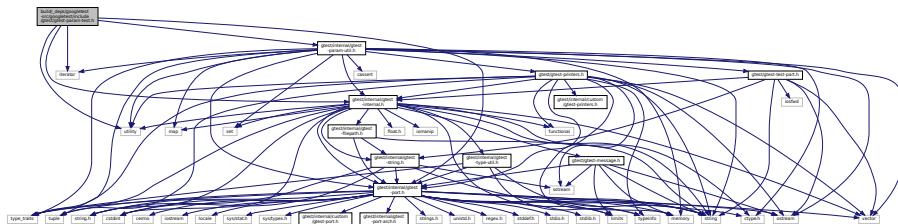
- testing
  - testing::internal

## Functions

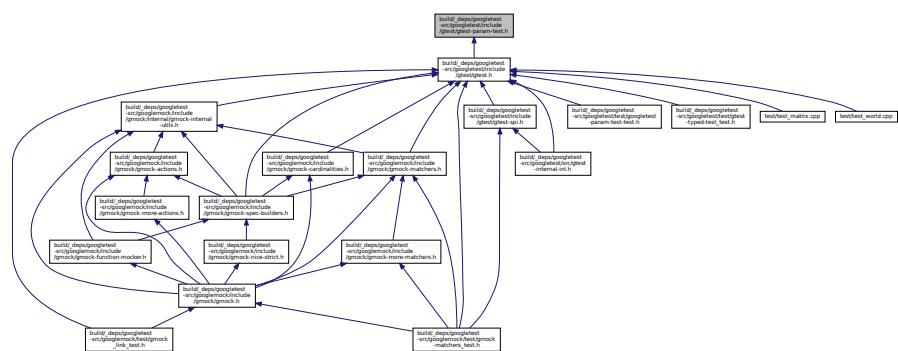
- std::ostream & `testing::operator<<` (std::ostream &os, const Message &sb)
  - template<typename T>  
  std::string `testing::internal::StreamableToString` (const T &streamable)

## 7.22 build/\_deps/googletest-src/googletest/include/gtest/gtest-param-test.h File Reference

```
#include <iterator>
#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 GTEST_ALLOW_UNINSTANTIATED_PARAMETERIZED_TEST(T)`
- `#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 std::iterator\_traits< 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)
- template<typename T >  
internal::ParamConverterGenerator< T > **testing::ConvertGenerator** (internal::ParamGenerator< T > gen)

### 7.22.1 Macro Definition Documentation

#### 7.22.1.1 GTEST\_ALLOW\_UNINSTANTIATED\_PARAMETERIZED\_TEST

```
#define GTEST_ALLOW_UNINSTANTIATED_PARAMETERIZED_TEST(
    T )
```

##### Value:

```
namespace gtest_do_not_use_outside_namespace_scope {} \
static const ::testing::internal::MarkAsIgnored gtest_allow_ignore_##T( \
    GTEST_STRINGIFY_(T))
```

#### 7.22.1.2 GTEST\_EXPAND\_

```
#define GTEST_EXPAND_(
    arg ) arg
```

#### 7.22.1.3 GTEST\_GET\_FIRST\_

```
#define GTEST_GET_FIRST_(
    first,
    ... ) first
```

#### 7.22.1.4 GTEST\_GET\_SECOND\_

```
#define GTEST_GET_SECOND_(
    first,
    second,
    ... ) second
```

#### 7.22.1.5 INSTANTIATE\_TEST\_CASE\_P

```
#define INSTANTIATE_TEST_CASE_P
```

**Value:**

```
static_assert(::testing::internal::InstantiateTestCase_P_IsDeprecated(), \
    "");
INSTANTIATE_TEST_SUITE_P
```

#### 7.22.1.6 INSTANTIATE\_TEST\_SUITE\_P

```
#define INSTANTIATE_TEST_SUITE_P(
    prefix,
    test_suite_name,
    ... )
```

#### 7.22.1.7 TEST\_P

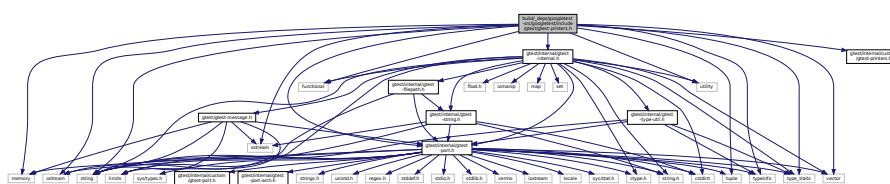
```
#define TEST_P(
    test_suite_name,
    test_name )
```

**Value:**

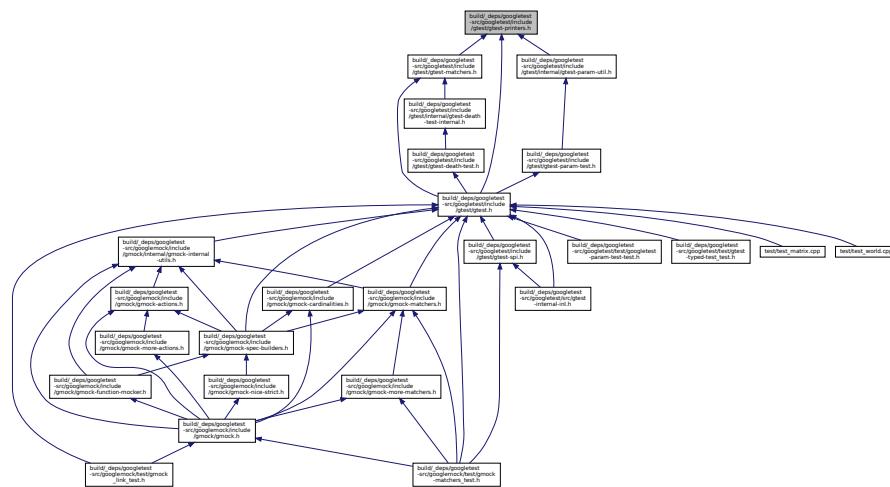
```
class GTEST_TEST_CLASS_NAME_(test_suite_name, test_name)
    : public test_suite_name, private ::testing::internal::GTestNonCopyable {
public:
    GTEST_TEST_CLASS_NAME_(test_suite_name, test_name) {}
    void TestBody() override; \
private:
    static int AddToRegistry() {
        ::testing::UnitTest::GetInstance() \
            ->parameterized_test_registry() \
            .GetTestSuitePatternHolder<test_suite_name>(
                GTEST_STRINGIFY_(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)>(),
            ::testing::internal::CodeLocation(__FILE__, __LINE__));
    }
    return 0;
}
static int gtest_registering_dummy_ GTEST_ATTRIBUTE_UNUSED_;
}; \
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()
```

## 7.23 build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h File Reference

```
#include <functional>
#include <memory>
#include <iostream>
#include <sstream>
#include <string>
#include <tuple>
#include <type_traits>
#include <typeinfo>
#include <utility>
#include <vector>
#include "gtest/internal/gtest-internal.h"
#include "gtest/internal/gtest-port.h"
#include "gtest/internal/custom/gtest-printers.h"
Include dependency graph for gtest-printers.h:
```



This graph shows which files directly or indirectly include this file:



## Classes

- struct `testing::internal::ContainerPrinter`
  - struct `testing::internal::FunctionPointerPrinter`
  - struct `testing::internal::PointerPrinter`
  - struct `testing::internal::internal_stream_operator_without_lexical_name_lookup::LookupBlocker`
  - struct `testing::internal::internal_stream operator without lexical name lookup::StreamPrinter`

- struct `testing::internal::ProtobufPrinter`
- struct `testing::internal::ConvertibleToIntegerPrinter`
- struct `testing::internal::ConvertibleToStringViewPrinter`
- struct `testing::internal::RawBytesPrinter`
- struct `testing::internal::FallbackPrinter`
- struct `testing::internal::FindFirstPrinter< T, E, Printer, Printers >`
- struct `testing::internal::FindFirstPrinter< T, decltype(Printer::PrintValue(std::declval< const T & >()), nullptr), Printer, Printers... >`
- class `testing::internal::FormatForComparison< ToPrint, OtherOperand >`
- class `testing::internal::FormatForComparison< ToPrint[N], OtherOperand >`
- class `testing::internal::UniversalPrinter< T >`
- class `testing::internal::UniversalPrinter< const 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< std::reference_wrapper< T > >`
- class `testing::internal::UniversalTersePrinter< T[N]>`
- class `testing::internal::UniversalTersePrinter< const char * >`
- class `testing::internal::UniversalTersePrinter< char * >`
- class `testing::internal::UniversalTersePrinter< const char16_t * >`
- class `testing::internal::UniversalTersePrinter< char16_t * >`
- class `testing::internal::UniversalTersePrinter< const char32_t * >`
- class `testing::internal::UniversalTersePrinter< char32_t * >`
- class `testing::internal::UniversalTersePrinter< wchar_t * >`

## Namespaces

- `testing`
- `testing::internal`
- `testing::internal::internal_stream_operator_without_lexical_name_lookup`

## 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`

## Functions

- template<typename T >  
void [testing::internal::UniversalPrint](#) (const T &value, ::std::ostream \*os)
- void [testing::internal::internal\\_stream\\_operator\\_without\\_lexical\\_name\\_lookup::operator<<](#) (LookupBlocker, LookupBlocker)
- [GTEST\\_API\\_ void testing::internal::PrintBytesInObjectTo](#) (const unsigned char \*obj\_bytes, size\_t count, ← ::std::ostream \*os)
- template<typename T >  
void [testing::internal::PrintWithFallback](#) (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\\_POINTER\\_](#) (char16\_t)
- [testing::internal::GTEST\\_IMPL\\_FORMAT\\_C\\_STRING\\_AS\\_POINTER\\_](#) (char32\_t)
- [testing::internal::GTEST\\_IMPL\\_FORMAT\\_C\\_STRING\\_AS\\_STRING\\_](#) (char, ::std::string)
- [testing::internal::GTEST\\_IMPL\\_FORMAT\\_C\\_STRING\\_AS\\_STRING\\_](#) (char16\_t, ::std::u16string)
- [testing::internal::GTEST\\_IMPL\\_FORMAT\\_C\\_STRING\\_AS\\_STRING\\_](#) (char32\_t, ::std::u32string)
- template<typename T1 , typename T2 >  
std::string [testing::internal::FormatForComparisonFailureMessage](#) (const T1 &value, const T2 &)
- 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](#) (char32\_t c, ::std::ostream \*os)
- void [testing::internal::PrintTo](#) (char16\_t c, ::std::ostream \*os)
- template<typename FloatType >  
int [testing::internal::AppropriateResolution](#) (FloatType val)
- void [testing::internal::PrintTo](#) (float f, ::std::ostream \*os)
- void [testing::internal::PrintTo](#) (double d, ::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 char16\_t \*s, ::std::ostream \*os)
- void [testing::internal::PrintTo](#) (char16\_t \*s, ::std::ostream \*os)
- [GTEST\\_API\\_ void testing::internal::PrintTo](#) (const char32\_t \*s, ::std::ostream \*os)
- void [testing::internal::PrintTo](#) (char32\_t \*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)
- [GTEST\\_API\\_ void testing::internal::PrintU16StringTo](#) (const ::std::u16string &s, ::std::ostream \*os)
- void [testing::internal::PrintTo](#) (const ::std::u16string &s, ::std::ostream \*os)
- [GTEST\\_API\\_ void testing::internal::PrintU32StringTo](#) (const ::std::u32string &s, ::std::ostream \*os)
- void [testing::internal::PrintTo](#) (const ::std::u32string &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)

- const void \* `testing::internal::VoidifyPointer` (const void \*p)
- const void \* `testing::internal::VoidifyPointer` (volatile const void \*p)
- template<typename T , typename Ptr >  
void `testing::internal::PrintSmartPointer` (const Ptr &ptr, std::ostream \*os, char)
- template<typename T , typename Ptr , typename = typename std::enable\_if<!std::is\_void<T>::value && !std::is\_array<T>::value>><--  
::type>  
void `testing::internal::PrintSmartPointer` (const Ptr &ptr, std::ostream \*os, int)
- template<typename T , typename D >  
void `testing::internal::PrintTo` (const std::unique\_ptr< T, D > &ptr, std::ostream \*os)
- template<typename T >  
void `testing::internal::PrintTo` (const std::shared\_ptr< T > &ptr, 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 \*)
- 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 char16\_t \*begin, size\_t len, ::std::ostream \*os)
- **GTEST\_API\_** void `testing::internal::UniversalPrintArray` (const char32\_t \*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)

## 7.23.1 Macro Definition Documentation

### 7.23.1.1 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));
    }
}
```

### 7.23.1.2 GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_STRING\_

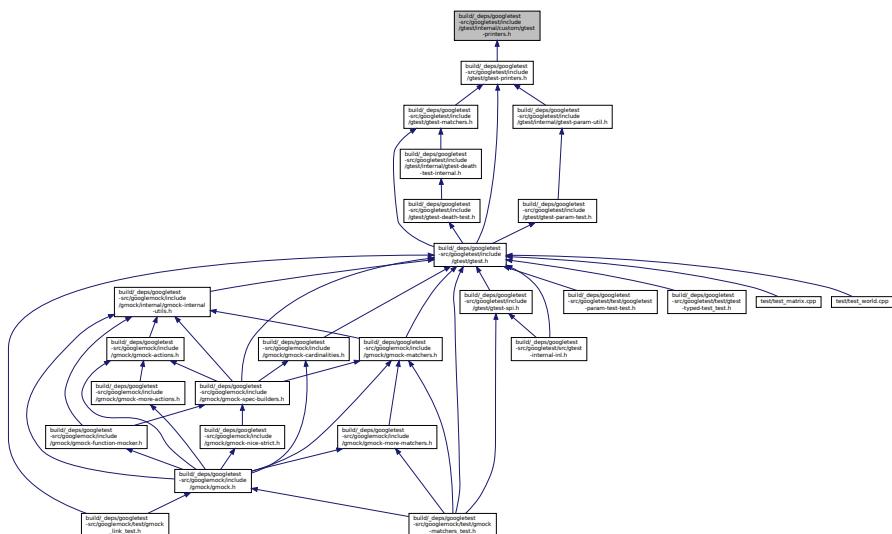
```
#define GTEST_IMPL_FORMAT_C_STRING_AS_STRING_(  
    CharType,  
    OtherStringType )
```

**Value:**

```
template <>  
class FormatForComparison<CharType*, OtherStringType> {  
public:  
    static ::std::string Format(CharType* value) {  
        return ::testing::PrintToString(value);  
    }  
}
```

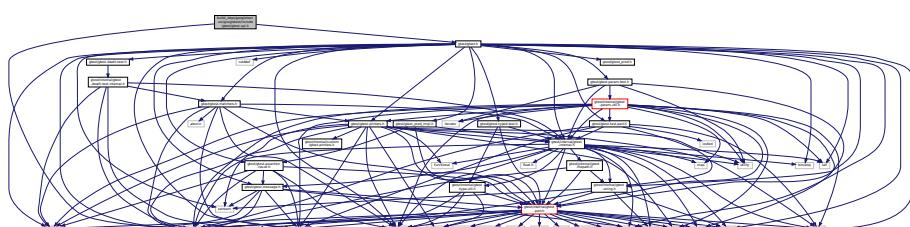
## 7.24 build/\_deps/googletest-src/gtest/include/gtest/internal/custom/gtest-printers.h File Reference

This graph shows which files directly or indirectly include this file:

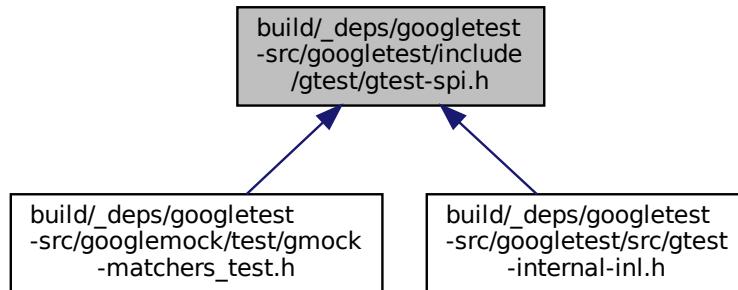


## 7.25 build/\_deps/googletest-src/gtest/include/gtest/gtest-spi.h File Reference

```
#include <string>  
#include "gtest/gtest.h"  
Include dependency graph for gtest-spi.h:
```



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

### 7.25.1 Macro Definition Documentation

#### 7.25.1.1 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())
```

### 7.25.1.2 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())
```

### 7.25.1.3 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())
```

### 7.25.1.4 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())
```

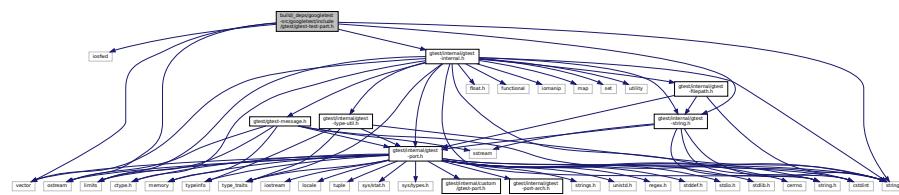
## 7.25.2 Function Documentation

### 7.25.2.1 GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_()

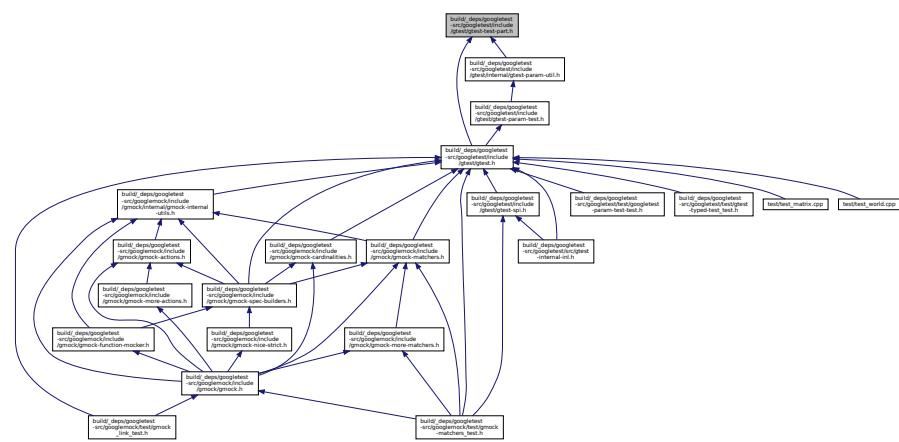
```
GTEST_DISABLE_MSC_WARNINGS_PUSH_
    4251 GMOCK_MAYBE_5046_ )
```

## 7.26 build/\_deps/googletest-src/googletest/include/gtest/gtest-test-part.h File Reference

```
#include <iostream>
#include <sstream>
#include <string>
#include <vector>
#include "gtest/internal/gtest-internal.h"
#include "gtest/internal/gtest-string.h"
Include dependency graph for gtest-test-part.h:
```



This graph shows which files directly or indirectly include this file:



## Functions

- `GTEST_DISABLE_MSC_WARNINGS_PUSH_` (4251) namespace testing

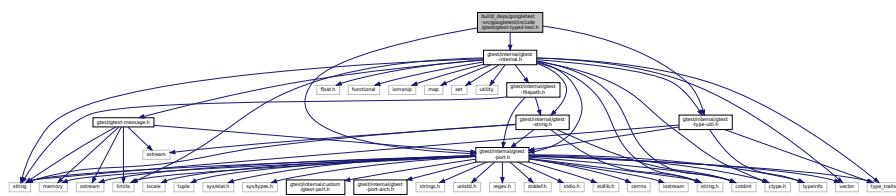
## 7.26.1 Function Documentation

#### 7.26.1.1 GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_()

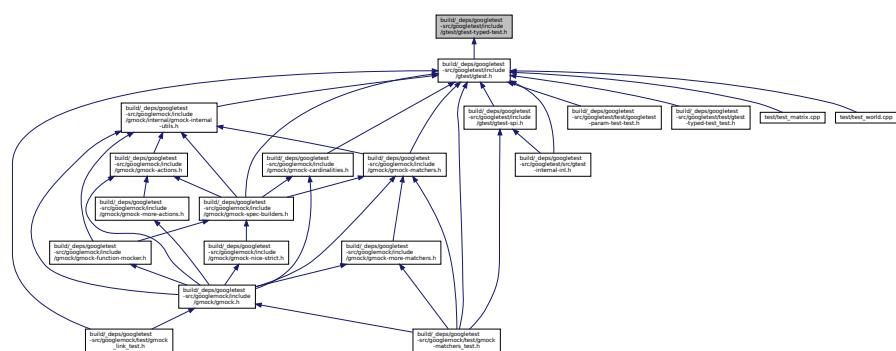
```
GTEST_DISABLE_MSC_WARNINGS_PUSH_ (
```

## 7.27 build/\_deps/googletest-src/googletest/include/gtest/gtest-typed-test.h File Reference

```
#include "gtest/internal/gtest-internal.h"
#include "gtest/internal/gtest-port.h"
#include "gtest/internal/gtest-type-util.h"
Include dependency graph for gtest-typed-test.h:
```



This graph shows which files directly or indirectly include this file:



## Macros

- `#define GTEST_TYPE_PARAMS_(TestSuiteName) gtest_type_params_##TestSuiteName##`
  - `#define GTEST_NAME_GENERATOR_(TestSuiteName) gtest_type_params_##TestSuiteName##_Name` ↵  
Generator
  - `#define TYPED_TEST_SUITE(CaseName, Types, ...)`
  - `#define TYPED_TEST(CaseName, TestName)`
  - `#define TYPED_TEST_CASE`

- #define `GTEST_SUITE_NAMESPACE_(TestSuiteName)` `gtest_suite_##TestSuiteName##_`
- #define `GTEST_TYPED_TEST_SUITE_P_STATE_(TestSuiteName)` `gtest_typed_test_suite_p_state_` ↵  
  `##TestSuiteName##_`
- #define `GTEST_REGISTERED_TEST_NAMES_(TestSuiteName)` `gtest_registered_test_names_##Test` ↵  
  `SuiteName##_`
- #define `TYPED_TEST_SUITE_P(SuiteName)`
- #define `TYPED_TEST_CASE_P`
- #define `TYPED_TEST_P(SuiteName, TestName)`
- #define `REGISTER_TYPED_TEST_SUITE_P(SuiteName, ...)`
- #define `REGISTER_TYPED_TEST_CASE_P`
- #define `INSTANTIATE_TYPED_TEST_SUITE_P(Prefix, SuiteName, Types, ...)`
- #define `INSTANTIATE_TYPED_TEST_CASE_P`

## 7.27.1 Macro Definition Documentation

### 7.27.1.1 `GTEST_NAME_GENERATOR_`

```
#define GTEST_NAME_GENERATOR_(
    TestSuiteName )  gtest_type_params_##TestSuiteName##_NameGenerator
```

### 7.27.1.2 `GTEST_REGISTERED_TEST_NAMES_`

```
#define GTEST_REGISTERED_TEST_NAMES_(
    TestSuiteName )  gtest_registered_test_names_##TestSuiteName##_
```

### 7.27.1.3 `GTEST_SUITE_NAMESPACE_`

```
#define GTEST_SUITE_NAMESPACE_(
    TestSuiteName )  gtest_suite_##TestSuiteName##_
```

### 7.27.1.4 `GTEST_TYPE_PARAMS_`

```
#define GTEST_TYPE_PARAMS_(
    TestSuiteName )  gtest_type_params_##TestSuiteName##_
```

### 7.27.1.5 GTEST\_TYPED\_TEST\_SUITE\_P\_STATE\_

```
#define GTEST_TYPED_TEST_SUITE_P_STATE_(TestSuiteName) gtest_typed_test_suite_p_state_##TestSuiteName##_
```

### 7.27.1.6 INSTANTIATE\_TYPED\_TEST\_CASE\_P

```
#define INSTANTIATE_TYPED_TEST_CASE_P
```

**Value:**

```
static_assert(  
    ::testing::internal::InstantiateTypedTestCase_P_IsDeprecated(), ""); \  
INSTANTIATE_TYPED_TEST_SUITE_P
```

### 7.27.1.7 INSTANTIATE\_TYPED\_TEST\_SUITE\_P

```
#define INSTANTIATE_TYPED_TEST_SUITE_P(  
    Prefix,  
    SuiteName,  
    Types,  
    ...)
```

**Value:**

```
static_assert(sizeof(GTEST_STRINGIFY_(Prefix)) > 1,  
    "test-suit-prefix must not be empty"); \  
static bool gtest_##Prefix##_SuiteName GTEST_ATTRIBUTE_UNUSED_ =  
    ::testing::internal::TypeParameterizedTestSuite<  
        SuiteName, GTEST_SUITE_NAMESPACE_(SuiteName)::gtest_AllTests_,  
        ::testing::internal::GenerateTypeList<Types>::type>:::  
    Register(GTEST_STRINGIFY_(Prefix),  
        ::testing::internal::CodeLocation(__FILE__, __LINE__), \  
        &GTEST_TYPED_TEST_SUITE_P_STATE_(SuiteName),  
        GTEST_STRINGIFY_(SuiteName),  
        GTEST_REGISTERED_TEST_NAMES_(SuiteName),  
        ::testing::internal::GenerateNames<  
            ::testing::internal::NameGeneratorSelector<  
                __VA_ARGS__>::type,  
            ::testing::internal::GenerateTypeList<Types>::type>())
```

### 7.27.1.8 REGISTER\_TYPED\_TEST\_CASE\_P

```
#define REGISTER_TYPED_TEST_CASE_P
```

**Value:**

```
static_assert(::testing::internal::RegisterTypedTestCase_P_IsDeprecated(), ""); \  
REGISTER_TYPED_TEST_SUITE_P
```

### 7.27.1.9 REGISTER\_TYPED\_TEST\_SUITE\_P

```
#define REGISTER_TYPED_TEST_SUITE_P(
    SuiteName,
    ... )
```

**Value:**

```
namespace GTEST_SUITE_NAMESPACE_(SuiteName) {
    typedef ::testing::internal::Templates<__VA_ARGS__> gtest_AllTests_;
}
static const char* const GTEST_REGISTERED_TEST_NAMES_(
    SuiteName) GTEST_ATTRIBUTE_UNUSED_ =
    GTEST_TYPED_TEST_SUITE_P_STATE_(SuiteName).VerifyRegisteredTestNames( \
        GTEST_STRINGIFY_(SuiteName), __FILE__, __LINE__, #__VA_ARGS__)
```

### 7.27.1.10 TYPED\_TEST

```
#define TYPED_TEST(
    CaseName,
    TestName )
```

**Value:**

```
static_assert(sizeof(GTEST_STRINGIFY_(TestName)) > 1,
    "test-name must not be empty");
template <typename gtest_TypeParam>
class GTEST_TEST_CLASS_NAME_(CaseName, TestName)
    : public CaseName<gtest_TypeParam> {
private:
    \
    typedef CaseName<gtest_TypeParam> TestFixture;
    typedef gtest_TypeParam_ TypeParam;
    void TestBody() override;
};
static bool gtest_##CaseName##_##TestName##_registered_
    GTEST_ATTRIBUTE_UNUSED_ = ::testing::internal::TypeParameterizedTest<
        CaseName,
        ::testing::internal::TemplateSel<GTEST_TEST_CLASS_NAME_(CaseName,
            TestName)>,
        GTEST_TYPE_PARAMS_(CaseName)>::Register("", \
            ::testing::internal::CodeLocation(
                __FILE__, __LINE__),
                GTEST_STRINGIFY_(CaseName),
                GTEST_STRINGIFY_(TestName), 0,
                ::testing::internal::GenerateNames<
                    GTEST_NAME_GENERATOR_(CaseName),
                    GTEST_TYPE_PARAMS_(CaseName)>());
template <typename gtest_TypeParam>
void GTEST_TEST_CLASS_NAME_(CaseName,
    TestName)<gtest_TypeParam>::TestBody()
```

### 7.27.1.11 TYPED\_TEST\_CASE

```
#define TYPED_TEST_CASE
```

**Value:**

```
static_assert(::testing::internal::TypedTestCaseIsDeprecated(), "");
TYPED_TEST_SUITE
```

### 7.27.1.12 TYPED\_TEST\_CASE\_P

```
#define TYPED_TEST_CASE_P
```

**Value:**

```
static_assert(::testing::internal::TypedTestCase_P_IsDeprecated(), ""); \
TYPED_TEST_SUITE_P
```

### 7.27.1.13 TYPED\_TEST\_P

```
#define TYPED_TEST_P( \
    SuiteName, \
    TestName )
```

**Value:**

```
namespace GTEST_SUITE_NAMESPACE_(SuiteName) { \
    template <typename gtest_TypeParam> \
    class TestName : public SuiteName<gtest_TypeParam> { \
        private: \
            \
            typedef SuiteName<gtest_TypeParam> TestFixture; \
            typedef gtest_TypeParam_ TypeParam; \
            void TestBody() override; \
    }; \
    static bool gtest_##TestName##_defined_GTEST_ATTRIBUTE_UNUSED_ = \
        GTEST_TYPED_TEST_SUITE_P_STATE_(SuiteName).AddTestName( \
            __FILE__, __LINE__, GTEST_STRINGIFY_(SuiteName), \
            GTEST_STRINGIFY_(TestName)); \
} \
template <typename gtest_TypeParam> \
void GTEST_SUITE_NAMESPACE_( \
    SuiteName)::TestName<gtest_TypeParam>::TestBody()
```

### 7.27.1.14 TYPED\_TEST\_SUITE

```
#define TYPED_TEST_SUITE( \
    CaseName, \
    Types, \
    ... )
```

**Value:**

```
typedef ::testing::internal::GenerateTypeList<Types>::type \
    GTEST_TYPE_PARAMS_(CaseName); \
typedef ::testing::internal::NameGeneratorSelector<__VA_ARGS__>::type \
    GTEST_NAME_GENERATOR_(CaseName)
```

### 7.27.1.15 TYPED\_TEST\_SUITE\_P

```
#define TYPED_TEST_SUITE_P( \
    SuiteName )
```

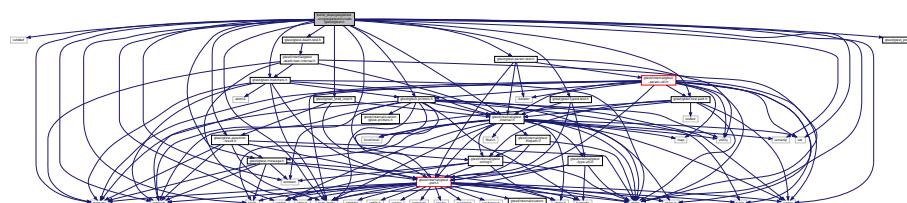
**Value:**

```
static ::testing::internal::TypedTestSuitePState \
GTEST_TYPED_TEST_SUITE_P_STATE_(SuiteName)
```

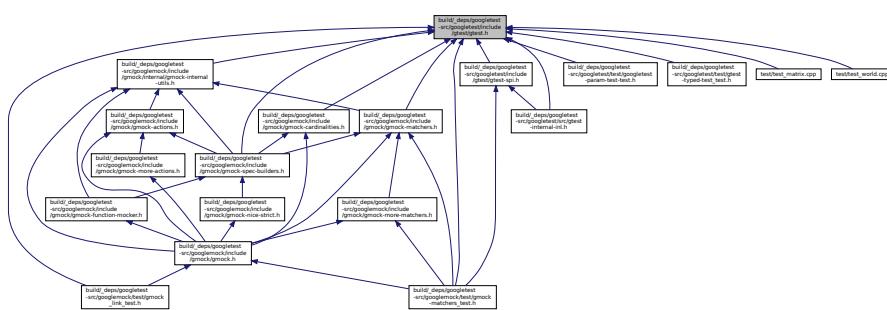
## 7.28 build/\_deps/googletest-src/googletest/include/gtest/gtest.h File Reference

```
#include <cstddef>
#include <cstdint>
#include <iomanip>
#include <limits>
#include <memory>
#include <ostream>
#include <set>
#include <sstream>
#include <string>
#include <type_traits>
#include <vector>
#include "gtest/gtest-assertion-result.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-test-part.h"
#include "gtest/gtest-typed-test.h"
#include "gtest/gtest_pred_impl.h"
#include "gtest/gtest_prod.h"
#include "gtest/internal/gtest-internal.h"
#include "gtest/internal/gtest-string.h"
```

Include dependency graph for gtest.h:



This graph shows which files directly or indirectly include this file:



### Classes

- class [testing::internal::GTestNonCopyable](#)

- 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\_("")
- #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 GTEST\_EXPECT\_TRUE(condition)
- #define GTEST\_EXPECT\_FALSE(condition)
- #define GTEST\_ASSERT\_TRUE(condition) GTEST\_TEST\_BOOLEAN\_(condition, #condition, false, true, GTEST\_FATAL\_FAILURE\_)
- #define GTEST\_ASSERT\_FALSE(condition)
- #define EXPECT\_TRUE(condition) GTEST\_EXPECT\_TRUE(condition)
- #define EXPECT\_FALSE(condition) GTEST\_EXPECT\_FALSE(condition)
- #define ASSERT\_TRUE(condition) GTEST\_ASSERT\_TRUE(condition)
- #define ASSERT\_FALSE(condition) GTEST\_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\_FATAL\_FAILURE\_)
- #define EXPECT\_NO\_FATAL\_FAILURE(statement) GTEST\_TEST\_NO\_FATAL\_FAILURE\_(statement, GTEST\_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 GTEST\_TEST\_F(test\_fixture, test\_name)
- #define TEST\_F(test\_fixture, test\_name) GTEST\_TEST\_F(test\_fixture, test\_name)

## Typedefs

- using `testing::TestCase` = `TestSuite`
- typedef `internal::TimeInMillis testing::TimeInMillis`

## Functions

- `GTEST_DISABLE_MSC_WARNINGS_PUSH_` (4251) `GTEST_DECLARE_bool_(also_run_disabled_tests)`
- `GTEST_DECLARE_bool_(break_on_failure)`
- `GTEST_DECLARE_bool_(catch_exceptions)`
- `GTEST_DECLARE_string_(color)`
- `GTEST_DECLARE_bool_(fail_fast)`
- `GTEST_DECLARE_string_(filter)`
- `GTEST_DECLARE_bool_(install_failure_signal_handler)`
- `GTEST_DECLARE_bool_(list_tests)`
- `GTEST_DECLARE_string_(output)`
- `GTEST_DECLARE_bool_(brief)`
- `GTEST_DECLARE_bool_(print_time)`
- `GTEST_DECLARE_bool_(print_utf8)`
- `GTEST_DECLARE_int32_(random_seed)`
- `GTEST_DECLARE_int32_(repeat)`
- `GTEST_DECLARE_bool_(recreate_environments_when_repeating)`
- `GTEST_DECLARE_bool_(show_internal_stack_frames)`
- `GTEST_DECLARE_bool_(shuffle)`
- `GTEST_DECLARE_int32_(stack_trace_depth)`
- `GTEST_DECLARE_bool_(throw_on_failure)`
- `GTEST_DECLARE_string_(stream_result_to)`
- class `UnitTestImpl` \* `testing::internal::GetUnitTestImpl()`
- void `testing::internal::ReportFailureInUnknownLocation` (`TestPartResult::Type result_type`, const `std::string &message`)
- `std::set< std::string > * testing::internal::GetIgnoredParameterizedTestSuites()`
- `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`)
- template<typename T1, typename T2>  
`AssertionResult testing::internal::CmpHelperOpFailure` (`const char *expr1`, `const char *expr2`, `const T1 &val1`, `const T2 &val2`, `const char *op`)
- `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_ 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 >  
`constexpr bool testing::StaticAssertTypeEq () noexcept`
- `GTEST_API_ std::string testing::TempDir ()`
- `GTEST_API_ std::string testing::SrcDir ()`
- 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

- const int `testing::kMaxStackTraceDepth = 100`

### 7.28.1 Macro Definition Documentation

#### 7.28.1.1 ADD\_FAILURE

```
#define ADD_FAILURE( ) GTEST_NONFATAL_FAILURE_("Failed")
```

### 7.28.1.2 ADD\_FAILURE\_AT

```
#define ADD_FAILURE_AT( file, line )  
    GTEST_MESSAGE_AT_(file, line, "Failed", \  
                      ::testing::TestPartResult::kNonFatalFailure)
```

**Value:**

```
GTEST_MESSAGE_AT_(file, line, "Failed", \  
                  ::testing::TestPartResult::kNonFatalFailure)
```

### 7.28.1.3 ASSERT\_ANY\_THROW

```
#define ASSERT_ANY_THROW( statement )  GTEST_TEST_ANY_THROW_(statement, GTEST_FATAL_FAILURE_)
```

### 7.28.1.4 ASSERT\_DOUBLE\_EQ

```
#define ASSERT_DOUBLE_EQ( val1, val2 )
```

**Value:**

```
ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperFloatingPointEQ<double>, \  
                   val1, val2)
```

### 7.28.1.5 ASSERT\_EQ

```
#define ASSERT_EQ( val1, val2 )  GTEST_ASSERT_EQ(val1, val2)
```

### 7.28.1.6 ASSERT\_FALSE

```
#define ASSERT_FALSE( condition )  GTEST_ASSERT_FALSE(condition)
```

### 7.28.1.7 ASSERT\_FLOAT\_EQ

```
#define ASSERT_FLOAT_EQ(  
    val1,  
    val2 )
```

**Value:**

```
ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperFloatingPointEQ<float>, \  
    val1, val2)
```

### 7.28.1.8 ASSERT\_GE

```
#define ASSERT_GE(  
    val1,  
    val2 ) GTEST_ASSERT_GE(val1, val2)
```

### 7.28.1.9 ASSERT\_GT

```
#define ASSERT_GT(  
    val1,  
    val2 ) GTEST_ASSERT_GT(val1, val2)
```

### 7.28.1.10 ASSERT\_LE

```
#define ASSERT_LE(  
    val1,  
    val2 ) GTEST_ASSERT_LE(val1, val2)
```

### 7.28.1.11 ASSERT\_LT

```
#define ASSERT_LT(  
    val1,  
    val2 ) GTEST_ASSERT_LT(val1, val2)
```

### 7.28.1.12 ASSERT\_NE

```
#define ASSERT_NE(  
    val1,  
    val2 ) GTEST_ASSERT_NE(val1, val2)
```

### 7.28.1.13 ASSERT\_NEAR

```
#define ASSERT_NEAR(
    val1,
    val2,
    abs_error )
```

**Value:**

```
ASSERT_PRED_FORMAT3(::testing::internal::DoubleNearPredFormat, val1, val2, \
    abs_error)
```

### 7.28.1.14 ASSERT\_NO\_FATAL\_FAILURE

```
#define ASSERT_NO_FATAL_FAILURE(
    statement )  GTEST_TEST_NO_FATAL_FAILURE_(statement, GTEST_FATAL_FAILURE_)
```

### 7.28.1.15 ASSERT\_NO\_THROW

```
#define ASSERT_NO_THROW(
    statement )  GTEST_TEST_NO_THROW_(statement, GTEST_FATAL_FAILURE_)
```

### 7.28.1.16 ASSERT\_STRCASEEQ

```
#define ASSERT_STRCASEEQ(
    s1,
    s2 )  ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperSTRCASEEQ, s1, s2)
```

### 7.28.1.17 ASSERT\_STRCASENE

```
#define ASSERT_STRCASENE(
    s1,
    s2 )  ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperSTRCASENE, s1, s2)
```

### 7.28.1.18 ASSERT\_STREQ

```
#define ASSERT_STREQ(
    s1,
    s2 )  ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperSTREQ, s1, s2)
```

### 7.28.1.19 ASSERT\_STRNE

```
#define ASSERT_STRNE(
    s1,
    s2 ) ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperSTRNE, s1, s2)
```

### 7.28.1.20 ASSERT\_THROW

```
#define ASSERT_THROW(
    statement,
    expected_exception ) GTEST_TEST_THROW_(statement, expected_exception, GTEST_FATAL_FAILURE_)
```

### 7.28.1.21 ASSERT\_TRUE

```
#define ASSERT_TRUE(
    condition ) GTEST_ASSERT_TRUE(condition)
```

### 7.28.1.22 EXPECT\_ANY\_THROW

```
#define EXPECT_ANY_THROW(
    statement ) GTEST_TEST_ANY_THROW_(statement, GTEST_NONFATAL_FAILURE_)
```

### 7.28.1.23 EXPECT\_DOUBLE\_EQ

```
#define EXPECT_DOUBLE_EQ(
    val1,
    val2 )
```

**Value:**

```
EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperFloatingPointEQ<double>, \
    val1, val2)
```

### 7.28.1.24 EXPECT\_EQ

```
#define EXPECT_EQ(
    val1,
    val2 ) EXPECT_PRED_FORMAT2(::testing::internal::EqHelper::Compare, val1, val2)
```

### 7.28.1.25 EXPECT\_FALSE

```
#define EXPECT_FALSE(  
    condition ) GTEST_EXPECT_FALSE(condition)
```

### 7.28.1.26 EXPECT\_FLOAT\_EQ

```
#define EXPECT_FLOAT_EQ(  
    val1,  
    val2 )
```

#### Value:

```
EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperFloatingPointEQ<float>, \  
    val1, val2)
```

### 7.28.1.27 EXPECT\_GE

```
#define EXPECT_GE(  
    val1,  
    val2 ) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperGE, val1, val2)
```

### 7.28.1.28 EXPECT\_GT

```
#define EXPECT_GT(  
    val1,  
    val2 ) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperGT, val1, val2)
```

### 7.28.1.29 EXPECT\_LE

```
#define EXPECT_LE(  
    val1,  
    val2 ) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperLE, val1, val2)
```

### 7.28.1.30 EXPECT\_LT

```
#define EXPECT_LT(  
    val1,  
    val2 ) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperLT, val1, val2)
```

### 7.28.1.31 EXPECT\_NE

```
#define EXPECT_NE(
    val1,
    val2 ) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperNE, val1, val2)
```

### 7.28.1.32 EXPECT\_NEAR

```
#define EXPECT_NEAR(
    val1,
    val2,
    abs_error )
```

**Value:**

```
EXPECT_PRED_FORMAT3(::testing::internal::DoubleNearPredFormat, val1, val2, \
                   abs_error)
```

### 7.28.1.33 EXPECT\_NO\_FATAL\_FAILURE

```
#define EXPECT_NO_FATAL_FAILURE(
    statement ) GTEST_TEST_NO_FATAL_FAILURE_(statement, GTEST_NONFATAL_FAILURE_)
```

### 7.28.1.34 EXPECT\_NO\_THROW

```
#define EXPECT_NO_THROW(
    statement ) GTEST_TEST_NO_THROW_(statement, GTEST_NONFATAL_FAILURE_)
```

### 7.28.1.35 EXPECT\_STRCASEEQ

```
#define EXPECT_STRCASEEQ(
    s1,
    s2 ) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperSTRCASEEQ, s1, s2)
```

### 7.28.1.36 EXPECT\_STRCASENE

```
#define EXPECT_STRCASENE(
    s1,
    s2 ) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperSTRCASENE, s1, s2)
```

### 7.28.1.37 EXPECT\_STREQ

```
#define EXPECT_STREQ(  
    s1,  
    s2 ) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperSTREQ, s1, s2)
```

### 7.28.1.38 EXPECT\_STRNE

```
#define EXPECT_STRNE(  
    s1,  
    s2 ) EXPECT_PRED_FORMAT2(::testing::internal::CmpHelperSTRNE, s1, s2)
```

### 7.28.1.39 EXPECT\_THROW

```
#define EXPECT_THROW(  
    statement,  
    expected_exception ) GTEST_TEST_THROW_(statement, expected_exception, GTEST_NONFATAL_FAILURE_)
```

### 7.28.1.40 EXPECT\_TRUE

```
#define EXPECT_TRUE(  
    condition ) GTEST_EXPECT_TRUE(condition)
```

### 7.28.1.41 FAIL

```
#define FAIL( ) GTEST_FAIL()
```

### 7.28.1.42 GTEST\_ASSERT\_EQ

```
#define GTEST_ASSERT_EQ(  
    val1,  
    val2 ) ASSERT_PRED_FORMAT2(::testing::internal::EqHelper::Compare, val1, val2)
```

#### 7.28.1.43 GTEST\_ASSERT\_FALSE

```
#define GTEST_ASSERT_FALSE(  
    condition )
```

**Value:**

```
GTEST_TEST_BOOLEAN_(!(condition), #condition, true, false, \  
    GTEST_FATAL_FAILURE_)
```

#### 7.28.1.44 GTEST\_ASSERT\_GE

```
#define GTEST_ASSERT_GE(  
    val1,  
    val2 )  ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperGE, val1, val2)
```

#### 7.28.1.45 GTEST\_ASSERT\_GT

```
#define GTEST_ASSERT_GT(  
    val1,  
    val2 )  ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperGT, val1, val2)
```

#### 7.28.1.46 GTEST\_ASSERT\_LE

```
#define GTEST_ASSERT_LE(  
    val1,  
    val2 )  ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperLE, val1, val2)
```

#### 7.28.1.47 GTEST\_ASSERT\_LT

```
#define GTEST_ASSERT_LT(  
    val1,  
    val2 )  ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperLT, val1, val2)
```

#### 7.28.1.48 GTEST\_ASSERT\_NE

```
#define GTEST_ASSERT_NE(  
    val1,  
    val2 )  ASSERT_PRED_FORMAT2(::testing::internal::CmpHelperNE, val1, val2)
```

### 7.28.1.49 GTEST\_ASSERT\_TRUE

```
#define GTEST_ASSERT_TRUE( condition )  GTEST_TEST_BOOLEAN_(condition, #condition, false, true, GTEST_FATAL_FAILURE_)
```

### 7.28.1.50 GTEST\_EXPECT\_FALSE

```
#define GTEST_EXPECT_FALSE( condition )
```

**Value:**

```
GTEST_TEST_BOOLEAN_(!condition, #condition, true, false, \
                     GTEST_NONFATAL_FAILURE_)
```

### 7.28.1.51 GTEST\_EXPECT\_TRUE

```
#define GTEST_EXPECT_TRUE( condition )
```

**Value:**

```
GTEST_TEST_BOOLEAN_(condition, #condition, false, true, \
                     GTEST_NONFATAL_FAILURE_)
```

### 7.28.1.52 GTEST\_FAIL

```
#define GTEST_FAIL( )  GTEST_FATAL_FAILURE_("Failed")
```

### 7.28.1.53 GTEST\_FAIL\_AT

```
#define GTEST_FAIL_AT( file, line )
```

**Value:**

```
return GTEST_MESSAGE_AT_(file, line, "Failed", \
                           ::testing::TestPartResult::kFatalFailure)
```

### 7.28.1.54 GTEST\_IMPL\_CMP\_HELPER\_

```
#define GTEST_IMPL_CMP_HELPER_(
    op_name,
    op )
```

**Value:**

```
template <typename T1, typename T2>
AssertionResult CmpHelper##op_name(const char* expr1, const char* expr2,
                                    const T1& val1, const T2& val2) {
    if (val1 op val2) {
        return AssertionSuccess();
    } else {
        return CmpHelperOpFailure(expr1, expr2, val1, val2, #op);
    }
}
```

### 7.28.1.55 GTEST\_SKIP

```
#define GTEST_SKIP( ) GTEST_SKIP_( "")
```

### 7.28.1.56 GTEST\_SUCCEED

```
#define GTEST_SUCCEED( ) GTEST_SUCCESS_("Succeeded")
```

### 7.28.1.57 GTEST\_TEST

```
#define GTEST_TEST(
    test_suite_name,
    test_name )
```

**Value:**

```
GTEST_TEST_(test_suite_name, test_name, ::testing::Test, \
            ::testing::internal::GetTypeId())
```

### 7.28.1.58 GTEST\_TEST\_F

```
#define GTEST_TEST_F(
    test_fixture,
    test_name )
```

**Value:**

```
GTEST_TEST_(test_fixture, test_name, test_fixture, \
            ::testing::internal::GetTypeId<test_fixture>())
```

### 7.28.1.59 SCOPED\_TRACE

```
#define SCOPED_TRACE(  
    message )  
  
Value:  
::testing::ScopedTrace GTEST_CONCAT_TOKEN_(gtest_trace_, __LINE__)( \  
__FILE__, __LINE__, (message))
```

### 7.28.1.60 SUCCEED

```
#define SUCCEED( ) GTEST_SUCCEED()
```

### 7.28.1.61 TEST

```
#define TEST(  
    test_suite_name,  
    test_name ) GTEST_TEST(test_suite_name, test_name)
```

### 7.28.1.62 TEST\_F

```
#define TEST_F(  
    test_fixture,  
    test_name ) GTEST_TEST_F(test_fixture, test_name)
```

## 7.28.2 Function Documentation

### 7.28.2.1 GTEST\_DECLARE\_bool\_() [1/12]

```
GTEST_DECLARE_bool_ (  
    break_on_failure )
```

### 7.28.2.2 GTEST\_DECLARE\_bool\_() [2/12]

```
GTEST_DECLARE_bool_ (  
    brief )
```

**7.28.2.3 GTEST\_DECLARE\_bool\_() [3/12]**

```
GTEST_DECLARE_bool_(
    catch_exceptions )
```

**7.28.2.4 GTEST\_DECLARE\_bool\_() [4/12]**

```
GTEST_DECLARE_bool_(
    fail_fast )
```

**7.28.2.5 GTEST\_DECLARE\_bool\_() [5/12]**

```
GTEST_DECLARE_bool_(
    install_failure_signal_handler )
```

**7.28.2.6 GTEST\_DECLARE\_bool\_() [6/12]**

```
GTEST_DECLARE_bool_(
    list_tests )
```

**7.28.2.7 GTEST\_DECLARE\_bool\_() [7/12]**

```
GTEST_DECLARE_bool_(
    print_time )
```

**7.28.2.8 GTEST\_DECLARE\_bool\_() [8/12]**

```
GTEST_DECLARE_bool_(
    print_utf8 )
```

**7.28.2.9 GTEST\_DECLARE\_bool\_() [9/12]**

```
GTEST_DECLARE_bool_(
    recreate_environments_when_repeating )
```

**7.28.2.10 GTEST\_DECLARE\_bool\_() [10/12]**

```
GTEST_DECLARE_bool_ (
    show_internal_stack_frames )
```

**7.28.2.11 GTEST\_DECLARE\_bool\_() [11/12]**

```
GTEST_DECLARE_bool_ (
    shuffle )
```

**7.28.2.12 GTEST\_DECLARE\_bool\_() [12/12]**

```
GTEST_DECLARE_bool_ (
    throw_on_failure )
```

**7.28.2.13 GTEST\_DECLARE\_int32\_() [1/3]**

```
GTEST_DECLARE_int32_ (
    random_seed )
```

**7.28.2.14 GTEST\_DECLARE\_int32\_() [2/3]**

```
GTEST_DECLARE_int32_ (
    repeat )
```

**7.28.2.15 GTEST\_DECLARE\_int32\_() [3/3]**

```
GTEST_DECLARE_int32_ (
    stack_trace_depth )
```

**7.28.2.16 GTEST\_DECLARE\_string\_() [1/4]**

```
GTEST_DECLARE_string_ (
    color )
```

**7.28.2.17 GTEST\_DECLARE\_string\_() [2/4]**

```
GTEST_DECLARE_string_ (
    filter   )
```

**7.28.2.18 GTEST\_DECLARE\_string\_() [3/4]**

```
GTEST_DECLARE_string_ (
    output   )
```

**7.28.2.19 GTEST\_DECLARE\_string\_() [4/4]**

```
GTEST_DECLARE_string_ (
    stream_result_to   )
```

**7.28.2.20 GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_()**

```
GTEST_DISABLE_MSC_WARNINGS_PUSH_ (
    4251 GMOCK_MAYBE_5046_ )
```

