

ISO/IEC TS 19568:2024-08 (E)

Programming Languages - C++ Extensions for Library Fundamentals

Contents	Page
Foreword	vi
Introduction	viii
1 Scope	1
2 Normative references	2
3 Terms and definitions	3
4 General principles	4
4.1 Namespaces, headers, and modifications to standard classes	4
4.2 Feature-testing recommendations	5
5 Modifications to the C++ Standard Library	7
5.1 General	7
5.2 Exception requirements	7
6 General utilities library	8
6.1 Constness propagation	8
6.1.1 Header <experimental/propagate_const> synopsis	8
6.1.2 Class template propagate_const	10
6.1.2.1 Overview	10
6.1.2.2 General requirements on T	12
6.1.2.3 Requirements on class type T	12
6.1.2.4 Constructors	13
6.1.2.5 Assignment	13
6.1.2.6 Const observers	14
6.1.2.7 Non-const observers	14
6.1.2.8 Modifiers	15
6.1.2.9 Relational operators	15
6.1.2.10 Specialized algorithms	18
6.1.2.11 Underlying pointer access	18
6.1.2.12 Hash support	18
6.1.2.13 Comparison function objects	19
6.2 Scope guard support	20
6.2.1 Header <experimental/scope> synopsis	20
6.2.2 Class templates scope_exit, scope_fail, and scope_success	21
6.2.3 Class template unique_resource	24
6.2.3.1 Overview	24
6.2.3.2 Constructors	26
6.2.3.3 Destructor	27
6.2.3.4 Assignment	27
6.2.3.5 Other member functions	29
6.2.3.6 unique_resource creation	30

6.3	Metaprogramming and type traits	31
6.3.1	Header <experimental/type_traits> synopsis	31
6.3.2	Other type transformations	32
6.3.3	Detection idiom	34
7	Function objects	36
7.1	Header <experimental/functional> synopsis	36
7.2	Class template function	36
7.2.1	Overview	36
7.2.2	Construct/copy/destroy	38
7.2.3	Modifiers	39
7.2.4	Observers	39
8	Memory	40
8.1	Header <experimental/memory> synopsis	40
8.2	Non-owning (observer) pointers	41
8.2.1	Class template observer_ptr overview	41
8.2.2	observer_ptr constructors	42
8.2.3	observer_ptr observers	43
8.2.4	observer_ptr conversions	43
8.2.5	observer_ptr modifiers	43
8.2.6	observer_ptr specialized algorithms	44
8.2.7	observer_ptr hash support	45
8.3	Header <experimental/memory_resource> synopsis	45
8.4	Alias template resource_adaptor	45
8.4.1	resource_adaptor	45
8.4.2	resource_adaptor_imp constructors	47
8.4.3	resource_adaptor_imp member functions	47
9	Iterators library	48
9.1	Header <experimental/iterator> synopsis	48
9.2	Class template ostream_joiner	48
9.2.1	Overview	48
9.2.2	Constructor	49
9.2.3	Operations	50
9.2.4	Creation function	50
10	Algorithms library	51
10.1	Header <experimental/algorithm> synopsis	51
10.2	Sampling	51
10.3	Shuffle	52
11	Numerics library	53
11.1	Random number generation	53
11.1.1	Header <experimental/random> synopsis	53
11.1.2	Function template randint	53