square\_list<> design.

# Goal

Develop a C++ 11 compatible set-like templated class that implements a *square\_list*.

# Tests

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| Phase | Test | Operations | Type |
| **Proof of Concept** | | | |
| 1 | Proof of concept | square\_list()  insert()  begin()  end()  iterator operators \*,++,= | value\_type  iterator |
| 2 | Capacity methods | empty()  size()  max\_size() | size\_type |
| 3 | Forward iterator | begin()  end()  pre/post-increment  iterator ==, != |  |
| 4 | Bi-directional iterator |  | difference\_type |
| 5 | Reverse iterator | rbegin()  rend() | reverse\_iterator |
| 6 | Constant iterators | begin() const  end() const  cbegin()  cend()  crbegin()  crend()  rbegin() const  rend() const | const\_iterator  const\_reverse\_iterator |
| **Modifiers** | | | |
| 7 | Erase Single Element | erase(const\_iterator pos) |  |
| 8 | Insert Single (Rigorous) | insert(value\_type const& v) |  |
| 9 | Clear | clear() |  |
| 10 | R-value insert | insert(value\_type&& v) |  |
| 11 | Iterator range insert | insert(InputIt first, InputIt) |  |
| 12 | Initializer list insert | insert(std::initializer\_list<value\_type>) |  |
| 13 | Iterator range erase | erase(const\_iterator first, const\_iterator last) |  |
| 14 | Mass erase | erase(const key\_type& key) | key\_type |
| 15 | Swap | void swap(square\_list& other) |  |
| **Constructors** | | | |
| 16 | Copy constructor | square\_list( square\_list const& other) |  |
| 17 | R-value constructor | square\_list( square\_list && other) |  |
| 18 | Iterator range constructor | square\_list( InputIt first, InputIt last ) |  |
| 19 | Initializer list constructor | square\_list( std::initializer\_list<value\_type> init ) |  |
| **Assignment** | | | |
| 20 | Deep copy assignment | square\_list& operator=(square\_list const&); |  |
| 21 | R-value assignment | square\_list& operator=(square\_list &&); |  |
| 22 | Initializer list assignment | square\_list& operator=(std::initializer\_list); |  |
| **Non-member functions** | | | |
| 23 | Relational operators | operator ==  operator !=  operator <  operator <=  operator >  operator >= |  |
| 24 | Swap function | void swap(square\_list<T>&,square\_list<T>&) |  |
| **Lookup** | | | |
| 25 | Count | size\_type count(key\_type const& key) const |  |
| 26 | Front/Back | const\_reference front() const  const\_reference back() const; | const\_reference |
| 27 | Find | iterator find(Key const& k)  const\_iterator find(Key const& k) const; |  |
| 28 | Equal range | std::pair<iterator,iterator> equal\_range(Key const&)  std::pair<const\_iterator,const\_iterator> equal\_range(Key const&) const |  |
| **Compare** | | | |
| 29 | Implement compare | ctors |  |
| **Allocator** | | | |
| 30 | Implement Allocator | ctors |  |
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