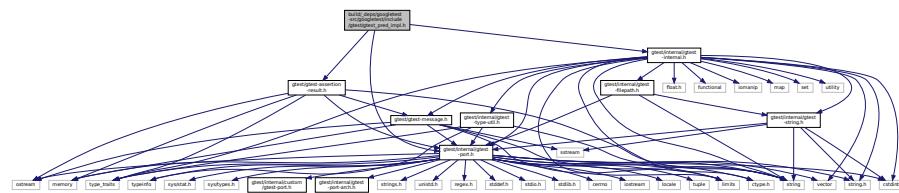
**7.28.2.21 RUN\_ALL\_TESTS()**

```
int RUN_ALL_TESTS ( ) [inline]
```

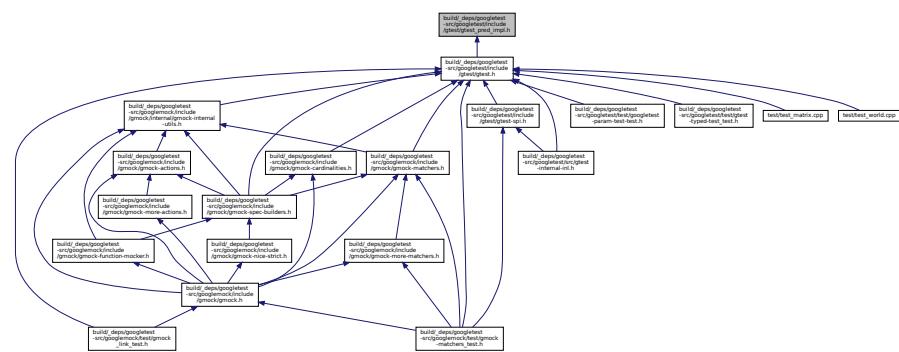
**7.29 build/\_deps/googletest-  
src/googletest/include/gtest/internal/custom/gtest.h File Reference****7.30 build/\_deps/googletest-src/googletest/include/gtest/gtest\_pred\_←  
impl.h File Reference**

```
#include "gtest/gtest-result.h"
#include "gtest/internal/gtest-internal.h"
```

```
#include "gtest/internal/gtest-port.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) GTEST_ASSERT_(pred_format(#v1, v1),
on_failure)
• #define GTEST_PRED1_(pred, v1, on_failure) GTEST_ASSERT_(:testing::AssertPred1Helper(#pred, #v1,
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) GTEST_ASSERT_(pred_format(#v1,
#v2, 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) GTEST_ASSERT_(pred_←format(#v1, #v2, #v3, 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 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) GTEST_ASSERT_(pred_←format(#v1, #v2, #v3, #v4, 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)`

### 7.30.1 Macro Definition Documentation

### 7.30.1.1 ASSERT\_PRED1

```
#define ASSERT_PRED1(
    pred,
    v1 )  GTEST_PRED1_(pred, v1, GTEST_FATAL_FAILURE_)
```

### 7.30.1.2 ASSERT\_PRED2

```
#define ASSERT_PRED2(
    pred,
    v1,
    v2 )  GTEST_PRED2_(pred, v1, v2, GTEST_FATAL_FAILURE_)
```

### 7.30.1.3 ASSERT\_PRED3

```
#define ASSERT_PRED3(
    pred,
    v1,
    v2,
    v3 )  GTEST_PRED3_(pred, v1, v2, v3, GTEST_FATAL_FAILURE_)
```

### 7.30.1.4 ASSERT\_PRED4

```
#define ASSERT_PRED4(
    pred,
    v1,
    v2,
    v3,
    v4 )  GTEST_PRED4_(pred, v1, v2, v3, v4, GTEST_FATAL_FAILURE_)
```

### 7.30.1.5 ASSERT\_PRED5

```
#define ASSERT_PRED5(
    pred,
    v1,
    v2,
    v3,
    v4,
    v5 )  GTEST_PRED5_(pred, v1, v2, v3, v4, v5, GTEST_FATAL_FAILURE_)
```

### 7.30.1.6 ASSERT\_PRED\_FORMAT1

```
#define ASSERT_PRED_FORMAT1(
    pred_format,
    v1 )  GTEST_PRED_FORMAT1_(pred_format, v1, GTEST_FATAL_FAILURE_)
```

### 7.30.1.7 ASSERT\_PRED\_FORMAT2

```
#define ASSERT_PRED_FORMAT2(
    pred_format,
    v1,
    v2 )  GTEST_PRED_FORMAT2_(pred_format, v1, v2, GTEST_FATAL_FAILURE_)
```

### 7.30.1.8 ASSERT\_PRED\_FORMAT3

```
#define ASSERT_PRED_FORMAT3(
    pred_format,
    v1,
    v2,
    v3 )  GTEST_PRED_FORMAT3_(pred_format, v1, v2, v3, GTEST_FATAL_FAILURE_)
```

### 7.30.1.9 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_)
```

### 7.30.1.10 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_)
```

### 7.30.1.11 EXPECT\_PRED1

```
#define EXPECT_PRED1(
    pred,
    v1 ) GTEST_PRED1_(pred, v1, GTEST_NONFATAL_FAILURE_)
```

### 7.30.1.12 EXPECT\_PRED2

```
#define EXPECT_PRED2(
    pred,
    v1,
    v2 ) GTEST_PRED2_(pred, v1, v2, GTEST_NONFATAL_FAILURE_)
```

### 7.30.1.13 EXPECT\_PRED3

```
#define EXPECT_PRED3(
    pred,
    v1,
    v2,
    v3 ) GTEST_PRED3_(pred, v1, v2, v3, GTEST_NONFATAL_FAILURE_)
```

### 7.30.1.14 EXPECT\_PRED4

```
#define EXPECT_PRED4(
    pred,
    v1,
    v2,
    v3,
    v4 ) GTEST_PRED4_(pred, v1, v2, v3, v4, GTEST_NONFATAL_FAILURE_)
```

### 7.30.1.15 EXPECT\_PRED5

```
#define EXPECT_PRED5(
    pred,
    v1,
    v2,
    v3,
    v4,
    v5 ) GTEST_PRED5_(pred, v1, v2, v3, v4, v5, GTEST_NONFATAL_FAILURE_)
```

### 7.30.1.16 EXPECT\_PRED\_FORMAT1

```
#define EXPECT_PRED_FORMAT1(
    pred_format,
    v1 )  GTEST_PRED_FORMAT1_(pred_format, v1, GTEST_NONFATAL_FAILURE_)
```

### 7.30.1.17 EXPECT\_PRED\_FORMAT2

```
#define EXPECT_PRED_FORMAT2(
    pred_format,
    v1,
    v2 )  GTEST_PRED_FORMAT2_(pred_format, v1, v2, GTEST_NONFATAL_FAILURE_)
```

### 7.30.1.18 EXPECT\_PRED\_FORMAT3

```
#define EXPECT_PRED_FORMAT3(
    pred_format,
    v1,
    v2,
    v3 )  GTEST_PRED_FORMAT3_(pred_format, v1, v2, v3, GTEST_NONFATAL_FAILURE_)
```

### 7.30.1.19 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_)
```

### 7.30.1.20 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_)
```

### 7.30.1.21 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())\
```

### 7.30.1.22 GTEST\_PRED1\_

```
#define GTEST_PRED1_(
    pred,
    v1,
    on_failure )  GTEST_ASSERT_(::testing::AssertPred1Helper(#pred, #v1, pred, v1),
on_failure)
```

### 7.30.1.23 GTEST\_PRED2\_

```
#define GTEST_PRED2_(
    pred,
    v1,
    v2,
    on_failure )
```

**Value:**

```
GTEST_ASSERT_(::testing::AssertPred2Helper(#pred, #v1, #v2, pred, v1, v2), \
on_failure)
```

### 7.30.1.24 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)
```

### 7.30.1.25 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)
```

### 7.30.1.26 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)
```

### 7.30.1.27 GTEST\_PRED\_FORMAT1\_

```
#define GTEST_PRED_FORMAT1_(  
    pred_format,  
    v1,  
    on_failure )  GTEST_ASSERT_(pred_format(#v1, v1), on_failure)
```

### 7.30.1.28 GTEST\_PRED\_FORMAT2\_

```
#define GTEST_PRED_FORMAT2_(  
    pred_format,  
    v1,  
    v2,  
    on_failure )  GTEST_ASSERT_(pred_format(#v1, #v2, v1, v2), on_failure)
```

### **7.30.1.29 GTEST\_PRED\_FORMAT3**

```
#define GTEST_PRED_FORMAT3_(  
    pred_format,  
    v1,  
    v2,  
    v3,  
    on_failure )  GTEST_ASSERT_(pred_format(#v1, #v2, #v3, v1, v2, v3), on_failure)
```

### **7.30.1.30 GTEST\_PRED\_FORMAT4\_**

```
#define GTEST_PRED_FORMAT4_(  
    pred_format,  
    v1,  
    v2,  
    v3,  
    v4,  
    on_failure )  GTEST_ASSERT_(pred_format(#v1, #v2, #v3, #v4, v1, v2, v3, v4), on←  
_failure)
```

### **7.30.1.31 GTEST\_PRED\_FORMAT5**

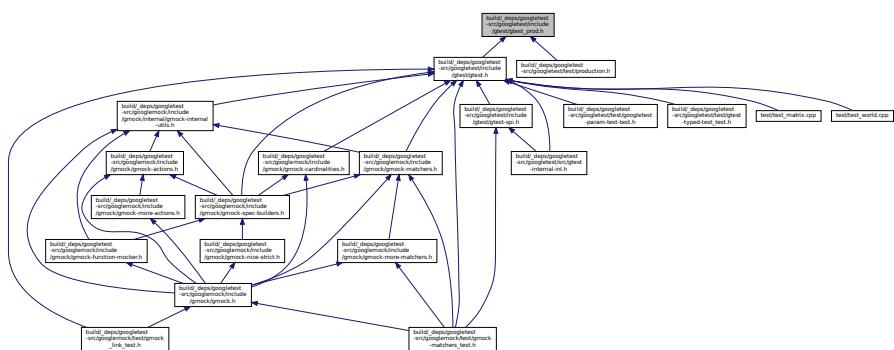
```
#define GTEST_PRED_FORMAT5_(  
    pred_format,  
    v1,  
    v2,  
    v3,  
    v4,  
    v5,  
    on_failure )
```

**Value:**

```
    GTEST_ASSERT_(pred_format(#v1, #v2, #v3, #v4, #v5, v1, v2, v3, v4, v5), \
        on_failure)
```

## 7.31 build/\_deps/googletest-src/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_name##_Test`

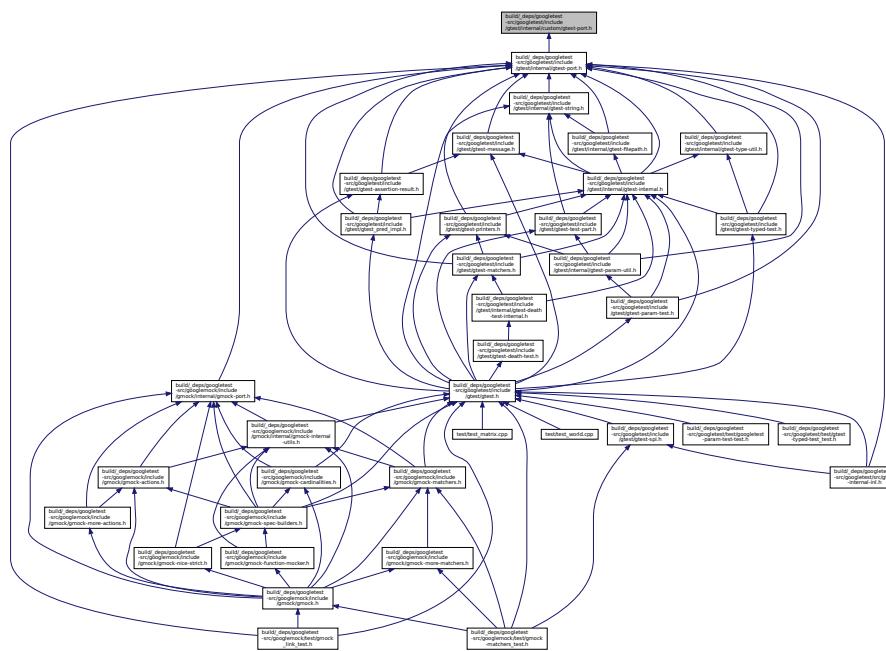
### 7.31.1 Macro Definition Documentation

### **7.31.1.1 FRIEND\_TEST**

```
#define FRIEND_TEST(  
    test_case_name,  
    test_name ) friend class test_case_name##_##test_name##_Test
```

**7.32 build/\_deps/googletest-  
src/googletest/include/gtest/internal/custom/gtest-port.h File  
Reference**

This graph shows which files directly or indirectly include this file:



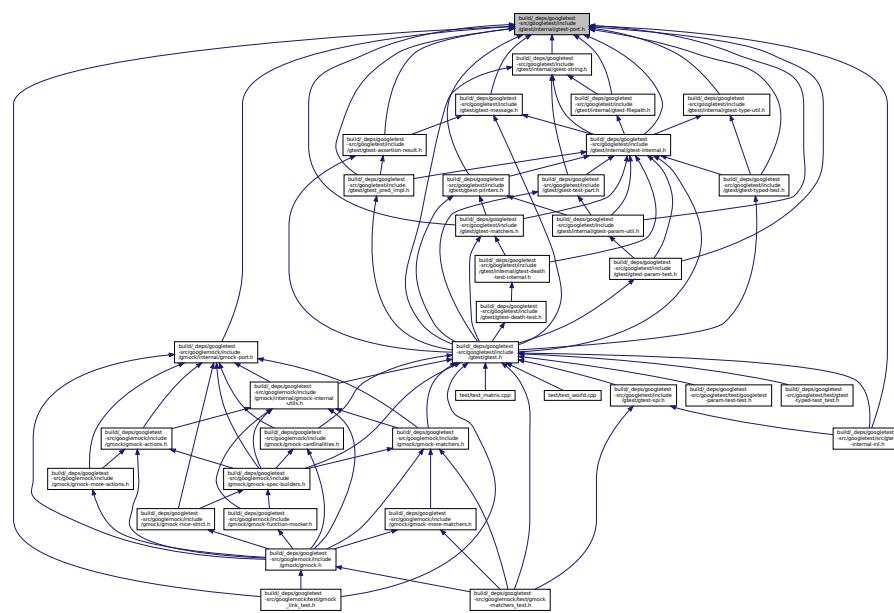
## 7.33 build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-port.h File Reference

```
#include <ctype.h>
#include <stddef.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <cerrno>
#include <cstdint>
#include <iostream>
#include <limits>
#include <locale>
#include <memory>
#include <ostream>
#include <string>
#include <tuple>
#include <type_traits>
#include <vector>
#include <sys/stat.h>
#include <sys/types.h>
#include "gtest/internal/custom/gtest-port.h"
#include "gtest/internal/gtest-port-arch.h"
#include <strings.h>
#include <unistd.h>
#include <regex.h>
#include <typeinfo>
```

Include dependency graph for gtest-port.h:



This graph shows which files directly or indirectly include this file:



## Classes

- class `testing::internal::RE`
- class `testing::internal::GTestLog`
- struct `testing::internal::ConstRef< T >`
- struct `testing::internal::ConstRef< T & >`
- class `testing::internal::Mutex`
- class `testing::internal::GTestMutexLock`
- class `testing::internal::ThreadLocal< 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_(4996)`
- `#define GTEST_DISABLE_MSC_DEPRECATED_POP_() GTEST_DISABLE_MSC_WARNINGS_POP_()`
- `#define GTEST_HAS_POSIX_RE !(GTEST_OS_WINDOWS || GTEST_OS_XTENSA || GTEST_OS_QURT)`
- `#define GTEST_USES_POSIX_RE 1`
- `#define GTEST_HAS_EXCEPTIONS 0`
- `#define GTEST_HAS_STD_WSTRING`
- `#define GTEST_HAS_FILE_SYSTEM 1`
- `#define GTEST_HAS_RTTI 1`
- `#define GTEST_HAS_PTHREAD`
- `#define GTEST_HAS_CLONE 0`
- `#define GTEST_HAS_STREAM_REDIRECTION 1`
- `#define GTEST_WIDE_STRINGUSES_UTF16_ (GTEST_OS_WINDOWS || GTEST_OS_CYGWIN || GTEST_OS_AIX || GTEST_OS_OS2)`
- `#define GTEST_AMBIGUOUS_ELSE_BLOCKER_`
- `#define GTEST_HAVE_ATTRIBUTE_(x) 0`
- `#define GTEST_HAVE_FEATURE_(x) 0`
- `#define GTEST_ATTRIBUTE_UNUSED_`
- `#define GTEST_ATTRIBUTE_PRINTF_(string_index, first_to_check)`
- `#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_NO_TAIL_CALL_`
- `#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_LOG_(severity)`
- `#define GTEST_CHECK_(condition)`
- `#define GTEST_CHECK_POSIX_SUCCESS_(posix_call)`
- `#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_(name) gtest_##name`
- `#define GTEST_FLAG(name) FLAGS_gtest_##name`
- `#define GTEST_DEFINE_bool_(name, default_val, doc)`
- `#define GTEST_DEFINE_int32_(name, default_val, doc)`
- `#define GTEST_DEFINE_string_(name, default_val, doc)`
- `#define GTEST_DECLARE_bool_(name)`
- `#define GTEST_DECLARE_int32_(name)`
- `#define GTEST_DECLARE_string_(name)`
- `#define GTEST_FLAG_SAVER_ ::testing::internal::GTestFlagSaver`
- `#define GTEST_FLAG_GET(name) ::testing::internal::GTEST_FLAG(name)`
- `#define GTEST_FLAG_SET(name, value) (void)(::testing::internal::GTEST_FLAG(name) = value)`
- `#define GTEST_USE_OWN_FLAGFILE_FLAG_ 1`
- `#define GTEST_EXCLUSIVE_LOCK_REQUIRED_(locks)`
- `#define GTEST_LOCK_EXCLUDED_(locks)`
- `#define GTEST_INTERNAL_DEPRECATED(message)`

## Typedefs

- `typedef GTestMutexLock testing::internal::MutexLock`
- `typedef struct stat testing::internal::posix::StatStruct`
- `using testing::internal::BiggestInt = long long`
- `using testing::internal::TimeInMillis = int64_t`

## 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::GetArgs ()`
- `GTEST_API_ size_t testing::internal::GetThreadCount ()`
- `bool testing::internal::IsAlpha (char ch)`
- `bool testing::internal::IsAlNum (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 (char16_t ch)`
- `bool testing::internal::IsXDigit (char32_t 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::Stat (const char *path, StatStruct *buf)`
- `int testing::internal::posix::RmDir (const char *dir)`
- `bool testing::internal::posix::IsDir (const StatStruct &st)`
- `int testing::internal::posix::DolsATTY (int fd)`
- `int testing::internal::posix::StrCaseCmp (const char *s1, const char *s2)`
- `char * testing::internal::posix::StrDup (const char *src)`
- `int testing::internal::posix::IsATTY (int fd)`
- `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 ()`
- `GTEST_API_ bool testing::internal::ParseInt32 (const Message &src_text, const char *str, int32_t *value)`
- `bool testing::internal::BoolFromGTestEnv (const char *flag, bool default_val)`
- `GTEST_API_ int32_t testing::internal::Int32FromGTestEnv (const char *flag, int32_t default_val)`
- `std::string testing::internal::OutputFlagAlsoCheckEnvVar ()`
- `const char * testing::internal::StringFromGTestEnv (const char *flag, const char *default_val)`

## Variables

- `constexpr BiggestInt testing::internal::kMaxBiggestInt = (std::numeric_limits<BiggestInt>::max)()`

### 7.33.1 Macro Definition Documentation

#### 7.33.1.1 GTEST\_AMBIGUOUS\_ELSE\_BLOCKER\_

```
#define GTEST_AMBIGUOUS_ELSE_BLOCKER_
```

##### Value:

```
switch (0) \
case 0: \
default: \
```

#### 7.33.1.2 GTEST\_API\_

```
#define GTEST_API_
```

#### 7.33.1.3 GTEST\_ATTRIBUTE\_NO\_SANITIZE\_ADDRESS\_

```
#define GTEST_ATTRIBUTE_NO_SANITIZE_ADDRESS_
```

#### 7.33.1.4 GTEST\_ATTRIBUTE\_NO\_SANITIZE\_HWADDRESS\_

```
#define GTEST_ATTRIBUTE_NO_SANITIZE_HWADDRESS_
```

#### 7.33.1.5 GTEST\_ATTRIBUTE\_NO\_SANITIZE\_MEMORY\_

```
#define GTEST_ATTRIBUTE_NO_SANITIZE_MEMORY_
```

#### 7.33.1.6 GTEST\_ATTRIBUTE\_NO\_SANITIZE\_THREAD\_

```
#define GTEST_ATTRIBUTE_NO_SANITIZE_THREAD_
```

### 7.33.1.7 GTEST\_ATTRIBUTE\_PRINTF\_

```
#define GTEST_ATTRIBUTE_PRINTF_(  
    string_index,  
    first_to_check )
```

### 7.33.1.8 GTEST\_ATTRIBUTE\_UNUSED\_

```
#define GTEST_ATTRIBUTE_UNUSED_
```

### 7.33.1.9 GTEST\_CHECK\_

```
#define GTEST_CHECK_(  
    condition )
```

**Value:**

```
GTEST_AMBIGUOUS_ELSE_BLOCKER_  
if (::testing::internal::IsTrue(condition)) \\\n  
;  
else \\\nGTEST_LOG_(FATAL) << "Condition " #condition " failed. "
```

### 7.33.1.10 GTEST\_CHECK\_POSIX\_SUCCESS\_

```
#define GTEST_CHECK_POSIX_SUCCESS_(  
    posix_call )
```

**Value:**

```
if (const int gtest_error = (posix_call)) \\\nGTEST_LOG_(FATAL) << #posix_call << "failed with error " << gtest_error
```

### 7.33.1.11 GTEST\_DECLARE\_bool\_

```
#define GTEST_DECLARE_bool_(  
    name )
```

**Value:**

```
namespace testing {  
GTEST_API_ extern bool GTEST_FLAG(name); \\\n}  
static_assert(true, "no-op to require trailing semicolon")
```

### 7.33.1.12 GTEST\_DECLARE\_int32\_

```
#define GTEST_DECLARE_int32_(
    name )
```

**Value:**

```
namespace testing {
GTEST_API_ extern std::int32_t GTEST_FLAG(name); \
}
static_assert(true, "no-op to require trailing semicolon")
```

### 7.33.1.13 GTEST\_DECLARE\_STATIC\_MUTEX\_

```
#define GTEST_DECLARE_STATIC_MUTEX_(
    mutex )  extern ::testing::internal::Mutex mutex
```

### 7.33.1.14 GTEST\_DECLARE\_string\_

```
#define GTEST_DECLARE_string_(
    name )
```

**Value:**

```
namespace testing {
GTEST_API_ extern ::std::string GTEST_FLAG(name); \
}
static_assert(true, "no-op to require trailing semicolon")
```

### 7.33.1.15 GTEST\_DEFAULT\_DEATH\_TEST\_STYLE

```
#define GTEST_DEFAULT_DEATH_TEST_STYLE "fast"
```

### 7.33.1.16 GTEST\_DEFINE\_bool\_

```
#define GTEST_DEFINE_bool_(
    name,
    default_val,
    doc )
```

**Value:**

```
namespace testing {
GTEST_API_ bool GTEST_FLAG(name) = (default_val); \
}
static_assert(true, "no-op to require trailing semicolon")
```

### 7.33.1.17 GTEST\_DEFINE\_int32\_

```
#define GTEST_DEFINE_int32_(
    name,
    default_val,
    doc )
```

**Value:**

```
namespace testing {
GTEST_API_ std::int32_t GTEST_FLAG(name) = (default_val); \
}
static_assert(true, "no-op to require trailing semicolon")
```

### 7.33.1.18 GTEST\_DEFINE\_STATIC\_MUTEX\_

```
#define GTEST_DEFINE_STATIC_MUTEX_(
    mutex ) ::testing::internal::Mutex mutex
```

### 7.33.1.19 GTEST\_DEFINE\_string\_

```
#define GTEST_DEFINE_string_(
    name,
    default_val,
    doc )
```

**Value:**

```
namespace testing {
GTEST_API_ ::std::string GTEST_FLAG(name) = (default_val); \
}
static_assert(true, "no-op to require trailing semicolon")
```

### 7.33.1.20 GTEST\_DEV\_EMAIL\_

```
#define GTEST_DEV_EMAIL_ "googletestframework@googlegroups.com"
```

### 7.33.1.21 GTEST\_DISABLE\_MSC\_DEPRECATED\_POP\_

```
#define GTEST_DISABLE_MSC_DEPRECATED_POP_( ) GTEST_DISABLE_MSC_WARNINGS_POP_()
```

### 7.33.1.22 GTEST\_DISABLE\_MSC\_DEPRECATED\_PUSH\_

```
#define GTEST_DISABLE_MSC_DEPRECATED_PUSH_( ) GTEST_DISABLE_MSC_WARNINGS_PUSH_(4996)
```

### 7.33.1.23 GTEST\_DISABLE\_MSC\_WARNINGS\_POP\_

```
#define GTEST_DISABLE_MSC_WARNINGS_POP_( )
```

### 7.33.1.24 GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_

```
#define GTEST_DISABLE_MSC_WARNINGS_PUSH_(
    warnings )
```

### 7.33.1.25 GTEST\_EXCLUSIVE\_LOCK\_REQUIRED\_

```
#define GTEST_EXCLUSIVE_LOCK_REQUIRED_(
    locks )
```

### 7.33.1.26 GTEST\_FLAG

```
#define GTEST_FLAG(
    name ) FLAGS_gtest_##name
```

### 7.33.1.27 GTEST\_FLAG\_GET

```
#define GTEST_FLAG_GET(
    name ) ::testing::GTEST_FLAG(name)
```

### 7.33.1.28 GTEST\_FLAG\_NAME\_

```
#define GTEST_FLAG_NAME_(
    name ) gtest_##name
```

### 7.33.1.29 GTEST\_FLAG\_PREFIX\_

```
#define GTEST_FLAG_PREFIX_ "gtest_"
```

### 7.33.1.30 GTEST\_FLAG\_PREFIX\_DASH\_

```
#define GTEST_FLAG_PREFIX_DASH_ "gtest-"
```

### 7.33.1.31 GTEST\_FLAG\_PREFIX\_UPPER\_

```
#define GTEST_FLAG_PREFIX_UPPER_ "GTEST_"
```

### 7.33.1.32 GTEST\_FLAG\_SAVER\_

```
#define GTEST_FLAG_SAVER_ ::testing::internal::GTestFlagSaver
```

### 7.33.1.33 GTEST\_FLAG\_SET

```
#define GTEST_FLAG_SET(  
    name,  
    value ) (void) (::testing::GTEST_FLAG(name) = value)
```

### 7.33.1.34 GTEST\_HAS\_ALT\_PATH\_SEP\_

```
#define GTEST_HAS_ALT_PATH_SEP_ 0
```

### 7.33.1.35 GTEST\_HAS\_CLONE

```
#define GTEST_HAS_CLONE 0
```

### 7.33.1.36 GTEST\_HAS\_CXXABI\_H\_

```
#define GTEST_HAS_CXXABI_H_ 0
```

### 7.33.1.37 GTEST\_HAS\_EXCEPTIONS

```
#define GTEST_HAS_EXCEPTIONS 0
```

### 7.33.1.38 GTEST\_HAS\_FILE\_SYSTEM

```
#define GTEST_HAS_FILE_SYSTEM 1
```

### 7.33.1.39 GTEST\_HAS\_POSIX\_REGEX

```
#define GTEST_HAS_POSIX_REGEX !(GTEST_OS_WINDOWS || GTEST_OS_XTENSA || GTEST_OS_QURT)
```

### 7.33.1.40 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 || GTEST_OS_GNU_HURD)
```

### 7.33.1.41 GTEST\_HAS\_RTTI

```
#define GTEST_HAS_RTTI 1
```

### 7.33.1.42 GTEST\_HAS\_SEH

```
#define GTEST_HAS_SEH 0
```

### 7.33.1.43 GTEST\_HAS\_STD\_WSTRING

```
#define GTEST_HAS_STD_WSTRING
```

**Value:**

```
(! (GTEST_OS_LINUX_ANDROID || GTEST_OS_CYGWIN || GTEST_OS_SOLARIS || \
 GTEST_OS_HAIKU || GTEST_OS_ESP32 || GTEST_OS_ESP8266 || \
 GTEST_OS_XTENSA || GTEST_OS_QURT))
```

### 7.33.1.44 GTEST\_HAS\_STREAM\_REDIRECTION

```
#define GTEST_HAS_STREAM_REDIRECTION 1
```

### 7.33.1.45 GTEST\_HAVE\_ATTRIBUTE\_

```
#define GTEST_HAVE_ATTRIBUTE_(  
    x ) 0
```

### 7.33.1.46 GTEST\_HAVE\_FEATURE\_

```
#define GTEST_HAVE_FEATURE_(  
    x ) 0
```

### 7.33.1.47 GTEST\_INIT\_GOOGLE\_TEST\_NAME\_

```
#define GTEST_INIT_GOOGLE_TEST_NAME_ "testing::InitGoogleTest"
```

### 7.33.1.48 GTEST\_INTENTIONAL\_CONST\_COND\_POP\_

```
#define GTEST_INTENTIONAL_CONST_COND_POP_( ) GTEST_DISABLE_MSC_WARNINGS_POP_()
```

### 7.33.1.49 GTEST\_INTENTIONAL\_CONST\_COND\_PUSH\_

```
#define GTEST_INTENTIONAL_CONST_COND_PUSH_( ) GTEST_DISABLE_MSC_WARNINGS_PUSH_(4127)
```

### 7.33.1.50 GTEST\_INTERNAL\_DEPRECATED

```
#define GTEST_INTERNAL_DEPRECATED(  
    message )
```

### 7.33.1.51 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)
```

### 7.33.1.52 GTEST\_LOCK\_EXCLUDED\_

```
#define GTEST_LOCK_EXCLUDED_(
    locks )
```

### 7.33.1.53 GTEST\_LOG\_

```
#define GTEST_LOG_(
    severity )
```

**Value:**

```
::testing::internal::GTestLog(::testing::internal::GTEST_##severity, \
    __FILE__, __LINE__)
    .GetStream()
```

### 7.33.1.54 GTEST\_MUST\_USE\_RESULT\_

```
#define GTEST_MUST_USE_RESULT_
```

### 7.33.1.55 GTEST\_NAME\_

```
#define GTEST_NAME_ "Google Test"
```

### 7.33.1.56 GTEST\_NO\_INLINE\_

```
#define GTEST_NO_INLINE_
```

**7.33.1.57 GTEST\_NO\_TAIL\_CALL\_**

```
#define GTEST_NO_TAIL_CALL_
```

**7.33.1.58 GTEST\_PATH\_SEP\_**

```
#define GTEST_PATH_SEP_ "/"
```

**7.33.1.59 GTEST\_PROJECT\_URL\_**

```
#define GTEST_PROJECT_URL_ "https://github.com/google/googletest/"
```

**7.33.1.60 GTEST\_REFERENCE\_TO\_CONST\_**

```
#define GTEST_REFERENCE_TO_CONST_  
    T )  typename ::testing::internal::ConstRef<T>::type
```

**7.33.1.61 GTEST\_SNPRINTF\_**

```
#define GTEST_SNPRINTF_ snprintf
```

**7.33.1.62 GTEST\_USE\_OWN\_FLAGFILE\_FLAG\_**

```
#define GTEST_USE_OWN_FLAGFILE_FLAG_ 1
```

**7.33.1.63 GTESTUSES\_POSIX\_RE**

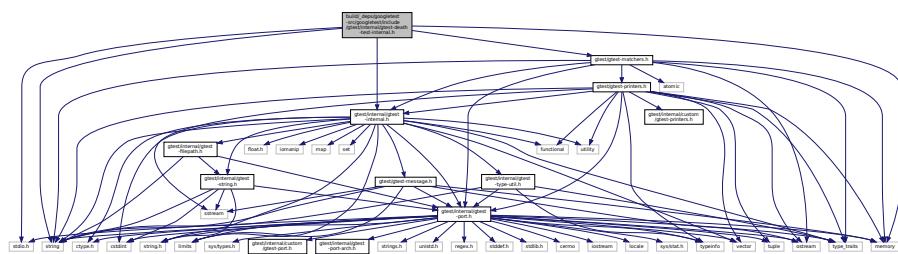
```
#define GTESTUSES_POSIX_RE 1
```

**7.33.1.64 GTEST\_WIDE\_STRING\_USES\_UTF16\_**

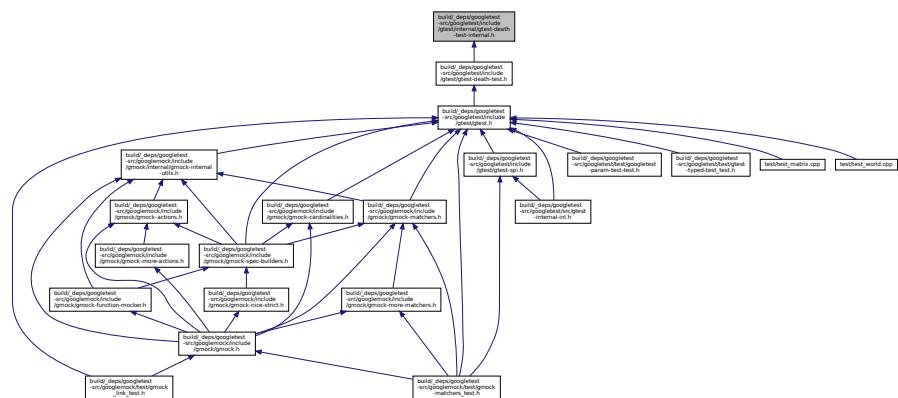
```
#define GTEST_WIDE_STRING_USES_UTF16_ (GTEST_OS_WINDOWS || GTEST_OS_CYGWIN || GTEST_OS_AIX ||  
GTEST_OS_OS2)
```

## 7.34 build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-death-test-internal.h File Reference

```
#include <stdio.h>
#include <memory>
#include <string>
#include "gtest/gtest-matchers.h"
#include "gtest/internal/gtest-internal.h"
Include dependency graph for gtest-death-test-internal.h:
```



This graph shows which files directly or indirectly include this file:



## Namespaces

- testing
  - testing::internal

## Functions

- `GTEST_DECLARE` string (internal run death test)

## Variables

- const char testing::internal::kDeathTestStyleFlag [] = "death\_test\_style"
  - const char testing::internal::kDeathTestUseFork [] = "death\_test\_use\_fork"
  - const char testing::internal::kInternalRunDeathTestFlag [] = "internal\_run\_death\_test"

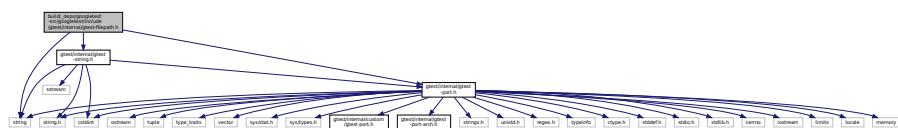
### 7.34.1 Function Documentation

### 7.34.1.1 GTEST\_DECLARE\_string\_()

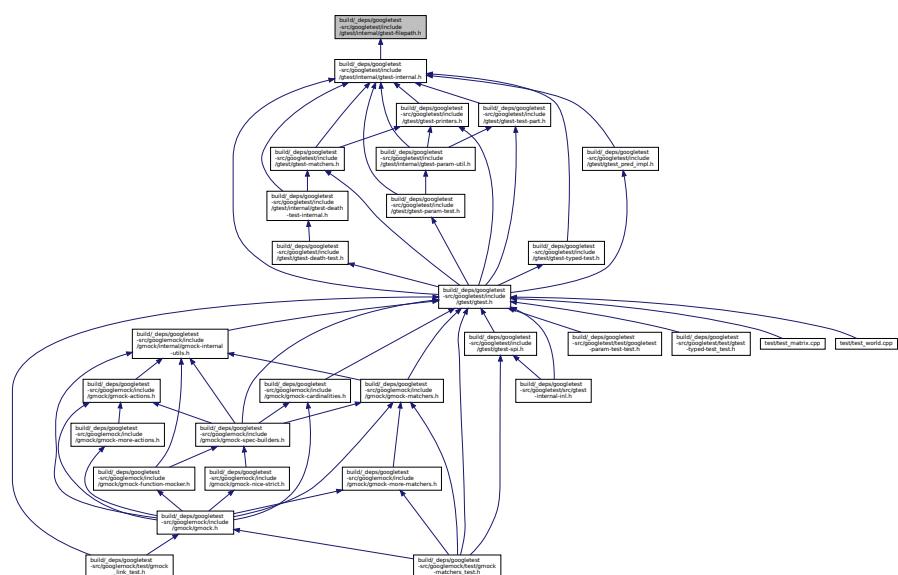
```
GTEST_DECLARE_string_ (  
    internal_run_death_test )
```

## 7.35 build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-filepath.h File Reference

```
#include <string>
#include "gtest/internal/gtest-port.h"
#include "gtest/internal/gtest-string.h"
Include dependency graph for gtest-filepath.h:
```



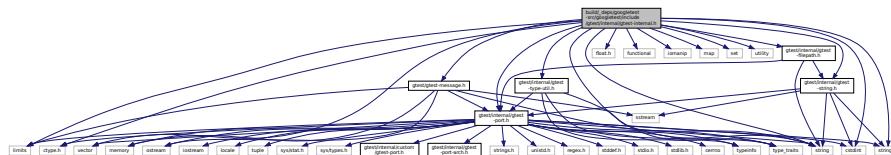
This graph shows which files directly or indirectly include this file:



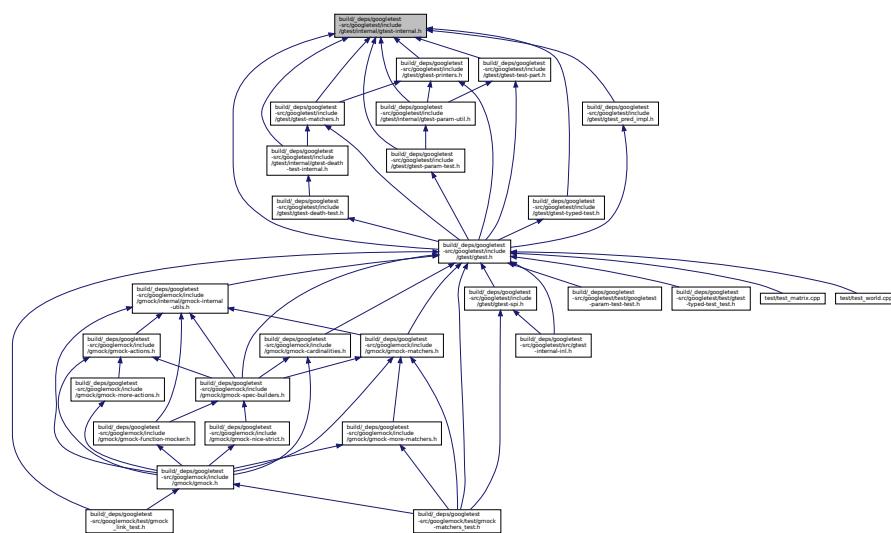
## 7.36 build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-internal.h File Reference

```
#include "gtest/internal/gtest-port.h"
#include <ctype.h>
#include <float.h>
#include <string.h>
#include <cstdint>
#include <functional>
#include <iomanip>
#include <limits>
#include <map>
#include <set>
#include <string>
#include <type_traits>
#include <utility>
#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::DefaultNameGenerator`
- struct `testing::internal::NameGeneratorSelector< Provided >`
- class `testing::internal::TypeParameterizedTest< Fixture, TestSel, Types >`
- class `testing::internal::TypeParameterizedTest< Fixture, TestSel, internal::None >`
- class `testing::internal::TypeParameterizedTestSuite< Fixture, Tests, Types >`
- class `testing::internal::TypeParameterizedTestSuite< Fixture, internal::None, Types >`
- struct `testing::internal::ConstCharPtr`
- struct `testing::internal::TrueWithString`
- class `testing::internal::Random`
- class `testing::internal::HasDebugStringAndShortDebugString< T >`
- struct `testing::internal::IsHashTable< T >`
- struct `testing::internal::IsRecursiveContainerImpl< C, false >`
- struct `testing::internal::IsRecursiveContainerImpl< C, true >`
- struct `testing::internal::IsRecursiveContainer< C >`
- struct `testing::internal::RelationToSourceReference`
- struct `testing::internal::RelationToSourceCopy`
- class `testing::internal::NativeArray< Element >`
- struct `testing::internal::IndexSequence< Is >`
- struct `testing::internal::DoubleSequence< true, IndexSequence< I... >, sizeofT >`
- struct `testing::internal::DoubleSequence< false, IndexSequence< I... >, sizeofT >`
- struct `testing::internal::MakeIndexSequenceImpl< N >`
- struct `testing::internal::MakeIndexSequenceImpl< 0 >`
- struct `testing::internal::Ignore< size_t >`
- struct `testing::internal::ElemFromListImpl< IndexSequence< I... > >`
- struct `testing::internal::ElemFromList< N, T >`
- struct `testing::internal::FlatTupleConstructTag`
- struct `testing::internal::FlatTupleElemBase< FlatTuple< T... >, I >`
- struct `testing::internal::FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > >`
- class `testing::internal::FlatTuple< T >`
- struct `std::tuple_size< testing::internal::FlatTuple< Ts... > >`

## Namespaces

- `proto2`
- `testing`
- `testing::internal`
- `testing::internal::edit_distance`
- `std`

## 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\_HELPER\_(name, ...) #name
- #define GTEST\_STRINGIFY\_(...) GTEST\_STRINGIFY\_HELPER\_\_(\_\_VA\_ARGS\_\_, )
- #define GTEST\_REMOVE\_REFERENCE\_AND\_CONST\_(T) typename std::remove\_const<typename std::remove\_reference<T>::type>::type
- #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)
- #define GTEST\_TEST\_THROW\_CATCH\_STD\_EXCEPTION\_(statement, expected\_exception)
- #define GTEST\_TEST\_THROW\_(statement, expected\_exception, fail)
- #define GTEST\_TEST\_NO\_THROW\_CATCH\_STD\_EXCEPTION\_()
- #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::Typeld
- using testing::internal::SetUpTestSuiteFunc = void(\*)()
- using testing::internal::TearDownTestSuiteFunc = void(\*)()
- using testing::internal::SetUpTearDownSuiteFuncType = void(\*)()
- using testing::internal::TypedTestCasePState = TypedTestSuitePState
- typedef int testing::internal::IsContainer
- typedef char testing::internal::IsNotContainer
- template<size\_t N>
   
using testing::internal::MakeIndexSequence = typename MakeIndexSequenceImpl< N >::type
- template<typename... T>
   
using testing::internal::IndexSequenceFor = typename MakeIndexSequence< sizeof...(T)>::type

## 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 &gtest\_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\_ 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 >  
  Typeld **testing::internal::GetTypeid** ()
- **GTEST\_API\_ Typeld 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, Typeld 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)
- **testing::internal::GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_** (4251) class **GTEST\_API\_ TypedTestSuitePState**
- **testing::internal::GTEST\_DISABLE\_MSC\_WARNINGS\_POP\_** () inline const char \*SkipComma(const char \*str)
- std::string **testing::internal::GetPrefixUntilComma** (const char \*str)
- void **testing::internal::SplitString** (const ::std::string &str, char delimiter, ::std::vector<::std::string > \*dest)
- template<typename NameGenerator >  
  void **testing::internal::GenerateNamesRecursively** (internal::None, std::vector< std::string > \*, int)
- template<typename NameGenerator , typename Types >  
  void **testing::internal::GenerateNamesRecursively** (Types, std::vector< std::string > \*result, int i)
- template<typename NameGenerator , typename Types >  
  std::vector< std::string > **testing::internal::GenerateNames** ()
- **GTEST\_API\_ void testing::internal::RegisterTypeParameterizedTestSuite** (const char \*test\_suite\_name, CodeLocation code\_location)
- **GTEST\_API\_ void testing::internal::RegisterTypeParameterizedTestSuiteInstantiation** (const char \*case\_name)
- **GTEST\_API\_ std::string testing::internal::GetCurrentOsStackTraceExceptTop** (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(plusplus::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](#) []

### 7.36.1 Macro Definition Documentation

#### 7.36.1.1 GTEST\_CONCAT\_TOKEN\_

```
#define GTEST_CONCAT_TOKEN_(  
    foo,  
    bar ) GTEST\_CONCAT\_TOKEN\_IMPL\_(foo, bar)
```

#### 7.36.1.2 GTEST\_CONCAT\_TOKEN\_IMPL\_

```
#define GTEST_CONCAT_TOKEN_IMPL_(  
    foo,  
    bar ) foo##bar
```

#### 7.36.1.3 GTEST\_FATAL\_FAILURE\_

```
#define GTEST_FATAL_FAILURE_(  
    message )    return GTEST\_MESSAGE\_(message, ::testing::TestPartResult::kFatalFailure)
```

#### 7.36.1.4 GTEST\_MESSAGE\_

```
#define GTEST_MESSAGE_(  
    message,  
    result_type )  GTEST_MESSAGE_AT_(__FILE__, __LINE__, message, result_type)
```

#### 7.36.1.5 GTEST\_MESSAGE\_AT\_

```
#define GTEST_MESSAGE_AT_(  
    file,  
    line,  
    message,  
    result_type )
```

**Value:**

```
::testing::internal::AssertHelper(result_type, file, line, message) = \  
::testing::Message()
```

#### 7.36.1.6 GTEST\_NONFATAL\_FAILURE\_

```
#define GTEST_NONFATAL_FAILURE_(  
    message )  GTEST_MESSAGE_(message, ::testing::TestPartResult::kNonFatalFailure)
```

#### 7.36.1.7 GTEST\_REMOVE\_REFERENCE\_AND\_CONST\_

```
#define GTEST_REMOVE_REFERENCE_AND_CONST_(  
    T )  typename std::remove_const<typename std::remove_reference<T>::type>::type
```

#### 7.36.1.8 GTEST\_SKIP\_

```
#define GTEST_SKIP_(  
    message )  return GTEST_MESSAGE_(message, ::testing::TestPartResult::kSkip)
```

#### 7.36.1.9 GTEST\_STRINGIFY\_

```
#define GTEST_STRINGIFY_(  
    ... )  GTEST_STRINGIFY_HELPER_(__VA_ARGS__, )
```

### 7.36.1.10 GTEST\_STRINGIFY\_HELPER\_

```
#define GTEST_STRINGIFY_HELPER_(  
    name,  
    ... ) #name
```

### 7.36.1.11 GTEST\_SUCCESS\_

```
#define GTEST_SUCCESS_(  
    message )  GTEST_MESSAGE_(message, ::testing::TestPartResult::kSuccess)
```

### 7.36.1.12 GTEST\_SUPPRESS\_UNREACHABLE\_CODE\_WARNING\_BELOW\_

```
#define GTEST_SUPPRESS_UNREACHABLE_CODE_WARNING_BELOW_(  
    statement )
```

**Value:**

```
if (::testing::internal::AlwaysTrue()) {  
    statement;  
} else /* NOLINT */  
    static_assert(true, "")\
```

### 7.36.1.13 GTEST\_TEST\_

```
#define GTEST_TEST_(  
    test_suite_name,  
    test_name,  
    parent_class,  
    parent_id )
```

### 7.36.1.14 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.")\
```

### 7.36.1.15 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())
```

### 7.36.1.16 GTEST\_TEST\_CLASS\_NAME\_

```
#define GTEST_TEST_CLASS_NAME_(  
    test_suite_name,  
    test_name )  test_suite_name##_##test_name##_Test
```

### 7.36.1.17 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.")
```

### 7.36.1.18 GTEST\_TEST\_NO\_THROW\_

```
#define GTEST_TEST_NO_THROW_(  
    statement,  
    fail )
```

**Value:**

```
GTEST_AMBIGUOUS_ELSE_BLOCKER_  
if (::testing::internal::TrueWithString gtest_msg{}) {  
    try {  
        GTEST_SUPPRESS_UNREACHABLE_CODE_WARNING_BELOW_(statement);  
    }  
    GTEST_TEST_NO_THROW_CATCH_STD_EXCEPTION_()  
    catch (...) {  
        gtest_msg.value = "it throws.";  
        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: " +  
       gtest_msg.value)  
     .c_str())
```

### 7.36.1.19 GTEST\_TEST\_NO\_THROW\_CATCH\_STD\_EXCEPTION\_

```
#define GTEST_TEST_NO_THROW_CATCH_STD_EXCEPTION_( )
```

### 7.36.1.20 GTEST\_TEST\_THROW\_

```
#define GTEST_TEST_THROW_(  
    statement,  
    expected_exception,  
    fail )
```

**Value:**

```
GTEST_AMBIGUOUS_ELSE_BLOCKER_  
if (::testing::internal::TrueWithString gtest_msg{}) {  
    bool gtest_caught_expected = false;  
    try {  
        GTEST_SUPPRESS_UNREACHABLE_CODE_WARNING_BELOW_(statement);  
    } catch (expected_exception const&) {  
        gtest_caught_expected = true;  
    }  
    GTEST_TEST_THROW_CATCH_STD_EXCEPTION_(statement, expected_exception)  
    catch (...) {  
        gtest_msg.value = "Expected: " #statement  
                      " throws an exception of type " #expected_exception  
                      ".\n Actual: it throws a different type.";  
        goto GTEST_CONCAT_TOKEN_(gtest_label_testthrow_, __LINE__);  
    }  
    if (!gtest_caught_expected) {  
        gtest_msg.value = "Expected: " #statement  
                      " throws an exception of type " #expected_exception  
                      ".\n Actual: it throws nothing.";  
        goto GTEST_CONCAT_TOKEN_(gtest_label_testthrow_, __LINE__);  
    }  
} else /*NOLINT*/  
GTEST_CONCAT_TOKEN_(gtest_label_testthrow_, __LINE__)  
: fail(gtest_msg.value.c_str())
```

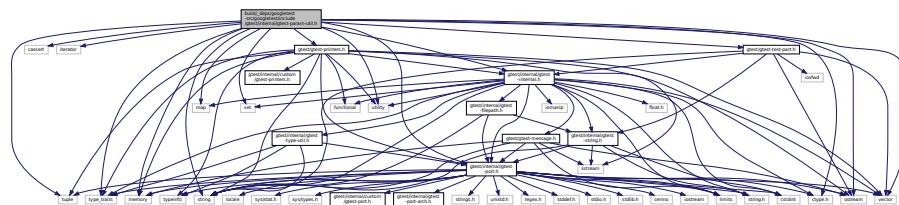
### 7.36.1.21 GTEST\_TEST\_THROW\_CATCH\_STD\_EXCEPTION\_

