

```
1
2 // COS30008, Final Exam, 2023
3
4 #include "DSPStringIterator.h"
5
6 DSPStringIterator::DSPStringIterator( const DSPString& aCollection ) :
7     fCollection( std::make_shared<DSPString>( aCollection ) ),
8     fIndex( 0 )
9 {}
10
11 char DSPStringIterator::operator*() const noexcept
12 {
13     return (*fCollection.get())[fIndex];
14 }
15
16 DSPStringIterator& DSPStringIterator::operator++() noexcept
17 {
18     fIndex++;
19     return *this;
20 }
21
22 DSPStringIterator DSPStringIterator::operator++( int ) noexcept
23 {
24     DSPStringIterator old = *this;
25
26     ++(*this);
27
28     return old;
29 }
30
31 DSPStringIterator& DSPStringIterator::operator--() noexcept
32 {
33     fIndex--;
34     return *this;
35 }
36
37 DSPStringIterator DSPStringIterator::operator--( int ) noexcept
38 {
39     DSPStringIterator old = *this;
40
41     --(*this);
42
43     return old;
44 }
45
46 bool DSPStringIterator::operator==( const DSPStringIterator& aOther ) const noexcept ➤
47 {
48     return fIndex == aOther.fIndex && fCollection == aOther.fCollection;
```

```
49 }
50
51 bool DSPStringIterator::operator!=( const DSPStringIterator& aOther ) const      ↗
    noexcept
52 {
53     return !(*this == aOther);
54 }
55
56 DSPStringIterator DSPStringIterator::begin() const noexcept
57 {
58     DSPStringIterator begin = *this;
59     begin.fIndex = 0;
60     return begin;
61 }
62
63 DSPStringIterator DSPStringIterator::end() const noexcept
64 {
65     DSPStringIterator end = *this;
66     end.fIndex = fCollection.get()->size()-1;
67     return end;
68 }
69
70 DSPStringIterator DSPStringIterator::rbegin() const noexcept
71 {
72     DSPStringIterator rBegin = *this;
73     return rBegin.end();
74 }
75
76 DSPStringIterator DSPStringIterator::rend() const noexcept
77 {
78     DSPStringIterator rEnd = *this;
79     rEnd.fIndex = -1;
80     return rEnd;
81 }
82
```