



# Min and Max



This topic teaches the min and max algorithm by demonstrating the usage including min, max, minmax and minmax\_element and explaining the algorithms



- Figure 16.13 demonstrates `min`, `max`, `minmax` and `minmax_element`.



```
cout << "The minimum of 12 and 7 is: "  
      << min( 12, 7 );  
cout << "\nThe maximum of 12 and 7 is: "  
      << max( 12, 7 );  
cout << "\nThe minimum of 'G' and 'Z' is: "  
      << min( 'G', 'Z' );  
cout << "\nThe maximum of 'G' and 'Z' is: "  
      << max( 'G', 'Z' );
```

- Algorithms **min** and **max** determine the minimum and the maximum of two elements, respectively

C++11 now includes overloaded versions of the algorithms `min` and `max` that each receive an `initializer_list` parameter and return the smallest or largest item in the list initializer that's passed as an argument

For example, the following statement returns 7:

```
int mininum = min({10, 7, 14, 21, 17});
```

Each of these new `min` and `max` algorithms is overloaded with a version that takes as a second argument a *binary predicate function* for comparing values

```
auto result2 = minmax_element
```

```
(items.cbegin(), items.cend());
```

- Receives two input iterators representing a range of elements
- Returns a pair of iterators in which `first` points to the smallest element in the range and `second` points to the largest
- A second version of this algorithm takes as a third argument a *binary predicate function* for comparing values



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