```
#define GTEST_TEST_THROW_CATCH_STD_EXCEPTION_(  
    statement,  
    expected_exception )
```

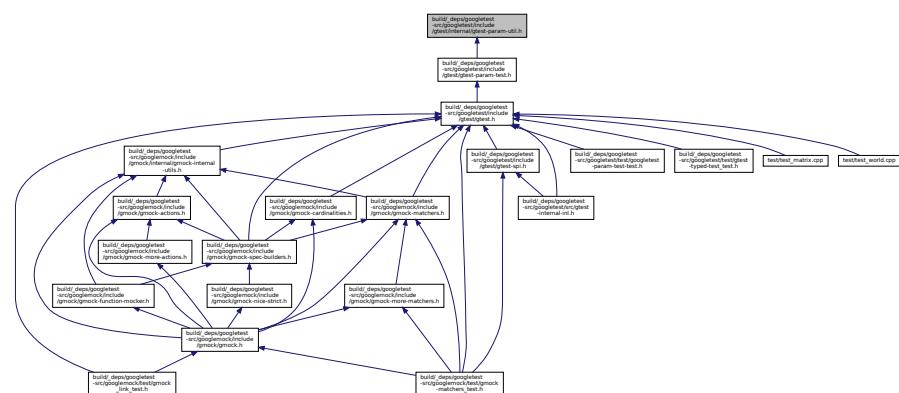
## 7.37 build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-param-util.h File Reference

```
#include <ctype.h>  
#include <cassert>  
#include <iostream>  
#include <map>  
#include <memory>  
#include <ostream>  
#include <set>  
#include <string>  
#include <tuple>  
#include <type_traits>  
#include <utility>  
#include <vector>  
#include "gtest/gtest-printers.h"  
#include "gtest/gtest-test-part.h"  
#include "gtest/internal/gtest-internal.h"  
#include "gtest/internal/gtest-port.h"
```

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::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`
- struct `testing::internal::MarkAsIgnored`
- class `testing::internal::ParameterizedTestSuiteInfo< TestSuite >`
- struct `testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfo`
- struct `testing::internal::ParameterizedTestSuiteInfo< TestSuite >::InstantiationInfo`
- class `testing::internal::ParameterizedTestSuiteRegistry`
- class `testing::internal::TypeParameterizedTestSuiteRegistry`
- struct `testing::internal::TypeParameterizedTestSuiteRegistry::TypeParameterizedTestSuiteInfo`
- class `testing::internal::ValueArray< Ts >`
- class `testing::internal::CartesianProductGenerator< T >`
- class `testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >`
- class `testing::internal::CartesianProductHolder< Gen >`
- class `testing::internal::ParamGeneratorConverter< From, To >`
- class `testing::internal::ParamGeneratorConverter< From, To >::Iterator`
- class `testing::internal::ParamConverterGenerator< Gen >`

## Namespaces

- `testing`
- `testing::internal`

## Typedefs

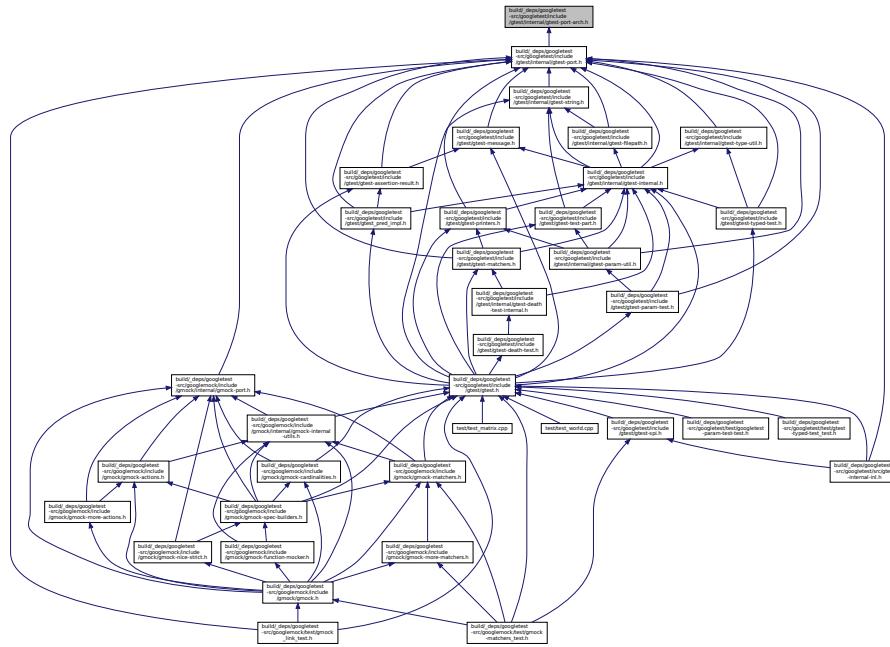
- template<class TestCase >  
using `testing::internal::ParameterizedTestCaseInfo` = `ParameterizedTestSuiteInfo< TestCase >`

## 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 &`)
- `GTEST_API_ void testing::internal::InsertSyntheticTestCase` (const `std::string &name`, `CodeLocation location`, `bool has_test_p`)
- template<class Container >  
`internal::ParamGenerator< typename Container::value_type >` `testing::ValuesIn` (const `Container &container`)

## 7.38 build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-port-arch.h File Reference

This graph shows which files directly or indirectly include this file:

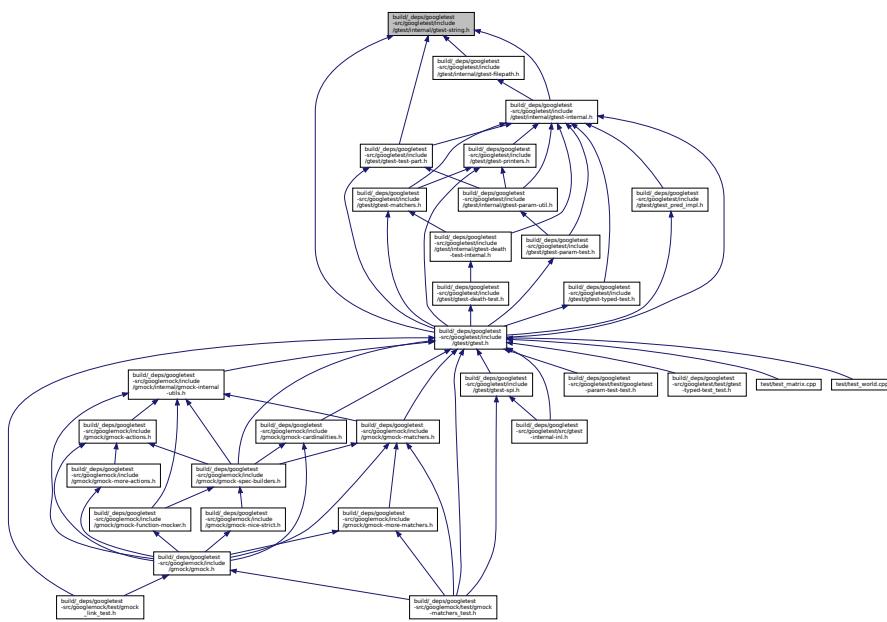


## 7.39 build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-string.h File Reference

```
#include <string.h>
#include <cstdint>
#include <sstream>
#include <string>
#include "gtest/internal/gtest-port.h"
Include dependency graph for gtest-string.h:
```



This graph shows which files directly or indirectly include this file:



## Classes

- class `testing::internal::String`

## Namespaces

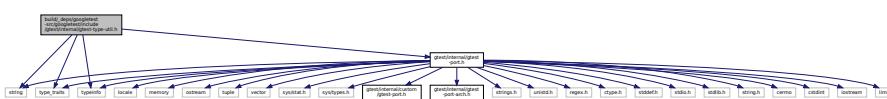
- testing
  - testing::internal

## Functions

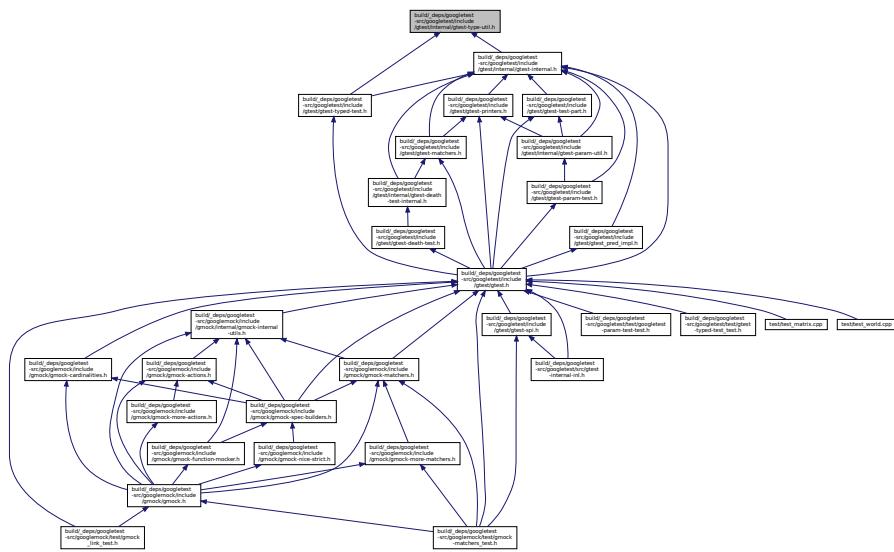
- [GTEST\\_API\\_ std::string testing::internal::StringStreamToString \(::std::stringstream \\*stream\)](#)

## 7.40 build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-type-util.h File Reference

```
#include <string>
#include <type_traits>
#include <typeinfo>
#include "gtest/internal/gtest-port.h"
Include dependency graph for gtest-type-util.h:
```



This graph shows which files directly or indirectly include this file:



## Classes

- struct [testing::internal::None](#)
  - struct [testing::internal::TemplateSel< Tmpl >](#)
  - struct [testing::internal::TemplateSel< Tmpl >::Bind< T >](#)
  - struct [testing::internal::Templates< Head\\_, Tail\\_ >](#)
  - struct [testing::internal::Templates< Head\\_ >](#)
  - struct [testing::internal::Types< Head\\_, Tail\\_ >](#)
  - struct [testing::internal::Types< Head\\_ >](#)
  - struct [testing::internal::ProxyTypeList< Ts >](#)
  - struct [testing::internal::is\\_proxy\\_type\\_list< typename >](#)
  - struct [testing::internal::is\\_proxy\\_type\\_list< ProxyTypeList< Ts... > >](#)
  - struct [testing::internal::GenerateTypeList< T >](#)

# Namespaces

- testing
  - testing::internal

## Macros

- `#define GTEST_TEMPLATE_`
  - `#define GTEST_BIND_(TmplSel, T) TmplSel::template Bind<T>::type`

## TypeDefs

- template<typename... Ts>  
    using testing::Types = internal::ProxyTypeList< Ts... >

## Functions

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

### 7.40.1 Macro Definition Documentation

#### 7.40.1.1 GTEST\_BIND\_

```
#define GTEST_BIND_(
    TmplSel,
    T ) TmplSel::template Bind<T>::type
```

#### 7.40.1.2 GTEST\_TEMPLATE\_

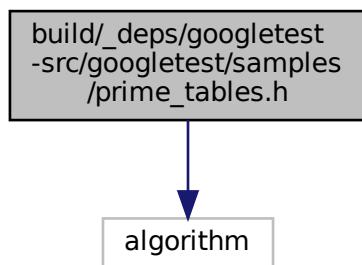
```
#define GTEST_TEMPLATE_
```

##### Value:

```
template <typename T> \
class
```

## 7.41 build/\_deps/googletest-src/googletest/samples/prime\_tables.h File Reference

```
#include <algorithm>
Include dependency graph for prime_tables.h:
```



## Classes

- class [PrimeTable](#)
- class [OnTheFlyPrimeTable](#)
- class [PreCalculatedPrimeTable](#)

## 7.42 build/\_deps/googletest-src/googletest/samples/sample1.h File Reference

### Functions

- int [Factorial](#) (int n)
- bool [IsPrime](#) (int n)

#### 7.42.1 Function Documentation

##### 7.42.1.1 Factorial()

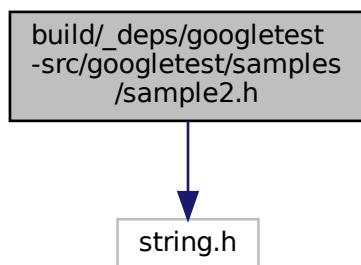
```
int Factorial (
    int n )
```

##### 7.42.1.2 IsPrime()

```
bool IsPrime (
    int n )
```

## 7.43 build/\_deps/googletest-src/googletest/samples/sample2.h File Reference

```
#include <string.h>
Include dependency graph for sample2.h:
```

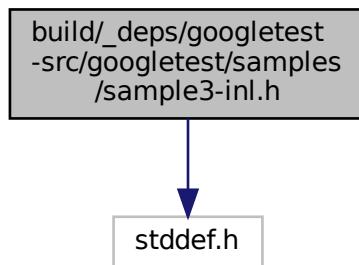


## Classes

- class [MyString](#)

## 7.44 build/\_deps/googletest-src/googletest/samples/sample3-inl.h File Reference

```
#include <stddef.h>
Include dependency graph for sample3-inl.h:
```



## Classes

- class [QueueNode< E >](#)
- class [Queue< E >](#)

## 7.45 build/\_deps/googletest-src/googletest/samples/sample4.h File Reference

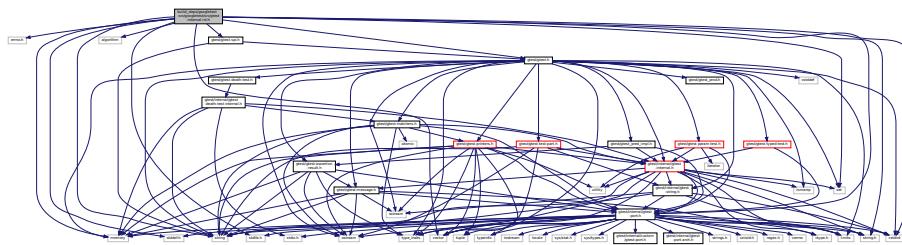
## Classes

- class [Counter](#)

## 7.46 build/\_deps/googletest-src/googletest/src/gtest-internal-inl.h File Reference

```
#include <errno.h>
#include <stddef.h>
#include <stdlib.h>
#include <string.h>
#include <algorithm>
```

```
#include <cstdint>
#include <memory>
#include <set>
#include <string>
#include <vector>
#include "gtest/internal/gtest-port.h"
#include "gtest/gtest-spi.h"
#include "gtest/gtest.h"
Include dependency graph for gtest-internal-inl.h:
```



## Classes

- class [testing::internal::GTestFlagSaver](#)
- class [testing::internal::TestPropertyKeyls](#)
- class [testing::internal::UnitTestOptions](#)
- class [testing::internal::OsStackTraceGetterInterface](#)
- class [testing::internal::OsStackTraceGetter](#)
- struct [testing::internal::TraceInfo](#)
- class [testing::internal::DefaultGlobalTestPartResultReporter](#)
- class [testing::internal::DefaultPerThreadTestPartResultReporter](#)
- class [testing::internal::UnitTestFixture](#)
- class [testing::internal::TestResultAccessor](#)

## Namespaces

- [testing](#)
- [testing::internal](#)

## Functions

- [GTEST\\_DISABLE\\_MSC\\_WARNINGS\\_PUSH\\_\(4251\)](#) [GTEST\\_DECLARE\\_bool\\_\(death\\_test\\_use\\_fork\)](#)
- [GTEST\\_API\\_ TimeInMillis testing::internal::GetTimeInMillis\(\)](#)
- [GTEST\\_API\\_ bool testing::internal::ShouldUseColor\(bool stdout\\_is\\_tty\)](#)
- [GTEST\\_API\\_ std::string testing::internal::FormatTimeInMillisAsSeconds\(TimeInMillis ms\)](#)
- [GTEST\\_API\\_ std::string testing::internal::FormatEpochTimeInMillisAsIso8601\(TimeInMillis ms\)](#)
- [GTEST\\_API\\_ bool testing::internal::ParseFlag\(const char \\*str, const char \\*flag, int32\\_t \\*value\)](#)
- [int testing::internal::GetRandomSeedFromFlag\(int32\\_t random\\_seed\\_flag\)](#)
- [int testing::internal::GetNextRandomSeed\(int seed\)](#)
- [GTEST\\_API\\_ std::string testing::internal::CodePointToUtf8\(uint32\\_t code\\_point\)](#)
- [GTEST\\_API\\_ std::string testing::internal::WideStringToUtf8\(const wchar\\_t \\*str, int num\\_chars\)](#)
- [void testing::internal::WriteToShardStatusFileIfNeeded\(\)](#)

- `GTEST_API_ bool testing::internal::ShouldShard (const char *total_shards_str, const char *shard_index_str, bool in_subprocess_for_death_test)`
- `GTEST_API_ int32_t testing::internal::Int32FromEnvOrDie (const char *env_var, int32_t default_val)`
- `GTEST_API_ bool testing::internal::ShouldRunTestOnShard (int total_shards, int shard_index, int test_id)`
- template<class Container , typename Predicate >  
  int `testing::internal::CountIf (const Container &c, Predicate predicate)`
- template<class Container , typename Functor >  
  void `testing::internal::ForEach (const Container &c, Functor functor)`
- template<typename E >  
  E `testing::internal::GetElementOr (const std::vector< E > &v, int i, E default_value)`
- template<typename E >  
  void `testing::internal::ShuffleRange (internal::Random *random, int begin, int end, std::vector< E > *v)`
- template<typename E >  
  void `testing::internal::Shuffle (internal::Random *random, std::vector< E > *v)`
- template<typename T >  
  static void `testing::internal::Delete (T *x)`
- class `UnitTestImpl * testing::internal::GetUnitTestImpl ()`
- `GTEST_API_ void testing::internal::ParseGoogleTestFlagsOnly (int *argc, char **argv)`
- `GTEST_API_ void testing::internal::ParseGoogleTestFlagsOnly (int *argc, wchar_t **argv)`

## Variables

- `GTEST_API_ const Typeld testing::internal::kTestIdInGoogleTest`
- `const int testing::internal::kMaxRandomSeed = 99999`
- `GTEST_API_ bool testing::internal::g_help_flag`

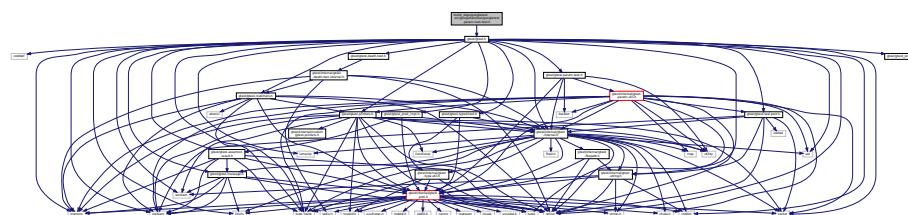
### 7.46.1 Function Documentation

#### 7.46.1.1 GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_()

```
GTEST_DISABLE_MSC_WARNINGS_PUSH_ (
    4251 GMOCK_MAYBE_5046_ )
```

## 7.47 build/\_deps/googletest-src/googletest/test/googletest-param-test-test.h File Reference

```
#include "gtest/gtest.h"
Include dependency graph for googletest-param-test-test.h:
```

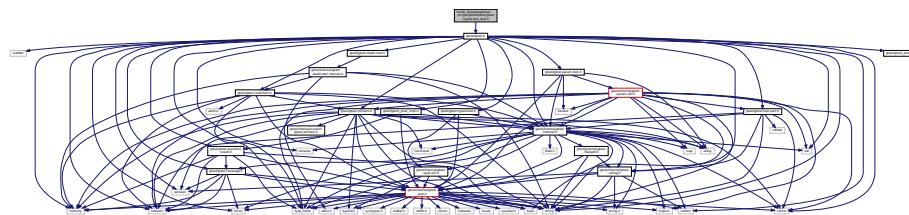


## Classes

- class [ExternalInstantiationTest](#)
- class [InstantiationInMultipleTranslationUnitsTest](#)

## 7.48 build/\_deps/googletest-src/googletest/test/gtest-typed-test\_test.h File Reference

```
#include "gtest/gtest.h"
Include dependency graph for gtest-typed-test.h:
```



## Classes

- class [ContainerTest< T >](#)

## Functions

- [TYPED\\_TEST\\_SUITE\\_P](#) ([ContainerTest](#))
- [TYPED\\_TEST\\_P](#) ([ContainerTest](#), [CanBeDefaultConstructed](#))
- [TYPED\\_TEST\\_P](#) ([ContainerTest](#), [InitialSizeIsZero](#))
- [REGISTER\\_TYPED\\_TEST\\_SUITE\\_P](#) ([ContainerTest](#), [CanBeDefaultConstructed](#), [InitialSizeIsZero](#))

### 7.48.1 Function Documentation

#### 7.48.1.1 REGISTER\_TYPED\_TEST\_SUITE\_P()

```
REGISTER_TYPED_TEST_SUITE_P (
    ContainerTest ,
    CanBeDefaultConstructed ,
    InitialSizeIsZero )
```

#### 7.48.1.2 TYPED\_TEST\_P() [1/2]

```
TYPED_TEST_P (  
    ContainerTest,  
    CanBeDefaultConstructed )
```

#### 7.48.1.3 TYPED\_TEST\_P() [2/2]

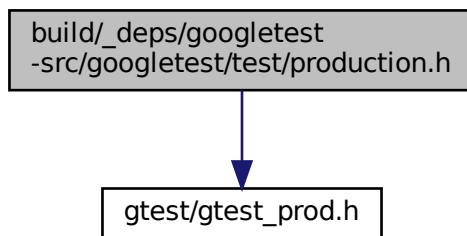
```
TYPED_TEST_P (  
    ContainerTest,  
    InitialSizeIsZero )
```

#### 7.48.1.4 TYPED\_TEST\_SUITE\_P()

```
TYPED_TEST_SUITE_P (  
    ContainerTest )
```

### 7.49 build/\_deps/googletest-src/googletest/test/production.h File Reference

```
#include "gtest/gtest_prod.h"  
Include dependency graph for production.h:
```

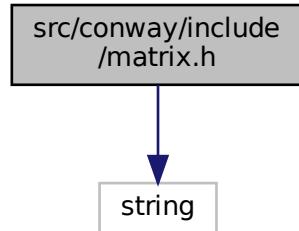


## Classes

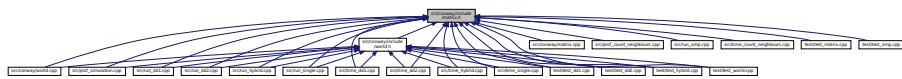
- class [PrivateCode](#)

## 7.50 src/conway/include/matrix.h File Reference

```
#include <string>
Include dependency graph for matrix.h:
```



This graph shows which files directly or indirectly include this file:



### Classes

- class [Matrix](#)  
*Library for matrix functions contained in the namespace "matrix".*

### Namespaces

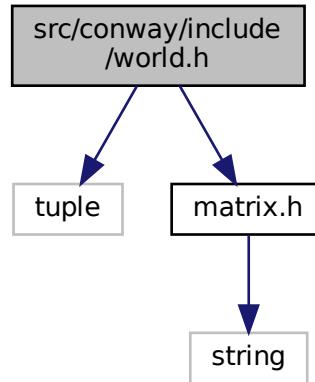
- [matrix](#)

### Functions

- std::string [matrix::read\\_file](#) (std::string filename)
- [Matrix](#) [matrix::read\\_matrix\\_str](#) (std::string matrix\_string)
- std::string [matrix::write\\_matrix\\_str](#) ([Matrix](#) A)
- [Matrix](#) [matrix::count\\_neighbours](#) ([Matrix](#) &A)
- [Matrix](#) [matrix::generate\\_matrix](#) (int n\_rows, int n\_cols)

## 7.51 src/conway/include/world.h File Reference

```
#include <tuple>
#include "matrix.h"
Include dependency graph for world.h:
```



This graph shows which files directly or indirectly include this file:



## Classes

- class [World](#)  
*Library for the functions involved in simulating a Game of Life world.*

## Namespaces

- [conway](#)

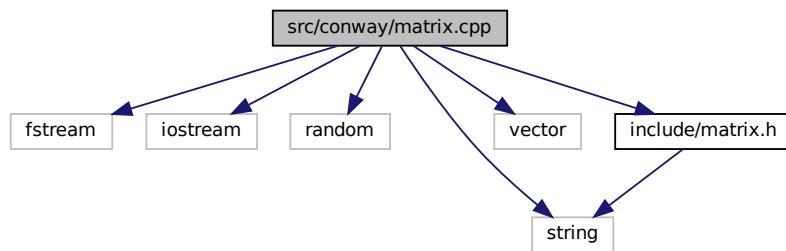
## Functions

- int [conway::evaluate\\_rules](#) (`Matrix &Cells_count`, `Matrix &Cells_current`, `Matrix &Cells_next`)
- int [conway::update\\_boundary](#) (`Matrix &Cells`)
- std::tuple< int, int > [conway::divide\\_rows](#) (int rows, int size, int rank)

## 7.52 src/conway/matrix.cpp File Reference

```
#include <fstream>
#include <iostream>
#include <random>
#include <string>
#include <vector>
#include "include/matrix.h"
```

Include dependency graph for matrix.cpp:



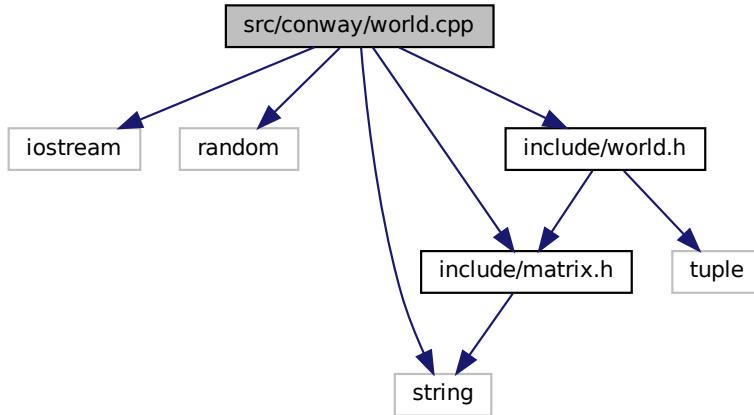
### 7.52.1 Detailed Description

Contains useful functions for low-level matrix operations.

## 7.53 src/conway/world.cpp File Reference

```
#include <iostream>
#include <random>
#include <string>
#include "include/matrix.h"
#include "include/world.h"
```

Include dependency graph for world.cpp:

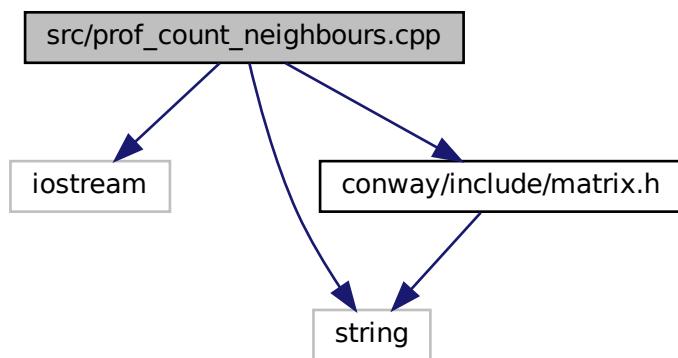


### 7.53.1 Detailed Description

Defines the [World](#) class for simulating Game of Life, as well as some useful routines for the updating and communicating the halos during domain decomposition.

## 7.54 src/prof\_count\_neighbours.cpp File Reference

```
#include <iostream>
#include <string>
#include "conway/include/matrix.h"
Include dependency graph for prof_count_neighbours.cpp:
```



## Functions

- int `main ()`

### 7.54.1 Function Documentation

#### 7.54.1.1 `main()`

```
int main ( )
```

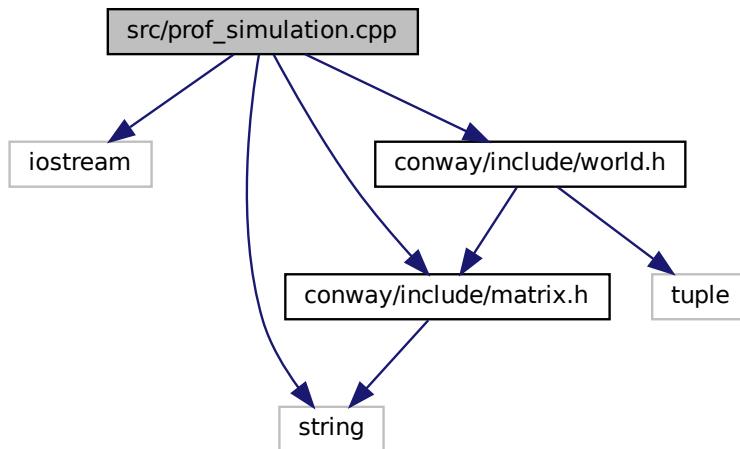
Performs the necessary 3x3 2D convolution required for Game of Life.

#### Parameters

|                |               |
|----------------|---------------|
| <code>A</code> | Input matrix. |
|----------------|---------------|

## 7.55 src/prof\_simulation.cpp File Reference

```
#include <iostream>
#include <string>
#include "conway/include/matrix.h"
#include "conway/include/world.h"
Include dependency graph for prof_simulation.cpp:
```



## Functions

- int `main ()`

### 7.55.1 Function Documentation

#### 7.55.1.1 main()

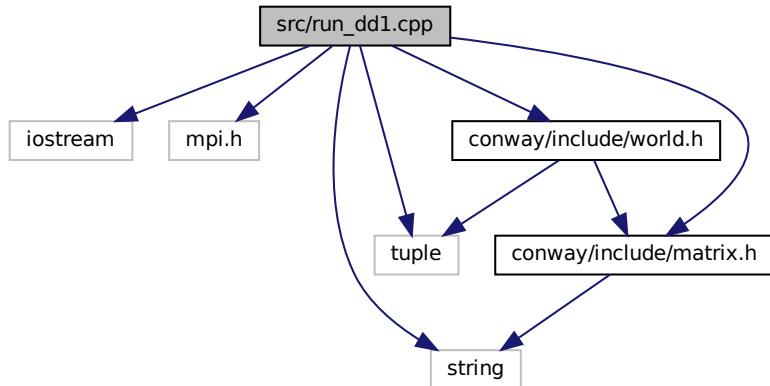
```
int main ( )
```

Main procedure to run.

## 7.56 src/run\_dd1.cpp File Reference

```
#include <iostream>
#include <mpi.h>
#include <string>
#include <tuple>
#include "conway/include/matrix.h"
#include "conway/include/world.h"
```

Include dependency graph for run\_dd1.cpp:



## Functions

- int [main](#) (int argc, char \*\*argv)

*run\_dd1.cpp* This file can be used to run the 1D domain decomposed solution.

### 7.56.1 Function Documentation

### 7.56.1.1 main()

```
int main (
    int argc,
    char ** argv )
```

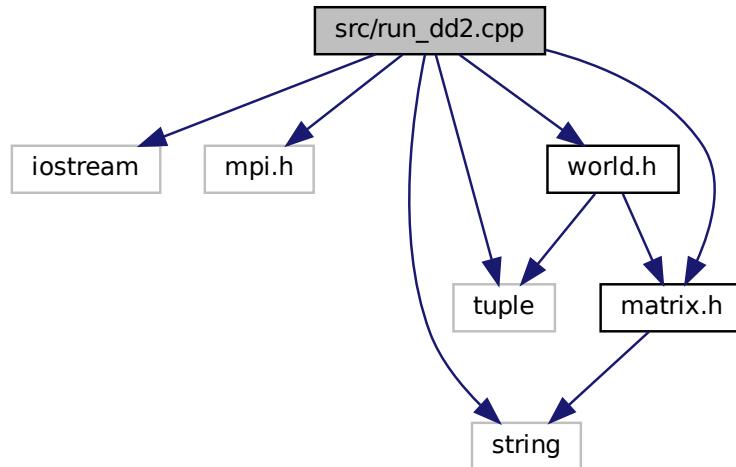
[run\\_dd1.cpp](#) This file can be used to run the 1D domain decomposed solution.

Can be run using `mpirun -n n_ranks ./bin/run_dd1 <world_options>`. Main procedure to run.

## 7.57 src/run\_dd2.cpp File Reference

```
#include <iostream>
#include <mpi.h>
#include <string>
#include <tuple>
#include "matrix.h"
#include "world.h"
```

Include dependency graph for run\_dd2.cpp:



## Functions

- int `main` (int argc, char \*\*argv)

[run\\_dd2.cpp](#) This file can be used to run the 2D domain decomposed solution.

### 7.57.1 Function Documentation

### 7.57.1.1 main()

```
int main (
    int argc,
    char ** argv )
```

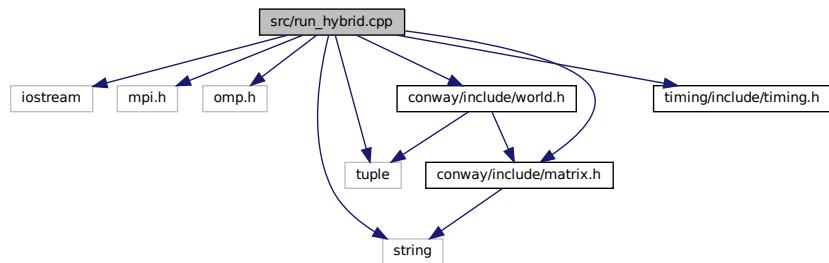
[run\\_dd2.cpp](#) This file can be used to run the 2D domain decomposed solution.

Can be run using `mpirun -n n_ranks ./bin/run_dd2 n_ranks_rows n_cols_rows <world_options>`. Main procedure to run.

## 7.58 src/run\_hybrid.cpp File Reference

```
#include <iostream>
#include <mpi.h>
#include <omp.h>
#include <string>
#include <tuple>
#include "conway/include/matrix.h"
#include "conway/include/world.h"
#include "timing/include/timing.h"
```

Include dependency graph for run\_hybrid.cpp:



## Functions

- `int update_boundary_omp (Matrix &cells_0)`  
`run_hybrid.cpp` This file can be used to run the hybrid OpenMP/2D MPI solution.
- `int evolve_omp (Matrix &cells_0, Matrix &cells_1)`
- `int main (int argc, char **argv)`

### 7.58.1 Function Documentation

### 7.58.1.1 evolve\_omp()

```
int evolve_omp (
    Matrix & cells_0,
    Matrix & cells_1 )
```

### 7.58.1.2 main()

```
int main (
    int argc,
    char ** argv )
```

Main procedure to run.

### 7.58.1.3 update\_boundary\_omp()

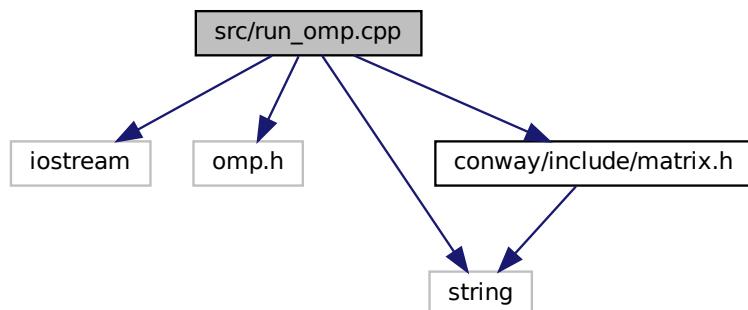
```
int update_boundary_omp (
    Matrix & cells_0 )
```

[run\\_hybrid.cpp](#) This file can be used to run the hybrid OpenMP/2D MPI solution.

Can be run using `mpirun -n n_ranks ./bin/run_hybrid n_ranks_rows n_cols_rows <world_options>`.

## 7.59 src/run\_omp.cpp File Reference

```
#include <iostream>
#include <omp.h>
#include <string>
#include "conway/include/matrix.h"
Include dependency graph for run_omp.cpp:
```



## Functions

- int `update_boundary_omp (Matrix &cells_0)`  
*run\_omp.cpp This file can be used to run the OpenMP threaded solution.*
- int `evolve_omp (Matrix &cells_0, Matrix &cells_1)`
- int `main (int argc, char **argv)`

### 7.59.1 Function Documentation

#### 7.59.1.1 evolve\_omp()

```
int evolve_omp (
    Matrix & cells_0,
    Matrix & cells_1 )
```

#### 7.59.1.2 main()

```
int main (
    int argc,
    char ** argv )
```

#### 7.59.1.3 update\_boundary\_omp()

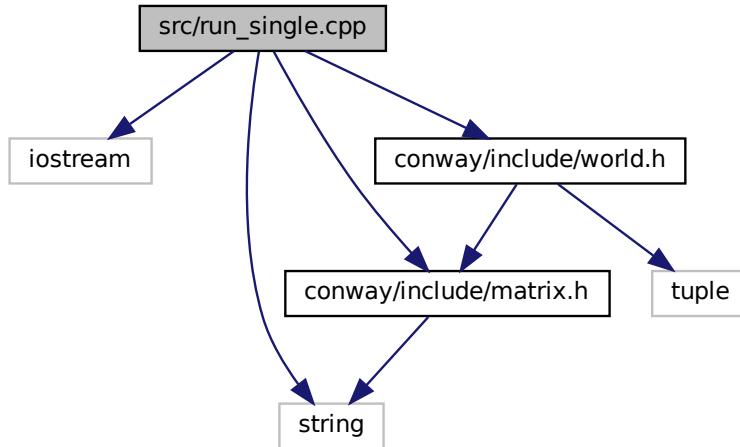
```
int update_boundary_omp (
    Matrix & cells_0 )
```

*run\_omp.cpp This file can be used to run the OpenMP threaded solution.*

Can be run by first specifying `export OMP_NUM_THREADS=x` and then `./bin/run_omp`

## 7.60 src/run\_single.cpp File Reference

```
#include <iostream>
#include <string>
#include "conway/include/matrix.h"
#include "conway/include/world.h"
Include dependency graph for run_single.cpp:
```



### Functions

- int [main](#) (int argc, char \*\*argv)

#### 7.60.1 Detailed Description

Used to run the single-thread version of the simulation algorithm.

Can be run using `./bin/run_single <world_options>`

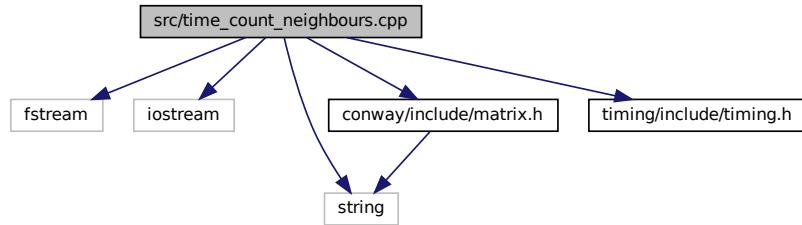
#### 7.60.2 Function Documentation

##### 7.60.2.1 main()

```
int main (
    int argc,
    char ** argv )
```

## 7.61 src/time\_count\_neighbours.cpp File Reference

```
#include <fstream>
#include <iostream>
#include <string>
#include "conway/include/matrix.h"
#include "timing/include/timing.h"
Include dependency graph for time_count_neighbours.cpp:
```



### Functions

- double [time\\_count\\_neighbours](#) (int n\_rows, int n\_cols)
- int [main](#) ()

#### 7.61.1 Function Documentation

##### 7.61.1.1 main()

```
int main ( )
```

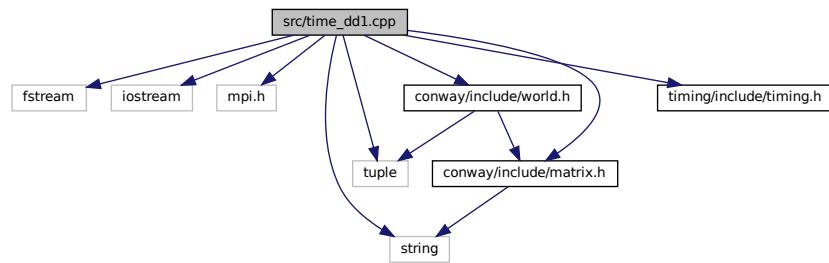
Main procedure to run.

##### 7.61.1.2 time\_count\_neighbours()

```
double time_count_neighbours (
    int n_rows,
    int n_cols )
```

## 7.62 src/time\_dd1.cpp File Reference

```
#include <fstream>
#include <iostream>
#include <mpi.h>
#include <string>
#include <tuple>
#include "conway/include/matrix.h"
#include "conway/include/world.h"
#include "timing/include/timing.h"
Include dependency graph for time_dd1.cpp:
```



## Functions

- int [main](#) (int argc, char \*\*argv)

### 7.62.1 Detailed Description

Assesses how the run\_dd1 script time scales with simulation size.

### 7.62.2 Function Documentation

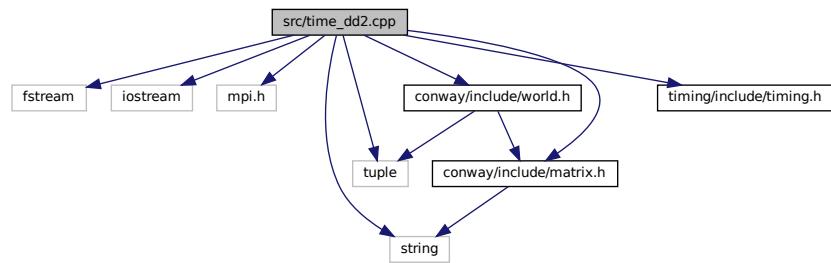
#### 7.62.2.1 main()

```
int main (
    int argc,
    char ** argv )
```

Main procedure to run.

## 7.63 src/time\_dd2.cpp File Reference

```
#include <fstream>
#include <iostream>
#include <mpi.h>
#include <string>
#include <tuple>
#include "conway/include/matrix.h"
#include "conway/include/world.h"
#include "timing/include/timing.h"
Include dependency graph for time_dd2.cpp:
```



## Functions

- int [main](#) (int argc, char \*\*argv)

### 7.63.1 Detailed Description

Assesses how the run\_dd2 script time scales with simulation size.

### 7.63.2 Function Documentation

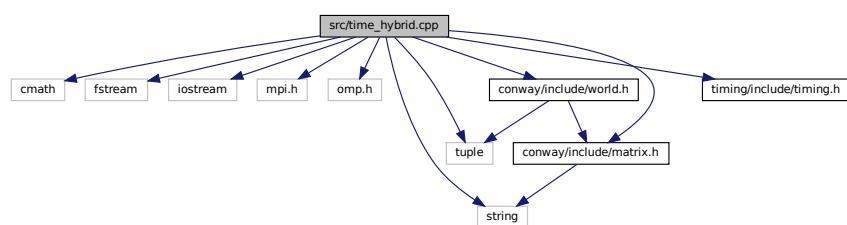
#### 7.63.2.1 main()

```
int main (
    int argc,
    char ** argv )
```

Main procedure to run.

## 7.64 src/time\_hybrid.cpp File Reference

```
#include <cmath>
#include <fstream>
#include <iostream>
#include <mpi.h>
#include <omp.h>
#include <string>
#include <tuple>
#include "conway/include/matrix.h"
#include "conway/include/world.h"
#include "timing/include/timing.h"
Include dependency graph for time_hybrid.cpp:
```



## Functions

- int `update_boundary_omp (Matrix &cells_0)`
- int `evolve_omp (Matrix &cells_0, Matrix &cells_1)`
- int `main (int argc, char **argv)`

### 7.64.1 Detailed Description

Assesses how the dd1 script time scales with simulation size for 200 ticks.

Can be run via `mpirun -n n_ranks ./bin/time_hybrid`, noting that `n_ranks` must be square.

### 7.64.2 Function Documentation

#### 7.64.2.1 evolve\_omp()

```
int evolve_omp (
    Matrix & cells_0,
    Matrix & cells_1 )
```

### 7.64.2.2 main()

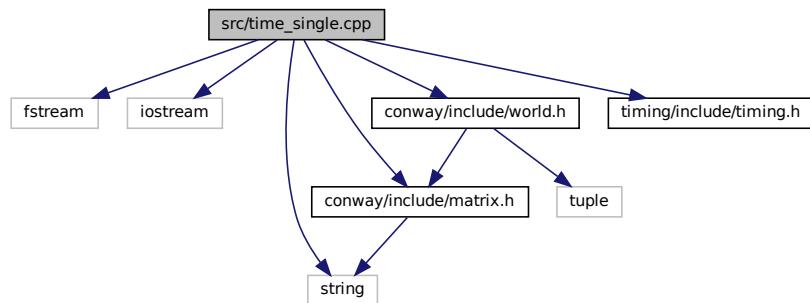
```
int main (
    int argc,
    char ** argv )
```

### 7.64.2.3 update\_boundary\_omp()

```
int update_boundary_omp (
    Matrix & cells_0 )
```

## 7.65 src/time\_single.cpp File Reference

```
#include <fstream>
#include <iostream>
#include <string>
#include "conway/include/matrix.h"
#include "conway/include/world.h"
#include "timing/include/timing.h"
Include dependency graph for time_single.cpp:
```



## Functions

- double [time\\_simulation](#) (int n\_rows, int n\_cols, int final\_age)
- int [main](#) ()

### 7.65.1 Detailed Description

Assesses how the time taken for the simulation scales with size, for 200 ticks.

Can be run by ./bin/time\_single

## 7.65.2 Function Documentation

### 7.65.2.1 main()

```
int main ( )
```

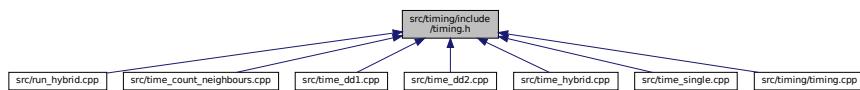
Main procedure to run.

### 7.65.2.2 time\_simulation()

```
double time_simulation (
    int n_rows,
    int n_cols,
    int final_age )
```

## 7.66 src/timing/include/timing.h File Reference

This graph shows which files directly or indirectly include this file:



## Namespaces

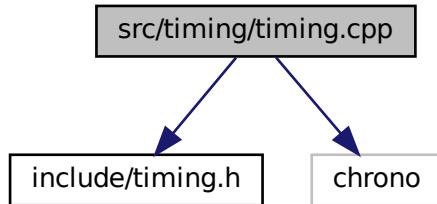
- [timing](#)

## Functions

- `void timing::start_clock ()`
- `double timing::get_split ()`

## 7.67 src/timing/timing.cpp File Reference

```
#include "include/timing.h"
#include <chrono>
Include dependency graph for timing.cpp:
```



### Variables

- std::chrono::high\_resolution\_clock::time\_point [time\\_point](#)

#### 7.67.1 Variable Documentation

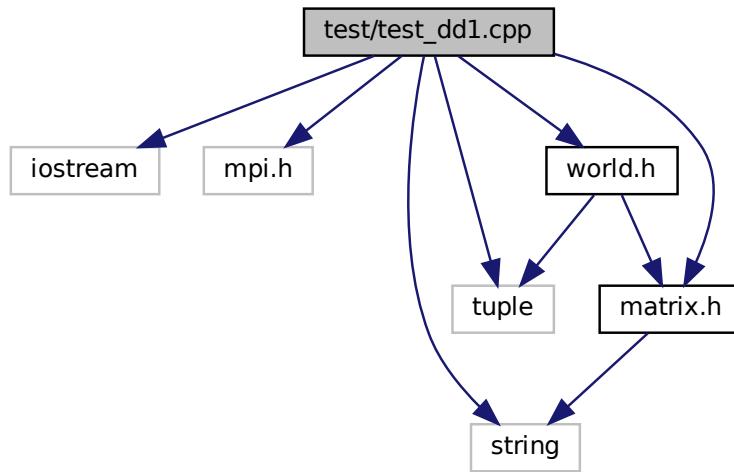
##### 7.67.1.1 time\_point

```
std::chrono::high_resolution_clock::time_point time_point
```

## 7.68 test/test\_dd1.cpp File Reference

```
#include <iostream>
#include <mpi.h>
#include <string>
#include <tuple>
#include "matrix.h"
```

```
#include "world.h"
Include dependency graph for test_dd1.cpp:
```



## Functions

- int `main` (int argc, char \*\*argv)

### 7.68.1 Detailed Description

Tests that the 1D decomposition correctly evolves the `input_file_1.txt` seed.

Can be run via `mpirun -n n_ranks ./bin/test_dd1`

### 7.68.2 Function Documentation

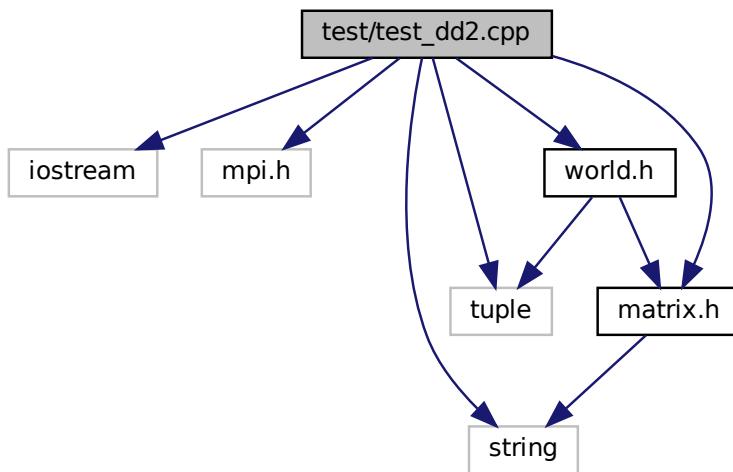
#### 7.68.2.1 main()

```
int main (
    int argc,
    char ** argv )
```

Main procedure to run.

## 7.69 test/test\_dd2.cpp File Reference

```
#include <iostream>
#include <mpi.h>
#include <string>
#include <tuple>
#include "matrix.h"
#include "world.h"
Include dependency graph for test_dd2.cpp:
```



### Functions

- int [main](#) (int argc, char \*\*argv)

#### 7.69.1 Detailed Description

Tests that the 2D decomposition correctly evolves the input\_file\_1.txt seed.

Can be run via `mpirun -n n_ranks ./bin/test_dd2 ranks_rows ranks_cols`

#### 7.69.2 Function Documentation

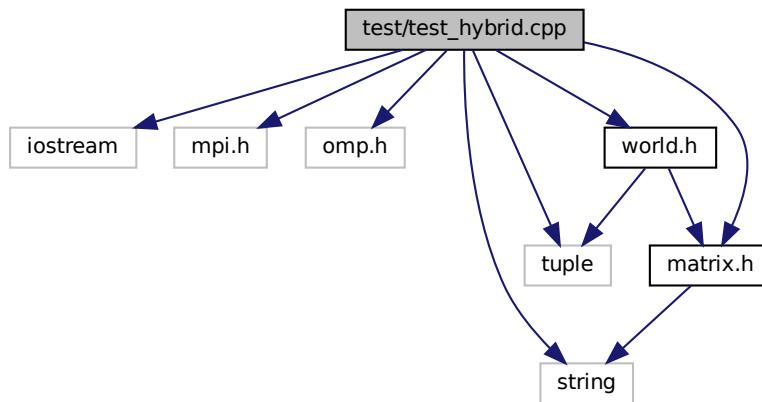
##### 7.69.2.1 main()

```
int main (
    int argc,
    char ** argv )
```

Main procedure to run.

## 7.70 test/test\_hybrid.cpp File Reference

```
#include <iostream>
#include <mpi.h>
#include <omp.h>
#include <string>
#include <tuple>
#include "matrix.h"
#include "world.h"
Include dependency graph for test_hybrid.cpp:
```



### Functions

- int [update\\_boundary\\_omp \(Matrix &cells\\_0\)](#)
- int [evolve\\_omp \(Matrix &cells\\_0, Matrix &cells\\_1\)](#)
- int [main \(int argc, char \\*\\*argv\)](#)

#### 7.70.1 Detailed Description

Tests that the hybrid approach correctly evolves the input\_file\_1.txt seed.

Can be run via `mpirun -n n_ranks ./bin/test_hybrid ranks_rows ranks_cols`

#### 7.70.2 Function Documentation

##### 7.70.2.1 evolve\_omp()

```
int evolve_omp (
    Matrix & cells_0,
    Matrix & cells_1 )
```

### 7.70.2.2 main()

```
int main (
    int argc,
    char ** argv )
```

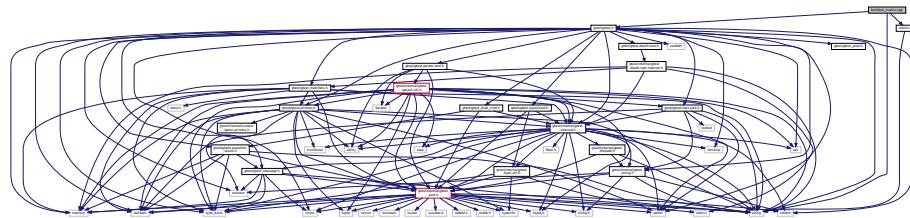
Main procedure to run.

### 7.70.2.3 update\_boundary\_omp()

```
int update_boundary_omp (
    Matrix & cells_0 )
```

## 7.71 test/test\_matrix.cpp File Reference

```
#include <gtest/gtest.h>
#include <string>
#include "matrix.h"
Include dependency graph for test_matrix.cpp:
```



## Functions

- [TEST \(File, ReadFileValid\)](#)
- [TEST \(File, ReadFileInvalid\)](#)
- [int populate\\_matrix \(Matrix &matrix\)](#)
- [TEST \(Matrix, MatrixEQValid\)](#)
- [TEST \(Matrix, MatrixNEQValid\)](#)
- [TEST \(Matrix, MatrixNEQShapeValid\)](#)
- [TEST \(Matrix, ReadMatrixValid\)](#)
- [TEST \(Matrix, ReadMatrixInvalidShape\)](#)
- [TEST \(Matrix, ReadMatrixInvalidType\)](#)
- [TEST \(Matrix, WriteMatrixValid\)](#)
- [TEST \(Matrix, GenerateBinaryMatrixValid\)](#)
- [TEST \(Matrix, CountNeighboursValid\)](#)

## Variables

- [std::string STR\\_FILE = " a b c d 1 2 3 4 X! Hello Wo\\_rld. "](#)

### 7.71.1 Detailed Description

Unit testing for matrix module.

Run via ./bin/test\_conway

### 7.71.2 Function Documentation

#### 7.71.2.1 populate\_matrix()

```
int populate_matrix (
    Matrix & matrix )
```

#### 7.71.2.2 TEST() [1/11]

```
TEST (
    File ,
    ReadFileInvalid )
```

#### 7.71.2.3 TEST() [2/11]

```
TEST (
    File ,
    ReadFileValid )
```

#### 7.71.2.4 TEST() [3/11]

```
TEST (
    Matrix ,
    CountNeighboursValid )
```

#### 7.71.2.5 TEST() [4/11]

```
TEST (
    Matrix ,
    GenerateBinaryMatrixValid )
```

**7.71.2.6 TEST() [5/11]**

```
TEST (
    Matrix ,
    MatrixEQValid )
```

**7.71.2.7 TEST() [6/11]**

```
TEST (
    Matrix ,
    MatrixNEQShapeValid )
```

**7.71.2.8 TEST() [7/11]**

```
TEST (
    Matrix ,
    MatrixNEQValid )
```

**7.71.2.9 TEST() [8/11]**

```
TEST (
    Matrix ,
    ReadMatrixInvalidShape )
```

**7.71.2.10 TEST() [9/11]**

```
TEST (
    Matrix ,
    ReadMatrixInvalidType )
```

**7.71.2.11 TEST() [10/11]**

```
TEST (
    Matrix ,
    ReadMatrixValid )
```

### 7.71.2.12 TEST() [11/11]

```
TEST (
    Matrix ,
    WriteMatrixValid )
```

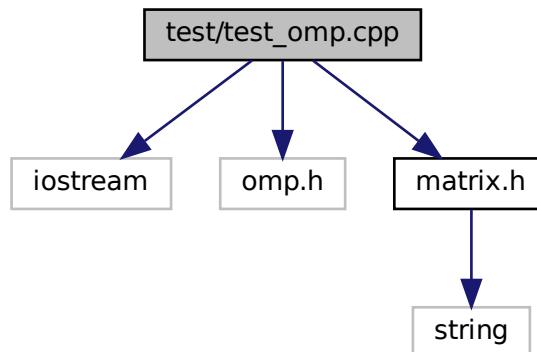
## 7.71.3 Variable Documentation

### 7.71.3.1 STR\_FILE

```
std::string STR_FILE = " a b c d 1 2 3 4 X! Hello Wo_rld. "
```

## 7.72 test/test\_omp.cpp File Reference

```
#include <iostream>
#include <omp.h>
#include "matrix.h"
Include dependency graph for test_omp.cpp:
```



## Functions

- int [update\\_boundary\\_omp \(Matrix &cells\\_0\)](#)
- int [evolve\\_omp \(Matrix &cells\\_0, Matrix &cells\\_1\)](#)
- int [main \(\)](#)

### 7.72.1 Detailed Description

Tests that the threaded solution correctly evolves the input\_file\_1.txt seed.

Can be run via `./bin/test_omp`

### 7.72.2 Function Documentation

#### 7.72.2.1 evolve\_omp()

```
int evolve_omp (
    Matrix & cells_0,
    Matrix & cells_1 )
```

#### 7.72.2.2 main()

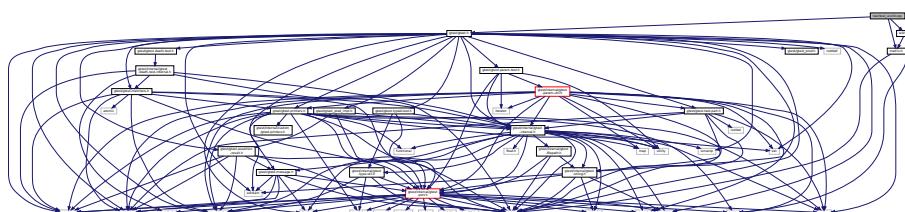
```
int main ( )
```

#### 7.72.2.3 update\_boundary\_omp()

```
int update_boundary_omp (
    Matrix & cells_0 )
```

## 7.73 test/test\_world.cpp File Reference

```
#include <gtest/gtest.h>
#include "matrix.h"
#include "world.h"
Include dependency graph for test_world.cpp:
```



## Functions

- `TEST (World, Seed)`
- `TEST (World, OutputCells)`
- `TEST (World, EvaluateRules)`
- `TEST (World, UpdateBoundary)`
- `TEST (World, Toad)`
- `TEST (World, Glider)`

### 7.73.1 Detailed Description

Unit testing for world module.

Run via `./bin/test_conway`

### 7.73.2 Function Documentation

#### 7.73.2.1 TEST() [1/6]

```
TEST (
    World ,
    EvaluateRules )
```

#### 7.73.2.2 TEST() [2/6]

```
TEST (
    World ,
    Glider )
```

#### 7.73.2.3 TEST() [3/6]

```
TEST (
    World ,
    OutputCells )
```

#### 7.73.2.4 TEST() [4/6]

```
TEST (
    World ,
    Seed )
```

**7.73.2.5 TEST() [5/6]**

```
TEST (
    World ,
    Toad )
```

**7.73.2.6 TEST() [6/6]**

```
TEST (
    World ,
    UpdateBoundary )
```



# Index

::testing::UnitTest  
    testing::internal::UnitTestImpl, 469

~ActionInterface  
    testing::ActionInterface< F >, 113

~AssertHelper  
    testing::internal::AssertHelper, 116

~CartesianProductGenerator  
    testing::internal::CartesianProductGenerator< T >, 126

~Environment  
    testing::Environment, 163

~FailureReporterInterface  
    testing::internal::FailureReporterInterface, 169

~GTestFlagSaver  
    testing::internal::GTestFlagSaver, 195

~GTestLog  
    testing::internal::GTestLog, 200

~GTestNonCopyable  
    testing::internal::GTestNonCopyable, 204

~Interface  
    Interface, 225

~Iterator  
    testing::internal::ParamGeneratorConverter< From, To >::Iterator, 244

    testing::internal::RangeGenerator< T, IncrementT >::Iterator, 248

    testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator, 251

~IteratorImpl  
    testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >, 255

~Matrix  
    Matrix, 263

~MyString  
    MyString, 275

~NaggyMockImpl  
    testing::internal::NaggyMockImpl< Base >, 279

~NativeArray  
    testing::internal::NativeArray< Element >, 282

~NiceMockImpl  
    testing::internal::NiceMockImpl< Base >, 287

~OsStackTraceGetterInterface  
    testing::internal::OsStackTraceGetterInterface, 294

~ParamGeneratorInterface  
    testing::internal::ParamGeneratorInterface< T >, 314

~ParamIteratorInterface  
    testing::internal::ParamIteratorInterface< T >, 319

~ParameterizedTestSuiteInfoBase  
    testing::internal::ParameterizedTestSuiteInfoBase, 306

~ParameterizedTestSuiteRegistry  
    testing::internal::ParameterizedTestSuiteRegistry, 308

~PreCalculatedPrimeTable  
    PreCalculatedPrimeTable, 324

~PrimeTable  
    PrimeTable, 326

~Queue  
    Queue< E >, 331

~RE  
    testing::internal::RE, 342

~RangeGenerator  
    testing::internal::RangeGenerator< T, IncrementT >, 339

~ScopedTrace  
    testing::ScopedTrace, 358

~StrictMockImpl  
    testing::internal::StrictMockImpl< Base >, 375

~Test  
    testing::Test, 383

~TestEventListener  
    testing::TestEventListener, 388

~TestEventListeners  
    testing::TestEventListeners, 392

~TestFactoryBase  
    testing::internal::TestFactoryBase, 396

~TestInfo  
    testing::TestInfo, 402

~TestMetaFactoryBase  
    testing::internal::TestMetaFactoryBase< ParamType >, 410

~TestResult  
    testing::TestResult, 415

~TestSuite  
    testing::TestSuite, 424

~UnitTest  
    testing::UnitTest, 449

~UnitTestImpl  
    testing::internal::UnitTestImpl, 460

~ValueProducer  
    testing::DefaultValue< T >::ValueProducer, 487

~ValuesInIteratorRangeGenerator  
    testing::internal::ValuesInIteratorRangeGenerator< T >, 490

~WithParamInterface  
    testing::WithParamInterface< T >, 494

Abort  
     testing::internal::posix, 100

Accept  
     testing::internal::is\_implicitly\_convertible< From, To >, 235

ACTION  
     gmock-actions.h, 506

Action  
     testing::Action< R(Args...)>, 107, 108

action\_  
     testing::internal::IgnoreResultAction< A >, 211  
     testing::internal::IgnoreResultAction< A >::Impl< F >, 214

ACTION\_P  
     gmock-actions.h, 507

ACTION\_P10  
     gmock-actions.h, 507

ACTION\_P2  
     gmock-actions.h, 507

ACTION\_P3  
     gmock-actions.h, 507

ACTION\_P4  
     gmock-actions.h, 507

ACTION\_P5  
     gmock-actions.h, 508

ACTION\_P6  
     gmock-actions.h, 508

ACTION\_P7  
     gmock-actions.h, 508

ACTION\_P8  
     gmock-actions.h, 508

ACTION\_P9  
     gmock-actions.h, 508

ACTION\_TEMPLATE  
     gmock-more-actions.h, 556

ActionImpl  
     testing::internal::ActionImpl< R(Args...), Impl >, 111

ActionInterface  
     testing::ActionInterface< F >, 113, 114

ad\_hoc\_test\_result  
     testing::internal::UnitTestImpl, 460  
     testing::TestSuite, 424  
     testing::UnitTest, 449

ad\_hoc\_test\_result\_  
     testing::internal::UnitTestImpl, 469  
     testing::TestSuite, 430

ADD\_FAILURE  
     gtest.h, 654

ADD\_FAILURE\_AT  
     gtest.h, 654

AddEnvironment  
     testing::UnitTest, 450

AddGlobalTestEnvironment  
     testing, 25  
     testing::UnitTest, 455

address\_  
     testing::DefaultValue< T & >, 147

AddTestInfo  
     testing::internal::UnitTestImpl, 460  
     testing::TestSuite, 425

AddTestPartResult  
     testing::TestResult, 416  
     testing::UnitTest, 450

AddTestPattern  
     testing::internal::ParameterizedTestSuiteInfo< TestSuite >, 303

AddTestSuiteInstantiation  
     testing::internal::ParameterizedTestSuiteInfo< TestSuite >, 303

Adjust  
     testing::internal::ThisRefAdjuster< Pattern >, 433

AdjustT  
     testing::internal::ThisRefAdjuster< Pattern >, 433

Advance  
     testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >, 256  
     testing::internal::ParamGeneratorConverter< From, To >::Iterator, 244  
     testing::internal::ParamIteratorInterface< T >, 319  
     testing::internal::RangeGenerator< T, IncrementT >::Iterator, 248  
     testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator, 252

AdvanceIfEnd  
     testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >, 256

age  
     World, 500

AlmostEquals  
     testing::internal::FloatingPoint< RawType >, 183

also\_run\_disabled\_tests\_  
     testing::internal::GTestFlagSaver, 195

AlwaysFalse  
     testing::internal, 55

AlwaysTrue  
     testing::internal, 55

Append  
     testing::TestEventListeners, 393

AppendUserMessage  
     testing::internal, 55

Apply  
     testing::internal, 55  
     testing::internal::ActionImpl< R(Args...), Impl >, 112  
     testing::internal::ElemFromListImpl< IndexSequence< I... > >, 158  
     testing::internal::FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > >, 177, 178

ApplyImpl  
     testing::internal, 55

AppropriateResolution  
     testing::internal, 56

Arg

testing::internal::Function< R(Args...)>, 189  
args\_type  
    testing::internal::ActionImpl< R(Args...), Impl >, 111  
ArgumentCount  
    testing::internal::Function< R(Args...)>, 190  
ArgumentMatcherTuple  
    testing::internal::Function< R(Args...)>, 189  
ArgumentTuple  
    testing::Action< R(Args...)>, 106  
    testing::ActionInterface< F >, 113  
    testing::internal::Function< R(Args...)>, 189  
    testing::internal::IgnoreResultAction< A >::Impl< F >, 213  
    testing::internal::ReturnRefAction< T >::Impl< F >, 217  
    testing::internal::ReturnRefOfCopyAction< F >::Impl< F >, 219  
    testing::PolymorphicAction< Impl >::MonomorphicImpl< F >, 272  
array\_  
    testing::internal::NativeArray< Element >, 283  
ArrayAwareFind  
    testing::internal, 56  
ArrayEq  
    testing::internal, 56  
as\_const  
    testing::internal, 57  
Assert  
    testing::internal, 57  
ASSERT\_ANY\_THROW  
    gtest.h, 655  
ASSERT\_DEATH\_IF\_SUPPORTED  
    gtest-death-test.h, 630  
ASSERT\_DOUBLE\_EQ  
    gtest.h, 655  
ASSERT\_EQ  
    gtest.h, 655  
ASSERT\_FALSE  
    gtest.h, 655  
ASSERT\_FLOAT\_EQ  
    gtest.h, 655  
ASSERT\_GE  
    gtest.h, 656  
ASSERT\_GT  
    gtest.h, 656  
ASSERT\_LE  
    gtest.h, 656  
ASSERT\_LT  
    gtest.h, 656  
ASSERT\_NE  
    gtest.h, 656  
ASSERT\_NEAR  
    gtest.h, 656  
ASSERT\_NO\_FATAL\_FAILURE  
    gtest.h, 657  
ASSERT\_NO\_THROW  
    gtest.h, 657  
ASSERT\_PRED1  
    gtest\_pred\_impl.h, 670  
ASSERT\_PRED2  
    gtest\_pred\_impl.h, 671  
ASSERT\_PRED3  
    gtest\_pred\_impl.h, 671  
ASSERT\_PRED4  
    gtest\_pred\_impl.h, 671  
ASSERT\_PRED5  
    gtest\_pred\_impl.h, 671  
ASSERT\_PRED\_FORMAT1  
    gtest\_pred\_impl.h, 671  
ASSERT\_PRED\_FORMAT2  
    gtest\_pred\_impl.h, 672  
ASSERT\_PRED\_FORMAT3  
    gtest\_pred\_impl.h, 672  
T ASSERT\_PRED\_FORMAT4  
    gtest\_pred\_impl.h, 672  
ASSERT\_PRED\_FORMAT5  
    gtest\_pred\_impl.h, 672  
ASSERT\_STRCASEEQ  
    gtest.h, 657  
ASSERT\_STRCASENE  
    gtest.h, 657  
ASSERT\_STREQ  
    gtest.h, 657  
ASSERT\_STRNE  
    gtest.h, 657  
ASSERT\_THAT  
    gmock-matchers.h, 545  
ASSERT\_THROW  
    gtest.h, 658  
ASSERT\_TRUE  
    gtest.h, 658  
AssertHeld  
    testing::internal::Mutex, 274  
AssertHelper  
    testing::internal::AssertHelper, 115, 116  
AssertHelperData  
    testing::internal::AssertHelper::AssertHelperData, 117  
AssertPred1Helper  
    testing, 25  
AssertPred2Helper  
    testing, 25  
AssertPred3Helper  
    testing, 25  
AssertPred4Helper  
    testing, 26  
AssertPred5Helper  
    testing, 26  
Assign  
    testing, 26  
AssignAction  
    testing::internal::AssignAction< T1, T2 >, 119  
AtEnd  
    testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >,

256

Base  
 testing::internal::ActionImpl< R(Args...), Impl >, 111  
 testing::internal::DoAllAction< InitialAction, OtherActions... >, 154

Base64Unescape  
 testing::internal, 57

base\_  
 testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >, 257  
 testing::internal::ParamGeneratorConverter< From, To >::Iterator, 245  
 testing::internal::RangeGenerator< T, IncrementT >::Iterator, 249  
 testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator, 253

BaseGenerator  
 testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >, 256  
 testing::internal::ParamGeneratorConverter< From, To >::Iterator, 244  
 testing::internal::ParamIteratorInterface< T >, 320  
 testing::internal::RangeGenerator< T, IncrementT >::Iterator, 248  
 testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator, 252

BasicNarrowIoManip  
 testing::Message, 266

Begin  
 testing::internal::CartesianProductGenerator< T >, 126  
 testing::internal::ParamGeneratorConverter< From, To >, 313  
 testing::internal::ParamGeneratorInterface< T >, 315  
 testing::internal::RangeGenerator< T, IncrementT >, 339  
 testing::internal::ValuesInIteratorRangeGenerator< T >, 490

begin  
 testing::internal::NativeArray< Element >, 282  
 testing::internal::ParamGenerator< T >, 311

begin\_  
 testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >, 257  
 testing::internal::RangeGenerator< T, IncrementT >, 340

BiggestInt  
 testing::internal, 50

Bits  
 testing::internal::FloatingPoint< RawType >, 182

bits  
 testing::internal::FloatingPoint< RawType >, 183

bits\_  
 testing::internal::FloatingPoint< RawType >::FloatingPointUnion, 187

Bool  
 testing, 27

BoolFromGTestEnv  
 testing::internal, 57

break\_on\_failure\_  
 testing::internal::GTestFlagSaver, 195

brief\_  
 testing::internal::GTestFlagSaver, 195

build/\_deps/googletest-src/googlemock/include/gmock/actions.h, 501

build/\_deps/googletest-src/googlemock/include/gmock/gmock-cardinalities.h, 512

build/\_deps/googletest-src/googlemock/include/gmock/gmock-function-mocker.h, 513

build/\_deps/googletest-src/googlemock/include/gmock/gmock-matchers.h, 543

build/\_deps/googletest-src/googlemock/include/gmock/gmock-more-actions.h, 552

build/\_deps/googletest-src/googlemock/include/gmock/gmock-more-matchers.h, 585

build/\_deps/googletest-src/googlemock/include/gmock/gmock-nice-strict.h, 586

build/\_deps/googletest-src/googlemock/include/gmock/gmock-spec-builders.h, 587

build/\_deps/googletest-src/googlemock/include/gmock/gmock.h, 589

build/\_deps/googletest-src/googlemock/include/gmock/internal/custom/gm-generated-actions.h, 591

build/\_deps/googletest-src/googlemock/include/gmock/internal/custom/gm-matchers.h, 552

build/\_deps/googletest-src/googlemock/include/gmock/internal/custom/gm-port.h, 592

build/\_deps/googletest-src/googlemock/include/gmock/internal/gmock-internal-utils.h, 596

build/\_deps/googletest-src/googlemock/include/gmock/internal/gmock-port.h, 592

build/\_deps/googletest-src/googlemock/include/gmock/internal/gmock-pp.h, 600

build/\_deps/googletest-src/googlemock/test/gmock-matchers\_test.h, 617

build/\_deps/googletest-src/googlemock/test/gmock\_link\_test.h, 619

build/\_deps/googletest-src/googletest/include/gtest/gtest-assertion-result.h, 628

build/\_deps/googletest-src/googletest/include/gtest/gtest-death-test.h, 629

build/\_deps/googletest-src/googletest/include/gtest/gtest-matchers.h, 631

build/\_deps/googletest-src/googletest/include/gtest/gtest-message.h, 633

build/\_deps/googletest-src/googletest/include/gtest/gtest-param-test.h, 634

build/\_deps/googletest-src/googletest/include/gtest/gtest-printers.h, 637

build/\_deps/googletest-src/googletest/include/gtest/gtest-spi.h, 641

build/\_deps/googletest-src/googletest/include/gtest/gtest-  
    test-part.h, 644  
build/\_deps/googletest-src/googletest/include/gtest/gtest-  
    typed-test.h, 645  
build/\_deps/googletest-src/googletest/include/gtest/gtest.h,  
    650  
build/\_deps/googletest-src/googletest/include/gtest/gtest\_pred\_  
    668  
build/\_deps/googletest-src/googletest/include/gtest/gtest\_prod.h, 324  
    677  
build/\_deps/googletest-src/googletest/include/gtest/internal/custom\_  
    port.h, 678  
build/\_deps/googletest-src/googletest/include/gtest/internal/custom\_  
    printers.h, 641  
build/\_deps/googletest-src/googletest/include/gtest/internal/custom\_  
    668  
build/\_deps/googletest-src/googletest/include/gtest/internal/death\_  
    death-test-internal.h, 693  
build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-  
    filepath.h, 694  
build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-  
    internal.h, 695  
build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-  
    internal.h, 695  
build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-  
    internal.h, 704  
build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-  
    port-arch.h, 706  
build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-  
    port.h, 679  
build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-  
    string.h, 706  
build/\_deps/googletest-src/googletest/include/gtest/internal/gtest-  
    type-util.h, 707  
build/\_deps/googletest-src/googletest/samples/prime\_tables.h, 709  
build/\_deps/googletest-src/googletest/samples/sample1.h, 710  
build/\_deps/googletest-src/googletest/samples/sample2.h, 710  
build/\_deps/googletest-src/googletest/samples/sample3-  
    inl.h, 711  
build/\_deps/googletest-src/googletest/samples/sample4.h, 711  
build/\_deps/googletest-src/googletest/src/gtest-internal-  
    inl.h, 711  
build/\_deps/googletest-src/googletest/test/gtest-  
    param-test-test.h, 713  
build/\_deps/googletest-src/googletest/test/gtest-typed-  
    test\_test.h, 714  
build/\_deps/googletest-src/googletest/test/production.h,  
    715  
ByMove  
    testing, 27  
ByMoveWrapper  
    testing::internal::ByMoveWrapper< T >, 123  
ByRef  
    testing, 27  
c\_string  
    MyString, 276  
    c\_string  
        MyString, 276  
CalculateEndIndex  
    testing::internal::RangeGenerator< T, IncrementT  
        >, 339  
CalculateOptimalEdits  
    testing::internal::edit\_distance, 98  
CalculatePrimesUpTo  
    testing::internal::PreCalculatedPrimeTable, 324  
    Call  
    testing::OnceAction< Result(Args...) >, 290  
    call\_result\_t  
    callable  
    testing::internal, 50  
    testing::OnceAction< Result(Args...) >::IgnoreIncomingArguments<  
        Callable >, 210  
    testing::internal  
        testing::OnceAction< Result(Args...) >::StdFunctionAdaptor<  
            T > >::State, 365  
    testing::internalForStdLibVersioning  
        testing::internal, 57  
    testing::internal  
        testing::internal, 58  
    testing::internal  
        testing::internal, 126  
    CartesianProductHolder  
    CartesianProductGenerator  
        testing::internal::CartesianProductGenerator< T  
            >, 126  
    CartesianProductHolder  
    testing::internal::CartesianProductHolder< Gen >, 127  
CaseInsensitiveCStringEquals  
    testing::internal::String, 376  
CaseInsensitiveWideCStringEquals  
    testing::internal::String, 376  
catch\_exceptions  
    testing::internal::UnitTestImpl, 460  
catch\_exceptions\_  
    testing::internal::GTestFlagSaver, 195  
    testing::internal::UnitTestImpl, 469  
Cells\_0  
    World, 500  
Cells\_1  
    World, 500  
ChDir  
    testing::internal::posix, 100  
CheckDebugString  
    testing::internal::HasDebugStringAndShortDebugString<  
        T >, 205  
CheckedDowncastToActualType  
    testing::internal, 58  
CheckForInstantiations  
    testing::internal::TypeParameterizedTestSuiteRegistry,  
        443  
CheckShortDebugString

testing::internal::HasDebugStringAndShortDebugString< testing::internal::TypeParameterizedTestSuiteRegistry::TypeParameterizedTestSuite>, 206  
**Clear**  
 Queue< E >, 331  
 testing::DefaultValue< T >, 144  
 testing::DefaultValue< T & >, 146  
 testing::TestResult, 416  
**ClearAdHocTestResult**  
 testing::internal::UnitTestImpl, 461  
**ClearNonAdHocTestResult**  
 testing::internal::UnitTestImpl, 461  
**ClearResult**  
 testing::TestSuite, 425  
**ClearTestPartResults**  
 testing::internal::TestResultAccessor, 422  
 testing::TestResult, 416  
**ClearTestResult**  
 testing::TestInfo, 402  
**ClearTestSuiteResult**  
 testing::TestSuite, 425  
**Clone**  
 testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >, 256  
 testing::internal::ParamGeneratorConverter< From, To >::Iterator, 245  
 testing::internal::ParamIteratorInterface< T >, 320  
 testing::internal::RangeGenerator< T, IncrementT >::Iterator, 248  
 testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator, 252  
**clone\_**  
 testing::internal::NativeArray< Element >, 283  
**CloneCString**  
 MyString, 276  
 testing::internal::String, 377  
**Close**  
 testing::internal::posix, 100  
**CmpHelperEQ**  
 testing::internal, 58  
**CmpHelperEQFailure**  
 testing::internal, 58  
**CmpHelperFloatingPointEQ**  
 testing::internal, 58  
**CmpHelperOpFailure**  
 testing::internal, 59  
**CmpHelperSTRCASEEQ**  
 testing::internal, 59  
**CmpHelperSTRCASENE**  
 testing::internal, 59  
**CmpHelperSTREQ**  
 testing::internal, 59  
**CmpHelperSTRNE**  
 testing::internal, 60  
**code\_location**  
 testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfo, 400  
**code\_location\_**  
 testing::internal::ParameterizedTestSuiteInfo< TestSuite >, 304  
**CodeLocation**  
 testing::internal::CodeLocation, 128  
**CodePointToUtf8**  
 testing::internal, 60  
**color\_**  
 testing::internal::GTestFlagSaver, 195  
**Combine**  
 testing, 27  
**Compare**  
 testing::internal::EqHelper, 164, 165  
**ComputeCurrentValue**  
 testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >, 257  
**ConfigureXmlOutput**  
 testing::internal::UnitTestImpl, 461  
**const\_iterator**  
 testing::internal::NativeArray< Element >, 281  
**const\_reference**  
 testing::internal::StlContainerView< ::std::tuple< ElementPointer, Size > >, 370  
 testing::internal::StlContainerView< Element[N]>, 371  
 testing::internal::StlContainerView< RawContainer >, 368  
**ConstCharPtr**  
 testing::internal::ConstCharPtr, 132  
**ConstReference**  
 testing::internal::StlContainerView< ::std::tuple< ElementPointer, Size > >, 370  
 testing::internal::StlContainerView< Element[N]>, 372  
 testing::internal::StlContainerView< RawContainer >, 369  
**container\_**  
 testing::internal::ValuesInIteratorRangeGenerator< T >, 491  
**ContainerTest< T >**, 135  
**ContainerType**  
 testing::internal::ValuesInIteratorRangeGenerator< T >, 489  
**ConvertGenerator**  
 testing, 27  
**ConvertIdentifierNameToWords**  
 testing::internal, 60  
**conway**, 17  
 divide\_rows, 17  
 evaluate\_rules, 18  
 update\_boundary, 18  
**Copy**  
 testing::internal::StlContainerView< ::std::tuple< ElementPointer, Size > >, 370  
 testing::internal::StlContainerView< Element[N]>, 371

372  
testing::internal::StlContainerView< RawContainer >, 369  
CopyArray  
    testing::internal, 60, 61  
count\_neighbours  
    matrix, 18  
Counter, 137  
    Counter, 137  
    counter\_, 138  
    Decrement, 137  
    Increment, 137  
    Print, 138  
counter\_  
    Counter, 138  
CountIf  
    testing::internal, 61  
CreateTest  
    testing::internal::ParameterizedTestFactory< TestClass >, 299  
    testing::internal::TestFactoryBase, 397  
    testing::internal::TestFactoryImpl< TestClass >, 398  
CreateTestFactory  
    testing::internal::TestMetaFactory< TestSuite >, 409  
    testing::internal::TestMetaFactoryBase< ParamType >, 410  
CreateUnifiedDiff  
    testing::internal::edit\_distance, 98  
CStringEquals  
    testing::internal::String, 377  
Current  
    testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >, 257  
    testing::internal::ParamGeneratorConverter< From, To >::Iterator, 245  
    testing::internal::ParamIteratorInterface< T >, 320  
    testing::internal::RangeGenerator< T, IncrementT >::Iterator, 249  
    testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator, 252  
current\_  
    testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >, 258  
current\_test\_case  
    testing::UnitTest, 450  
current\_test\_info  
    testing::internal::UnitTestImpl, 461  
    testing::UnitTest, 450  
current\_test\_info\_  
    testing::internal::UnitTestImpl, 469  
current\_test\_result  
    testing::internal::UnitTestImpl, 461  
current\_test\_suite  
    testing::internal::UnitTestImpl, 461  
    testing::UnitTest, 450  
current\_test\_suite\_  
    testing::internal::UnitTestImpl, 450  
current\_value\_  
    testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >, 258  
CurrentOsStackTraceExceptTop  
    testing::internal::UnitTestImpl, 461  
CurrentStackTrace  
    testing::internal::OsStackTraceGetter, 293  
    testing::internal::OsStackTraceGetterInterface, 295  
data  
    Matrix, 264  
data\_  
    testing::internal::AssertHelper, 116  
death\_test\_count  
    testing::TestResult, 416  
death\_test\_count\_  
    testing::TestResult, 420  
death\_test\_style\_  
    testing::internal::GTestFlagSaver, 195  
death\_test\_use\_fork\_  
    testing::internal::GTestFlagSaver, 196  
Decrement  
    Counter, 137  
default\_global\_test\_part\_result\_reporter\_  
    testing::internal::UnitTestImpl, 469  
default\_per\_thread\_test\_part\_result\_reporter\_  
    testing::internal::UnitTestImpl, 469  
default\_result\_printer  
    testing::TestEventListeners, 393  
default\_result\_printer\_  
    testing::TestEventListeners, 395  
default\_xml\_generator  
    testing::TestEventListeners, 393  
default\_xml\_generator\_  
    testing::TestEventListeners, 395  
DefaultGlobalTestPartResultReporter  
    testing::internal::DefaultGlobalTestPartResultReporter, 139  
DefaultParamName  
    testing::internal, 61  
DefaultPerThreadTestPartResultReporter  
    testing::internal::DefaultPerThreadTestPartResultReporter, 142  
Delete  
    testing::internal, 61  
DeleteArg  
    testing, 27  
DeleteSelf\_  
    testing::Test, 384  
Dequeue  
    Queue< E >, 331  
Describe  
    testing::gmock\_matchers\_test, 39  
DescribeNegation  
    testing::gmock\_matchers\_test, 39

DescribeNegationTo  
 testing::gmock\_matchers\_test::GreaterThanOrEqual<End  
 T >, 193  
 testing::gmock\_matchers\_test::GtestGreaterThanOrEqual< T >, 198  
 testing::internal::IsEmptyMatcher, 238

DescribeTo  
 testing::gmock\_matchers\_test::GreaterThanOrEqual< T >, 193  
 testing::gmock\_matchers\_test::GtestGreaterThanOrEqual< T >, 199  
 testing::internal::IsEmptyMatcher, 238

difference\_type  
 testing::internal::ParamIterator< T >, 316

disabled\_test\_count  
 testing::internal::UnitTestImpl, 462  
 testing::TestSuite, 425  
 testing::UnitTest, 450

display\_world  
 World, 497

DistanceBetweenSignAndMagnitudeNumbers  
 testing::internal::FloatingPoint< RawType >, 183

divide\_rows  
 conway, 17

DoAll  
 testing, 28

DoAllAction  
 testing::internal::DoAllAction< FinalAction >, 152  
 testing::internal::DoAllAction< InitialAction, OtherActions... >, 154

DoDefault  
 testing, 28

DolsATTY  
 testing::internal::posix, 100

Double  
 testing::internal, 51

DoubleLE  
 testing, 28

DoubleNearPredFormat  
 testing::internal, 61

DownCast\_  
 testing::internal, 62

dummy\_  
 testing::internal::TypeIDHelper< T >, 439

EditType  
 testing::internal::edit\_distance, 97

elapsed\_time  
 testing::internal::UnitTestImpl, 462  
 testing::TestResult, 416  
 testing::TestSuite, 425  
 testing::UnitTest, 450

elapsed\_time\_  
 testing::internal::UnitTestImpl, 470  
 testing::TestResult, 420  
 testing::TestSuite, 430

element  
 QueueNode< E >, 334

element\_

QueueNode< E >, 335

testing::internal::CartesianProductGenerator< T >, 126  
 testing::internal::ParamGeneratorConverter< From, To >, 313  
 testing::internal::ParamGeneratorInterface< T >, 315  
 testing::internal::RangeGenerator< T, IncrementT >, 340  
 testing::internal::ValuesInIteratorRangeGenerator< T >, 490

end

testing::internal::NativeArray< Element >, 282  
 testing::internal::ParamGenerator< T >, 311

end\_

testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >, 258  
 testing::internal::ParamGeneratorConverter< From, To >::Iterator, 245  
 testing::internal::RangeGenerator< T, IncrementT >, 340

end\_index\_

testing::internal::RangeGenerator< T, IncrementT >, 340

EndsWith  
 testing::internal, 62

EndsWithCaseInsensitive  
 testing::internal::String, 377

Enqueue  
 Queue< E >, 331

environments  
 testing::internal::UnitTestImpl, 462

environments\_

testing::internal::UnitTestImpl, 470

EqFailure  
 testing::internal, 62

Equals  
 testing::internal, 62  
 testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >, 257  
 testing::internal::ParamGeneratorConverter< From, To >::Iterator, 245  
 testing::internal::ParamIteratorInterface< T >, 320  
 testing::internal::RangeGenerator< T, IncrementT >::Iterator, 249  
 testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator, 253

errno\_

testing::internal::SetErrnoAndReturnAction< T >, 363

evaluate\_rules  
 conway, 18  
 World, 497

EventForwardingEnabled  
 testing::TestEventListeners, 393

evolve\_omp  
run\_hybrid.cpp, 723  
run\_omp.cpp, 725  
test\_hybrid.cpp, 736  
test\_omp.cpp, 741  
time\_hybrid.cpp, 730

Exists  
testing::DefaultValue< T >, 144  
testing::DefaultValue< T & >, 146  
testing::DefaultValue< void >, 147  
testing::internal::BuiltInDefaultValue< const T >, 121  
testing::internal::BuiltInDefaultValue< T >, 120  
testing::internal::BuiltInDefaultValue< T \* >, 122

Expect  
testing::internal, 62, 63

EXPECT\_ANY\_THROW  
gtest.h, 658

EXPECT\_CALL  
gmock-spec-builders.h, 588

EXPECT\_DEATH\_IF\_SUPPORTED  
gtest-death-test.h, 630

EXPECT\_DOUBLE\_EQ  
gtest.h, 658

EXPECT\_EQ  
gtest.h, 658

EXPECT\_FALSE  
gtest.h, 658

EXPECT\_FATAL\_FAILURE  
gtest-spi.h, 642

EXPECT\_FATAL\_FAILURE\_ON\_ALL\_THREADS  
gtest-spi.h, 642

EXPECT\_FLOAT\_EQ  
gtest.h, 659

EXPECT\_GE  
gtest.h, 659

EXPECT\_GT  
gtest.h, 659

EXPECT\_LE  
gtest.h, 659

EXPECT\_LT  
gtest.h, 659

EXPECT\_NE  
gtest.h, 659

EXPECT\_NEAR  
gtest.h, 660

EXPECT\_NO\_FATAL\_FAILURE  
gtest.h, 660

EXPECT\_NO\_THROW  
gtest.h, 660

EXPECT\_NONFATAL\_FAILURE  
gtest-spi.h, 643

EXPECT\_NONFATAL\_FAILURE\_ON\_ALL\_THREADS  
gtest-spi.h, 643

EXPECT\_PRED1  
gtest\_pred\_impl.h, 672

EXPECT\_PRED2  
gtest\_pred\_impl.h, 673

EXPECT\_PRED3  
gtest\_pred\_impl.h, 673

EXPECT\_PRED4  
gtest\_pred\_impl.h, 673

EXPECT\_PRED5  
gtest\_pred\_impl.h, 673

EXPECT\_PRED\_FORMAT1  
gtest\_pred\_impl.h, 673

EXPECT\_PRED\_FORMAT2  
gtest\_pred\_impl.h, 674

EXPECT\_PRED\_FORMAT3  
gtest\_pred\_impl.h, 674

EXPECT\_PRED\_FORMAT4  
gtest\_pred\_impl.h, 674

EXPECT\_PRED\_FORMAT5  
gtest\_pred\_impl.h, 674

EXPECT\_STRCASEEQ  
gtest.h, 660

EXPECT\_STRCASENE  
gtest.h, 660

EXPECT\_STREQ  
gtest.h, 660

EXPECT\_STRNE  
gtest.h, 661

EXPECT\_THAT  
gmock-matchers.h, 545

EXPECT\_THROW  
gtest.h, 661

EXPECT\_TRUE  
gtest.h, 661

Explain  
testing::gmock\_matchers\_test, 39

exponent\_bits  
testing::internal::FloatingPoint< RawType >, 183

ExternalInstantiationTest, 165

F  
testing::Action< R(Args...) >, 106

Factorial  
sample1.h, 710

factory\_  
testing::DefaultValue< T >::FactoryValueProducer, 168

testing::TestInfo, 405

FactoryFunction  
testing::DefaultValue< T >, 144

FactoryValueProducer  
testing::DefaultValue< T >::FactoryValueProducer, 167

FAIL  
gtest.h, 661

fail\_fast\_  
testing::internal::GTestFlagSaver, 196

Failed  
testing::internal::UnitTestImpl, 462

testing::TestResult, 416

testing::TestSuite, 425

testing::UnitTest, 451

failed\_test\_case\_count

testing::UnitTest, 451  
 failed\_test\_count  
     testing::internal::UnitTestImpl, 462  
     testing::TestSuite, 425  
     testing::UnitTest, 451  
 failed\_test\_suite\_count  
     testing::internal::UnitTestImpl, 462  
     testing::UnitTest, 451  
 FailureType  
     testing::internal::FailureReporterInterface, 168  
 FClose  
     testing::internal::posix, 100  
 FOpen  
     testing::internal::posix, 100  
 field  
     FieldHelper, 171  
 field\_  
     FieldHelper, 171  
 FieldHelper, 170  
     field, 171  
     field\_, 171  
     FieldHelper, 170  
 file  
     testing::internal::AssertHelper::AssertHelperData, 118  
     testing::internal::CodeLocation, 129  
     testing::internal::ParameterizedTestSuiteInfo< TestSuite >::InstantiationInfo, 222  
     testing::internal::TraceInfo, 436  
     testing::TestInfo, 402  
 FileNo  
     testing::internal::posix, 100  
 filter\_  
     testing::internal::GTestFlagSaver, 196  
 FilterMatchesTest  
     testing::internal::UnitTestOptions, 473  
 FilterTests  
     testing::internal::UnitTestImpl, 462  
 final\_action\_  
     testing::internal::DoAllAction< FinalAction >, 152  
 first  
     testing::internal::SetArrayArgumentAction< k, I1, I2 >, 361  
 FixedValueProducer  
     testing::DefaultValue< T >::FixedValueProducer, 173  
 fixture\_class\_id\_  
     testing::TestInfo, 405  
 FlatTuple  
     testing::internal::FlatTuple< T >, 175  
 FlatTupleBase  
     testing::internal::FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > >, 177  
 FlatTupleElemBase  
     testing::internal::FlatTupleElemBase< FlatTuple< T... >, I >, 180  
 Float  
     testing::internal, 51  
 FloatingPoint  
     testing::internal::FloatingPoint< RawType >, 182  
 FloatLE  
     testing, 28  
 FlushInfoLog  
     testing::internal, 63  
 FOpen  
     testing::internal::posix, 101  
 ForEach  
     testing::internal, 63  
 Format  
     testing::internal::FormatForComparison< ToPrint, OtherOperand >, 187  
     testing::internal::FormatForComparison< ToPrint[N], OtherOperand >, 188  
 FormatByte  
     testing::internal::String, 377  
 FormatCompilerIndependentFileLocation  
     testing::internal, 63  
 FormatEpochTimeInMillisAsIso8601  
     testing::internal, 63  
 FormatFileLocation  
     testing::internal, 63  
 FormatForComparisonFailureMessage  
     testing::internal, 64  
 FormatHexInt  
     testing::internal::String, 377  
 FormatHexUInt32  
     testing::internal::String, 377  
 FormatIntWidth2  
     testing::internal::String, 378  
 FormatIntWidthN  
     testing::internal::String, 378  
 FormatTimeInMillisAsSeconds  
     testing::internal, 64  
 fraction\_bits  
     testing::internal::FloatingPoint< RawType >, 183  
 FReopen  
     testing::internal::posix, 101  
 FRIEND\_TEST  
     gtest\_prod.h, 678  
     PrivateCode, 327, 328  
 full\_regex\_  
     testing::internal::RE, 344  
 FullMatch  
     testing::internal::RE, 343  
 fun\_  
     testing::Action< R(Args...) >, 109  
 function\_  
     testing::OnceAction< Result(Args...) >, 290  
 function\_impl  
     testing::Action< R(Args...) >::IgnoreArgs< FunctionImpl >, 208  
     testing::internal::InvokeWithoutArgsAction< FunctionImpl >, 232  
 function\_type  
     testing::internal::ActionImpl< R(Args...), Impl >, 111

g\_help\_flag  
    testing::internal, 95

Generate  
    testing::internal::Random, 336

generate\_matrix  
    matrix, 19

GenerateNames  
    testing::internal, 64

GenerateNamesRecursively  
    testing::internal, 64

generator  
    testing::internal::ParameterizedTestSuiteInfo<  
        TestSuite >::InstantiationInfo, 222

generator\_  
    testing::internal::ParamConverterGenerator< Gen  
        >, 297

    testing::internal::ParamGeneratorConverter<  
        From, To >, 313

generators\_  
    testing::internal::CartesianProductGenerator< T  
        >, 127

    testing::internal::CartesianProductHolder< Gen >,  
        128

Get  
    testing::DefaultValue< T >, 144

    testing::DefaultValue< T & >, 146

    testing::DefaultValue< void >, 147

    testing::internal::BuiltInDefaultValue< const T >,  
        121

    testing::internal::BuiltInDefaultValue< T >, 120

    testing::internal::BuiltInDefaultValue< T \* >, 122

    testing::internal::BuiltInDefaultValueGetter< T,  
        false >, 123

    testing::internal::BuiltInDefaultValueGetter< T,  
        kDefaultConstructible >, 122

    testing::internal::FlatTupleBase< FlatTuple< T...>,  
        IndexSequence< Idx... > >, 178

get  
    testing::internal::ThreadLocal< T >, 434

get\_split  
    timing, 103

GetAbsolutePathToOutputFile  
    testing::internal::UnitTestOptions, 473

GetArgs  
    testing::internal, 64

GetBoolAssertionFailureMessage  
    testing::internal, 65

GetCapturedStderr  
    testing::internal, 65

GetCapturedStdout  
    testing::internal, 65

GetCurrentOsStackTraceExceptTop  
    testing::internal, 65

GetElementOr  
    testing::internal, 65

GetEnv  
    testing::internal::posix, 101

GetFailureReporter  
    testing::internal, 65

    testing::internal, 66

GetFileSize  
    testing::internal, 66

GetGlobalTestPartResultReporter  
    testing::internal::UnitTestImpl, 463

GetIgnoredParameterizedTestSuites  
    testing::internal, 66

GetInstance  
    testing::UnitTest, 451

GetMutableSuiteCase  
    testing::internal::UnitTestImpl, 463

GetMutableTestInfo  
    testing::TestSuite, 426

GetMutableTestSuite  
    testing::UnitTest, 451

GetName  
    testing::internal::DefaultNameGenerator, 140

GetNextPrime  
    OnTheFlyPrimeTable, 291

    PreCalculatedPrimeTable, 324

    PrimeTable, 326

GetNextRandomSeed  
    testing::internal, 66

GetNotDefaultOrNull  
    testing::internal, 66

GetOutputFormat  
    testing::internal::UnitTestOptions, 473

GetParam  
    testing::WithParamInterface< T >, 494

GetPrefixUntilComma  
    testing::internal, 66

GetRandomSeedFromFlag  
    testing::internal, 66

GetRawPointer  
    testing::internal, 66, 67

GetSetUpCaseOrSuite  
    testing::internal::SuiteApiResolver< T >, 380

GetStream  
    testing::internal::GTestLog, 200

GetString  
    testing::Message, 266

GetTearDownCaseOrSuite  
    testing::internal::SuiteApiResolver< T >, 380

GetTestCase  
    testing::internal::UnitTestImpl, 463

    testing::UnitTest, 451

GetTestCasePatternHolder  
    testing::internal::ParameterizedTestSuiteRegistry,  
        309

GetTestInfo  
    testing::TestSuite, 426

GetTestPartResult  
    testing::TestResult, 417

GetTestPartResultReporterForCurrentThread  
    testing::internal::UnitTestImpl, 463

GetTestProperty  
    testing::TestResult, 417

GetTestSuite  
    testing::TestSuite, 426

testing::internal::UnitTestImpl, 463, 464  
 testing::UnitTest, 452  
**GetTestSuiteName**  
 testing::internal::ParameterizedTestSuiteInfo<  
     TestSuite >, 303  
 testing::internal::ParameterizedTestSuiteInfoBase,  
     306  
**GetTestSuitePatternHolder**  
 testing::internal::ParameterizedTestSuiteRegistry,  
     309  
**GetTestSuiteTypeId**  
 testing::internal::ParameterizedTestSuiteInfo<  
     TestSuite >, 303  
 testing::internal::ParameterizedTestSuiteInfoBase,  
     307  
**GetTestTypeId**  
 testing::internal, 67  
**GetThreadCount**  
 testing::internal, 67  
**GetTimeInMillis**  
 testing::internal, 67  
**GetTypeId**  
 testing::internal, 67  
**GetType\_Name**  
 testing::internal, 67  
**GetUnitTestImpl**  
 testing::internal, 68  
**GetWithoutMatchers**  
 testing::internal, 68  
     testing::internal::WithoutMatchers, 493  
**global\_test\_part\_result\_reporter\_**  
 testing::internal::UnitTestImpl, 470  
**global\_test\_part\_result\_reporter\_mutex\_**  
 testing::internal::UnitTestImpl, 470  
**gmock-actions.h**  
     ACTION, 506  
     ACTION\_P, 507  
     ACTION\_P10, 507  
     ACTION\_P2, 507  
     ACTION\_P3, 507  
     ACTION\_P4, 507  
     ACTION\_P5, 508  
     ACTION\_P6, 508  
     ACTION\_P7, 508  
     ACTION\_P8, 508  
     ACTION\_P9, 508  
     GMOCK\_ACTION\_ARG\_TYPES\_AND\_NAMES\_,  
         508  
     GMOCK\_ACTION\_ARG\_TYPES\_AND\_NAMES\_UNUSED\_,  
         509  
     GMOCK\_ACTION\_FIELD\_PARAMS\_, 509  
     GMOCK\_ACTION\_GVALUE\_PARAMS\_, 509  
     GMOCK\_ACTION\_INIT\_PARAMS\_, 509  
     GMOCK\_ACTION\_TEMPLATE\_ARGS\_NAMES\_,  
         509  
     GMOCK\_ACTION\_TYPE\_GVALUE\_PARAMS\_,  
         509  
     GMOCK\_ACTION\_TYPE\_PARAMS\_, 510  
**GMOCK\_ACTION\_TYPENAME\_PARAMS\_**, 510  
**GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_**,  
     510  
**GMOCK\_INTERNAL\_ACTION**, 510  
**GMOCK\_INTERNAL\_ARG**, 510  
**GMOCK\_INTERNAL\_ARG\_UNUSED**, 511  
**GMOCK\_INTERNAL\_FIELD\_PARAM**, 511  
**GMOCK\_INTERNAL\_GVALUE\_PARAM**, 511  
**GMOCK\_INTERNAL\_INIT\_PARAM**, 511  
**GMOCK\_INTERNAL\_TEMPLATE\_ARG**, 511  
**GMOCK\_INTERNAL\_TYPE\_GVALUE\_PARAM**,  
     511  
**GMOCK\_INTERNAL\_TYPE\_PARAM**, 512  
**GMOCK\_INTERNAL\_TYPENAME\_PARAM**, 512  
**gmock-cardinalities.h**  
     GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_,  
         513  
**gmock-function-mocker.h**  
     GMOCK\_INTERNAL\_A\_MATCHER\_ARGUMENT,  
         519  
     GMOCK\_INTERNAL\_ARG\_O, 519  
     GMOCK\_INTERNAL\_ASSERT\_PARENTHESIS,  
         519  
     GMOCK\_INTERNAL\_ASSERT\_VALID\_SIGNATURE,  
         519  
     GMOCK\_INTERNAL\_ASSERT\_VALID\_SPEC,  
         519  
     GMOCK\_INTERNAL\_ASSERT\_VALID\_SPEC\_ELEMENT,  
         520  
     GMOCK\_INTERNAL\_CALLTYPE\_SPEC\_IF\_CALLTYPE,  
         520  
     GMOCK\_INTERNAL\_DETECT\_CALLTYPE, 520  
     GMOCK\_INTERNAL\_DETECT\_CALLTYPE\_I\_Calltype,  
         520  
     GMOCK\_INTERNAL\_DETECT\_CONST, 520  
     GMOCK\_INTERNAL\_DETECT\_CONST\_I\_const,  
         521  
     GMOCK\_INTERNAL\_DETECT\_FINAL, 521  
     GMOCK\_INTERNAL\_DETECT\_FINAL\_I\_final,  
         521  
     GMOCK\_INTERNAL\_DETECT\_NOEXCEPT, 521  
     GMOCK\_INTERNAL\_DETECT\_NOEXCEPT\_I\_noexcept,  
         521  
     GMOCK\_INTERNAL\_DETECT\_OVERRIDE, 521  
     GMOCK\_INTERNAL\_DETECT\_OVERRIDE\_I\_override,  
         522  
     GMOCK\_INTERNAL\_DETECT\_REF, 522  
     GMOCK\_INTERNAL\_DETECT\_REF\_I\_ref, 522  
     GMOCK\_INTERNAL\_EXPAND, 522  
     GMOCK\_INTERNAL\_FORWARD\_ARG, 522  
     GMOCK\_INTERNAL\_GET\_CALLTYPE\_SPEC,  
         522  
     GMOCK\_INTERNAL\_GET\_NOEXCEPT\_SPEC,  
         523  
     GMOCK\_INTERNAL\_GET\_REF\_SPEC, 523  
     GMOCK\_INTERNAL\_GET\_TYPE, 523  
     GMOCK\_INTERNAL\_HAS\_CONST, 523  
     GMOCK\_INTERNAL\_HAS\_FINAL, 523

GMOCK\_INTERNAL\_HAS\_OVERRIDE, 523  
GMOCK\_INTERNAL\_MATCHER\_ARGUMENT,  
    524  
GMOCK\_INTERNAL\_MATCHER\_O, 524  
GMOCK\_INTERNAL\_MATCHER\_PARAMETER,  
    524  
GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_1,  
    524  
GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_2,  
    524  
GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_3,  
    525  
GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_4,  
    525  
GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_5,  
    525  
GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_6,  
    525  
GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_7,  
    525  
GMOCK\_INTERNAL\_MOCK\_METHOD\_IMPL,  
    526  
GMOCK\_INTERNAL\_MOCK\_METHODN, 526  
GMOCK\_INTERNAL\_NOEXCEPT\_SPEC\_IF\_NOEXCEPT, 526  
GMOCK\_INTERNAL\_PARAMETER, 527  
GMOCK\_INTERNAL\_REF\_SPEC\_IF\_REF, 527  
GMOCK\_INTERNAL\_SIGNATURE, 527  
GMOCK\_INTERNAL\_UNPACK\_Calltype, 527  
GMOCK\_INTERNAL\_UNPACK\_ref, 528  
GMOCK\_INTERNAL\_WRONG\_ARITY, 528  
GMOCK\_MOCKER\_, 528  
MOCK\_CONST\_METHOD0, 528  
MOCK\_CONST\_METHOD0\_T, 528  
MOCK\_CONST\_METHOD0\_T\_WITH\_CALLTYPE,  
    528  
MOCK\_CONST\_METHOD0\_WITH\_CALLTYPE,  
    529  
MOCK\_CONST\_METHOD1, 529  
MOCK\_CONST\_METHOD10, 529  
MOCK\_CONST\_METHOD10\_T, 529  
MOCK\_CONST\_METHOD10\_T\_WITH\_CALLTYPE,  
    529  
MOCK\_CONST\_METHOD10\_WITH\_CALLTYPE,  
    529  
MOCK\_CONST\_METHOD1\_T, 530  
MOCK\_CONST\_METHOD1\_T\_WITH\_CALLTYPE,  
    530  
MOCK\_CONST\_METHOD1\_WITH\_CALLTYPE,  
    530  
MOCK\_CONST\_METHOD2, 530  
MOCK\_CONST\_METHOD2\_T, 530  
MOCK\_CONST\_METHOD2\_T\_WITH\_CALLTYPE,  
    530  
MOCK\_CONST\_METHOD2\_WITH\_CALLTYPE,  
    531  
MOCK\_CONST\_METHOD3, 531  
MOCK\_CONST\_METHOD3\_T, 531  
MOCK\_CONST\_METHOD3\_T\_WITH\_CALLTYPE,  
    531  
MOCK\_CONST\_METHOD4, 531  
MOCK\_CONST\_METHOD4\_T, 532  
MOCK\_CONST\_METHOD4\_T\_WITH\_CALLTYPE,  
    532  
MOCK\_CONST\_METHOD4\_WITH\_CALLTYPE,  
    532  
MOCK\_CONST\_METHOD5, 532  
MOCK\_CONST\_METHOD5\_T, 532  
MOCK\_CONST\_METHOD5\_T\_WITH\_CALLTYPE,  
    532  
MOCK\_CONST\_METHOD5\_WITH\_CALLTYPE,  
    533  
MOCK\_CONST\_METHOD6, 533  
MOCK\_CONST\_METHOD6\_T, 533  
MOCK\_CONST\_METHOD6\_T\_WITH\_CALLTYPE,  
    533  
MOCK\_CONST\_METHOD6\_WITH\_CALLTYPE,  
    533  
MOCK\_CONST\_METHOD7, 533  
MOCK\_CONST\_METHOD7\_T, 534  
MOCK\_CONST\_METHOD7\_T\_WITH\_CALLTYPE,  
    534  
MOCK\_CONST\_METHOD7\_WITH\_CALLTYPE,  
    534  
MOCK\_CONST\_METHOD8, 534  
MOCK\_CONST\_METHOD8\_T, 534  
MOCK\_CONST\_METHOD8\_T\_WITH\_CALLTYPE,  
    534  
MOCK\_CONST\_METHOD8\_WITH\_CALLTYPE,  
    535  
MOCK\_CONST\_METHOD9, 535  
MOCK\_CONST\_METHOD9\_T, 535  
MOCK\_CONST\_METHOD9\_T\_WITH\_CALLTYPE,  
    535  
MOCK\_CONST\_METHOD9\_WITH\_CALLTYPE,  
    535  
MOCK\_METHOD, 535  
MOCK\_METHOD0, 536  
MOCK\_METHOD0\_T, 536  
MOCK\_METHOD0\_T\_WITH\_CALLTYPE, 536  
MOCK\_METHOD0\_WITH\_CALLTYPE, 536  
MOCK\_METHOD1, 536  
MOCK\_METHOD10, 536  
MOCK\_METHOD10\_T, 537  
MOCK\_METHOD10\_T\_WITH\_CALLTYPE, 537  
MOCK\_METHOD10\_WITH\_CALLTYPE, 537  
MOCK\_METHOD1\_T, 537  
MOCK\_METHOD1\_T\_WITH\_CALLTYPE, 537  
MOCK\_METHOD1\_WITH\_CALLTYPE, 537  
MOCK\_METHOD2, 538  
MOCK\_METHOD2\_T, 538  
MOCK\_METHOD2\_T\_WITH\_CALLTYPE, 538  
MOCK\_METHOD2\_WITH\_CALLTYPE, 538  
MOCK\_METHOD3, 538

MOCK\_METHOD3\_T, 538  
 MOCK\_METHOD3\_T\_WITH\_CALLTYPE, 539  
 MOCK\_METHOD3\_WITH\_CALLTYPE, 539  
 MOCK\_METHOD4, 539  
 MOCK\_METHOD4\_T, 539  
 MOCK\_METHOD4\_T\_WITH\_CALLTYPE, 539  
 MOCK\_METHOD4\_WITH\_CALLTYPE, 539  
 MOCK\_METHOD5, 540  
 MOCK\_METHOD5\_T, 540  
 MOCK\_METHOD5\_T\_WITH\_CALLTYPE, 540  
 MOCK\_METHOD5\_WITH\_CALLTYPE, 540  
 MOCK\_METHOD6, 540  
 MOCK\_METHOD6\_T, 540  
 MOCK\_METHOD6\_T\_WITH\_CALLTYPE, 541  
 MOCK\_METHOD6\_WITH\_CALLTYPE, 541  
 MOCK\_METHOD7, 541  
 MOCK\_METHOD7\_T, 541  
 MOCK\_METHOD7\_T\_WITH\_CALLTYPE, 541  
 MOCK\_METHOD7\_WITH\_CALLTYPE, 541  
 MOCK\_METHOD8, 542  
 MOCK\_METHOD8\_T, 542  
 MOCK\_METHOD8\_T\_WITH\_CALLTYPE, 542  
 MOCK\_METHOD8\_WITH\_CALLTYPE, 542  
 MOCK\_METHOD9, 542  
 MOCK\_METHOD9\_T, 542  
 MOCK\_METHOD9\_T\_WITH\_CALLTYPE, 543  
 MOCK\_METHOD9\_WITH\_CALLTYPE, 543  
 gmock-internal-utils.h  
     GMOCK\_DECLARE\_KIND\_, 598  
     GMOCK\_INTERNAL\_WARNING\_CLANG, 598  
     GMOCK\_INTERNAL\_WARNING\_POP, 599  
     GMOCK\_INTERNAL\_WARNING\_PUSH, 599  
     GMOCK\_KIND\_OF\_, 599  
     GMOCK\_WCHAR\_T\_IS\_NATIVE\_, 599  
 gmock-matchers.h  
     ASSERT\_THAT, 545  
     EXPECT\_THAT, 545  
     GMOCK\_INTERNAL\_MATCHER, 545  
     GMOCK\_INTERNAL\_MATCHER\_ARG\_USAGE, 545  
     GMOCK\_INTERNAL\_MATCHER\_ARGS\_USAGE, 546  
     GMOCK\_INTERNAL\_MATCHER\_FORWARD\_ARG, 546  
     GMOCK\_INTERNAL\_MATCHER\_FORWARD\_ARGS, 546  
     GMOCK\_INTERNAL\_MATCHER\_FUNCTION\_ARG, 546  
     GMOCK\_INTERNAL\_MATCHER\_FUNCTION\_ARGS, 546  
     GMOCK\_INTERNAL\_MATCHER\_MEMBER, 546  
     GMOCK\_INTERNAL\_MATCHER\_MEMBER\_USAGE, 547  
     GMOCK\_INTERNAL\_MATCHER\_MEMBERS, 547  
     GMOCK\_INTERNAL\_MATCHER\_MEMBERS\_USAGE, 547  
     GMOCK\_INTERNAL\_MATCHER\_TEMPLATE\_PARAM, 547  
         GMOCK\_INTERNAL\_MATCHER\_TEMPLATE\_PARAMS, 547  
         GMOCK\_INTERNAL\_MATCHER\_TYPE\_PARAM, 547  
         GMOCK\_INTERNAL\_MATCHER\_TYPE\_PARAMS, 548  
         GMOCK\_MAYBE\_5046\_, 548  
         GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_, 552  
         MATCHER, 548  
         MATCHER\_P, 548  
         MATCHER\_P10, 548  
         MATCHER\_P2, 549  
         MATCHER\_P3, 549  
         MATCHER\_P4, 549  
         MATCHER\_P5, 550  
         MATCHER\_P6, 550  
         MATCHER\_P7, 550  
         MATCHER\_P8, 551  
         MATCHER\_P9, 551  
     gmock-matchers\_test.h  
         INSTANTIATE\_GTEST\_MATCHER\_TEST\_P, 619  
 gmock-more-actions.h  
     ACTION\_TEMPLATE, 556  
     GMOCK\_ACTION\_CLASS\_, 557  
     GMOCK\_INTERNAL\_COUNT\_AND\_0\_VALUE\_PARAMS, 557  
     GMOCK\_INTERNAL\_COUNT\_AND\_10\_VALUE\_PARAMS, 557  
     GMOCK\_INTERNAL\_COUNT\_AND\_1\_VALUE\_PARAMS, 557  
     GMOCK\_INTERNAL\_COUNT\_AND\_2\_VALUE\_PARAMS, 557  
     GMOCK\_INTERNAL\_COUNT\_AND\_3\_VALUE\_PARAMS, 558  
     GMOCK\_INTERNAL\_COUNT\_AND\_4\_VALUE\_PARAMS, 558  
     GMOCK\_INTERNAL\_COUNT\_AND\_5\_VALUE\_PARAMS, 558  
     GMOCK\_INTERNAL\_COUNT\_AND\_6\_VALUE\_PARAMS, 558  
     GMOCK\_INTERNAL\_COUNT\_AND\_7\_VALUE\_PARAMS, 558  
     GMOCK\_INTERNAL\_COUNT\_AND\_8\_VALUE\_PARAMS, 559  
     GMOCK\_INTERNAL\_COUNT\_AND\_9\_VALUE\_PARAMS, 559  
     GMOCK\_INTERNAL\_DECL\_AND\_0\_VALUE\_PARAMS, 559  
     GMOCK\_INTERNAL\_DECL\_AND\_10\_VALUE\_PARAMS, 559  
     GMOCK\_INTERNAL\_DECL\_AND\_1\_VALUE\_PARAMS, 560  
     GMOCK\_INTERNAL\_DECL\_AND\_2\_VALUE\_PARAMS, 560  
     GMOCK\_INTERNAL\_DECL\_AND\_3\_VALUE\_PARAMS, 560  
     GMOCK\_INTERNAL\_DECL\_AND\_4\_VALUE\_PARAMS,

|                                               |                                               |     |
|-----------------------------------------------|-----------------------------------------------|-----|
| GMOCK_INTERNAL_DECL_AND_5_VALUE_PARAMS,       | GMOCK_INTERNAL_DEFN_AND_2_VALUE_PARAMS,       | 569 |
| 560                                           | 569                                           |     |
| GMOCK_INTERNAL_DECL_AND_6_VALUE_PARAMS,       | GMOCK_INTERNAL_DEFN_AND_3_VALUE_PARAMS,       | 561 |
| 561                                           | 569                                           |     |
| GMOCK_INTERNAL_DECL_AND_7_VALUE_PARAMS,       | GMOCK_INTERNAL_DEFN_AND_4_VALUE_PARAMS,       | 561 |
| 561                                           | 569                                           |     |
| GMOCK_INTERNAL_DECL_AND_8_VALUE_PARAMS,       | GMOCK_INTERNAL_DEFN_AND_5_VALUE_PARAMS,       | 561 |
| 561                                           | 570                                           |     |
| GMOCK_INTERNAL_DECL_AND_9_VALUE_PARAMS,       | GMOCK_INTERNAL_DEFN_AND_6_VALUE_PARAMS,       | 561 |
| 561                                           | 570                                           |     |
| GMOCK_INTERNAL_DECL_HAS_10_TEMPLATE_PARAMS,   | GMOCK_INTERNAL_DEFN_AND_7_VALUE_PARAMS,       | 562 |
| 562                                           | 570                                           |     |
| GMOCK_INTERNAL_DECL_HAS_1_TEMPLATE_PARAMS,    | GMOCK_INTERNAL_DEFN_AND_8_VALUE_PARAMS,       | 562 |
| 562                                           | 571                                           |     |
| GMOCK_INTERNAL_DECL_HAS_2_TEMPLATE_PARAMS,    | GMOCK_INTERNAL_DEFN_AND_9_VALUE_PARAMS,       | 562 |
| 562                                           | 571                                           |     |
| GMOCK_INTERNAL_DECL_HAS_3_TEMPLATE_PARAMS,    | GMOCK_INTERNAL_DEFN_COPY_AND_0_VALUE_PARAMS,  | 563 |
| 563                                           | 572                                           |     |
| GMOCK_INTERNAL_DECL_HAS_4_TEMPLATE_PARAMS,    | GMOCK_INTERNAL_DEFN_COPY_AND_10_VALUE_PARAMS, | 563 |
| 563                                           | 572                                           |     |
| GMOCK_INTERNAL_DECL_HAS_5_TEMPLATE_PARAMS,    | GMOCK_INTERNAL_DEFN_COPY_AND_1_VALUE_PARAMS,  | 563 |
| 563                                           | 572                                           |     |
| GMOCK_INTERNAL_DECL_HAS_6_TEMPLATE_PARAMS,    | GMOCK_INTERNAL_DEFN_COPY_AND_2_VALUE_PARAMS,  | 563 |
| 563                                           | 572                                           |     |
| GMOCK_INTERNAL_DECL_HAS_7_TEMPLATE_PARAMS,    | GMOCK_INTERNAL_DEFN_COPY_AND_3_VALUE_PARAMS,  | 564 |
| 564                                           | 572                                           |     |
| GMOCK_INTERNAL_DECL_HAS_8_TEMPLATE_PARAMS,    | GMOCK_INTERNAL_DEFN_COPY_AND_4_VALUE_PARAMS,  | 564 |
| 564                                           | 572                                           |     |
| GMOCK_INTERNAL_DECL_HAS_9_TEMPLATE_PARAMS,    | GMOCK_INTERNAL_DEFN_COPY_AND_5_VALUE_PARAMS,  | 565 |
| 565                                           | 572                                           |     |
| GMOCK_INTERNAL_DECL_TYPE_AND_0_VALUE_PARAMS,  | GMOCK_INTERNAL_DEFN_COPY_AND_6_VALUE_PARAMS,  | 565 |
| 565                                           | 573                                           |     |
| GMOCK_INTERNAL_DECL_TYPE_AND_10_VALUE_PARAMS, | GMOCK_INTERNAL_DEFN_COPY_AND_7_VALUE_PARAMS,  | 565 |
| 565                                           | 573                                           |     |
| GMOCK_INTERNAL_DECL_TYPE_AND_1_VALUE_PARAMS,  | GMOCK_INTERNAL_DEFN_COPY_AND_8_VALUE_PARAMS,  | 566 |
| 566                                           | 573                                           |     |
| GMOCK_INTERNAL_DECL_TYPE_AND_2_VALUE_PARAMS,  | GMOCK_INTERNAL_DEFN_COPY_AND_9_VALUE_PARAMS,  | 566 |
| 566                                           | 573                                           |     |
| GMOCK_INTERNAL_DECL_TYPE_AND_3_VALUE_PARAMS,  | GMOCK_INTERNAL_INIT_AND_0_VALUE_PARAMS,       | 566 |
| 566                                           | 573                                           |     |
| GMOCK_INTERNAL_DECL_TYPE_AND_4_VALUE_PARAMS,  | GMOCK_INTERNAL_INIT_AND_10_VALUE_PARAMS,      | 566 |
| 566                                           | 573                                           |     |
| GMOCK_INTERNAL_DECL_TYPE_AND_5_VALUE_PARAMS,  | GMOCK_INTERNAL_INIT_AND_1_VALUE_PARAMS,       | 566 |
| 566                                           | 574                                           |     |
| GMOCK_INTERNAL_DECL_TYPE_AND_6_VALUE_PARAMS,  | GMOCK_INTERNAL_INIT_AND_2_VALUE_PARAMS,       | 567 |
| 567                                           | 574                                           |     |
| GMOCK_INTERNAL_DECL_TYPE_AND_7_VALUE_PARAMS,  | GMOCK_INTERNAL_INIT_AND_3_VALUE_PARAMS,       | 567 |
| 567                                           | 574                                           |     |
| GMOCK_INTERNAL_DECL_TYPE_AND_8_VALUE_PARAMS,  | GMOCK_INTERNAL_INIT_AND_4_VALUE_PARAMS,       | 567 |
| 567                                           | 574                                           |     |
| GMOCK_INTERNAL_DECL_TYPE_AND_9_VALUE_PARAMS,  | GMOCK_INTERNAL_INIT_AND_5_VALUE_PARAMS,       | 568 |
| 568                                           | 575                                           |     |
| GMOCK_INTERNAL_DEFN_AND_0_VALUE_PARAMS,       | GMOCK_INTERNAL_INIT_AND_6_VALUE_PARAMS,       | 568 |
| 568                                           | 575                                           |     |
| GMOCK_INTERNAL_DEFN_AND_10_VALUE_PARAMS,      | GMOCK_INTERNAL_INIT_AND_7_VALUE_PARAMS,       | 568 |
| 568                                           | 575                                           |     |
| GMOCK_INTERNAL_DEFN_AND_1_VALUE_PARAMS,       | GMOCK_INTERNAL_INIT_AND_8_VALUE_PARAMS,       |     |



GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_1,  
607  
GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_10,  
607  
GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_11,  
607  
GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_12,  
608  
GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_13,  
608  
GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_14,  
608  
GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_15,  
608  
GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_2,  
609  
GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_3,  
609  
GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_4,  
609  
GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_5,  
609  
GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_6,  
610  
GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_7,  
610  
GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_8,  
610  
GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_9,  
610  
GMOCK\_PP\_INTERNAL\_HEAD, 611  
GMOCK\_PP\_INTERNAL\_IBP\_IS\_VARIADIC\_C,  
611  
GMOCK\_PP\_INTERNAL\_IBP\_IS\_VARIADIC\_R\_1,  
611  
GMOCK\_PP\_INTERNAL\_IBP\_IS\_VARIADIC\_R\_GMOCK\_ACTION\_VARIADIC\_C,  
611  
GMOCK\_PP\_INTERNAL\_IF\_0, 611  
GMOCK\_PP\_INTERNAL\_IF\_1, 611  
GMOCK\_PP\_INTERNAL\_INC\_0, 612  
GMOCK\_PP\_INTERNAL\_INC\_1, 612  
GMOCK\_PP\_INTERNAL\_INC\_10, 612  
GMOCK\_PP\_INTERNAL\_INC\_11, 612  
GMOCK\_PP\_INTERNAL\_INC\_12, 612  
GMOCK\_PP\_INTERNAL\_INC\_13, 612  
GMOCK\_PP\_INTERNAL\_INC\_14, 612  
GMOCK\_PP\_INTERNAL\_INC\_15, 613  
GMOCK\_PP\_INTERNAL\_INC\_2, 613  
GMOCK\_PP\_INTERNAL\_INC\_3, 613  
GMOCK\_PP\_INTERNAL\_INC\_4, 613  
GMOCK\_PP\_INTERNAL\_INC\_5, 613  
GMOCK\_PP\_INTERNAL\_INC\_6, 613  
GMOCK\_PP\_INTERNAL\_INC\_7, 613  
GMOCK\_PP\_INTERNAL\_INC\_8, 613  
GMOCK\_PP\_INTERNAL\_INC\_9, 614  
GMOCK\_PP\_INTERNAL\_INTERNAL\_16TH, 614  
GMOCK\_PP\_INTERNAL\_INTERNAL\_HEAD, 614  
GMOCK\_PP\_INTERNAL\_INTERNAL\_TAIL, 614  
GMOCK\_PP\_INTERNAL\_IS\_EMPTY, 614  
GMOCK\_PP\_INTERNAL\_IS\_EMPTY\_CASE\_0001,  
615  
GMOCK\_PP\_INTERNAL\_REMOVE\_PARENS,  
615  
GMOCK\_PP\_INTERNAL\_STRINGIZE, 615  
GMOCK\_PP\_INTERNAL\_TAIL, 615  
GMOCK\_PP\_IS\_BEGIN\_PARENS, 615  
GMOCK\_PP\_IS\_EMPTY, 615  
GMOCK\_PP\_IS\_ENCLODED\_PARENS, 616  
GMOCK\_PP\_NARG, 616  
GMOCK\_PP\_NARG0, 616  
GMOCK\_PP\_REMOVE\_PARENS, 616  
GMOCK\_PP\_REPEAT, 616  
GMOCK\_PP\_STRINGIZE, 617  
GMOCK\_PP\_TAIL, 617  
GMOCK\_PP\_VARIADIC\_CALL, 617  
gmock-spec-builders.h  
EXPECT\_CALL, 588  
GMOCK\_ON\_CALL\_IMPL\_, 588  
GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_,  
589  
ON\_CALL, 589  
gmock.h  
GMOCK\_DECLARE\_bool\_, 590  
GMOCK\_DECLARE\_int32\_, 590  
GMOCK\_DECLARE\_string\_, 590  
GMOCK\_ACTION\_ARG\_TYPES\_AND\_NAMES\_  
gmock-actions.h, 508  
GMOCK\_ACTION\_ARG\_TYPES\_AND\_NAMES\_UNUSED\_  
gmock-actions.h, 509  
GMOCK\_ACTION\_CLASS\_  
gmock-more-actions.h, 557  
GMOCK\_ACTION\_FIELD\_PARAMS\_  
gmock-actions.h, 509  
GMOCK\_ACTION\_INIT\_PARAMS\_  
gmock-actions.h, 509  
GMOCK\_ACTION\_TEMPLATE\_ARGS\_NAMES\_  
gmock-actions.h, 509  
GMOCK\_ACTION\_TYPE\_GVALUE\_PARAMS\_  
gmock-actions.h, 509  
GMOCK\_ACTION\_TYPE\_PARAMS\_  
gmock-actions.h, 510  
GMOCK\_ACTION\_TYPENAME\_PARAMS\_  
gmock-actions.h, 510  
GMOCK\_DECLARE\_bool\_  
gmock-port.h, 593  
gmock.h, 590  
GMOCK\_DECLARE\_int32\_  
gmock-port.h, 593  
gmock.h, 590  
GMOCK\_DECLARE\_KIND\_  
gmock-internal-utils.h, 598  
testing::internal, 68–70  
GMOCK\_DECLARE\_string\_  
gmock-port.h, 594

gmock.h, 590  
**GMOCK\_DEFINE\_bool\_**  
 gmock-port.h, 594  
**GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE** gmock-more-actions.h, 559  
 gmock-actions.h, 510  
 testing::internal, 70–73  
**GMOCK\_DEFINE\_int32\_**  
 gmock-port.h, 594  
**GMOCK\_DEFINE\_string\_**  
 gmock-port.h, 594  
**GMOCK\_FLAG**  
 gmock-port.h, 595  
**GMOCK\_FLAG\_GET**  
 gmock-port.h, 595  
**GMOCK\_FLAG\_NAME\_**  
 gmock-port.h, 595  
**GMOCK\_FLAG\_SET**  
 gmock-port.h, 595  
**GMOCK\_INTERNAL\_A\_MATCHER\_ARGUMENT**  
 gmock-function-mocker.h, 519  
**GMOCK\_INTERNAL\_ACTION**  
 gmock-actions.h, 510  
**GMOCK\_INTERNAL\_ARG**  
 gmock-actions.h, 510  
**GMOCK\_INTERNAL\_ARG\_O**  
 gmock-function-mocker.h, 519  
**GMOCK\_INTERNAL\_ARG\_UNUSED**  
 gmock-actions.h, 511  
**GMOCK\_INTERNAL\_ASSERT\_PARENTHESIS**  
 gmock-function-mocker.h, 519  
**GMOCK\_INTERNAL\_ASSERT\_VALID\_SIGNATURE**  
 gmock-function-mocker.h, 519  
**GMOCK\_INTERNAL\_ASSERT\_VALID\_SPEC**  
 gmock-function-mocker.h, 519  
**GMOCK\_INTERNAL\_ASSERT\_VALID\_SPEC\_ELEMENT** GMOCK\_INTERNAL\_DECL\_HAS\_5\_TEMPLATE\_PARAMS  
 gmock-function-mocker.h, 520  
**GMOCK\_INTERNAL\_CALLTYPE\_SPEC\_IF\_CALLTYPE** GMOCK\_INTERNAL\_DECL\_HAS\_6\_TEMPLATE\_PARAMS  
 gmock-function-mocker.h, 520  
**GMOCK\_INTERNAL\_COUNT\_AND\_0\_VALUE\_PARAMS** GMOCK\_INTERNAL\_DECL\_HAS\_7\_TEMPLATE\_PARAMS  
 gmock-more-actions.h, 557  
**GMOCK\_INTERNAL\_COUNT\_AND\_10\_VALUE\_PARAMS** GMOCK\_INTERNAL\_DECL\_HAS\_8\_TEMPLATE\_PARAMS  
 gmock-more-actions.h, 557  
**GMOCK\_INTERNAL\_COUNT\_AND\_1\_VALUE\_PARAMS** GMOCK\_INTERNAL\_DECL\_HAS\_9\_TEMPLATE\_PARAMS  
 gmock-more-actions.h, 557  
**GMOCK\_INTERNAL\_COUNT\_AND\_2\_VALUE\_PARAMS** GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_0\_VALUE\_PARAMS  
 gmock-more-actions.h, 557  
**GMOCK\_INTERNAL\_COUNT\_AND\_3\_VALUE\_PARAMS** GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_10\_VALUE\_PARAMS  
 gmock-more-actions.h, 558  
**GMOCK\_INTERNAL\_COUNT\_AND\_4\_VALUE\_PARAMS** GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_1\_VALUE\_PARAMS  
 gmock-more-actions.h, 558  
**GMOCK\_INTERNAL\_COUNT\_AND\_5\_VALUE\_PARAMS** GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_2\_VALUE\_PARAMS  
 gmock-more-actions.h, 558  
**GMOCK\_INTERNAL\_COUNT\_AND\_6\_VALUE\_PARAMS** GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_3\_VALUE\_PARAMS  
 gmock-more-actions.h, 558  
**GMOCK\_INTERNAL\_COUNT\_AND\_7\_VALUE\_PARAMS** GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_4\_VALUE\_PARAMS  
 gmock-more-actions.h, 558  
**GMOCK\_INTERNAL\_COUNT\_AND\_8\_VALUE\_PARAMS** GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_5\_VALUE\_PARAMS  
 gmock-more-actions.h, 559

GMOCK\_INTERNAL\_COUNT\_AND\_9\_VALUE\_PARAMS  
 gmock-more-actions.h, 559  
**GMOCK\_INTERNAL\_DECL\_AND\_0\_VALUE\_PARAMS**  
 gmock-more-actions.h, 559  
**GMOCK\_INTERNAL\_DECL\_AND\_10\_VALUE\_PARAMS**  
 gmock-more-actions.h, 559  
**GMOCK\_INTERNAL\_DECL\_AND\_1\_VALUE\_PARAMS**  
 gmock-more-actions.h, 560  
**GMOCK\_INTERNAL\_DECL\_AND\_2\_VALUE\_PARAMS**  
 gmock-more-actions.h, 560  
**GMOCK\_INTERNAL\_DECL\_AND\_3\_VALUE\_PARAMS**  
 gmock-more-actions.h, 560  
**GMOCK\_INTERNAL\_DECL\_AND\_4\_VALUE\_PARAMS**  
 gmock-more-actions.h, 560  
**GMOCK\_INTERNAL\_DECL\_AND\_5\_VALUE\_PARAMS**  
 gmock-more-actions.h, 560  
**GMOCK\_INTERNAL\_DECL\_AND\_6\_VALUE\_PARAMS**  
 gmock-more-actions.h, 561  
**GMOCK\_INTERNAL\_DECL\_AND\_7\_VALUE\_PARAMS**  
 gmock-more-actions.h, 561  
**GMOCK\_INTERNAL\_DECL\_AND\_8\_VALUE\_PARAMS**  
 gmock-more-actions.h, 561  
**GMOCK\_INTERNAL\_DECL\_AND\_9\_VALUE\_PARAMS**  
 gmock-more-actions.h, 561  
**GMOCK\_INTERNAL\_DECL\_HAS\_10\_TEMPLATE\_PARAMS**  
 gmock-more-actions.h, 562  
**GMOCK\_INTERNAL\_DECL\_HAS\_1\_TEMPLATE\_PARAMS**  
 gmock-more-actions.h, 562  
**GMOCK\_INTERNAL\_DECL\_HAS\_2\_TEMPLATE\_PARAMS**  
 gmock-more-actions.h, 562  
**GMOCK\_INTERNAL\_DECL\_HAS\_3\_TEMPLATE\_PARAMS**  
 gmock-more-actions.h, 563  
**GMOCK\_INTERNAL\_DECL\_HAS\_4\_TEMPLATE\_PARAMS**  
 gmock-more-actions.h, 563  
**GMOCK\_INTERNAL\_DECL\_HAS\_5\_TEMPLATE\_PARAMS**  
 gmock-more-actions.h, 563  
**GMOCK\_INTERNAL\_DECL\_HAS\_6\_TEMPLATE\_PARAMS**  
 gmock-more-actions.h, 563  
**GMOCK\_INTERNAL\_DECL\_HAS\_7\_TEMPLATE\_PARAMS**  
 gmock-more-actions.h, 564  
**GMOCK\_INTERNAL\_DECL\_HAS\_8\_TEMPLATE\_PARAMS**  
 gmock-more-actions.h, 564  
**GMOCK\_INTERNAL\_DECL\_HAS\_9\_TEMPLATE\_PARAMS**  
 gmock-more-actions.h, 565  
**GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_0\_VALUE\_PARAMS**  
 gmock-more-actions.h, 565  
**GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_10\_VALUE\_PARAMS**  
 gmock-more-actions.h, 565  
**GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_1\_VALUE\_PARAMS**  
 gmock-more-actions.h, 566  
**GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_2\_VALUE\_PARAMS**  
 gmock-more-actions.h, 566  
**GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_3\_VALUE\_PARAMS**  
 gmock-more-actions.h, 566  
**GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_4\_VALUE\_PARAMS**  
 gmock-more-actions.h, 566  
**GMOCK\_INTERNAL\_DECL\_TYPE\_AND\_5\_VALUE\_PARAMS**  
 gmock-more-actions.h, 566

|                                              |                                           |
|----------------------------------------------|-------------------------------------------|
| GMOCK_INTERNAL_DECL_TYPE_AND_6_VALUE_PARAMS  | GMOCK_INTERNAL_DETECT_CONST_I_CONST       |
| gmock-more-actions.h, 567                    | gmock-function-mocker.h, 521              |
| GMOCK_INTERNAL_DECL_TYPE_AND_7_VALUE_PARAMS  | GMOCK_INTERNAL_DETECT_FINAL               |
| gmock-more-actions.h, 567                    | gmock-function-mocker.h, 521              |
| GMOCK_INTERNAL_DECL_TYPE_AND_8_VALUE_PARAMS  | GMOCK_INTERNAL_DETECT_FINAL_I_FINAL       |
| gmock-more-actions.h, 567                    | gmock-function-mocker.h, 521              |
| GMOCK_INTERNAL_DECL_TYPE_AND_9_VALUE_PARAMS  | GMOCK_INTERNAL_DETECT_NOEXCEPT            |
| gmock-more-actions.h, 568                    | gmock-function-mocker.h, 521              |
| GMOCK_INTERNAL_DEFN_AND_0_VALUE_PARAMS       | GMOCK_INTERNAL_DETECT_NOEXCEPT_I_NOEXCEPT |
| gmock-more-actions.h, 568                    | gmock-function-mocker.h, 521              |
| GMOCK_INTERNAL_DEFN_AND_10_VALUE_PARAMS      | GMOCK_INTERNAL_DETECT_OVERRIDE            |
| gmock-more-actions.h, 568                    | gmock-function-mocker.h, 521              |
| GMOCK_INTERNAL_DEFN_AND_1_VALUE_PARAMS       | GMOCK_INTERNAL_DETECT_OVERRIDE_I_OVERRIDE |
| gmock-more-actions.h, 569                    | gmock-function-mocker.h, 522              |
| GMOCK_INTERNAL_DEFN_AND_2_VALUE_PARAMS       | GMOCK_INTERNAL_DETECT_REF                 |
| gmock-more-actions.h, 569                    | gmock-function-mocker.h, 522              |
| GMOCK_INTERNAL_DEFN_AND_3_VALUE_PARAMS       | GMOCK_INTERNAL_DETECT_REF_I_REF           |
| gmock-more-actions.h, 569                    | gmock-function-mocker.h, 522              |
| GMOCK_INTERNAL_DEFN_AND_4_VALUE_PARAMS       | GMOCK_INTERNAL_EXPAND                     |
| gmock-more-actions.h, 569                    | gmock-function-mocker.h, 522              |
| GMOCK_INTERNAL_DEFN_AND_5_VALUE_PARAMS       | GMOCK_INTERNAL_FIELD_PARAM                |
| gmock-more-actions.h, 570                    | gmock-actions.h, 511                      |
| GMOCK_INTERNAL_DEFN_AND_6_VALUE_PARAMS       | GMOCK_INTERNAL_FORWARD_ARG                |
| gmock-more-actions.h, 570                    | gmock-function-mocker.h, 522              |
| GMOCK_INTERNAL_DEFN_AND_7_VALUE_PARAMS       | GMOCK_INTERNAL_GET_CALLOUTSPEC            |
| gmock-more-actions.h, 570                    | gmock-function-mocker.h, 522              |
| GMOCK_INTERNAL_DEFN_AND_8_VALUE_PARAMS       | GMOCK_INTERNAL_GET_NOEXCEPT_SPEC          |
| gmock-more-actions.h, 571                    | gmock-function-mocker.h, 523              |
| GMOCK_INTERNAL_DEFN_AND_9_VALUE_PARAMS       | GMOCK_INTERNAL_GET_REF_SPEC               |
| gmock-more-actions.h, 571                    | gmock-function-mocker.h, 523              |
| GMOCK_INTERNAL_DEFN_COPY_AND_0_VALUE_PARAMS  | GMOCK_INTERNAL_GET_TYPE                   |
| gmock-more-actions.h, 572                    | gmock-function-mocker.h, 523              |
| GMOCK_INTERNAL_DEFN_COPY_AND_10_VALUE_PARAMS | GMOCK_INTERNAL_GVALUE_PARAM               |
| gmock-more-actions.h, 572                    | gmock-actions.h, 511                      |
| GMOCK_INTERNAL_DEFN_COPY_AND_1_VALUE_PARAMS  | GMOCK_INTERNAL_HAS_CONST                  |
| gmock-more-actions.h, 572                    | gmock-function-mocker.h, 523              |
| GMOCK_INTERNAL_DEFN_COPY_AND_2_VALUE_PARAMS  | GMOCK_INTERNAL_HAS_FINAL                  |
| gmock-more-actions.h, 572                    | gmock-function-mocker.h, 523              |
| GMOCK_INTERNAL_DEFN_COPY_AND_3_VALUE_PARAMS  | GMOCK_INTERNAL_HAS_OVERRIDE               |
| gmock-more-actions.h, 572                    | gmock-function-mocker.h, 523              |
| GMOCK_INTERNAL_DEFN_COPY_AND_4_VALUE_PARAMS  | GMOCK_INTERNAL_INIT_AND_0_VALUE_PARAMS    |
| gmock-more-actions.h, 572                    | gmock-more-actions.h, 573                 |
| GMOCK_INTERNAL_DEFN_COPY_AND_5_VALUE_PARAMS  | GMOCK_INTERNAL_INIT_AND_10_VALUE_PARAMS   |
| gmock-more-actions.h, 572                    | gmock-more-actions.h, 573                 |
| GMOCK_INTERNAL_DEFN_COPY_AND_6_VALUE_PARAMS  | GMOCK_INTERNAL_INIT_AND_1_VALUE_PARAMS    |
| gmock-more-actions.h, 573                    | gmock-more-actions.h, 574                 |
| GMOCK_INTERNAL_DEFN_COPY_AND_7_VALUE_PARAMS  | GMOCK_INTERNAL_INIT_AND_2_VALUE_PARAMS    |
| gmock-more-actions.h, 573                    | gmock-more-actions.h, 574                 |
| GMOCK_INTERNAL_DEFN_COPY_AND_8_VALUE_PARAMS  | GMOCK_INTERNAL_INIT_AND_3_VALUE_PARAMS    |
| gmock-more-actions.h, 573                    | gmock-more-actions.h, 574                 |
| GMOCK_INTERNAL_DEFN_COPY_AND_9_VALUE_PARAMS  | GMOCK_INTERNAL_INIT_AND_4_VALUE_PARAMS    |
| gmock-more-actions.h, 573                    | gmock-more-actions.h, 574                 |
| GMOCK_INTERNAL_DETECT_CALLTYPE               | GMOCK_INTERNAL_INIT_AND_5_VALUE_PARAMS    |
| gmock-function-mocker.h, 520                 | gmock-more-actions.h, 575                 |
| GMOCK_INTERNAL_DETECT_CALLTYPE_I_CALLTYPE    | GMOCK_INTERNAL_INIT_AND_6_VALUE_PARAMS    |
| gmock-function-mocker.h, 520                 | gmock-more-actions.h, 575                 |
| GMOCK_INTERNAL_DETECT_CONST                  | GMOCK_INTERNAL_INIT_AND_7_VALUE_PARAMS    |
| gmock-function-mocker.h, 520                 | gmock-more-actions.h, 575                 |

GMOCK\_INTERNAL\_INIT\_AND\_8\_VALUE\_PARAMS  
gmock-more-actions.h, 576

GMOCK\_INTERNAL\_INIT\_AND\_9\_VALUE\_PARAMS  
gmock-more-actions.h, 576

GMOCK\_INTERNAL\_INIT\_PARAM  
gmock-actions.h, 511

GMOCK\_INTERNAL\_LIST\_AND\_0\_VALUE\_PARAMS  
gmock-more-actions.h, 577

GMOCK\_INTERNAL\_LIST\_AND\_10\_VALUE\_PARAMS  
gmock-more-actions.h, 577

GMOCK\_INTERNAL\_LIST\_AND\_1\_VALUE\_PARAMS  
gmock-more-actions.h, 577

GMOCK\_INTERNAL\_LIST\_AND\_2\_VALUE\_PARAMS  
gmock-more-actions.h, 577

GMOCK\_INTERNAL\_LIST\_AND\_3\_VALUE\_PARAMS  
gmock-more-actions.h, 577

GMOCK\_INTERNAL\_LIST\_AND\_4\_VALUE\_PARAMS  
gmock-more-actions.h, 578

GMOCK\_INTERNAL\_LIST\_AND\_5\_VALUE\_PARAMS  
gmock-more-actions.h, 578

GMOCK\_INTERNAL\_LIST\_AND\_6\_VALUE\_PARAMS  
gmock-more-actions.h, 578

GMOCK\_INTERNAL\_LIST\_AND\_7\_VALUE\_PARAMS  
gmock-more-actions.h, 578

GMOCK\_INTERNAL\_LIST\_AND\_8\_VALUE\_PARAMS  
gmock-more-actions.h, 578

GMOCK\_INTERNAL\_LIST\_AND\_9\_VALUE\_PARAMS  
gmock-more-actions.h, 579

GMOCK\_INTERNAL\_LIST\_HAS\_10\_TEMPLATE\_PARAMS  
gmock-more-actions.h, 579

GMOCK\_INTERNAL\_LIST\_HAS\_1\_TEMPLATE\_PARAMS  
gmock-more-actions.h, 579

GMOCK\_INTERNAL\_LIST\_HAS\_2\_TEMPLATE\_PARAMS  
gmock-more-actions.h, 580

GMOCK\_INTERNAL\_LIST\_HAS\_3\_TEMPLATE\_PARAMS  
gmock-more-actions.h, 580

GMOCK\_INTERNAL\_LIST\_HAS\_4\_TEMPLATE\_PARAMS  
gmock-more-actions.h, 580

GMOCK\_INTERNAL\_LIST\_HAS\_5\_TEMPLATE\_PARAMS  
gmock-more-actions.h, 580

GMOCK\_INTERNAL\_LIST\_HAS\_6\_TEMPLATE\_PARAMS  
gmock-more-actions.h, 580

GMOCK\_INTERNAL\_LIST\_HAS\_7\_TEMPLATE\_PARAMS  
gmock-more-actions.h, 581

GMOCK\_INTERNAL\_LIST\_HAS\_8\_TEMPLATE\_PARAMS  
gmock-more-actions.h, 581

GMOCK\_INTERNAL\_LIST\_HAS\_9\_TEMPLATE\_PARAMS  
gmock-more-actions.h, 581

GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_0\_VALUE\_PARAMS  
gmock-more-actions.h, 582

GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_10\_VALUE\_PARAMS  
gmock-more-actions.h, 582

GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_1\_VALUE\_PARAMS  
gmock-more-actions.h, 582

GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_2\_VALUE\_PARAMS  
gmock-more-actions.h, 582

GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_3\_VALUE\_PARAMS  
gmock-more-actions.h, 583

GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_4\_VALUE\_PARAMS  
gmock-more-actions.h, 583

GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_5\_VALUE\_PARAMS  
gmock-more-actions.h, 583

GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_6\_VALUE\_PARAMS  
gmock-more-actions.h, 583

GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_7\_VALUE\_PARAMS  
gmock-more-actions.h, 583

GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_8\_VALUE\_PARAMS  
gmock-more-actions.h, 584

GMOCK\_INTERNAL\_LIST\_TYPE\_AND\_9\_VALUE\_PARAMS  
gmock-more-actions.h, 584

GMOCK\_INTERNAL\_MATCHER  
gmock-matchers.h, 545

GMOCK\_INTERNAL\_MATCHER\_ARG\_USAGE  
gmock-matchers.h, 545

GMOCK\_INTERNAL\_MATCHER\_ARGS\_USAGE  
gmock-matchers.h, 546

GMOCK\_INTERNAL\_MATCHER\_ARGUMENT  
gmock-function-mocker.h, 524

GMOCK\_INTERNAL\_MATCHER\_FORWARD\_ARG  
gmock-matchers.h, 546

GMOCK\_INTERNAL\_MATCHER\_FORWARD\_ARGS  
gmock-matchers.h, 546

GMOCK\_INTERNAL\_MATCHER\_FUNCTION\_ARG  
gmock-matchers.h, 546

GMOCK\_INTERNAL\_MATCHER\_FUNCTION\_ARGS  
gmock-matchers.h, 546

GMOCK\_INTERNAL\_MATCHER\_MEMBER  
gmock-matchers.h, 546

GMOCK\_INTERNAL\_MATCHER\_MEMBERS\_USAGE  
gmock-matchers.h, 547

GMOCK\_INTERNAL\_MATCHER\_MEMBERS  
gmock-matchers.h, 547

GMOCK\_INTERNAL\_MATCHER\_PARAMETER  
gmock-function-mocker.h, 524

GMOCK\_INTERNAL\_MATCHER\_TEMPLATE\_PARAM  
gmock-matchers.h, 547

GMOCK\_INTERNAL\_MATCHER\_TEMPLATE\_PARAMS  
gmock-matchers.h, 547

GMOCK\_INTERNAL\_MATCHER\_TYPE\_PARAM  
gmock-matchers.h, 547

GMOCK\_INTERNAL\_MATCHER\_TYPE\_PARAMS  
gmock-matchers.h, 548

GMOCK\_INTERNAL\_METHOD\_ARG\_1  
gmock-function-mocker.h, 524

GMOCK\_INTERNAL\_METHOD\_ARG\_2  
gmock-function-mocker.h, 524

GMOCK\_INTERNAL\_METHOD\_ARG\_3  
gmock-function-mocker.h, 525

GMOCK\_INTERNAL\_METHOD\_ARG\_4  
gmock-function-mocker.h, 525

GMOCK\_INTERNAL\_METHOD\_ARG\_5  
gmock-function-mocker.h, 525

GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_6  
    gmock-function-mocker.h, 525  
GMOCK\_INTERNAL\_MOCK\_METHOD\_ARG\_7  
    gmock-function-mocker.h, 525  
GMOCK\_INTERNAL\_MOCK\_METHOD\_IMPL  
    gmock-function-mocker.h, 526  
GMOCK\_INTERNAL\_MOCK\_METHODON  
    gmock-function-mocker.h, 526  
GMOCK\_INTERNAL\_NOEXCEPT\_SPEC\_IF\_NOEXCEPT  
    gmock-function-mocker.h, 526  
GMOCK\_INTERNAL\_PARAMETER  
    gmock-function-mocker.h, 527  
GMOCK\_INTERNAL\_REF\_SPEC\_IF\_REF  
    gmock-function-mocker.h, 527  
GMOCK\_INTERNAL\_SIGNATURE  
    gmock-function-mocker.h, 527  
GMOCK\_INTERNAL\_TEMPLATE\_ARG  
    gmock-actions.h, 511  
GMOCK\_INTERNAL\_TYPE\_GVALUE\_PARAM  
    gmock-actions.h, 511  
GMOCK\_INTERNAL\_TYPE\_PARAM  
    gmock-actions.h, 512  
GMOCK\_INTERNAL\_TYPENAME\_PARAM  
    gmock-actions.h, 512  
GMOCK\_INTERNAL\_UNPACK\_Calltype  
    gmock-function-mocker.h, 527  
GMOCK\_INTERNAL\_UNPACK\_ref  
    gmock-function-mocker.h, 528  
GMOCK\_INTERNAL\_WARNING\_CLANG  
    gmock-internal-utils.h, 598  
GMOCK\_INTERNAL\_WARNING\_POP  
    gmock-internal-utils.h, 599  
GMOCK\_INTERNAL\_WARNING\_PUSH  
    gmock-internal-utils.h, 599  
GMOCK\_INTERNAL\_WRONG\_ARITY  
    gmock-function-mocker.h, 528  
GMOCK\_KIND\_OF\_  
    gmock-internal-utils.h, 599  
gmock\_link\_test.h  
    TEST, 620–628  
GMOCK\_MAYBE\_5046\_  
    gmock-matchers.h, 548  
GMOCK\_MOCKER\_  
    gmock-function-mocker.h, 528  
GMOCK\_ON\_CALL\_IMPL\_  
    gmock-spec-builders.h, 588  
GMOCK\_PP\_CAT  
    gmock-pp.h, 602  
GMOCK\_PP\_COMMA  
    gmock-pp.h, 602  
GMOCK\_PP\_COMMA\_IF  
    gmock-pp.h, 602  
GMOCK\_PP\_EMPTY  
    gmock-pp.h, 602  
GMOCK\_PP\_FOR\_EACH  
    gmock-pp.h, 603  
GMOCK\_PP\_GENERIC\_IF  
    gmock-pp.h, 603  
GMOCK\_PP\_HAS\_COMMA  
    gmock-pp.h, 603  
GMOCK\_PP\_HEAD  
    gmock-pp.h, 603  
GMOCK\_PP\_IDENTITY  
    gmock-pp.h, 603  
GMOCK\_PP\_IF  
    gmock-pp.h, 603  
GMOCK\_PP\_INC  
    gmock-pp.h, 604  
GMOCK\_PP\_INTEGRAL\_EMPTY\_TUPLE  
    gmock-pp.h, 604  
GMOCK\_PP\_INTERNAL\_16TH  
    gmock-pp.h, 604  
GMOCK\_PP\_INTERNAL\_CALL\_MACRO  
    gmock-pp.h, 604  
GMOCK\_PP\_INTERNAL\_CAT  
    gmock-pp.h, 604  
GMOCK\_PP\_INTERNAL\_CAT\_5  
    gmock-pp.h, 604  
GMOCK\_PP\_INTERNAL\_COMMA\_IF\_0  
    gmock-pp.h, 605  
GMOCK\_PP\_INTERNAL\_COMMA\_IF\_1  
    gmock-pp.h, 605  
GMOCK\_PP\_INTERNAL\_COMMA\_IF\_10  
    gmock-pp.h, 605  
GMOCK\_PP\_INTERNAL\_COMMA\_IF\_11  
    gmock-pp.h, 605  
GMOCK\_PP\_INTERNAL\_COMMA\_IF\_12  
    gmock-pp.h, 605  
GMOCK\_PP\_INTERNAL\_COMMA\_IF\_13  
    gmock-pp.h, 605  
GMOCK\_PP\_INTERNAL\_COMMA\_IF\_14  
    gmock-pp.h, 605  
GMOCK\_PP\_INTERNAL\_COMMA\_IF\_15  
    gmock-pp.h, 606  
GMOCK\_PP\_INTERNAL\_COMMA\_IF\_2  
    gmock-pp.h, 606  
GMOCK\_PP\_INTERNAL\_COMMA\_IF\_3  
    gmock-pp.h, 606  
GMOCK\_PP\_INTERNAL\_COMMA\_IF\_4  
    gmock-pp.h, 606  
GMOCK\_PP\_INTERNAL\_COMMA\_IF\_5  
    gmock-pp.h, 606  
GMOCK\_PP\_INTERNAL\_COMMA\_IF\_6  
    gmock-pp.h, 606  
GMOCK\_PP\_INTERNAL\_COMMA\_IF\_7  
    gmock-pp.h, 606  
GMOCK\_PP\_INTERNAL\_COMMA\_IF\_8  
    gmock-pp.h, 606  
GMOCK\_PP\_INTERNAL\_COMMA\_IF\_9  
    gmock-pp.h, 607  
GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_0  
    gmock-pp.h, 607  
GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_1  
    gmock-pp.h, 607  
GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_10  
    gmock-pp.h, 607

GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_11  
     gmock-pp.h, 607

GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_12  
     gmock-pp.h, 608

GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_13  
     gmock-pp.h, 608

GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_14  
     gmock-pp.h, 608

GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_15  
     gmock-pp.h, 608

GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_2  
     gmock-pp.h, 609

GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_3  
     gmock-pp.h, 609

GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_4  
     gmock-pp.h, 609

GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_5  
     gmock-pp.h, 609

GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_6  
     gmock-pp.h, 610

GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_7  
     gmock-pp.h, 610

GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_8  
     gmock-pp.h, 610

GMOCK\_PP\_INTERNAL\_FOR\_EACH\_IMPL\_9  
     gmock-pp.h, 610

GMOCK\_PP\_INTERNAL\_HEAD  
     gmock-pp.h, 611

GMOCK\_PP\_INTERNAL\_IBP\_IS\_VARIADIC\_C  
     gmock-pp.h, 611

GMOCK\_PP\_INTERNAL\_IBP\_IS\_VARIADIC\_R\_1  
     gmock-pp.h, 611

GMOCK\_PP\_INTERNAL\_IBP\_IS\_VARIADIC\_R\_GMOCK\_PP\_IS\_ENCLOSED\_IN\_PARENS  
     gmock-pp.h, 611

GMOCK\_PP\_INTERNAL\_IF\_0  
     gmock-pp.h, 611

GMOCK\_PP\_INTERNAL\_IF\_1  
     gmock-pp.h, 611

GMOCK\_PP\_INTERNAL\_INC\_0  
     gmock-pp.h, 612

GMOCK\_PP\_INTERNAL\_INC\_1  
     gmock-pp.h, 612

GMOCK\_PP\_INTERNAL\_INC\_10  
     gmock-pp.h, 612

GMOCK\_PP\_INTERNAL\_INC\_11  
     gmock-pp.h, 612

GMOCK\_PP\_INTERNAL\_INC\_12  
     gmock-pp.h, 612

GMOCK\_PP\_INTERNAL\_INC\_13  
     gmock-pp.h, 612

GMOCK\_PP\_INTERNAL\_INC\_14  
     gmock-pp.h, 612

GMOCK\_PP\_INTERNAL\_INC\_15  
     gmock-pp.h, 613

GMOCK\_PP\_INTERNAL\_INC\_2  
     gmock-pp.h, 613

GMOCK\_PP\_INTERNAL\_INC\_3  
     gmock-pp.h, 613

GMOCK\_PP\_INTERNAL\_INC\_4  
     gmock-pp.h, 613

GMOCK\_PP\_INTERNAL\_INC\_5  
     gmock-pp.h, 613

GMOCK\_PP\_INTERNAL\_INC\_6  
     gmock-pp.h, 613

GMOCK\_PP\_INTERNAL\_INC\_7  
     gmock-pp.h, 613

GMOCK\_PP\_INTERNAL\_INC\_8  
     gmock-pp.h, 613

GMOCK\_PP\_INTERNAL\_INC\_9  
     gmock-pp.h, 614

GMOCK\_PP\_INTERNAL\_INTERNAL\_16TH  
     gmock-pp.h, 614

GMOCK\_PP\_INTERNAL\_INTERNAL\_HEAD  
     gmock-pp.h, 614

GMOCK\_PP\_INTERNAL\_INTERNAL\_TAIL  
     gmock-pp.h, 614

GMOCK\_PP\_INTERNAL\_IS\_EMPTY  
     gmock-pp.h, 614

GMOCK\_PP\_INTERNAL\_IS\_EMPTY\_CASE\_0001  
     gmock-pp.h, 615

GMOCK\_PP\_INTERNAL\_REMOVE\_PARENS  
     gmock-pp.h, 615

GMOCK\_PP\_INTERNAL\_STRINGIZE  
     gmock-pp.h, 615

GMOCK\_PP\_INTERNAL\_TAIL  
     gmock-pp.h, 615

GMOCK\_PP\_IS\_BEGIN\_PARENS  
     gmock-pp.h, 615

GMOCK\_PP\_IS\_EMPTY  
     gmock-pp.h, 615

GMOCK\_PP\_IS\_ENCLOSED\_IN\_PARENS  
     gmock-pp.h, 616

GMOCK\_PP\_NARG  
     gmock-pp.h, 616

GMOCK\_PP\_NARG0  
     gmock-pp.h, 616

GMOCK\_PP\_REMOVE\_PARENS  
     gmock-pp.h, 616

GMOCK\_PP\_REPEAT  
     gmock-pp.h, 616

GMOCK\_PP\_STRINGIZE  
     gmock-pp.h, 617

GMOCK\_PP\_TAIL  
     gmock-pp.h, 617

GMOCK\_PP\_VARIADIC\_CALL  
     gmock-pp.h, 617

GMOCK\_WCHAR\_T\_IS\_NATIVE\_  
     gmock-internal-utils.h, 599

GreaterThan  
     testing::gmock\_matchers\_test::GTestMatcherTestP,  
         202

GreaterThanOrEqual  
     testing::gmock\_matchers\_test::GreaterThanOrEqual<  
         T >, 193

gtest-assertion-result.h

GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_,  
629  
gtest-death-test-internal.h  
  GTEST\_DECLARE\_string\_, 694  
gtest-death-test.h  
  ASSERT\_DEATH\_IF\_SUPPORTED, 630  
  EXPECT\_DEATH\_IF\_SUPPORTED, 630  
  GTEST\_DECLARE\_string\_, 631  
  GTEST\_UNSUPPORTED\_DEATH\_TEST, 630  
gtest-internal-inl.h  
  GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_,  
    713  
gtest-internal.h  
  GTEST\_CONCAT\_TOKEN\_, 699  
  GTEST\_CONCAT\_TOKEN\_IMPL\_, 699  
  GTEST\_FATAL\_FAILURE\_, 699  
  GTEST\_MESSAGE\_, 699  
  GTEST\_MESSAGE\_AT\_, 700  
  GTEST\_NONFATAL\_FAILURE\_, 700  
  GTEST\_REMOVE\_REFERENCE\_AND\_CONST\_,  
    700  
  GTEST\_SKIP\_, 700  
  GTEST\_STRINGIFY\_, 700  
  GTEST\_STRINGIFY\_HELPER\_, 700  
  GTEST\_SUCCESS\_, 701  
  GTEST\_SUPPRESS\_UNREACHABLE\_CODE\_WARNING\_,  
    701  
  GTEST\_TEST\_, 701  
  GTEST\_TEST\_ANY\_THROW\_, 701  
  GTEST\_TEST\_BOOLEAN\_, 701  
  GTEST\_TEST\_CLASS\_NAME\_, 702  
  GTEST\_TEST\_NO\_FATAL\_FAILURE\_, 702  
  GTEST\_TEST\_NO\_THROW\_, 702  
  GTEST\_TEST\_NO\_THROW\_CATCH\_STD\_EXCEPTION\_,  
    703  
  GTEST\_TEST\_THROW\_, 703  
  GTEST\_TEST\_THROW\_CATCH\_STD\_EXCEPTION\_,  
    703  
gtest-matchers.h  
  GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_,  
    632  
  GTEST\_MAYBE\_5046\_, 632  
gtest-param-test.h  
  GTEST\_ALLOW\_UNINSTANTIATED\_PARAMETERIZED\_,  
    635  
  GTEST\_EXPAND\_, 635  
  GTEST\_GET\_FIRST\_, 635  
  GTEST\_GET\_SECOND\_, 635  
  INSTANTIATE\_TEST\_CASE\_P, 636  
  INSTANTIATE\_TEST\_SUITE\_P, 636  
  TEST\_P, 636  
gtest-port.h  
  GTEST\_AMBIGUOUS\_ELSE\_BLOCKER\_, 683  
  GTEST\_API\_, 683  
  GTEST\_ATTRIBUTE\_NO\_SANITIZE\_ADDRESS\_,  
    683  
  GTEST\_ATTRIBUTE\_NO\_SANITIZE\_HWADDRESS\_,  
    683  
  GTEST\_ATTRIBUTE\_NO\_SANITIZE\_MEMORY\_,  
    683  
  GTEST\_ATTRIBUTE\_NO\_SANITIZE\_THREAD\_,  
    683  
  GTEST\_ATTRIBUTE\_PRINTF\_, 683  
  GTEST\_ATTRIBUTE\_UNUSED\_, 684  
  GTEST\_CHECK\_, 684  
  GTEST\_CHECK\_POSIX\_SUCCESS\_, 684  
  GTEST\_DECLARE\_bool\_, 684  
  GTEST\_DECLARE\_int32\_, 684  
  GTEST\_DECLARE\_STATIC\_MUTEX\_, 685  
  GTEST\_DECLARE\_string\_, 685  
  GTEST\_DEFAULT\_DEATH\_TEST\_STYLE, 685  
  GTEST\_DEFINE\_bool\_, 685  
  GTEST\_DEFINE\_int32\_, 685  
  GTEST\_DEFINE\_STATIC\_MUTEX\_, 686  
  GTEST\_DEFINE\_string\_, 686  
  GTEST\_DEV\_EMAIL\_, 686  
  GTEST\_DISABLE\_MSC\_DEPRECATED\_POP\_,  
    686  
  GTEST\_DISABLE\_MSC\_DEPRECATED\_PUSH\_,  
    686  
  GTEST\_DISABLE\_MSC\_WARNINGS\_POP\_, 686  
  GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_,  
    687  
  GTEST\_EXCLUSIVE\_LOCK\_REQUIRED\_, 687  
  GTEST\_FLAG, 687  
  GTEST\_FLAG\_GET, 687  
  GTEST\_FLAG\_NAME\_, 687  
  GTEST\_FLAG\_PREFIX\_, 687  
  GTEST\_FLAG\_PREFIX\_DASH\_, 687  
  GTEST\_FLAG\_PREFIX\_UPPER\_, 688  
  GTEST\_FLAG\_SAVER\_, 688  
  GTEST\_FLAG\_SET, 688  
  GTEST\_HAS\_ALT\_PATH\_SEP\_, 688  
  GTEST\_HAS\_CLONE, 688  
  GTEST\_HAS\_CXXABI\_H\_, 688  
  GTEST\_HAS\_EXCEPTIONS, 688  
  GTEST\_HAS\_FILE\_SYSTEM, 689  
  GTEST\_HAS\_POSIX\_RE, 689  
  GTEST\_HAS\_PTHREAD, 689  
  GTEST\_HAS\_RTTI, 689  
  GTEST\_HAS\_SEH, 689  
  GTEST\_HAS\_STD\_WSTRING, 689  
  GTEST\_HAS\_STREAM\_REDIRECTION, 689  
  GTEST\_HAVE\_ATTRIBUTE\_, 690  
  GTEST\_HAVE\_FEATURE\_, 690  
  GTEST\_INIT GOOGLE\_TEST\_NAME\_, 690  
  GTEST\_INTENTIONAL\_CONST\_COND\_POP\_,  
    690  
  GTEST\_INTENTIONAL\_CONST\_COND\_PUSH\_,  
    690  
  GTEST\_INTERNAL\_DEPRECATED, 690  
  GTEST\_IS\_THREADSAFE, 690  
  GTEST\_LOCK\_EXCLUDED\_, 691  
  GTEST\_LOG\_, 691  
  GTEST\_MUST\_USE\_RESULT\_, 691  
  GTEST\_NAME\_, 691

GTEST\_NO\_INLINE\_, 691  
 GTEST\_NO\_TAIL\_CALL\_, 691  
 GTEST\_PATH\_SEP\_, 692  
 GTEST\_PROJECT\_URL\_, 692  
 GTEST\_REFERENCE\_TO\_CONST\_, 692  
 GTEST\_SNPRINTF\_, 692  
 GTEST\_USE\_OWN\_FLAGFILE\_FLAG\_, 692  
 GTESTUSES\_POSIX\_RE, 692  
 GTEST\_WIDE\_STRING\_USES\_UTF16\_, 692  
**gtest-printers.h**  
   GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_POINTER\_,  
     640  
   GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_STRING\_,  
     640  
**gtest-spi.h**  
   EXPECT\_FATAL\_FAILURE, 642  
   EXPECT\_FATAL\_FAILURE\_ON\_ALL\_THREADS,  
     642  
   EXPECT\_NONFATAL\_FAILURE, 643  
   EXPECT\_NONFATAL\_FAILURE\_ON\_ALL\_THREADS,  
     643  
   GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_,  
     644  
**gtest-test-part.h**  
   GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_,  
     645  
**gtest-type-util.h**  
   GTEST\_BIND\_, 709  
   GTEST\_TEMPLATE\_, 709  
**gtest-typed-test.h**  
   GTEST\_NAME\_GENERATOR\_, 646  
   GTEST\_REGISTERED\_TEST\_NAMES\_, 646  
   GTEST\_SUITE\_NAMESPACE\_, 646  
   GTEST\_TYPE\_PARAMS\_, 646  
   GTEST\_TYPED\_TEST\_SUITE\_P\_STATE\_, 646  
   INSTANTIATE\_TYPED\_TEST\_CASE\_P, 647  
   INSTANTIATE\_TYPED\_TEST\_SUITE\_P, 647  
   REGISTER\_TYPED\_TEST\_CASE\_P, 647  
   REGISTER\_TYPED\_TEST\_SUITE\_P, 647  
   TYPED\_TEST, 648  
   TYPED\_TEST\_CASE, 648  
   TYPED\_TEST\_CASE\_P, 648  
   TYPED\_TEST\_P, 649  
   TYPED\_TEST\_SUITE, 649  
   TYPED\_TEST\_SUITE\_P, 649  
**gtest-typed-test-test.h**  
   REGISTER\_TYPED\_TEST\_SUITE\_P, 714  
   TYPED\_TEST\_P, 714, 715  
   TYPED\_TEST\_SUITE\_P, 715  
**gtest.h**  
   ADD\_FAILURE, 654  
   ADD\_FAILURE\_AT, 654  
   ASSERT\_ANY\_THROW, 655  
   ASSERT\_DOUBLE\_EQ, 655  
   ASSERT\_EQ, 655  
   ASSERT\_FALSE, 655  
   ASSERT\_FLOAT\_EQ, 655  
   ASSERT\_GE, 656  
   ASSERT\_GT, 656  
   ASSERT\_LE, 656  
   ASSERT\_LT, 656  
   ASSERT\_NE, 656  
   ASSERT\_NEAR, 656  
   ASSERT\_NO\_FATAL\_FAILURE, 657  
   ASSERT\_NO\_THROW, 657  
   ASSERT\_STRCASEEQ, 657  
   ASSERT\_STRCASENE, 657  
   ASSERT\_STREQ, 657  
   ASSERT\_STRNE, 657  
   ASSERT\_THROW, 658  
   ASSERT\_TRUE, 658  
   EXPECT\_ANY\_THROW, 658  
   EXPECT\_DOUBLE\_EQ, 658  
   EXPECT\_EQ, 658  
   EXPECT\_FALSE, 658  
   EXPECT\_FLOAT\_EQ, 659  
   EXPECT\_GE, 659  
   EXPECT\_GT, 659  
   EXPECT\_LE, 659  
   EXPECT\_LT, 659  
   EXPECT\_NE, 659  
   EXPECT\_NEAR, 660  
   EXPECT\_NO\_FATAL\_FAILURE, 660  
   EXPECT\_NO\_THROW, 660  
   EXPECT\_STRCASEEQ, 660  
   EXPECT\_STRCASENE, 660  
   EXPECT\_STREQ, 660  
   EXPECT\_STRNE, 661  
   EXPECT\_THROW, 661  
   EXPECT\_TRUE, 661  
   FAIL, 661  
   GTEST\_ASSERT\_EQ, 661  
   GTEST\_ASSERT\_FALSE, 661  
   GTEST\_ASSERT\_GE, 662  
   GTEST\_ASSERT\_GT, 662  
   GTEST\_ASSERT\_LE, 662  
   GTEST\_ASSERT\_LT, 662  
   GTEST\_ASSERT\_NE, 662  
   GTEST\_ASSERT\_TRUE, 662  
   GTEST\_DECLARE\_bool\_, 665–667  
   GTEST\_DECLARE\_int32\_, 667  
   GTEST\_DECLARE\_string\_, 667, 668  
   GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_,  
     668  
   GTEST\_EXPECT\_FALSE, 663  
   GTEST\_EXPECT\_TRUE, 663  
   GTEST\_FAIL, 663  
   GTEST\_FAIL\_AT, 663  
   GTEST\_IMPL\_CMP\_HELPER\_, 663  
   GTEST\_SKIP, 664  
   GTEST\_SUCCEED, 664  
   GTEST\_TEST, 664  
   GTEST\_TEST\_F, 664  
   RUN\_ALL\_TESTS, 668  
   SCOPED\_TRACE, 664  
   SUCCEED, 665

TEST, 665  
TEST\_F, 665  
GTEST\_ALLOW\_UNINSTANTIATED\_PARAMETERIZED\_TEST  
  gtest-param-test.h, 635  
GTEST\_AMBIGUOUS\_ELSE\_BLOCKER\_  
  gtest-port.h, 683  
GTEST\_API\_  
  gtest-port.h, 683  
GTEST\_ASSERT\_  
  gtest\_pred\_impl.h, 674  
GTEST\_ASSERT\_EQ  
  gtest.h, 661  
GTEST\_ASSERT\_FALSE  
  gtest.h, 661  
GTEST\_ASSERT\_GE  
  gtest.h, 662  
GTEST\_ASSERT\_GT  
  gtest.h, 662  
GTEST\_ASSERT\_LE  
  gtest.h, 662  
GTEST\_ASSERT\_LT  
  gtest.h, 662  
GTEST\_ASSERT\_NE  
  gtest.h, 662  
GTEST\_ASSERT\_TRUE  
  gtest.h, 662  
GTEST\_ATTRIBUTE\_NO\_SANITIZE\_ADDRESS\_  
  gtest-port.h, 683  
GTEST\_ATTRIBUTE\_NO\_SANITIZE\_HWDADDRESS\_  
  gtest-port.h, 683  
GTEST\_ATTRIBUTE\_NO\_SANITIZE\_MEMORY\_  
  gtest-port.h, 683  
GTEST\_ATTRIBUTE\_NO\_SANITIZE\_THREAD\_  
  gtest-port.h, 683  
GTEST\_ATTRIBUTE\_PRINTF\_  
  gtest-port.h, 683  
GTEST\_ATTRIBUTE\_UNUSED\_  
  gtest-port.h, 684  
GTEST\_BIND\_  
  gtest-type-util.h, 709  
GTEST\_CHECK\_  
  gtest-port.h, 684  
GTEST\_CHECK\_POSIX\_SUCCESS\_  
  gtest-port.h, 684  
GTEST\_CONCAT\_TOKEN\_  
  gtest-internal.h, 699  
GTEST\_CONCAT\_TOKEN\_IMPL\_  
  gtest-internal.h, 699  
GTEST\_DECLARE\_bool\_  
  gtest-port.h, 684  
  gtest.h, 665–667  
GTEST\_DECLARE\_int32\_  
  gtest-port.h, 684  
  gtest.h, 667  
GTEST\_DECLARE\_STATIC\_MUTEX\_  
  gtest-port.h, 685  
GTEST\_DECLARE\_string\_  
  gtest-death-test-internal.h, 694  
                  gtest-death-test.h, 631  
                  gtest-port.h, 685  
                  gtest.h, 667, 668  
                  GTEST\_DEFAULT\_DEATH\_TEST\_STYLE  
                  gtest-port.h, 685  
                  GTEST\_DEFINE\_bool\_  
                  gtest-port.h, 685  
                  GTEST\_DEFINE\_int32\_  
                  gtest-port.h, 685  
                  GTEST\_DEFINE\_STATIC\_MUTEX\_  
                  gtest-port.h, 686  
                  GTEST\_DEFINE\_string\_  
                  gtest-port.h, 686  
                  GTEST\_DEV\_EMAIL\_  
                  gtest-port.h, 686  
                  GTEST\_DISABLE\_MSC\_DEPRECATED\_POP\_  
                  gtest-port.h, 686  
                  GTEST\_DISABLE\_MSC\_DEPRECATED\_PUSH\_  
                  gtest-port.h, 686  
                  GTEST\_DISABLE\_MSC\_WARNINGS\_POP\_  
                  gtest-port.h, 686  
                  testing::internal, 73  
                  GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_  
                  gmock-cardinalities.h, 513  
                  gmock-matchers.h, 552  
                  gmock-spec-builders.h, 589  
                  gtest-assertion-result.h, 629  
                  gtest-internal-inl.h, 713  
                  gtest-matchers.h, 632  
                  gtest-port.h, 687  
                  gtest-spi.h, 644  
                  gtest-test-part.h, 645  
                  gtest.h, 668  
                  testing::internal, 73  
GTEST\_ERROR  
  testing::internal, 54  
GTEST\_EXCLUSIVE\_LOCK\_REQUIRED\_  
  gtest-port.h, 687  
GTEST\_EXPAND\_  
  gtest-param-test.h, 635  
GTEST\_EXPECT\_FALSE  
  gtest.h, 663  
GTEST\_EXPECT\_TRUE  
  gtest.h, 663  
GTEST\_FAIL  
  gtest.h, 663  
GTEST\_FAIL\_AT  
  gtest.h, 663  
GTEST\_FATAL  
  testing::internal, 54  
GTEST\_FATAL\_FAILURE\_  
  gtest-internal.h, 699  
GTEST\_FLAG  
  gtest-port.h, 687  
GTEST\_FLAG\_GET  
  gtest-port.h, 687  
GTEST\_FLAG\_NAME\_  
  gtest-port.h, 687

GTEST\_FLAG\_PREFIX\_  
  gtest-port.h, 687

GTEST\_FLAG\_PREFIX\_DASH\_  
  gtest-port.h, 687

GTEST\_FLAG\_PREFIX\_UPPER\_  
  gtest-port.h, 688

GTEST\_FLAG\_SAVER\_  
  gtest-port.h, 688

gtest\_flag\_saver\_  
  testing::Test, 387

GTEST\_FLAG\_SET  
  gtest-port.h, 688

GTEST\_GET\_FIRST\_  
  gtest-param-test.h, 635

GTEST\_GET\_SECOND\_  
  gtest-param-test.h, 635

GTEST\_HAS\_ALT\_PATH\_SEP\_  
  gtest-port.h, 688

GTEST\_HAS\_CLONE  
  gtest-port.h, 688

GTEST\_HAS\_CXXABI\_H\_  
  gtest-port.h, 688

GTEST\_HAS\_EXCEPTIONS  
  gtest-port.h, 688

GTEST\_HAS\_FILE\_SYSTEM  
  gtest-port.h, 689

GTEST\_HAS\_POSIX\_RE  
  gtest-port.h, 689

GTEST\_HAS\_PTHREAD  
  gtest-port.h, 689

GTEST\_HAS\_RTTI  
  gtest-port.h, 689

GTEST\_HAS\_SEH  
  gtest-port.h, 689

GTEST\_HAS\_STD\_WSTRING  
  gtest-port.h, 689

GTEST\_HAS\_STREAM\_REDIRECTION  
  gtest-port.h, 689

GTEST\_HAVE\_ATTRIBUTE\_  
  gtest-port.h, 690

GTEST\_HAVE\_FEATURE\_  
  gtest-port.h, 690

GTEST\_IMPL\_CMP\_HELPER\_  
  gtest.h, 663

GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_POINTER\_  
  gtest-printers.h, 640  
  testing::internal, 73, 74

GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_STRING\_  
  gtest-printers.h, 640  
  testing::internal, 74

GTEST\_INFO  
  testing::internal, 54

GTEST\_INIT\_GOOGLE\_TEST\_NAME\_  
  gtest-port.h, 690

GTEST\_INTENTIONAL\_CONST\_COND\_POP\_  
  gtest-port.h, 690

GTEST\_INTENTIONAL\_CONST\_COND\_PUSH\_  
  gtest-port.h, 690

GTEST\_INTERNAL\_DEPRECATED  
  gtest-port.h, 690  
  testing::internal, 74, 75

GTEST\_INTERNAL\_EMPTY\_BASE\_CLASS  
  gmock-nice-strict.h, 587

GTEST\_IS\_THREADSAFE  
  gtest-port.h, 690

GTEST\_LOCK\_EXCLUDED\_  
  gtest-port.h, 691

GTEST\_LOG\_  
  gtest-port.h, 691

GTEST\_MAYBE\_5046\_  
  gtest-matchers.h, 632

GTEST\_MESSAGE\_  
  gtest-internal.h, 699

GTEST\_MESSAGE\_AT\_  
  gtest-internal.h, 700

GTEST\_MUST\_USE\_RESULT\_  
  gtest-port.h, 691

GTEST\_NAME\_  
  gtest-port.h, 691

GTEST\_NAME\_GENERATOR\_  
  gtest-typed-test.h, 646

GTEST\_NO\_INLINE\_  
  gtest-port.h, 691

GTEST\_NO\_TAIL\_CALL\_  
  gtest-port.h, 691

GTEST\_NONFATAL\_FAILURE\_  
  gtest-internal.h, 700

GTEST\_PATH\_SEP\_  
  gtest-port.h, 692

GTEST\_PRED1\_  
  gtest\_pred\_impl.h, 675

GTEST\_PRED2\_  
  gtest\_pred\_impl.h, 675

GTEST\_PRED3\_  
  gtest\_pred\_impl.h, 675

GTEST\_PRED4\_  
  gtest\_pred\_impl.h, 675

GTEST\_PRED5\_  
  gtest\_pred\_impl.h, 676

GTEST\_PRED\_FORMAT1\_  
  gtest\_pred\_impl.h, 676

GTEST\_PRED\_FORMAT2\_  
  gtest\_pred\_impl.h, 676

GTEST\_PRED\_FORMAT3\_  
  gtest\_pred\_impl.h, 676

GTEST\_PRED\_FORMAT4\_  
  gtest\_pred\_impl.h, 677

GTEST\_PRED\_FORMAT5\_  
  gtest\_pred\_impl.h, 677

gtest\_pred\_impl.h

- ASSERT\_PRED1, 670
- ASSERT\_PRED2, 671
- ASSERT\_PRED3, 671
- ASSERT\_PRED4, 671
- ASSERT\_PRED5, 671
- ASSERT\_PRED\_FORMAT1, 671



testing::Test, 384  
 testing::TestResult, 417  
 HasSameFixtureClass  
   testing::Test, 384  
 HasShortDebugStringType  
   testing::internal::HasDebugStringAndShortDebugStringRequirement  
     T >, 205  
 HasStrictnessModifier  
   testing::internal, 75  
 Head  
   Queue< E >, 331, 332  
   testing::internal::Templates< Head\_ >, 381  
   testing::internal::Templates< Head\_, Tail\_ >, 380  
   testing::internal::Types< Head\_ >, 445  
   testing::internal::Types< Head\_, Tail\_ >, 444  
 head\_  
   Queue< E >, 333  
 HONOR\_SHARDING\_PROTOCOL  
   testing::internal::UnitTestImpl, 460  
 i  
   testing::internal::ReturnRoundRobinAction<  
     >::State, 366  
 identity\_t  
   testing::internal, 51  
 Ignore  
   testing::internal::Ignore< size\_t >, 207  
 IGNORE\_SHARDING\_PROTOCOL  
   testing::internal::UnitTestImpl, 460  
 ignored\_parameterized\_test\_suites  
   testing::internal::UnitTestImpl, 464  
 ignored\_parameterized\_test\_suites\_  
   testing::internal::UnitTestImpl, 470  
 IgnoredValue  
   testing::internal::IgnoredValue, 209  
 IgnoreResult  
   testing, 28  
 IgnoreResultAction  
   testing::internal::IgnoreResultAction< A >, 211  
 IllegalDoDefault  
   testing::internal, 75  
 Impl  
   testing::internal::IgnoreResultAction< A >::Impl<  
     F >, 213  
   testing::internal::ReturnAction< R >::Impl< U >,  
     214, 215  
   testing::internal::ReturnRefAction< T >::Impl< F  
     >, 217  
   testing::internal::ReturnRefOfCopyAction<  
     >::Impl< F >, 219  
 impl  
   testing::UnitTest, 452  
 impl\_  
   testing::Action< R(Args...)>::ActionAdapter, 109  
   testing::gmock\_matchers\_test::GreaterThanMatcher<  
     T >, 193  
   testing::internal::ParamGenerator< T >, 311  
   testing::internal::ParamIterator< T >, 318  
   testing::PolymorphicAction< Impl >, 322  
   testing::PolymorphicAction< Impl >::MonomorphicImpl<  
     F >, 273  
   testing::UnitTest, 456  
 ImplicitCast\_  
   testing::internal, 76  
 index  
   Counter, 137  
 increment\_death\_test\_count  
   testing::TestInfo, 402  
   testing::TestResult, 417  
 index\_  
   testing::internal::RangeGenerator< T, IncrementT  
     >::Iterator, 249  
 IndexSequenceFor  
   testing::internal, 51  
 Indices  
   testing::internal::FlatTuple< T >, 175  
   testing::internal::FlatTupleBase< FlatTuple< T...  
     >, IndexSequence< Idx... > >, 177  
 T  
 Infinity  
   testing::internal::FloatingPoint< RawType >, 183  
 Init  
   testing::Action< R(Args...)>, 107, 108  
   testing::internal::RE, 343  
 InitCopy  
   testing::internal::NativeArray< Element >, 282  
 InitGoogleMock  
   testing, 28, 29  
 InitGoogleTest  
   testing, 29  
 initial\_action\_  
   testing::internal::DoAllAction< InitialAction, Other-  
     Actions... >, 155  
 InitialActionArgType  
   testing::internal::DoAllAction< InitialAction, Other-  
     Actions... >, 154  
 InitRef  
   testing::internal::NativeArray< Element >, 282  
 inner\_action  
   testing::internal::WithArgsAction< InnerAction, I >,  
     492  
 InnerSignature  
   testing::internal::WithArgsAction< InnerAction, I >,  
     491  
 input\_value  
   testing::internal::ReturnAction< R >::Impl< U  
     >::State, 364  
 InsertSyntheticTestCase  
   testing::internal, 76  
 INSTANTIATE\_GTEST\_MATCHER\_TEST\_P  
   gmock-matchers\_test.h, 619  
 INSTANTIATE\_TEST\_CASE\_P  
   gtest-param-test.h, 636  
 INSTANTIATE\_TEST\_SUITE\_P  
   gtest-param-test.h, 636  
 INSTANTIATE\_TYPED\_TEST\_CASE\_P

gtest-typed-test.h, 647  
INSTANTIATE\_TYPED\_TEST\_SUITE\_P  
    gtest-typed-test.h, 647  
instantiated  
    testing::internal::TypeParameterizedTestSuiteRegistry::TypeParameterizedTestSuiteInfo,  
        443  
InstantiationContainer  
    testing::internal::ParameterizedTestSuiteInfo<  
        TestSuite >, 301  
InstantiationInfo  
    testing::internal::ParameterizedTestSuiteInfo<  
        TestSuite >::InstantiationInfo, 222  
InstantiationInMultipleTranslationUnitsTest, 223  
instantiations\_  
    testing::internal::ParameterizedTestSuiteInfo<  
        TestSuite >, 304  
Int  
    testing::internal::TypeWithSize< 4 >, 446  
    testing::internal::TypeWithSize< 8 >, 447  
Int32FromEnvOrDie  
    testing::internal, 76  
Int32FromGTestEnv  
    testing::internal, 76  
Interface, 224  
    ~Interface, 225  
    IntFromString, 225  
    IntRefFromString, 225  
    StringFromString, 225  
    VoidFromDouble, 225  
    VoidFromFloat, 226  
    VoidFromFunc, 226  
    VoidFromIntRef, 226  
    VoidFromString, 226  
    VoidFromVector, 226  
internal::AssertHelper  
    testing::UnitTest, 455  
internal::DefaultGlobalTestPartResultReporter  
    testing::TestEventListeners, 394  
    testing::TestResult, 419  
internal::ExecDeathTest  
    testing::TestResult, 419  
internal::FuchsiaDeathTest  
    testing::TestResult, 419  
internal::GetIgnoredParameterizedTestSuites  
    testing::UnitTest, 455  
internal::GetUnitTestImpl  
    testing::UnitTest, 456  
internal::MakeAndRegisterTestInfo  
    testing::TestInfo, 404  
internal::NoExecDeathTest  
    testing::TestEventListeners, 394  
internal::ParameterizedTestFactory  
    testing::WithParamInterface< T >, 495  
internal::ReportFailureInUnknownLocation  
    testing::UnitTest, 456  
internal::StreamingListenerTest  
    testing::TestInfo, 405  
    testing::UnitTest, 456  
internal::TestEventListenersAccessor  
    testing::TestEventListeners, 394  
internal::TestResultAccessor  
    testing::TestResult, 419  
internal::TypeParameterizedTestSuiteInfo,  
    testing::TestEventListeners, 394  
    testing::TestInfo, 405  
    testing::TestResult, 420  
    testing::TestSuite, 430  
internal::UnitTestRecordPropertyTestHelper  
    testing::UnitTest, 456  
internal::WindowsDeathTest  
    testing::TestResult, 420  
internal\_run\_death\_test\_  
    testing::internal::GTestFlagSaver, 196  
IntFromString  
    Interface, 225  
IntRefFromString  
    Interface, 225  
Invalid  
    testing::internal, 76  
Invoke  
    testing, 29, 30  
InvokeArgument  
    testing, 30  
    testing::internal, 76  
InvokeHelper, 228  
    StaticBoolFromString, 228  
    StaticIntFromString, 228  
    StaticVoidFromString, 228  
    StaticVoidFromVoid, 228  
    VoidFromString, 228  
    VoidFromVoid, 229  
InvokeWithoutArgs  
    testing, 30  
is\_callable\_r  
    testing::internal, 51  
is\_disabled\_  
    testing::TestInfo, 406  
is\_gtest\_matcher  
    testing::gmock\_matchers\_test::GtestGreaterThanOrEqual<  
        T >, 198  
is\_in\_another\_shard  
    testing::TestInfo, 403  
is\_in\_another\_shard\_  
    testing::TestInfo, 406  
is\_nan  
    testing::internal::FloatingPoint< RawType >, 183  
is\_prime\_  
    PreCalculatedPrimeTable, 325  
is\_prime\_size\_  
    PreCalculatedPrimeTable, 325  
is\_reportable  
    testing::TestInfo, 403  
is\_valid\_  
    testing::internal::RE, 344  
IsAInNum  
    testing::internal, 77

IsAlpha  
 testing::internal, 77

IsATTY  
 testing::internal::posix, 101

IsCompatibleAfterIgnoringArguments  
 testing::OnceAction< Result(Args...)>, 288

IsCompatibleFunctor  
 testing::Action< R(Args...)>, 106

IsContainer  
 testing::internal, 51

IsContainerTest  
 testing::internal, 77

IsDigit  
 testing::internal, 77

IsDir  
 testing::internal::posix, 101

IsDirectlyCompatible  
 testing::OnceAction< Result(Args...)>, 288

IsDoDefault  
 testing::Action< R(Args...)>, 108

IsEmpty  
 testing, 30

IsLower  
 testing::internal, 77

IsNotContainer  
 testing::internal, 51

IsNotSubstring  
 testing, 30, 31

IsPrime  
 OnTheFlyPrimeTable, 291  
 PreCalculatedPrimeTable, 324  
 PrimeTable, 326  
 sample1.h, 710

IsSet  
 testing::DefaultValue< T >, 145  
 testing::DefaultValue< T & >, 146

IsSkipped  
 testing::Test, 385

IsSpace  
 testing::internal, 78

IsSubstring  
 testing, 31

IsTrue  
 testing::internal, 78

IsUpper  
 testing::internal, 78

IsValidParamName  
 testing::internal::ParameterizedTestSuiteInfo< TestSuite >, 303

IsXDigit  
 testing::internal, 78

it\_  
 testing::internal::ParamGeneratorConverter< From, To >::Iterator, 246

Iterator  
 testing::internal::CartesianProductGenerator< T >, 125

testing::internal::ParamGeneratorConverter< From, To >::Iterator, 244

testing::internal::RangeGenerator< T, IncrementT >::Iterator, 247, 248

testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator, 251, 252

iterator  
 testing::internal::NativeArray< Element >, 281  
 testing::internal::ParamGenerator< T >, 310

iterator\_  
 testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator, 253

IteratorImpl  
 testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... > >, 255

JoinAsKeyValueTuple  
 testing::internal, 79

kAdd  
 testing::internal::edit\_distance, 98

kBitCount  
 testing::internal::FloatingPoint< RawType >, 185

kBool  
 testing::internal, 55

kDeathTestStyleFlag  
 testing::internal, 95

kDeathTestUseFork  
 testing::internal, 95

kElidedFramesMarker  
 testing::internal::OsStackTraceGetterInterface, 295

kErrorVerbosity  
 testing::internal, 95

kExponentBitCount  
 testing::internal::FloatingPoint< RawType >, 185

kExponentBitMask  
 testing::internal::FloatingPoint< RawType >, 185

key  
 testing::TestProperty, 412

key\_  
 testing::internal::TestPropertyKeyIs, 413  
 testing::TestProperty, 412

kFatal  
 testing::internal::FailureReporterInterface, 169

kFloatingPoint  
 testing::internal, 55

kFractionBitCount  
 testing::internal::FloatingPoint< RawType >, 185

kFractionBitMask  
 testing::internal::FloatingPoint< RawType >, 185

kInfo  
 testing::internal, 54

kInfoVerbosity  
 testing::internal, 95

kInteger  
 testing::internal, 55

kInternalRunDeathTestFlag  
 testing::internal, 95

kMatch  
    testing::internal::edit\_distance, 98

kMaxBiggestInt  
    testing::internal, 96

kMaxRandomSeed  
    testing::internal, 96

kMaxRange  
    testing::internal::Random, 337

kMaxStackTraceDepth  
    testing, 38

kMaxUlps  
    testing::internal::FloatingPoint< RawType >, 185

kNonfatal  
    testing::internal::FailureReporterInterface, 169

kOther  
    testing::internal, 55

kProtobufOneLinerMaxLength  
    testing::internal::ProtobufPrinter, 329

kRemove  
    testing::internal::edit\_distance, 98

kReplace  
    testing::internal::edit\_distance, 98

kSignBitMask  
    testing::internal::FloatingPoint< RawType >, 186

kStackTraceMarker  
    testing::internal, 96

kTestTypeInGoogleTest  
    testing::internal, 96

kWarning  
    testing::internal, 54

kWarningVerbosity  
    testing::internal, 96

Last  
    Queue< E >, 332

last  
    testing::internal::SetArrayArgumentAction< k, I1, I2 >, 361

last\_  
    Queue< E >, 333

last\_death\_test\_suite\_  
    testing::internal::UnitTestImpl, 470

Length  
    MyString, 276

line  
    testing::internal::AssertHelper::AssertHelperData, 118  
    testing::internal::CodeLocation, 129  
    testing::internal::ParameterizedTestSuiteInfo< TestSuite >::InstantiationInfo, 222  
    testing::internal::TraceInfo, 436  
    testing::TestInfo, 403

list\_tests\_  
    testing::internal::GTestFlagSaver, 196

listeners  
    testing::internal::UnitTestImpl, 464  
    testing::UnitTest, 452

listeners\_  
    testing::internal::UnitTestImpl, 471

ListTestsMatchingFilter  
    testing::internal::UnitTestImpl, 464

location\_  
    testing::TestInfo, 406

Lock  
    testing::internal::Mutex, 274

Log  
    testing::internal, 79

LogIsVisible  
    testing::internal, 79

LogSeverity  
    testing::internal, 54

LogToStderr  
    testing::internal, 79

LosslessArithmeticConvertible  
    testing::internal, 52

LosslessArithmeticConvertibleImpl  
    testing::internal, 52

main  
    prof\_count\_neighbours.cpp, 720  
    prof\_simulation.cpp, 721  
    run\_dd1.cpp, 721  
    run\_dd2.cpp, 722  
    run\_hybrid.cpp, 724  
    run\_omp.cpp, 725  
    run\_single.cpp, 726  
    test\_dd1.cpp, 734  
    test\_dd2.cpp, 735  
    test\_hybrid.cpp, 736  
    test\_omp.cpp, 741  
    time\_count\_neighbours.cpp, 727  
    time\_dd1.cpp, 728  
    time\_dd2.cpp, 729  
    time\_hybrid.cpp, 730  
    time\_single.cpp, 732

Make  
    testing::internal::is\_implicitly\_convertible< From, To >, 235

MakeAction  
    testing, 32  
    testing::internal, 79

MakeAndRegisterTestInfo  
    testing::internal, 80

MakeIndexSequence  
    testing::internal, 52

MakePolymorphicAction  
    testing, 32

MakeResultIgnoredValue  
    testing::internal::Function< R(Args...) >, 189

MakeResultVoid  
    testing::internal::Function< R(Args...) >, 189

MakeVector  
    testing::internal::ValueArray< Ts >, 486

Map  
    Queue< E >, 332

MarkAsIgnored  
    testing::internal::MarkAsIgnored, 261

MatchAndExplain

testing::gmock\_matchers\_test::GreaterThanOrEqual<method\_ptr  
T >, 193  
testing::gmock\_matchers\_test::GtestGreaterThanOrEqual<  
T >, 199  
testing::internal::IsEmptyMatcher, 238

MATCHER  
gmock-matchers.h, 548  
testing, 32

MATCHER\_P  
gmock-matchers.h, 548

MATCHER\_P10  
gmock-matchers.h, 548

MATCHER\_P2  
gmock-matchers.h, 549

MATCHER\_P3  
gmock-matchers.h, 549

MATCHER\_P4  
gmock-matchers.h, 549

MATCHER\_P5  
gmock-matchers.h, 550

MATCHER\_P6  
gmock-matchers.h, 550

MATCHER\_P7  
gmock-matchers.h, 550

MATCHER\_P8  
gmock-matchers.h, 551

MATCHER\_P9  
gmock-matchers.h, 551

matches\_filter\_  
testing::TestInfo, 406

MatchesFilter  
testing::internal::UnitTestOptions, 473

Matrix, 262  
~Matrix, 263  
data, 264  
Matrix, 262, 263  
n\_cols, 265  
n\_rows, 265  
operator(), 263  
operator=, 263  
operator==, 263  
read\_sub\_matrix, 264  
write\_sub\_matrix, 264  
zero, 264

matrix, 18  
count\_neighbours, 18  
generate\_matrix, 19  
read\_file, 19  
read\_matrix\_str, 20  
write\_matrix\_str, 20

Max  
testing::internal::FloatingPoint< RawType >, 184

Message  
testing::Message, 266

message  
testing::internal::AssertHelper::AssertHelperData,  
118

testing::internal::TraceInfo, 436

testing::internal::InvokeMethodAction<  
MethodPtr >, 229  
testing::internal::InvokeMethodWithoutArgsAction<  
Class, MethodPtr >, 231

Mock, 268  
Mock, 269  
MOCK\_METHOD1, 269–271  
operator=, 271

MOCK\_CONST\_METHOD0  
gmock-function-mocker.h, 528

MOCK\_CONST\_METHOD0\_T  
gmock-function-mocker.h, 528

MOCK\_CONST\_METHOD0\_T\_WITH\_CALLTYPE  
gmock-function-mocker.h, 528

MOCK\_CONST\_METHOD0\_WITH\_CALLTYPE  
gmock-function-mocker.h, 529

MOCK\_CONST\_METHOD1  
gmock-function-mocker.h, 529

MOCK\_CONST\_METHOD10  
gmock-function-mocker.h, 529

MOCK\_CONST\_METHOD10\_T  
gmock-function-mocker.h, 529

MOCK\_CONST\_METHOD10\_T\_WITH\_CALLTYPE  
gmock-function-mocker.h, 529

MOCK\_CONST\_METHOD10\_WITH\_CALLTYPE  
gmock-function-mocker.h, 529

MOCK\_CONST\_METHOD1\_T  
gmock-function-mocker.h, 530

MOCK\_CONST\_METHOD1\_T\_WITH\_CALLTYPE  
gmock-function-mocker.h, 530

MOCK\_CONST\_METHOD1\_WITH\_CALLTYPE  
gmock-function-mocker.h, 530

MOCK\_CONST\_METHOD2  
gmock-function-mocker.h, 530

MOCK\_CONST\_METHOD2\_T  
gmock-function-mocker.h, 530

MOCK\_CONST\_METHOD2\_T\_WITH\_CALLTYPE  
gmock-function-mocker.h, 530

MOCK\_CONST\_METHOD2\_WITH\_CALLTYPE  
gmock-function-mocker.h, 531

MOCK\_CONST\_METHOD3  
gmock-function-mocker.h, 531

MOCK\_CONST\_METHOD3\_T  
gmock-function-mocker.h, 531

MOCK\_CONST\_METHOD3\_T\_WITH\_CALLTYPE  
gmock-function-mocker.h, 531

MOCK\_CONST\_METHOD3\_WITH\_CALLTYPE  
gmock-function-mocker.h, 531

MOCK\_CONST\_METHOD4  
gmock-function-mocker.h, 531

MOCK\_CONST\_METHOD4\_T  
gmock-function-mocker.h, 532

MOCK\_CONST\_METHOD4\_T\_WITH\_CALLTYPE  
gmock-function-mocker.h, 532

MOCK\_CONST\_METHOD4\_WITH\_CALLTYPE  
gmock-function-mocker.h, 532

MOCK\_CONST\_METHOD5

gmock-function-mocker.h, 532  
MOCK\_CONST\_METHOD5\_T  
    gmock-function-mocker.h, 532  
MOCK\_CONST\_METHOD5\_T\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 532  
MOCK\_CONST\_METHOD5\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 533  
MOCK\_CONST\_METHOD6  
    gmock-function-mocker.h, 533  
MOCK\_CONST\_METHOD6\_T  
    gmock-function-mocker.h, 533  
MOCK\_CONST\_METHOD6\_T\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 533  
MOCK\_CONST\_METHOD6\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 533  
MOCK\_CONST\_METHOD7  
    gmock-function-mocker.h, 533  
MOCK\_CONST\_METHOD7\_T  
    gmock-function-mocker.h, 534  
MOCK\_CONST\_METHOD7\_T\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 534  
MOCK\_CONST\_METHOD7\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 534  
MOCK\_CONST\_METHOD8  
    gmock-function-mocker.h, 534  
MOCK\_CONST\_METHOD8\_T  
    gmock-function-mocker.h, 534  
MOCK\_CONST\_METHOD8\_T\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 534  
MOCK\_CONST\_METHOD8\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 535  
MOCK\_CONST\_METHOD9  
    gmock-function-mocker.h, 535  
MOCK\_CONST\_METHOD9\_T  
    gmock-function-mocker.h, 535  
MOCK\_CONST\_METHOD9\_T\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 535  
MOCK\_CONST\_METHOD9\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 535  
MOCK\_METHOD  
    gmock-function-mocker.h, 535  
MOCK\_METHOD0  
    gmock-function-mocker.h, 536  
MOCK\_METHOD0\_T  
    gmock-function-mocker.h, 536  
MOCK\_METHOD0\_T\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 536  
MOCK\_METHOD0\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 536  
MOCK\_METHOD1  
    gmock-function-mocker.h, 536  
    Mock, 269–271  
    testing::gmock\_matchers\_test::ContainerHelper,  
        134  
MOCK\_METHOD10  
    gmock-function-mocker.h, 536  
MOCK\_METHOD10\_T  
    gmock-function-mocker.h, 537  
MOCK\_METHOD10\_T\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 537  
MOCK\_METHOD10\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 537  
MOCK\_METHOD1\_T  
    gmock-function-mocker.h, 537  
MOCK\_METHOD1\_T\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 537  
MOCK\_METHOD1\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 537  
MOCK\_METHOD2  
    gmock-function-mocker.h, 538  
MOCK\_METHOD2\_T  
    gmock-function-mocker.h, 538  
MOCK\_METHOD2\_T\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 538  
MOCK\_METHOD2\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 538  
MOCK\_METHOD3  
    gmock-function-mocker.h, 538  
MOCK\_METHOD3\_T  
    gmock-function-mocker.h, 538  
MOCK\_METHOD3\_T\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 539  
MOCK\_METHOD3\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 539  
MOCK\_METHOD4  
    gmock-function-mocker.h, 539  
MOCK\_METHOD4\_T  
    gmock-function-mocker.h, 539  
MOCK\_METHOD4\_T\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 539  
MOCK\_METHOD4\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 539  
MOCK\_METHOD5  
    gmock-function-mocker.h, 540  
MOCK\_METHOD5\_T  
    gmock-function-mocker.h, 540  
MOCK\_METHOD5\_T\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 540  
MOCK\_METHOD5\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 540  
MOCK\_METHOD6  
    gmock-function-mocker.h, 540  
MOCK\_METHOD6\_T  
    gmock-function-mocker.h, 540  
MOCK\_METHOD6\_T\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 541  
MOCK\_METHOD6\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 541  
MOCK\_METHOD7  
    gmock-function-mocker.h, 541  
MOCK\_METHOD7\_T  
    gmock-function-mocker.h, 541  
MOCK\_METHOD7\_T\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 541  
MOCK\_METHOD7\_WITH\_CALLTYPE  
    gmock-function-mocker.h, 541

MOCK\_METHOD8  
     gmock-function-mocker.h, 542

MOCK\_METHOD8\_T  
     gmock-function-mocker.h, 542

MOCK\_METHOD8\_T\_WITH\_CALLTYPE  
     gmock-function-mocker.h, 542

MOCK\_METHOD8\_WITH\_CALLTYPE  
     gmock-function-mocker.h, 542

MOCK\_METHOD9  
     gmock-function-mocker.h, 542

MOCK\_METHOD9\_T  
     gmock-function-mocker.h, 542

MOCK\_METHOD9\_T\_WITH\_CALLTYPE  
     gmock-function-mocker.h, 543

MOCK\_METHOD9\_WITH\_CALLTYPE  
     gmock-function-mocker.h, 543

MonomorphicImpl  
     testing::PolymorphicAction< Impl >::MonomorphicImpl< F >, 273

Mutex  
     testing::internal::Mutex, 274

mutex\_  
     testing::UnitTest, 457

MutexLock  
     testing::internal, 52

MyString, 274  
     ~MyString, 275  
     c\_string, 276  
     c\_string\_, 276  
     CloneCString, 276  
     Length, 276  
     MyString, 275  
     operator=, 276  
     Set, 276

n\_cols  
     Matrix, 265  
     World, 500

n\_rows  
     Matrix, 265  
     World, 500

NaggyMock  
     testing::NaggyMock< MockClass >, 278

NaggyMockImpl  
     testing::internal::NaggyMockImpl< Base >, 279

name  
     testing::internal::ParameterizedTestSuiteInfo< TestSuite >::InstantiationInfo, 222  
     testing::TestInfo, 403  
     testing::TestSuite, 426

name\_  
     testing::TestInfo, 406  
     testing::TestSuite, 430

name\_func  
     testing::internal::ParameterizedTestSuiteInfo< TestSuite >::InstantiationInfo, 222

NativeArray  
     testing::internal::NativeArray< Element >, 281, 282

Next  
     testing::internal::ReturnRoundRobinAction< T >::State, 366

next  
     QueueNode< E >, 334, 335

next\_  
     QueueNode< E >, 335

NiceMock  
     testing::NiceMock< MockClass >, 285, 286

NiceMockImpl  
     testing::internal::NiceMockImpl< Base >, 287

obj\_ptr  
     testing::internal::InvokeMethodAction< Class, MethodPtr >, 230  
     testing::internal::InvokeMethodWithoutArgsAction< Class, MethodPtr >, 231

ON\_CALL  
     gmock-spec-builders.h, 589

OnceAction  
     testing::OnceAction< Result(Args...) >, 289

OnEnvironmentsSetUpEnd  
     testing::EmptyTestEventListener, 160  
     testing::TestEventListener, 388

OnEnvironmentsSetUpStart  
     testing::EmptyTestEventListener, 160  
     testing::TestEventListener, 388

OnEnvironmentsTearDownEnd  
     testing::EmptyTestEventListener, 160  
     testing::TestEventListener, 388

OnEnvironmentsTearDownStart  
     testing::EmptyTestEventListener, 160  
     testing::TestEventListener, 388

OnTestCaseEnd  
     testing::EmptyTestEventListener, 160  
     testing::TestEventListener, 388

OnTestCaseStart  
     testing::EmptyTestEventListener, 160  
     testing::TestEventListener, 389

OnTestDisabled  
     testing::EmptyTestEventListener, 161  
     testing::TestEventListener, 389

OnTestEnd  
     testing::EmptyTestEventListener, 161  
     testing::TestEventListener, 389

OnTestIterationEnd  
     testing::EmptyTestEventListener, 161  
     testing::TestEventListener, 389

OnTestIterationStart  
     testing::EmptyTestEventListener, 161  
     testing::TestEventListener, 389

OnTestPartResult  
     testing::EmptyTestEventListener, 161  
     testing::TestEventListener, 390

OnTestProgramEnd  
     testing::EmptyTestEventListener, 162  
     testing::TestEventListener, 390

OnTestProgramStart  
     testing::EmptyTestEventListener, 162

testing::TestEventListener, 390  
OnTestStart  
    testing::EmptyTestEventListener, 162  
    testing::TestEventListener, 390  
OnTestSuiteEnd  
    testing::EmptyTestEventListener, 162  
    testing::TestEventListener, 390  
OnTestSuiteStart  
    testing::EmptyTestEventListener, 162  
    testing::TestEventListener, 391  
OnTheFlyPrimeTable, 290  
    GetNextPrime, 291  
    IsPrime, 291  
operator Action< F >  
    testing::internal::DoDefaultAction, 156  
    testing::internal::IgnoreResultAction< A >, 211  
    testing::internal::ReturnRefAction< T >, 352  
    testing::internal::ReturnRefOfCopyAction< T >, 353  
    testing::PolymorphicAction< Impl >, 322  
operator Action< R  
    testing::internal::DoAllAction< FinalAction >, 152  
    testing::internal::DoAllAction< InitialAction, OtherActions... >, 155  
    testing::internal::WithArgsAction< InnerAction, I >, 492  
operator Action< U  
    testing::internal::ReturnAction< R >, 346  
operator bool  
    testing::internal::ConstCharPtr, 133  
    testing::internal::TrueWithString, 437  
operator const Impl &  
    testing::internal::ImplBase< Impl >::Holder, 207  
operator OnceAction< F >  
    testing::Action< R(Args...)>, 108  
operator OnceAction< R  
    testing::internal::DoAllAction< FinalAction >, 152  
    testing::internal::DoAllAction< InitialAction, OtherActions... >, 155  
    testing::internal::WithArgsAction< InnerAction, I >, 492  
operator OnceAction< U  
    testing::internal::ReturnAction< R >, 346  
operator ParamGenerator< T >  
    testing::internal::ParamConverterGenerator< Gen >, 297  
    testing::internal::ValueArray< Ts >, 486  
operator ParamGenerator<::std::tuple< T... >>  
    testing::internal::CartesianProductHolder< Gen >, 128  
operator!=  
    testing::internal, 80  
    testing::internal::ParamIterator< T >, 317  
operator<<  
    testing, 32  
    testing::internal::internal\_stream\_operator\_without\_lexical\_teaming, 99  
    testing::Message, 266, 267  
operator\*  
    testing::internal::ParamIterator< T >, 317  
operator()  
    Matrix, 263  
    testing::Action< R(Args...)>::ActionAdapter, 109  
    testing::Action< R(Args...)>::IgnoreArgs< FunctionImpl >, 208  
    testing::internal::ActionImpl< R(Args...), Impl >, 112  
    testing::internal::DeleteArgAction< k >, 148  
    testing::internal::InvokeArgumentAction< index, Params >, 227  
    testing::internal::InvokeMethodAction< Class, MethodPtr >, 229  
    testing::internal::InvokeMethodWithoutArgsAction< Class, MethodPtr >, 231  
    testing::internal::InvokeWithoutArgsAction< FunctionImpl >, 232  
    testing::internal::ReturnAction< ByMoveWrapper < T > >, 348  
    testing::internal::ReturnAction< R >::Impl< U >, 215  
    testing::internal::ReturnArgAction< k >, 348  
    testing::internal::ReturnNewAction< T, Params >, 349  
    testing::internal::ReturnPointeeAction< Ptr >, 350  
    testing::internal::ReturnRoundRobinAction< T >, 354  
    testing::internal::SaveArgAction< k, Ptr >, 355  
    testing::internal::SaveArgPointeeAction< k, Ptr >, 356  
    testing::internal::SetArgRefereeAction< k, T >, 359  
    testing::internal::SetArgumentPointeeAction< N, A, typename >, 360  
    testing::internal::SetArrayArgumentAction< k, I1, I2 >, 361  
    testing::internal::TestPropertyParams, 413  
    testing::OnceAction< Result(Args...)>::IgnoreIncomingArguments< Callable >, 209  
    testing::OnceAction< Result(Args...)>::StdFunctionAdaptor< Callable >, 367  
    testing::PrintToStringParamName, 326  
operator++  
    testing::internal::ParamIterator< T >, 317  
operator->  
    testing::internal::ParamIterator< T >, 317  
operator=  
    Matrix, 263  
    Mock, 271  
    MyString, 276  
    PreCalculatedPrimeTable, 324  
    Queue< E >, 332  
    QueueNode< E >, 335  
    testing::ActionInterface< F >, 114  
    testing::DefaultValue< T >::FactoryValueProducer, 168  
    testing::DefaultValue< T >::FixedValueProducer,

173  
 testing::internal::AssertHelper, 116  
 testing::internal::AssertHelper::AssertHelperData, 117  
 testing::internal::DefaultGlobalTestPartResultReporter, 140  
 testing::internal::DefaultPerThreadTestPartResultReporter, 142  
 testing::internal::GTestLog, 200  
 testing::internal::GTestNonCopyable, 204  
 testing::internal::OsStackTraceGetter, 293  
 testing::internal::OsStackTraceGetterInterface, 295  
 testing::internal::ParameterizedTestFactory< Test-  
     Class >, 299  
 testing::internal::ParameterizedTestSuiteInfo<  
     TestSuite >, 304  
 testing::internal::ParameterizedTestSuiteInfoBase, 307  
 testing::internal::ParameterizedTestSuiteRegistry, 309  
 testing::internal::ParamGenerator< T >, 311  
 testing::internal::ParamIterator< T >, 317  
 testing::internal::Random, 337  
 testing::internal::RangeGenerator< T, IncrementT  
     >, 340  
 testing::internal::RangeGenerator< T, IncrementT  
     >::Iterator, 249  
 testing::internal::TestFactoryBase, 397  
 testing::internal::TestMetaFactory< TestSuite >, 409  
 testing::internal::UnitTestImpl, 464  
 testing::internal::ValuesInIteratorRangeGenerator<  
     T >, 490  
 testing::Message, 267  
 testing::NaggyMock< MockClass >, 279  
 testing::NiceMock< MockClass >, 286  
 testing::OnceAction< Result(Args...) >, 290  
 testing::ScopedTrace, 358  
 testing::StrictMock< MockClass >, 375  
 testing::Test, 385  
 testing::TestEventListeners, 393  
 testing::TestInfo, 403  
 testing::TestResult, 417  
 testing::TestSuite, 426  
 testing::UnitTest, 452  
 operator===  
     Matrix, 263  
     testing::internal, 80  
     testing::internal::NativeArray< Element >, 283  
     testing::internal::ParamIterator< T >, 318  
 original\_working\_dir  
     testing::UnitTest, 452  
 OriginalFunction  
     testing::internal::IgnoreResultAction< A >::Impl<  
         F >, 213  
 os\_stack\_trace\_getter  
     testing::internal::UnitTestImpl, 465  
 os\_stack\_trace\_getter\_

    testing::internal::UnitTestImpl, 471  
 OsStackTraceGetter  
     testing::internal::OsStackTraceGetter, 293  
 OsStackTraceGetterInterface  
     testing::internal::OsStackTraceGetterInterface, 294, 295  
 output\_
     testing::internal::GTestFlagSaver, 196  
 output\_cells  
     World, 497  
 OutputFlagAlsoCheckEnvVar  
     testing::internal, 80  
 param  
     testing::TestParamInfo< ParamType >, 411  
 ParamConverterGenerator  
     testing::internal::ParamConverterGenerator< Gen  
         >, 296  
 parameter\_
     testing::internal::ParameterizedTestFactory< Test-  
         Class >, 299  
     testing::WithParamInterface< T >, 495  
 parameterized\_test\_registry  
     testing::internal::UnitTestImpl, 465  
     testing::UnitTest, 452  
 parameterized\_test\_registry\_
     testing::internal::UnitTestImpl, 471  
 parameterized\_tests\_registered\_
     testing::internal::UnitTestImpl, 471  
 ParameterizedTestCaseInfo  
     testing::internal, 52  
 ParameterizedTestFactory  
     testing::internal::ParameterizedTestFactory< Test-  
         Class >, 299  
 ParameterizedTestSuiteInfo  
     testing::internal::ParameterizedTestSuiteInfo<  
         TestSuite >, 302  
 ParameterizedTestSuiteInfoBase  
     testing::internal::ParameterizedTestSuiteInfoBase,  
         306  
 ParameterizedTestSuiteRegistry  
     testing::internal::ParameterizedTestSuiteRegistry,  
         308  
 ParamGenerator  
     testing::internal::ParameterizedTestSuiteInfo<  
         TestSuite >, 304  
     testing::internal::ParamGenerator< T >, 310  
 ParamGenerator< T >  
     testing::internal::ParamIterator< T >, 318  
 ParamGeneratorConverter  
     testing::internal::ParamGeneratorConverter<  
         From, To >, 313  
 ParamIterator  
     testing::internal::ParamIterator< T >, 316  
 ParamNameGeneratorFunc  
     testing::internal::ParameterizedTestSuiteInfo<  
         TestSuite >, 302  
 params

testing::internal::InvokeArgumentAction< index,  
Params >, 227  
testing::internal::ReturnNewAction< T, Params >,  
349  
ParamType  
  testing::internal::CartesianProductGenerator< T  
    >, 126  
  testing::internal::ParameterizedTestFactory< Test-  
    Class >, 298  
  testing::internal::ParameterizedTestSuiteInfo<  
    TestSuite >, 302  
  testing::internal::ParamGeneratorInterface< T >,  
    314  
  testing::internal::TestMetaFactory< TestSuite >,  
    408  
  testing::WithParamInterface< T >, 494  
parent\_  
  testing::internal::UnitTestImpl, 471  
ParseFlag  
  testing::internal, 80  
ParseGoogleTestFlagsOnly  
  testing::internal, 80, 81  
ParseInt32  
  testing::internal, 81  
partial\_regex\_  
  testing::internal::RE, 344  
PartialMatch  
  testing::internal::RE, 343  
Passed  
  testing::internal::UnitTestImpl, 465  
  testing::TestResult, 417  
  testing::TestSuite, 426  
  testing::UnitTest, 453  
pattern  
  testing::internal::RE, 343  
pattern\_  
  testing::internal::RE, 344  
payload  
  testing::internal::ByMoveWrapper< T >, 124  
per\_thread\_test\_part\_result\_reporter\_  
  testing::internal::UnitTestImpl, 471  
Perform  
  testing::Action< R(Args...)>, 108  
  testing::ActionInterface< F >, 114  
  testing::internal::AssignAction< T1, T2 >, 119  
  testing::internal::IgnoreResultAction< A >::Impl<  
    F >, 213  
  testing::internal::ReturnNullAction, 350  
  testing::internal::ReturnRefAction< T >::Impl< F  
    >, 217  
  testing::internal::ReturnRefOfCopyAction<  
    >::Impl< F >, 220  
  testing::internal::ReturnVoidAction, 355  
  testing::internal::SetErrnoAndReturnAction< T >,  
    362  
  testing::PolymorphicAction< Impl >::MonomorphicImpl<  
    F >, 273  
pointer  
  testing::internal::ReturnPointeeAction< Ptr >, 351  
  testing::internal::SaveArgAction< k, Ptr >, 356  
  testing::internal::SaveArgPointeeAction< k, Ptr >,  
    357  
  testing::internal::ThreadLocal< T >, 434, 435  
PolymorphicAction  
  testing::PolymorphicAction< Impl >, 322  
PopGTestTrace  
  testing::UnitTest, 453  
populate\_matrix  
  test\_matrix.cpp, 738  
post\_flag\_parse\_init\_performed\_  
  testing::internal::UnitTestImpl, 471  
PostFlagParsingInit  
  testing::internal::UnitTestImpl, 465  
PreCalculatedPrimeTable, 323  
  ~PreCalculatedPrimeTable, 324  
  CalculatePrimesUpTo, 324  
  GetNextPrime, 324  
  is\_prime\_, 325  
  is\_prime\_size\_, 325  
  IsPrime, 324  
  operator=, 324  
  PreCalculatedPrimeTable, 324  
PrefixOf  
  testing::internal, 81  
PrimeTable, 325  
  ~PrimeTable, 326  
  GetNextPrime, 326  
  IsPrime, 326  
Print  
  Counter, 138  
  testing::internal::UniversalPrinter< T >, 474  
  testing::internal::UniversalPrinter< T & >, 476  
  testing::internal::UniversalPrinter< T[N]>, 476  
  testing::internal::UniversalTersePrinter< const  
    char \* >, 481  
  testing::internal::UniversalTersePrinter< const  
    char16\_t \* >, 482  
  testing::internal::UniversalTersePrinter< const  
    char32\_t \* >, 482  
  testing::internal::UniversalTersePrinter< std::reference\_wrapper<  
    T > >, 483  
  testing::internal::UniversalTersePrinter< T >, 477  
  testing::internal::UniversalTersePrinter< T & >,  
    484  
  testing::internal::UniversalTersePrinter< T[N]>,  
    484  
  testing::internal::UniversalTersePrinter< wchar\_t \*  
    >, 485  
  print\_time\_  
    testing::internal::GTestFlagSaver, 196  
  print\_utf8\_  
    testing::internal::GTestFlagSaver, 196  
  PrintBytesInObjectTo  
    testing::internal, 81  
  PrintRawArrayTo  
    testing::internal, 81

PrintSmartPointer  
 testing::internal, 81, 82

PrintStringTo  
 testing::internal, 82

PrintTo  
 testing::internal, 82–87

PrintToString  
 testing, 32

PrintTupleTo  
 testing::internal, 87

PrintU16StringTo  
 testing::internal, 87

PrintU32StringTo  
 testing::internal, 88

PrintValue  
 testing::internal::ContainerPrinter, 135  
 testing::internal::ConvertibleToIntegerPrinter, 136  
 testing::internal::FallbackPrinter, 170  
 testing::internal::FunctionPointerPrinter, 190  
 testing::internal::internal\_stream\_operator\_without\_lexical\_scope, 334  
 next, 334  
 StreamPrinter, 372  
 testing::internal::PointerPrinter, 321  
 testing::internal::ProtobufPrinter, 329  
 testing::internal::RawBytesPrinter, 341

PrintWithFallback  
 testing::internal, 88

PrivateCode, 327  
 FRIEND\_TEST, 327, 328  
 PrivateCode, 327  
 set\_x, 328  
 x, 328  
 x\_, 328

Produce  
 testing::DefaultValue< T >::FactoryValueProducer, 168  
 testing::DefaultValue< T >::FixedValueProducer, 173  
 testing::DefaultValue< T >::ValueProducer, 488

producer\_  
 testing::DefaultValue< T >, 145

prof\_count\_neighbours.cpp  
 main, 720

prof\_simulation.cpp  
 main, 721

proto2, 20

proxy  
 testing::internal::GenerateTypeList< T >, 191

ptr  
 testing::internal::ImplBase< Impl >::Holder, 207

ptr\_  
 testing::internal::AssignAction< T1, T2 >, 119

PushGTestTrace  
 testing::UnitTest, 453

PushTrace  
 testing::ScopedTrace, 358

Queue  
 Queue< E >, 330, 331

Queue< E >, 330

~Queue, 331

Clear, 331

Dequeue, 331

Enqueue, 331

Head, 331, 332

head\_, 333

Last, 332

last\_, 333

Map, 332

operator=, 332

Queue, 330, 331

QueueNode< E >, 335

Size, 332

size\_, 333

QueueNode  
 QueueNode< E >, 334  
 QueueNode< E >, 333  
 element, 334  
 element\_, 335

Random  
 testing::internal::Random, 336

random  
 testing::internal::UnitTestImpl, 465

random\_  
 testing::internal::UnitTestImpl, 472

random\_seed  
 testing::internal::UnitTestImpl, 465  
 testing::UnitTest, 453  
 World, 497

random\_seed\_  
 testing::internal::GTestFlagSaver, 197  
 testing::internal::UnitTestImpl, 472

Range  
 testing, 33

RangeGenerator  
 testing::internal::RangeGenerator< T, IncrementT >, 339

RawElement  
 testing::internal::StlContainerView< ::std::tuple< ElementPointer, Size > >, 370  
 testing::internal::StlContainerView< Element[N]>, 371

RE  
 testing::internal::RE, 342

ReactionToSharding  
 testing::internal::UnitTestImpl, 459

Read  
 testing::internal::posix, 101

read\_edge\_1d  
 World, 498

read\_edge\_2d  
 World, 498

read\_file

matrix, 19  
read\_matrix\_str  
    matrix, 20  
read\_sub\_matrix  
    Matrix, 264  
read\_vertex\_2d  
    World, 498  
ReadEntireFile  
    testing::internal, 88  
RecordProperty  
    testing::internal::TestResultAccessor, 422  
    testing::internal::UnitTestImpl, 465  
    testing::Test, 385  
    testing::TestResult, 418  
    testing::UnitTest, 453  
recreate\_environments\_when\_repeating\_  
    testing::internal::GTestFlagSaver, 197  
ref\_  
    testing::internal::ReturnRefAction< T >, 352  
    testing::internal::ReturnRefAction< T >::Impl< F  
        >, 217  
reference  
    testing::internal::ParamIterator< T >, 316  
Register  
    testing::internal::TypeParameterizedTest< Fixture,  
        TestSel, internal::None >, 440  
    testing::internal::TypeParameterizedTest< Fixture,  
        TestSel, Types >, 439  
    testing::internal::TypeParameterizedTestSuite<  
        Fixture, internal::None, Types >, 441  
    testing::internal::TypeParameterizedTestSuite<  
        Fixture, Tests, Types >, 440  
REGISTER\_TYPED\_TEST\_CASE\_P  
    gtest-typed-test.h, 647  
REGISTER\_TYPED\_TEST\_SUITE\_P  
    gtest-typed-test.h, 647  
    gtest-typed-test\_test.h, 714  
RegisterInstantiation  
    testing::internal::TypeParameterizedTestSuiteRegistry,  
        443  
RegisterParameterizedTests  
    testing::internal::UnitTestImpl, 466  
RegisterTest  
    testing, 33  
RegisterTests  
    testing::internal::ParameterizedTestSuiteInfo<  
        TestSuite >, 304  
    testing::internal::ParameterizedTestSuiteInfoBase,  
        307  
    testing::internal::ParameterizedTestSuiteRegistry,  
        309  
RegisterTestSuite  
    testing::internal::TypeParameterizedTestSuiteRegistry,  
        444  
RegisterTypeParameterizedTestSuite  
    testing::internal, 88  
RegisterTypeParameterizedTestSuiteInstantiation  
    testing::internal, 88  
ReinterpretBits  
    testing::internal::FloatingPoint< RawType >, 184  
Release  
    testing::TestEventListeners, 393  
repeat\_  
    testing::internal::GTestFlagSaver, 197  
repeater  
    testing::TestEventListeners, 393  
repeater\_  
    testing::TestEventListeners, 395  
reportable\_disabled\_test\_count  
    testing::internal::UnitTestImpl, 466  
    testing::TestSuite, 426  
    testing::UnitTest, 453  
reportable\_test\_count  
    testing::internal::UnitTestImpl, 466  
    testing::TestSuite, 426  
    testing::UnitTest, 453  
ReportFailure  
    testing::internal::FailureReporterInterface, 169  
ReportFailureInUnknownLocation  
    testing::internal, 88  
ReportInvalidTestSuiteType  
    testing::internal, 89  
ReportTestPartResult  
    testing::internal::DefaultGlobalTestPartResultReporter,  
        140  
    testing::internal::DefaultPerThreadTestPartResultReporter,  
        142  
Reseed  
    testing::internal::Random, 337  
Result  
    testing::Action< R(Args...) >, 106  
    testing::ActionInterface< F >, 113  
    testing::internal::Function< R(Args...) >, 189  
    testing::internal::IgnoreResultAction< A >::Impl<  
        F >, 213  
    testing::internal::ReturnRefAction< T >::Impl< F  
        >, 217  
    testing::internal::ReturnRefOfCopyAction< T  
        >::Impl< F >, 219  
    testing::PolymorphicAction< Impl >::MonomorphicImpl<  
        F >, 272  
result  
    testing::TestInfo, 403  
result\_  
    testing::internal::SetErrnoAndReturnAction< T >,  
        363  
    testing::TestInfo, 406  
Return  
    testing, 33  
ReturnAction  
    testing::internal::ReturnAction< ByMoveWrapper<  
        T > >, 347  
    testing::internal::ReturnAction< R >, 346  
ReturnArg  
    testing, 34  
ReturnNew

testing, 34  
**ReturnNull**  
 testing, 34  
**ReturnPointee**  
 testing, 34  
**ReturnRef**  
 testing, 34  
**ReturnRefAction**  
 testing::internal::ReturnRefAction< T >, 351  
**ReturnRefOfCopy**  
 testing, 35  
**ReturnRefOfCopyAction**  
 testing::internal::ReturnRefOfCopyAction< T >, 353  
**ReturnRoundRobin**  
 testing, 35  
**ReturnRoundRobinAction**  
 testing::internal::ReturnRoundRobinAction< T >, 354  
**ReturnType**  
 testing::internal::InvokeMethodWithoutArgsAction< Class, MethodPtr >, 230  
**rhs**  
 testing::gmock\_matchers\_test::GtestGreaterThanOrEqual< testing::internal::UnitTestImpl, 467  
 T >, 199  
**RmDir**  
 testing::internal::posix, 102  
**Run**  
 testing::Test, 385  
 testing::TestInfo, 403  
 testing::TestSuite, 427  
 testing::UnitTest, 454  
**RUN\_ALL\_TESTS**  
 gtest.h, 668  
**run\_dd1.cpp**  
 main, 721  
**run\_dd2.cpp**  
 main, 722  
**run\_hybrid.cpp**  
 evolve\_omp, 723  
 main, 724  
 update\_boundary\_omp, 724  
**run\_omp.cpp**  
 evolve\_omp, 725  
 main, 725  
 update\_boundary\_omp, 725  
**run\_single.cpp**  
 main, 726  
**RunAllTests**  
 testing::internal::UnitTestImpl, 466  
**RunSetUpTestSuite**  
 testing::TestSuite, 427  
**RunTearDownTestSuite**  
 testing::TestSuite, 427  
**sample1.h**  
 Factorial, 710  
 IsPrime, 710  
**SaveArg**  
 testing, 35  
**SaveArgPointee**  
 testing, 35  
**SCOPED\_TRACE**  
 gtest.h, 664  
**ScopedTrace**  
 testing::ScopedTrace, 357, 358  
 testing::UnitTest, 456  
**Set**  
 MyString, 276  
 testing::DefaultValue< T >, 145  
 testing::DefaultValue< T & >, 146  
**set**  
 testing::internal::ThreadLocal< T >, 435  
**set\_catch\_exceptions**  
 testing::internal::UnitTestImpl, 466  
**set\_current\_test\_info**  
 testing::internal::UnitTestImpl, 466  
**set\_current\_test\_suite**  
 testing::internal::UnitTestImpl, 466  
**set\_elapsed\_time**  
 testing::TestResult, 418  
**set\_os\_stack\_trace\_getter**  
**set\_should\_run**  
 testing::TestSuite, 427  
**set\_start\_timestamp**  
 testing::TestResult, 418  
**set\_up\_tc**  
 testing::TestSuite, 431  
**set\_x**  
 PrivateCode, 328  
**SetArgPointee**  
 testing, 35  
**SetArgReferee**  
 testing, 36  
**SetArgumentPointee**  
 testing, 36  
**SetArrayArgument**  
 testing, 36  
**SetDefaultResultPrinter**  
 testing::TestEventListeners, 394  
**SetDefaultXmlGenerator**  
 testing::TestEventListeners, 394  
**SetErrnoAndReturn**  
 testing, 36  
**SetErrnoAndReturnAction**  
 testing::internal::SetErrnoAndReturnAction< T >, 362  
**SetFactory**  
 testing::DefaultValue< T >, 145  
**SetGlobalTestPartResultReporter**  
 testing::internal::UnitTestImpl, 467  
**SetParam**  
 testing::WithParamInterface< T >, 495  
**SetTestPartResultReporterForCurrentThread**  
 testing::internal::UnitTestImpl, 467  
**SetUp**

testing::Environment, 163  
testing::Test, 385  
Setup  
  testing::Environment, 164  
  testing::Test, 385  
SetUpTearDownSuiteFuncType  
  testing::internal, 52  
SetUpTestCase  
  testing::Test, 386  
SetUpTestSuite  
  testing::Test, 386  
setUpTestSuiteFunc  
  testing::internal, 53  
SetValue  
  testing::TestProperty, 412  
severity\_  
  testing::internal::GTestLog, 201  
should\_run  
  testing::TestInfo, 404  
  testing::TestSuite, 427  
should\_run\_  
  testing::TestInfo, 406  
  testing::TestSuite, 431  
ShouldRunTest  
  testing::TestSuite, 427  
ShouldRunTestOnShard  
  testing::internal, 89  
ShouldShard  
  testing::internal, 89  
ShouldUseColor  
  testing::internal, 89  
ShowWideCString  
  testing::internal::String, 378  
Shuffle  
  testing::internal, 89  
shuffle\_  
  testing::internal::GTestFlagSaver, 197  
ShuffleRange  
  testing::internal, 89  
ShuffleTests  
  testing::internal::UnitTestImpl, 467  
  testing::TestSuite, 427  
side  
  World, 500  
sign\_bit  
  testing::internal::FloatingPoint< RawType >, 184  
SignAndMagnitudeToBiased  
  testing::internal::FloatingPoint< RawType >, 184  
Size  
  Queue< E >, 332  
size  
  testing::internal::NativeArray< Element >, 283  
size\_  
  Queue< E >, 333  
  testing::internal::NativeArray< Element >, 283  
Skip  
  testing::TestInfo, 404  
  testing::TestSuite, 428  
Skipped  
  testing::TestResult, 418  
skipped\_test\_count  
  testing::internal::UnitTestImpl, 467  
  testing::TestSuite, 428  
  testing::UnitTest, 454  
SkipPrefix  
  testing::internal, 90  
SplitString  
  testing::internal, 90  
src/conway/include/matrix.h, 716  
src/conway/include/world.h, 717  
src/conway/matrix.cpp, 718  
src/conway/world.cpp, 718  
src/prof\_count\_neighbours.cpp, 719  
src/prof\_simulation.cpp, 720  
src/run\_dd1.cpp, 721  
src/run\_dd2.cpp, 722  
src/run\_hybrid.cpp, 723  
src/run\_omp.cpp, 724  
src/run\_single.cpp, 726  
src/time\_count\_neighbours.cpp, 727  
src/time\_dd1.cpp, 728  
src/time\_dd2.cpp, 729  
src/time\_hybrid.cpp, 730  
src/time\_single.cpp, 731  
src/timing/include/timing.h, 732  
src/timing/timing.cpp, 733  
SrcDir  
  testing, 36  
ss\_  
  testing::Message, 268  
stack\_trace\_depth\_  
  testing::internal::GTestFlagSaver, 197  
start\_clock  
  timing, 103  
start\_timestamp  
  testing::internal::UnitTestImpl, 467  
  testing::TestResult, 418  
  testing::TestSuite, 428  
  testing::UnitTest, 454  
start\_timestamp\_  
  testing::internal::UnitTestImpl, 472  
  testing::TestResult, 421  
  testing::TestSuite, 431  
StartsWith  
  testing::internal, 90  
Stat  
  testing::internal::posix, 102  
State  
  testing::internal::ReturnAction< ByMoveWrapper<  
    T > >::State, 365  
  testing::internal::ReturnAction< R >::Impl< U  
    >::State, 364  
state\_  
  testing::internal::Random, 337  
  testing::internal::ReturnAction< ByMoveWrapper<  
    T > >, 348

testing::internal::ReturnAction< R >::Impl< U >, 215  
 testing::internal::ReturnRoundRobinAction< T >, 354  
**StaticAssertTypeEq**  
 testing, 36  
**StaticBoolFromString**  
 InvokeHelper, 228  
**StaticIntFromString**  
 InvokeHelper, 228  
**StaticVoidFromString**  
 InvokeHelper, 228  
**StaticVoidFromVoid**  
 InvokeHelper, 228  
**StatStruct**  
 testing::internal::posix, 99  
**std**, 20  
 std::tuple\_size< testing::internal::FlatTuple< Ts... > >, 438  
**StdFunctionAdaptor**  
 testing::OnceAction< Result(Args...) >::StdFunctionAdaptor< Callable >, 367  
**step\_**  
 testing::internal::RangeGenerator< T, IncrementT >, 340  
 testing::internal::RangeGenerator< T, IncrementT >::Iterator, 250  
**STR\_FILE**  
 test\_matrix.cpp, 740  
**StrCaseCmp**  
 testing::internal::posix, 102  
**StrDup**  
 testing::internal::posix, 102  
**stream\_result\_to\_**  
 testing::internal::GTestFlagSaver, 197  
**StreamableToString**  
 testing::internal, 90  
**StrError**  
 testing::internal::posix, 102  
**StrictMock**  
 testing::StrictMock< MockClass >, 374  
**StrictMockImpl**  
 testing::internal::StrictMockImpl< Base >, 375  
**StrictnessModifierProbe**  
 testing::internal, 90, 91  
**String**  
 testing::internal::String, 376  
**StringFromGTestEnv**  
 testing::internal, 91  
**StringFromString**  
 Interface, 225  
**Strings**  
 testing::internal, 53  
**StringStreamToString**  
 testing::internal, 91  
**StripTrailingSpaces**  
 testing::internal, 91  
**SUCCEED**  
**gtest.h**, 665  
**successful\_test\_case\_count**  
 testing::UnitTest, 454  
**successful\_test\_count**  
 testing::internal::UnitTestImpl, 467  
 testing::TestSuite, 428  
 testing::UnitTest, 454  
**successful\_test\_suite\_count**  
 testing::internal::UnitTestImpl, 468  
 testing::UnitTest, 454  
**suites\_**  
 testing::internal::TypeParameterizedTestSuiteRegistry, 444  
**SuppressEventForwarding**  
 testing::TestEventListeners, 394  
**Tail**  
 testing::internal::Templates< Head\_ >, 381  
 testing::internal::Templates< Head\_, Tail\_ >, 381  
 testing::internal::Types< Head\_ >, 445  
 testing::internal::Types< Head\_, Tail\_ >, 444  
**tear\_down\_tc\_**  
 testing::TestSuite, 431  
**TearDown**  
 testing::Environment, 164  
 testing::Test, 386  
**TearDownTestCase**  
 testing::Test, 386  
**TearDownTestSuite**  
 testing::Test, 386  
**TearDownTestSuiteFunc**  
 testing::internal, 53  
**TempDir**  
 testing, 37  
**TersePrintPrefixToStrings**  
 testing::internal, 91, 92  
**TEST**  
 gmock\_link\_test.h, 620–628  
**gtest.h**, 665  
 test\_matrix.cpp, 738, 739  
 test\_world.cpp, 742, 743  
**Test**  
 testing::internal::SuiteApiResolver< T >, 379  
 testing::Test, 384  
 testing::TestInfo, 405  
 testing::TestSuite, 430  
 testing::UnitTest, 456  
**test**  
 testing::internal::IsHashTable< T >, 239  
**test/test\_dd1.cpp**, 733  
**test/test\_dd2.cpp**, 735  
**test/test\_hybrid.cpp**, 736  
**test/test\_matrix.cpp**, 737  
**test/test\_omp.cpp**, 740  
**test/test\_world.cpp**, 741  
**test\_base\_name**  
 testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfo, 400  
**test\_case\_name**

testing::TestInfo, 404  
test\_case\_to\_run\_count  
    testing::UnitTest, 454  
test\_dd1.cpp  
    main, 734  
test\_dd2.cpp  
    main, 735  
TEST\_F  
    gtest.h, 665  
test\_hybrid.cpp  
    evolve\_omp, 736  
    main, 736  
    update\_boundary\_omp, 737  
test\_indices\_  
    testing::TestSuite, 431  
test\_info\_list  
    testing::TestSuite, 428  
test\_info\_list\_  
    testing::TestSuite, 431  
test\_matrix.cpp  
    populate\_matrix, 738  
    STR\_FILE, 740  
    TEST, 738, 739  
test\_meta\_factory  
    testing::internal::ParameterizedTestSuiteInfo<  
        TestSuite >::TestInfo, 400  
test\_omp.cpp  
    evolve\_omp, 741  
    main, 741  
    update\_boundary\_omp, 741  
TEST\_P  
    gtest-param-test.h, 636  
test\_part\_results  
    testing::internal::TestResultAccessor, 422  
    testing::TestResult, 418  
test\_part\_results\_  
    testing::TestResult, 421  
test\_properties  
    testing::TestResult, 418  
test\_properties\_  
    testing::TestResult, 421  
test\_properties\_mutex\_  
    testing::TestResult, 421  
test\_property\_count  
    testing::TestResult, 419  
test\_suite\_base\_name  
    testing::internal::ParameterizedTestSuiteInfo<  
        TestSuite >::TestInfo, 400  
test\_suite\_indices\_  
    testing::internal::UnitTestImpl, 472  
test\_suite\_infos\_  
    testing::internal::ParameterizedTestSuiteRegistry,  
        309  
test\_suite\_name  
    testing::TestInfo, 404  
test\_suite\_name\_  
    testing::internal::ParameterizedTestSuiteInfo<  
        TestSuite >, 305  
testing::TestInfo, 406  
test\_suite\_to\_run\_count  
    testing::internal::UnitTestImpl, 468  
    testing::UnitTest, 454  
test\_suites\_  
    testing::internal::UnitTestImpl, 472  
test\_to\_run\_count  
    testing::internal::UnitTestImpl, 468  
    testing::TestSuite, 428  
    testing::UnitTest, 455  
test\_world.cpp  
    TEST, 742, 743  
TestBody  
    testing::Test, 386  
TestCase  
    testing, 24  
TestDisabled  
    testing::TestSuite, 429  
TestEventListeners  
    testing::TestEventListeners, 392  
TestFactoryBase  
    testing::internal::TestFactoryBase, 396  
TestFailed  
    testing::TestSuite, 429  
TestImplicitConversion  
    testing::internal::is\_implicitly\_convertible< From,  
        To >, 235  
TestInfo  
    testing::internal::ParameterizedTestSuiteInfo<  
        TestSuite >::TestInfo, 399  
    testing::Test, 386  
    testing::TestEventListeners, 395  
    testing::TestInfo, 402  
    testing::TestResult, 420  
TestInfoContainer  
    testing::internal::ParameterizedTestSuiteInfo<  
        TestSuite >, 302  
testing, 21  
    AddGlobalTestEnvironment, 25  
    AssertPred1Helper, 25  
    AssertPred2Helper, 25  
    AssertPred3Helper, 25  
    AssertPred4Helper, 26  
    AssertPred5Helper, 26  
    Assign, 26  
    Bool, 27  
    ByMove, 27  
    ByRef, 27  
    Combine, 27  
    ConvertGenerator, 27  
    DeleteArg, 27  
    DoAll, 28  
    DoDefault, 28  
    DoubleLE, 28  
    FloatLE, 28  
    IgnoreResult, 28  
    InitGoogleMock, 28, 29  
    InitGoogleTest, 29

Invoke, 29, 30  
 InvokeArgument, 30  
 InvokeWithoutArgs, 30  
 IsEmpty, 30  
 IsNotSubstring, 30, 31  
 IsSubstring, 31  
 kMaxStackTraceDepth, 38  
 MakeAction, 32  
 MakePolymorphicAction, 32  
 MATCHER, 32  
 operator<<, 32  
 PrintToString, 32  
 Range, 33  
 RegisterTest, 33  
 Return, 33  
 ReturnArg, 34  
 ReturnNew, 34  
 ReturnNull, 34  
 ReturnPointee, 34  
 ReturnRef, 34  
 ReturnRefOfCopy, 35  
 ReturnRoundRobin, 35  
 SaveArg, 35  
 SaveArgPointee, 35  
 SetArgPointee, 35  
 SetArgReferee, 36  
 SetArgumentPointee, 36  
 SetArrayArgument, 36  
 SetErrnoAndReturn, 36  
 SrcDir, 36  
 StaticAssertTypeEq, 36  
 TempDir, 37  
 TestCase, 24  
 TimeInMillis, 24  
 Types, 24  
 Unused, 25  
 Values, 37  
 ValuesIn, 37  
 WithArg, 37  
 WithArgs, 38  
 WithoutArgs, 38  
 testing::Action< F >, 105  
 testing::Action< R(Args...) >, 105  
     Action, 107, 108  
     ArgumentTuple, 106  
     F, 106  
     fun\_, 109  
     Init, 107, 108  
     IsCompatibleFunctor, 106  
     IsDoDefault, 108  
     operator OnceAction< F >, 108  
     Perform, 108  
     Result, 106  
 testing::Action< R(Args...) >::ActionAdapter, 109  
     impl\_, 109  
     operator(), 109  
 testing::Action< R(Args...) >::IgnoreArgs< FunctionImpl >, 208  
     function\_impl, 208  
     operator(), 208  
 testing::ActionInterface< F >, 112  
     ~ActionInterface, 113  
     ActionInterface, 113, 114  
     ArgumentTuple, 113  
     operator=, 114  
     Perform, 114  
     Result, 113  
 testing::DefaultValue< T >, 143  
     Clear, 144  
     Exists, 144  
     FactoryFunction, 144  
     Get, 144  
     IsSet, 145  
     producer\_, 145  
     Set, 145  
     SetFactory, 145  
 testing::DefaultValue< T >::FactoryValueProducer, 166  
     factory\_, 168  
     FactoryValueProducer, 167  
     operator=, 168  
     Produce, 168  
 testing::DefaultValue< T >::FixedValueProducer, 172  
     FixedValueProducer, 173  
     operator=, 173  
     Produce, 173  
     value\_, 174  
 testing::DefaultValue< T >::ValueProducer, 487  
     ~ValueProducer, 487  
     Produce, 488  
 testing::DefaultValue< T & >, 145  
     address\_, 147  
     Clear, 146  
     Exists, 146  
     Get, 146  
     IsSet, 146  
     Set, 146  
 testing::DefaultValue< void >, 147  
     Exists, 147  
     Get, 147  
 testing::EmptyTestEventListener, 159  
     OnEnvironmentsSetUpEnd, 160  
     OnEnvironmentssetUpStart, 160  
     OnEnvironmentsTearDownEnd, 160  
     OnEnvironmentstearDownStart, 160  
     OnTestCaseEnd, 160  
     OnTestCaseStart, 160  
     OnTestDisabled, 161  
     OnTestEnd, 161  
     OnTestIterationEnd, 161  
     OnTestIterationStart, 161  
     OnTestPartResult, 161  
     OnTestProgramEnd, 162  
     OnTestProgramStart, 162  
     OnTestStart, 162  
     OnTestSuiteEnd, 162  
     OnTestSuiteStart, 162

testing::Environment, 163  
~Environment, 163  
SetUp, 163  
Setup, 164  
TearDown, 164  
testing::Environment::Setup\_should\_be\_spelled\_SetUp,  
    363  
testing::gmock\_matchers\_test, 38  
    Describe, 39  
    DescribeNegation, 39  
    Explain, 39  
    GtestGreaterThan, 39  
testing::gmock\_matchers\_test::ContainerHelper, 134  
    MOCK\_METHOD1, 134  
testing::gmock\_matchers\_test::GreaterThanMatcher<  
    T >, 192  
    DescribeNegationTo, 193  
    DescribeTo, 193  
    GreaterThanMatcher, 193  
    impl\_, 193  
    MatchAndExplain, 193  
testing::gmock\_matchers\_test::GtestGreaterThanMatcher<  
    T >, 198  
    DescribeNegationTo, 198  
    DescribeTo, 199  
    is\_gtest\_matcher, 198  
    MatchAndExplain, 199  
    rhs, 199  
testing::gmock\_matchers\_test::GTestMatcherTestP, 201  
    GreaterThanOrEqual, 202  
    use\_gtest\_matcher\_, 202  
testing::internal, 39  
    AlwaysFalse, 55  
    AlwaysTrue, 55  
    AppendUserMessage, 55  
    Apply, 55  
    ApplyImpl, 55  
    AppropriateResolution, 56  
    ArrayAwareFind, 56  
    ArrayEq, 56  
    as\_const, 57  
    Assert, 57  
    Base64Unescape, 57  
    BiggestInt, 50  
    BoolFromGTestEnv, 57  
    call\_result\_t, 50  
    CanonicalizeForStdLibVersioning, 57  
    CaptureStderr, 58  
    CaptureStdout, 58  
    CheckedDowncastToActualType, 58  
    CmpHelperEQ, 58  
    CmpHelperEQFailure, 58  
    CmpHelperFloatingPointEQ, 58  
    CmpHelperOpFailure, 59  
    CmpHelperSTRCASEEQ, 59  
    CmpHelperSTRCASENE, 59  
    CmpHelperSTREQ, 59  
    CmpHelperSTRNE, 60  
    CodePointToUtf8, 60  
    ConvertIdentifierNameToWords, 60  
    CopyArray, 60, 61  
    CountIf, 61  
    DefaultParamName, 61  
    Delete, 61  
    Double, 51  
    DoubleNearPredFormat, 61  
    DownCast\_, 62  
    EndsWith, 62  
    EqFailure, 62  
    Equals, 62  
    Expect, 62, 63  
    Float, 51  
    FlushInfoLog, 63  
    ForEach, 63  
    FormatCompilerIndependentFileLocation, 63  
    FormatEpochTimeInMillisAsIso8601, 63  
    FormatFileLocation, 63  
    FormatForComparisonFailureMessage, 64  
    FormatTimeInMillisAsSeconds, 64  
    g\_help\_flag, 95  
    GenerateNames, 64  
    GenerateNamesRecursively, 64  
    GetArgs, 64  
    GetBoolAssertionFailureMessage, 65  
    GetCapturedStderr, 65  
    GetCapturedStdout, 65  
    GetCurrentOsStackTraceExceptTop, 65  
    GetElementOr, 65  
    GetFailureReporter, 65  
    GetFileSize, 66  
    GetIgnoredParameterizedTestSuites, 66  
    GetNextRandomSeed, 66  
    GetNotDefaultOrNull, 66  
    GetPrefixUntilComma, 66  
    GetRandomSeedFromFlag, 66  
    GetRawPointer, 66, 67  
    GetTestTypeId, 67  
    GetThreadCount, 67  
    GetTimeInMillis, 67  
    GetTypeid, 67  
    GetTypeName, 67  
    GetUnitTestImpl, 68  
    GetWithoutMatchers, 68  
    GMOCK\_DECLARE\_KIND\_, 68–70  
    GMOCK\_DEFINE\_DEFAULT\_ACTION\_FOR\_RETURN\_TYPE\_,  
        70–73  
    GTEST\_DISABLE\_MSC\_WARNINGS\_POP\_, 73  
    GTEST\_DISABLE\_MSC\_WARNINGS\_PUSH\_, 73  
    GTEST\_ERROR, 54  
    GTEST\_FATAL, 54  
    GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_POINTER\_,  
        73, 74  
    GTEST\_IMPL\_FORMAT\_C\_STRING\_AS\_STRING\_,  
        74  
    GTEST\_INFO, 54  
    GTEST\_INTERNAL\_DEPRECATED, 74, 75

GTEST\_WARNING, 54  
 GTestLogSeverity, 54  
 HasStrictnessModifier, 75  
 identity\_t, 51  
 IllegalDoDefault, 75  
 ImplicitCast\_, 76  
 IndexSequenceFor, 51  
 InsertSyntheticTestCase, 76  
 Int32FromEnvOrDie, 76  
 Int32FromGTestEnv, 76  
 Invalid, 76  
 InvokeArgument, 76  
 is\_callable\_r, 51  
 IsAINum, 77  
 IsAlpha, 77  
 IsContainer, 51  
 IsContainerTest, 77  
 IsDigit, 77  
 IsLower, 77  
 IsNotContainer, 51  
 IsSpace, 78  
 IsTrue, 78  
 IsUpper, 78  
 IsXDigit, 78  
 JoinAsKeyValueTuple, 79  
 kBool, 55  
 kDeathTestStyleFlag, 95  
 kDeathTestUseFork, 95  
 kErrorVerbosity, 95  
 kFloatingPoint, 55  
 kInfo, 54  
 kInfoVerbosity, 95  
 kInteger, 55  
 kInternalRunDeathTestFlag, 95  
 kMaxBiggestInt, 96  
 kMaxRandomSeed, 96  
 kOther, 55  
 kStackTraceMarker, 96  
 kTestTypeldInGoogleTest, 96  
 kWaring, 54  
 kWaringVerbosity, 96  
 Log, 79  
 LogIsVisible, 79  
 LogSeverity, 54  
 LogToStderr, 79  
 LosslessArithmeticConvertible, 52  
 LosslessArithmeticConvertibleImpl, 52  
 MakeAction, 79  
 MakeAndRegisterTestInfo, 80  
 MakeIndexSequence, 52  
 MutexLock, 52  
 operator!=, 80  
 operator==, 80  
 OutputFlagAlsoCheckEnvVar, 80  
 ParameterizedTestCaseInfo, 52  
 ParseFlag, 80  
 ParseGoogleTestFlagsOnly, 80, 81  
 ParseInt32, 81  
 PrefixOf, 81  
 PrintBytesInObjectTo, 81  
 PrintRawArrayTo, 81  
 PrintSmartPointer, 81, 82  
 PrintStringTo, 82  
 PrintTo, 82–87  
 PrintTupleTo, 87  
 PrintU16StringTo, 87  
 PrintU32StringTo, 88  
 PrintWithFallback, 88  
 ReadEntireFile, 88  
 RegisterTypeParameterizedTestSuite, 88  
 RegisterTypeParameterizedTestSuiteInstantiation, 88  
 ReportFailureInUnknownLocation, 88  
 ReportInvalidTestSuiteType, 89  
 SetUpTearDownSuiteFuncType, 52  
 SetUpTestSuiteFunc, 53  
 ShouldRunTestOnShard, 89  
 ShouldShard, 89  
 ShouldUseColor, 89  
 Shuffle, 89  
 ShuffleRange, 89  
 SkipPrefix, 90  
 SplitString, 90  
 StartsWith, 90  
 StreamableToString, 90  
 StrictnessModifierProbe, 90, 91  
 StringFromGTestEnv, 91  
 Strings, 53  
 StringStreamToString, 91  
 StripTrailingSpaces, 91  
 TearDownTestSuiteFunc, 53  
 TersePrintPrefixToStrings, 91, 92  
 TestNotEmpty, 92  
 TimeInMillis, 53  
 ToLower, 92  
 ToUpper, 92  
 TupleElement, 53  
 TypedTestCasePState, 53  
 Typeld, 53  
 TypeKind, 54  
 UniversalPrint, 92  
 UniversalPrintArray, 93  
 UniversalTersePrint, 94  
 UniversalTersePrintTupleFieldsToStrings, 94  
 ValidateSpec, 94  
 void\_t, 54  
 VoidifyPointer, 94  
 WideStringToUtf8, 94  
 WriteToShardStatusFileIfNeeded, 95  
 testing::internal::ActionImpl< F, Impl >, 110  
 testing::internal::ActionImpl< R(Args...), Impl >, 110  
     ActionImpl, 111  
     Apply, 112  
     args\_type, 111  
     Base, 111  
     function\_type, 111

operator(), 112  
testing::internal::AssertHelper, 115  
~AssertHelper, 116  
AssertHelper, 115, 116  
data\_, 116  
operator=, 116  
testing::internal::AssertHelper::AssertHelperData, 117  
AssertHelperData, 117  
file, 118  
line, 118  
message, 118  
operator=, 117  
type, 118  
testing::internal::AssignAction< T1, T2 >, 118  
AssignAction, 119  
Perform, 119  
ptr\_, 119  
value\_, 119  
testing::internal::BuiltInDefaultValue< const T >, 121  
Exists, 121  
Get, 121  
testing::internal::BuiltInDefaultValue< T >, 120  
Exists, 120  
Get, 120  
testing::internal::BuiltInDefaultValue< T \* >, 121  
Exists, 122  
Get, 122  
testing::internal::BuiltInDefaultValueGetter< T, false >, 123  
Get, 123  
testing::internal::BuiltInDefaultValueGetter< T, kDefaultConstructible >, 122  
Get, 122  
testing::internal::ByMoveWrapper< T >, 123  
ByMoveWrapper, 123  
payload, 124  
testing::internal::CartesianProductGenerator< T >, 124  
~CartesianProductGenerator, 126  
Begin, 126  
CartesianProductGenerator, 126  
End, 126  
generators\_, 127  
Iterator, 125  
ParamType, 126  
testing::internal::CartesianProductGenerator< T >::IteratorImpl< I >, 254  
testing::internal::CartesianProductGenerator< T >::IteratorImpl< IndexSequence< I... >, 254  
~IteratorImpl, 255  
Advance, 256  
AdvanceIfEnd, 256  
AtEnd, 256  
base\_, 257  
BaseGenerator, 256  
begin\_, 257  
Clone, 256  
ComputeCurrentValue, 257  
Current, 257  
current, 258  
current\_value\_, 258  
end\_, 258  
Equals, 257  
IteratorImpl, 255  
testing::internal::CartesianProductHolder< Gen >, 127  
CartesianProductHolder, 127  
generators\_, 128  
operator ParamGenerator<::std::tuple< T... >>, 128  
testing::internal::CodeLocation, 128  
CodeLocation, 128  
file, 129  
line, 129  
testing::internal::conjunction< P1 >, 130  
testing::internal::conjunction< P1, Ps... >, 131  
testing::internal::conjunction<... >, 129  
testing::internal::ConstCharPtr, 132  
ConstCharPtr, 132  
operator bool, 133  
value, 133  
testing::internal::ConstRef< T >, 133  
type, 133  
testing::internal::ConstRef< T & >, 134  
type, 134  
testing::internal::ContainerPrinter, 135  
PrintValue, 135  
testing::internal::ConvertibleToIntegerPrinter, 136  
PrintValue, 136  
testing::internal::ConvertibleToStringViewPrinter, 137  
testing::internal::DefaultGlobalTestPartResultReporter, 138  
DefaultGlobalTestPartResultReporter, 139  
operator=, 140  
ReportTestPartResult, 140  
unit\_test\_, 140  
testing::internal::DefaultNameGenerator, 140  
GetName, 140  
testing::internal::DefaultPerThreadTestPartResultReporter, 141  
DefaultPerThreadTestPartResultReporter, 142  
operator=, 142  
ReportTestPartResult, 142  
unit\_test\_, 143  
testing::internal::DeleteArgAction< k >, 148  
operator(), 148  
testing::internal::disjunction< P1 >, 149  
testing::internal::disjunction< P1, Ps... >, 150  
testing::internal::disjunction<... >, 148  
testing::internal::DoAllAction< Actions >, 151  
testing::internal::DoAllAction< FinalAction >, 151  
DoAllAction, 152  
final\_action\_, 152  
operator Action< R, 152  
operator OnceAction< R, 152  
testing::internal::DoAllAction< FinalAction >::UserConstructorTag, 485

testing::internal::DoAllAction< InitialAction, OtherActions... >, 153  
 Base, 154  
 DoAllAction, 154  
 initial\_action\_, 155  
 InitialActionArgType, 154  
 operator Action< R, 155  
 operator OnceAction< R, 155  
 testing::internal::DoAllAction< InitialAction, OtherActions... >::UserConstructorTag, 485  
 testing::internal::DoDefaultAction, 156  
 operator Action< F >, 156  
 testing::internal::DoubleSequence< false, IndexSequence< I... >, sizeofT >, 156  
 type, 156  
 testing::internal::DoubleSequence< plus\_one, T, sizeofT >, 156  
 testing::internal::DoubleSequence< true, IndexSequence< I... >, sizeofT >, 157  
 type, 157  
 testing::internal::edit\_distance, 96  
 CalculateOptimalEdits, 98  
 CreateUnifiedDiff, 98  
 EditType, 97  
 kAdd, 98  
 kMatch, 98  
 kRemove, 98  
 kReplace, 98  
 testing::internal::ElemFromList< N, T >, 157  
 type, 158  
 testing::internal::ElemFromListImpl< IndexSequence< I... > >, 158  
 Apply, 158  
 testing::internal::ElemFromListImpl< typename >, 158  
 testing::internal::EqHelper, 164  
 Compare, 164, 165  
 testing::internal::ExcessiveArg, 165  
 testing::internal::FailureReporterInterface, 168  
 ~FailureReporterInterface, 169  
 FailureType, 168  
 kFatal, 169  
 kNonfatal, 169  
 ReportFailure, 169  
 testing::internal::faketype, 169  
 testing::internal::FallbackPrinter, 169  
 PrintValue, 170  
 testing::internal::FindFirstPrinter< T, decltype(Printer::PrintValue) >(&Printer, Printers... >, 171  
 type, 171  
 testing::internal::FindFirstPrinter< T, E, Printer, Printers... >, 171  
 testing::internal::FlatTuple< T >, 174  
 FlatTuple, 175  
 Indices, 175  
 testing::internal::FlatTupleBase< Derived, Idx >, 175  
 testing::internal::FlatTupleBase< FlatTuple< T... >, IndexSequence< Idx... > >, 176  
 Apply, 177, 178  
 FlatTupleBase, 177  
 Get, 178  
 Indices, 177  
 testing::internal::FlatTupleConstructTag, 178  
 testing::internal::FlatTupleElemBase< Derived, I >, 179  
 testing::internal::FlatTupleElemBase< FlatTuple< T... >, I >, 179  
 FlatTupleElemBase, 180  
 value, 180  
 value\_type, 180  
 testing::internal::FloatingPoint< RawType >, 181  
 AlmostEquals, 183  
 Bits, 182  
 bits, 183  
 DistanceBetweenSignAndMagnitudeNumbers, 183  
 exponent\_bits, 183  
 FloatingPoint, 182  
 fraction\_bits, 183  
 Infinity, 183  
 is\_nan, 183  
 kBitCount, 185  
 kExponentBitCount, 185  
 kExponentBitMask, 185  
 kFractionBitCount, 185  
 kFractionBitMask, 185  
 kMaxUlps, 185  
 kSignBitMask, 186  
 Max, 184  
 ReinterpretBits, 184  
 sign\_bit, 184  
 SignAndMagnitudeToBiased, 184  
 u\_, 186  
 testing::internal::FloatingPoint< RawType >::FloatingPointUnion, 186  
 bits\_, 187  
 value\_, 187  
 testing::internal::FormatForComparison< ToPrint, OtherOperand >, 187  
 Format, 187  
 testing::internal::FormatForComparison< ToPrint[N], OtherOperand >, 188  
 Format, 188  
 testing::internal::Function< R(Args...) >, 188  
 Arg, 189  
 ArgumentCount, 190  
 ArgumentMatcherTuple, 189  
 ArgumentTuple, 189  
 MakeResultIgnoredValue, 189  
 MakeResultVoid, 189  
 Result, 189  
 testing::internal::Function< T >, 188  
 testing::internal::FunctionPointerPrinter, 190  
 PrintValue, 190  
 testing::internal::GenerateTypeList< T >, 191  
 proxy, 191  
 type, 191  
 testing::internal::GTestFlagSaver, 194

~GTestFlagSaver, 195  
also\_run\_disabled\_tests\_, 195  
break\_on\_failure\_, 195  
brief\_, 195  
catch\_exceptions\_, 195  
color\_, 195  
death\_test\_style\_, 195  
death\_test\_use\_fork\_, 196  
fail\_fast\_, 196  
filter\_, 196  
GTestFlagSaver, 194  
internal\_run\_death\_test\_, 196  
list\_tests\_, 196  
output\_, 196  
print\_time\_, 196  
print\_utf8\_, 196  
random\_seed\_, 197  
recreate\_environments\_when\_repeating\_, 197  
repeat\_, 197  
shuffle\_, 197  
stack\_trace\_depth\_, 197  
stream\_result\_to\_, 197  
throw\_on\_failure\_, 197  
testing::internal::GTestLog, 199  
  ~GTestLog, 200  
  GetStream, 200  
  GTestLog, 200  
  operator=, 200  
  severity\_, 201  
testing::internal::GTestMutexLock, 203  
  GTestMutexLock, 203  
testing::internal::GTestNonCopyable, 203  
  ~GTestNonCopyable, 204  
  GTestNonCopyable, 203, 204  
  operator=, 204  
testing::internal::HasDebugStringAndShortDebugString< T >, 204  
  CheckDebugString, 205  
  CheckShortDebugString, 206  
  HasDebugStringType, 205  
  HasShortDebugStringType, 205  
  value, 206  
testing::internal::Ignore< size\_t >, 207  
  Ignore, 207  
testing::internal::IgnoredValue, 209  
  IgnoredValue, 209  
testing::internal::IgnoredValue::Sink, 363  
testing::internal::IgnoreResultAction< A >, 210  
  action\_, 211  
  IgnoreResultAction, 211  
  operator Action< F >, 211  
testing::internal::IgnoreResultAction< A >::Impl< F >, 212  
  action\_, 214  
  ArgumentTuple, 213  
  Impl, 213  
  OriginalFunction, 213  
  Perform, 213  
            Result, 213  
testing::internal::ImplBase< Impl >, 220  
  type, 220  
testing::internal::ImplBase< Impl >::Holder, 206  
  operator const Impl &, 207  
  ptr, 207  
testing::internal::IndexSequence< Is >, 221  
  type, 221  
testing::internal::internal\_stream\_operator\_without\_lexical\_name\_lookup, 98  
  operator<<, 99  
testing::internal::internal\_stream\_operator\_without\_lexical\_name\_lookup:: 259  
testing::internal::internal\_stream\_operator\_without\_lexical\_name\_lookup:: 372  
  PrintValue, 372  
testing::internal::InvokeArgumentAction< index, Params >, 227  
  operator(), 227  
  params, 227  
testing::internal::InvokeMethodAction< Class, MethodPtr >, 229  
  method\_ptr, 229  
  obj\_ptr, 230  
  operator(), 229  
testing::internal::InvokeMethodWithoutArgsAction< Class, MethodPtr >, 230  
  method\_ptr, 231  
  obj\_ptr, 231  
  operator(), 231  
  ReturnType, 230  
testing::internal::InvokeWithoutArgsAction< FunctionImpl >, 231  
  function\_impl, 232  
  operator(), 232  
            testing::internal::is\_callable\_r\_Impl< Void, R, F, Args >, 232  
testing::internal::is\_callable\_r\_Impl< void\_t< call\_result\_t < F, Args... > >, R, F, Args... >, 233  
testing::internal::is\_implicitly\_convertible< From, To >, 234  
  Accept, 235  
  Make, 235  
  TestImplicitConversion, 235  
  type, 234  
  value, 235  
testing::internal::is\_proxy\_type\_list< ProxyTypeList< Ts... > >, 237  
testing::internal::is\_proxy\_type\_list< typename >, 236  
testing::internal::IsEmptyMatcher, 237  
  DescribeNegationTo, 238  
  DescribeTo, 238  
  MatchAndExplain, 238  
testing::internal::IsHashTable< T >, 239  
  test, 239  
  value, 240  
testing::internal::IsRecursiveContainer< C >, 240  
testing::internal::IsRecursiveContainerImpl< C, bool >,

241  
`testing::internal::IsRecursiveContainerImpl< C, false >`, 241  
`testing::internal::IsRecursiveContainerImpl< C, true >`, 242  
 type, 242  
`value_type`, 242  
`testing::internal::KindOf< T >`, 258  
 value, 259  
`testing::internal::MakeIndexSequenceImpl< 0 >`, 260  
`testing::internal::MakeIndexSequenceImpl< N >`, 259  
`testing::internal::MarkAsIgnored`, 261  
 MarkAsIgnored, 261  
`testing::internal::Mutex`, 273  
 AssertHeld, 274  
 Lock, 274  
 Mutex, 274  
 Unlock, 274  
`testing::internal::NaggyMockImpl< Base >`, 279  
`~NaggyMockImpl`, 279  
 NaggyMockImpl, 279  
`testing::internal::NameGeneratorSelector< Provided >`, 280  
 type, 280  
`testing::internal::NativeArray< Element >`, 280  
`~NativeArray`, 282  
`array_`, 283  
`begin`, 282  
`clone_`, 283  
`const_iterator`, 281  
`end`, 282  
`InitCopy`, 282  
`InitRef`, 282  
`iterator`, 281  
`NativeArray`, 281, 282  
`operator==`, 283  
`size`, 283  
`size_`, 283  
`value_type`, 281  
`testing::internal::negation< P >`, 284  
`testing::internal::NiceMockImpl< Base >`, 287  
`~NiceMockImpl`, 287  
 NiceMockImpl, 287  
`testing::internal::None`, 287  
`testing::internal::OsStackTraceGetter`, 292  
 CurrentStackTrace, 293  
`operator=`, 293  
 OsStackTraceGetter, 293  
 UponLeavingGTest, 293  
`testing::internal::OsStackTraceGetterInterface`, 294  
`~OsStackTraceGetterInterface`, 294  
 CurrentStackTrace, 295  
`kElidedFramesMarker`, 295  
`operator=`, 295  
 OsStackTraceGetterInterface, 294, 295  
 UponLeavingGTest, 295  
`testing::internal::ParamConverterGenerator< Gen >`, 296  
 generator\_, 297  
`operator ParamGenerator< T >`, 297  
 ParamConverterGenerator, 296  
`testing::internal::ParameterizedTestFactory< TestClass >`, 297  
 CreateTest, 299  
`operator=`, 299  
`parameter_`, 299  
 ParameterizedTestFactory, 299  
 ParamType, 298  
`testing::internal::ParameterizedTestSuiteInfo< TestSuite >`, 300  
 AddTestPattern, 303  
 AddTestSuiteInstantiation, 303  
`code_location_`, 304  
`GetTestSuiteName`, 303  
`GetTestSuiteTypeId`, 303  
 InstantiationContainer, 301  
`instantiations_`, 304  
`isValidParamName`, 303  
`operator=`, 304  
 ParameterizedTestSuiteInfo, 302  
 ParamGenerator, 304  
`ParamNameGeneratorFunc`, 302  
 ParamType, 302  
`RegisterTests`, 304  
`test_suite_name_`, 305  
 TestInfoContainer, 302  
`tests_`, 305  
`testing::internal::ParameterizedTestSuiteInfo< TestSuite >::InstantiationInfo`, 221  
 file, 222  
 generator, 222  
`InstantiationInfo`, 222  
 line, 222  
 name, 222  
`name_func`, 222  
`testing::internal::ParameterizedTestSuiteInfo< TestSuite >::TestInfo`, 399  
`code_location`, 400  
`test_base_name`, 400  
`test_meta_factory`, 400  
`test_suite_base_name`, 400  
`TestInfo`, 399  
`testing::internal::ParameterizedTestSuiteInfoBase`, 305  
`~ParameterizedTestSuiteInfoBase`, 306  
`GetTestSuiteName`, 306  
`GetTestSuiteTypeId`, 307  
`operator=`, 307  
 ParameterizedTestSuiteInfoBase, 306  
`RegisterTests`, 307  
`testing::internal::ParameterizedTestSuiteRegistry`, 307  
`~ParameterizedTestSuiteRegistry`, 308  
`GetTestCasePatternHolder`, 309  
`GetTestSuitePatternHolder`, 309  
`operator=`, 309  
 ParameterizedTestSuiteRegistry, 308  
`RegisterTests`, 309

test\_suite\_infos\_, 309  
TestSuiteInfoContainer, 308  
testing::internal::ParamGenerator< T >, 310  
    begin, 311  
    end, 311  
    impl\_, 311  
    iterator, 310  
    operator=, 311  
    ParamGenerator, 310  
testing::internal::ParamGeneratorConverter< From, To >, 312  
    Begin, 313  
    End, 313  
    generator\_, 313  
    ParamGeneratorConverter, 313  
testing::internal::ParamGeneratorConverter< From, To >::Iterator, 243  
    ~Iterator, 244  
    Advance, 244  
    base\_, 245  
    BaseGenerator, 244  
    Clone, 245  
    Current, 245  
    end\_, 245  
    Equals, 245  
    it\_, 246  
    Iterator, 244  
    value\_, 246  
testing::internal::ParamGeneratorInterface< T >, 314  
    ~ParamGeneratorInterface, 314  
    Begin, 315  
    End, 315  
    ParamType, 314  
testing::internal::ParamIterator< T >, 315  
    difference\_type, 316  
    impl\_, 318  
    operator!=, 317  
    operator\*, 317  
    operator++, 317  
    operator->, 317  
    operator=, 317  
    operator==, 318  
    ParamGenerator< T >, 318  
    ParamIterator, 316  
    reference, 316  
    value\_type, 316  
testing::internal::ParamIteratorInterface< T >, 319  
    ~ParamIteratorInterface, 319  
    Advance, 319  
    BaseGenerator, 320  
    Clone, 320  
    Current, 320  
    Equals, 320  
testing::internal::PointerPrinter, 321  
    PrintValue, 321  
testing::internal::posix, 99  
    Abort, 100  
    ChDir, 100  
Close, 100  
DolsATTY, 100  
FClose, 100  
FDOpen, 100  
FileNo, 100  
FOpen, 101  
FReopen, 101  
GetEnv, 101  
IsATTY, 101  
IsDir, 101  
Read, 101  
RmDir, 102  
Stat, 102  
StatStruct, 99  
StrCaseCmp, 102  
StrDup, 102  
StrError, 102  
Write, 102  
testing::internal::ProtobufPrinter, 328  
    kProtobufOneLinerMaxLength, 329  
    PrintValue, 329  
testing::internal::ProxyTypeList< Ts >, 329  
    type, 329  
testing::internal::Random, 336  
    Generate, 336  
    kMaxRange, 337  
    operator=, 337  
    Random, 336  
    Reseed, 337  
    state\_, 337  
testing::internal::RangeGenerator< T, IncrementT >, 338  
    ~RangeGenerator, 339  
    Begin, 339  
    begin\_, 340  
    CalculateEndIndex, 339  
    End, 340  
    end\_, 340  
    end\_index\_, 340  
    operator=, 340  
    RangeGenerator, 339  
    step\_, 340  
testing::internal::RangeGenerator< T, IncrementT >::Iterator, 246  
    ~Iterator, 248  
    Advance, 248  
    base\_, 249  
    BaseGenerator, 248  
    Clone, 248  
    Current, 249  
    Equals, 249  
    index\_, 249  
    Iterator, 247, 248  
    operator=, 249  
    step\_, 250  
    value\_, 250  
testing::internal::RawBytesPrinter, 341  
    PrintValue, 341

testing::internal::RE, 341  
 ~RE, 342  
 full\_regex\_, 344  
 FullMatch, 343  
 Init, 343  
 is\_valid\_, 344  
 partial\_regex\_, 344  
 PartialMatch, 343  
 pattern, 343  
 pattern\_, 344  
 RE, 342

testing::internal::RelationToSourceCopy, 344

testing::internal::RelationToSourceReference, 344

testing::internal::RemoveConstFromKey< std::pair< const K, V >, type>, 345

testing::internal::RemoveConstFromKey< T >, 345  
 type, 345

testing::internal::ReturnAction< ByMoveWrapper< T > >, 347  
 operator(), 348  
 ReturnAction, 347  
 state\_, 348

testing::internal::ReturnAction< ByMoveWrapper< T > >::State, 365  
 called, 365  
 State, 365  
 value, 365

testing::internal::ReturnAction< R >, 346  
 operator Action< U >, 346  
 operator OnceAction< U >, 346  
 ReturnAction, 346  
 value\_, 347

testing::internal::ReturnAction< R >::Impl< U >, 214  
 Impl, 214, 215  
 operator(), 215  
 state\_, 215

testing::internal::ReturnAction< R >::Impl< U >::State, 364  
 input\_value, 364  
 State, 364  
 value, 364

testing::internal::ReturnArgAction< k >, 348  
 operator(), 348

testing::internal::ReturnNewAction< T, Params >, 349  
 operator(), 349  
 params, 349

testing::internal::ReturnNullAction, 350  
 Perform, 350

testing::internal::ReturnPointeeAction< Ptr >, 350  
 operator(), 350  
 pointer, 351

testing::internal::ReturnRefAction< T >, 351  
 operator Action< F >, 352  
 ref\_, 352  
 ReturnRefAction, 351

testing::internal::ReturnRefAction< T >::Impl< F >, 216

ArgumentTuple, 217  
 Impl, 217  
 Perform, 217  
 ref\_, 217  
 Result, 217

testing::internal::ReturnRefOfCopyAction< T >, 352  
 operator Action< F >, 353  
 ReturnRefOfCopyAction, 353  
 value\_, 353

testing::internal::ReturnRefOfCopyAction< T >::Impl< F >, 218  
 ArgumentTuple, 219  
 Impl, 219  
 Perform, 220  
 Result, 219  
 value\_, 220

testing::internal::ReturnRoundRobinAction< T >, 353  
 operator(), 354  
 ReturnRoundRobinAction, 354  
 state\_, 354

testing::internal::ReturnRoundRobinAction< T >::State, 366  
 i, 366  
 Next, 366  
 values, 366

testing::internal::ReturnVoidAction, 355  
 Perform, 355

testing::internal::SaveArgAction< k, Ptr >, 355  
 operator(), 355  
 pointer, 356

testing::internal::SaveArgPointeeAction< k, Ptr >, 356  
 operator(), 356  
 pointer, 357

testing::internal::SetArgRefereeAction< k, T >, 359  
 operator(), 359  
 value, 359

testing::internal::SetArgumentPointeeAction< N, A, typename >, 360  
 operator(), 360  
 value, 360

testing::internal::SetArrayArgumentAction< k, l1, l2 >, 361  
 first, 361  
 last, 361  
 operator(), 361

testing::internal::SetErrnoAndReturnAction< T >, 362  
 errno\_, 363  
 Perform, 362  
 result\_, 363  
 SetErrnoAndReturnAction, 362

testing::internal::StlContainerView< ::std::tuple< ElementPointer, Size > >, 369  
 const\_reference, 370  
 ConstReference, 370  
 Copy, 370  
 RawElement, 370  
 type, 370

testing::internal::StlContainerView< Element[N]>, 371

const\_reference, 371  
ConstReference, 372  
Copy, 372  
RawElement, 371  
type, 371  
testing::internal::StlContainerView< RawContainer >, 368  
    const\_reference, 368  
    ConstReference, 369  
    Copy, 369  
    type, 369  
testing::internal::StrictMockImpl< Base >, 375  
    ~StrictMockImpl, 375  
    StrictMockImpl, 375  
testing::internal::String, 376  
    CaseInsensitiveCStringEquals, 376  
    CaseInsensitiveWideCStringEquals, 376  
    CloneCString, 377  
    CStringEquals, 377  
    EndsWithCaseInsensitive, 377  
    FormatByte, 377  
    FormatHexInt, 377  
    FormatHexUInt32, 377  
    FormatIntWidth2, 378  
    FormatIntWidthN, 378  
    ShowWideCString, 378  
    String, 376  
    WideCStringEquals, 378  
testing::internal::SuiteApiResolver< T >, 379  
    GetSetUpCaseOrSuite, 380  
    GetTearDownCaseOrSuite, 380  
    Test, 379  
testing::internal::Templates< Head\_ >, 381  
    Head, 381  
    Tail, 381  
testing::internal::Templates< Head\_, Tail\_ >, 380  
    Head, 380  
    Tail, 381  
testing::internal::TemplateSel< Tmpl >, 382  
testing::internal::TemplateSel< Tmpl >::Bind< T >, 120  
    type, 120  
testing::internal::TestFactoryBase, 396  
    ~TestFactoryBase, 396  
    CreateTest, 397  
    operator=, 397  
    TestFactoryBase, 396  
testing::internal::TestFactoryImpl< TestClass >, 397  
    CreateTest, 398  
testing::internal::TestMetaFactory< TestSuite >, 407  
    CreateTestFactory, 409  
    operator=, 409  
    ParamType, 408  
    TestMetaFactory, 408, 409  
testing::internal::TestMetaFactoryBase< ParamType >, 409  
    ~TestMetaFactoryBase, 410  
    CreateTestFactory, 410  
testing::internal::TestPropertyKeyls, 413  
    key\_, 413  
    operator(), 413  
    TestPropertyKeyls, 413  
testing::internal::TestResultAccessor, 421  
    ClearTestPartResults, 422  
    RecordProperty, 422  
    test\_part\_results, 422  
testing::internal::ThisRefAdjuster< Pattern >, 433  
    Adjust, 433  
    AdjustT, 433  
testing::internal::ThreadLocal< T >, 434  
    get, 434  
    pointer, 434, 435  
    set, 435  
    ThreadLocal, 434  
    value\_, 435  
testing::internal::TraceInfo, 435  
    file, 436  
    line, 436  
    message, 436  
testing::internal::TrueWithString, 436  
    operator bool, 437  
    TrueWithString, 436, 437  
    value, 437  
testing::internal::TypeidHelper< T >, 438  
    dummy\_, 439  
testing::internal::TypeParameterizedTest< Fixture, Test-Sel, internal::None >, 440  
    Register, 440  
testing::internal::TypeParameterizedTest< Fixture, Test-Sel, Types >, 439  
    Register, 439  
testing::internal::TypeParameterizedTestSuite< Fixture, internal::None, Types >, 441  
    Register, 441  
testing::internal::TypeParameterizedTestSuite< Fixture, Tests, Types >, 440  
    Register, 440  
testing::internal::TypeParameterizedTestSuiteRegistry, 443  
    CheckForInstantiations, 443  
    RegisterInstantiation, 443  
    RegisterTestSuite, 444  
    suites\_, 444  
testing::internal::TypeParameterizedTestSuiteRegistry::TypeParameterized  
    442  
    code\_location, 442  
    instantiated, 443  
    TypeParameterizedTestSuiteInfo, 442  
testing::internal::Types< Head\_ >, 445  
    Head, 445  
    Tail, 445  
testing::internal::Types< Head\_, Tail\_ >, 444  
    Head, 444  
    Tail, 444  
testing::internal::TypeWithSize< 4 >, 446  
    Int, 446  
    Uint, 446

testing::internal::TypeWithSize< 8 >, 447  
   Int, 447  
   UInt, 447  
 testing::internal::TypeWithSize< size >, 445  
   UInt, 446  
 testing::internal::UnitTestImpl, 457  
   ::testing::UnitTest, 469  
   ~UnitTestImpl, 460  
   ad\_hoc\_test\_result, 460  
   ad\_hoc\_test\_result\_, 469  
   AddTestInfo, 460  
   catch\_exceptions, 460  
   catch\_exceptions\_, 469  
   ClearAdHocTestResult, 461  
   ClearNonAdHocTestResult, 461  
   ConfigureXmlOutput, 461  
   current\_test\_info, 461  
   current\_test\_info\_, 469  
   current\_test\_result, 461  
   current\_test\_suite, 461  
   current\_test\_suite\_, 469  
   CurrentOsStackTraceExceptTop, 461  
   default\_global\_test\_part\_result\_reporter\_, 469  
   default\_per\_thread\_test\_part\_result\_reporter\_, 469  
   disabled\_test\_count, 462  
   elapsed\_time, 462  
   elapsed\_time\_, 470  
   environments, 462  
   environments\_, 470  
   Failed, 462  
   failed\_test\_count, 462  
   failed\_test\_suite\_count, 462  
   FilterTests, 462  
   GetGlobalTestPartResultReporter, 463  
   GetMutableSuiteCase, 463  
   GetTestCase, 463  
   GetTestPartResultReporterForCurrentThread, 463  
   GetTestSuite, 463, 464  
   global\_test\_part\_result\_reporter\_, 470  
   global\_test\_part\_result\_reporter\_mutex\_, 470  
   gtest\_trace\_stack, 464  
   gtest\_trace\_stack\_, 470  
   HONOR\_SHARDING\_PROTOCOL, 460  
   IGNORE\_SHARDING\_PROTOCOL, 460  
   ignored\_parameterized\_test\_suites, 464  
   ignored\_parameterized\_test\_suites\_, 470  
   last\_death\_test\_suite\_, 470  
   listeners, 464  
   listeners\_, 471  
   ListTestsMatchingFilter, 464  
   operator=, 464  
   os\_stack\_trace\_getter, 465  
   os\_stack\_trace\_getter\_, 471  
   parameterized\_test\_registry, 465  
   parameterized\_test\_registry\_, 471  
   parameterized\_tests\_registered\_, 471  
   parent\_, 471  
   Passed, 465  
   per\_thread\_test\_part\_result\_reporter\_, 471  
   post\_flag\_parse\_init\_performed\_, 471  
   PostFlagParsingInit, 465  
   random, 465  
   random\_, 472  
   random\_seed, 465  
   random\_seed\_, 472  
   ReactionToSharding, 459  
   RecordProperty, 465  
   RegisterParameterizedTests, 466  
   reportable\_disabled\_test\_count, 466  
   reportable\_test\_count, 466  
   RunAllTests, 466  
   set\_catch\_exceptions, 466  
   set\_current\_test\_info, 466  
   set\_current\_test\_suite, 466  
   set\_os\_stack\_trace\_getter, 467  
   SetGlobalTestPartResultReporter, 467  
   SetTestPartResultReporterForCurrentThread, 467  
   ShuffleTests, 467  
   skipped\_test\_count, 467  
   start\_timestamp, 467  
   start\_timestamp\_, 472  
   successful\_test\_count, 467  
   successful\_test\_suite\_count, 468  
   test\_suite\_indices\_, 472  
   test\_suite\_to\_run\_count, 468  
   test\_suites\_, 472  
   test\_to\_run\_count, 468  
   total\_test\_count, 468  
   total\_test\_suite\_count, 468  
   type\_parameterized\_test\_registry, 468  
   type\_parameterized\_test\_registry\_, 472  
   UnitTestImpl, 460  
   UnshuffleTests, 468  
 testing::internal::UnitTestOptions, 473  
   FilterMatchesTest, 473  
   GetAbsolutePathToOutputFile, 473  
   GetOutputFormat, 473  
   MatchesFilter, 473  
 testing::internal::UniversalPrinter< const T >, 475  
 testing::internal::UniversalPrinter< T >, 474  
   Print, 474  
 testing::internal::UniversalPrinter< T & >, 475  
   Print, 476  
 testing::internal::UniversalPrinter< T[N]>, 476  
   Print, 476  
 testing::internal::UniversalTersePrinter< char \* >, 477  
 testing::internal::UniversalTersePrinter< char16\_t \* >, 478  
 testing::internal::UniversalTersePrinter< char32\_t \* >, 479  
 testing::internal::UniversalTersePrinter< const char \* >, 480  
   Print, 481  
 testing::internal::UniversalTersePrinter< const char16\_t \* >, 481

Print, 482  
testing::internal::UniversalTersePrinter< const char32\_t \* >, 482  
Print, 482  
testing::internal::UniversalTersePrinter< std::reference\_wrapper< T > >, 483  
Print, 483  
testing::internal::UniversalTersePrinter< T >, 477  
Print, 477  
testing::internal::UniversalTersePrinter< T & >, 483  
Print, 484  
testing::internal::UniversalTersePrinter< T[N]>, 484  
Print, 484  
testing::internal::UniversalTersePrinter< wchar\_t \* >, 484  
Print, 485  
testing::internal::ValueArray< Ts >, 485  
MakeVector, 486  
operator ParamGenerator< T >, 486  
v\_, 487  
ValueArray, 486  
testing::internal::ValuesInIteratorRangeGenerator< T >, 488  
~ValuesInIteratorRangeGenerator, 490  
Begin, 490  
container\_, 491  
ContainerType, 489  
End, 490  
operator=, 490  
ValuesInIteratorRangeGenerator, 489  
testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator, 250  
~Iterator, 251  
Advance, 252  
base\_, 253  
BaseGenerator, 252  
Clone, 252  
Current, 252  
Equals, 253  
Iterator, 251, 252  
iterator\_, 253  
value\_, 253  
testing::internal::WithArgsAction< InnerAction, I >, 491  
inner\_action, 492  
InnerSignature, 491  
operator Action< R >, 492  
operator OnceAction< R >, 492  
testing::internal::WithoutMatchers, 492  
GetWithoutMatchers, 493  
WithoutMatchers, 493  
testing::Matcher< typename >, 262  
testing::Message, 265  
BasicNarrowIoManip, 266  
GetString, 266  
Message, 266  
operator<<, 266, 267  
operator=, 267  
ss\_, 268  
testing::NaggyMock< MockClass >, 277  
NaggyMock, 278  
operator=, 279  
testing::NiceMock< MockClass >, 284  
NiceMock, 285, 286  
operator=, 286  
testing::OnceAction< F >, 287  
testing::OnceAction< Result(Args...) >, 288  
Call, 290  
function\_, 290  
IsCompatibleAfterIgnoringArguments, 288  
IsDirectlyCompatible, 288  
OnceAction, 289  
operator=, 290  
testing::OnceAction< Result(Args...) >::IgnoreIncomingArguments< Callable >, 209  
callable, 210  
operator(), 209  
testing::OnceAction< Result(Args...) >::StdFunctionAdaptor< Callable >, 367  
callable\_, 368  
operator(), 367  
StdFunctionAdaptor, 367  
testing::OnceAction< Result(Args...) >::StdFunctionAdaptor< Callable >::CallableTag, 124  
testing::PolymorphicAction< Impl >, 321  
impl\_, 322  
operator Action< F >, 322  
PolymorphicAction, 322  
testing::PolymorphicAction< Impl >::MonomorphicImpl< F >, 271  
ArgumentTuple, 272  
impl\_, 273  
MonomorphicImpl, 273  
Perform, 273  
Result, 272  
testing::PrintToStringParamName, 326  
operator(), 326  
testing::ScopedTrace, 357  
~ScopedTrace, 358  
operator=, 358  
PushTrace, 358  
ScopedTrace, 357, 358  
testing::StrictMock< MockClass >, 373  
operator=, 375  
StrictMock, 374  
testing::Test, 382  
~Test, 383  
DeleteSelf\_, 384  
gtest\_flag\_saver\_, 387  
HasFailure, 384  
HasFatalFailure, 384  
HasNonfatalFailure, 384  
HasSameFixtureClass, 384  
IsSkipped, 385  
operator=, 385  
RecordProperty, 385  
Run, 385

SetUp, 385  
 Setup, 385  
 SetUpTestCase, 386  
 SetUpTestSuite, 386  
 TearDown, 386  
 TearDownTestCase, 386  
 TearDownTestSuite, 386  
 Test, 384  
 TestBody, 386  
 TestInfo, 386  
**testing::Test::Setup\_should\_be\_spelled\_SetUp**, 363  
**testing::TestEventListener**, 387  
 ~TestEventListener, 388  
 OnEnvironmentsSetUpEnd, 388  
 OnEnvironmentsSetUpStart, 388  
 OnEnvironmentsTearDownEnd, 388  
 OnEnvironmentsTearDownStart, 388  
 OnTestCaseEnd, 388  
 OnTestCaseStart, 389  
 OnTestDisabled, 389  
 OnTestEnd, 389  
 OnTestIterationEnd, 389  
 OnTestIterationStart, 389  
 OnTestPartResult, 390  
 OnTestProgramEnd, 390  
 OnTestProgramStart, 390  
 OnTestStart, 390  
 OnTestSuiteEnd, 390  
 OnTestSuiteStart, 391  
**testing::TestEventListeners**, 391  
 ~TestEventListeners, 392  
 Append, 393  
 default\_result\_printer, 393  
 default\_result\_printer\_, 395  
 default\_xml\_generator, 393  
 default\_xml\_generator\_, 395  
 EventForwardingEnabled, 393  
**internal::DefaultGlobalTestPartResultReporter**, 394  
**internal::NoExecDeathTest**, 394  
**internal::TestEventListenersAccessor**, 394  
**internal::UnitTestImpl**, 394  
 operator=, 393  
 Release, 393  
 repeater, 393  
 repeater\_, 395  
 SetDefaultResultPrinter, 394  
 SetDefaultXmlGenerator, 394  
 SuppressEventForwarding, 394  
 TestEventListeners, 392  
 TestInfo, 395  
 TestSuite, 395  
**testing::TestInfo**, 400  
 ~TestInfo, 402  
 ClearTestResult, 402  
 factory\_, 405  
 file, 402  
 fixture\_class\_id\_, 405  
 increment\_death\_test\_count, 402  
 internal::MakeAndRegisterTestInfo, 404  
 internal::StreamingListenerTest, 405  
 internal::UnitTestImpl, 405  
 is\_disabled\_, 406  
 is\_in\_another\_shard, 403  
 is\_in\_another\_shard\_, 406  
 is\_reportable, 403  
 line, 403  
 location\_, 406  
 matches\_filter\_, 406  
 name, 403  
 name\_, 406  
 operator=, 403  
 result, 403  
 result\_, 406  
 Run, 403  
 should\_run, 404  
 should\_run\_, 406  
 Skip, 404  
 Test, 405  
 test\_case\_name, 404  
 test\_suite\_name, 404  
 test\_suite\_name\_, 406  
 TestInfo, 402  
 TestSuite, 405  
 type\_param, 404  
 type\_param\_, 407  
 value\_param, 404  
 value\_param\_, 407  
**testing::TestParamInfo< ParamType >**, 410  
 index, 411  
 param, 411  
 TestParamInfo, 410  
**testing::TestProperty**, 411  
 key, 412  
 key\_, 412  
 SetValue, 412  
 TestProperty, 412  
 value, 412  
 value\_, 412  
**testing::TestResult**, 414  
 ~TestResult, 415  
 AddTestPartResult, 416  
 Clear, 416  
 ClearTestPartResults, 416  
 death\_test\_count, 416  
 death\_test\_count\_, 420  
 elapsed\_time, 416  
 elapsed\_time\_, 420  
 Failed, 416  
 GetTestPartResult, 417  
 GetTestProperty, 417  
 HasFatalFailure, 417  
 HasNonfatalFailure, 417  
 increment\_death\_test\_count, 417  
**internal::DefaultGlobalTestPartResultReporter**, 419  
**internal::ExecDeathTest**, 419  
**internal::FuchsiaDeathTest**, 419

internal::TestResultAccessor, 419  
internal::UnitTestImpl, 420  
internal::WindowsDeathTest, 420  
operator=, 417  
Passed, 417  
RecordProperty, 418  
set\_elapsed\_time, 418  
set\_start\_timestamp, 418  
Skipped, 418  
start\_timestamp, 418  
start\_timestamp\_, 421  
test\_part\_results, 418  
test\_part\_results\_, 421  
test\_properties, 418  
test\_properties\_, 421  
test\_properties\_mutex\_, 421  
test\_property\_count, 419  
TestInfo, 420  
TestResult, 415, 416  
TestSuite, 420  
total\_part\_count, 419  
UnitTest, 420  
ValidateTestProperty, 419  
testing::TestSuite, 422  
~TestSuite, 424  
ad\_hoc\_test\_result, 424  
ad\_hoc\_test\_result\_, 430  
AddTestInfo, 425  
ClearResult, 425  
ClearTestSuiteResult, 425  
disabled\_test\_count, 425  
elapsed\_time, 425  
elapsed\_time\_, 430  
Failed, 425  
failed\_test\_count, 425  
GetMutableTestInfo, 426  
GetTestInfo, 426  
internal::UnitTestImpl, 430  
name, 426  
name\_, 430  
operator=, 426  
Passed, 426  
reportable\_disabled\_test\_count, 426  
reportable\_test\_count, 426  
Run, 427  
RunSetUpTestSuite, 427  
RunTearDownTestSuite, 427  
set\_should\_run, 427  
set\_up\_tc\_, 431  
should\_run, 427  
should\_run\_, 431  
ShouldRunTest, 427  
ShuffleTests, 427  
Skip, 428  
skipped\_test\_count, 428  
start\_timestamp, 428  
start\_timestamp\_, 431  
successful\_test\_count, 428  
tear\_down\_tc\_, 431  
Test, 430  
test\_indices\_, 431  
test\_info\_list, 428  
test\_info\_list\_, 431  
test\_to\_run\_count, 428  
TestDisabled, 429  
TestFailed, 429  
TestPassed, 429  
TestReportable, 429  
TestReportableDisabled, 429  
TestSkipped, 429  
TestSuite, 424  
total\_test\_count, 429  
type\_param, 430  
type\_param\_, 431  
UnshuffleTests, 430  
testing::TestWithParam< T >, 432  
testing::UnitTest, 447  
~UnitTest, 449  
ad\_hoc\_test\_result, 449  
AddEnvironment, 450  
AddGlobalTestEnvironment, 455  
AddTestPartResult, 450  
current\_test\_case, 450  
current\_test\_info, 450  
current\_test\_suite, 450  
disabled\_test\_count, 450  
elapsed\_time, 450  
Failed, 451  
failed\_test\_case\_count, 451  
failed\_test\_count, 451  
failed\_test\_suite\_count, 451  
GetInstance, 451  
GetMutableTestSuite, 451  
GetTestCase, 451  
GetTestSuite, 452  
impl, 452  
impl\_, 456  
internal::AssertHelper, 455  
internal::GetIgnoredParameterizedTestSuites, 455  
internal::GetUnitTestImpl, 456  
internal::ReportFailureInUnknownLocation, 456  
internal::StreamingListenerTest, 456  
internal::UnitTestRecordPropertyTestHelper, 456  
listeners, 452  
mutex\_, 457  
operator=, 452  
original\_working\_dir, 452  
parameterized\_test\_registry, 452  
Passed, 453  
PopGTestTrace, 453  
PushGTestTrace, 453  
random\_seed, 453  
RecordProperty, 453  
reportable\_disabled\_test\_count, 453  
reportable\_test\_count, 453  
Run, 454

ScopedTrace, 456  
 skipped\_test\_count, 454  
 start\_timestamp, 454  
 successful\_test\_case\_count, 454  
 successful\_test\_count, 454  
 successful\_test\_suite\_count, 454  
 Test, 456  
 test\_case\_to\_run\_count, 454  
 test\_suite\_to\_run\_count, 454  
 test\_to\_run\_count, 455  
 total\_test\_case\_count, 455  
 total\_test\_count, 455  
 total\_test\_suite\_count, 455  
 UnitTest, 449  
**testing**:WithParamInterface< T >, 493  
 ~WithParamInterface, 494  
 GetParam, 494  
 internal::ParameterizedTestFactory, 495  
 parameter\_, 495  
 ParamType, 494  
 SetParam, 495  
**TestMetaFactory**  
 testing::internal::TestMetaFactory< TestSuite >, 408, 409  
**TestNotEmpty**  
 testing::internal, 92  
**TestParamInfo**  
 testing::TestParamInfo< ParamType >, 410  
**TestPassed**  
 testing::TestSuite, 429  
**TestProperty**  
 testing::TestProperty, 412  
**TestPropertyKeyIs**  
 testing::internal::TestPropertyKeyIs, 413  
**TestReportable**  
 testing::TestSuite, 429  
**TestReportableDisabled**  
 testing::TestSuite, 429  
**TestResult**  
 testing::TestResult, 415, 416  
**tests\_**  
 testing::internal::ParameterizedTestSuiteInfo< TestSuite >, 305  
**TestSkipped**  
 testing::TestSuite, 429  
**TestSuite**  
 testing::TestEventListeners, 395  
 testing::TestInfo, 405  
 testing::TestResult, 420  
 testing::TestSuite, 424  
**TestSuiteInfoContainer**  
 testing::internal::ParameterizedTestSuiteRegistry, 308  
**ThreadLocal**  
 testing::internal::ThreadLocal< T >, 434  
**throw\_on\_failure\_**  
 testing::internal::GTestFlagSaver, 197  
**time\_count\_neighbours**  
 time\_count\_neighbours.cpp, 727  
 time\_count\_neighbours.cpp  
 main, 727  
 time\_count\_neighbours, 727  
 time\_dd1.cpp  
 main, 728  
 time\_dd2.cpp  
 main, 729  
 time\_hybrid.cpp  
 evolve\_omp, 730  
 main, 730  
 update\_boundary\_omp, 731  
**time\_point**  
 timing.cpp, 733  
**time\_simulation**  
 time\_single.cpp, 732  
**time\_single.cpp**  
 main, 732  
 time\_simulation, 732  
**TimeInMillis**  
 testing, 24  
 testing::internal, 53  
**timing**, 103  
 get\_split, 103  
 start\_clock, 103  
**timing.cpp**  
 time\_point, 733  
**ToLower**  
 testing::internal, 92  
**total\_part\_count**  
 testing::TestResult, 419  
**total\_test\_case\_count**  
 testing::UnitTest, 455  
**total\_test\_count**  
 testing::internal::UnitTestImpl, 468  
 testing::TestSuite, 429  
 testing::UnitTest, 455  
**total\_test\_suite\_count**  
 testing::internal::UnitTestImpl, 468  
 testing::UnitTest, 455  
**ToUpper**  
 testing::internal, 92  
**TrueWithString**  
 testing::internal::TrueWithString, 436, 437  
**TupleElement**  
 testing::internal, 53  
**type**  
 testing::internal::AssertHelper::AssertHelperData,  
     118  
 testing::internal::ConstRef< T >, 133  
 testing::internal::ConstRef< T & >, 134  
 testing::internal::DoubleSequence< false, IndexSequence<  
     I... >, sizeofT >, 156  
 testing::internal::DoubleSequence< true, IndexSequence<  
     I... >, sizeofT >, 157  
 testing::internal::ElemFromList< N, T >, 158  
 testing::internal::FindFirstPrinter< T, decltype(Printer::PrintValue(std::  
     const T & >(), nullptr)), Printer, Printers... >,

171  
testing::internal::GenerateTypeList< T >, 191  
testing::internal::ImplBase< Impl >, 220  
testing::internal::IndexSequence< Is >, 221  
testing::internal::is\_implicitly\_convertible< From,  
 To >, 234  
testing::internal::IsRecursiveContainerImpl< C,  
 true >, 242  
testing::internal::NameGeneratorSelector< Pro-  
 vided >, 280  
testing::internal::ProxyTypeList< Ts >, 329  
testing::internal::RemoveConstFromKey< std::pair<  
 const K, V > >, 345  
testing::internal::RemoveConstFromKey< T >,  
 345  
testing::internal::StlContainerView< ::std::tuple<  
 ElementPointer, Size > >, 370  
testing::internal::StlContainerView< Element[N]>,  
 371  
testing::internal::StlContainerView< RawContainer  
 >, 369  
testing::internal::TemplateSel< Tmpl >::Bind< T  
 >, 120  
type\_param  
 testing::TestInfo, 404  
 testing::TestSuite, 430  
type\_param\_  
 testing::TestInfo, 407  
 testing::TestSuite, 431  
type\_parameterized\_test\_registry  
 testing::internal::UnitTestImpl, 468  
type\_parameterized\_test\_registry\_  
 testing::internal::UnitTestImpl, 472  
TYPED\_TEST  
 gtest-typed-test.h, 648  
TYPED\_TEST\_CASE  
 gtest-typed-test.h, 648  
TYPED\_TEST\_CASE\_P  
 gtest-typed-test.h, 648  
TYPED\_TEST\_P  
 gtest-typed-test.h, 649  
 gtest-typed-test\_test.h, 714, 715  
TYPED\_TEST\_SUITE  
 gtest-typed-test.h, 649  
TYPED\_TEST\_SUITE\_P  
 gtest-typed-test.h, 649  
 gtest-typed-test\_test.h, 715  
TypedTestCasePState  
 testing::internal, 53  
TypeId  
 testing::internal, 53  
TypeKind  
 testing::internal, 54  
TypeParameterizedTestSuiteInfo  
 testing::internal::TypeParameterizedTestSuiteRegistry::TypeParameterizedTestSuiteInfo,  
 442  
Types  
 testing, 24  
u\_  
 testing::internal::FloatingPoint< RawType >, 186  
UInt  
 testing::internal::TypeWithSize< 4 >, 446  
 testing::internal::TypeWithSize< 8 >, 447  
 testing::internal::TypeWithSize< size >, 446  
unit\_test\_  
 testing::internal::DefaultGlobalTestPartResultReporter,  
 140  
 testing::internal::DefaultPerThreadTestPartResultReporter,  
 143  
UnitTest  
 testing::TestResult, 420  
 testing::UnitTest, 449  
UnitTestImpl  
 testing::internal::UnitTestImpl, 460  
UniversalPrint  
 testing::internal, 92  
UniversalPrintArray  
 testing::internal, 93  
UniversalTersePrint  
 testing::internal, 94  
UniversalTersePrintTupleFieldsToStrings  
 testing::internal, 94  
Unlock  
 testing::internal::Mutex, 274  
UnshuffleTests  
 testing::internal::UnitTestImpl, 468  
 testing::TestSuite, 430  
Unused  
 testing, 25  
update\_boundary  
 conway, 18  
 World, 499  
update\_boundary\_omp  
 run\_hybrid.cpp, 724  
 run\_omp.cpp, 725  
 test\_hybrid.cpp, 737  
 test\_omp.cpp, 741  
 time\_hybrid.cpp, 731  
UponLeavingGTest  
 testing::internal::OsStackTraceGetter, 293  
 testing::internal::OsStackTraceGetterInterface, 295  
use\_gtest\_matcher\_  
 testing::gmock\_matchers\_test::GTestMatcherTestP,  
 202  
v\_  
 testing::internal::ValueArray< Ts >, 487  
ValidateSpec  
 testing::internal, 94  
ValidateTestProperty  
 testing::TestResult, 419  
value  
 testing::internal::ConstCharPtr, 133  
 testing::internal::FlatTupleElemBase< FlatTuple<  
 ... >, I >, 180  
 testing::internal::HasDebugStringAndShortDebugString<  
 T >, 206

testing::internal::is\_implicitly\_convertible< From, To >, 235  
 testing::internal::IsHashTable< T >, 240  
 testing::internal::KindOf< T >, 259  
 testing::internal::ReturnAction< ByMoveWrapper< T >::State, 365  
 testing::internal::ReturnAction< R >::Impl< U >::State, 364  
 testing::internal::SetArgRefereeAction< k, T >, 359  
 testing::internal::SetArgumentPointeeAction< N, A, typename >, 360  
 testing::internal::TrueWithString, 437  
 testing::TestProperty, 412  
**value\_**  
 testing::DefaultValue< T >::FixedValueProducer, 174  
 testing::internal::AssignAction< T1, T2 >, 119  
 testing::internal::FloatingPoint< RawType >::FloatingPoint, 187  
 testing::internal::ParamGeneratorConverter< From, To >::Iterator, 246  
 testing::internal::RangeGenerator< T, IncrementT >::Iterator, 250  
 testing::internal::ReturnAction< R >, 347  
 testing::internal::ReturnRefOfCopyAction< T >, 353  
 testing::internal::ReturnRefOfCopyAction< T >::Impl< F >, 220  
 testing::internal::ThreadLocal< T >, 435  
 testing::internal::ValuesInIteratorRangeGenerator< T >::Iterator, 253  
 testing::TestProperty, 412  
**value\_param**  
 testing::TestInfo, 404  
**value\_param\_**  
 testing::TestInfo, 407  
**value\_type**  
 testing::internal::FlatTupleElemBase< FlatTuple< T... >, I >, 180  
 testing::internal::IsRecursiveContainerImpl< C, true >, 242  
 testing::internal::NativeArray< Element >, 281  
 testing::internal::ParamIterator< T >, 316  
**ValueArray**  
 testing::internal::ValueArray< Ts >, 486  
**Values**  
 testing, 37  
**values**  
 testing::internal::ReturnRoundRobinAction< T >::State, 366  
**ValuesIn**  
 testing, 37  
**ValuesInIteratorRangeGenerator**  
 testing::internal::ValuesInIteratorRangeGenerator< T >, 489  
**void\_t**  
 testing::internal, 54

VoidFromDouble Interface, 225  
 VoidFromFloat Interface, 226  
 VoidFromFunc Interface, 226  
 VoidFromIntRef Interface, 226  
 VoidFromString Interface, 226  
 InvokeHelper, 228  
 VoidFromVector Interface, 226  
 VoidFromVoid InvokeHelper, 229  
 VoidifyPointer testing::internal, 94  
 WideCStringEquals PointToString, testing::internal::String, 378  
 WideStringToUtf8 testing::internal, 94  
**WithArg**  
 testing, 37  
**WithArgs**  
 testing, 38  
**WithoutArgs**  
 testing, 38  
**WithoutMatchers**  
 testing::internal::WithoutMatchers, 493  
**World**, 496  
 age, 500  
 Cells\_0, 500  
 Cells\_1, 500  
 display\_world, 497  
 evaluate\_rules, 497  
 n\_cols, 500  
 n\_rows, 500  
 output\_cells, 497  
 random\_seed, 497  
 read\_edge\_1d, 498  
 read\_edge\_2d, 498  
 read\_vertex\_2d, 498  
 side, 500  
 update\_boundary, 499  
**World**, 497  
 write\_edge\_1d, 499  
 write\_edge\_2d, 499  
 write\_vertex\_2d, 499

**Write**  
 testing::internal::posix, 102  
**write\_edge\_1d**  
 World, 499  
**write\_edge\_2d**  
 World, 499  
**write\_matrix\_str**  
 matrix, 20  
**write\_sub\_matrix**  
 Matrix, 264

write\_vertex\_2d  
    World, [499](#)  
WriteToShardStatusFileIfNeeded  
    testing::internal, [95](#)

x  
    PrivateCode, [328](#)  
x\_  
    PrivateCode, [328](#)

zero  
    Matrix, [264](#)